
Manual

PlanMaker

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Welcome!

Note: Up until now, the manual contains only basic information on how to operate the software using the new **ribbon** interface. More detailed instructions will be added in a later edition.

Tip: A table showing which ribbon command corresponds to each menu command can be found here: [Menu commands and corresponding ribbon commands](#).

Welcome to PlanMaker, the powerful and easy-to-use spreadsheet application.

We have made every effort in the development of PlanMaker to ensure its functions provide the maximum benefits while minimizing user time and effort.

Some of PlanMaker's features

- Available for **Windows, Mac, Linux, and Android**
- Well-designed, ergonomic **user interface** - either with modern "ribbons" or classic menus and toolbars
- More than **330 built-in arithmetic functions**
- Makes creating attractive worksheets easy through **numerous formatting options**. Long, boring columns of numbers can be turned into appealing tables with the **AutoFormat** command. With **cell styles** and **character styles**, you apply frequently needed formatting with just a key press.
- Integrated **charting module** that lets you present numbers vividly in charts
- ... and much more!

PlanMaker is in continuing development, and we welcome comments and suggestions from our users. If, in the course of your work, you encounter a need for a feature that isn't present, or you have other suggestions, write to us – we want PlanMaker to measure up to the users' wishes!

Android version

PlanMaker is also available for Android devices and contains practically all features of the Windows version.

Technical support

If you have any questions, our technical support team will be glad to assist you. You can reach us as follows:

Website

Our website provides program updates, tips and tricks, free downloads, and much more.

Visit us at: www.softmaker.com

Support forums

Feel free to communicate with our technical support team, as well as other users, in our support forums.

You find them at: forum.softmaker.com

Inquiries to our support

If you have a problem with our software, we will gladly help you.

You can post your questions here: www.softmaker.com/en/support-assistant

About this manual

PlanMaker has been developed with an understanding that there is a broad range of user experience. While it has many functions and customization options for the advanced user, it is designed to be an extremely useful tool for the novice as well.

The chapters of this manual are organized as follows:

- Chapter [Installation and program startup](#) Describes how to install and start PlanMaker.
- Chapter [Screen elements](#): Describes the individual components of PlanMaker's application window.
- Chapter [PlanMaker basics](#): Acquaints you with PlanMaker's basic functions and explains basic spreadsheet terminology.
- Chapter [The PlanMaker Tour](#) Introduces you to the operation of PlanMaker with some practical examples.
- Chapters [Editing worksheets](#) and following are the reference part of the manual. These chapters are organized by subject, like a reference book, and describe all the functions of the program in detail.

System requirements

In order to run this software, the following hardware and software is required:

Windows version

- Windows 10, Windows 8/8.1, or Windows 7 (32 or 64 bit)

Mac version

- macOS or OS X version 10.10 ("Mavericks") or better

Linux version

- Any x86 Linux (32 or 64 bit)

Android-Version

- Android 5.0 or better
- ARM compatible CPU

Installation and program startup

This chapter covers information on installing and starting PlanMaker.

It is divided into the following sections:

- [Installing under Windows](#)
- [Installing under macOS](#)
- [Installing under Linux](#)
- [Installing on an Android device](#)

Please go directly to the section that covers your operating system.

Installing under Windows

Download

If you obtained the software by *download* from our website, you will find installation instructions included in the e-mail that you received after purchasing the software.

CD-ROM

If you obtained the software on *CD-ROM*, please launch the installation program provided in the root folder of the CD.

Then, follow the installation program's instructions to install the software.

Starting

To start the installed programs, use the Start menu at the lower left corner of the screen. You will find your SoftMaker Office applications in a sub-folder called **SoftMaker Office**.

Note: When you start PlanMaker for the first time, you will be asked to enter your name and address. This information is *not* for the purpose of registering the program, but allows you to insert your name, mailing address, etc., in documents through the [USERFIELD](#) function. You can always change this information later (see section [Preferences, General tab](#))

Installing under macOS

You will find information about installing the software in the e-mail that you received after purchasing it.

Error message appears when launching the installation program?

Depending on your system settings, you may receive the following error message when you try to start the installation program:



This happens when your system's security settings specify that only programs that have been downloaded from the App Store should be allowed to run.

Clicking on the question mark in the lower left corner of the message reveals how you can launch the installation program anyway. A help window appears, recommending the following procedure:

1. Close the error message.
2. Hold down the **Ctrl** key and click on the installation program.
3. A context menu appears. Select the **Open** command.
4. A message appears asking if you really want to open this application. Confirm this by clicking on the **Open** button.

The installation program will now start.

Starting

After the installation is complete, icons for each of the installed applications will appear in both the Launchpad and the Dock at the bottom of the screen. To start one of the apps, click on its icon.

Installing under Linux

You will find information about installing the software in the e-mail that you received after purchasing it.

Starting

In most Linux distributions, the installer automatically creates shortcut icons for all SoftMaker Office applications in the menu. To start any of the applications, click on the corresponding icon.

Alternatively, the following shell scripts are available for launching the programs:

- **textmaker18** launches TextMaker
- **planmaker18** launches PlanMaker
- **presentations18** launches Presentations

You can execute these scripts in a shell, for example.

Note: When you start PlanMaker for the first time, you will be asked to enter your name and address. This information is *not* for the purpose of registering the program, but allows you to insert your name, mailing address, etc., in documents through the [USERFIELD](#) function. You can always change this information later (see section [Preferences, General tab](#)).

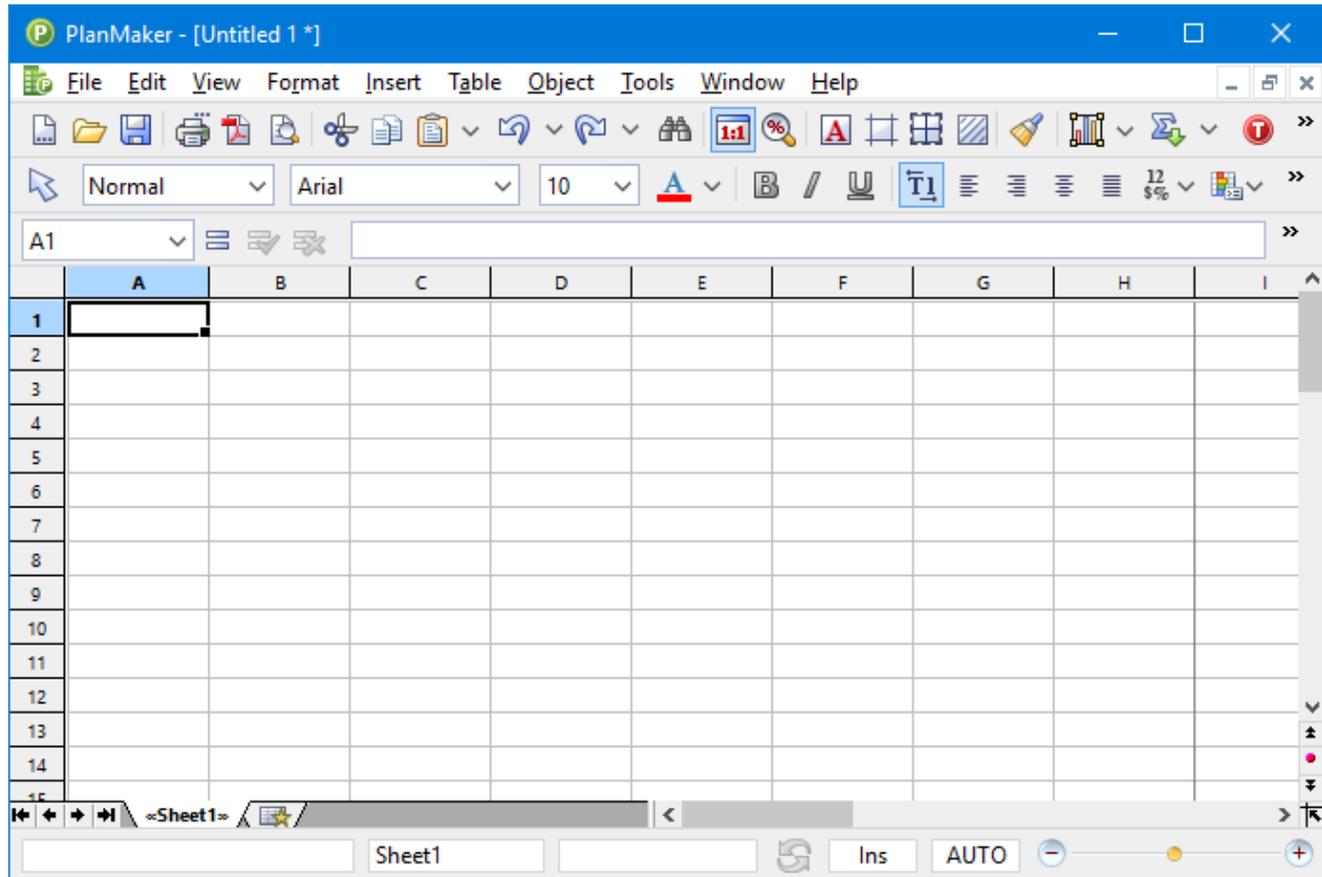
Installing on an Android device

Purchased in Google Play Store

When you purchase an app using the **Google Play Store** on your Android device, there is nothing you have to do: The app will be downloaded and installed automatically, right after you bought it.

Screen elements

On the following pages, the individual components of PlanMaker's user interface are described in detail.



PlanMaker's application window (Windows version)

Note: Most of the illustrations in this manual were prepared with the **Windows** version of PlanMaker. On other operating systems, some of the controls have a slightly different appearance, but their modes of operation are identical.

Title bar

At the top of the application window, you will find the *title bar*.



The title bar indicates the name of the application and the name of the current document.

If this document contains changes that have not been saved yet, a little asterisk is displayed behind its name.

Menu bar

The *menu bar* is found directly under the title bar.

File Edit View Format Insert Table Object Tools Window Help

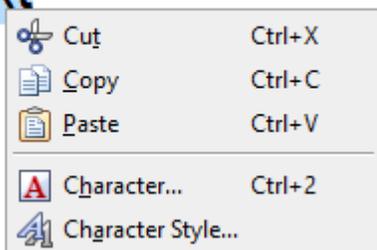
It contains all of PlanMaker's commands in the form of clearly arranged menus. Click on a menu item to open a menu and invoke a command.

Context menu

In addition, a menu called *context menu* is also available.

This menu contains different commands depending on the current situation. For example, when you select some text and open the context menu, it will offer commands for cutting, copying, or formatting that text.

Text



To open the context menu, you usually first select something in your document and then click on that selection with the *right* mouse button.

Android: In the Android version, you can also open the context menu with your finger: Just tap on the screen and *hold* your finger there for about a second.

Standard toolbar

The *Standard toolbar* is shown below the menu bar. It contains icons for the most commonly used commands.



Toolbars, such as the Standard toolbar, allow fast access to a program's functions. Each icon represents a specific command. If you click on it, the corresponding command is invoked.

Tip: If you point the mouse cursor at an icon (without clicking) and hold it there, a text box called a "tooltip" is shown. The tooltip describes the icon's function.

There are additional toolbars in PlanMaker that you can turn on and off as you choose. To do this, either invoke the menu command **View > Toolbars** or click with the right mouse button on one of the displayed toolbars. A menu appears, from which you can select toolbars that you would like displayed.

Customizing toolbars: You can customize the built-in toolbars to your liking and even create your own toolbars. For more information, see the section [Customizing toolbars](#).

Formatting toolbar

The *Formatting toolbar*, which appears beneath the Standard toolbar, allows you to format text by choosing the desired font and style, such as bold, italics, underline, etc.

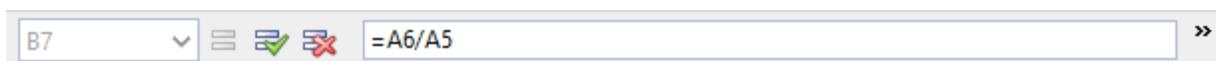


To choose, for example, a different font, click on the little arrow to the right of the font name to open a list, and then select a font.

Other icons in the Formatting toolbar are switches that you can turn on and off by clicking, for example, the **B** for bold.

Edit toolbar

Below the Standard and the Formatting toolbar is the *Edit toolbar*.



The Edit toolbar contains the following control elements:

Cell address

The address of the currently active cell is displayed at the very left.

Symbols and input field for editing cell contents

To the right of the cell address are four icons and an input field.

Click into the input field to edit the content of the current cell. Or, to edit the cell directly, simply click in the cell and begin typing. For detailed information on entering and editing cells, see section [Entering data in cells](#).

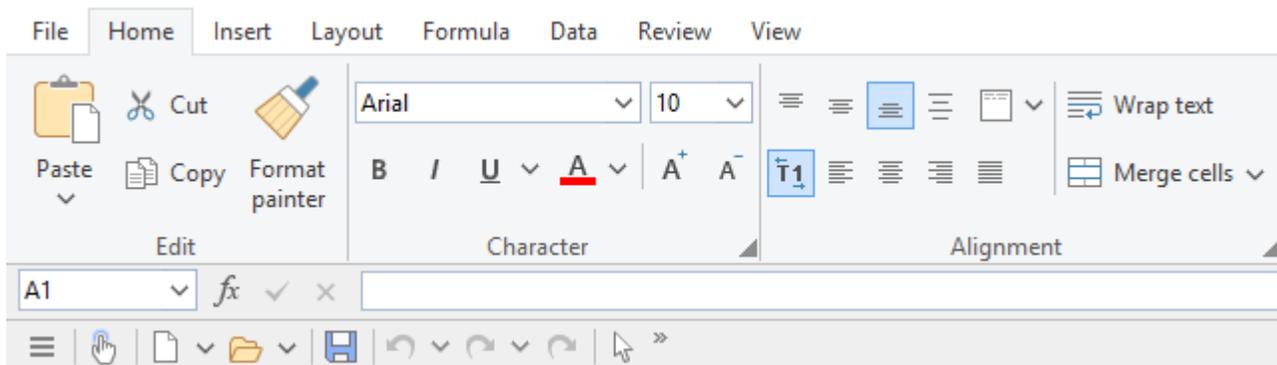
The Edit toolbar icons have the following functions:

Icon	Function
	Invokes the Insert > Function menu command
	Accepts the user input in the input field (identical to pressing the Enter ↵ key)
	Cancels the user input in the input field (identical to pressing the Esc key)

For more information on entering formulas, see section [Entering formulas](#).

Ribbon

If you have selected in the settings that you would prefer to use a *ribbon* interface instead of classic menus and toolbars, the uppermost area of the program window will look like this on your device:



The ribbon and the Quick Access Toolbar (at the bottom)

Ribbons are a modern type of user interface supposed to replace menus and toolbars (by combining them) in order to simplify the handling of the software.

As you can see, the ribbon has several tabs that are displayed at its top (File, Home, Insert, etc.). You can switch between them with the click of a mouse. Each tab contains icons for a specific topic.

Tip: You can also switch between the ribbon tabs using the keyboard: Use **Ctrl+F12** to move to the next tab and **Ctrl+Shift+F12** to the previous tab.

The *Quick Access Toolbar* is displayed below the ribbon. It provides a selection of the most frequently used commands.

Note: Up until now, the manual contains only basic information on how to operate the software using the ribbon. More detailed instructions will be added in a later edition.

Tip 1: A table showing which ribbon command corresponds to each menu command can be found here: [Menu commands and corresponding ribbon commands](#).

Tip 2: You can access the classic menu also from the ribbon: Simply click on the  icon in the *Quick Access Toolbar* to open it.

Tip 3: You can switch the user interface between *ribbon* and *classic menus and toolbars* at any time. To do this, invoke the menu command **Tools > Options** (or, in the ribbon, the command **File > Options**). In the dialog, switch to the **Appearance** tab and click on the **User Interface** button. A dialog box appears in which you can select the type of user interface you prefer.

Document tabs

A bar with *document tabs* can be found below the Edit toolbar. It displays one tab for each open document.



The document tabs bar

The following actions can be performed here:

- To make a document become the active document, click on its tab with the *left* mouse button. This allows you to switch between the currently open documents quickly.
- To close a document, click on its tab with the *middle* mouse button. (Alternatively, left-click on the **x** icon displayed on the right of the tab).

Documents can also be opened in a new program window if desired. For details on working with multiple documents at the same time, see the chapter [Working with multiple documents](#).

Document

The document itself takes up the largest area of the program window. This is the work area where you enter data, carry out calculations, etc.

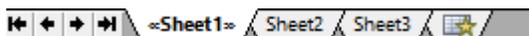
Detailed information on editing the document and entering data can be found throughout this manual; in particular, in the chapter [Editing worksheets](#).

Worksheet register

Below the document is the *worksheet register*.

A PlanMaker document can consist of multiple worksheets, which are layered like a stack of paper sheets, one on top of another. With the *worksheet register*, you can switch between the individual worksheets in a

document (by clicking on its tab), create new sheets, and manage the existing ones. For details, see the section [Working with multiple worksheets](#)).

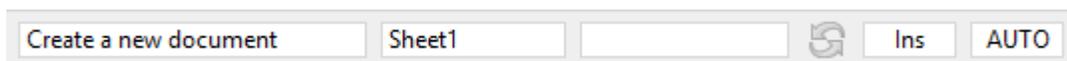


In the illustration above, the document consists of three worksheets, with "Sheet1" as the active worksheet.

Status bar

The *Status bar* is found at the bottom of the program window.

Hint: If you do not see the status bar, you have to change the settings as described in the section [Preferences, Appearance tab](#).



When you point to an icon or other control in the user interface with your mouse, a short explanation of its function is displayed in the status bar.

Apart from that, the following information is provided in the status bar (from left to right):

Example	Explanation
	On the very left, information is displayed about the toolbar icon or menu entry that the mouse is currently pointing at.
Sheet1	The name of the current worksheet is displayed here.
Sum=6	If just a single cell is selected, its content is shown here. If multiple cells are selected, the sum of their cell contents is indicated. (You can change the type of calculation displayed here with the Calculation in status bar option in the dialog box of the Tools > Options menu command).
	This icon lights up if the worksheet contains circular references. This usually indicates an erroneously written formula – for example, a formula in cell A1 that refers to cell A1 itself. If you click this icon, PlanMaker selects the cell with the circular reference. If you click again, it jumps to the next such cell (if more of them exist).
Ins	Shows whether Insert Mode (Ins) or Overstrike Mode (Ovr) is active. Ins: Insert mode is active – newly entered text will be inserted into existing text. Ovr: Overwrite mode is active – newly entered text will be written over existing text. The default setting is Insert Mode. You switch between these modes by pressing the Ins key.
AUTO	Indicates the current input mode:

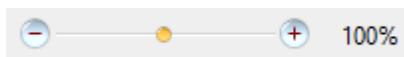
AUTO: Normal input mode – numbers are automatically recognized as numbers, and formulas as formulas. This is the standard setting.

TEXT: Text input mode – everything you enter is interpreted as *text*, including formulas and numbers.

To switch between these two modes, either click on the text "AUTO" in the status bar or press the key combination **Ctrl+Shift+F4**.

Note: If you switch to TEXT input mode, a single quotation mark (') is automatically placed before all numbers and formulas that you enter, converting them into text – which can *not* be used for calculations anymore. (In order to turn text into numbers or formulas again, switch back to AUTO mode and simply remove the leading quotation mark.)

Additionally, a zoom slider can be found in the status bar:



To change the zoom level, either drag the slider with your mouse, or click on the minus or plus icon. (See also section [Zoom level](#).)

PlanMaker basics

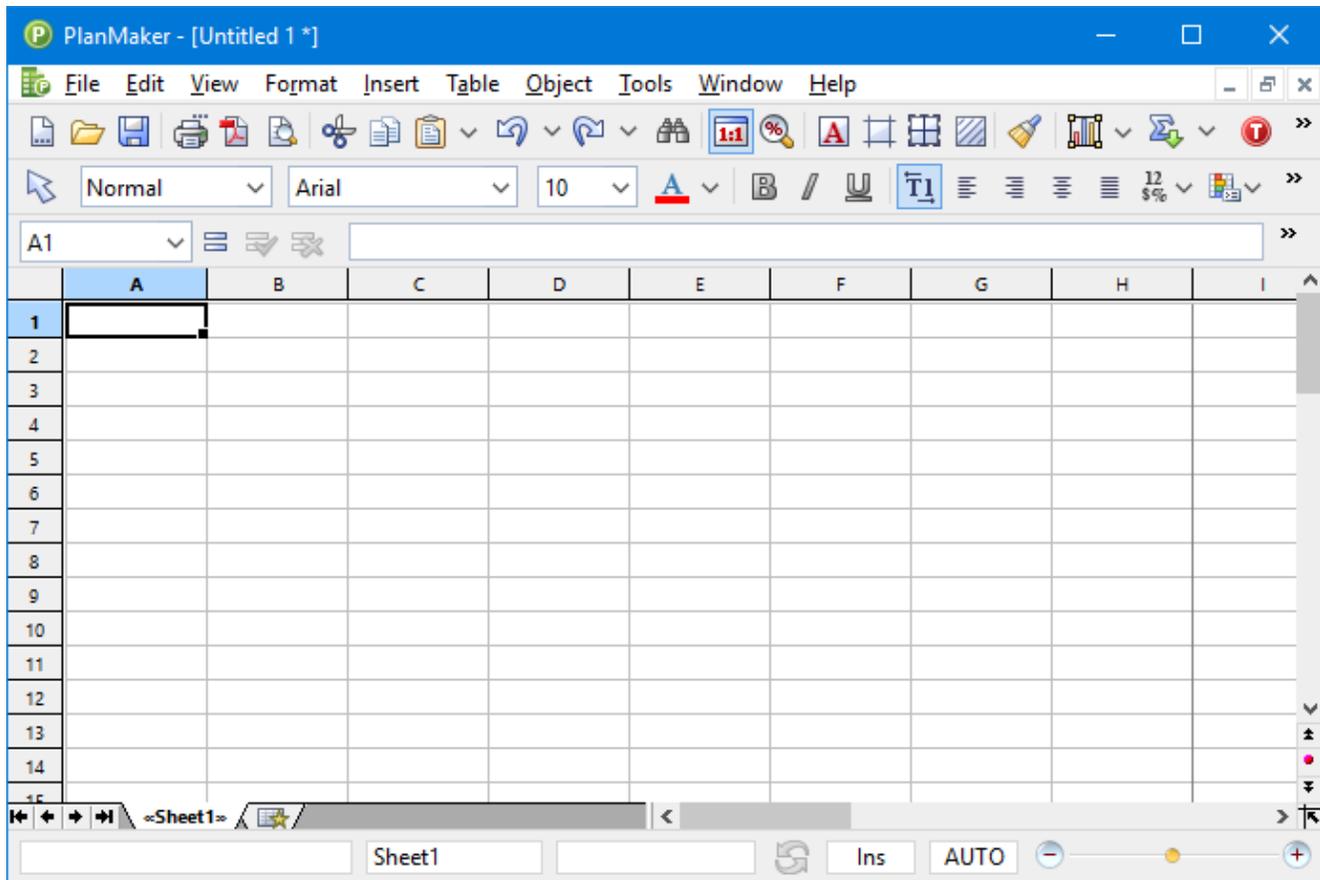
This chapter gives you a brief description of basic PlanMaker functions and terminology.

Topics covered in this chapter:

- [The structure of a spreadsheet](#)
- [Moving around in a worksheet](#)
- [Entering data](#) and [Deleting data](#)
- [Undoing changes](#)
- [Beginning a new document](#)
- [Opening a document](#), [Printing a document](#) and [Saving a document](#)
- [Exiting PlanMaker](#)

The structure of a spreadsheet

First, let's have a look at how spreadsheets are organized.



Spreadsheets are divided into lines and columns. Each spreadsheet can contain up to 1 million rows and 16384 columns, labeled as follows:

- The rows are numbered.
- The columns are labeled with alphabetic characters: A to Z, then AA to AZ, then BA to BZ, etc.

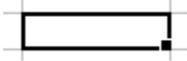
The matrix of rows and columns results in a cell grid. Each of the cells has its individual coordinates: B5, for example, describes the cell in the fifth line of column B (the second column). A3 would be the cell in the third row of column A (the first column), etc. These coordinates are referred to as the *cell address*.

The cell address is very important because calculations often refer to other cells: If, for example, you want to put twice the value of cell A1 in cell A2, you would enter in cell A2: =A1*2.

Twice the value of A1 is now displayed in A2. If you change the value in A1, the resulting calculation of cell A2 is automatically updated.

Moving around in a worksheet

If you enter data in PlanMaker, it is always inserted into the active cell. A thin dark frame, known as the *cell frame*, indicates the active cell:



You can move the cell frame to another cell as follows:

Mouse: Click on the desired cell.

Keyboard: Use the arrow keys of the keyboard to move the cell frame.

Via keyboard is also possible: Use the **Tab** key to get to the next right cell and **Shift+Tab** to the next left cell. Press the **Enter**↵ key to move down and **Shift+Enter** to move up.

A list of available keystroke commands can be found in the section [Keyboard shortcuts](#).

Entering data

In order to enter data into a cell, move to the desired cell using the arrow keys or the mouse, and begin typing.

To complete your input, press the **Enter** ↵ key.

To undo an input error, press the **Esc** key. PlanMaker restores the previous cell content.

Alternatively, use the following buttons of the Edit toolbar:

- To accept the input, click the  button (identical to pressing the **Enter** ↵ key).
- To cancel the input, click the  button (identical to pressing the **Esc** key).

To edit the content of an already populated cell, double-click it, or navigate to the cell and press the **F2** key.

For detailed information on this topic, see section [Entering data in cells](#).

Deleting data

There are several ways to delete data from a document:

- **Deleting the content of a cell**

In order to delete the content of a cell, navigate to the cell and press the **Del** key – or choose the **Edit > Delete** menu command.

- **Deleting only parts of the cell content**

In order to delete only a part of the contents of a cell, double-click it. Alternatively, navigate to the cell and press the **F2** key. This allows you to edit the cell content and, for example, delete parts of it.

- **Deleting the contents of multiple cells**

To delete multiple cells at once, *select* them before you press the **Del** key or choose the **Edit > Delete** menu command. For information on how to select cells, see section [Selecting cells and cell contents](#).

More detailed information on this topic can be found in the section [Deleting cells and cell contents](#).

Undoing changes

The **Edit > Undo** menu command reverses changes made to a document, one by one, in reverse order. The Undo command can be used repeatedly, as desired.

Reversing the undo command

There is also an opposite to the **Undo** command, the menu command **Edit > Redo**. It restores the action last undone and can also be used repeatedly.

For detailed information on this topic, see section [Undoing changes](#).

Beginning a new document

To begin a new document, invoke the menu command **File > New**.

In the resulting dialog box, select a document template for the new document. To create a document without any additional formatting, select the standard document template `normal.pmvx`.

Press Enter ↵ or click **OK** to create the new document.

Using document templates

Template: Apart from the standard template `Normal.pmvx` you will also see some folders that can be opened with a double-click. These folders contain prepared document templates.

Language: Select the language for which you want to have document templates displayed.

Set default: Change the default template by clicking a template and using the **Set default** button.

For detailed information on using document templates, see section [Document templates](#).

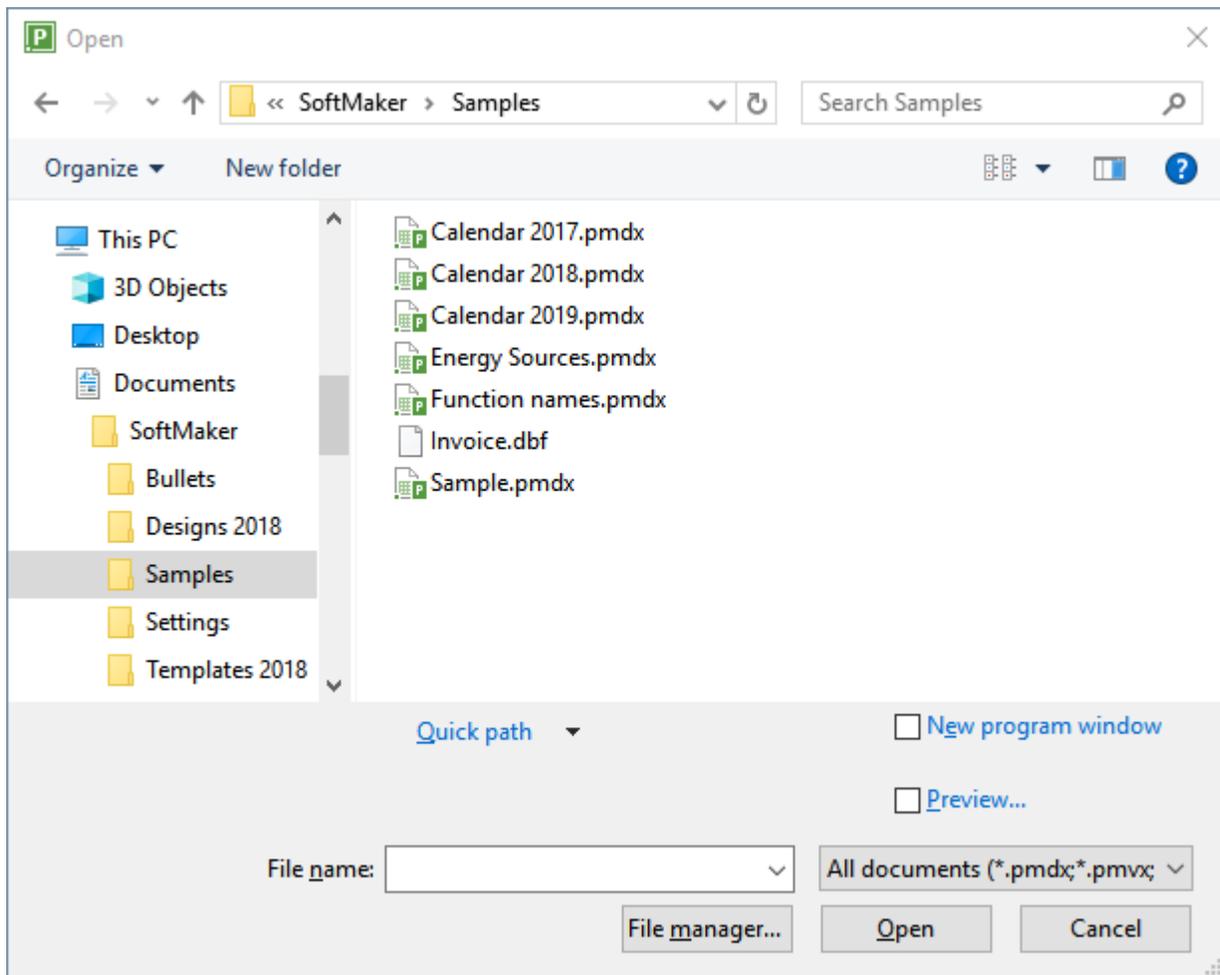
"New program window" option

The **New program window** checkbox in this dialog has the following meaning: If it is switched on, the new document will be opened in a new program window. If it is switched off, the new document will appear in the existing window with an additional tab. (Note: This option is not available in the Android version.)

Opening a document

To open an existing document, use the **File > Open** menu command.

A dialog box appears that can look, for example, as follows:



The most recently accessed folder will display with all existing documents listed (based on the listed file types). To choose the file to be opened, type its name in manually or simply select a file from the list.

"New program window" option

The **New program window** checkbox has the following meaning: If it is switched on, the new document will be opened in a new program window. If it is switched off, the new document will appear in the existing window. (Note: This option is not available in the Android version.)

Previewing a document

When the **Preview** option is activated, a little box displaying a preview of the currently selected document is displayed alongside the dialog.

Opening other file formats

In addition to opening files created in PlanMaker's default file format, you can also open files created within other software, such as Microsoft Excel. To open a file from another application, choose the format of the file you want to open from the file types list box. This will display all matches to that software's file extensions in the dialog.

You will find more information about this in chapter [Working with other file formats](#).

Using Quick Paths

With the **Quick Path** button, you can create *quick paths* in order to quickly move to a specified folder when opening or saving files. This allows you to create a list of your most frequently used folders, permitting much faster navigation.

You will find more information about this in section [Quick paths](#).

Using the File manager

The **File manager** button opens the integrated file manager. This shows a list of your documents, and allows you to open, print, view, or delete them, as well as perform searches.

You will find more information about this in section [The file manager](#).

Using the list of recently opened files

Tip: At the bottom of the **File** menu you will find a list of recently opened files. Simply click on one of these files to open it again.

Printing a document

To print the active document, choose the **File > Print** menu command.

A dialog box appears, in which you can specify which parts of the document will be printed.

For more information on outputting documents (printing, e-mailing, etc.), see the chapter [Outputting documents](#).

Saving a document

To save a document, choose the **File > Save** menu command. If the document has not been saved before, PlanMaker will request a document name before saving.

Saving under a different name or in a different place

To save a document under a new name or location on your computer, use the menu command **File > Save as**. This saves your document too, but you can first give it another name or select another folder in which to save it.

Saving in a different file format

With the **File > Save as** menu command, you can also save a document in another file format. To do so, simply choose the desired format from the **Save as type** list before clicking the **Save** button. See also chapter [Working with other file formats](#).

Saving all open documents

If you have multiple documents open at the same time, you can use the menu command **File > Save all** to save all documents open in all the windows. PlanMaker checks which of the documents have been altered since the last save and saves only those that have been changed.

Exiting PlanMaker

To exit PlanMaker, use the **File > Exit** menu command.

If any of the open documents have been altered since they were last saved, PlanMaker automatically asks whether you would like to save them first.

The PlanMaker Tour

Welcome to the PlanMaker Tour!

On the next few pages, we will introduce you to some of PlanMaker's most important functions using some practical examples. Users unfamiliar with spreadsheets should read this chapter thoroughly.

More advanced users are encouraged to browse through this section as needed.

Note: Most of the illustrations in this manual were prepared with the **Windows** version of PlanMaker. On other operating systems, some of the controls have a slightly different appearance, but their modes of operation are identical.

Five minutes of theory ...

If, for example, you plan a computer purchase, you need to compare various systems, based on their hardware components: you will need a PC, a monitor, and a printer. One vendor may offer a competitively priced computer; another one might offer an inexpensive monitor, etc. Which is the best option?

To determine this, you have to add up the prices. So, you grab your pocket calculator, type in the numbers one by one, jot down the result – and become frustrated: With every new offer, the game begins anew, even though the method of calculation never changes, only the values do.

Such calculations can be carried out much easier with the help of a spreadsheet application.

The first technique you will learn when using PlanMaker, is to make use of "variables." Variables help you to generate abstract formulas, without the use of actual number (or dollar) values. For instance:

computer + monitor + printer = total price

Abstracted:

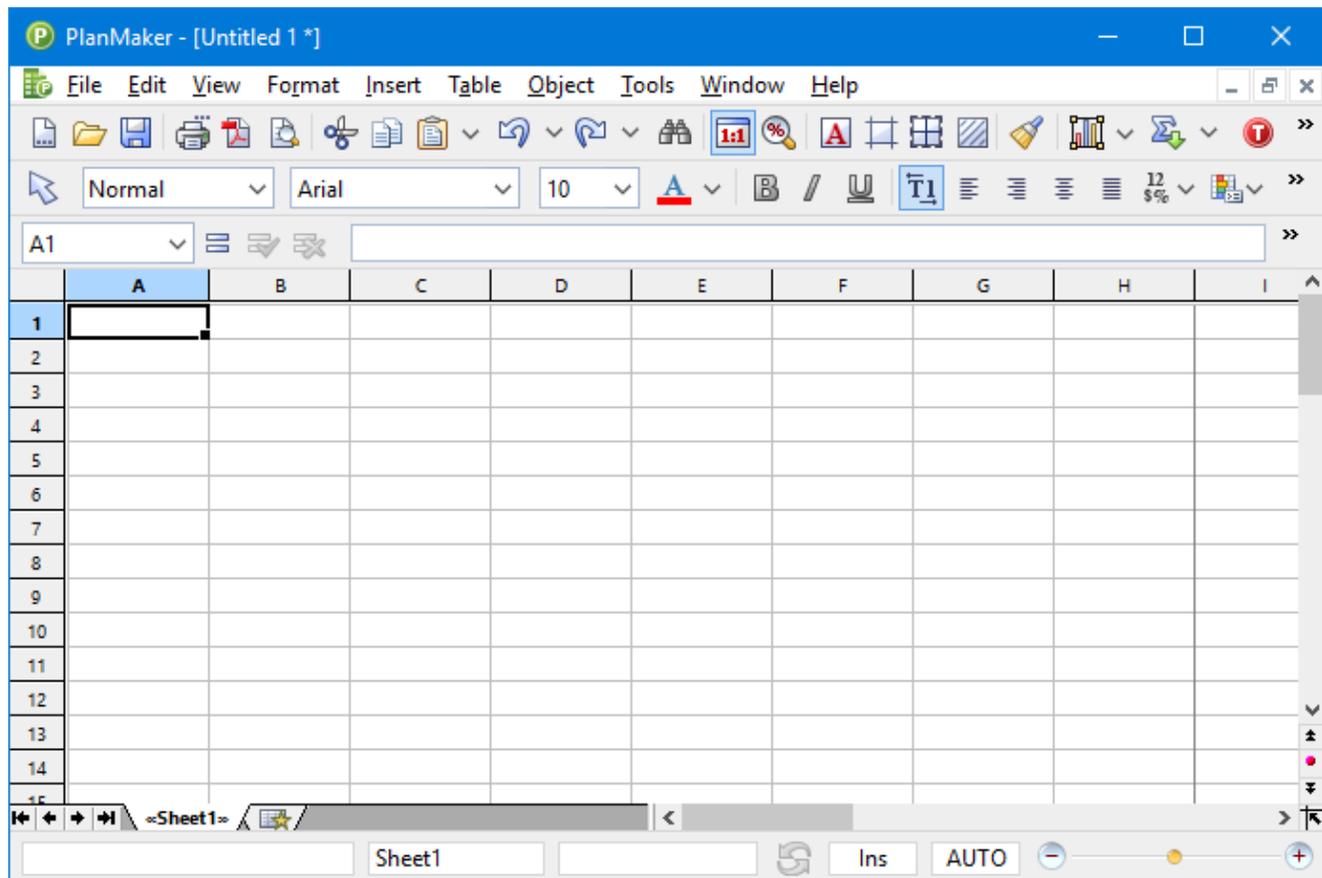
$a + b + c = d$

Without spreadsheets, such a formula has only practical benefit if you use a programmable calculator – you can enter the formula once, and then execute it many times. The calculator asks for the values one by one, and then shows the total value. This is not much of an improvement over repeated individual calculations...

First steps with PlanMaker

With these preliminary thoughts in mind, let's look at how such problems can be solved with PlanMaker.

When you start PlanMaker, the following screen will appear (Windows version):



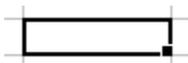
Most of the application window is taken up by your new worksheet. On the top, it is bordered by a row of alphabetic characters, on the left by a column of numbers.

Let's have a closer look at the worksheet.

The basic structure of a worksheet

As you already know from chapter [PlanMaker basics](#), a worksheet is divided into *rows* and *columns*. This is also visible through the gray lines that are displayed in the worksheet.

A dark frame that we call the *cell frame* surrounds the cell in the upper left corner. The cell frame indicates which cell is currently active:



When entering data, it is always placed in the active cell.

You can use the arrow keys on your keyboard, e.g. ↓ and →, to move the cell frame from one cell to another. While you do that, take a look at the Edit toolbar above the worksheet: at the very left, PlanMaker displays the *address* of the currently active cell. The address always consists of one or two alphabetic characters and a number:

A1 means column 1, row 1.

A5 means column 1, row 5.

D5 means column 4, row 5, etc.

The fact that every cell has a unique address is the key to all functions of a spreadsheet. Remember the variables a, b, c we talked about before? In PlanMaker, the *cells* are used as variables. Therefore, you can enter calculations in a cell that refer to other cells in your worksheet – and, for example, calculate the sum of several cells in another cell.

Entering values and formulas

Enough theory for now! Let's create our first calculation.

First we type in the price for the personal computer; under that, the price for the monitor; and under that, the price for the printer. Suppose the prices are \$799, \$425, and \$199, respectively.

Use the arrow keys to go to cell B2, and enter the value 799. The value appears both in the chosen cell and in the Edit toolbar above the table.

Note: Do not make the mistake of typing the letter "O" or "o" instead of the numerical digit "0". Computers make a clear distinction between letters and numbers. PlanMaker would accept the input but interpret it as text. When attempting to calculate with it, PlanMaker will generate an error message.

Press the **Enter** ↵ key now to finish your input. The cell frame moves down one row to cell B3. Type the value 425 here, and in the row below that type the value 199.

Hint: If you entered a wrong value and have already pressed the Enter ↵ key, you can still correct your mistake. Move the cell frame to the cell with the error, and enter the correct value. As soon as you press the Enter ↵ key, the old content is overwritten by the new input. You can also edit the content of already filled-out cells by pressing the F2 key.

Entering formulas

Let's enter our first formula.

In order to calculate the total cost of our computer equipment, we have to add up the unit prices. This is simple to do:

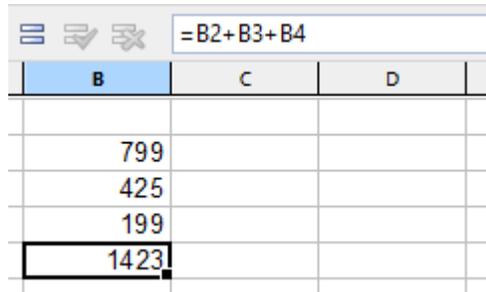
Go to cell B5 and type an = (equal sign). The equal sign shows PlanMaker that you would like to begin entering a formula.

Now enter the formula. For this purpose, you use the cell addresses as "variables". Type in:

=B2+B3+B4

Note: Cell addresses are not case-sensitive, i.e., you can enter them in either upper or lower case.

When you press the **Enter** ↵ key, you will see the result of your first formula:



B	C	D
799		
425		
199		
1423		

Let's see what happens if you change the numbers in the cells. Replace 425 by 300, or some other value. As soon as you press the **Enter** ↵ key, the result of the calculation is updated immediately.

Regardless of what cells B2, B3 and B4 contain, PlanMaker will always sum them up. If you get a quote for a computer system in which only the price for only one component has changed, you only need to update that one value, and the new total price will be displayed in cell B5.

The SUM function

The example above is one method of adding up several numbers. But while this method is adequate for a few numbers, it is clearly too cumbersome for adding 50 numbers - that would be one long formula! However, there are better ways to achieve this: the *arithmetic functions* of PlanMaker.

Let's find out more about them! First, make cell B5 the current cell; it contains the formula you entered previously.

Next, delete the old formula by pressing the **Del** key, or by simply overwriting the existing cell content. Now enter the following formula:

=SUM(B2:B4)

After you press the **Enter** ↵ key, you can see the result in the cell: the sum of the cells B2 through B4.

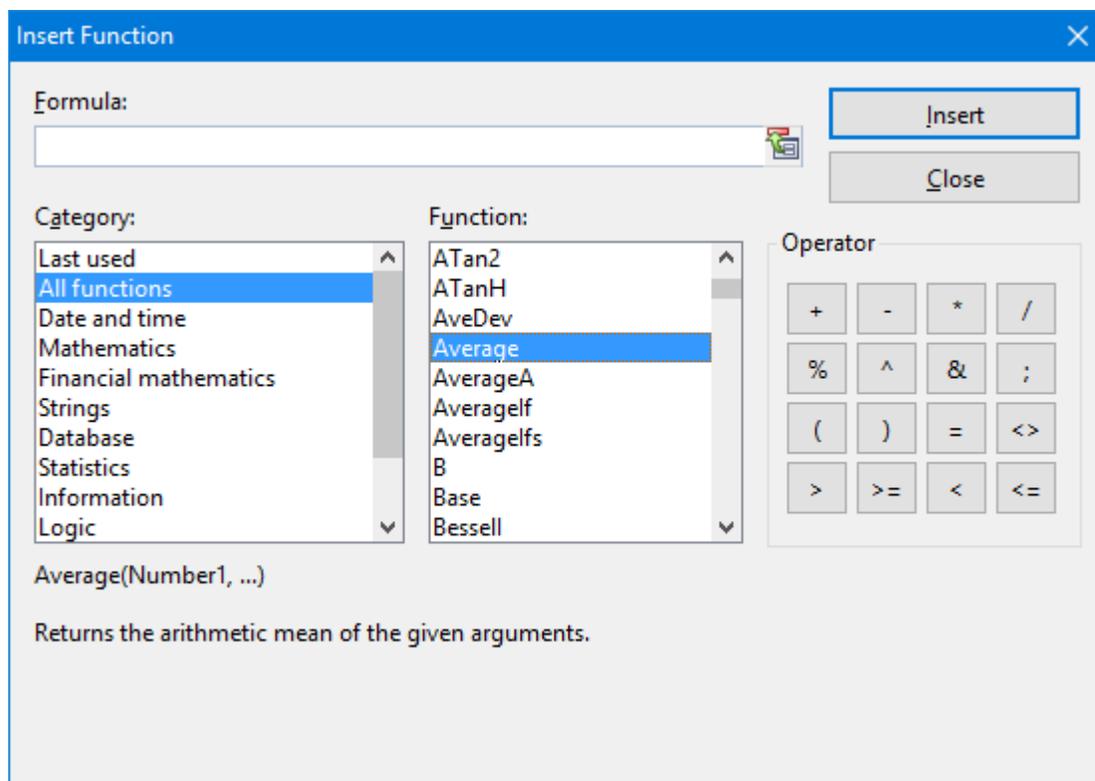
PlanMaker has over 330 built-in arithmetic functions, and one of them is SUM. The SUM function calculates the sum of the values that your formula references. The expression in parentheses after the function name tells PlanMaker where to start and stop totaling.

You have directed PlanMaker to start adding in cell B2 and stop in cell B4. Between cell B2 and cell B4 sits one cell, B3, and it is included in the summing as well. You could easily have specified a larger range, such as B2:B123.

The notation *StartingCell:EndingCell* can also be used when both row and column changes. If, for example, you enter B2 as the starting cell and C4 as the ending cell, these two coordinates form the corners of a rectangle. The formula =SUM(B2:C4) would sum all numbers contained within this rectangle.

Using the Insert > Function dialog

To get an impression of the large number of arithmetic functions PlanMaker supports, choose the **Insert > Function** menu command. A dialog box will appear that displays all the functions PlanMaker supports.



Hint: In the Windows version of PlanMaker, you can retrieve a help page for each function by selecting the function in the dialog and then pressing the **F1** key.

Let's try another function. Let's calculate the average value of our three numbers in the table. Proceed as follows:

Close the dialog box to return to the worksheet, and delete the contents of cell B5 again.

Choose the **Insert > Function** menu command. Select the category **All functions** in the left list. Now scroll through the list on the right, down to the "Average" function. Double-click the **Average** function.

PlanMaker now places the Average function into the input field of the dialog box:

Average ()

In order to complete the formula, enter the cell range B2:B4 between the parentheses.

Alternatively, you can select the cell range right in the worksheet: left-click on cell B2, then drag down the mouse to cell B4 (as you did in a previous example). If the dialog box covers the cells you want to select, simply drag the dialog box out of the way.

The completed formula should look like this:

=Average (B2:B4)

If you click the **Insert** button now, this formula is placed into cell B5 and calculated immediately.

You have now learned about two of the more than 330 arithmetic functions of PlanMaker. A comprehensive list of all functions can be found in section [Functions from A to Z](#).

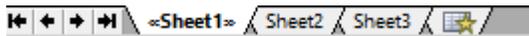
Going three-dimensional

PlanMaker documents are not limited to single worksheets. If required, you can stack several worksheets on top of each other – just like a stack of papers. PlanMaker documents are therefore also called *workbooks*. Each workbook can contain up to 256 *worksheets*.

The main advantage of this is that calculations in one worksheet can also refer to cells in other worksheets of a workbook, in essence, letting you create "three-dimensional" calculations.

As an example, if you maintain the financial records of three branches of a company on three worksheets, you can create a fourth worksheet that sums the financial results of the three branches, giving you an integrated view of the company finances.

To add a new worksheet to a workbook, use the **Worksheet > Worksheet > Insert** menu command. To switch between the individual sheets, use the worksheet tabs on the worksheet register.



Simply click on the desired worksheet tab to switch the currently active worksheet.

For detailed information on this topic, see section [Working with multiple worksheets](#).

Changing the layout of worksheets

Let's return to our first sample worksheet and improve the visual layout. PlanMaker has many formatting functions that let you fine-tune how the worksheets look.

Adding a headline

What is missing from our worksheet is a headline. Let's enter one and increase the font size to make it stand out.

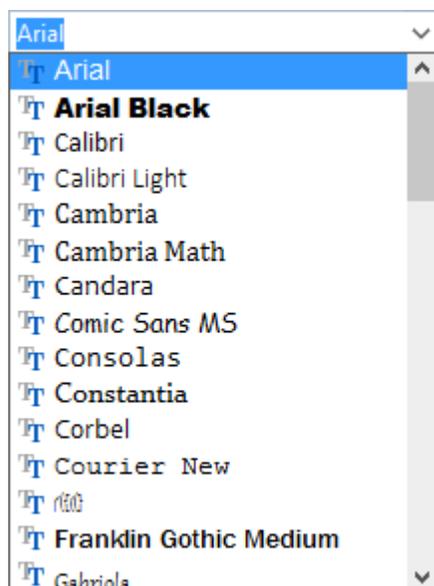
Click on cell B1 to make it the active cell. Then, for example, type the following text:

```
My first worksheet↓
```

Changing character formatting

Next, let's choose a different font for the heading – and make it a lot bigger.

For this purpose, first move the cell frame back to the cell B1 again. Open the font list in the Formatting toolbar by clicking the small triangle to the right of the font name.



PlanMaker now displays a list of all fonts installed on your computer. Select the Tahoma font (or any other font you like). Then open the list with the font sizes (at the right of the font list). Select a font size of 24 point.

The remaining elements of the Formatting toolbar allow you to change the color of text, and to apply various formatting attributes: **B** turns on bold printing, *I* switches to italics, U underlines the text, etc.

Changing number formatting

When it comes to formatting *numbers*, PlanMaker not only allows you to change the character format of numbers (font face, font size, etc.), but you can also modify their *number format*.

Let's try this out: To display the values in the cells B2 through B5 with a currency symbol, proceed as follows:

First, *select* the cells of interest. To do so, click on the cell B2 and then – with the mouse button still held down – move the mouse pointer to the cell B5.

Android: Please note that in the Android version, selecting cells is done in a quite different way. For details, see the section [Selecting cells and cell contents](#).

When you have selected the cells to be changed, invoke the **Format > Cell** menu command. A dialog with numerous options opens. We are only interested in the tab named **Number format**: On this tab, simply choose the entry **Currency** from the list and confirm with **OK**.

Result: A currency symbol is now displayed with values in the selected cells. Also, the values are displayed with two digits after the decimal point.

There are many more number format options at your disposal, for example, you can make values display as percentages, change their number of decimal places, etc. Important: Applying a different number format to a value only changes its display – not the value itself.

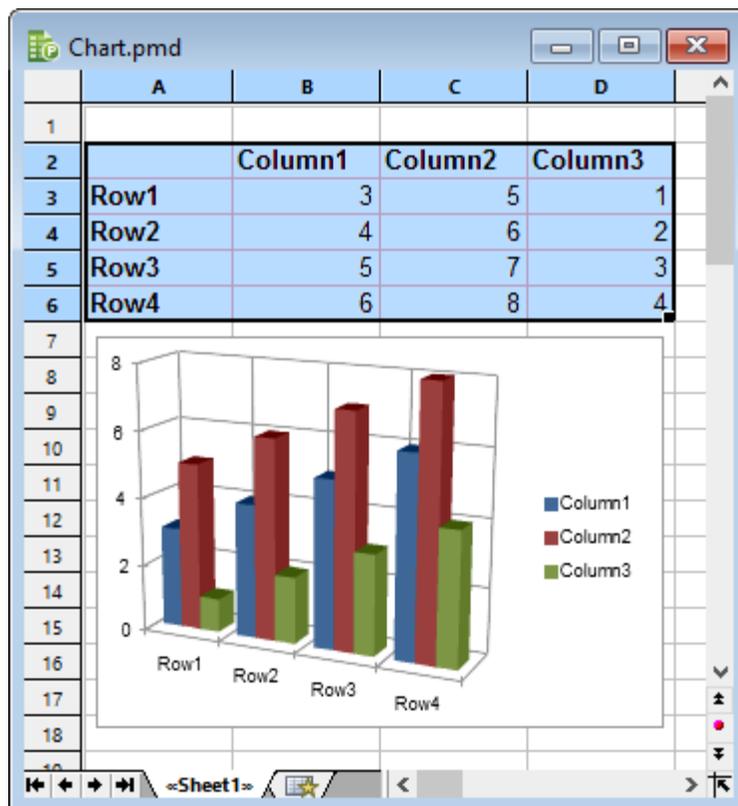
You have now met a tiny part of PlanMaker's options for improving the visual display of worksheets – many more are to be discovered. For more information on this, see the chapter [Formatting worksheets](#).

Charts

Before we end this tour, let's have a quick look at *charts*.

In spreadsheets consisting of nothing but long columns of numbers, it is often hard to interpret their meaning. PlanMaker provides easy ways to turn raw numbers into charts that get the point across.

To insert a chart in a worksheet, select the values you want to base your chart on and choose the menu command **Object > New chart frame**. A dialog box will open where you specify the type (pie chart, column chart, etc.) and the graphical options (colors, headline, legend, etc.) of the chart. When done, the chart is inserted into the worksheet.



For more information on charts, see chapter [Charts](#).

Outlook

The introductory part of the manual ends here. You now know everything about the basic functions of PlanMaker. Next comes the reference section of the manual, which contains detailed instructions on working with PlanMaker's functions. Jump to any chapter you want or just read on.

Enjoy!

Editing worksheets

This chapter begins the *reference section* of the manual. This part of the manual contains detailed descriptions of all features of PlanMaker, and is arranged by topic.

In this first chapter you will find out how to enter data and how to edit worksheets. The following topics are covered in this chapter:

- [Entering data in cells](#)

In the first section of this chapter, you will learn everything you need to know about entering text, numbers, dates, calculations, etc. in cells.

- [Undoing changes](#)

If you make an error, you can reverse it with the help of the **Edit > Undo** menu command. The **Edit > Redo** command is the counterpart to this, and reverses the Undo command.

- [Repeating commands](#)

The **Edit > Repeat** menu command repeats the last command that you have used with exactly the same settings.

- [Selecting cells and cell contents](#)

This section describes how to select cells using e.g. mouse or keyboard.

- [Deleting cells and cell contents](#)

You can use the menu command **Edit > Delete** to delete just the contents of cells, or **Worksheet > Delete cells** to remove cells completely.

- [Inserting new cells](#)

The **Worksheet > Insert cells** menu command inserts new cells in your worksheet and pushes the existing cells down.

- [Moving and copying cells](#)

Cells can be moved or copied by selecting them and either using the commands in the **Edit** menu or dragging them using the mouse. Formulas that reference cells are automatically updated when you move or copy cells.

- [Pasting cells selectively](#)

The **Edit > Paste special** menu command lets you insert the content of the clipboard. You can specify exactly what to be pasted; for example, just the values or just the formatting.

- [Filling cells automatically](#)

The **Edit > Fill** menu command allows you to fill ranges of cells with identical values or a series of values.

- [Working with multiple worksheets](#)

You can create multiple worksheets in a single document and stack them like a pile of paper. Formulas in one worksheet can reference cells in other worksheets, enabling you to do "three-dimensional" calculations.

- [Naming cell ranges](#)

With the **Worksheet > Names** menu command, you can assign a name to a range of cells and use this name in formulas; for example, =SUM(Sales) instead of =SUM(A1:A5).

- [Sorting cells](#)

The **Worksheet > Sort** menu command sorts ranges of cells according to one or more criteria.

- [Transposing cells](#)

The **Worksheet > Transpose** menu command exchanges the row and column orientation of a selected cell range.

- [Distributing text into multiple columns](#)

The **Worksheet > Text to columns** menu command allows you to distribute text entered in one table cell into multiple columns.

- [Filtering cells by their contents](#)

The **Worksheet > Filter** menu command filters ranges of cells so that only cells that meet certain criteria are displayed.

- [Analyzing tables](#)

This section covers tools that can be helpful for analyzing tables and detecting errors, including a command for displaying formulas instead of results, syntax highlighting, a watch window for cell contents, and several commands for auditing the formulas in a table.

- [Updating tables](#)

The calculations in a table are kept up-to-date automatically. Whenever you change the content of a cell, PlanMaker recalculates the entire workbook. If required, you can turn this behavior off and use the **Tools > Recalculate** menu command to update the table manually.

- [Inserting comments](#)

With the **Insert > Comment** menu command, you can attach comments to a cell. If you move the mouse over such a cell, the comment will be displayed.

- [Goal-seeking](#)

With the **Tools > Goal seek** menu command, you can "reverse" the order of a calculation (using an approximation method). The Goal Seeker is able to determine what value a certain portion of a calculation must meet to extract a predefined result from the calculation.

- [Scenarios](#)

The **Tools > Scenarios** menu command allows you to create and display "scenarios". *Scenarios* can be used to observe how the calculations in a worksheet change when the values in specific cells are altered. This enables you to perform all kinds of "what-if" analysis.

- [Consolidating data](#)

The **Worksheet > Data consolidation** menu command allows you to evaluate data from multiple cell ranges, for example, in order to calculate their total sums.

- [Tables in worksheets](#)

When you can select a cell range and then invoke the **Worksheet > New table** menu command, PlanMaker will create a "table in a worksheet" from it.

This has the following effects: The cell range is automatically formatted with a so-called *table style*. You can switch to a different table style anytime in order to change the appearance of the entire cell range at once. Apart from that, an *AutoFilter* is applied to the "table" automatically. Additionally, special tools like adding a *total row* are available.

- [Pivot tables](#)

Huge and complex amounts of data can be summarized to certain criteria very clearly with pivot tables. Select an existing data area and use the menu command **Worksheet > New pivot table** to create meaningful presentations of your data with little effort. With exercises in the section.

- [Freezing rows and columns](#)

With the **View > Freeze** menu command, you can freeze the top rows and/or columns of a worksheet on the screen. This will cause them to stay in place when you scroll the worksheet – ideal for row or column headings.

- [Inserting special characters](#)

The **Insert > Symbol** menu command can be used to enter special characters that are not readily available from the keyboard.

See the following pages for detailed information.

Entering data in cells

In order to enter data into a cell, navigate to the desired cell with the arrow keys or mouse, and begin typing.

Press the **Enter** ↵ key to complete the input.

If you made an error during input, press the **Esc** key instead of the **Enter** ↵ key. PlanMaker discards what you just typed and restores the original cell content.

Alternatively, use the following buttons of the Edit toolbar:

- To accept the input, click the  button (identical to pressing the **Enter** ↵ key).
- To cancel the input, click the  button (identical to pressing the **Esc** key).

To modify the contents of a cell, navigate to the cell and press the function key **F2**, or simply double-click on the cell.

Notes on entering numbers

- Always enter numbers using the decimal separator specified in the regional settings of your computer (either decimal point or decimal comma).
- Numbers can also be entered in scientific (exponential) notation. 4E03, for example, corresponds to $4 * 10^3$, which equals 4000. 4E-03 corresponds to $4 * 10^{-3}$, which equals 0.004.
- Numbers can also be entered as fractions; for example, 2 1/2 corresponds to 2.5.
- Numbers can also be entered as percentages; for example, 70% corresponds to 0.7.

Note: You can change the format of numbers using the **Format > Cell** menu command. See section [Number format](#).

Notes on entering dates

- Dates can be entered in various formats; for example, 09/25/18 or 9/25/2018 etc.
- You can enter dates between January 1st, 1900 and December 31st, 2500.
- If you enter the year with only the last two digits, it is interpreted as follows:

00 to 29 -> 2000 to 2029

30 to 99 -> 1930 to 1999

Examples:

1/1/29 is treated as 1/1/**2029**.

1/1/30 is treated as 1/1/**1930**.

- Times can be entered in numerous formats, for example:

9:30

09:30

09:30:00

09:30:00 AM

etc.

- You can combine a date and a time in a single cell by typing the date, a space, and the time. For example, when you type in 9/25/18 6:00, PlanMaker knows that you mean the 25th of September 2018 at 6:00 am.

Note: Spreadsheets store dates and times internally as *numbers* (so that calculations can be carried out with them). The number 0 represents 1/1/1900, the number 1 stands for 1/2/1900, etc. The time is stored in the fractional part of the number.

However, you don't have to worry about this. Simply enter dates and times in your preferred way. PlanMaker automatically converts your input into a number but will display it formatted in date/time format.

To learn more about changing the format of dates and times, see section [Number format](#).

Notes on entering logical values (Boolean values)

- To enter a logical value in a cell, type in either TRUE or FALSE.

Notes on entering formulas

- Formulas must always begin with an equal sign; e.g., =2+5.
- The **Insert > Function** menu command lets you easily compose formulas by picking PlanMaker's arithmetic functions from a list. Of course you can also input formulas manually.
- Detailed information on creating formulas is available in the chapter [Formulas and functions](#).
- For descriptions of all arithmetic functions, see section [Functions from A to Z](#).

Notes on entering text

- To input text in a cell, simply type it in.
- In some rare cases, you may want to "force" PlanMaker to consider a *number* as text. This can be achieved by putting a single quotation mark in front of the number. For example, when you enter '42 (including the single quotation mark), PlanMaker will treat this as text, not as a number.
- **Hint:** When you have entered several text entries in a column (one on top of each other), you can open a selection list of these entries by pressing the key combination **Alt+Shift+↓** in a cell directly above or below the entries.

A list of all text entries directly above and below this cell will open. You can now select one of these entries and press the **Enter** ↵ key to paste it into the cell. This can save you a lot of time when you have to enter a large number of identical text entries.

Note: This feature works only with *text* entries – not with numbers, dates, or formulas.

- **Another hint:** In addition, while you type text in a cell, PlanMaker automatically makes suggestions from the existing text entries found in the cells above and below this cell.

Example: You have entered the values "New York", "Rio", and "Tokyo" in a column. If you now go to the cell below these entries and type the letter "N", the program will automatically suggest "New York". If you type the letter "T", "Tokyo" is suggested, etc.



New York
Rio
Tokyo
New York

To accept the suggestion, press the **Enter** ↵ key. To reject it, simply continue typing or press the **Del** key.

Note: In case you do not want PlanMaker to make suggestions while you are typing, you can always turn this feature off. Choose the menu command **Tools > Options**, switch to the **Edit** tab and deactivate the **Autocomplete Cells** option.

Undoing changes

With the menu command **Edit > Undo** you can cancel recently completed modifications to a document. For example, if you format text in another font, you need only invoke the **Undo** command and the new formatting will be removed.

This works not only with formatting, but also with practically all kinds of changes – so you can also, for example, undo the entry or deletion of text.

The **Undo** command can be applied repeatedly as needed. For example, invoke it five times to cancel the last five changes.

Redoing undone actions

There is also an opposite to the **Undo** command, the menu command **Edit > Redo**. It restores the effect of your most recently canceled action. So you can undo the cancellation of a change.

This command can also be invoked repeatedly. For example, if you invoke the **Undo** command five times, the last five changes are canceled. If you then invoke the command **Redo** five times, you get back the original text.

Repeating commands

The **Edit > Repeat** menu command repeats the last command that you have used with exactly the same settings.

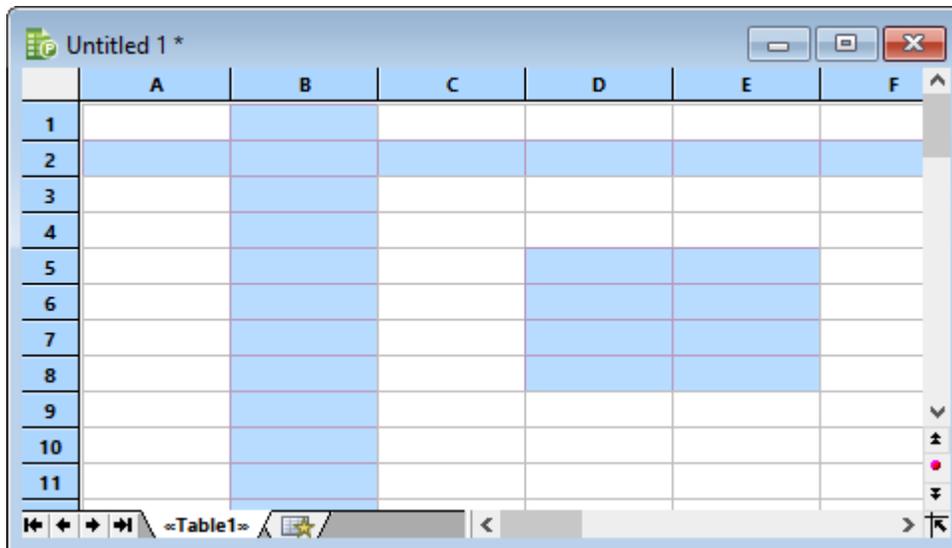
This is very useful especially when formatting a document. For example, when you have just changed the font of a cell using the **Format > Character** menu command, you can navigate to other cells and choose the menu command **Edit > Repeat**. This will apply the font change to the other cells as well – as if you had invoked the **Format > Character** command once again, with the same settings.

There are many other commands that can be repeated as well.

Selecting cells and cell contents

Some PlanMaker commands allow you to first *select* the range of cells to which you want the command to apply.

For example, when you select some cells and then invoke the **Edit > Delete** menu command, *all* of these cells will be deleted.



You can even select non-contiguous cell ranges (using the Ctrl key)

Depending on the operating system in use, the way you proceed when selecting something is a bit different. For that reason, this section is split into two parts:

- [Selecting in the Windows, Mac, and Linux version](#)
- [Selecting in the Android version](#)

Selecting in the Windows, Mac, and Linux version

In the Windows, Mac, and Linux version of PlanMaker, you can select cells and cell contents as follows:

Using the mouse for selection

To select something with your mouse, proceed as follows:

- **Selecting cell ranges**

You can select arbitrary cell ranges by pressing and holding the left mouse button while you drag the mouse pointer over the cells to be selected.

- **Selecting whole rows and columns**

An entire column can be selected by clicking on its column header. *Column headers* are buttons displayed above the table, labeled A, B, C, and so on.

There are also *row headers* for each row. They are located at the left of the table and labeled 1, 2, 3, etc. If you click on a row header, the entire row is selected.

If you left-click and drag the mouse over several column or row headers, you can conveniently select multiple columns or rows at the same time.

- **Selecting the entire worksheet**

The command button in the top left of the worksheet window (above the "1" and left of the "A") will select the entire worksheet, as will the **Edit > Select all** menu command.

- **Selecting a single cell**

To select a single cell, click on that cell, drag the mouse pointer to a neighboring cell, and drag it back again (while keeping the left mouse button pressed).

- **Selecting non-contiguous cell ranges**

You can also select non-contiguous (not connected) ranges of cells. For this purpose, hold down the **Ctrl** key and use the mouse to select a range of cells as described above.

- **Selecting just a part of a cell content**

To select just a *part* of a cell content, proceed as follows:

First, double-click on the cell (in order to edit it). Then, drag the mouse cursor over the characters that you want to select (while keeping the left mouse button pressed).

- **Selecting objects**

To select an object (e.g. a picture, a drawing, etc.), simply click on it with the mouse. A frame appears around the object to indicate that it is selected.

Using the keyboard for selection

With the keyboard, ranges of cells can be selected as follows:

- **Selecting cell ranges**

To select a range of connected cells, navigate to the cell to start with, hold down the **Shift**↑ key, and select the cells by navigating with the arrow keys.

For example, if you navigate to cell B5, hold down the **Shift**↑ key, and press ↓ five times, the cells B5 to B10 will be selected. You can find a list of all key combinations suitable for navigating in a table in the section [Keyboard shortcuts](#).

- **Selecting a single cell**

To select a single cell, navigate to that cell, hold down the **Shift**↑ key, use any arrow key to select a neighboring cell, and then go back to the original cell. (For example, press **Shift**+→ and then **Shift**+←).

- **Selecting non-contiguous cell ranges**

Non-contiguous cell ranges can only be selected with the mouse (see above).

- **Selecting just a part of a cell content**

To select just a *part* of a cell content, proceed as follows:

Navigate to the cell of interest and press the **F2** key (in order to edit the cell). Then, use the arrow keys together with the **Shift**⬆ key to select text in the usual manner.

- **Selecting objects**

Objects can be selected only with the mouse (see above).

Selecting in the Android version

In the Android version, the procedure for selecting something is a bit different. You can use either your finger or a mouse. Proceed as follows:

- **Selecting cell ranges**

On Android devices, you can select cell ranges as follows:

Tap on the starting cell *once*. (You should *not* see a blinking text cursor in the cell now.)

Wait a little moment, then tap on the same cell once more, and drag your finger to the cell where you want the selection to end.

- **Selecting just a part of a cell content**

To select just a *part* of a cell content, proceed as follows:

Double-tap on the cell in order to edit it. (The text cursor should start blinking in the cell.)

Inside the cell, *double-tap* on the word that you want to start your selection with. The word has now been selected. Large "handles" appear before and after it:



These two handles represent start and end of the selection. They allow you to extend the selection easily: Simply drag these handles to the desired positions.

- **Selecting objects**

To select an object (picture, drawing, etc.), tap on it. A frame appears around the object to indicate that it is selected.

Deleting cells and cell contents

There are two methods for deleting data in a worksheet:

- [Deleting the contents of cells](#)

If you use the **Edit > Delete** menu command, only the contents of the selected cells are removed.

- [Deleting whole cells](#)

If you use the **Worksheet > Delete cells** menu command, the selected cells will be removed *completely* and the other cells move up to take their space.

In addition, PlanMaker offers two commands especially for deleting *empty rows* and *duplicate rows*:

- [Deleting empty rows](#)

To delete all *empty* rows in a certain range of rows, select the rows of interest and invoke the menu command **Worksheet > Remove > Empty rows**.

- [Deleting duplicate rows](#)

To delete all *duplicate* rows in a certain range of rows, select the rows of interest and invoke the menu command **Worksheet > Remove > Duplicate rows**.

See the following pages for detailed information.

Deleting the contents of cells

To delete the contents of cells, proceed as follows:

1. Select the cells of interest.

(For information on how to select cells, see section [Selecting cells and cell contents](#).)

2. Invoke the **Edit > Delete** menu command – or simply press **Del**, the keyboard shortcut for this command.

This will remove only the *contents* of the cells, not the cells themselves.

Selective deletion

If you use the menu command **Edit > Delete special** instead of **Edit > Delete**, you can determine exactly what will be deleted.

PlanMaker will show a sub-menu with the following options:

- **All**

Delete everything – cell contents as well as formatting, comments, conditional formatting and input validation.

- **Formatting**

Remove only the formatting (number format, character format, background shading, borders, etc.).

- **Contents**

Delete only the contents, keep everything else (formatting, comments, etc.).

- **Comments**

Remove only comments that have been added to the selected cells, leaving both content and formatting intact (see section [Inserting comments](#)).

- **Conditional formatting**

Remove only the conditional formatting (see section [Conditional formatting](#)).

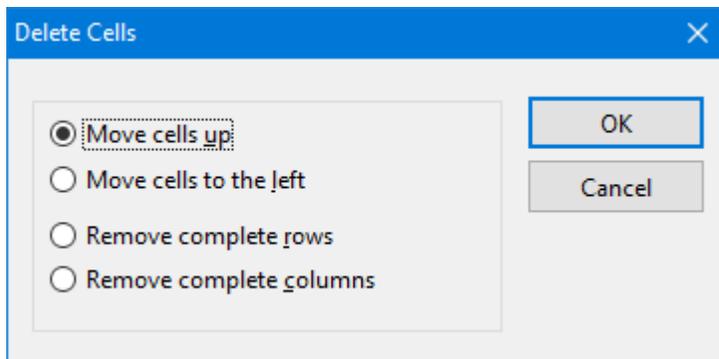
- **Input validation**

Remove only the input validation (see section [Input validation](#)).

Deleting whole cells

The **Worksheet > Delete cells** menu command not only deletes the content of the selected cells but also removes them from the worksheet *completely*.

A dialog box will appear in which you can determine how the other cells will move after the deletion.



Options available:

- **Move cells up**

The selected cells are removed, and the cells below move up.

- **Move cells to the left**

The selected cells are removed, and the cells to the right of them move to the left.

- **Remove complete rows**

The entire row(s) including the selected cells are removed, and the rows below move up.

- **Remove complete columns**

The entire column(s) including the selected cells are removed, and the columns right of them move to the left.

Deleting empty rows

To delete all *empty* rows in a certain range of rows, select the rows of interest and invoke the menu command **Worksheet > Remove > Empty rows**.

PlanMaker scans this range for rows that are completely empty, (i.e. where none of its cells is filled with a value) and deletes all matching rows.

Note

Normally, you use this command with a range of *entire* rows selected. However, you can also select a cell range that doesn't consist of entire rows. In that case, PlanMaker will first ask you if you want it to delete matching rows *entirely*:

- If your answer is **Yes**, the entire row will be deleted for all matching rows.
- If your answer is **No**, only cells inside the selection will be deleted. The cells left and right of the selection are not affected.

Deleting duplicate rows

To delete all *duplicate* rows in a certain range of rows, select the rows of interest and invoke the menu command **Worksheet > Remove > Duplicate rows**.

PlanMaker scans this range for rows that are completely identical, (i.e. where the contents of *all* cells in one row are identical to another row) and deletes these duplicate rows.

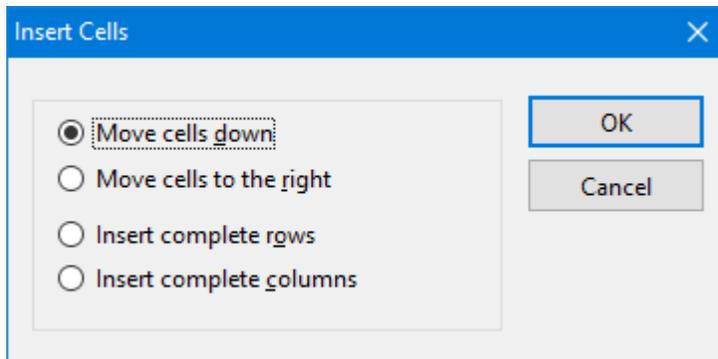
Note

Normally, you use this command with a range of *entire* rows selected. However, you can also select a cell range that doesn't consist of entire rows. In that case, PlanMaker will first ask you if you want it to delete matching rows *entirely*:

- If your answer is **Yes**, the entire row will be deleted for all matching rows.
- If your answer is **No**, only cells inside the selection will be deleted. The cells left and right of the selection are not affected.

Inserting new cells

The **Worksheet > Insert cells** menu command inserts new cells, rows or columns in a worksheet.



A dialog window appears where you can choose in which way the cells should be inserted. Options available:

- **Move cells down**

PlanMaker will insert as many cells as were selected before executing this command. If nothing was selected before, just one cell will be inserted.

The cells below the insertion are moved down.

- **Move cells to the right**

Same as above, but the cells to the right of the insertion are moved to the right.

- **Insert complete rows**

PlanMaker will insert as many *complete rows* as were selected before executing this command. If nothing was selected before, just one row will be inserted.

The rows below the insertion are moved down.

- **Insert complete columns**

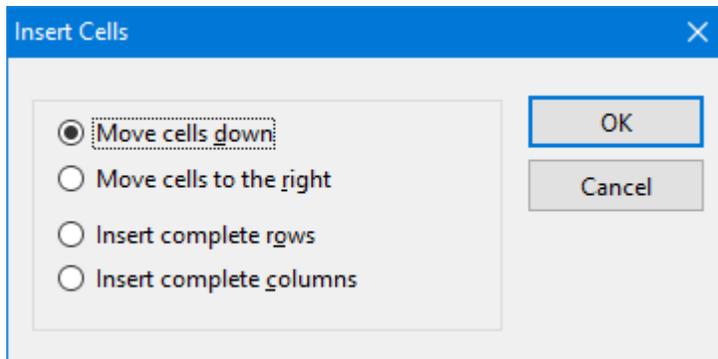
PlanMaker will insert as many *complete columns* as were selected before executing this command. If nothing was selected before, just one column will be inserted.

The columns to the right of the insertion are moved to the right.

Inserting copied cells

It happens from time to time that you want to place copied cells at a position where values already exist. If you do not want to overwrite these values, but move them when pasting something from the clipboard, the following option is available.

The **Worksheet > Insert copied cells** menu command inserts cells, rows or columns from the clipboard into a worksheet.



A dialog window appears where you can choose in which way the cells should be inserted. Options available:

- **Move cells down**

The copied cells from the clipboard are inserted at the selected position.

The cells below the insertion are moved down.

- **Move cells to the right**

Same as above, but the cells to the right of the insertion are moved to the right.

- **Insert complete rows**

The copied rows from the clipboard are inserted at the selected position.

The rows below the insertion are moved down.

- **Insert complete columns**

The copied columns from the clipboard are inserted at the selected position.

The columns to the right of the insertion are moved to the right.

Moving and copying cells

All operating systems supported by PlanMaker have a built-in *clipboard*.

Using the clipboard allows the user to select worksheet content, and put it on the clipboard, either by *copying* it from the worksheet or by *cutting* it from the worksheet. Once in the clipboard, it can be pasted elsewhere in the worksheet. In this way, cells (and also objects) can be deleted, duplicated or moved.

You will find all the necessary commands in the **Edit** menu:

Command	Explanation
Cut	The Edit > Cut menu command removes the selection and places it on the clipboard.
Copy	The Edit > Copy menu command copies the selection to the clipboard.

Paste* The **Edit > Paste** menu command inserts the contents of the clipboard to the active cell. You can paste the content of the clipboard repeatedly.

* How to paste from the clipboard without overwriting the existing values of the active cell, see chapter [Inserting copied cells](#).

These commands can also be used with objects (pictures, charts, etc.)

Pasting into a selected cell range

When you copy cells to the clipboard and *select* a range of cells before inserting them with the **Paste** command, the pasted cells will be fit into the selection, as follows:

- If the selected cell range is *smaller* than the cell range to be pasted, all cells which do not fit are *omitted*.
- If the selection is *larger* than the cell range to be pasted, the cells are repeated until the selected range is completely filled.
- There's one exception:

If the selected cell range consists of just one row, PlanMaker will still paste *all* columns of the source cells.

The same applies when the selected cell range contains only one column.

Moving and copying using the mouse ("Drag and Drop")

Note: This feature is *not* available in the **Android** version.

To move or copy cells using the mouse: Select the cells, drag them to a different place, and drop them there. This technique, called "*Drag and Drop*", provides a particularly quick method for moving and copying.

Proceed as follows:

1. Select the cells that you want to drag to another location.
2. Point at the selection with your mouse.
3. Press and hold the left mouse button.
4. Drag the mouse, with the left mouse button still held down, to the desired location.
5. When you release the mouse button, the cells will be *moved* to the target location.

If you hold the **Ctrl** key down while releasing the mouse button, the cells will instead be *copied* to the new location.

If you hold the **Alt** key down while releasing the mouse button, a dialog appears where you can choose if you want the cells to be copied or moved. When you choose "Copy", you can also specify if just the cell contents should be copied or also their formatings.

Hint: To move or copy a *single* cell, you can also use the following method: Click on the cell once to make it the active cell. Click on it again and *hold* the left mouse button. After about one second, the mouse cursor changes, indicating that you can now drag the cell around (as described above).

Moving and copying formulas containing relative coordinates

If you copy cells that contain formulas, the cell addresses in the formulas are automatically updated to the new location.

For example:

Suppose you have a formula in cell A7 that adds up the values from the four cells above:

```
=SUM(A3:A6)
```

If you copy this formula to cell B7, PlanMaker will automatically update the formula so that it will work again with the four cells above the new position. Cell B7 will therefore contain the following formula:

```
=SUM(B3:B6)
```

If you do not want this to happen, use *absolute* cell addressing instead of the usual *relative* cell addressing (see section [Relative vs. absolute cell references](#)).

Pasting cells selectively

In addition to common clipboard operations like **Cut**, **Copy**, and **Paste**, PlanMaker offers the **Edit > Paste special** menu command which gives you more control over how the clipboard content is pasted into your document.

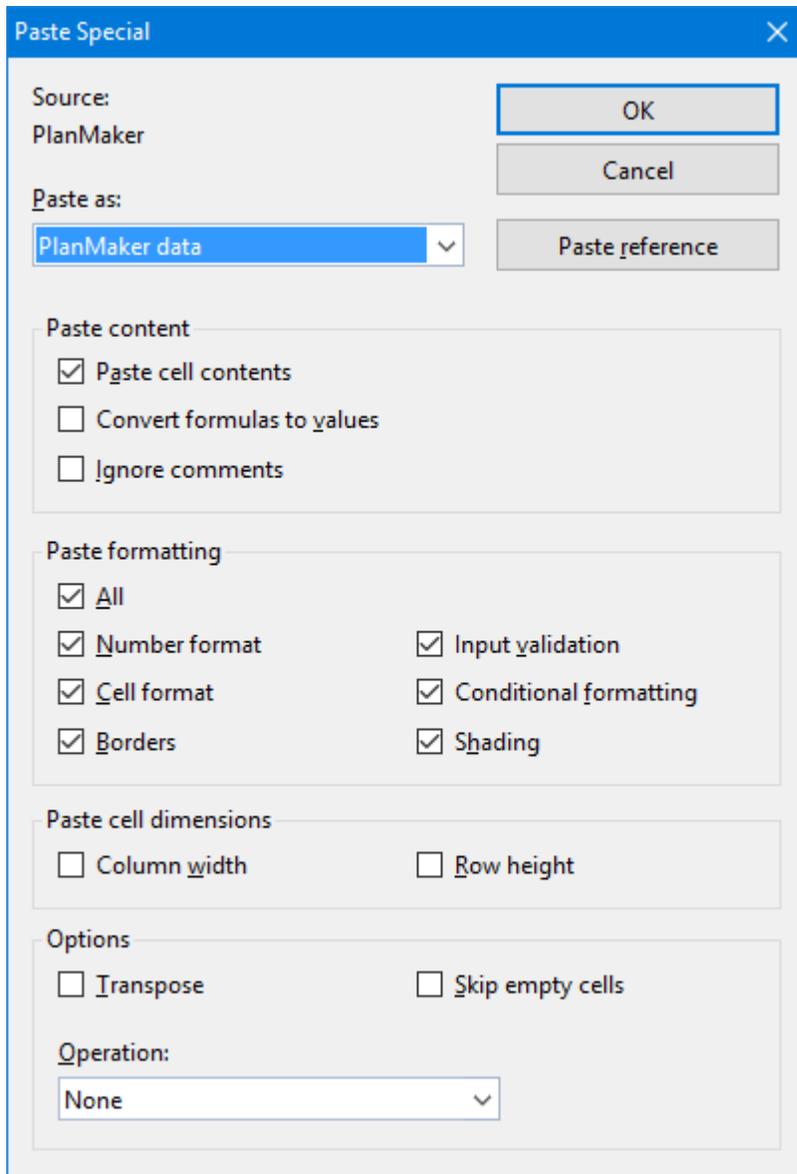
In detail:

When you place information in the clipboard using the **Cut** or the **Edit** command, this information is saved there in several formats. For example, if you cut or copy text, the text is saved both in formatted form and in unformatted form.

Normally, you don't need to be concerned about this, because PlanMaker automatically selects the most appropriate format when it inserts the content of the clipboard in response to a **Paste** command. However, if you need to, you can select the format in which the content is to be inserted yourself. You use the menu command **Edit > Paste special** to do this.

When you invoke this command, a dialog box appears and presents you with a list of all the formats in which the information currently residing in the clipboard is saved. When you select a format from the **Paste as** list and then confirm with **OK**, the content of the clipboard is inserted in the selected format.

If you have copied *cells* to the clipboard, the dialog offers some additional options, as follows:



Options available:

Paste content

These options allow you to control how the *content* of the cells in the clipboard should be inserted when they are pasted.

Options available:

- **Paste cell contents**

If this option is checked, the content of the copied cells is pasted. If it is not checked, just their formatting is pasted.

- **Convert formulas to values**

If this option is checked, PlanMaker will paste the *results* of formulas in the copied cells – rather than the formulas themselves. For example, if the clipboard contains a cell with the calculation " $=A1*2$ ", PlanMaker will calculate its current value and paste the result as a fixed number.

- **Ignore comments**

If this option is checked, comments attached to the cells in the clipboard will not be pasted.

Paste formatting

These options allow you to control if the *formatting* of the copied cells should be retained when they are pasted.

Options available:

- **All**

The cells in the clipboard retain their entire formatting when they are pasted. (Choosing this option activates all the other options listed below.)

- **Number format**

The cells retain their number format when they are pasted.

- **Cell format**

The cells retain their cell format when they are pasted.

- **Input validation**

The cells retain their input validation settings when they are pasted.

- **Conditional formatting**

The cells retain their conditional formatting settings when they are pasted.

- **Borders, Shading**

The cells retain their borders/shading when they are pasted.

- **Column width, Row height**

The cells retain their column width/row height when they are pasted.

Paste cell dimensions

These options allow you to control if the *cell sizes* of the copied cells should also be transferred to the target cells on pasting.

Options available:

- **Column width**

The cells retain their column width when they are pasted.

- **Row height**

The cells retain their row height when they are pasted.

Options

This section contains the following additional options:

- **Transpose**

If this option is checked, the row and column order of the cells will be exchanged when they are pasted. Rows become columns, and columns become rows.

- **Skip empty cells**

If this option is checked, empty cells amongst the cells in the clipboard will be skipped when they are pasted. Accordingly, if you paste an empty cell over an existing cell, the existing cell will keep its current content and formatting.

- **Operation**

This option can be useful when you paste cells over existing cells. It allows you to combine the existing values with the values to be pasted by performing basic arithmetic operations.

Options available:

None: Do not combine the existing values with the values in the clipboard. Just overwrite the existing values. This is the default setting.

Add to destination: Add the values in the clipboard to the existing values.

Subtract from destination: Subtract the values in the clipboard from the existing values.

Multiply with destination: Multiply the existing values by the values in the clipboard.

Divide the destination: Divide the existing values by the values in the clipboard.

Example: Copy a cell that contains the value 2 to the clipboard. Go to a cell that contains the value 8 and invoke the **Insert > Paste special** menu command. If you choose the option **Add to destination**, the cell will contain the value 10 now ($8+2=10$).

"Paste reference" button

This button ignores any settings made in this dialog, since it has the following special function:

When you copy cells to the clipboard, invoke the **Edit > Paste special** menu command and click on the **Paste references** button, *cell references* to these cells are inserted rather than their content.

For example, when you copy the cell B15 to the clipboard, using this button will insert the cell reference =B15.

Hint: This even works when cells have been copied to the clipboard from within a different document. In this case, PlanMaker will insert an *external* cell reference (see section [External cell references](#) for details).

Filling cells automatically

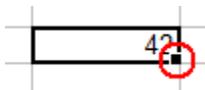
You can use PlanMaker's **Fill** function to quickly copy the content of one cell to other cells – or to create an increasing or decreasing number series across cells.

There are two ways to use this function:

Filling with the mouse

To fill cells automatically using the mouse:

1. Enter the initial value in a cell.
2. Click on that cell (to make it the currently selected cell).
3. With your mouse, point to the small rectangle in the bottom-right corner of the cell frame (marked in red color in the illustration below):



4. Drag this rectangle, while holding the mouse button down, to cover the desired range of cells. Release the mouse button when the target position has been reached.

All cells in the selection you created have now been automatically filled.

What the cells are filled with depends on the content of the initial cell:

- If the initial cell contains **text**, PlanMaker fills all cells with this text.
- If the initial cell contains a **number** (e.g., 42), PlanMaker fills successive cells with incrementing values (in this case, 43, 44, 45, etc.).

Hint: If you do not want PlanMaker to fill the cells with a series of numbers but, instead, duplicate the value 42 in all cells, press and hold the **Ctrl** key while you are dragging with the mouse.

To control the fill function precisely, press and hold the **Alt** key while dragging. A dialog box (described below) will appear, providing full control over how the cells are filled.

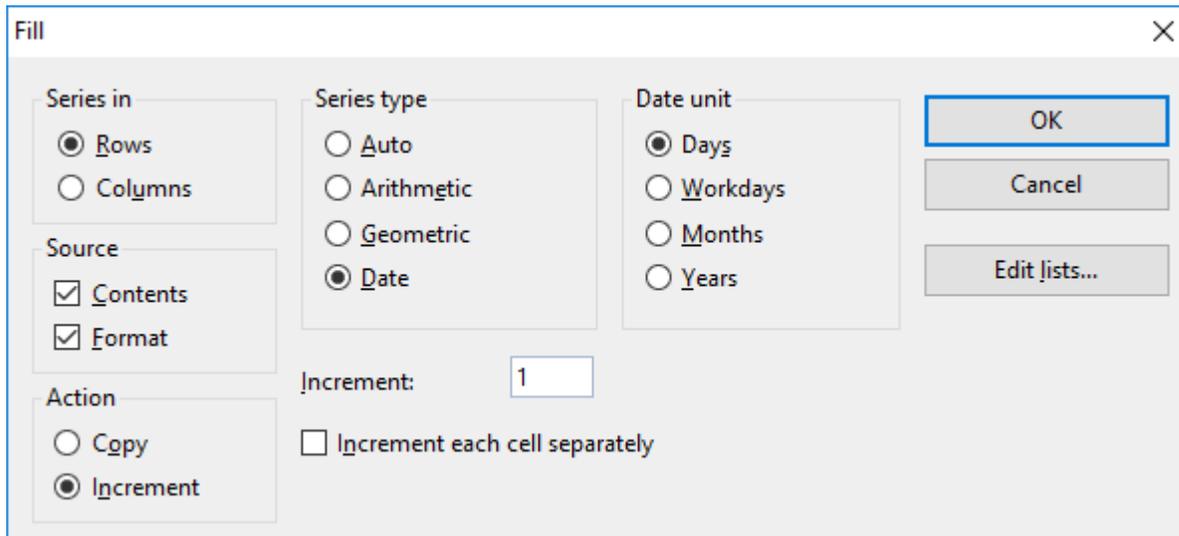
Filling with the keyboard

To fill cells automatically using the keyboard:

1. Enter the initial value in a cell.
2. Select this cell *and* all cells you want to be filled.
3. Choose the menu command **Edit > Fill**.
4. Select a fill direction from the sub-menu (left, right, up or down).
5. In the resulting dialog box, you can precisely define the way the cells will be filled (see below).

6. When you're done, click **OK** to confirm.

The dialog box appearing during this procedure looks as follows:



The dialog offers the following options:

- **Series in**

Select here if you want to fill in the direction of the rows (right) or in the direction of the columns (down).

- **Source**

Activate the **Contents** option if you want the cells to be filled with values.

Activate the **Format** option if you also want the formatting of the source cells to be continued in the new cells.

By default, both options are checked.

- **Action**

This option is equivalent to pressing the **Ctrl** key during filling with the mouse. It lets you determine whether to copy values or to increment them from cell to cell:

If the initial cell contains the number 42 and you select **Copy**, all cells will be filled with the value 42.

If you choose **Increment**, successive cells will be filled with a series of numbers (in this case, 43, 44, 45, etc.).

The numerical increment can be specified using the other options in this dialog:

- **Series type**

Lets you specify how the series of values is continued:

Auto:

Arithmetic series with automatic increment. Here, each new value will be increased by an increment that is determined by PlanMaker automatically.

For example, if you continue two cells containing the values 10 and 20, the new cells will be filled with 30, 40, 50, etc. (see also tips and tricks in the next section).

Arithmetic:

Arithmetic series. Here, each new value will be increased by the value entered in the **Increment** input box.

For example, if the initial cell contains the value 1 and you specify an increment of 2, the new cells will be filled with 3, 5, 7, 9, 11, etc.

Geometric:

Geometrical series. Here, each new value will be *multiplied* by the value entered in the **Increment** input box.

For example, if the initial cell contains the value 1 and you specify an increment of 2, the new cells will be filled with 2, 4, 8, 16, 32, etc.

Date:

Date series. Here, each new value will be increased by the specified increment in the chosen date unit (see below). Note: This type of series only works correctly if the initial cell contains a date.

For example, if the initial cell contains the date 1/1/2018, the increment is set to 1, and the **Date unit** is set to "Months", the new cells will be filled with 2/1/2018, 3/1/2018, 4/1/2018, etc.

■ Date unit

This option is only available if the **Series type** is set to "Date".

It allows you to specify the unit of the increment:

Days: increment by days

Workdays: increment by days, excluding Saturdays and Sundays. For example, if the initial value is a Friday, the next value would be the Monday (not Saturday).

Months: increment by months

Years: increment by years

■ Increment

Lets you specify the amount by which each value will increase from cell to cell. For examples, see above.

Positive or negative increment values can be used.

This option is not available if the **Series type** is set to "Auto".

■ Increment each cell separately

When this option is turned on, the specified increment will be added to each of the currently selected cells individually.

Example: Let's assume you have selected three cells containing the values 1, 2, and 3, and try to fill the cells below them.

When this option is turned off, the sequence from the source cells is simply continued, and the cells are filled as follows:

4, 5, 6, 7, 8, 9, 10, 11, 12, etc.

When you turn it on, the cells are filled as follows:

2, 3, 4, then 3, 4, 5, then 4, 5, 6, etc.

- **Edit lists** button

You can create custom lists for the **Fill** command.

For example, if you create a list with the content "Red", "Green", and "Blue", and later start a fill operation from a cell that contains the text "Red", PlanMaker will continue the series and fill with Green, Blue, Red, Green, Blue, etc.

This button invokes the **Tools > Edit lists** menu command that allows you to create such lists. See section [Customizing AutoFill lists](#).

Tips and tricks for automatic filling

As described on the last pages, PlanMaker provides many options for filling cells automatically. This section offers some tips and tricks to help you effectively use this very useful feature.

Hint: The quickest way to fill a range of cells is to drag the small rectangle in the bottom-right corner of a cell with the mouse in the appropriate direction. PlanMaker then sets the series type to "Auto", which means that it will automatically figure which values to use to fill the cells.

- **Filling with text**

To fill cells with text, simply enter the desired text in the first cell. Then, drag the small rectangle in the bottom-right corner of the cell over the cells you want to fill.

- **Filling with numbers**

If you use the mouse to fill cells with numbers, PlanMaker will automatically determine the increment.

For example, if you drag the small rectangle from a cell with the value 42, the other cells will be filled with the values 43, 44, 45, etc.

If the initial cell value is 10, and the next cell value is 20, and you select *both* cells and drag the small rectangle down, PlanMaker automatically recognizes how to continue this series and fills the other cells with 30, 40, 50, etc.

- **Filling with formulas**

If you use the mouse to fill cells with formulas, PlanMaker automatically attempts to update the formulas in the new cells with incremented cell addresses.

For example, the formula =A1*2 in the initial cell will be updated to =A2*2, =A3*2, etc., in the other cells.

- **Filling with dates**

Filling with dates is identical to filling with numbers:

Enter the starting date in the initial cell and drag the small rectangle over the desired cells. PlanMaker will add one day in every new cell.

If desired, use the **Edit > Fill** menu command to define whether to increment by days, months, or years.

■ Filling with structures

As you have already learned, it is possible to select *multiple* initial cells before starting the filling operation.

If the initial cells contain both text *and* numbers, PlanMaker will attempt to find a pattern in these values. For example, if you enter the values 1, 2, text, PlanMaker will continue the series with 3, 4, text; 5, 6, text; 7, 8, text; etc.

If the initial cells contain just text, PlanMaker will simply repeat the text. For example, the series Red, Green, Blue will be repeated as Red, Green, Blue, Red, Green, Blue, etc.

■ Filling with custom lists

The **Tools > Edit lists** menu command allows you to create your own lists for the **Fill** command.

For example, if you create a list with the content "Red", "Green", and "Blue", and later start a fill operation from a cell that contains the text "Red", PlanMaker will continue the series and fill with Green, Blue, Red, Green, Blue, etc.

For additional information on creating such lists, see section [Customizing AutoFill lists](#).

Working with multiple worksheets

PlanMaker documents are not limited to single worksheets. As needed, you can stack several worksheets on top of each other – just like a stack of papers. PlanMaker documents are therefore also called *workbooks*. Each workbook can contain up to 256 *worksheets*.

The main advantage of this is that calculations in one worksheet can also refer to cells in other worksheets of a workbook, in essence, letting you create "three-dimensional" calculations (see section [Calculating in three dimensions](#)).

In this section, you will learn everything you need to know about working with multiple worksheets in a document. The following topics are covered:

■ [Creating new worksheets](#)

To create a new worksheet, use the **Worksheet > Worksheet > Insert** menu command.

■ [Working with the worksheet register](#)

The *worksheet register* displayed at the bottom of the document window allows you to switch between your worksheets with a single mouse click. You can also use it to create, move and manage worksheets.

■ [Managing worksheets](#)

To manage the worksheets in a document, use the context menu of the worksheet register or the sub-menu of the **Worksheet > Worksheet** menu command. Both contain commands for renaming, copying, moving sheets, etc.

■ [Calculating in three dimensions](#)

In the last section, you will learn how to create calculations that refer to cells in other worksheets.

See the following pages for detailed information on these topics.

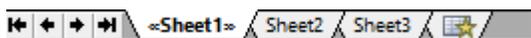
Creating new worksheets

To create a new worksheet, use the **Worksheet > Worksheet** menu command. Select **Insert** from the sub-menu and provide a name for the new worksheet.

Click **OK** and the new worksheet is created.

Working with the worksheet register

The *worksheet register* at the bottom of the document window displays tabs for each worksheet in the document.



The active worksheet is highlighted.

With the worksheet register, the following actions can be performed:

- **Switching between worksheets**

To switch to a different worksheet, click on its tab in the worksheet register.

Note: If there are more worksheet tabs than can be displayed at the same time, you can scroll through the list with the arrows displayed left of the register.

Tip: You can also switch between the worksheets using the keyboard: Use **Ctrl+Tab** to move to the next worksheet and **Ctrl+Shift+Tab** to the previous worksheet.

- **Changing the order of worksheets**

The worksheet register can also be used to move worksheets, allowing you to change their order. Simply click the desired worksheet tab and drag it to the desired location within the other worksheet tabs.

- **Editing multiple worksheets at the same time**

You can select multiple worksheets in the worksheet register and edit them *simultaneously*. To select multiple worksheets, press and hold the **Ctrl** key while you click on their tabs in the register.

When multiple worksheets are selected, changes made to one of the worksheets affect all of the other selected worksheets in exactly the same way.

Examples:

When you change the formatting of cells, your changes are also applied to the same cells on the other selected worksheets.

When you edit or delete the content of a cell, the same cell on the other selected worksheets will be changed the same way.

Changes made with the menu commands **Worksheet > Row** and **Worksheet > Column** also affect all selected worksheets.

■ **Managing worksheets**

When you click on one of the tabs in the worksheet register with the *right* mouse button, a context menu will appear, showing commands for creating and managing worksheets. See the next section for details.

■ **Creating a new worksheet**

The tab labeled with an asterisk (*) at the very right serves as a "shortcut" for creating new worksheets: When you click on it, a new worksheet is generated instantaneously.

Managing worksheets

To manage worksheets, choose the **Worksheet > Worksheet** menu command. A sub-menu will appear.

Tip: This menu can also be invoked by clicking on the desired tab in the worksheet register with the *right* mouse button.

The menu contains the following commands:

- The **Insert** command creates a new worksheet.
- The **Copy** command creates a copy of a worksheet. A sub-menu will appear where you can choose the position of the copy (within the other worksheets).
If you want to place the copy in a different (currently opened) document or in a new document, choose the **To another document** option.
- The **Move** command moves a worksheet to a different location. Like with the **Copy** command, a dialog where you can choose the position will appear.
- The **Delete** command removes a worksheet along with its contents.
- The **Rename** command lets you change the name of a worksheet.
- The **Show** command makes hidden worksheets (see **Hide** command) visible again.

A sub-menu will appear, listing all hidden worksheets. Click on the desired worksheet to make it reappear. The **Show all** command makes all hidden worksheets visible at once.

- The **Hide** command hides a worksheet.

Hidden worksheets are invisible. They cannot be displayed or edited, and they do not even appear in the worksheet register. However, they are still used as a source for calculations.

- The commands **Select all sheets** and **Deselect sheets** (available in the context menu only) select or unselect all worksheet tabs in the worksheet register.
- The **Page setup** command in the context menu is identical to the **File > Page setup** menu command in the main menu. It allows you to change page layout options like paper format, page margins, etc. for a worksheet. See section [Page setup](#).

- The **Copy page setup** command in the context menu enables you to transfer the entire page setup (i.e. all settings made with the **File > Page setup** menu command) from one worksheet to another. It opens a sub-menu with the following entries:

To all sheets: Copies the page setup from the current worksheet to all other sheets.

From...: Copies the page setup from any other worksheet to the current worksheet.

- The **Properties** command in the context menu is identical to the **Worksheet > Properties** menu command in the main menu. It allows you to alter common properties of a worksheet. See section [Worksheet properties](#).

Hint: As described in the section [Working with the worksheet register](#), you can select multiple worksheets in the worksheet register before you invoke one of these commands. The command will then be applied to all selected sheets at once.

Note: If you activate *workbook protection* for a document, PlanMaker disables the **Worksheet > Worksheet** menu command as well as the context menu of the worksheet register. For additional information, see section [Workbook protection](#).

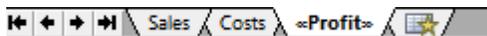
Calculating in three dimensions

In a multi-worksheet document, you can create calculations in one worksheet that refer to cells in other worksheets, allowing you to perform "three-dimensional" calculations.

To enter such calculations, place the name of the desired worksheet before the cell address, and separate it with an exclamation point. For example, "Sheet1!B2" refers to cell B2 on worksheet "Sheet1".

An example

Assume you want to create a profit/loss statement. For this purpose, you have created three worksheets named "Sales", "Costs", and "Profit".



Now you want the value in cell D2 of the "Costs" worksheet to be deducted from the value in cell A8 of the "Sales" worksheet and to appear in cell C9 of the "Profit" worksheet.

To do this, switch to the "Profit" worksheet, navigate to the cell C9 and enter the following formula:

```
=Sales!A8 - Costs!D2
```

After hitting the **Enter** ↵ key, cell C9 on the worksheet "Profit" will contain the result of your calculation.

Naming cell ranges

Use the **Worksheet > Names** menu command to assign *names* to cell ranges.

For example, if your worksheet has four columns with the sales figures for spring, summer, fall and winter, name these ranges accordingly. After that, a calculation like the following is possible:

=SUM(Spring)

When you invoke the **Worksheet > Names** menu command, a sub-menu opens. It contains all commands needed to work with named cell ranges.

Note: The **Worksheet > Names** menu command will not be available if at least one worksheet in your workbook has *worksheet protection* turned on (see also section [Sheet protection](#)).

Detailed information on working with named ranges is provided on the next pages. The following topics are covered:

- [Assigning and editing names to cell ranges](#)
- [Defining names automatically from the selection](#)
- [Creating a list of all named ranges](#)
- [Putting named ranges to use](#)
- [Applying names in existing formulas](#)

Assigning and editing names to cell ranges

Assigning names

To assign a name to a range of cells:

1. Select the cell range that you want to name.
2. Choose the menu command **Worksheet > Names > Edit**.
3. Input a name for the cell range in the **Name** edit control.
4. Click the **Add** button.

You have now assigned the specified name to the selected cell range.

From now on, this name can be used in formulas instead of the original cell addresses. If you assign the name "January" to the cell range from A2 to A10, the formula =SUM(January) is equivalent to =SUM(A2:A10).

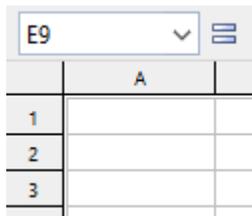
Note: Names may only consist of alphanumeric characters, underscores and periods. The first character must be a letter or an underscore.

Names that look like a cell address must not be used. For example, the name "A2" is not valid because PlanMaker wouldn't be able to distinguish it from the cell address A2.

Hint: A faster method

There is a faster method for assigning names to cell addresses:

In the top left corner of the worksheet is an editable dropdown list that normally displays the current cell address.



Use this dropdown list to quickly set up a new named range, as follows:

1. Select the cell range that you want to name.
2. Click inside this dropdown list.
3. Enter the new name for the selected cell range.
4. Press the **Enter** ↵ key.

You have now assigned the specified name to the selected cell range.

Deleting and renaming names

To delete or rename the name of a named cell range:

1. Choose the menu command **Worksheet > Names > Edit**.
2. In the list of names, select the desired name.
3. To delete the name, click the **Delete** button. To rename it, click the **Rename** button.

The name has now been deleted/renamed.

Note: When you delete a name, all formulas that use this name will now return a #NAME? error value instead of a result. For example, if a cell range was named "January", all references to this named range, such as =SUM(January), will display a #NAME? error value.

Defining names automatically from the selection

If you select cells that contain values as well as row or column headings, you can let PlanMaker generate named ranges automatically from these cells. PlanMaker then picks up the names from the headings.

To define names automatically:

1. Select the desired cell range. It must contain both the values and the headings that will be used to create the named ranges.
2. Choose the menu command **Worksheet > Names > Import**.
3. In the displayed dialog box, you can select which row and/or column contains the headings that will be used for naming the ranges (see example below).

When you're done, click **OK** to confirm.

The names will now be created from the selected headings.

An example

To generate names automatically from the following table:

	January	February	March
London	100	450	333
Paris	345	543	564
Madrid	123	543	555

Select all values *and* all headings. Invoke the **Worksheet > Names > Import** menu command. Select which row and/or column headings to use:

- If you select **Top row**, PlanMaker assigns the names "January", "February", and "March" to the cells below them.
- If you select **Left Column**, PlanMaker names the cells to the right of "London", "Paris", and "Madrid" with the corresponding name.
- If both options are selected, PlanMaker will create all six names.

Creating a list of all named ranges

PlanMaker can insert a list into the worksheet of all named ranges. This is useful if you want an overview of all named ranges in the workbook and the corresponding cell addresses.

To insert a list of all named ranges defined:

1. Select the cell where the list is to be inserted.

2. Choose the menu command **Worksheet > Names > Insert list**.

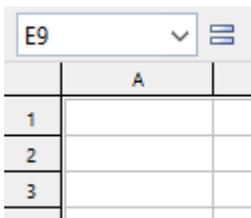
A list of all named ranges will now be inserted in the table.

Putting named ranges to use

After creating named ranges with the **Worksheet > Names** menu command, the following very useful functions become available:

Quickly selecting a named range

In the top-left corner of the worksheet window, you can see a dropdown list that displays the address of the currently selected cell.



When you open this dropdown list, it will display a list of all named ranges. Clicking on one of these names will select the corresponding cell range.

Using names in formulas

In formulas, range names can be used instead of the cell addresses they represent. This saves time and makes formulas more coherent.

For example:

You have entered sales figures for January in cells A2 to A10. You have also assigned the name "January" to this range of cells.

To sum up the sales, you simply type:

```
=SUM(January)
```

This method is also considerably more understandable than the default naming convention of `=SUM(A2:A10)`.

Hint: The dialog box for the **Insert > Function** menu command has a **Category** list. One of the categories is "Named ranges". Click on this category and you can quickly pick named ranges and insert them in formulas.

Applying names in existing formulas

The **Apply** command in the sub-menu of the **Worksheet > Names** menu command is a useful helper for applying named ranges: It scans all formulas within the selected cells and replaces every cell reference that has a name assigned to it by the corresponding name.

You use this command as follows:

1. Select the range of cells whose formulas you want to update. If you do not select anything, the entire table will be affected.
2. Choose the menu command **Worksheet > Names > Apply**.
3. In the **Names** list, select all names you want to apply to the selected cells. Alternatively, click **Select all** to select all names.

When you're done, click **OK** to confirm.

PlanMaker now updates all cell references within the selection. Any cell reference that has a name assigned to it will be replaced by the corresponding name.

An example:

The name "January" is assigned to cells A2 to A10. One of the cells in the worksheet contains the formula =SUM(A2:A10). Using the **Worksheet > Names > Apply** menu command, this formula will be automatically updated to read as =SUM(January).

The "Also apply to relative references" option

In the dialog discussed above, you will find an option named **Also apply to relative references**. This option should remain checked in most cases.

Some background information:

In PlanMaker, names always refer to cell ranges with *absolute* addressing (like \$A\$1:\$A\$10). But in most calculations, users will be using relative addressing (like A1:A10).

If this option is checked, PlanMaker will convert relative cell references as well.

If it is not checked, PlanMaker will *only* convert absolute cell references.

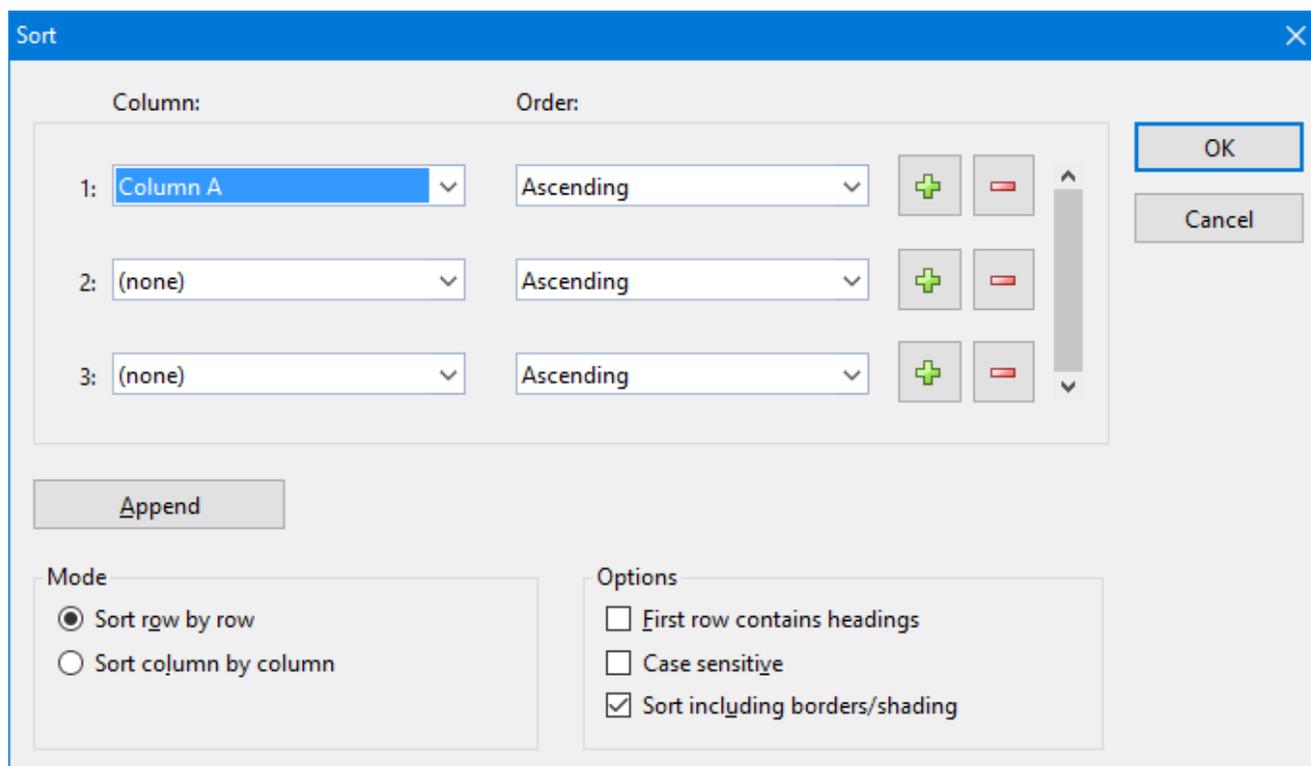
For example:

Assume the range from A1 to A10 (more precisely: \$A\$1:\$A\$10) was named "January". If you apply the **Apply** function to the formula =SUM(\$A\$1:\$A\$10), this formula will always be converted to =SUM(January). But if you apply it to the formula =SUM(A1:A10), the formula will be converted only if the option **Also apply to relative references** is turned on.

For more information on absolute and relative cell addresses, see section [Relative vs. absolute cell references](#).

Sorting cells

The **Worksheet > Sort** menu command allows you to sort a cell range.



Proceed as follows:

1. Select the cell range to be sorted.
2. Choose the menu command **Worksheet > Sort**.
3. At **1:**, choose the **Column** you wish to sort on.
4. Next to the column, you can choose the **Order** of the sorting: **Ascending** (A to Z) or **Descending** (Z to A).
5. If required, you can choose additional columns to sort on at **2:** and **3:**.

For example, if you choose a column containing family names at **1:** and a column with first names at **2:**, the cell range will be sorted by the family name – and then, in groups of identical family names, by the first name.

6. Make any further settings as required, see below.

When you confirm with **OK**, the cell range will be sorted accordingly.

Dialog options

The dialog box for this command has the following options:

■ Column and Order

Here, select the desired **column(s)** to determine the sorting sequence.

You also specify the sorting direction for each column: **Ascending** goes from A to Z, and **Descending** goes from Z to A.

By default, up to 3 columns can be specified. If needed, you can even add additional columns – up to 64 columns. Proceed as follows:

Adding a column: Click the **Plus** icon to add an additional column at the respective position.

Appending a column: Click the **Append** button (below the list) to append a column at the bottom.

Removing a column: Click the **Minus** icon to remove the respective column.

■ Sort row by row or Sort column by column

Determines whether PlanMaker sorts by row or by column.

■ First row contains headings

If the first row or column of the selected cells contains a heading, enable this option. PlanMaker omits it from the sorting.

Example: You have selected a list of postal addresses that you want to sort by row. The first line of your selection contains headings such as "Name", "Street", "City", etc. The actual addresses are in the rows below. If you turn on this option, the first row is not sorted along with the addresses, but stays on top.

■ Case sensitive

If you check this option, sort terms that begin with lowercase letters will be placed above terms beginning with uppercase letters. Otherwise, all sort terms that begin with the same letter will be grouped together, regardless of the cases of the first letters.

Example:

Off: Apples, bananas, Cherries. **On:** bananas, Apples, Cherries.

■ Sort including borders/shading

If this option is checked, cells moved by the sorting operation take their assigned border lines and shading with them.

If not, the selected cell range keeps its original layout as far as borders and shading is regarded.

Transposing cells

The **Worksheet > Transpose** menu command exchanges the row and column order of the selected cells. Rows become columns, and columns become rows.

Select the desired cells before you use this command.

Important! Please note that transposing does *not* adapt any formulas or range names to the changes made to cell addresses by transposing, neither inside nor outside the transposed range!

Distributing text into multiple columns

The **Worksheet > Text to columns** menu command allows you to distribute text entered in one table cell into multiple columns. For example, if a cell contains a sentence, this command will move each single word into its own column.

You apply this command as follows:

1. Navigate to the cell containing the text to be distributed.

(If you want to distribute the text in multiple cells at once, select those cells.)

2. Invoke the **Worksheet > Text to columns** menu command.
3. A dialog box with several options is displayed (see below).

Normally, PlanMaker determines appropriate settings for this dialog automatically, so you don't have to care about it.

4. Click **OK** to confirm.

The text in the cell is distributed into multiple cells in the adjacent columns.

Dialog options

Hint: The best settings for this dialog are determined from the given cell content automatically. Normally, no manual changes are required.

The dialog window for this command has the following options:

- **Target range**

If desired, you can enter a different target range here. If you do so, the distributed text will not be placed at its original position, but at the specified target position.

It is sufficient to enter just the address of the cell in the top left corner of the target position.

- **Separator**

If required, you can specify which character PlanMaker should consider as a text separator here. For example, if the cell contains the sentence "This is a test", PlanMaker automatically chooses blanks as separators, which will move each word of the sentence into one column.

- **Text marker**

If the text in the cell contains text marker characters, use this option to specify which character has been used (e.g. quotation marks).

(Background info: The text export feature of some programs surrounds each data field with such a character, in order to make it easy to determine where a data field begins and ends.)

Filtering cells by their contents

You can select a range of cells and *filter* this data based on a filtering condition. PlanMaker will hide all rows that do not match the condition.

There are four commands for filtering data available in the sub-menu of the **Worksheet > Filter** menu command:

- The [AutoFilter](#) command offers you different options to filter rows: When you select a cell range and invoke this command, from now on, an arrow will appear on top of each column in this cell range. Clicking on one of these arrows opens a dropdown menu where you can easily choose between the values contained in the corresponding column – and other predefined filter conditions.
- The [Special filter](#) command opens a dialog box where you can formulate one or more filter conditions. After clicking **OK**, the filter activates and hides all rows in the selected cell range that do not match the chosen filter conditions.
- The **Show all** command makes all hidden rows visible again, rendering the effect of the *Special filter* as well as the *AutoFilter* inactive.
- The **Reapply filter** command allows you to update also subsequently added values in the cell range of an active *AutoFilter* (not possible for *Special filter*).

Detailed information on these three commands is provided on the following pages.

AutoFilter

Use the **AutoFilter** menu command to filter the rows of a table:

When you select a cell range and invoke the command **Worksheet > Filter > AutoFilter**, from now on, an arrow will appear on top of each column in this range. Clicking on one of these arrows opens a dropdown menu where you can easily choose between the values contained in the corresponding column – and various predefined conditions that allow you to apply a filter to the cell range.

Hint1: The AutoFilter can only be inserted once per worksheet; two separate filters cannot be inserted on one worksheet. Otherwise, you cancel the previously applied filter by selecting the AutoFilter menu command again. However, on different worksheets it is quite possible to apply a separate AutoFilter.

Hint2: Newly added or updated values are not automatically sorted by the previously set filter conditions. To integrate changed data into existing AutoFilter, use the menu command [Reapply filter](#).

Proceed as follows to apply the AutoFilter:

1. Select the desired range of cells. **Important:** The first row of this range must contain headings for the data below.
2. Invoke the **Worksheet > Filter** menu command. In the resulting sub-menu, choose the **AutoFilter** command.

The AutoFilter function is now enabled. Note the downward arrows in the first row of every column in the selected range.

Clicking on one of these arrows will open a dropdown menu listing the contents of the current column, as well as some other options. By default, *all* values in the list are selected, meaning that currently no filtering is taking place.

To filter the data in the cell range, use this menu as follows:

- **Sort ascending:** Sorts the filter results of the applied AutoFilter area in ascending order.
- **Sort descending:** Sorts the filter results of the applied AutoFilter area in descending order.
- **More filters: Text filters, Number filters and Date filters** open a submenu with additional filters (see below).
- **(All):** This menu entry is a useful placeholder: It allows you to add/remove all values the column contains with just a single click.

A checkmark is displayed to the left of this entry to indicate that currently all cell contents are contained in the filter.

When you click on the **(All)** entry now, all cell contents are removed from the filter (and the checkmark disappears). When you click it again, all cell contents will be added to the filter again (and the checkmark reappears).

If not all cell contents are included in the filter, but at least one cell content, a gray area is displayed instead of the checkmark.

- **(Blank):** If you have empty cell contents in your column, you can use this selection to show/hide all empty rows.
- **List of the cell contents:** The most important part: This part of the menu lists all cell contents that the column contains. You can add/remove a value to the filter by clicking on it. A checkmark is displayed to the left of all entries that are currently contained in the filter.

Note: For the last 3 described options (*All*), (*Blank*) and *List of cell contents* please always be aware: To confirm your selection, you have to press **OK**.

Example

For example, to filter a cell range in a way that it shows only rows that contain the name "Smith" in a column with the heading "Name", proceed as follows:

Select the cell range of interest (including the headings) and invoke the **Worksheet > Filter > AutoFilter** menu command to activate the AutoFilter.

A dropdown arrow will now appear next to each column heading. Click on the arrow for the column "Name" to open the AutoFilter menu for this column.

First, click on the **(All)** entry in this menu in order to remove all cell contents from the filter. Then, choose the menu entry "Smith" and press **OK**. Effectively, you have now created a filter condition "Name equals Smith" using the AutoFilter function. All rows that do not match this condition will be hidden.

If, in addition, you would also like to have all rows with the name "Miller" listed, simply choose the menu entry "Miller" as well. To remove the Millers again, click on the "Miller" entry once more to deselect it. Press **OK** to confirm in each case.

As you can see, the entries in the AutoFilter menu can be combined in any possible way. Just click on an entry to add it to the filter – or remove it.

More filters: Text filters, Number filters, Date filters

Depending on the format category of the filtered columns, PlanMaker automatically sets more filter options for *Text filter*, *Number filter*, or *Date filter* in the AutoFilter menu. The *Text filter* is offered for text-only values and the *Date filter* for date-only values. If the formats are mixed, the *Number filter* is applied.

Use the offered filter to obtain specialized filter conditions, for example:

Text filters:

- **Equals...** Display only rows with exact matches.
- **Does not equal...** Rows with exact matches are hidden.
- **Greater than...** Display rows with values that are alphabetically behind the entered filter value.
- **Greater than or equal to...** see above, but including the entered value.
- **Less than...** Display rows with values that are alphabetically before the entered filter value.
- **Less than or equal to...** see above, but including the entered value.
- **Starts with...** Display only rows with specific word beginnings.
- **Doesn't start with...** Rows with specific word beginnings are hidden.
- **Ends with...** Display only rows with specific word endings.
- **Doesn't end with...** Rows with specific word endings are hidden.
- **Contains...** Display only rows that contain specific strings as part of the text.
- **Doesn't contain...** Rows that contain specific strings as part of the text are hidden.

Number filters:

- **Greater than...** Works like the operator $>$. Display rows with values that are greater than the filter value entered.
- **Greater than or equal to...** Works like the operator \geq . Display rows with values that are greater than or equal to the filter value entered.

- **Less than...** Works like the operator $<$. Display rows with values that are smaller than the filter value entered.
- **Less than or equal to...** Works like the operator \leq . Display rows with values that are smaller than or equal to the filter value entered.
- **Between...** Display values of the rows which are defined in a number range.
- **Not between...** Hide values of the rows which are defined in a number range.
- **Top 10...** Display only rows where the value in this column is amongst e.g. the 10 highest (or lowest) values. You can customize this selection when the *Top 10...* dialog box has opened: In the field on the left, choose between *Top* or *Bottom* values. In the middle field, you can set the number of top/bottom values. In the right-hand field, you can choose between absolute values (*Items*) and relative values (*Percent*).

An example: If you want to get 50% of the lowest values from 60 values given, then set the following:

Left field: Bottom Middle field: 50 Right field: Percent

- **Only empty:** Display only rows where the value in this column is empty.
- **Non-empty:** Display only rows where the value in this column is not empty.
- **Above average:** Display only rows where the value in this column is larger than the average value (of this column).
- **Below average:** Display only rows where the value in this column is smaller than the average value (of this column).

Date filters:

- **Equals...** Display only rows with exact date matches.
- **Does not equal...** Rows with exact date matches are hidden.
- **Before...** Display only rows in which the date values are earlier than the entered date value.
- **Before or equal...** see above, but including the entered value.
- **After...** Display only rows in which the date values are later than the entered date value.
- **After or equal...** see above, but including the entered value.
- **Between...** Display rows where the date values are within a defined date range.
- **Not between...** Hide rows where the date values are within a defined date range.
- **Day, Week, Month, Quarter, Year:** Here you can make further selections to quickly narrow down the desired date ranges.

Note: If you have applied the AutoFilter to date values, you will notice in the dropdown list of the AutoFilter that the single days have already been sorted at year and month level. Click on the plus sign in front of the year/month level to expand it and view the associated single values. If you have now expanded the date "tree" and, for example, selected only single day values from a certain date level, in front of the associated date level (month/year) a gray area appears instead of a checkmark. Only if all available values of a date level are selected, also a checkmark for this level appears. If no value of a date level is selected, you will see a white area in front of it. This allows you to see at a glance whether all, none or single values of a date level have been selected.

In addition, there are the following options for each of the offered filter methods Text filters, Number filters or Date filters:

- **Custom filter:** Open a dialog where you can define individual filter conditions.
- **Delete filter:** This option is only activated if criteria have been set via the Text filter, Number filter or Date filter selection. Press *Delete filter* to remove exactly these filters.

Making all filtered rows visible again

To make all rows hidden by the AutoFilter visible again, invoke the **Worksheet > Filter > Show all** menu command.

Reapply filter

If values in the cell range set by AutoFilter have changed, you can use the menu command **Worksheet > Filter > Reapply filter** to update the selection you have already defined.

For example, you have specified that all rows with the name "Smith" should not be displayed and further entries with this name were added afterwards. With the menu command **Reapply filter** you can filter out such subsequently created entries again and you don't have to define the terms of the filter again from the beginning.

Of course, this function is especially helpful for dynamic formula and date values.

Deactivating the AutoFilter

To completely deactivate the AutoFilter, invoke the **Worksheet > Filter > AutoFilter** menu command once again. The downward arrows displayed at the top of the cell range disappear, and all filtered rows will become visible again.

Special filter

In addition to the **AutoFilter** introduced in the previous section, there are further options to filter the data in a cell range by one or more combinable conditions much more complex: with the menu command **Worksheet > Filter > Special Filter**.

Proceed as follows:

1. Select the desired range of cells.
2. Invoke the **Worksheet > Filter** menu command. Choose the **Special filter** command from the resulting sub-menu.
3. A dialog box is displayed in which you can define one or more filter conditions (see below).

When you're done, click **OK** to confirm.

All rows that do match the filter conditions will now be hidden.

Setting up filter conditions

To select one or more filter conditions in the dialog box of the **Special filter** menu command:

In the **1st condition** group box, select the column to apply to the filter condition. In the middle dropdown list, select the arithmetic operator. On the right, enter the value to compare against.

Some examples:

- The condition "Column D equals Los Angeles" only shows entries where column D contains the text "Los Angeles".
- The condition "Column E greater than 100000" only shows entries where column E contains a value greater than 100000.

If one condition is not sufficient for formulating your filters, you can set up to three filter conditions in the **Special filter** dialog by filling out the group boxes **2nd condition** and **3rd condition** as well.

Using "wildcard characters": In conditions, the characters * and ? can be used as "wildcards": * represents *any* number of arbitrary characters, and ? represents a *single* arbitrary character. For example, "M*er" would call out "Mister", "Miller", "Mary's mother", etc., whereas "?ouse" would call out "mouse", "house", "rouse", etc.

Dialog options

The dialog box for the **Special filter** command offers the following options:

- **Range contains headings**

If the first row and/or column of the selected cell range contains headings, turn on this option. PlanMaker will ignore this line or column while filtering.

- **Case sensitive**

If this option is checked, PlanMaker will distinguish between uppercase and lowercase letters in conditions. For a condition such as "COLUMN A equals Smith", the condition will match only if the cell contains the text "Smith". "SMITH" and "smith" will not be included in the filtering results.

- **Mode**

Determines whether rows or columns will be filtered.

Selecting **Filter row by row**, all *rows* will be filtered out that do not satisfy the filter condition.

Selecting **Filter column by column**, all *columns* will be filtered out that do not satisfy the filter condition.

- **Results**

Determines whether the filter will be applied to the actual data or a copy of it:

Filter at current position – Select this option and the original data will be filtered. Rows/columns that do not satisfy the filter condition will be hidden at exactly that point where you set the filter.

Copy to position – If you choose this option instead, PlanMaker creates a copy of the original cells at a cell address you specify. This copy contains only the filtered data and the original data remains unchanged in its place.

In the latter case, enter the cell address of the destination cell in the input field. You can either specify a single cell address (which will be the starting point of the output range) or a cell range where the copy of the data shall be placed. Copying to other worksheets is also possible. Caution: If the copy of the data is larger than the cell range entered, cells will be cut off (exception: you enter a single cell address as the starting point).

Making all filtered rows visible again

To make all rows hidden by a filter visible again, invoke the **Worksheet > Filter > Show all** menu command.

Analyzing tables

PlanMaker provides several tools that can be very useful for analyzing tables and detecting errors, including the following:

- [Displaying formulas instead of results](#)

If the **View > Show formulas** menu command is activated, cells containing a calculation will display the formula rather than the result.

- [Syntax highlighting](#)

If the **View > Syntax highlighting** menu command is activated, cells will be colorized according to their content.

- [Watch window for cell contents](#)

The **View > Watch window** menu command displays a *watch window* for cell contents. It allows you to observe the current values in the specified cells.

- [Formula auditing](#)

The **Tools > Formula auditing** menu command provides tools for displaying the relationships between cells graphically. For example, if the current cell contains a formula that refers to other cells, you can let PlanMaker display arrows pointing to these cells.

Apart from that, you can use this command to find errors in your table easily or to mark all invalid data with red circles.

For detailed information, see the following pages.

Displaying formulas instead of results

If the **View > Show formulas** menu command is activated, cells containing a calculation will display the formula rather than the result.

Invoke again to deactivate.

Syntax highlighting

If *Syntax highlighting* is activated, cells will be colorized according to their content. For example, cells containing an error are displayed in red; cells containing a formula are displayed in green, etc.

This is useful for visualizing which cells contain formulas, fixed values, etc., and where errors occur.

Activating and deactivating syntax highlighting

Choose the menu command **View > Syntax highlighting** to activate.

Choose again to deactivate.

What the foreground color indicates

When syntax highlighting is activated, cell contents are displayed in the following foreground colors:

Cell content	Foreground color
Error value	Red
Formula	Green
Fixed positive number	Dark blue
Fixed negative number	Light blue
Fixed logical value	Brown
Fixed text string	Black

What the background color indicates

Cells containing an error are displayed in red foreground color and shaded in one of the following background colors:

Background color	Error type
White	Formula returns an error value. The calculation in this cell returns an error value (caused, for example, by a division by zero). Hint: If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. For more information on error values, see section Error values .
Cyan	Syntax error in formula. The calculation in this cell has a syntax error (caused, for example, by a missing parenthesis or missing arguments).

Hint: If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. *If you don't correct the formula, it will be replaced by the text string #NULL! when the document is saved!*

Light gray

Function not exportable. The calculation in this cell uses an arithmetic function that cannot be saved in the currently chosen file format.

Hint: Replace the function by a function that is compatible with the chosen file format. For more information, see the corresponding function description in this manual.

Magenta

Function possibly imported erroneously. The calculation in this cell uses a PlanMaker 97 arithmetic function whose syntax or function might be incompatible with recent versions of PlanMaker. This error only occurs when importing documents created with PlanMaker 97 (an older version of PlanMaker).

Hint: See corresponding function description in this manual.

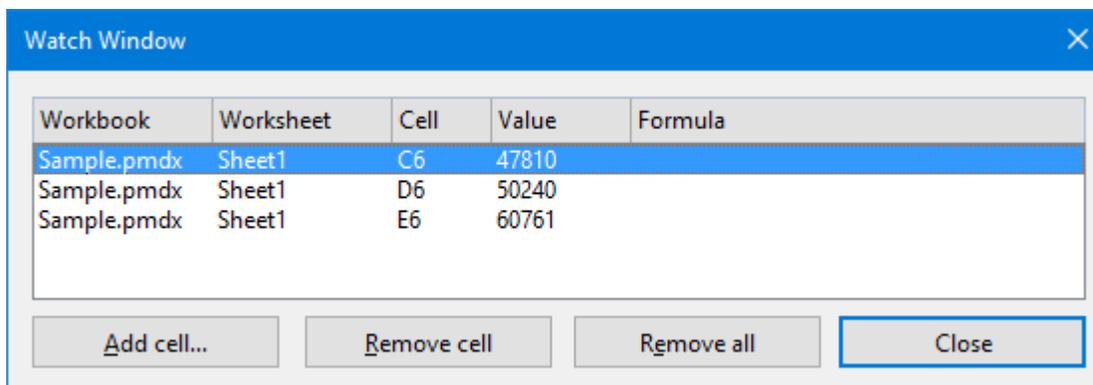
Yellow

Function unknown. The calculation in this cell uses an arithmetic function unknown to PlanMaker. This error might occur when importing documents created with other applications (e.g. Microsoft Excel).

Hint: Replace the function with a corresponding PlanMaker function. For a list of all PlanMaker functions, see section [Functions from A to Z](#), or this manual's index.

Watch window for cell contents

PlanMaker has an option to display a *watch window* for cell contents. It allows you to observe the current values in the specified cells.



Activating and deactivating the watch window

Choose the menu command **View > Watch window** to activate the watch window.

Choose again to deactivate.

Adding cells to the watch window

To keep track of the value in a cell, add it to the watch window as follows:

1. In the watch window, click on the **Add cell** button.
2. Enter the address of the desired cell and confirm with **OK**.

Hint: You can also enter an entire cell range here. For example, if you enter A1:A3, the cells A1, A2, and A3 will be added.

The content of the specified cells is now displayed in the watch window. Whenever the table is recalculated, the watch window will be updated as well.

Removing cells from the watch window

To remove a cell from the watch window, select it in the watch window and click on the **Remove cell** button.

To remove all cells at once, use the **Remove all** button.

Formula auditing

The **Tools > Formula auditing** menu command provides tools for displaying the relationships between cells graphically. For example, if the current cell contains a formula that refers to other cells, you can let PlanMaker display arrows pointing to these cells.

Apart from that, you can use this command to find errors in your table easily or to mark all invalid data with red circles.

When you invoke this menu command, a submenu with several commands opens. Broken down by subjects, the following functions are available in this menu:

- [Displaying the relationships between cells](#)

Amongst others, the **Tools > Formula auditing** menu command provides commands that display the relationships between cells graphically. For example, PlanMaker can display arrows to all cells that the calculation in the current cell refers to. Thus, if a cell contains the formula =A1*A2, arrows to the cells A1 and A2 will appear.

- [Selecting the cells related to a cell](#)

There are also commands that allow you to select all cells the calculation in the current cell refers to. Or, vice versa, all cells that depend on the current cell.

- [Detecting errors in calculations](#)

Furthermore, you can jump to the previous or next cell that contains an error value, and display arrows to the sources of the error.

- [Detecting invalid data in cells](#)

Finally, you can find cells whose content violates the input validation settings for the cell.

For detailed information on these topics, see the following pages.

Tip: Using the Formula auditing toolbar

The easiest way to access the functions provided by this command is to use the *Formula auditing toolbar*.



You can enable or disable this toolbar anytime by choosing the menu command **Tools > Formula auditing > Show "Formula auditing" toolbar**.

The icons in this toolbar represent the following functions (from left to right):

- Trace predecessors
- Remove traces to predecessors
- Trace successors
- Remove traces to successors
- Remove all traces
- Trace to error

- Mark invalid data
- Remove invalid data marks

- Go to previous error
- Go to next error
- Go to previous invalid cell
- Go to next invalid cell

Detailed information about the individual function of each icon is given on the following pages.

Displaying the relationships between cells

Amongst others, the **Tools > Formula auditing** menu command provides commands that can be used to display the relationships between cells graphically.

	A	B	C
1	6		
2	7		
3			
4		42	
5			

To do this, navigate to the cell of interest and invoke one of the following commands from the submenu of this command:

- **Trace predecessors**

This command displays an arrow to each cell that the calculation in the current cell refers to.

Example: If the current cell contains the formula $=A1*A2$, this command will display arrows pointing to the cells A1 and A2.

- **Remove traces to predecessors**

Removes the arrows added with the above command for the current cell.

- **Trace successors**

Displays an arrow to each cell that refers to the current cell.

Example: If a cell contains the formula $=B5*2$, this command will display an arrow pointing to this cell when you invoke it in cell B5.

- **Remove traces to successors**

Removes the arrows added with the above command for the current cell.

- **Remove all traces**

Removes all arrows added with the commands **Trace predecessors** or **Trace successors** for the entire workbook.

Notes and tips

- If desired, you can invoke the commands **Trace predecessors** or **Trace successors** multiple times in a cell. Another level of relationships will be displayed every time you do that.
- The tracer arrows displayed by the above commands are clickable. When you click such an arrow, PlanMaker jumps to the cell at the other end of the arrow.
- If the current cell is referring to a cell located on a *different worksheet*, just a small arrow will be displayed in the top left corner of the cell. Again, you can click this arrow to jump to the related cell.
- All tracer arrows pointing to a cell will be removed when you edit, move, or delete the cell.
- Tracer arrows also appear in the printout.
- However, the arrows are not stored in the document. Thus, when you save a document, close it, and open it again, all arrows are removed.

Selecting the cells related to a cell

The **Tools > Formula auditing** menu command also provides commands that can be used to select the cells related to the current cell.

To do this, navigate to the cell of interest and invoke one of the following commands from the submenu of this command:

- **Select predecessors**

This command selects all cells that the calculation in the current cell refers to.

Example: If the current cell contains the formula =A1*A2, this command will select the cells A1 and A2.

- **Select successors**

Selects all cells that refer to the current cell.

Example: If any cell contains e.g. the formula =B5*2, this cell will be selected when you invoke the command in cell B5.

Detecting errors in calculations

The **Tools > Formula auditing** menu command also provides commands that can be used to find and analyze cells that return an error value.

Note: A cell returns an *error value* when the calculation it performs gives an illegal result. For example, if a cell tries to perform a division by zero, the error value #DIV/0 will be displayed in the cell. (For more information on error values, see the section [Error values](#).)

To find and analyze such errors, use the following commands in the submenu of the **Tools > Formula auditing** menu command:

- **Trace to error**

If the current cell contains an error value, this command will display arrows to the cells that cause the error (if applicable).

Example: If a cell returns a #DIV/0 error value and you invoke the above command in this cell, arrows to the cells that perform the division by zero will appear.

- **Go to previous error**

Jumps to the previous cell that contains an error value.

- **Go to next error**

Jumps to the next cell that contains an error value.

Detecting invalid data in cells

The **Tools > Formula auditing** menu command also provides commands that can be used to find cells that contain invalid data.

Note: A cell contains invalid data if the **Format > Input validation** menu command has been used to specify which values should be allowed in the cell, and the current cell content violates any of these rules.

To find such errors, use the following commands in the submenu of the **Tools > Formula auditing** menu command:

- **Mark invalid data**

This command paints a red circle around each cell (on the current worksheet) that contains an invalid value.

- **Remove invalid data marks**

Removes all circles added with the above command (from the current worksheet).

- **Go to previous invalid cell**

Jumps to the previous cell that contains an invalid value.

- **Go to next invalid cell**

Jumps to the next cell that contains an invalid value.

Notes

- The marks for invalid data also appear in the printout.
- However, the marks are not stored in the document. Thus, when you save a document, close it, and open it again, all circles are removed.

Updating tables

The calculations in a document are kept up-to-date *automatically*. Whenever you change the content of a cell, PlanMaker recalculates the entire workbook.

So usually you don't have to care about this.

Deactivating automatic updating

As needed, you can turn the automatic updating of calculations off. This can be useful when, for example, you want to edit a complex workbook on a slow device.

For this purpose, change the setting of the **Recalculation** option in the document properties accordingly. See section [Document properties, Calculate tab](#) for details.

When automatic updating is disabled, the calculations in the table have to be updated manually. You can use the following key strokes or menu commands for this:

- To update the calculations on *all* worksheets, hit the **F9** key or choose the command **Tools > Recalculate** from the menu.
- To update the calculations only on the *current* worksheet, hit the **Shift+F9** key combination.

Note: The latter can return outdated results in case the current worksheet contains calculations that refer to cells on other worksheets.

Updating external cell references

Please note that *external* cell references are *not* updated when a workbook is recalculated.

(External cell references are cell references that refer to cells located in a different workbook – for example ='C:\My Folder\[My Workbook.pmdx]Sheet1!A1.)

Such cell references are updated automatically only once, when you open the document that contains them. Apart from that, you can update them manually whenever needed.

For detailed information on this working with external references, see the section [External cell references](#).

Inserting comments

Using the **Insert > Comment** menu command, you can attach a *comment* to the current cell, for example, "Don't forget to update this value!".

Adding comments to cells

To add a comment, select the cell to which you want the comment to be attached and choose the menu command **Insert > Comment**. A yellow box will appear allowing you to type in the applicable comment. When done typing, click outside the yellow box or press the **Esc** key.

Comments are stored in the document and will be saved with the worksheet data.

Viewing comments

Cells with an attached comment have a yellow triangle in their top-right corner. When you point with the mouse to such a cell, the comment will be displayed. To make it disappear, move the mouse outside the cell.

Editing comments

To modify a comment, go to the cell that contains the comment, choose the menu command **Insert > Comment**, and apply your changes.

Hint: Alternatively, double-click the yellow triangle in the cell or press the keyboard shortcut **Shift+F2** to edit a comment.

Deleting comments

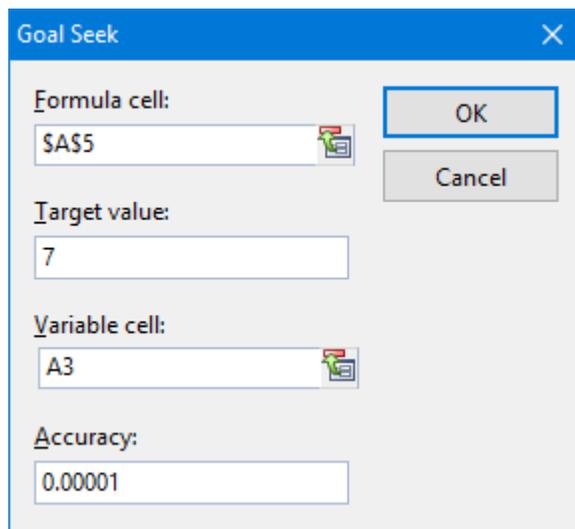
To remove a comment from a cell, go to the cell use the **Edit > Delete special** menu command. Choosing the **Comments** option from the sub-menu will remove the comments from the selected cells.

Goal-seeking

The **Tools > Goal seek** menu command can help you determine what value a certain portion of a calculation must meet to extract a predefined result from the calculation.

Note: This is done by mathematical approximation, and as with all approximation methods, the result cannot be guaranteed completely accurate.

Before executing this command, navigate to the cell that contains the calculation.



Upon executing the **Tools > Goal seek** menu command, a dialog box will open with the following options:

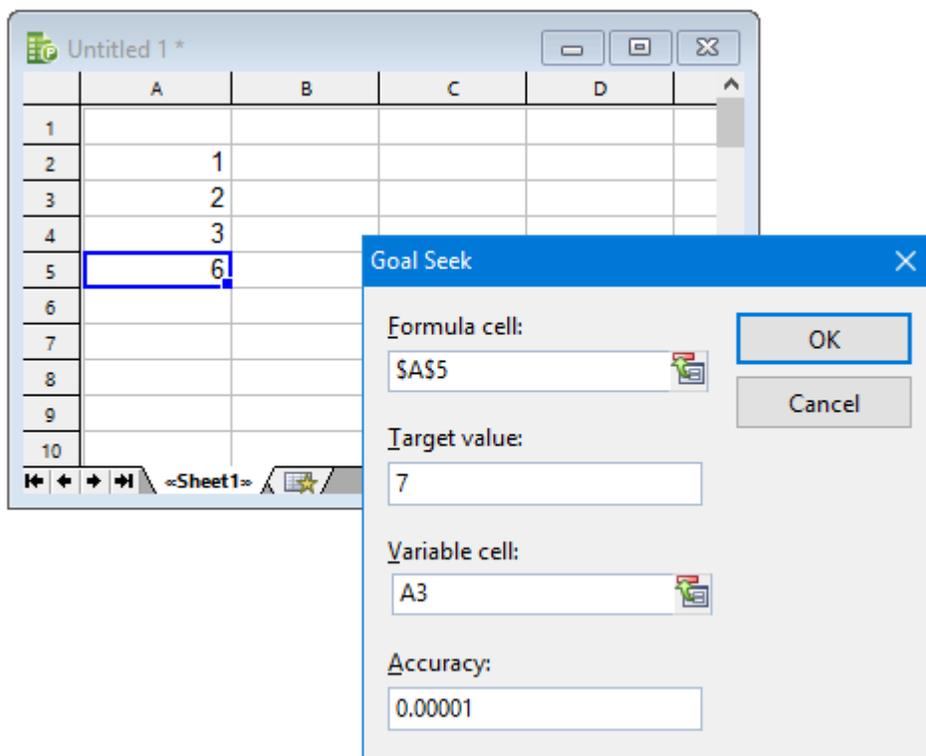
- In **Formula cell**, enter the address of the cell that contains the formula. (Generally this is preset by PlanMaker.)
- In **Target value**, enter the desired result of the calculation.
- In **Variable cell**, enter the cell address of the cell in which PlanMaker will test different values until the formula cell returns the desired result.
- In **Accuracy**, you can specify how close the result must match the desired target value. PlanMaker will attempt to approximate values until the difference to the target value is smaller than **Accuracy**.

If PlanMaker is unable to find a sufficiently close result after some seconds, it will determine that the value cannot be calculated through approximation and will abort the search.

An example

In the worksheet shown below, the SUM function has been used in cell A5 to add the numbers 1, 2, and 3 in the cells A2, A3, and A4. The result in cell A5 is 6. The intent is to determine to which value cell A3 must be changed so that the result of the addition is 7.

For this purpose, move the cell frame to the cell with the calculation whose result is to be modified; in this case, cell A5 with the SUM formula. Then, choose the menu command **Tools > Goal seek**.



Notice in the screenshot how to fill in the values in the dialog box. When you click **OK**, PlanMaker starts the approximation process and displays the result 3 in a dialog box.

This means that the content of cell A3 must be changed from 2 to 3 so that the calculation has the result 7. If you click the **Use** button, the found result will be copied into cell A3.

Scenarios

The **Tools > Scenarios** menu command allows you to create and display "scenarios".

Scenarios can be used to observe how the calculations in a worksheet change when the values in specific cells are altered. This enables you to perform all kinds of "what-if" analysis.

Example: What effect on the total costs of a loan will it have when the duration is varied between 24, 36, and 96 months?

In this section you will learn everything you need to know about scenarios. The following topics are covered:

- [Creating scenarios](#)
- [Viewing scenarios](#)
- [Managing scenarios](#)
- [Merging scenarios](#)
- [Creating a scenario summary](#)

Read the following pages for detailed information.

Creating scenarios

To create scenarios, first create a worksheet with the calculations that you want to analyze.

Then, proceed as follows:

1. Invoke the menu command **Tools > Scenarios**.
2. Click the **Add** button.
3. Under **Scenario name**, enter a name that describes the purpose of the scenario.
4. Under **Changing cells**, enter the address of the cell whose content is to be altered in the scenario.

You can also specify multiple cells by separating their addresses with semicolons – for example: A2;A4;A10. Cell ranges (like B5:B10) are allowed as well.
5. Click the **Next** button to continue.
6. Another dialog appears. There, enter the value that is to be inserted into the "changing cell" in this scenario.

If multiple changing cells are defined in the scenario, the dialog displays a list of these cells. Click on each list entry and enter the desired value for it.
7. Click the **Finish** button to finalize this scenario.
8. Repeat the steps 2. through 7. for all further scenarios that you want to add.
9. When done, close the dialog with the **Close** button.

The scenarios have now been created. To learn how to display them, please read the next section.

Dialog options

In the dialog for adding scenarios, the following additional options are available:

- **Comment**
Allows you to enter a comment for the scenario.
- **Prevent changes**
When this option is enabled, the scenario can no longer be modified or deleted when you activate worksheet protection.
- **Hide**
When this option is enabled, the scenario is no longer displayed in the list of scenarios when you activate worksheet protection.

Hint: For general information on working with worksheet protection, see section [Sheet protection](#).

Viewing scenarios

When you have created scenarios, as described in the previous section, you can view them as follows:

1. Invoke the menu command **Tools > Scenarios**.
2. Select the desired scenario in the list.
3. Click on the **Show** button.

Hint: Alternatively, simply double-click the scenario to display.

The chosen scenario will now be displayed.

By switching between the different scenarios that you have created, you can watch how the changes to the cells specified in the scenario affect the calculations referring to those cells.

Note: When you display a scenario, the values in the given "changing cells" are physically replaced by the values specified in the scenario. The old cell contents will be lost.

Managing scenarios

The **Tools > Scenarios** menu command can also be used to manage the scenarios defined in the current worksheet.

For that purpose, the following buttons are available in the dialog for this command:

- **Add**
Adds a new scenario.
For details, see section [Creating scenarios](#).
- **Delete**
Deletes the scenario selected in the list.
- **Edit**
Opens a dialog where you can edit the selected scenario. When you click on **Next**, another dialog appears where you can edit the values for the changing cells.
- **Merge**
Merges scenarios that have been defined on other worksheets (or workbooks) into the current worksheet.
For details, see the section [Merging scenarios](#).

■ Summary

Creates a scenario summary for all scenarios, where you can directly compare the values in the changing cells as well as any "result cells" you define.

For details, see the section [Creating a scenario summary](#).

Merging scenarios

The **Tools > Scenarios** menu command can also be used to merge scenarios that have been defined on other worksheets (or workbooks) into the current worksheet.

Note: When using this function, make sure that all workbooks whose scenarios are to be merged have exactly the same layout and use the same changing cells in their scenarios.

To merge scenarios, proceed as follows:

1. Open the workbooks that contain the scenarios to be merged.
2. Switch to the workbook and worksheet into which you want to merge the scenarios.
3. Invoke the menu command **Tools > Scenarios**.
4. Click the **Merge** button.
5. Select the workbook and worksheet that contains the scenario(s) to be merged.
6. Click **OK** to confirm.
7. Repeat the steps 4. through 6. for all further scenarios that you want to merge.

The selected scenarios are now available in the current worksheet.

Creating a scenario summary

The **Tools > Scenarios** menu command can also be used to create a *scenario summary* for all scenarios defined in the current worksheet.

A scenario summary is a table listing all scenarios well arranged side by side. For each scenario, the "changing cells" are displayed alongside with any "result cells" that you specify (containing the calculations to be observed).

Scenario summaries allow you to compare the changing values and the results of scenarios at a glance.

To create a scenario summary, proceed as follows.

1. Create the desired scenarios (as described in the section [Creating scenarios](#)).
2. Invoke the menu command **Tools > Scenarios**.

3. Click the **Summary** button.
4. Enter the address of the desired "result cell". That is the cell that contains the calculation that you want to observe in your scenarios.

You can also specify multiple cells by separating their addresses with semicolons – for example: A2;A4;A10. Cell ranges (like B5:B10) are allowed as well.

5. Click **OK** to confirm.

PlanMaker will now create a new worksheet and generate the scenario summary on it.

Note: Scenario summaries are *not* updated automatically when cell contents or scenario settings are changed. To update a scenario summary manually, delete the worksheet containing the summary and create the summary once again.

Consolidating data

The **Worksheet > Data consolidation** menu command allows you to evaluate data from multiple cell ranges, for example, in order to calculate their total sums.

To do so, first you specify one or more "source ranges" for the consolidation. This can be any cell ranges containing the data to evaluate. They can be located in just one worksheets altogether, or be spread over multiple worksheets or even multiple files. For the evaluation, several statistical functions are available to choose from: sum, minimum, average, etc.

The results of the consolidation are inserted – as *fixed* values – into the "target range" (which can be any cell range). Note: The results will *not* be updated when you modify the values in any of the source ranges. This command's main purpose is to evaluate the *current* state of data, not regarding any changes made to them later (useful e.g. for monthly reports).

In this section, you will learn everything you need to know about working with consolidations. The following topics are covered:

- [Consolidating data by position](#)

In the simplest case, data is consolidated by its *position*, as follows:

You have entered the data into e.g. three source ranges. They should be identical in size and structure. In all three of them, each piece of data should have the same (relative) position.

When you let PlanMaker consolidate these cell ranges, it begins with calculating the sum of the first cell (top left) in the first range, second range, and third range. Then, the same is done with all other cells in each of the cell ranges.

- [Consolidating data by labels](#)

Alternatively, this command can consolidate data by its *labels*, as follows:

You have entered the data into one or more source ranges. All of them have one thing in common: a *label* has been added to each value, for example in the cell left of the value.

When you start a consolidation with such source ranges and activate the option **Labels in left column**, PlanMaker calculates the sum of all values that have the same label on their left.

It doesn't matter in which order and how often each label appears within the source ranges. The size of the source ranges is irrelevant as well. PlanMaker solely uses the *labels* to determine which values to sum up.

■ [Modifying and updating consolidations](#)

Whenever you perform a consolidation with the **Worksheet > Data consolidation** menu command, PlanMaker remembers each setting that you made in the corresponding dialog (separately for each worksheet).

This allows you to invoke this command again anytime, change some settings if required, and run the consolidation again.

For detailed information on these topics, see the pages that follow.

Consolidating data by position

As mentioned in the introduction of the section [Consolidating data](#), the **Worksheet > Data consolidation** menu command allows you to *consolidate* data from one or more cell ranges, for example, in order to calculate their total sums.

In the simplest case, data is consolidated by its *position*, as follows:

You have entered the data into e.g. three "source ranges". They should be identical in size and structure. In all three of them, each piece of data should have the same (relative) position.

When you let PlanMaker consolidate these cell ranges, it begins with calculating the sum of the first cell (top left) in the first range, second range, and third range. Then, the same is done with all other cells in each of the cell ranges.

Performing a consolidation by position

To consolidate data by position, proceed as follows:

1. Enter the data to evaluate into one or more cell ranges of exactly the same size and structure. (The order of the individual pieces of data must be identical in each range.)

The cell ranges can be located in just one worksheets altogether, or be spread over multiple worksheets or even multiple files.

2. Invoke the **Worksheet > Data consolidation** menu command.
3. Click into the edit field below **Source ranges**. There, enter the address of the first cell range containing the data to evaluate. (See also notes below.)

Hint: Alternatively, with the dialog still open, simply click into the table and select the cell range with your mouse.

4. Click on the **Add** button.
5. To add additional source ranges, repeat the steps 3. through 4.

6. At **Target range**, enter the address of the cell range where you want the results of the consolidation to be inserted.

Hint: It is sufficient to specify just the address of the cell in the top left corner of the target range. PlanMaker will then determine its size automatically.

Hint: You can simply click on the desired cell in the table to transfer its address into the dialog.

7. At **Function**, choose the arithmetic function to be used for the consolidation.
8. The options **Labels in ...** must be turned *off* for this kind of consolidation. (For more information, see section [Consolidating data by labels](#).)
9. Click on **Apply** to start the consolidation.

The data from the source ranges is now consolidated using the chosen arithmetic function. The result is inserted in the target range.

Note: The result of a consolidation is inserted into the table as *fixed* numbers. These numbers will *not* be updated when you modify the values in any of the source ranges.

Accordingly, this command's main purpose is to evaluate the *current* state of data, not regarding any changes made to them later (useful e.g. for monthly reports). See also section [Modifying and updating consolidations](#).

Notes on specifying the source ranges

In the dialog of the **Worksheet > Data consolidation** menu command, the **Source ranges** control can be used to add a source range in the following ways:

- **Source range from the current worksheet**

To add a cell range that is located in the current worksheet to the source ranges, simply enter its address or name.

Example: D2:G5

Hint: Alternatively, with the dialog still open, you can click into the table and select the cell range with your mouse.

- **Source range from a different worksheet**

To add a cell range that is located in a different worksheet, enter its address preceded with the other worksheet's name and an exclamation mark.

Example: Table3!D2:G5

Hint: You can also select the cell range directly in the table with your mouse. Make sure that you have clicked on the desired worksheet in the worksheet register first.

- **Source range from a different document**

To add a cell range that is located in a different document, enter its address the same way that external references are entered (see section [External cell references](#)).

Example: 'C:\My Folder\[My Workbook.pmdx]Table3!D2:G5

Hint: You don't have to enter the first part of the address (folder and file name) by hand. When you click on the **Browse** button in the dialog, a file dialog appears, allowing you to choose the desired file.

Don't forget to click on the **Add** button every time you have completed entering the address of a source range.

Consolidating data by labels

As mentioned in the introduction of the section [Consolidating data](#), the **Worksheet > Data consolidation** menu command allows you to *consolidate* data from one or more cell ranges, for example, in order to calculate their total sums.

Apart from consolidating data by position (see previous section), data can also be consolidated by its *labels*, as follows:

You have entered the data into one or more "source ranges". All of them have one thing in common: a *label* has been added to each value, for example into the cell left of the value.

When you start a consolidation with such source ranges and activate the option **Labels in left column**, PlanMaker calculates the sum of all values that have the *same* label on their left.

It doesn't matter in which order and how often each label appears within the source ranges. The size of the source ranges is irrelevant as well. PlanMaker solely uses the *labels* to determine which values to sum up.

Performing a consolidation by labels

To consolidate data by its labels, proceed as follows:

1. Enter the data into one or more cell ranges. Size and structure of these cell ranges don't matter. However, each of the values to be consolidated should have a label – either in the column left of them, or in the row on top of them.

The cell ranges can be located in just one worksheets altogether, or be spread over multiple worksheets or even multiple files.

2. Invoke the **Worksheet > Data consolidation** menu command.
3. Click into the edit field below **Source ranges**. There, enter the address of the first cell range containing the data to evaluate. (See also notes at the end of the previous section.)

Hint: Alternatively, with the dialog still open, simply click into the table and select the cell range with your mouse.

Important: Each source range must contain both the values itself *and* their labels. The labels must be placed in the leftmost column or in the top row.

4. Click on the **Add** button.
5. To add additional source ranges, repeat the steps 3. through 4.
6. At **Target range**, enter the address of the cell range where you want the results of the consolidation to be inserted.

Hint: It is sufficient to specify just the address of the cell in the top left corner of the target range. PlanMaker will then determine its size automatically.

Hint: You can simply click on the desired cell in the table to transfer its address into the dialog.

7. At **Function**, choose the arithmetic function to be used for the consolidation.
8. Under **Options**, specify the position of the labels in the source ranges:

Labels in left column: The labels are stored in the leftmost column of each source range. (In that case, the corresponding values must be stored directly at the right of the labels.)

Labels in top row: The labels are stored in the top row of each source range. (In that case, the corresponding values must be stored directly below the labels.)

You can also check both options, in case you want to evaluate source ranges that have labels in their leftmost column *and* in their top row.

When you activate the **Sort labels** option, the results of the consolidation in the target range will be sorted according to the labels.

9. Click on **Apply** to start the consolidation.

The data from the source ranges is now consolidated using the chosen arithmetic function. The result is inserted in the target range.

Note: The result of a consolidation is inserted into the table as *fixed* numbers. These numbers will *not* be updated when you modify the values in any of the source ranges. Accordingly, this command's main purpose is to evaluate the *current* state of data, not regarding any changes made to them later (useful e.g. for monthly reports). See also section [Modifying and updating consolidations](#).

Modifying and updating consolidations

Whenever you perform a consolidation with the **Worksheet > Data consolidation** menu command, PlanMaker remembers each setting that you made in the corresponding dialog (separately for each worksheet).

This allows you to invoke this command again anytime, change some settings if required, and run the consolidation again.

Hint: The settings are even stored in the document, so that PlanMaker remembers them the next time you open the document. (There's one little limitation: The **Target range** is not stored in *xls* files, since the file format doesn't support it. It is only stored in *xlsx* files, *pmd* files, and *pmdx* files.)

Modifying the settings of a consolidation and executing it again

To change the settings of a consolidation and then insert its updated results again, proceed as follows:

1. Invoke the **Worksheet > Data consolidation** menu command.

2. Modify the settings of the consolidation at will. You can even add new source ranges or remove existing ones.
3. Click on **Apply** to confirm your changes and update the results.

The consolidation in the current worksheet is now performed again, and its updated results are inserted into the target range. Existing data will be overwritten.

Updating the results of a consolidation

If you just want to update the results of a consolidation (without changing any settings), proceed as follows:

1. Invoke the **Worksheet > Data consolidation** menu command.
2. Click on **Apply** to confirm your changes and update the results.

The consolidation in the current worksheet is now performed again, with the same settings as before.

Tables in worksheets

The **Worksheet > New table** menu command allows you to create a "table" in a worksheet.

Note: The fact that this feature is named "table" may be a bit confusing, since the term "table" is often used to represent the content of a worksheet in general. However, since Microsoft has called this feature a "table" in Excel, we decided to keep this term in PlanMaker for compatibility reasons.

So, how exactly does this feature work?

When you can select a cell range and invoke the **Worksheet > New table** menu command, PlanMaker will create a "table" from it.

This has the following effects on the cell range:

- **Automatic formatting with a "table style"**

The selected cell range is reformatted automatically with a so-called *table style*. The default table style changes the background color of the table's rows to blue/white color. You can switch to a different table style anytime in order to change the appearance of the entire "table" at once.

- **AutoFilter applied automatically**

Apart from that, an *AutoFilter* is applied to the cell range that was used to create the "table". The AutoFilter adds little arrows to the right of each of the column headings in the table. When you click on one of these arrows, a menu opens, allowing you to set a filter on the cell contents living in the corresponding column.

- **Total row**

In "tables", you can easily activate a *total row* displayed below the table. The total row can display calculations summing up the values contained in the table (e.g. the sum of each column).

- **Special cell references**

When you have created a "table" in a worksheet, you can make use of special types of cell references. For example, the cells in a certain table column can be addressed via its column heading – as in:

=SUM(Table3[Spring])

More information on the "table" feature can be found on the next pages. The following topics are covered:

- [Creating tables in worksheets](#)
- [Removing tables in worksheets](#)
- [Editing tables in worksheets](#)
- [Formatting tables in worksheets](#)
- [Using the total row of tables in worksheets](#)
- [Tables in worksheets and cell references](#)

See the next pages for details.

Creating tables in worksheets

As described in the introduction of the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to have "Tables in worksheets". Below you will learn how to create such a table.

To create a "table in a worksheet", proceed as follows:

1. Optional: In a range of adjacent cells, enter the data that you want to create a table from.

Hint: It is recommended to add *column headings* for each column in the first row of that cell range. (If there are no column headings, PlanMaker will generate automatic headings named *Column1*, *Column2*, etc.)

2. Select the cell range (including the column headings).
3. Invoke the **Worksheet > New table** menu command.
4. A dialog box with the following options opens:

Source range: The cell range that the table is created from. The currently selected cells are suggested by default – so, unless you want to specify a different cell range, all you have to do is confirm this.

Source range contains titles: Here you can specify if the first row in the source range contains column headings, as recommended above. When you turn this option off, PlanMaker will generate automatic column headings named *Column1*, *Column2*, etc.

As soon as you confirm, a "table" is created from the specified source range. In detail, the following actions are performed:

- **No changes are made to the table cells and their contents**

Nothing special happens to the cells living inside the source range. They remain ordinary table cells after creating the table – you can edit them, format them, etc. just like before.

- **Automatic formatting with a "table style"**

However, you can easily spot a change in the format of the cells contained in the source range: By default, the first row (containing the column headings) is shaded in a medium blue, and the cells below are shaded in light blue and white.

A so-called *table style* is responsible for this. Whenever you create a table, it is automatically reformatted with the default table style. However, there are a lot of other table styles available to choose from. To apply a different table style, choose it in the dialog of the **Worksheet > Table > Table settings** menu command.

- **AutoFilter applied automatically**

Apart from that, you can see that a small arrow is now displayed to the right of each cell in the first table row. These arrows indicate the presence of an *AutoFilter* that has been added to the table cells automatically.

By default, the filter is off and *all* data in the table is shown. When you click on one of the little arrows, the menu of the AutoFilter for the current column opens. In this menu, you can apply different kinds of filters – and even sort the table data.

Detailed information on AutoFilters can be found in the section [AutoFilter](#).

Removing tables in worksheets

As described in the introduction of the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to create "Tables in worksheets". Below you will learn how to remove such a table.

There are two options for this:

A) Converting a table back to a normal cell range

To convert a table back to an "ordinary" range of cells, move the cell frame to any cell inside the table and invoke the menu command **Worksheet > Table > Convert to range**. In the following dialog click on the checkbox **Remove all formatting from the cells**.

This will remove the "magic" of the table features from all cells that were part of the table – including the automatic formatting and the AutoFilter.

B) Deleting a table with its entire content

To delete a table, including its entire content, move the cell frame to any cell inside the table and invoke the menu command **Worksheet > Table > Delete table**.

This will delete the entire table, including the content of all cells that were part of it.

Editing tables in worksheets

As described in the introduction of the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to create "Tables in worksheets". Below you will learn how to edit such a table.

The following procedures can be performed with tables:

Adding another row or column

"Tables in worksheets" can easily be extended by another row or column, as follows:

- When you enter a value into a cell that is located directly to the right of a table, the table is extended by another column automatically.
- When you enter a value into a cell that is located directly below a table, the table is extended by another row automatically.

(Note: This only works when the *total row* for the table is turned off.)

Hint: The above two methods for expanding tables can be disabled in case they are not wanted. To do so, disable the option **Expand tables automatically** in the dialog of the **Tools > Options** menu command, **Edit** tab.

- When you press the **Tab** key in the last cell of a table (i.e. the cell at its bottom right), another row is added to the table automatically. This works here even if the *total row* is turned on, it is automatically moved by one row.

Changing the size of a table

The size of a table can be changed in either of the following ways:

- A little arrow is displayed in the bottom right corner of tables. When you drag this arrow around with your mouse, the table is resized accordingly.
- When you invoke the menu command **Worksheet > Table > Table range**, a dialog opens, allowing you to edit the cell range covered by the table.
- You can also invoke the context menu by right-clicking in the table and edit the cell range using the menu command **Modify table area**.

Inserting rows or columns

To insert an additional row inside (and *only* inside) a table, proceed as follows:

1. Move the cell frame to a cell within the table.
2. Invoke the menu command **Worksheet > Table > Insert > Insert rows above** or **Insert rows below**.

This will add a new row above – or below – the current table cell.

Note: The new row will be added *only* inside the table – the cells outside the table are not affected.

Adding a new column can be achieved with the same procedure (using the menu commands **Worksheet > Table > Insert > Insert columns at left** or **Insert columns at right** respectively).

Deleting rows or columns

To delete a row inside (and *only* inside) a table, proceed as follows:

1. Move the cell frame to any cell within the table row to be deleted.
2. Invoke the menu command **Worksheet > Table > Delete > Delete rows**.

This will delete the corresponding row (including its content) from the table.

Note: The row will be deleted *only* inside the table – the cells outside the table are not affected.

Deleting a column can be achieved with the same procedure (using the menu command **Worksheet > Table > Delete > Delete column**).

Selecting cells in a table

Cells living in a table can be selected like all other cells, using either keyboard or mouse.

Apart from that, there is a menu command provided to make selecting cells *inside* a table easier: the command **Worksheet > Table > Select**. It has a sub-menu with the following commands:

- **Select rows:** Selects the current table row.
- **Select columns:** Selects the current table column.
- **Select column data:** Selects just the cells containing data in the current table column – column headings and cells located in the total row will not be included in the selection.
- **Select table:** Selects the entire table.

Formatting tables in worksheets

As described in the introduction of the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to create "Tables in worksheets". Below you will learn how to modify the formatting and other properties of such a table.

First of all, the cells in a table can be formatted just like any other cell, using the entire palette of commands and options that PlanMaker provides for this.

Apart from that, there is a command offering additional formatting options exclusive for tables: the command **Worksheet > Table > Table settings**.

This command can be applied as follows:

1. Move the cell frame to any cell within the table.
2. Invoke the menu command **Worksheet > Table > Table settings**.
3. A dialog box with the options described below opens. Make the desired changes and confirm with **OK**.

The following settings can be modified in the dialog:

Applying a different table style

The first tab of the dialog contains a listbox named **Style** where you can choose a *table style* for the table.

Applying a different table style changes the entire appearance of a table. Primarily, table styles modify the background colors of the table's rows and columns. The little preview images shown in the list give you an impression which colors each of the styles will apply.

Showing/hiding header row and total row

Below the **Style** list, there are more options for customizing the appearance of a table. The first two options have the following function:

■ Header row

This option turns the *header row* (displayed above the table) on/off. The header row displays a column title for each of the columns.

In the header row, you can also see a small arrow displayed to the right of each of the column titles. These arrows indicate the presence of the *AutoFilter* that is applied automatically to each table. To filter data, click on one of these little arrows. A menu opens, allowing you to choose from different kinds of filters for the values in the corresponding column. Detailed information on AutoFilters can be found in the section [AutoFilter](#).

■ Total row

This option turns the *total row* (displayed below the table) on/off. The total row displays calculations summing up the values contained in the table columns.

By default, the total row calculates just the sum of the values in the rightmost column of the table. However, when you click on one of the cells in the total row, a little arrow appears to its right. This arrow opens a menu where you can choose which kind of calculation the cell should perform. This allows you to calculate the sum, average, and other calculations for any given table column. For details, see section [Using the total row of tables in worksheets](#).

Additional formatting options for table styles

The other options on the **Style** tab have the following purpose:

■ Banded rows and Banded columns

This option turns the alternating background colors for the table's rows and columns on/off. (Hint: To change the colors, pick a different *table style*, as described above.)

- **First column and Last column**

When you activate this option, the first/last column in the table will be emphasized.

With most table styles, this option will turn on boldface for the text in the respective column. However, some table styles additionally change the background color – this depends on the table style definition.

Extended properties on the "Properties" tab

The **Properties** tab in the dialog box contains extended properties for tables, as follows:

- **Name**

Here you can change the name of the table.

The name of a table can be used in cell references (see section [Tables in worksheets and cell references](#)).

Please note that the following rules apply for table names:

1. Table names must be unique.
2. Table names must always begin with a letter or an underscore.
3. Table names must not contain blank spaces or other invalid characters. (For maximum compatibility, it is recommended to use solely letters, numbers, and underscores.)
4. Table names must not be structured like cell references (e.g. A1).

- **Title and Description**

Here you can specify a title and a short description for the table.

This makes it easier to process your worksheet for people who are blind or have low vision and therefore use tools like a screen reader.

Using the total row of tables in worksheets

As described in the introduction of the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to create "Tables in worksheets". Below you will learn how to make use of the "Total row" in tables.

Tables are able to display a so-called *Total row* below its content. It displays calculations summing up the values contained in the table columns. The *Total row* can be activated/deactivated anytime.

By default, the *Total row* displays the text "Total" and the sum of the values in the right-most column. However, you can always edit the total row in order to perform different/additional calculations, as described below.

Turning the total row on or off

To activate the total row for a table, proceed as follows:

1. Move the cell frame to any cell within the table.
2. Invoke the menu command **Worksheet > Table > Table settings**.
3. Activate the option **Total row** on the **Style** tab and confirm with **OK**.

The total row is now displayed below the table.

To turn the *Total row* off again, deactivate this option.

Customizing total rows

By default, the total row displays the text "Total" and the sum of the values in the right-most column.

However, you can edit the cells in a total row just like any other cell in a worksheet, and thus enter your own formulas or text.

A little helper is available for adding calculations that total the values in a column: When you move the cell frame to any cell in the total row, a little arrow appears to its right. Clicking on this arrow opens a menu offering different types of statistical functions (sum, average, etc.). When you pick e.g. the "Sum" entry, PlanMaker inserts a formula that calculates the sum of the corresponding column.

Tables in worksheets and cell references

As described in the introduction of the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to create "Tables in worksheets". Below you will learn more about the special types of cell references that are available with cells that live in a table.

Namely, apart from the usual types of cell references, the cells inside a table can also be addressed using *names* and special *specifiers*, as detailed below:

Using names

Names can be used in cell references to cells in a table as follows:

- **Addressing tables by their name**

When you use the name of a table in a cell reference, it represents the entire table (with all of its cells, except for the header row and the total row).

Example:

=SUM(**Table3**) returns the sum of all cells in the table named "Table3".

Hint: The name of a table can be changed in the dialog of the **Worksheet > Table > Table settings** menu command (**Properties** tab).

- **Addressing table columns by their column heading**

To address a single table column in a cell reference, enter the name of the table, followed by the column heading enclosed in brackets.

Example:

=SUM(Table3[Spring]) returns the sum of all cells living in the column with a column heading "Spring" in a table named "Table3".

■ Addressing adjacent table columns

To address a series of adjacent table columns, use the notation [[FirstColumn]:[LastColumn]].

Example:

=SUM(Table3[[Spring]:[Autumn]]) returns the sum of all cells living in the columns "Spring" through "Autumn" in the table.

■ Addressing *non-adjacent* table columns

To address multiple *non-adjacent* table columns, separate them with a comma instead of a colon.

Example:

=SUM(Table3[Summer],Table3[Winter]) returns the sum of the columns "Summer" and "Winter".

Note that in this case the name of the table has to be specified for *each* column.

Using specifiers

Apart from names, special *specifiers* that represent a certain component of a table can be used in cell references with tables.

Specifiers must be entered behind the table name, enclosed in brackets. For example, the cell reference **Table3[#Totals]** represents all cells in the *total row* of the table named "Table3".

The following specifiers are available:

- **#All:** Represents the entire table – *including* header row and total row, for example: Table3[#All].
- **#Data:** Represents the cells in a table that contain actual data, i.e. all cells *except* header row and total row.
- **#Headers:** Represents all cells in the *header row* (the row containing the column headers).
- **#Totals:** Represents all cells in the *total row*. (Note: If the total row is deactivated, the cell reference will return a #REF! error value.)
- **@[ColumnName]:** Represents the cell that is in the *same row* of the specified column. This is useful especially for calculations *within* a table.

For example, a cell reference like **[@Spring]** used in a table stands for the cell that is located in the same row of the column with the title "Spring".

Example:

=SUM(@[Spring]:[Winter]) returns the sum of those values in the columns "Spring" through "Winter" that are in the same row as the cell where this calculation was entered.

Note: PlanMaker does not distinguish between uppercase and lowercase letters in specifiers.

Pivot tables

Besides the normal tables (see chapter [Tables in worksheets](#)), there are also *Pivot tables*. You can create a pivot table using the menu command **Worksheet > New pivot table** based on your existing source data.

What exactly is a pivot table?

A pivot table is an optimal tool for displaying large amounts of data in a meaningful form. The generated pivot data can be structured, summarized, filtered and analyzed according to different perspectives. The source data remains unaffected.

Reports using pivot tables are particularly suitable for data sets with many different elements and criteria, which are predominantly similar and interdependent, such as sales reporting.

In addition to clarity, pivot tables are much better suited for data analysis than "normal" tables. If you would like to ask complex questions about extensive data, e.g. "How many sales did an employee make for which articles at what time," it will be quite laborious if you would extract this information directly from a normal table. You would have to sort the data records first, then filter them, use commands and finally prepare them. Pivot tables save you many work steps and give you a much better presentation of the desired information.

Data resources can be edited both directly from your PlanMaker worksheet and also via import from external PlanMaker and Microsoft Excel files.

Pivot tables illustrated by an example

The modes of operation of pivot tables are illustrated here with a simplified example, which is used throughout the chapter for description purposes.

Here you can see sample data records in PlanMaker from which a pivot table has to be created. The company employees had various expenses for their breakroom supplies throughout the year. Some employees, as well as some orders, appear several times in the respective columns.

	A	B	C	D	E
1	Date	Employee	Order	Amount	
2	01/10/2018	Anna	Coffee	\$35	
3	02/15/2018	Toni	Cream	\$15	
4	04/13/2018	Anna	Snacks	\$20	
5	05/15/2018	Toni	Tea	\$15	
6	06/18/2018	Maria	Coffee	\$30	
7	06/20/2018	Anna	Cream	\$12	
8	08/11/2018	Anna	Snacks	\$16	
9	08/18/2018	Toni	Sweetener	\$7	
10	10/28/2018	Anna	Coffee	\$40	
11	11/15/2018	Toni	Cream	\$10	
12					

Source data for the pivot table

Hint: Number formatting of the source data is not applied to pivot tables. For information on formatting values in the created pivot table, see section [Value settings \(Values area\)](#).

Following an example for a pivot table: Here, the *Employees* are clearly listed with the sums of their orders and the *Grand total* of all expenses.

Row labels ▼	Sum of Amount
Anna	123
Maria	30
Toni	47
Grand total	200

Variant 1 of a pivot table (view of the employees)

But this pivot table can also be created: Here the *Orders* are arranged in a totaled overview.

Row labels ▼	Sum of Amount
Coffee	105
Cream	37
Snacks	36
Sweetener	7
Tea	15
Grand total	200

Variant 2 of a pivot table (view of the orders)

Above all, the possibility of grouped arrangement shows the great advantages of pivot tables: Here, *Employees* and *Orders* are displayed together and nested in one overview.

Row labels ▼	Sum of Amount
Anna	123
Coffee	75
Cream	12
Snacks	36
Maria	30
Coffee	30
Toni	47
Cream	25
Sweetener	7
Tea	15
Grand total	200

Variant 3 of a pivot table (view of employees with grouped orders)

It can be seen from these examples that, depending on the question addressed to the existing data, different statements can be made with pivot tables.

The following sections clarify how to get different perspectives on pivot data and what settings you can make to obtain a suitable presentation of your results:

- [Creating a new pivot table](#)
- [Starting with the pivot table field list](#)

- [Configuring pivot tables with the field list](#)
- [Sorting and filtering pivot tables](#)
- [Updating pivot tables and changing data area](#)
- [Deleting, copying, moving pivot tables](#)

Creating a new pivot table

To create a pivot table, you must have data records to which a pivot table can be applied.

Using the menu command **Worksheet > New pivot table** you can generate a pivot table from any given source data.

Please note a few important rules for the existing source data. Some of the requirements are not mandatory, but they are helpful for practical use:

Requirements for source data

- The columns of the source data must have headings.
- Headings must appear in one single row, not one under the other.
- Headings must be unique, duplicate names for the headings must not occur.
- There must be no empty rows or columns and no merged cells in the source data.
- The data under the respective column headings must be of the same data type (number, text, or date – not mixed).
- If possible, the data should be available in its raw form; no formulas, summarizations, subtotals, or other prepared data should have been applied to them previously.

You can either use existing records in the current workbook as source data or import data records from another file (possible formats: PlanMaker and Excel).

Please read the next two sections:

- [Creating a pivot table with existing data](#)
- [Creating a pivot table with imported data](#)

Tip: Pivot tables can also be generated from **Tables in worksheets**. To do this, select a cell of the table and select **Worksheet > Table > Create pivot table**, or right-click in the table to open the context menu and use the menu command **Summarize as pivot table**. After that, proceed with the next steps to create a pivot table as described in the next section.

Creating a pivot table with existing data

If the source data is already in the current workbook, proceed as follows:

1. Select the entire data area. You can also select only one cell from the source data. PlanMaker automatically extends the selection to the entire corresponding area.

	A	B	C	D	E
1	Date	Employee	Order	Amount	
2	01/10/2018	Anna	Coffee	\$35	
3	02/15/2018	Toni	Cream	\$15	
4	04/13/2018	Anna	Snacks	\$20	
5	05/15/2018	Toni	Tea	\$15	
6	06/18/2018	Maria	Coffee	\$30	
7	06/20/2018	Anna	Cream	\$12	
8	08/11/2018	Anna	Snacks	\$16	
9	08/18/2018	Toni	Sweetener	\$7	
10	10/28/2018	Anna	Coffee	\$40	
11	11/15/2018	Toni	Cream	\$10	
12					

2. Select **Worksheet > New pivot-table**. The following dialog box appears:

The dialog box titled "Pivot table" has a close button (X) in the top right corner. It contains the following fields and controls:

- Source range:** A text input field containing "Sheet1!\$A\$1:\$D\$11" and a "Browse..." button to its right.
- Target range:** A section with two radio buttons:
 - New worksheet**
 - Existing worksheet**
 Below these is a text input field containing "Sheet2!\$A\$1".
- Buttons: "Insert" (highlighted with a blue border) and "Close" are located at the bottom right.

3. **Source range:** The cell area with the existing data from which the pivot table has to be generated. Here, the source range is already defined by your previous selection and can therefore be adopted. If you still want to change the source range, you can enter the correct cell range in the input field or simply select the correct cell range directly in the worksheet with the mouse.

Tip: If you have previously given the data area a name (see [Named ranges](#)), you can simply enter this name in the input field. An advantage of this procedure is that you only have to customize the *Named range* if the source data changes.

With the **Browse...** button you can also import external data. For more information, see the section [Creating a Pivot table with imported data](#).

4. **Target range:** Here you can decide where the pivot table should be created. Now choose between the following options:

New worksheet: The pivot table will be created in a new worksheet that is automatically generated by PlanMaker. You can adjust the proposed target in the lower input field.

Existing worksheet: The pivot table will be created in an existing worksheet. This can be the worksheet containing the source data or another existing worksheet. Please make sure that you first activate the *Existing worksheet* button and then click with the mouse on a cell in a **free area** in the desired worksheet. Or type the target range into the lower input field.

Tip: For pivot tables with large amounts of data, it is recommended to use a new worksheet rather than the worksheet with the source data, as it can quickly lead to a lack of space. If there is only a small amount of data - as in our example - it is useful to display the pivot table in the same worksheet next to or below the source data.

5. Confirm with the **Insert** button to create the pivot table.

If you created the pivot table in the same worksheet as the source data, the result should look like this:

The screenshot shows a spreadsheet with the following source data:

	A	B	C	D	E	F	G	H
1	Date	Employee	Order	Amount				
2	01/10/2018	Anna	Coffee	\$35				
3	02/15/2018	Toni	Cream	\$15				
4	04/13/2018	Anna	Snacks	\$20				
5	05/15/2018	Toni	Tea	\$15				
6	06/18/2018	Maria	Coffee	\$30				
7	06/20/2018	Anna	Cream	\$12				
8	08/11/2018	Anna	Snacks	\$16				
9	08/18/2018	Toni	Sweetener	\$7				
10	10/28/2018	Anna	Coffee	\$40				
11	11/15/2018	Toni	Cream	\$10				

Next to the source data, a pivot table report is shown, which is currently blank. The pivot table field list sidebar is open, showing the following options:

Pivot table field list

Choose fields to add to report:

- Date
- Employee
- Order
- Amount

Drag fields between areas below:

Report filter: [] Column labels: []

Row labels: [] Values: []

Pivot table settings... Refresh data [] Defer layout update [] Update

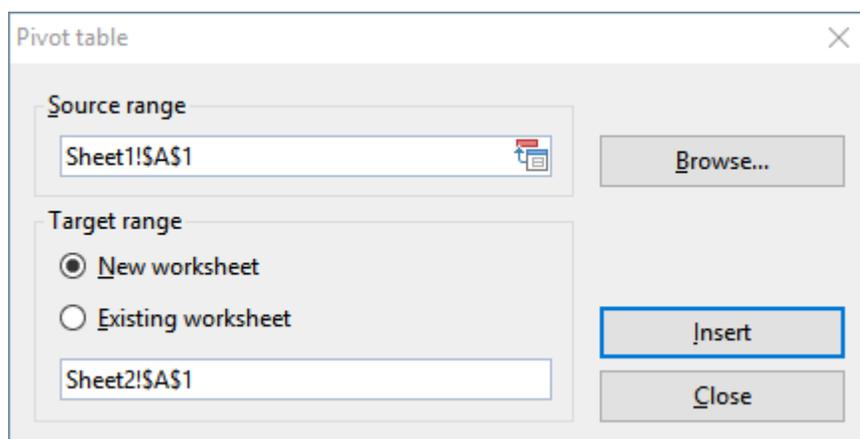
On the left side you can still see the **Source data**, next to it on the right the (still blank) **Pivot table report**, and rightmost in the sidebar the **Pivot table field list** or just **Field list**. It is the central control of the pivot table. By selecting the elements from the field list, you fill the blank pivot table with content according to your requirements.

Read more about the structure and handling of the field list in the section [Starting with the Pivot Table field list](#).

Creating a pivot table with imported data

You can also import data records from other PlanMaker files or Microsoft Excel files to create a pivot table. To do this, proceed as follows:

1. Select **Worksheet > New pivot-table**. The following dialog box appears:



2. **Source range**

In the file browser, locate the file with your source data and confirm with **Open**.

The input field below *Source range* displays the file path with the file name and a proposed worksheet with a cell area.

Here you have to adjust the desired cell range precisely. PlanMaker does not automatically extend the cell range to corresponding data records when importing from external files.

Example: Your source data is in the file *Pivot.pmdx* in the worksheet *Sheet1*, and the cell range of your source data records is from A1 to D11.

The syntax in the input field is then: 'filepath\[Pivot.pmdx]Sheet1!\$A\$1:\$D\$11

Tip: If you have previously named the range of source data in your external file (see [Named ranges](#)), you can avoid entering the cell range exactly. A further advantage of this procedure is that you have to adjust the named range only when making changes to the data records. Call up the name of the named range in the input field using the following syntax: 'filepath\[filename]!name

3. **Target range:** Here you can decide where the pivot table should be created:

New worksheet: The pivot table is created in a new worksheet that is automatically generated by PlanMaker. You can adjust the proposed target in the lower input field.

Existing worksheet: The pivot table will be created in an existing worksheet. This can be the worksheet containing the source data or another existing worksheet. Please make sure that you first activate the *Existing worksheet* button and then click with the mouse on a cell in a **free area** in the desired worksheet. Or type the target range into the lower input field.

4. Confirm with the **Insert** button to create the pivot table.

You should now see a (still blank) **Pivot table report** in the worksheet and the **Pivot table field list** or simply **Field list** on the right in the sidebar. It is the dialog and the central control of the pivot table. By selecting the elements from the field list, you fill the blank pivot table with content according to your requirements.

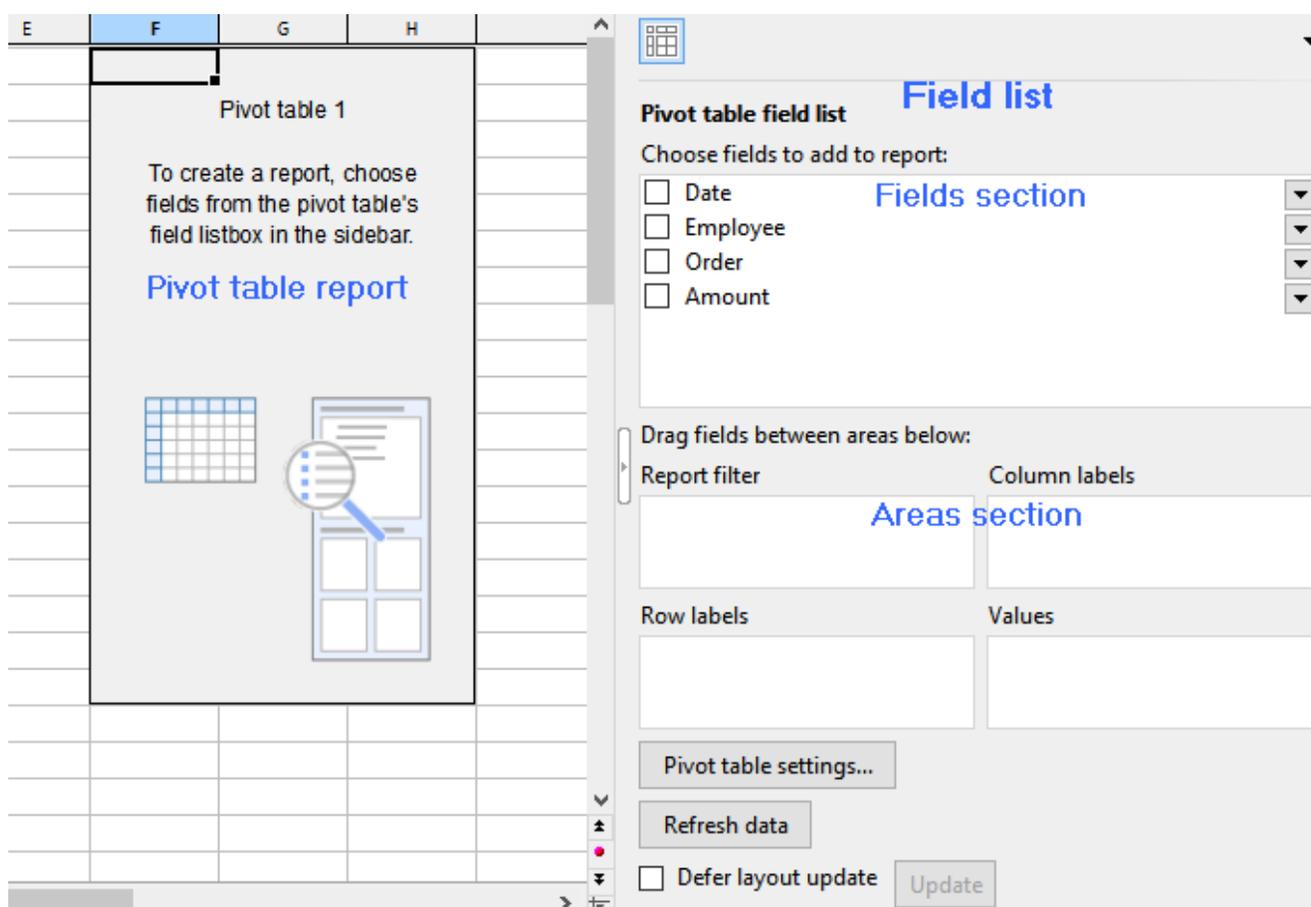
The following sections explain the structure and handling of the pivot table field list.

Starting with the pivot table field list

Once you have created a pivot table, the **Field list** appears on the right side of the sidebar with the upper **Fields section** and the lower **Areas section**. It is the central element of a pivot table because here you control which data is displayed in the target range of the pivot table (the **Pivot table report**) and how the data is arranged.

Hint: The field list is displayed only when you place the mouse pointer in the pivot table report.

Structure of the field list



On the left the still blank pivot table report; on the right the field list with the "Fields" section above and the "Areas" section below.

Fields section: In the upper part of the field list, the headings from the columns of the source data are grouped in their original sort order. The order of the columns from left to right in the source data corresponds to the order from top to bottom in the fields section. These elements are not called "Columns" here, but "**Fields.**"

Areas section: In the lower part of the field list, you can drag the fields from the upper fields section. Depending on how these fields are arranged, you can define the structure of the pivot table. As soon as you have placed at least one field in one of the 4 areas of the areas section, results appear in the *pivot table report*.

The areas section is divided into the following 4 individual areas:

■ Row Labels

If you drag a field into this area, the data from this field is grouped by *rows* in the pivot table report. In this context, grouping means that identical elements from a column of the source table appear only once and are totaled. You can also drag several fields into this area; the added fields then also form further subgroups line by line. The field that appears at the top of the row labels is the higher-level sort criterion. Fields further down are treated as lower-level and are displayed in the pivot table report according to this structure.

■ Column Labels

Same procedure as for row labels, but grouping is by *columns*.

■ Values

This is the most important area: The data records of the field dragged here are summarized in the pivot table report, for example, amount totals. This is why fields with numbers usually appear here.

■ Report filter

Allows you to show and hide selected data records in the pivot table report, based on the field that is inserted in the report filter (see also [Sorting and filtering pivot tables](#)).

Tips for displaying the field list: Adjust the **width of the field list** according to your requirements by dragging the mouse pointer at the inner edge of the sidebar. To **show or hide the field list**, click on the narrow vertical button with the small arrow at the edge of the sidebar. Select **View > Pivot table sidebar > Show at left/Show at right** to change the display side of the field list.

In the next sections you will find practical information on how to use the field list.

Exercises using the field list

You have already created a pivot table using the menu command **Worksheet > New pivot table**. The field list with the fields section and the areas section is on the right-hand side, but the target range of the pivot table (the pivot table report) is still blank.

This section explains step-by-step how to drag items from the fields section to the areas section in the field list, in order to display significant results with different characteristics in the pivot table report.

If you are already familiar with the structure of a pivot table, you can skip this section.

Tip 1: You can drag the fields to the desired area with the mouse. It is also possible to place a checkmark in front of the relevant field in the fields section. PlanMaker then automatically assigns the field to an area in the areas section. Fields with numbers are placed in the values area; all other formats, such as text and date, are placed in the row labels area.

Tip 2: Fields can be dragged back and forth not only between the fields section and the areas section, but also between the individual areas of the areas section and within the areas themselves, so you can easily swap the position of the fields.

Exercise 1: Adding a field to the "Values" area

In the fields section, place a checkmark in front of the *Amount* field, or drag the field with the left mouse button down directly to the **Values** area of the areas section.

1	Date	Employee	Order	Amount	Sum of Amount
2	01/10/2018	Anna	Coffee	\$35	200
3	02/15/2018	Toni	Cream	\$15	
4	04/13/2018	Anna	Snacks	\$20	
5	05/15/2018	Toni	Tea	\$15	
6	06/18/2018	Maria	Coffee	\$30	
7	06/20/2018	Anna	Cream	\$12	
8	08/11/2018	Anna	Snacks	\$16	
9	08/18/2018	Toni	Sweetener	\$7	
10	10/28/2018	Anna	Coffee	\$40	
11	11/15/2018	Toni	Cream	\$10	
12					
13					
14					
15					
16					
17					
18					

Pivot table field list

Choose fields to add to report:

Date

Employee

Order

Amount

Drag fields between areas below:

Report filter	Column labels
Row labels	Values
	Sum of Amount

On the left the unchanged source data, in the middle the result of the pivot table, and on the right the field list with the selection of the fields for Exercise 1

- The field element "Sum of Amount" appears in the **Values** area of the field list.
- In the pivot table report, the value field with the header "Sum of Amount" now appears instead of the blank report.
- All items from the *Values* field are summed up to a grand total in the pivot table report.

Exercise 2: Adding a field to the "Row labels" area

Now place an additional checkmark in front of the *Employee* field in the fields section or drag the field with the left mouse button down directly to the **Row labels** area.

Row labels	Sum of Amount
Anna	123
Maria	30
Toni	47
Grand total	200

Pivot table field list

Choose fields to add to report:

Date

Employee

Order

Amount

Drag fields between areas below:

Report filter	Column labels
Row labels	Values
Employee	Sum of Amount

On the left the result of the pivot table, and on the right the field list with the selected fields for Exercise 2

- The field element "Employee" appears in the **Row labels** area of the field list.
- In the pivot table report, a row field with the header "Row labels" is displayed and the employees are arranged by rows. Each name appears only once here.
- The value field with the header "Sum of Amount" in the pivot table report displays the expenses summed up and broken down by employee.

Exercise 3: Adding a field to the "Column labels" area

You can also display the result by columns instead of by rows. To do this, drag the same *Employee* field to the **Column labels** area.

	Column labels				
	Anna	Maria	Toni	Grand total	
Sum of Amount	123	30	47	200	

Pivot table field list

Choose fields to add to report:

Date

Employee

Order

Amount

Drag fields between areas below:

Report filter	Column labels
	Employee
Row labels	Values
	Sum of Amount

On the left the result of the pivot table, and on the right the field list with the selected fields for Exercise 3

- The field element "Employee" appears in the **Column labels** area of the field list.
- In the pivot table report, a column field with the header "Column labels" is displayed and the employees are arranged by columns. Each name appears only once.
- The expenses are summed in the pivot table report in the value field "Sum of Amount" and broken down by employee.

Exercise 4: Adding a second field to the "Row labels" area

Drag the *Employee* field back into the **Row labels** area, and now place an additional checkmark in front of the *Order* field.

Row labels	Sum of Amount
Anna	123
Coffee	75
Cream	12
Snacks	36
Maria	30
Coffee	30
Toni	47
Cream	25
Sweetener	7
Tea	15
Grand total	200

Pivot table field list

Choose fields to add to report:

- Date
- Employee
- Order
- Amount

Drag fields between areas below:

Report filter	Column labels
Row labels	Values
Employee	Sum of Amount
Order	

On the left the result of the pivot table, and on the right the field list with the selected fields for Exercise 4

- In the pivot table report, employees are grouped with their totaled order types under "Row labels". Since the *Employee* field is at the top of the row labels area, it is the primary criterion and is therefore displayed as the higher-level field in the pivot table report.
- The amounts for purchased orders are broken down by employee in the "Sum of Amount" value field in the pivot table report and partial results are displayed as subtotals per employee.

Note: It could be that the orders in the pivot table report are grouped as an indented column to the right of the employees. The structure of the results shown here is based on the PlanMaker default settings. See section [Configuring pivot tables: Field settings](#) to find useful information on how to customize the form.

Exercise 5: Using "Column labels" and "Row labels" together

Drag the *Order* field to the **Column labels** area, the *Employee* field remains in the **Row labels** area.

Sum of Amount	Column labels					
Row labels	Coffee	Cream	Snacks	Sweetener	Tea	Grand total
Anna	75	12	36			123
Maria	30					30
Toni		25		7	15	47
Grand total	105	37	36	7	15	200

Pivot table field list

Choose fields to add to report:

- Date
- Employee
- Order
- Amount

Drag fields between areas below:

Report filter	Column labels
	Order
Row labels	Values
Employee	Sum of Amount

On the left the result of the pivot table, and on the right the field list with the selected fields for Exercise 5

- You will see the same results as in Exercise 4, but shown as a cross-classified table. The intersecting fields without existing values (e.g. Anna did not buy sweetener) are displayed as empty cells.

Exercise 6: Using "Column labels" and "Row labels" together with multiple fields

Now also drag the *Date* field to the **Row labels** area below the *Employee* field.

Sum of Amount	Column labels						
Row labels	Coffee	Cream	Snacks	Sweetener	Tea	Grand total	
Anna	75	12	36			123	
01/10/2018	35					35	
04/13/2018			20			20	
06/20/2018		12				12	
08/11/2018			16			16	
10/28/2018	40					40	
Maria	30					30	
06/18/2018	30					30	
Toni		25		7	15	47	
02/15/2018		15				15	
05/15/2018					15	15	
08/18/2018				7		7	
11/15/2018		10				10	
Grand total	105	37	36	7	15	200	

Pivot table field list

Choose fields to add to report:

- Date
- Employee
- Order
- Amount

Drag fields between areas below:

Report filter	Column labels
	Order
Row labels	Values
Employee	Sum of Amount
Date	

On the left the result of the pivot table, and on the right the field list with the selected fields for Exercise 6

- The date of the orders purchased by employees is also displayed in the pivot table report, in this example grouped directly below the employees. A grouping of the orders as an indented column to the right of the employees could also appear, depending on the settings in PlanMaker.

Note 1: You can drag multiple fields into the row and/or column labels for reporting purposes, but you will also quickly reach the limits of clarity.

Note 2: If there are several fields in one area, the order of the fields determines the structure of the outline levels displayed in the pivot table report. You can change this order at any time by dragging the field up or down within the area.

Exercise 7: Adding a field to the "Report Filter" area

Drag the *Date* field from the **Row labels** area to the **Report filter** area and the *Order* field back to the **Row labels** area.

Date	(All items)
Row labels	Sum of Amount
Anna	123
Coffee	75
Cream	12
Snacks	36
Maria	30
Coffee	30
Toni	47
Cream	25
Sweetener	7
Tea	15
Grand total	200

Pivot table field list

Choose fields to add to report:

- Date
- Employee
- Order
- Amount

Drag fields between areas below:

Report filter	Column labels
Date	
Row labels	Values
Employee	Sum of Amount
Order	

On the left the result of the pivot table with the Report Filter above, and on the right the field list with the selected fields for Exercise 7

- A **Report filter** has been added for the Date field, which is integrated as a new row above the pivot report.
- Above the pivot report you can open a dropdown menu to the right of *(All items)* and filter by date values displayed in the list. Initially, all date values are selected, indicated by the checkmark in front of them. You can filter out the date items from the pivot report that you do not want to be displayed by removing the checkmarks.

Working with the field list: Fields section

The fields section in the upper part of the field list displays the headings of the columns of your source data. You can make the following changes to the fields section:

- **Display field names alphabetically in the fields section**

The field names are first automatically sorted according to the order of the columns from your source data. You can also display the fields in alphabetical order to find specific field names more quickly. To do this, click the **Pivot table settings** button below the areas section. In the **Filter** tab, **Field list** group box, select the **Sort A to Z** option and confirm with **OK**.

Note: The alphabetical order you enter here does not affect the appearance in the pivot table report. To sort the elements alphabetically directly in the pivot table report, see [Sorting and filtering Pivot Tables](#).

- **Rename field names in the fields section**

Open the dropdown menu to the right of the field name, and select the **Field settings**. In the associated dialog you can assign a **Custom name**.

You can also rename a field if it is in the *Values* area or *Row labels/Column labels* area of the areas section. For more information, see [Working with the field list: Areas section](#)

■ Move fields from the fields section to the areas section

To move a field from the fields section to the areas section, you have the following options:

1. Click the checkbox to the left of the field name in the fields section. PlanMaker automatically assigns the field to an area of the areas section according to its format: Numbers are placed in the *Values* area, text and date formats in the *Row labels* area.
2. Drag the field with the left mouse button to the desired area below.
3. Click the dropdown menu to the right of the field name. Here you can select the area in which you want to move the field directly.

Working with the field list: Areas section

After creating a pivot table, you will see first of all a blank pivot table report in your worksheet and the field list in the sidebar on the right. By adding the fields from the upper fields section to the 4 individual areas of the lower areas section, you can observe how the assignments in the field list affect the previously blank pivot report.

Tip: It is best to first drag the field with the amounts into the values area of the areas section. This way you can best follow the further steps in structuring the pivot table.

Adding, moving, removing fields

Adding fields to the areas section

To move a field from the fields section to the areas section, you have the following options:

1. Place the checkmark to the left of the field name in the fields section. PlanMaker automatically assigns the field to an area of the areas section according to its format: Numbers are placed in the values area, text and date in the row labels area.
2. Drag the field with the left mouse button to the desired area below.
3. Click the dropdown menu to the right of the field name. Here you can select the area you want to move the field directly into.

Moving fields within the areas section

To move fields from one area to another area within the areas section, you have the following options:

1. Drag the field from one area to another with the left mouse button.
2. Click the dropdown menu to the right of the field name (either in the fields section above or in the areas section below). Here you can select the area you want to move the field directly into.
3. Use the left mouse button to drag the field again from the upper fields section to the desired new area of the areas section. This will automatically remove it from the previous area (except for the *Values* area, where copies of a field are possible).

Removing fields from the areas section

To remove fields from the areas section at any time, you have the following options:

1. Use the left mouse button to drag the field back up into the fields section.
2. Remove the checkmark to the left of the field name in the fields section.
3. To the right of the field name, click the dropdown menu (either in the fields section above or in the areas section below) and select **Remove field**.

Please note: Removing fields from the areas section or moving fields between the areas will undo any changes made to the field (exception: renaming in the row labels/column labels area).

Tips and rules for using the areas section

Using fields more than once in the areas section

- To the *Row labels*, *Column labels* and *Report filter* areas the following applies: A field can be dragged only once into one of these areas. If you also want to insert it into another area, it is removed from the area where it was before.
- This does not apply to the *Values* area: here you can drag a field again, even if it already exists in another area. The same field can even be inserted several times as a copy. What could this be good for? You can display a field item both as a sum and a second time in a different format (e.g. average). An additional element Σ *Values* appears automatically in the column labels, which you can also move to the row labels area (the format is retained), but not to the report filter area.

Note: If you drag the field Σ *Values* back into the fields section, all fields in the values area will be automatically removed, and all changes made to these fields will be discarded.

Changing the order of the fields within an area of the areas section

- The order of the fields within an area can be changed by using the mouse to drag the field to the correct position within the area.
- Alternatively, click the dropdown menu to the right of the field name. Here you can select where you want to move the field (up, down, to the beginning or to the end).

Renaming a field name in the areas section

A field name can be renamed in the areas section so that it appears in the pivot table with a different name.

- Custom name in the **Row labels** or **Column labels** area:
If the field is in the row labels or column labels area, click the dropdown menu to the right of the field name and select **Field settings**. In the **Field** tab, enter a custom name.
- Custom name in the **Values** area:
If the field is in the values area, select **Value settings** from the dropdown menu to the right of the field and enter a custom name in the **Summarize values** tab.

Note: For renaming in the values area, the following applies: The new name is discarded when the field is removed from its area. However, you can also rename the field in the fields section (see [Working with the field list: Fields section](#)); the renaming made here remains.

- In the **Report filter** area it is not possible to rename fields. However, you can also rename the field at the fields section.

Further options in the field list

In the field list you will find further control elements not described here. These are explained more closely in the following sections:

- **Pivot table settings** button:
Section [Pivot table settings](#)
- **Refresh data** button:
Section [Updating pivot tables and changing data area](#)
- **Defer layout update** along with the **Update** button:
Section [Defer layout update](#)
- **Field settings** (via dropdown menu of fields in the row labels/column labels area):
Section [Field settings \(Row/Column labels area\)](#)
- **Filter labels** (via dropdown menu of fields in the row labels/column labels area):
Section [Sorting and filtering pivot tables](#)
- **Filter values** (via dropdown menu of fields in the report filter area):
Section [Sorting and filtering pivot tables](#)
- **Value settings** (via dropdown menu of fields in the value area):
Section [Value settings \(Values area\)](#)

Configuring pivot tables with the field list

In the field list, you have various options to change the structure and appearance of your pivot table, which are explained in this section:

- [Field settings](#)

The **Field settings** can be found in the areas section of the field list in the *Row labels* or *Column labels* areas; use the dropdown menu to the right of each field. In the field settings, you can define if and how partial results are displayed and in which form the layout appears (outline form or tabular form). You can also change the field name.

- [Value settings](#)

Fields in the *Values* area have different setting components from the field settings in the row/column labels. They can also be opened via the dropdown menu of the respective field and are called **Value settings** here. In the value settings you will find a selection of summary functions and calculations as well as the required number format for the displayed results. The field name can also be renamed here.

- [Pivot table settings](#)

In the **Pivot table settings**, you can make advanced layout adjustments, define filter methods, select styles, set data usage, and assign a name to the pivot table. You will find the pivot table settings located as a button below the areas section.

- [Defer layout update](#)

You will find the **Defer layout update** option along with the **Update** button at the bottom of the field list. It allows you to "freeze" the continuous recalculation. You can rearrange the fields between the areas without time-consuming calculation.

Note: Changes to **Field settings** and **Value settings** are discarded when a field is removed from its area (back to the fields section or to another area of the areas section). Changes to **Pivot table settings** are retained.

Field settings (Row/Column labels area)

If you open the dropdown menu for a field in the **Row labels** or **Column labels** in the areas section of the field list, you will find the **Field settings** option. Alternatively, right-click directly in the Pivot table report for the context menu (select a cell of the desired field below the header *Row labels/Column labels*).

This section describes the adjustments you can make with the field settings.

This is illustrated based on the known example data shown in the figure below: The *Amount* field is dragged into the **Value** area of the areas section, and the *Employee* and *Order* fields are dragged into the **Row labels** area.

Row labels	Sum of Amount
Anna right-click	123
Coffee	75
Cream	12
Snacks	36
Maria right-click	30
Coffee	30
Toni right-click	47
Cream	25
Sweetener	7
Tea	15
Grand total	200

Drag fields between areas below:

Report filter	Column labels
Row labels	Values
Employee ▼	Sum of Amount ▼
Order ▼	

The pivot table report at default values for field settings; highlighted in blue: selecting the field settings

Note: For the sake of simplicity, the descriptions given in this section refer to the arrangement of the fields in the *Row labels* area. If you drag the fields to the *Column labels* area instead, the results are basically the same. But they are displayed transposed (from left to right instead of top to bottom).

Field settings, "Subtotals" tab

If you have arranged several fields in a row labels or column labels area, you get partial results for the higher-level field item (Employee) in the pivot table report, as shown in the figure above (for Anna, Maria, Toni). These subtotals are automatically calculated as sums if a number field has been identified in the values area. In the **Subtotals** tab you can also change the display of the subtotals to other summary functions (e.g. count, average, etc. instead of sums) or hide the display of subtotals completely.

Note: The field settings have an effect for the pivot table only on the field selected in the row/column labels area.

Click on the dropdown menu to the right of the field (Employee) in the **Row labels** area (areas section of the field list) and select the **Field settings**. In the dialog that appears, choose the **Subtotals** tab.

Here you have the following options:

- **Auto** (default): *Sums* are displayed for the Subtotals (Employee, as in the figure above). If the value field (Amount) does not contain numbers, but values with other formats, the *Count* function is automatically used for the subtotals.
- **None**: The subtotals (Employee) are not displayed.

Row labels	Sum of Amount
Anna	
Coffee	75
Cream	12
Snacks	36
Maria	
Coffee	30
Toni	
Cream	25
Sweetener	7
Tea	15
Grand total	200

The Pivot table report without subtotals

- **Custom**

You can choose from various summary functions for displaying subtotals using the **Custom** option:

Sum: The subtotals are displayed as the sum of the single values.

Count: Returns the number of single values that occur. Works the same as the [COUNTA](#) function.

Average: Returns the average value of the occurring single values.

Maximum: Returns the largest occurring single value.

Minimum: Returns the smallest occurring single value.

Product: Returns the multiplied value of the occurring single values.

Count numbers: Returns the count of values that are numbers. Works the same as the [COUNT](#) function.

Standard deviation (sample): Returns the estimated value for the standard deviation of a population based on a sample. Works the same as the [STDEV.S](#) function.

Standard deviation (population): Returns the standard deviation of an entire population. Works the same as the [STDEV.P](#) function.

Variance (sample): Returns the estimated value for the variance of a population based on a sample. Works the same as the [VAR.S](#) function.

Variance (population): Returns the variance of an entire population. Works the same as the [VAR.P](#) function.

Tip 1: It is also possible to combine several custom functions. Each of them is then displayed as a separate row for the subtotal.

Tip 2: If you want to change not only the subtotals but also the other values to a certain display, you can make the required changes in the *Values* area with the *Value settings* option; see section [Value settings \(Values area\)](#). If, on the other hand, you want to show or hide the Grand totals for columns/rows, you will find the options available under [Pivot table settings](#).

Field settings, "Form" tab

In the example figure at the beginning of the section, you can see the pivot table report displayed in the outline view. You can use the **Form** options to customize this view.

Note: The displayed **Form** can only be customized for fields in the *Row labels* area. For fields in the *Column labels* area, the structure formats cannot be set.

In the **Row labels** area (in the areas section of the field list), click the dropdown menu to the right of the *Employee* field and select **Field settings**. In the dialog that appears, choose the **Form** tab.

The *Field settings* dialog with the default values in the *Form* tab

Form group box

Here you can choose between the view in **Outline form** or in **Tabular form**:

- In the **Outline form** - with additionally activated **Compact form** - several fields are displayed together in one column, and the lower-level elements are indented into the column. You can also select here whether the subtotals should appear above or below the grouping.

The following figures illustrate the different presentation variants, depending on the activated options:

Outline form: *Compact form* activated; *Subtotals at top* activated

Row labels	Sum of Amount
Anna	123
Coffee	75
Cream	12
Snacks	36
Maria	30
Coffee	30
Toni	47
Cream	25
Sweetener	7
Tea	15
Grand total	200

Outline form: *Compact form* deactivated; *Subtotals at top* activated

Row labels	Order	Sum of Amount
Anna		123
	Coffee	75
	Cream	12
	Snacks	36
Maria		30
	Coffee	30
Toni		47
	Cream	25
	Sweetener	7
	Tea	15
Grand total		200

Outline form: *Compact form* deactivated; *Subtotals at top* deactivated

Row labels	Order	Sum of Amount
Anna		
	Coffee	75
	Cream	12
	Snacks	36
Anna Total		123
Maria		
	Coffee	30
Maria Total		30
Toni		
	Cream	25
	Sweetener	7
	Tea	15
Toni Total		47
Grand total		200

- The **Tabular form** generally displays a separate column for each field, with the respective field heading:

Row labels	Order	Sum of Amount
Anna	Coffee	75
	Cream	12
	Snacks	36
Anna Total		123
Maria	Coffee	30
Maria Total		30
Toni	Cream	25
	Sweetener	7
	Tea	15
Toni Total		47
Grand total		200

Further options in the "Form" tab

There are three more options in the lower section of the form tab that you can use as needed to give the pivot table report a better structure.

Note: The options *Repeat item labels* and *Insert blank lines after subtotals* affect only higher-level field items (Employee). The option *Show items without data*, however, affect only lower-level field items (Order).

- **Repeat item labels**

The item labels of the elements are displayed repeatedly in each row. This option only works for the *Tabular form* and for the *Outline form* only if you deactivate the compact form.

Row labels	Order	Sum of Amount
Anna	Coffee	75
Anna	Cream	12
Anna	Snacks	36
Anna Total		123
Maria	Coffee	30
Maria Total		30
Toni	Cream	25
Toni	Sweetener	7
Toni	Tea	15
Toni Total		47
Grand total		200

Enabled option "Repeat item labels" for Tabular form

- **Insert blank lines after subtotals**

It can be helpful for the clarity of the pivot table report if a blank line appears after each group of subtotals. Activate the option for this purpose (not available for fields in the column labels area).

- **Show items without data**

Enable this option to also display those elements that did not contain associated data.

Example: Toni did not buy any *Coffee*. Activating this option, however will display that item with an empty cell in "Sum of Amount".

Field settings, "Field" tab

You can give the field a **Custom name** here so that it appears in the pivot table with a different name. Activate the checkbox and type the new name into the input field (see also [Working with the field list: Areas section](#)).

Value settings (Values area)

If you open the dropdown menu to the right of a field in the **Values** area in the lower section of the field list, you will find the **Value settings** option. Alternatively, right-click directly in the pivot table report for the context menu (select a cell below the header title *Sum of...*).

The value settings dialog contains the tabs **Summarize values** and **Show values as**, which give you various summary functions and calculation options to choose from.

Value settings, "Summarize values" tab

The results in the pivot table report are automatically displayed as a sum if a number field was identified in the *Values* area. If the field has values other than numbers, the results are calculated as a count.

You can customize the display of the results. The specified selection applies to the subtotals of the higher-level field and also to the subgrouped fields.

To do this, click the dropdown menu of the desired field in the **Values** area (in the areas section), and select the **Value settings** option. In the dialog that appears, select the **Summarize values** tab.

In the upper section of the dialog, you will find "Summarize values by" with the following options for displaying the values:

- **Sum:** The subtotals are displayed as the sum of the single values.
- **Count:** Returns the number of single values that occur. Works the same as the [COUNTA](#) function.
- **Average:** Returns the average value of the occurring single values.
- **Maximum:** Returns the largest occurring single value.
- **Minimum:** Returns the smallest occurring single value.
- **Product:** Returns the multiplied value of the occurring single values.
- **Count numbers:** Returns the count of values that are numbers. Works the same as the [COUNT](#) function.
- **Standard deviation (sample):** Returns the estimated value for the standard deviation of a population based on a sample. Works the same as the [STDEV.S](#) function.
- **Standard deviation (population):** Returns the standard deviation of an entire population. Works the same as the [STDEV.P](#) function.
- **Variance (sample):** Returns the estimated value for the variance of a population based on a sample. Works the same as the [VAR.S](#) function.

- **Variance (population):** Returns the variance of an entire population. Works the same as the [VAR.P](#) function.

Tip: If you only want to change the subtotals to a certain display, you can make the required changes in the *Row/Column labels* area with the *Field settings* option, see section [Field settings \(Row/Column labels area\)](#). If, on the other hand, you want to show or hide the grand totals for columns/rows, then you will find the options available under [Pivot table settings](#).

Furthermore, you will find the **Custom name** option in the tab. Here you can rename the field so that it appears in the pivot table with a different name. See also section [Working with the field list: Areas section](#).

Value settings, "Show values as" tab

In the **Show values as** tab you will find various options how to display the results of the pivot table, for example, as percentage values.

Tip: You can also drag the same field several times into the *Values* area. If you then apply different output settings to the copy of the field using **Show values as** (e.g. for one field standard values and for the other field percentage values), you can clearly compare the different output values in the pivot report.

In the upper section of the dialog you will find the section **Show values as** with choices for calculating the values. Depending on the calculation type, additional entries appear in the *Base field* and *Base item* lists below.

- **Standard (no calculation):** Displays the value as usual.
- **% of grand total:** Each item is displayed as a percentage of the grand total.
- **% of column total:** For each column, the total is set as a 100% reference, and each item in the column is shown as a percentage of that total.
- **% of row total:** For each row, the total is set as a 100% reference, and each item in the row is shown as a percentage of that total.
- **% of:** A column or row field is set as a 100% reference, and all other values are displayed as a percentage of this reference value. The required entries must be selected from the base field list and base item list.
- **% of parent row total:** Displays the percentage of an item relative to the higher-level item (= parent) in the row structure.
- **% of parent column total:** Displays the percentage of an item relative to the higher-level item (= parent) in the column structure.
- **% of parent total:** Displays the percentage of an item relative to any (selectable) higher-level item in the structure. The required entry must be selected from the base field list.
- **Difference from:** Displays the absolute difference of the values from the selected reference value. The required entries must be selected from the base field list and base item list.
- **% difference from:** Displays the percentage difference of the values from the selected reference value. The required entries must be selected from the base field list and base item list.
- **Running total in:** Displays the cumulative absolute values of the successive items. The required entry must be selected from the base field list.

- **% running total in:** Displays the cumulative percentage values of the successive items. The required entry must be selected from the base field list.
- **Rank smallest to largest:** Displays the rank of selected values in a specific field. The smallest item in the field is ranked 1. The required entry must be selected from the base field list.
- **Rank largest to smallest:** As above, but the largest element in the field is ranked 1.
- **Index:** Displays the weighting of the values in relation to the grand row total and grand column total. The higher the index value, the greater the weighting of the value on the grand row/column total. For the index value, this formula applies:

$$\frac{\text{value in cell} \times \text{grand total of the pivot table}}{\text{grand row total} \times \text{grand column total}}$$

You can use the **Number format** button in the tab to permanently adjust the display of the desired number format. For details on the various number formats, see section [List of all number formats available](#).

Hint: The changes to the number format that you make here are permanently applied. If you change the number format using the cell formatting only, the changes are discarded when the data is refreshed. The number formatting of the source range also is not adopted in the pivot table.

Pivot table settings

In the field list below the areas section with the 4 areas, you will find the **Pivot table settings** button. You can also access the command by right-clicking directly in the pivot table report for the context menu.

You can make further adjustments to the structure of your pivot table here, which you cannot find in the field settings or value settings, since *Pivot table settings* are of a general nature. Unlike the field and value settings, the changed options in the pivot table settings will remain in effect when you remove the fields from the areas section.

"Layout" tab

- **Show totals for rows/columns:** Shows or hides grand totals for rows/columns.
- **Indent row labels:** If you have arranged several fields in the row labels area and the outline form with compact format is set in the [Field settings](#), the field of the lower-level is displayed indented below it.
...character(s): Here you can now define the extent of the indentation from the left edge of the column by typing an appropriate number in the input field (default is 1 character).
- **Autofit column width:** If this option is enabled, the column width of the pivot table automatically fits to the text of the columns so that the text is not cut off by the next column. This has advantages, but the downside is that manually made column width adjustments may be discarded when changes are made to the fields. Deactivate this option to keep the column width you set manually.
- **Preserve cell formatting:** If this option is disabled, the formatting you have made in the pivot table (e.g. using a different font) will be discarded as soon as you update the pivot table or reopen the workbook. If the option is enabled, formatting changes are retained.

- **Classic pivot table format:** If you are confused about the header titles "Row labels" and "Column labels" in the pivot table report and prefer to see the real names of the fields instead, enable this option for a classic appearance (known from older versions of Microsoft Excel up to 2003).
- **Show the values row:** Activate the checkbox to insert an additional row with the heading "Values" above the pivot table report. Note: The value row is displayed only if there are at least two fields in the values area and cannot be activated for the classic pivot table format.

"Filter" tab

- **Report filter** group box: You can combine the following options *Display fields* and *Fields per row* to rearrange the placement of report filters in the pivot table report.

Display fields - If there are at least two fields in the report filter area, you use this option to specify how the fields in the report filter area are arranged in the pivot table report. You can choose between *First down, then right* or *First right, then down*.

Fields per row - Here you can also specify for the report filters of the pivot table report how many fields are displayed per column before a new column starts.

- **Field list** group box:

Sort A-Z/Sort in data source order - The field names in the field list are sorted according to the order of the columns from your source data. You can also display the fields in alphabetical order to find specific field names in the fields section more quickly.

Note: The order specified here does not affect the display in the pivot table report. To sort the items alphabetically directly in the pivot table report, see [Sorting and filtering pivot tables](#).

- **Display** group box:

Show field captions and filter dropdowns - The field names and filter symbols for row labels and column labels are displayed/hidden in the pivot table report.

"Style" tab

You can adjust the visual appearance of the pivot table report in various ways, just as you do with normal table styles. Select a style source (Excel 2007, Excel 2003, Excel 97) from the upper left list in the **Style** group box and choose one of the pivot styles with different formatting from the list below. For the Excel 2007 style templates, the selection light/dark/medium is also available in the upper right list.

The options *Banded rows*, *Banded columns*, *Row headers* and *Column headers* are displayed automatically adapted to the style template. For the Excel 2007 style templates, you can manually modify these options to your preferences.

Activating the option **Banded rows/Banded columns** causes alternating background colors of the rows/columns, activating the option **Row headers/Column headers** emphasizes the first row/column of the pivot table.

The design change is displayed directly in the pivot table report as a preview and has to be confirmed with **OK** for finally applying it.

"Data" tab

- **Special values** group box:

For error values show - Cells with incorrect calculations return the known error values also in the pivot table report (for example, #NV; see section [Error values](#)). Activate this option and enter an individual text in the right input field to display self-defined output values representing the error values.

For empty cells show - If no data can be assigned to an item (this usually occurs with combinations of row and column labels for cross-classified tables), an empty cell is displayed in the pivot table report. If you deactivate the checkbox, a 0 is displayed instead of empty cells. If the checkbox is activated, you can also enter an individual text in the input field next to it to display a self-defined output value instead of an empty cell or the 0.

- **Pivot table data** group box:

Save source data with file - If this option is enabled, the source data is stored in an internal cache and is available from the cache for the pivot table independently of your source data. In a way, a copy of the source table is created. This is particularly useful for external source data: If it no longer exists, you can still work on your pivot table with the data from the pivot cache.

If you disable this option, your data will not be stored in the pivot cache. When you re-open the file, you have to click the *Refresh data* button (see section [Updating Pivot tables and changing data area](#)) to initialize the pivot cache for the pivot table with the source data. For external source data, if they no longer exist, your pivot table can also not be updated.

Refresh when opening the file - If this option is enabled, the pivot table data is automatically updated to current source data when you open the file. If you disable this option, you can continue working with your old pivot data until you trigger the *Refresh data* button (see section [Updating Pivot tables and changing data area](#)).

Please note: Updating the data with the *Refresh when opening the file* option or with the *Refresh data* button will replace the pivot cache with updated source data, overwriting the previous data in your pivot table.

"Text" tab

In the **Text** tab you can enter a custom **Name**, a **Title** and a **Description** for your pivot table. The name is automatically generated by PlanMaker in sequence (*Pivot table 1*, *Pivot table 2*, etc.) and is shown as a heading in the blank pivot table report. An entry is also created in [Named ranges](#), but it cannot be renamed there. Moreover, the assigned *Name* cannot be used to identify the pivot table from the [GETPIVOTDATA](#) function; therefore, you must explicitly create a new entry for the pivot table in the *Named ranges*.

Apart from that, the entries from the **Text** tab do not appear anywhere in the pivot table. *Title* and *Description* can be useful as internal information. To rename the fields that effectively appear in the pivot table, please read the section [Working with the field list: Fields section](#).

Defer layout update

At the bottom of the field list you will find the option **Defer layout update**. It is combined with the **Update** button on the right, but is not related to the **Refresh data** option (see section [Updating pivot tables and changing data area](#)).

When you are repositioning fields in the field list, for example, add/remove/move fields in the areas section, the pivot table report is recalculated each time. This can take quite some time with large reports. Therefore, if you want to temporarily disable continuous recalculation, please proceed as follows:

1. Place a checkmark in the **Defer layout update** checkbox. You can then rearrange the fields of your pivot table, but you will not see the resulting changes in the pivot table report. In addition, all other editing options for this state are disabled.
2. Once you have finished repositioning the fields, click the **Update** button to see the result of the change.
3. Remove the checkmark from the **Defer layout update** checkbox.

Note: If you deactivate the **Defer layout update** option again without pressing **Update**, all arrangements of the fields that you have made since the option was activated will be discarded.

Sorting and filtering pivot tables

Too much data makes it difficult to see the relevant content. Therefore, there are various options for sorting and filtering table fields in pivot tables:

- Sorting field items alphabetically in the pivot table report
- Filtering in the areas section with the *Filter labels (Filter values)* option
- Filtering by adding *Report filters*
- Set additional special filters directly in the pivot table report via the dropdown menu

Please note: For all presented options of sorting and filtering, the changes will be discarded as soon as you have removed the field from the areas section or moved it from one to another area.

Sorting field items alphabetically in the Pivot table report

The screenshot shows a PivotTable report with the following data:

Row labels	Sum of Amount
Multiple filters	123
Employee	75
Order	
Maria	
Coffee	
Toni	
Cream	
Sweetener	
Tea	
Grand total	

The 'Employee' field is selected in the dropdown menu, and the 'Sort A to Z' option is chosen. The PivotTable settings pane on the right shows the following configuration:

- Fields list: Employee, Order, Amount
- Report filter: (empty)
- Column labels: (empty)
- Row labels: Employee, Order
- Values: Sum of Amount

You can sort the field items of a pivot table report alphabetically by opening the dropdown menu at the header row/column labels in the report itself and choosing from the list:

- **Sort from A to Z** (alphabetical order)
- **Sort from Z-A** (reverse alphabetical order)

If there are several fields in the row/column labels area (as in the figure above), you can sort each field separately. To do this, move in the dropdown menu of the pivot report to the next menu level on the right of the field you want to sort, to access the sort options for this field.

Hint: For the alphabetical display of the fields only in the field list, please read the section [Working with the field list: Fields section](#).

Filtering in the areas section with the option Filter labels (Filter values)

In the *Row labels/Column labels* areas of the field list, go to the desired field whose items you want to filter. Open the dropdown menu to the right of the field and select the **Filter labels** option (for fields in the *Report filter* area, do the same, but here the option is called **Filter values**). You can also select the option directly from the pivot table report by right-clicking on the desired field opening the context menu.

You can choose from the **Filter** dialog box that appears:

- Choose **single list items** that you want to show/hide by placing/removing a checkmark in front of them.
- The **Show all** button selects all items.
- The **Hide all** button deselects all items.

Confirm your selection by pressing **OK**.

In the pivot table report, the black dropdown arrow next to the header changes to a red arrow, indicating that a filter is active. The filtered out values are no longer displayed in the pivot table report.

Filtering by adding report filters

The **Report filter** is located in the lower areas section of the field list and offers you a particularly simple and clear option for filtering data.

Drag the fields you want to filter by to the report filter area. A cell with the field name is then inserted above the pivot table report and another cell (*All items*) with a dropdown arrow is integrated to the right of it. The items of the field can be filtered via the dropdown menu. You can choose **single list items** here or select/deselect the complete list of items with **Show all/Hide all**.

The red dropdown arrow to the right of the cell indicates that a filter is active. The filtered out values are no longer displayed in the pivot table report.

You can drag several fields from the field list to the report filter area and filter any combinations of single items from the various fields for the pivot table report.

Tip: Changing the positioning of the report filter fields in the pivot table report is possible using the [Pivot table settings, Filter tab](#).

Set additional special filters directly in the pivot table report via the dropdown menu

In the Pivot Table report, open the dropdown menu next to the *Row labels/Column labels* header. If there is only one field in the Row labels/Column labels area, the filter choice is displayed directly for the selected field.

If there are several fields in the row/column labels area, separate filters can be applied for each field. To do this, move in the dropdown menu of the pivot report to the next menu level on the right of the field to get its filter selections.

- You can choose **single list items** or select/deselect the entire list of items with **Show all/Hide all**.

Note: If the list has too many entries, it is shortened and the entry **More** appears at the end of the list. Clicking on this *More* entry takes you to the **Filter** dialog box. Here, the complete list of items is displayed for selection.

Furthermore, additional special filter conditions are available in the dropdown list. You can find detailed descriptions of the individual filter conditions in the [AutoFilter](#) section.

- **Label filter or Date filter:** Depending on whether you have selected a field with numbers/text or date values, one of the two filters is automatically offered. According to the filter, you will find certain filter conditions for numbers/text or date values.
- **Result filter:** The result filter has special filter conditions that you can use to narrow down the amounts in the value fields.

Note: Please pay attention when applying filters to several fields in which order you set the filters. The next filter that is applied refers only to the remaining results of the previously set filter.

- **Multiple Filters:** The filters in pivot table reports can be applied additively, that is, you can place another filter on the currently effective filter of the same field. To do this, however, you must activate the *Multiple filters* option to combine filters for single list items, label/date filters and result filters for the same field. If this *Multiple filters* option is not activated, a newly applied filter replaces the old one.
- **Clear Filter:** If you want to remove the used filters from the label filter/date filter or result filter, choose *Clear filter* from the dropdown list of the filter in question.

Tip: If you want to remove all filters at once, deactivate the **Multiple filters** entry. A dialog box **Clear all filters?** appears. Confirm with **OK** to remove all filters.

In the pivot table report, the red dropdown arrow next to the header indicates that a filter is set. The filtered out values are no longer displayed in the pivot table report.

Updating pivot tables and changing data area

The following generally applies for pivot tables: If you subsequently add new data to the source table, this has no effect on the pivot table. Due to PlanMaker's default values for pivot table settings (see section [Pivot table settings, Data tab](#)), the data of the original source table is stored in an internal pivot cache after creating the initial pivot table. The pivot table accesses the data from the cache.

Only when you *Refresh data* will the pivot cache be overwritten and the pivot table updated.

In the **Pivot table settings, Data tab**, you can also find the option **Refresh when opening the file**. If you activate this option, the pivot cache is regularly overwritten with the current data of the source range when you open the file. If you want to continue working with your old pivot data after opening the file, leave this option deactivated.

You can manually update your pivot table at any time by clicking the **Refresh data** button.

Please note: By updating the data with *Refresh data* button or with *Refresh when opening the file* option, the pivot cache will be replaced by updated source data and the previous data in your pivot table will be overwritten.

"Refresh data" button

You will find the **Refresh data** button below the areas section in the field list.

Depending on which place in the source data area you have added new data to, this has different effects on the pivot table:

- If you overwrite data within the source data area, the changed data is used in the refreshed pivot table.
- When you insert a new row/column within the source data area, the data area is automatically extended and reflected in the refreshed pivot table.
- But if you add a new row or column at the end of the source data area, the changed data is not reflected in the refreshed pivot table report at first. To do this, you must re-adjust the source data area (see below "Changing the source data area").

Refresh all pivot tables

If you want to refresh all existing pivot tables – even those with different source areas – select **Tools > Refresh all pivot tables**.

Changing the source data area

If your source data has changed in such a way that it no longer is in accordance with the original source range of the pivot table (new records have been appended / file with imported data has been moved), the referenced data area for the source data must be changed.

Proceed as follows:

1. Place the mouse pointer in the pivot table report.
2. Go to the menu command **Worksheet > Modify pivot table area** or right-click in the pivot table report to open the context menu and select the menu command with the same name.
3. A dialog box appears that is similar to the one for creating a new pivot table, with one difference: The *Insert* button is called *Change* here. In addition, the originally referenced source range is marked in blue color directly in the worksheet with the source data.
4. In the dialog box, enter the new data area in the input field (source range); the previous source range is the default. Alternatively, it is possible to mark the desired source range with the mouse if you have the worksheet with the source data in front of you. Use the left mouse button to grab the blue mark at the bottom right corner.

Note: For external data, the adjustment is possible only in the input field (source range).

5. Confirm with the **Change** button. Before you do this, you can enter in the lower input field whether you also want to move the target range to another position; the previous target range is the default.

Deleting, copying, moving pivot tables

You can also delete, copy, and move your created pivot tables. The following paragraphs explain exactly how to do this.

Tip: To delete, copy, or move, it is always necessary to precisely mark the entire area of the pivot table report. The easiest way to do this is to place the mouse in a cell of the report and use the key combination **Ctrl+A** or the menu command **Edit > Select all** to select it.

Deleting pivot tables

Deleting pivot tables works similarly to the standard procedures for [Deleting data](#). Note, however, that the pivot table report must be selected as a whole; individual cells cannot be deleted separately.

Select the entire pivot table report to delete and use one of the following methods:

- Press the **Del** key on the keyboard
- Use the menu command **Worksheet > Delete cells...** or right-click on the pivot table report to open the context menu and choose here **Delete cells...**
- Use the menu command **Edit > Delete**
- Use the menu command **Edit > Delete special** or right-click on the pivot table report to open the context menu and select here **Delete special**. In the next menu level, click **All** or **Contents** to completely delete the pivot table. Select the **Formats** entry if you only want to remove the applied formats from the pivot table.

Copying pivot tables

You can copy pivot tables anytime and duplicate them in the same worksheet to a different position or in a new worksheet. The copied pivot table will have the same values as the original. Even after you click the *Refresh data* button, the copied pivot table adopts changed data from the source table.

In the copied pivot table, however, you still have the opportunity to configure it independently of the copied original with regard to field arrangement, formatting, and so on. This gives you different views of the reports for the same source data.

Select the entire pivot table report to copy it and proceed according to one of the following methods:

- Use the menu command **Edit > Copy** and then **Edit > Paste**
- Right-click on the pivot table report to open the context menu and choose **Copy** and subsequently **Paste**
- Drag the pivot table report with the mouse to the desired position and press the **Ctrl** key to drop it before releasing the mouse.
- Use the key combination **Ctrl+C** and **Ctrl+V**

You can now decide which report you want to work on by moving the mouse pointer into a cell of the relevant pivot table report. The field list appears corresponding to the selected report.

Moving pivot tables

Select the entire pivot table report, and use the left mouse button to drag the selected range to a free position on the worksheet. Make sure that you do not overlap the source data range.

If you want to move the pivot table report to another worksheet, use one of these options:

- Select **Modify pivot table areas**, either via the context menu with the right mouse button or via the menu command **Worksheet > Modify pivot table areas**, and enter the desired target range in the dialog. (see section [Updating pivot tables and changing data area](#))
- Copy the pivot table report as described above, switch to the desired worksheet in an empty space, and paste the copy from the clipboard. Then remove the remaining pivot table report from the former place.

Some restrictive notes on copying and moving source/target range

Copying and moving data ranges - both the source range and the target range (the pivot table report) - is not fully possible in the same way as you are familiar with from normal tables. The following rules should be considered:

- **Copy & paste** of source range/target range: It is possible to first copy the source range of your data and paste it to another position, but the pivot table is still referenced to the position of the original source range and not to the new position. This means that the former cell range is still addressed when the data is refreshed, and if it has been removed, an error message appears. This restriction also applies if you copy and paste the source area together with the target area. Copying and pasting only the target range to another position is possible without any problems.
- **Drag & drop** the source range/target range: If you drag the selected source range to another position with the mouse, the restriction described above does not apply. The pivot data will be referenced to the new cell range and will be correct addressed when updating the data. Dragging and dropping only the target range or together with the source range is also possible without any problems.
- **Cut & paste** the source range/target range: Cutting is neither possible for the source range nor for the target range. An error message appears when using the command.

In the following table you can see the options once again clearly summarized:

Activity	Source range	Target range
Copy & paste	✘	✔
Drag & drop	✔	✔
Cut & paste	✘	✘

Freezing rows and columns

Use the **View > Freeze** menu command to "freeze" the first rows and/or columns of a worksheet on screen. As a result, the frozen rows or columns do not move when you scroll through the worksheet, but permanently stay in place.

This is particularly useful if you have put headings into rows or columns of a worksheet, and want these headers to stay visible all the time.

Activating freezing

To freeze rows or columns:

1. Determine which rows and/or columns to freeze:

Freezing rows: To freeze the first rows of a worksheet, select the row *directly below* the rows you want to freeze.

Freezing columns: To freeze the first columns of a worksheet, select the column *to the right* of these columns.

Freezing rows and columns: To freeze both rows and columns, navigate to the cell *to the right and below* the area to be frozen.

2. Select the **View > Freeze** menu command.

The rows and/or columns are now frozen and remain in their original location when you scroll through the worksheet.

Hint: You can also use the  icon in the bottom-right corner of the document window to freeze rows or columns. Simply click this icon and then drag it to the desired location.

Deactivating freezing

To deactivate freezing, select the **View > Freeze** menu command once again. This removes the checkmark at the **View > Freeze** menu command, and the rows/columns are no longer frozen.

Hint: A single mouse click the  icon in the bottom-right corner of the document window will also turn off freezing.

An example

Assume you have the following worksheet:

	A	B	C	D
1		High	Low	Closing
2	10/24	24	20	21
3	10/25	22	19	20
4	10/26	21	18	20
5	10/27	25	20	24
6	10/28	28	25	27
7				

Note that both the columns and the rows are labeled. To freeze the labels:

- The column labels (High, Low, etc.) are in the first row of the table.

To freeze them, select the second row by clicking its row header (the button left of the row, labeled with "2"). Then select the **View > Freeze** menu command.

- The row labels (10/24, 10/25, etc.) are in the first column of the worksheet.

To freeze them, select the second column (column B) by clicking on its column header (the button above the column, labeled with "B"). Then select the **View > Freeze** menu command.

- To freeze *both* rows and columns, click cell B2 and select the **View > Freeze** menu command.

To deactivate the freezing function, select the **View > Freeze** menu command once more.

Inserting special characters

Some characters, such as the copyright sign, the degree sign, and the accented characters used in some languages, cannot be entered into text directly with the keyboard. Instead, PlanMaker's built-in character table provides a convenient means for inserting symbols and other special characters.

You insert special characters as follows:

1. Invoke the menu command **Insert > Symbol**.
2. A dialog box appears, giving you access to every character that is available in the selected font. If you need a character from a different font, select it from the **Font** list at the top of the dialog.
3. A font's characters are organized into sets. If the character you want to use is not in the set immediately in view when you can jump to the set in which it is likely to be found by selecting it from the **Set** list. For example, you can select **Cyrillic** to view the font's Cyrillic characters (provided the font contains such characters).

Note: Many fonts contain only a few of the character sets that are available. However, the fonts that are supplied with your operating system usually constitute a huge reservoir of characters. These include, for example, the Arial, Tahoma and Times New Roman fonts supplied with Windows.

4. Select the desired character by clicking on it. Then press the **Enter** ↵ key or click on the **Insert** button to insert the character into the text. Alternatively, you can double-click on a character to select and immediately insert it.
5. You can repeat the above described procedure to insert additional characters, as required. When you are finished, exit the dialog with the **Close** button.

Tip for Windows users: Most Windows versions come with two symbol fonts (*Symbol* and *Wingdings*) that include numerous useful symbols (phone symbols, bullets, etc.) and special characters.

Using keyboard shortcuts

If you need to insert a special character frequently, you can always give it a keyboard shortcut. The advantage of doing that is that you can then apply the character very quickly, using a single key press.

To assign a keyboard shortcut to a special character, proceed as follows:

1. Invoke the menu command **Insert > Symbol**.
2. Select the character that you want to assign a keyboard shortcut to.
3. Click on the **Change** button next to the **Shortcut key** option.
4. Another dialog opens. There, press the desired keyboard shortcut in the **Please press accelerator** input box.

We recommend using key combinations that include the keys **Ctrl** and **Shift**, since these are normally not assigned.

Hint: If you make a typing mistake, you can always press the **Backspace** ⌫ key to remove the keyboard shortcut you entered.

5. **Don't forget:** Click on **Add** to assign this shortcut to the character.
6. Confirm with **OK** and exit the main dialog box with **Close**.

From now on, you can insert this special character into text by pressing the selected key combination.

Note: The keyboard shortcut remembers only the selected character; the selected font is *not* remembered.

For more information on changing the keyboard layout, see the section [Customizing keyboard shortcuts](#). Hint: The keyboard shortcuts for special character can be edited by opening the dialog for editing the keyboard mapping and choosing the entry **Characters** in the left list.

Inserting special characters via their character code

There is another method for inserting special characters: by typing in its hexadecimal character code (Unicode) and then pressing the key combination **Ctrl+Alt+Shift+X**.

For example, when you type in 20AC and press this key combination, you will receive a Euro sign, since the euro sign's character code is 20AC in the Unicode character set table.

Inserting special characters via Alt + numeric keypad

And here is yet another method for inserting a special character, using its ASCII code: Hold down the **Alt** key and enter the respective sequence of numbers (only possible via the numeric keypad!). Please also make sure that the numeric keypad is activated by pressing the **Num** key.

For example, if you type Alt+0128, you will receive a Euro sign as soon as you release the Alt key.

Mac/Linux: On some systems (including macOS and several Linux distributions), these keyboard shortcuts might be not available.

Formatting worksheets

You can apply a variety of fonts, colors, shades, borders, and other format options to improve the appearance and readability of worksheets.

This chapter covers the format options available in PlanMaker, as follows:

- [Cell size](#)

To change the size of cells, either use the commands in the sub-menu of the menu command **Worksheet > Row** (or **Worksheet > Column**), or simply drag the row header (or column header) using the mouse.

- [Number format](#)

PlanMaker can display numbers in many different number formats: as plain numbers, rounded to 2 decimal places, as a percentage, with a currency symbol, as a date or time, in a user-defined format, etc. Use the **Format > Cell** menu command to select the appropriate number format.

- [Borders and lines](#)

The **Format > Borders** menu command lets you add borders and lines to cells.

- [Shading](#)

The **Format > Shading** menu command lets you apply a variety of colors, shades, and patterns to the background of cells.

- [Alignment](#)

The **Format > Cell** menu command lets you change the cell format, including the alignment (left-aligned, centered, right-aligned, etc.) of the cell contents.

- [Protection](#)

The **Format > Cell** menu command can also be used to protect cells against changes (see also section [Sheet protection](#)).

- [Character format](#)

The **Format > Character** menu command lets you modify the character format of cells (font, font size, font style, font color, etc.).

- [Paragraph format \(text frames only\)](#)

The **Format > Paragraph** menu command is available only in *text frames*. It lets you modify the paragraph format (spacing, indents, etc.) of the included text.

- [Character styles](#)

You can create character styles that store your favorite character formats. Character styles can be applied to cells at the push of a button.

- [Cell styles](#)

Additionally, you can create cell styles that store your favorite character formats (font etc.) *and* cell formats (number format, borders, shading, alignment, and protection settings).

- [Document templates](#)

PlanMaker even lets you create your own document templates. Document templates can include your own character styles, your own cell styles, and any kind of content.

- [AutoFormat](#)

The **Format > AutoFormat** menu command allows you to format a range of cells by applying predefined format schemes.

- [Conditional formatting](#)

When you add *conditional* formattings to cells, these cells will automatically change their appearance when a certain *condition* is met. Example: "If the cell content is greater than 1000, display it in red color."

- [Input validation](#)

When you add input validation to cells, only the specified types of values (e.g. only numbers) within the specified limits (e.g. only values between 10 and 20) will be considered valid in these cells.

- [Transfer formatting](#)

Using the **Format > Transfer formatting** menu command, you can transfer the formatting of one cell to other cells.

- [Page setup](#)

The page setup command allows the user to set print options. It includes settings such as paper size and orientation, margins, headers and footers, and other options. Use the **File > Page setup** menu command to change these settings.

See the following pages for detailed information.

Cell size

On the next pages you will learn how to change the size of cells.

Note: If a cell displays hashes (e.g., #####) instead of the cell content, the column is too narrow to display the cell content. If this happens, simply widen the corresponding column.

Changing cell sizes using the mouse

Across the top of the table are buttons labeled A, B, C, etc. To the left of the table are buttons labeled 1, 2, 3, etc.

These so-called *column headers* and *row headers* allow you to change the column width or row height using the mouse:

- To change the *width* of a column, move the mouse pointer to the right border of the corresponding column header. The mouse pointer will change to a double arrow. Press and hold the left mouse button and move the mouse to change the column width.
- To change the *height* of a row, use the row headers in the same manner.

Changing cell sizes using menu commands

Another way to change the size of rows/columns is by using the menu commands **Worksheet > Column** and **Worksheet > Row**.

If you choose one of these menu commands, a sub-menu with the following commands will appear:

Width (or Height)

Lets you enter a numerical value for the column width (or row height, respectively).

Optimum width (or Optimum height)

The **Worksheet > Column > Optimum width** menu command sets the width of a column automatically, corresponding to the space required by the cell contents.

The command can be used in different ways:

- When you select an *entire column* and invoke this command, the width of the column will be adapted to the cell that needs the most space.

Hint: The same can be achieved much faster: by simply double-clicking on the column header.

- When you select *some cells* within a column and invoke this command, only these cells will be used for the calculation of the optimum width.
- When you select *nothing* and invoke this command, the column width will be adapted to the content of the current cell.

The height of rows can be changed the same way, using the menu command **Worksheet > Row > Optimum height**.

Hiding rows or columns

You can *hide* rows/columns, so they become invisible.

Note: If *sheet protection* is activated for a worksheet, users will not be able to unhide hidden row/columns in the worksheet. See also section [Sheet protection](#).

To hide rows/columns:

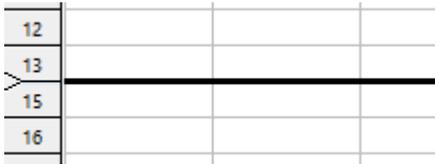
Using the row header to hide rows

The quickest way to hide rows is using *row headers*. (Row headers are the buttons labeled with the row number, located left of the worksheet.)

For example, to hide row 14:

1. With the mouse, point to the lower border of the row header labeled "14".
2. Press and hold the mouse button, and drag the border upwards until the row disappears.

Row 14 is now hidden. Instead of a row header, a small triangle is displayed:



12			
13			
14			
15			
16			

To make row 14 visible again, click this triangle.

Using the Worksheet > Row command to hide rows

Alternatively, rows can be hidden with the **Worksheet > Row** menu command:

1. Select the row(s) to hide.
2. Invoke the menu command **Worksheet > Row > Hide**.

The selected rows will be hidden.

To make them reappear:

1. Select any cell range that includes the hidden rows.
2. Invoke the menu command **Worksheet > Row > Show**.

Hiding columns

Hiding and unhiding columns works just the same way, except that you use the *column* headers or the menu commands **Worksheet > Column > Hide** and **Worksheet > Column > Show**, accordingly.

Number format

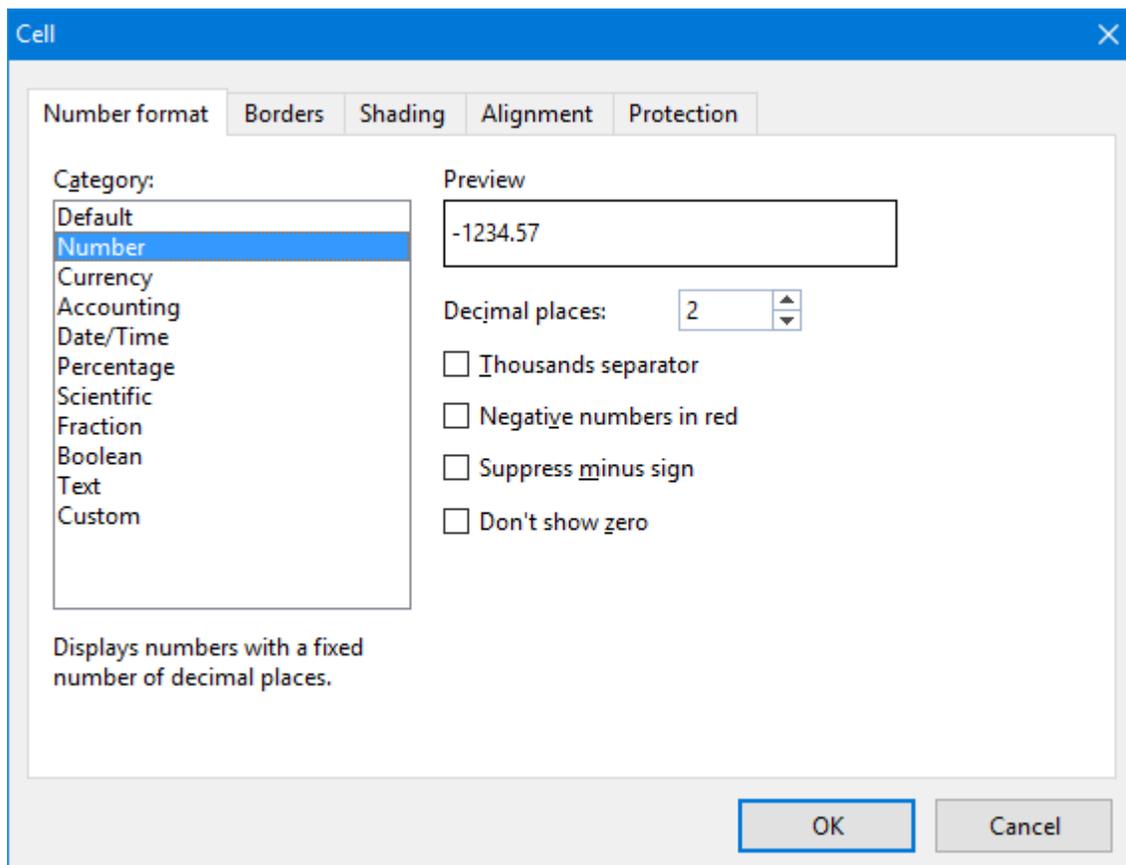
To change the *number format* of cells, choose the menu command **Format > Cell**, and switch to the **Number Format** tab.

The *number format* determines how numbers are represented in these cells. For example, if you enter 12.3456 in a cell and then apply one of the **Currency** number formats to it, it will be displayed with the chosen currency symbol and rounded to two decimal places (for example, as \$12.35).

Note: When you apply a number format that has a fixed number of decimal places, the number will only be displayed as a rounded value, but still keeps all of its decimal places. To actually round numbers, use arithmetic functions like the [ROUND](#) function

To change the number format of cells:

1. Select the cells whose number format you want to change.
2. Choose the menu command **Format > Cell**.
3. Switch to the **Number format** tab.



4. Specify the desired number format (as described below).

5. Click **OK** to confirm.

Options available in the dialog box:

- **Category**

Here you can select the desired type of number format. See section [List of all number formats available](#).

- **Format**

Some number formats also have several subtypes to choose from. Select the desired subtype in this list.

- **Decimal places**

Some formats allow you to specify the number of decimal places to be displayed.

Note: Numbers will only be displayed rounded, but they actually keep all of their decimal places.

- **Thousands separator**

Some formats allow you to specify if numbers should be displayed with thousands separators (e.g., 5,000,000) or without (e.g., 5000000).

- **Negative numbers in red**

Some formats allow you to specify if negative numbers should be displayed in red color.

- **Suppress minus sign**

Some formats allow you to specify if the minus sign of negative numbers should be suppressed.

- **Don't show zero**

Some formats allow you to specify if the content of cells containing the number zero should be suppressed.

When you confirm with **OK**, the numbers in the selected cells will be displayed in the chosen formatting.

List of all number formats available

As described in the previous section, you can use the **Format > Cell** menu command to choose the *number format* of a cell, allowing you to specify exactly how numbers entered in this cell should look like.

The following number formats are available:

Default

Displays the number just the way it was entered.

More precisely: The number is displayed right-aligned. Apart from that, no further reformatting takes places. Right of the decimal point, all decimal places that have been entered are shown (with a maximum of five decimal places).

Example: 42

Number

Same as the **Default** number format, except that you can specify several formatting options (see previous section). For example, you can set the number of decimal places to be displayed.

Example: 42.00

Note: When you apply a number format that has a fixed number of decimal places, the number will only be *displayed* as a rounded value, but still keeps *all* of its decimal places. To actually round numbers, use arithmetic functions like the [ROUND](#) function

Currency

Displays the number with a currency symbol and two decimal places.

To specify the desired currency symbol, select it in the **Currency** list box.

Example: \$42.00

Accounting

Same as **Currency** (see above), except that numbers are displayed in accounting format (with minus signs and currency symbols aligned).

Example: -\$ 42.00

Date/Time

Displays the number as date and/or time.

Depending on your system regional settings, various different date and time formats to choose from are offered in the **Format** list box.

Percentage

Displays the number as a percentage.

Apart from adding a percent sign (%) to the number, the number will also be displayed multiplied by 100. For example, 0.5 will be displayed as 50%.

Example: 42%

Scientific

Displays the number in scientific notation.

Examples: 5E+03 (equals $5 * 10^3$, which is 5000)

4.2E-01 (equals $4.2 * 10^{-1}$, which is 0.42)

Fraction

Displays the number as a fraction.

There are several different formats available.

Note: The number will be displayed as a rounded value, if necessary. For example, if you choose the format **As Halves**, and enter the number 2.3, it will be displayed as 2 1/2.

Examples: 2 1/2

5 9/10

Boolean

Displays the number as a Boolean value (logical value).

If the number is zero, FALSE will be displayed. If it is *any* other value, TRUE will be displayed.

Examples: TRUE

FALSE

Text

This number format presents a special case: It forces PlanMaker to treat a number as *text*, not as a number.

The number will be left-aligned and displayed exactly the way it was entered. As opposed to any other number format, numbers will *not* be reformatted on input by any means. Leading zeros will not be removed; dates will not be reformatted automatically, etc.

This can be useful, for example, when entering numbers with leading zeros (e.g. serial numbers). Normally, when you enter a number like "00043682" into a cell, PlanMaker will automatically remove the three leading zeros. If you apply the **Text** number format to the cell, the leading zeros will persist.

Warning: For compatibility reasons, this number format has been implemented exactly the same way as in Microsoft Excel. Therefore, it will lead to the same unexpected results in calculations: When you apply this format e.g. to the cells A1 and A2, the result of the calculation A1+A2 will be the sum of these two cells. However, the calculation SUM (A1:A2) will return zero. The reason is that, for most arithmetic functions, text always has the "value" zero!

Custom

Displays the number in a user-defined format.

For details, see the next section.

Working with user-defined number formats

Whenever required, you can also define and apply *your own* number formats with the **Format > Cell** menu command.

Defining and applying a new number format

To create a new user-defined number format, proceed as follows:

1. Select the table cells that you want to apply the new number format to.
2. Invoke the **Format > Cell** menu command, and switch to the **Number Format** tab.
3. In the **Category** list, choose **Custom**.
4. Click into the edit control below **Format**.
5. Enter a text string that specifies the desired number format.

For a list of available format codes, see the section [Structure of a user-defined format](#).

6. Click on **OK**.

The number format is created (and also applied to the currently selected cells).

Hint: If you want to create a new number format that is similar to one of the built-in number formats, the following tip can save you a lot of work: After opening the dialog, first click on the desired built-in number format in the **Categories** list. This will transfer the corresponding format codes into the edit control for the format codes (step 5.). All you have to do is make your desired changes, and you're done.

Applying a user-defined number format

Once created, a user-defined number format can be applied to as many other cells as you like. Proceed as follows:

1. Select the desired table cells.
2. Invoke the **Format > Cell** menu command, and switch to the **Number Format** tab.
3. In the **Category** list, choose **Custom**.
4. In the **Format** list, all user-defined number formats for the current document are displayed. Choose the desired format.
5. Click on **OK**.

The number format will now be applied to the selected cells.

Deleting a user-defined number format

If there's a number format that you don't want to keep anymore, you can delete it anytime. Proceed as follows:

1. Invoke the **Format > Cell** menu command, and switch to the **Number Format** tab.
2. In the **Category** list, choose **Custom**.
3. In the **Format** list, choose the format to be deleted.
4. Click on the **Delete** button.
5. Close the dialog (preferably using the **Cancel** button, since clicking **OK** would apply the currently selected format to the current cell).

Note: The **Delete** button is available only for user-defined number formats. You cannot delete any of the built-in number formats.

Structure of a user-defined format

When you create a new number format (as described in the previous section), you have to enter a text string containing *format codes*. These codes specify how numbers are displayed.

An example:

#.00

These codes will cause numbers to be displayed as follows: All digits left of the decimal point, then a decimal point, then exactly two digits right of the decimal point.

In detail, the following format codes are available:

Format codes for numbers and text

For formatting numbers and text, the following format codes can be used:

Code	Result
#	Display a single digit of the number – or nothing (in case there is no digit at this position). Example: ### applied to the number 1.2 returns 1.2.
0	Display a single digit of the number – or a zero (in case there is no digit at this position). Example: #.00 applied to the number 1.2 returns 1.20.
?	Display a single digit of the number – or a blank (in case there is no digit at this position). Example: #.?? applied to the number 1.2 returns 1.2 (with a blank behind the 2). <i>Important:</i> If <i>any</i> of the above codes is placed to the <i>left</i> of the decimal point, <i>all</i> digits left of the decimal point will be displayed. Example: 0.00 applied to the number 123.456 will not return 3.46, but 123.46.
.(period)	Display a decimal separator at this position.

Note: If your system utilizes a decimal separator other than a period (e.g. a comma), use the corresponding character instead of a period.

, (comma) Display the number with thousands separators. This code can be placed at an arbitrary position in the format string. Example: ,0.00 applied to the number 5000000 returns 5,000,000.00.

Note: If your system utilizes a thousands separator other than a comma, use the corresponding character instead of a comma.

% Display a percent sign at this position, and multiply the number by 100.

Example: 0% applied to the number 0.5 returns 50%.

E+ or e+ Display the number in *scientific notation*.

Example: 0E+00 applied to the number 50000 returns 5E+04.

Note: *Engineering notation* (using only exponents that can be divided by 3) is also available. For example, #00E+00 applied to the number 50000 does not return 5E+04 but 50E+03.

E- or e- Same as E+, except that the exponent's sign is only displayed if it is negative.

Example 1: 0E-00 applied to the number 5000 returns 5E03.

Example 2: 0E-00 applied to the number 0.005 returns 5E-03.

Standard Placeholder for the entire cell content (formatted with the number format "Standard").

@ Placeholder for the entire cell content as text.

\ Do not try to interpret the following character, just display it.

Example: To output a # character, use the code \# (since the # sign is a valid format code).

"Text" Do not interpret the text between the quotation marks, just display it.

Example: "MyText"

* (asterisk) Repeat the following character. For example, *x fills the entire cell with the character "x".

Example: The format codes "Total:"* 0.00 display the text "Total:" at the left of the cell and the number (with two decimal places) at the right. The space in-between is filled with blanks.

_ (underscore) Display a blank space that is as wide as the following character.

Example: _ - returns a blank space that is exactly as wide as a minus sign.

[Red] Display the cell content in red color. Other color codes available:

[Black] [White] [Red] [Green] [Blue] [Cyan] [Magenta] [Yellow]

Format codes for dates and times

For dates/times, only the following format codes are valid:

Note: The format codes listed below are **case-sensitive!**

Code	Result
D	Day (1-31)
DD	Day, with 2 digits (01-31)
DDD	Name of day, abbreviated ("Su" to "Mo")
DDDD	Name of day ("Sunday" to "Monday")
M	Month (1-12)
MM	Month, with 2 digits (01-12)
MMM	Name of month, abbreviated ("Jan" to "Dec")
MMMM	Name of month ("January" to "December")
MMMMM	Name of month, first letter only ("J" for January to "D" for December)
YY	Year, with 2 digits (e.g., 18)
YYYY	Year, with 4 digits (e.g., 2018)
Q	Quarter (1-4)
QQ	The word "quarter" in the language set in the system's regional settings
h	Hour (0-23)
hh	Hour, with 2 digits (00-23)
m	Minute (0-59)
mm	Minute, with 2 digits (00-59)
s	Second (0-59)
ss	Second, with 2 digits (00-59)
0	Tenths of a second (e.g., hh:mm:ss.0)
00	Hundredths of a second (e.g., hh:mm:ss.00)
000	Thousandths of a second (e.g., hh:mm:ss.000)

AM/PM	Display times in 12-hour format (with <i>AM</i> or <i>PM</i>). Has to be placed at the <i>end</i> of the format codes! Example: h:mm:ss AM/PM
am/pm	Same as AM/PM, but with <i>am</i> or <i>pm</i> (lower case)
a/p	Same as AM/PM, but with <i>a</i> or <i>p</i>
[h]	Number of hours in "endless" time format*
[m]	Number of minutes in "endless" time format*
[mm]	Same as [m], but with 2 digits*
[s]	Number of seconds in "endless" time format*
[ss]	Same as [s], but with 2 digits*
[\$-n]	Optional: Allows you to specify the regional code of the language to be used for day and month names. If no regional code is given, PlanMaker uses the system's default language. Example: [\$-409] represents English (US).

* The "endless" time format distinguishes itself from other time formats by its feature of *not* setting the time back to 0:00 after 24 hours. This is useful for *calculations* with times. For example, when you add 20:00 and 5:00, the result would normally be 1:00. But if you format this calculation as [h]:mm, the result will be 25:00.

The endless time format also supports negative time values. For example, 7:00 - 10:00 does not result in 21:00, but in -3:00.

The same applies to minutes and seconds, which are also not reset after 60 minutes/seconds. You can even use the endless time format to convert times to minutes or seconds. For example, when you format 02:00:00 as [mm]:ss, 120:00 will be displayed. When you format it as [s], 7200 (the number of seconds) will be displayed.

Defining separate sections for positive numbers, negative numbers, zero, and text

You can split the text string that defines a number format into up to four sections (separated by semicolons). This allows you to define different formats for positive numbers, negative numbers, the number zero, and text – as follows:

Positive; Negative; Zero; Text

The number of sections that you include has the following effect:

Number of sections	Effect
Just 1 section:	The format codes apply to all values.
2 sections:	The codes in the 1st section apply to positive values. The codes in the 2nd section apply to negative values.
3 sections:	The codes in the 1st section apply to positive values. The codes in the 2nd section apply to negative values. The codes in the 3rd section apply to the number zero.

- 4 sections:
 - The codes in the 1st section apply to positive values.
 - The codes in the 2nd section apply to negative values.
 - The codes in the 3rd section apply to the number zero.
 - The codes in the 4th section apply to text.

Example (with two sections):

`0.00; -0.00[Red]`

This number format has the following effect:

1st section: `0.00` causes positive numbers to be displayed with two digits after the decimal point.

2nd section: `-0.00[Red]` causes negative numbers to be displayed with two digits after the decimal point as well. A minus sign is displayed in front of the number (see note!). Additionally, the number is colored in red.

Note: When you define a number format with two (or more) sections, and you want negative values to be displayed with a minus sign, you must include a minus sign in the section for negative numbers.

The reason is that, as opposed to number formats with just one section, minus signs will *not* be displayed automatically for number formats with multiple sections.

Defining separate sections using conditions

Alternatively, you can split the text string that defines a number format into multiple sections by specifying a *condition* for each section.

The individual sections must be separated by semicolons. To specify the condition for a section, simply type in the desired comparison, enclosed in square brackets – for example comparisons like `[>0]` or `[>=100]` or `[=42]`.

You can define up to two sections that contain a condition. After these sections, an additional section that defines the number format for those values that *don't* match the condition should be specified.

An example:

`[<=0][Blue]0.00; [>30][Red]0.00; 0.00`

These format codes display all values smaller than or equal to zero in blue. Values larger than 30 are displayed in red. Values not matching any of these two criteria are not colored; they are displayed in black.

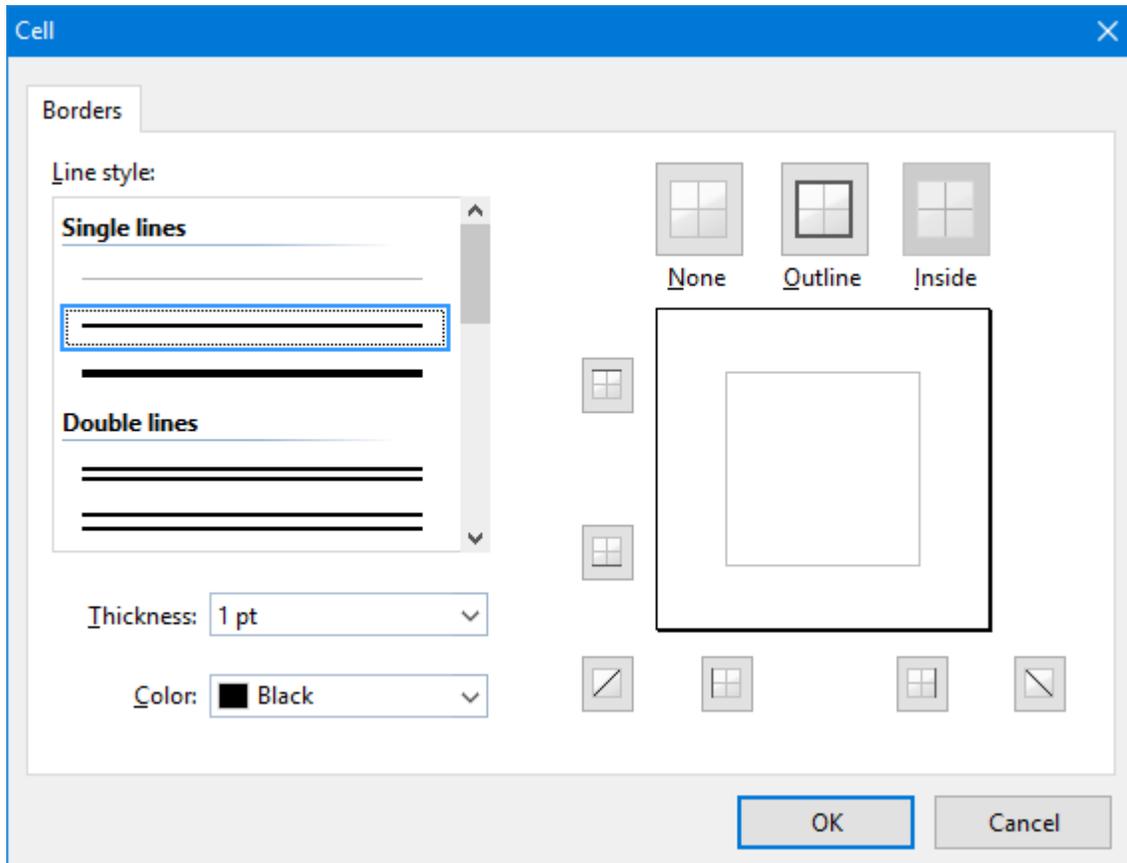
Hint: "Conditional formatting" provides a much more convenient and powerful way to perform such tasks. See section [Conditional formatting](#).

Borders and lines

To add border lines to cells, choose the menu command **Format > Cell** and switch to the **Borders** tab.

Alternatively, use the **Format > Borders** menu command, which is doing exactly the same.

You can add border lines at the left, right, top or bottom of cells, and you can create borders that completely surround cells. Also, you can add gutter lines (the lines between the cells) in this dialog.



A similar dialog box appears for all types of objects that allow you to add border lines (e.g. text frames or table cells).

Essentially, you operate this dialog as follows:

1. First you specify *what* kind of border lines you want (by selecting a line style, thickness, and color).
2. Then you pick *where* to apply the specified border lines – by clicking on the respective lines in the preview box displayed in the right half of the dialog (or on the buttons surrounding it).

Let's have a look at the entire procedure in detail:

For example, to add borders to cells, you do the following:

1. Select the cells of interest.
2. Invoke the menu command **Format > Borders**.
3. First, choose *what* kind of border lines you want – by specifying the following options:

Line style (single, double, or dashed lines)

Thickness of the line

Color of the line

4. Then, specify *where* to apply this line (top, bottom, left, right, etc.).

For this purpose, a preview box surrounded by a set of buttons is available in the right half of the dialog. Use it as follows:

A) When you click on one of the lines in this preview, the selected type of border line is applied to the corresponding border.

B) Alternatively, you can click on the buttons displayed to the left and below the preview. Each button represents one border (indicated by the symbol displayed on the icon).

C) The buttons shown above the preview provide some shortcuts:

The **Outline** button applies the currently set up border line to *all* outer borders.

The **Inside** button does the same for all inner lines (the gutter lines).

The **None** button removes all lines at once.

5. Add as many lines as you like – by simply repeating step 4.

Of course you can always modify the line settings (step 3) before you apply the line (step 4).

6. When done, confirm with **OK**.

The lines are now added to the selected cells.

Changing or removing existing border lines

You can change the style, thickness or color of existing border lines anytime – and of course you can also remove border lines. To do so, invoke the **Format > Borders** menu command again and proceed as follows:

- **Modifying:** To modify the appearance of a line, first choose the desired settings (style, thickness, color). Then, click on the line of interest in the preview (or on its button) in order to apply the line there.
- **Removing:** To remove a border line, click on it in the preview (or on its button) *twice*. Clicking once applies a line to a border, clicking once more removes it again.

Hint: The **None** button displayed above the preview removes all lines at once.

Tip: Using the Formatting toolbar

Alternatively, you can use the  icon at the very right of the Formatting toolbar to apply border lines.

Proceed as follows:

1. Select the desired cells.
2. Click the *arrow* right of the icon (*not* the icon itself). A menu with several predefined border styles will open. Click on the desired style.

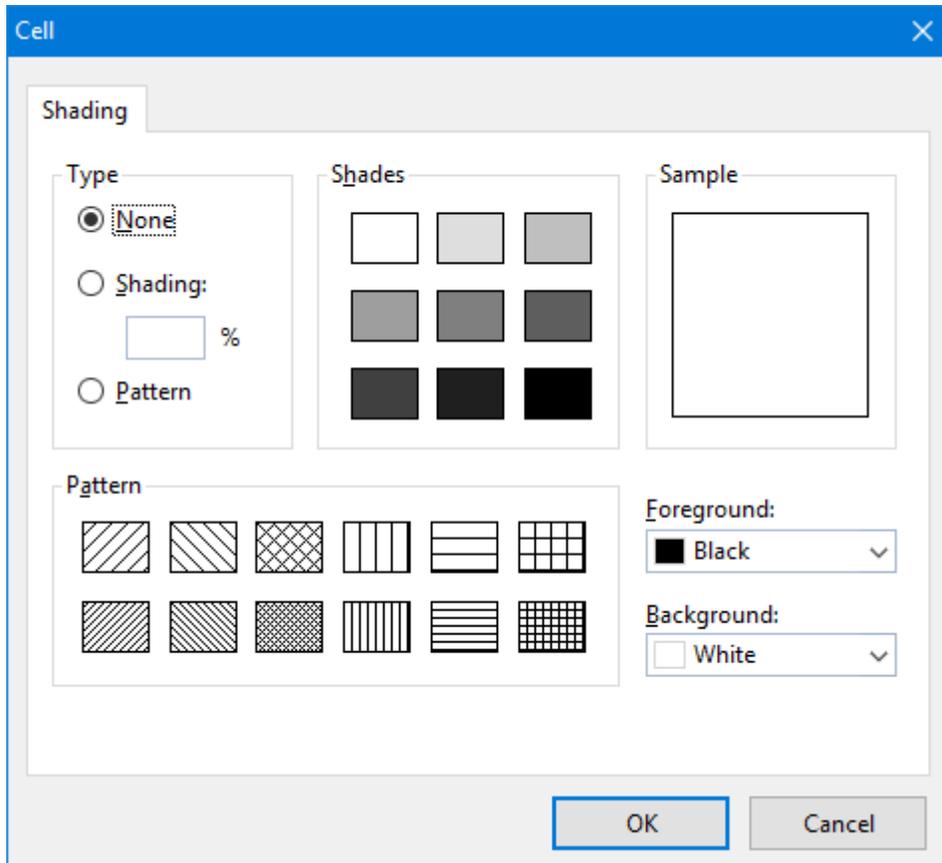
The border lines are now applied.

Tip: If you want to apply the same border style to other cell ranges thereafter, simply select them and click the icon itself (*not* the arrow). PlanMaker will apply the last chosen border style once more.

Shading

To apply a shade or fill pattern to cells, choose the menu command **Format > Cell** and switch to the **Shading** tab.

Alternatively, use the **Format > Shading** menu command, which does exactly the same.



To change a single cell, navigate to it without selecting. To change multiple cells, select them before executing this command. Then proceed as follows:

- **Applying a shade**

You can add a color shade mixed from a specific foreground color and background color to the selected paragraphs.

To add a shade, set the **Type** to **Shading** and specify the following settings:

First, choose a **Foreground** and a **Background** color. (The background color is set to white by default.)

In the **Shades** section, several mixtures of these two colors are now offered. Click on one of these suggestions to choose it. Alternatively, you can enter an exact percentage for the shade in the edit box below **Shading** (in the **Type** section). Values between 0 (100% background color) and 100 (100% foreground color) are allowed.

- **Applying a fill pattern**

To add a pattern, click on one of the patterns in the **Pattern** section.

You can also select a different **Foreground** and **Background** color for the pattern.

- **Removing shades or pattern**

To remove any shade or pattern applied, select **None** in the **Type** list.

Then confirm with **OK**.

Tip: Using the Formatting toolbar

Alternatively, you can use the  icon at the very right of the Formatting toolbar to apply color shades.

Proceed as follows:

1. Select the desired cells.
2. Click the *arrow* right of the icon (*not* the icon itself). A menu with predefined colors will open. Click on the desired color.

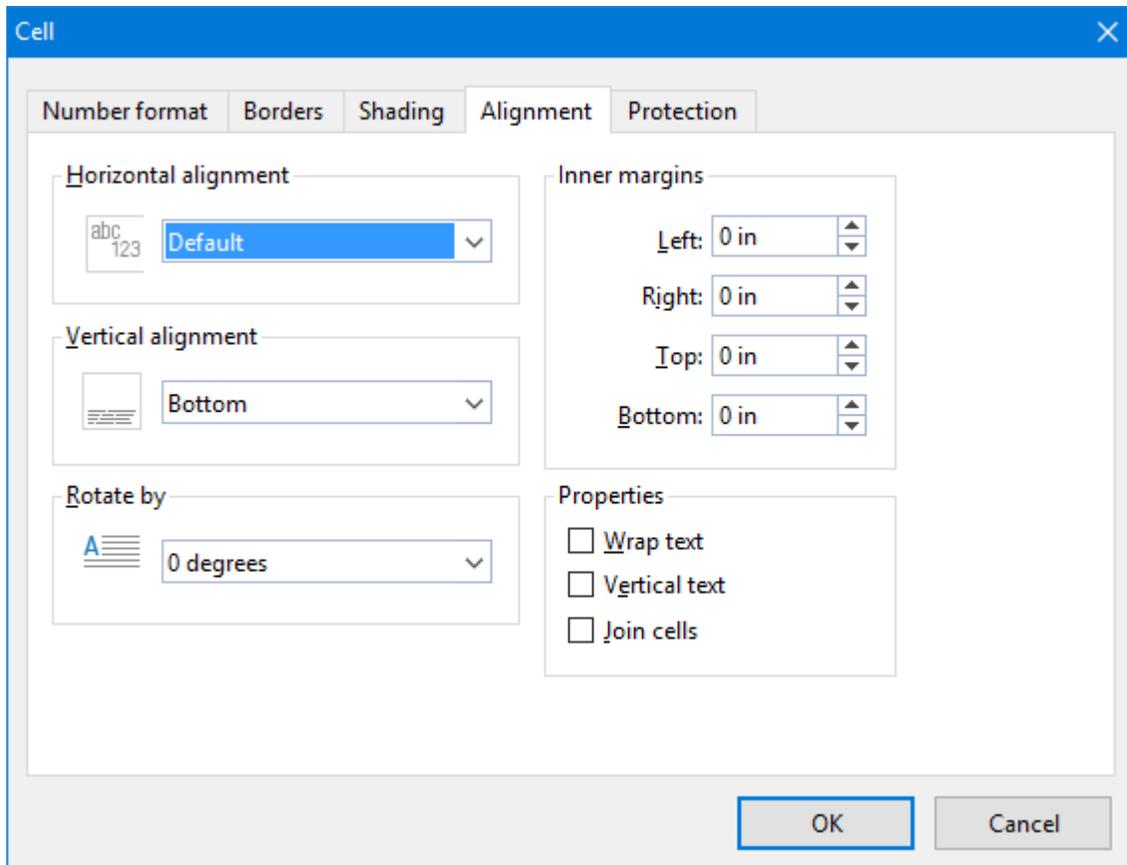
The shade is now applied.

Tip: If you want to apply the same shading color to other cell ranges thereafter, simply select them and click the icon itself (not the arrow). PlanMaker will apply the last chosen color once more.

Alignment

To change the alignment of cells, choose the menu command **Format > Cell** and switch to the **Alignment** tab.

To change a single cell, navigate to it without selecting. To change multiple cells, select them before executing this command.



Options available:

Horizontal alignment

Determines the horizontal alignment of the cell content within the cell boundaries:

Default: Text left-aligned, numbers right-aligned, and logical values and error values centered

Left: Left-aligned

Centered: Centered

Right: Right-aligned

Justified: Fully justified (evenly distributed between left and right cell border). This affects only cells that contain multiple lines of content and have the **Wrap text** option (see below) activated.

Center across columns: Content of *one* cell centered across *multiple* columns. Select the cell with the content and an arbitrary number of cells right of it beforehand (these cells have to be empty!).

Vertical alignment

Determines the vertical alignment of the cell content within the cell boundaries:

Bottom: Aligned to the bottom

Centered: Aligned to the center

Top: Aligned to the top

Justified: Vertically justified (evenly distributed between top and bottom cell border). Only affects cells that contain multiple lines of content and have the **Wrap text** option (see below) activated.

Rotate by...

Rotates the cell content by the specified angle.

Text direction

For text in Arabic script, you can change the text direction of the cell to right-to-left here.

Tip: If you choose the default setting **Context sensitive**, PlanMaker determines the correct writing direction automatically.

See also chapter [Working with Arabic text](#).

Inner margins

Lets you modify the inner margins of cells.

Wrap text

If this option is checked, the cell content will automatically be wrapped to multiple lines, if it does not fit into a single line.

Hint: To wrap parts of the cell content to the next line manually, press **Ctrl+↵**.

By default, this option is switched off, so that text that does not fit is continued right of the cell.

Vertical text

If this option is checked, the cell content will be displayed vertically (top to bottom instead of left to right).

Merge cells

Lets you merge a cell with neighboring cells. Merged cells are treated as if they were one single cell.

To merge cells, select them and activate this dialog option.

Note: Whenever you merge cells, the content of all selected cells is automatically deleted – except for the cell in the upper left corner of the selected range.

To disconnect merged cells, select them again and turn this option off.

Protection

The **Protection** tab in the dialog of the **Format > Cell** menu command can be used to prevent cells from being changed, to hide the cell content or formula, or to disable printing.

For more information, see section [Sheet protection](#).

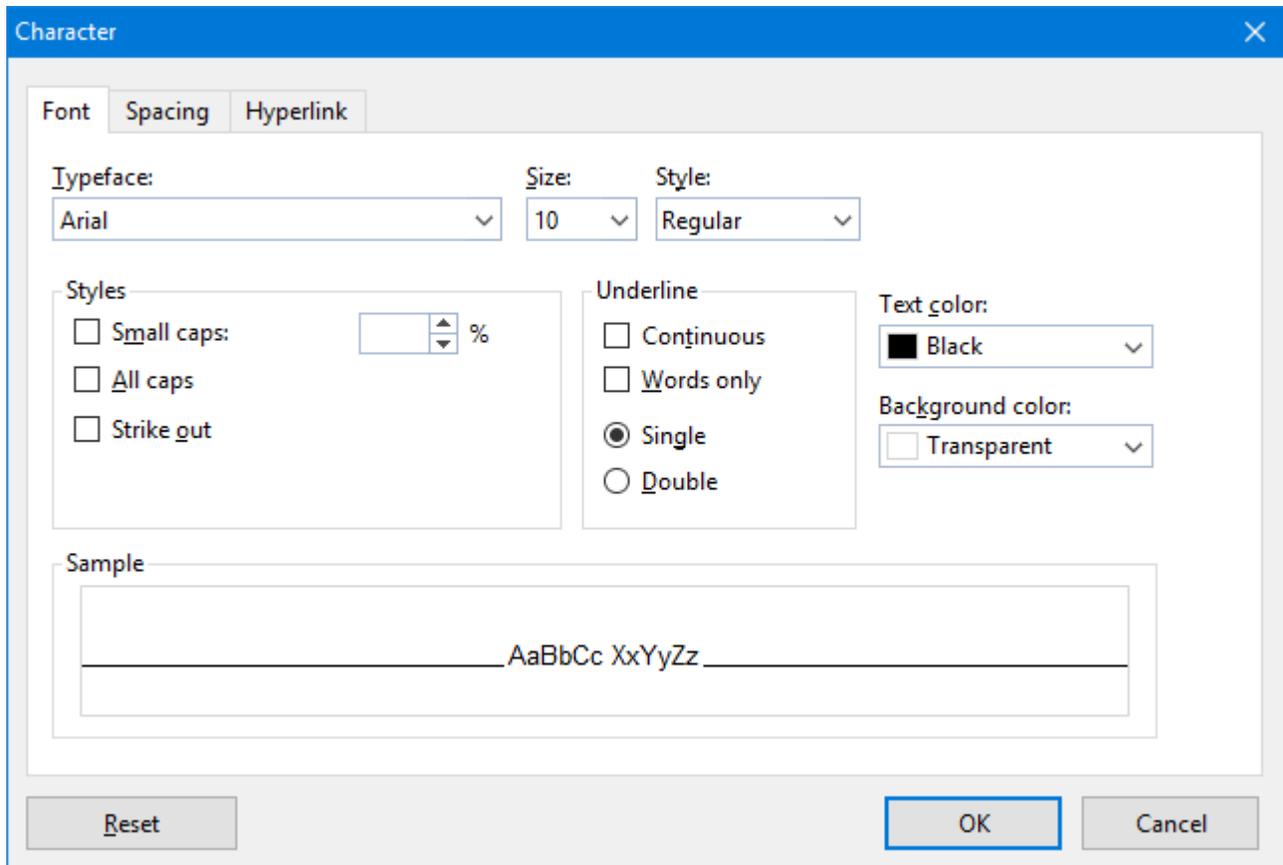
Character format

Use the menu command **Format > Character** to change the character format of text. The *character format* includes settings like font, font size, font style (bold, italic, etc.), font color, etc.

Before invoking this command, you can *select* the text that you want to change, as follows:

- To change the character format of a single table cell, simply navigate to it – without selecting.
- To change multiple cells, select them before executing this command.
- If you press **F2** and select just parts of the cell content, only the selected characters will be changed.

The options in the dialog of this command are distributed over several "index cards". You can switch between them by clicking on one of the tabs along the top of the dialog.



The following format options are available:

- **Font** tab
 - [Typeface and font size](#), [text style](#) (bold, italic, etc.), [text color](#)
- **Spacing** tab
 - [Superscript and subscript](#), [letter spacing and character pitch](#), [kerning](#)
- **Hyperlink** tab

For inserting and editing hyperlinks (e.g., to web pages). You will find information about this topic in section [Working with links](#).

See the following pages for detailed information.

Typeface and font size

To change the typeface and/or font size of text, do the following:

1. Select the cells or the text segment to be modified.
2. Invoke the menu command **Format > Character**.

3. In the associated dialog, switch to the **Font** tab (if necessary).

Now you can set the desired typeface and font size:

- To change the *typeface*, open the **Typeface** dropdown list box by clicking on the small arrow to its right and select the desired typeface.
- The most useful *font sizes* are presented in the **Size** dropdown list box. You can select one of these sizes or enter a different size manually. Type sizes can be given with a precision of a tenth of a point – thus a size such as 12.7 is allowed.

Using the Formatting toolbar

You can also change the typeface and font size with the Formatting toolbar.



This is done by selecting the text you want to format, opening the dropdown list box containing typefaces, or the one containing type sizes, and selecting the desired format from the list with a mouse click.

Text styles

Text styles are formattings like bold, italic, underline, etc.

PlanMaker supports the following text styles:

- **Italic:** A slanted variant of the typeface.
- **Bold:** A heavier ("thicker") variant of the typeface.
- **Underline:** The text is underlined (single, double, words only single, words only double, etc.).
- **SMALL CAPS:** Lowercase letters are replaced with small uppercase letters.
- **ALL CAPS:** All letters are rendered in uppercase.
- **Strike-out:** The text is struck through.
- **Superscript** (e.g. r^2) and **subscript** (e.g. H_2O): These text styles are found on the next tab (see [Superscript and subscript](#)).

Applying text styles

To apply text styles, invoke the menu command **Format > Character** and switch to the dialog's **Font** tab.

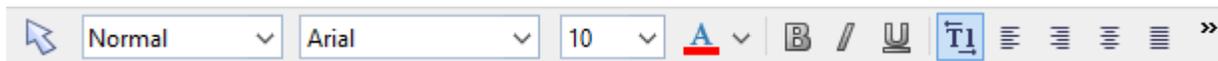
To turn on bold or italic, open the **Style** list (to the right of font size option) and select the desired style from the list: Regular, *Italic*, **Bold** or **Bold-Italic**.

To apply other text styles, turn them on or off by clicking on the corresponding checkbox in the **Styles** section of the dialog.

You are not limited to just one style; rather, you can apply combinations of the styles to text (although not all combinations are possible).

Using the Formatting toolbar

The most commonly used text styles can also be applied using the Formatting toolbar.



Click on the icon for the text style you want to apply or remove: The **B** stands for bold, the *I* for italic, and the U for single underline.

Keyboard shortcuts

There are also keyboard shortcuts for the application of text styles:

Command	Windows/Linux	Mac
Bold	Ctrl+B	Cmd+B
Italic	Ctrl+I	Cmd+I
Underline	Ctrl+U	Cmd+U

Text color

You can specify the color for both text itself and for its background.

To do this:

1. Select the cells or the text segment to be modified.
2. Invoke the menu command **Format > Character**.
3. In the associated dialog, switch to the **Font** tab (if necessary).

You can now select the desired color for the text from the **Text color** list.

You can also specify a background color for the text using the **Background color** list. By default, the background color is set to **Transparent**. If you choose a different color for the background, the text will appear against this color.

Note: Changing the background color of cell contents does *not* shade the entire cell but only the content. To shade *whole* cells, use the **Format > Shading** menu command.

Notes

- If none of the existing colors offered in the color list suits you, you can always compose your own colors. To do this, click on "**Define color...**", which is the last item in the color list (see also section [Document properties, Colors tab](#)).

- The text color can also be changed using the  icon in the **Formatting toolbar**:

To do so, select the text (or cells) of interest and click on the little arrow right of this icon (*not* on the icon itself). Then, choose the desired color from the list that opens.

Tip: To apply to same color to another piece of text, select the text and simply click on the icon itself.

Superscript and subscript

To activate superscript (e.g., r^2) or subscript (e.g., H_2O) for characters:

1. Select the cells or the text segment to be modified.

If you press **F2** and select just parts of the cell content, only the selected characters are changed.

2. Invoke the menu command **Format > Character**.
3. Switch to the **Spacing** tab.
4. Check the **Superscript** or the **Subscript** checkbox.

If you wish, you can specify the amount of offset above or below the baseline by entering a percentage in the **Position** edit box. In addition, you can specify the size reduction to be applied to the superscripted or subscripted text by entering a percentage in the **Size** edit box. For example, if you want a subscript to be the same size as adjoining normal text, you can specify 100 percent.

Letter spacing and character pitch

To change the spacing or the pitch of text:

1. Select the cells or the text segment to be modified.
2. Invoke the menu command **Format > Character**.
3. Switch to the **Spacing** tab.
4. Enter the desired values at **Spacing between characters** or **Character pitch**.

Spacing is the horizontal distance between characters. If you make the value smaller than 100%, the characters appear closer together than normal, and if you make the value larger than 100%, the characters appear farther apart.

If you change the **character pitch**, the width of the characters themselves, rather than the spacing between them, is affected.

Note: For some printers, changing the pitch of characters formatted in one of the printer's *internal* fonts is ignored in the printout.

Kerning

Certain pairs of letters look better when the spacing between these letters is reduced or increased a bit. Such adjustments, called *Kerning*, can be made automatically by PlanMaker.

A picture illustrates best what kerning is about:



Top: without kerning, bottom: with kerning

The upper half of the picture (without kerning) shows that the letters "V" and "A" are too far apart when no kerning is applied. In the lower half (with kerning), this has been corrected.

To activate kerning, select the cells (or the text segment) of interest, choose the **Format > Character** menu command, switch to the **Spacing** tab and activate the option **Use kerning**.

PlanMaker now automatically adjusts the spacing between all letters where this would improve the text appearance.

Note: Not all typefaces provide *kerning information* in their font data, which is required to determine which letter pairs to adjust and how. Almost all font collections published by **SoftMaker** include extensive kerning information.

Removing character formatting

In case you need to remove character formatting, PlanMaker lets you do this easily.

Proceed as follows:

1. Select the cells or the text segment to be modified.
2. Invoke the menu command **Format > Standard**.

PlanMaker now removes any character formatting that you have applied to the selected text.

Paragraph format (text frames only)

When you have placed text in a *text frame*, you can modify its paragraph format using the **Format > Paragraph** menu command.

Note: This command is available *only* in text frames. To learn more about text frames, see the section [Text frames](#).

Paragraph formats include:

- [Paragraph indents](#)
- [Line spacing](#)
- [Paragraph alignment](#)
- [Spacing above/below a paragraph](#)
- Hyphenation frequency (see section [Hyphenation](#))

For detailed information, see the pages that follow.

Paragraph indents (text frames only)

Note: Paragraph indents can be applied only to text placed in a *text frame*. To indent *cell contents*, modify the cell's inner margins in the dialog of the **Format > Cell** menu command (**Alignment** tab).

To indent text in a text frame, choose the menu command **Format > Paragraph**. There are independent settings for **Left**, **Right**, and **First**. The first line indent can be either positive or negative, and is used as an offset from the left indent of the paragraph.

Line spacing (text frames only)

Note: Line spacing can be applied only to text placed in a *text frame*.

Line spacing is the distance between lines of a paragraph.

To change the line spacing of text in a text frame:

1. In the text frame, place the text cursor in the paragraph of interest (or select multiple paragraphs to be modified).
2. Invoke the command **Format > Paragraph** menu command.

You will find the options for line spacing in the **Line spacing** group box:

3. First, select the method you want to use to specify the line spacing (see below) from the dropdown list box.
4. Then enter the spacing in the edit box to its right.

When you confirm with **OK**, the line spacing will be changed according to your settings.

Methods of specifying the line spacing

You can specify the line spacing in different ways. The **Line spacing** dropdown list allows you to choose from the following methods:

- **Single**

Automatic single line spacing.

Determines the optimum line spacing *automatically*:

If you increase the font size in the paragraph, the line spacing will be increased accordingly.

If you decrease the font size, the line spacing is reduced accordingly.

- **Multiple**

Multiple of automatic single line spacing.

Just like the **Single** option, this option determines the optimum line spacing automatically. However, whenever required, you can increase or decrease the line spacing easily: Simply enter the desired number of lines into the edit box right of this option.

Some examples:

When you enter "1.5" in the **Lines** edit box, the automatically determined spacing is multiplied by 1.5 (giving you automatic one and a half line spacing).

When you enter "2", the automatically determined spacing is multiplied by 2 (giving you automatic double line spacing).

Entering "1" corresponds to choosing the option **Single** (giving you automatic single line spacing).

- **Exactly**

Fixed line spacing.

If you choose this option, you can enter the *exact* line spacing manually in points. Here, the line spacing will *not* be adapted to the font size.

- **At least**

Automatic line spacing with a given minimum.

Just like the **Single** option, this option also provides automatic single line spacing – but prevents any reduction below the specified minimum value.

So, if you enter e.g. 12 points as a minimum value, normally automatic single line spacing is applied. However, if the automatic line spacing becomes smaller than 12 points (for example, because you used a very small font size), a fixed line spacing of 12 points is applied instead.

By default, the line spacing is set to **Single**.

Paragraph alignment (text frames only)

Note: Paragraph alignment can be applied only to text placed in a *text frame*. To change the alignment of *cell contents*, use the **Format > Cell** menu command (**Alignment** tab).

To change the alignment of text in a text frame, choose the menu command **Format > Paragraph** and select an alignment in the **Alignment** dropdown list.

Available alignment types:

- Left
- Centered
- Right
- Justified (evenly distributed between left and right margin)

Changing the text direction (for Arabic text)

For text in *Arabic* script, there's an additional option named **Text direction** where you can set the writing direction of the paragraph to right-to-left. See also chapter [Working with Arabic text](#).

Spacing above/below a paragraph (text frames only)

Note: Paragraph spacing can be modified only for text placed in a *text frame*. To change the spacing between *cells*, simply change their row height.

In text frames, you can add extra spacing above and/or below paragraphs.

For this purpose, select the desired paragraphs in the text frame, choose the menu command **Format > Paragraph**, and enter the desired values for the following options:

Option	Function
Before	Here you can set the amount of spacing to be added between the end of the previous paragraph and the beginning of the current paragraph.
After	Here you can set the amount of spacing that PlanMaker should reserve between the end of the current paragraph and the beginning of the next paragraph.

Note: These values do not affect the amount of space *between* lines within a paragraph (see section "Line spacing").

Character styles

Use the menu command **Format > Character style** to select from a list of defined character styles, or to create and modify character styles.

Character styles are a collection of character attributes (font, size, style, etc.) that you can name, save, and later apply to cells. For example, you can create one character style for cells containing values (using e.g. 10 point Times New Roman), and another style for headings (using 14 point Arial bold).

When you choose a character style, all the attributes stored in that style are applied to the selected cells (or the selected characters) at once.

Annotation: PlanMaker also supports *cell styles* (see section [Cell styles](#)). The difference between these two features is that character styles store the character format only, whereas cell styles store *both* character format *and* cell format (number format, alignment, etc.). Apart from that, character styles can be applied to single characters within a cell, whereas cell styles can only be applied to entire cells.

See the next pages for detailed information.

Creating character styles

To create a new character style:

1. Invoke the menu command **Format > Character style**.
2. Click on the **New** button.
3. Enter a name for the new character style and click **OK**.
4. A dialog box similar to the one of the **Format > Character** menu command (see section [Character format](#)) pops up. Here, you can specify the desired character format for this style.
5. Click **OK**.
6. Click **Close**.

The new character style is now defined and ready to use. To learn how to apply character styles, see the next section.

Assigning a keyboard shortcut to a character style

If you use a character style frequently, it might be useful to assign a keyboard shortcut to it, allowing you to apply it with a single keystroke.

For this purpose, choose the menu command **Format > Character style**, select a style, click **Edit**, and switch to the **Style** tab. Place the cursor in the **Shortcut key** input box and press the desired key combination.

Note: If you enter a key combination that is already in use, its current assignment will be displayed below the **Shortcut key** box. To prevent overwriting the keyboard shortcut for another style or menu command, press the **Backspace** key and assign a different key combination.

Applying keyboard shortcuts utilizing **Ctrl and Shift** is suggested, as these shortcuts are usually available.

Applying character styles

To apply a character style:

1. Select the desired cells. (Or, press **F2** and select partial cell content, if applying to selected characters.)
2. Choose the menu command **Format > Character style**.
3. Click one of the character styles listed.
4. Click the **Apply** button.

The character format of the selected cells/characters will change to the character format defined in the character style.

Tip: Character styles can also be applied by selecting them from the font list in the Formatting toolbar.

Even faster: If you have assigned a keyboard shortcut to a character style, the style can be applied by pressing the corresponding key combination.

To remove a style, apply the "Normal" character style. Keep in mind that text to which a character style has been applied can always be given additional formatting with e.g. the menu command **Format > Character**.

Modifying character styles

Note: When you change the formats stored in a character style, *all* cells using this style are changed accordingly.

To modify a character style:

1. Choose the menu command **Format > Character style**.
2. Select the style you want to modify.
3. Click **Edit**.

4. A dialog box similar to the one of the **Format > Character** menu command (see section [Character format](#)) pops up. Modify the character format as desired.
5. Click **OK**.
6. Click **Close**.

Deleting or renaming character styles

To delete a character style, choose the menu command **Format > Character style**, select a style, and click the **Delete** button. To rename it, click the **Rename** button.

The character style Normal

Every document you create contains a character style named "Normal". This is the *default* character style.

As long as you do not apply other character styles, every cell in a document uses the "Normal" character style. Additionally, every character style you create is based on this style.

In other words: The "Normal" character style defines the *default* character format in a document. For example, if you change the font in this style, *all* cells (except the ones manually formatted with a different font) will be formatted in that font.

Creating linked character styles

If you create new character styles as described at the beginning of this chapter, they will always be based on the character style "Normal". If you later change, for example, the font of the "Normal" style, the font of all derived styles changes as well – unless you explicitly chose a different font there.

Note: By default, all character styles are based on the character style "Normal". You can however base them on any other character style by selecting the base style in **Based on**.

To create a style and base it on another style, proceed as follows:

1. Choose the menu command **Format > Character style**.
2. Click **New**.
3. Enter a name for the new character style.
4. On the **Style** tab, choose the character style on which the new style should be based using the **Based on** option.
5. You can now apply the desired formatting to the character style.

Scaled font size

If you base a style on another, you can optionally define a *relative* font size. You can, for example, set the font size of style X to be always 80% of the font size of style Y.

To do this, proceed as follows:

1. Choose the menu command **Format > Character style**.
2. Select one of the styles and click on **Edit**.
3. Switch to the **Style** tab.
4. Enable the option **Scale**.
5. Enter the desired scaling factor as a percent value – for example, 80.
6. Confirm with **OK**.

The font size of such a style will now always be 80% of the font size of the style it is based on.

Cell styles

Use the menu command **Format > Cell style** to select from a list of defined cell styles, or to create and modify cell styles.

Cell styles are a combination of cell attributes (number format, orientation, borders, etc. as well as the character format) that you can name, save, and later apply to cells. Whenever you choose a cell style, all the attributes stored in that style are applied to the selected cells at once.

For example, if you want to frequently format cells with the number format "Percent", red background and bold font, simply create a corresponding cell style and apply it to as many cells as desired.

Annotation: PlanMaker also supports *character styles* (see section [Character styles](#)). The difference between these two features is that character styles store the character format (font etc.) only, whereas cell styles store both character format and cell format. Apart from that, character styles can be applied to single characters within a cell, whereas cell styles can only be applied to entire cells.

See the next pages for detailed information.

Applying cell styles

To apply a cell style:

1. Navigate to the cell of interest. Alternatively, you can select multiple cells to change them altogether.
2. Choose the menu command **Format > Cell style**.

A dialog appears with a list of all cell styles.

Tip: You can use the **Show** option to determine whether *all* available styles should be displayed in the list – or only those already used in the current document.

3. Select the desired style in the **Styles** list.
4. Click the **Apply** button.

The cell format and character format of the selected cells will be changed to the format defined in the cell style.

Tip: Cell styles can also be applied by selecting them from the dropdown list displayed on the left side of the Formatting toolbar.

In detail, a cell style can contain the following formatting options:

- Number format
- Font (font face, size, style, etc.)
- Cell alignment
- Shading
- Border
- Cell protection

In the section **Format includes** of the above dialog, you can (optionally) specify exactly *which* of these formatting options should be used when you apply the selected cell style (see also next section).

Creating cell styles

To create a new cell style:

1. Choose the menu command **Format > Cell style**.
2. Optional: In the **Styles** list, choose the cell style on which to base your new style (or simply select the default style called "Normal").
3. Click the **New** button.
4. Enter a name for the new cell style and click **OK**.
5. The new cell style has now been created, and you can modify it as follows:

To change the character format, click the **Character** button. A dialog box similar to the one of the **Format > Character** menu command pops up (see section [Character format](#)). Make the desired modifications and click **OK**.

To change the cell format, click the **Cell** button. A dialog box similar to the one of the **Format > Cell** menu command pops up (see section [Number format](#)). Make the desired modifications and click **OK**.

6. Click **Close** (or the **Apply** button first if you want to see the result of the cell style directly for the selected cells).

The new cell style is now defined and ready to use.

You can create a different set of cell styles for each document; the styles are stored inside the document.

The selection "Based on"

If you select **Based on**, you can create new cell styles using previously created cell styles, copy their formatting and adjust them. You thus build on the format properties of a style predecessor that you have already created.

In addition, subsequent changes to the formatting of the style predecessor are also "inherited" to its successors for all other cell styles that you have set as based on this predecessor.

Please Note: If you want to create a new cell style **Based on** another cell style and you have not yet created your own cell style, then this option is initially grayed out (i.e. cannot be selected), because only the standard styles are available so far, for example the "Normal" style. In this case, the formatting of the "Normal" style is used by default for a new cell style. Once you have self-defined your own new cell style and then select it from the styles list, you will be able to use the option **Based on**.

An example to explain the "inheritance" of formatting:

Create your first cell style as described in the chapter above using the **New** button. Name it maybe "*Cell style1*". This style initially has the formatting of the standard "Normal" style and can be modified to your own requirements via cell format and character format. For example, apply a pattern for the cell format in the *Shading* tab.

Now create a second cell style **based on** Cell style1 and press the **New** button again. Name this next style maybe "*Cell style2*".

The result looks like this:

1. The Cell style2 has adopted the formatting from Cell style1.
2. You can further customize the formatting of Cell style2.

But what's important: Subsequent changes to the formatting of Cell style1 will also lead to be adopted in Cell style2. Unless it concerns formatting options that have already been changed individually in Cell style2: these are kept there.

The "Format includes" section

In the **Format includes** section of the dialog, you can specify exactly which of the formatting options to include when you apply the cell style.

For example, cell styles such as "Currency" should solely provide the cells with the number format "Currency" – and nothing else. That's why all options except for "Number format" are deactivated in this style.

The setting in this section can be made for each template individually.

Please note: Just like "**Based on**", you cannot use these options until you have created your own new cell style. Otherwise the fields are grayed out and not selectable.

Assigning a keyboard shortcut to a cell style

If you use a cell style frequently, it might be useful to assign a keyboard shortcut to it, allowing you to apply it with a single keystroke.

To assign a keyboard shortcut to a style, invoke the **Format > Cell style** menu command and select the style of interest. Then, click into the **Shortcut** input box and press the desired key combination.

Note: If you enter a key combination that is already in use, its current assignment will be displayed below the **Shortcut key** box. To prevent overwriting the keyboard shortcut for another style or menu command, press the **Backspace** key and assign a different key combination.

Applying keyboard shortcuts utilizing **Ctrl** and **Shift** is suggested, as these shortcuts are usually available.

Modifying cell styles

Note: When you change the formatting options stored in a cell style, *all* cells using this style are changed accordingly.

To modify a cell style:

1. Choose the menu command **Format > Cell style**.
2. Select the style to be modified.
3. To modify the cell format, click on the **Cell** button. To modify the character format, click on the **Character** button.
4. Click on the **Close** button when done.

Deleting or renaming cell styles

To delete a cell style, choose the menu command **Format > Cell style**, select a style, and click the **Delete** button. To rename it, click the **Rename** button.

Note: Some of the cell styles are predefined and cannot be deleted or renamed.

The cell style Normal

Every document you create contains a cell style named "Normal". This is the *default* cell style.

As long as you do not apply other cell styles, every cell in a document uses the "Normal" cell style. Additionally, every cell style you create is based on this style.

In other words: The "Normal" cell style defines the *default* cell format in a document. For example, if you change the number format in this style, *all* cells (except the ones manually formatted with a different number format) will be formatted in that number format.

Document templates

Character styles and cell styles (see previous sections) are stored in the document they were created in. To reuse styles in other documents, store them in a *document template*.

When you use the **File > New** menu command to create a new document, PlanMaker requires that you choose the document template the new file will be based on. Choosing a document template that contains user-defined character and cell styles will make these styles available in the new document.

Note: Document templates can not only contain your favorite character and cell styles, but also text, values, calculations, etc. This enables you to create a set of templates for invoices, annual reports, balance sheets, or other frequently used documents.

Creating document templates

To create a new document template:

1. Start a new document or open the document to base the document template on.
2. Create the desired character and cell styles (and text, values, calculations, etc.) to be stored within the template.
3. Choose the menu command **File > Save as**.
4. In the **Save as Type** list, select **PlanMaker template**.
5. PlanMaker automatically switches to the document template folder.
6. Enter a filename for the template.
7. Click **OK** to confirm.

The new template will now be stored.

Using document templates

To use a user-created document template, start a new document. PlanMaker will display a dialog to let you select the document template:

1. Choose the menu command **File > New**.

2. Click one of the document templates listed.
3. Click **OK** to confirm.

PlanMaker will create a new document based on the selected template. It will contain all character and cell styles stored in the document template, as well as all the text, values, calculations, etc., stored in the template.

Modifying document templates

To modify a document template, proceed as you would modify a normal document: Open it, make your changes, and save it:

1. Choose the menu command **File > Open**.
2. In the file types list box, select **PlanMaker template**.
3. Select the template to modify. Click **OK**.
4. Modify the content and/or the styles of the template as desired.
5. Choose the menu command **File > Save** to save the template.

The document template Normal.pmvx

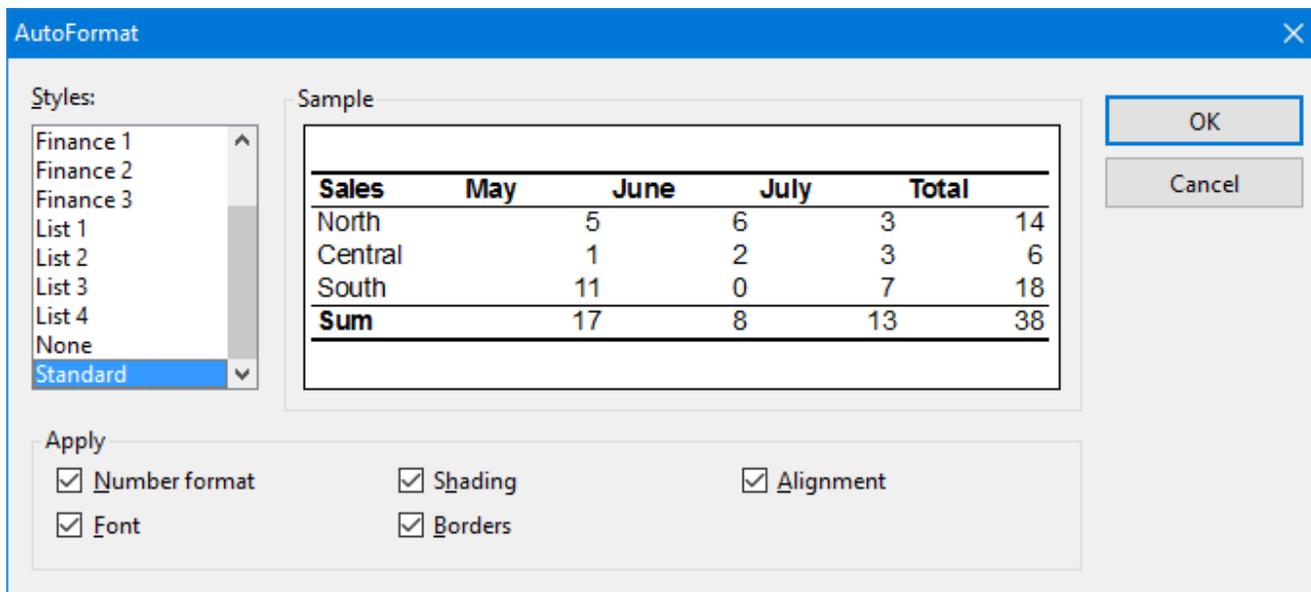
The document template named `normal.pmvx` is the *default template* for new documents. When using the **File > New** menu command, this template is selected by default. Please keep this in mind when modifying this template.

By default, `normal.pmvx` is completely empty. All it contains is the standard character style "Normal" and standard cell style "Normal". Therefore, this template is an ideal basis for creating new documents or document templates from the scratch.

Hint: To use a different document template as your default template, choose the menu command **File > New**, select a template, and click the **Set default** button. From now on, this template will be selected by default when creating a new document.

AutoFormat

The **Format > AutoFormat** menu command lets you apply a predefined scheme of formattings to an entire cell range.



For this purpose, select the desired cell range and choose the menu command **Format > AutoFormat**. A dialog displaying a list of predefined *AutoFormats* pops up. Select the desired format and click **OK**. The cell range will be reformatted accordingly.

Note: The options in the **Apply** group box of the dialog let you choose which formatting options to apply. For example, if you deselect all options except **Borders**, only the border lines will be applied; all other formatting options will remain unchanged.

Conditional formatting

The menu command **Format > Conditional formatting** allows you to add *conditional* formatting to cells. Conditional formatting will only be applied when a certain *condition* is met. This way you can achieve that, for example, a cell is displayed in red color whenever its content is greater than 1000.

Detailed information is provided on the next pages. Topics covered:

- [Creating a new conditional formatting rule](#)

To add conditional formatting to cells, you select those cells and create a so-called *formatting rule* for them. Example: "If the cell content is greater than 1000, display it in red color."

You can create as many formatting rules for a cell (or cell range) as you like. For example, you can add a second rule that formats the cell in boldface if it contains a value below zero etc. etc.

- [Types of conditional formatting rules](#)

This section details the different types of formatting rules available.

- [Managing conditional formatting rules](#)

The **Manage rules** command gives you access to a dialog where you can manage all conditional formatting in a document. For example, you can edit conditional formatting rules, delete rules, etc.

- [Removing conditional formatting](#)

The last section covers the removal of conditional formatting.

Creating a new conditional formatting rule

To add conditional formatting to cells, you select those cells and create a so-called *formatting rule* for them.

Formatting rules always consist of two parts:

- a condition
- ... and the formatting to be applied when this condition is met

Example: "If the cell content is greater than 1000, display it in red color."

To define (and apply) a formatting rule like this, proceed as follows:

1. Navigate to the cell of interest (or select a range of cells).
2. Choose the menu command **Format > Conditional formatting > New rule**.
3. At **Type**, choose what kind of condition you want to use.

In our example, you would select **Format only cells that contain**.

(For detailed information on each type of condition, see the section [Types of conditional formatting rules](#)).

4. Next, specify the desired condition.

In our example, this would be the condition "cell value is larger than 1000". Accordingly, select the options **Cell value** and **greater than**. In the edit control at the right, type in the value **1000**.

5. In the last step, click on the **Format** button and specify the formatting options to be applied whenever the condition is met.

In our example, switch to the **Font** tab in the dialog that pops up. There, set the **Text color** to red color and click on **OK**.

6. Click **OK** to confirm and create the new rule.
7. Close the dialog by clicking on **Close**.

The new formatting rule is now created – and at the same time applied to the selected cells. This has the following effect:

- If the cell content is smaller than or equal to 1000, the cell will be displayed in its *original* format.
- If the cell content is greater than 1000, the cell will be displayed in the *conditional* format, that is, in red color.

Hint: You can create as many formatting rules for a cell (or cell range) as you like. For example, you can add a second rule that formats the cell in boldface if it contains a value below zero etc. etc.

Types of conditional formatting rules

In the dialog for creating new conditional formatting rules (see previous section), you can choose between the following types of rules:

Format all cells based on their values

This type of conditional formatting rule actually does *not* utilize a condition at all. It rather reformats *all* of the selected cells – based on the values they contain.

For example, if you choose a **2-color scale** from red to green, the lowest value will be highlighted in red color, and the highest value in green color. The colors for the values in-between will be calculated automatically. The result is a color gradient like e.g. the following:



There are several sub-types available for this type of formatting rule. They can be selected using the **Format Style** control, which contains the following entries:

- **2-color scale**

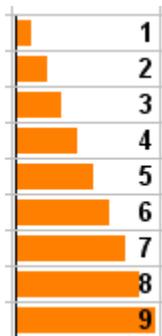
As described in the example above.

- **3-color scale**

Same as the 2-color scale, with an additional option to specify the color of the medium value.

- **Data bars**

Displays a bar in the background of each cell, representing the relative size of the value – similar to a bar chart:



■ **Icons sets**

Displays an icon in each cell, indicating the size of the respective value – for example a red signal light for the lower third of the values, a yellow one for the medium third, and a green light for the upper third:

●	1
●	2
●	3
●	4
●	5
●	6
●	7
●	8
●	9

Format only cells that contain ...

This type of rule reformats only those cells within the current selection that meet the specified *condition*.

Proceed as follows:

First, specify the desired condition, using the controls and input boxes in the dialog.

Then, click on the **Format** button and specify the formatting options to be applied for all cells that meet the condition.

An example can be found in the previous section – where we created a formatting rule that paints the cell content in red color if it is larger than 1000.

Format only upper and lower values

This type of rule reformats only those cells that contain the *highest* or *lowest* values within the current selection.

First, specify which values to reformat – for example, the top 3 values or the top 10% of the values.

Then, click on the **Format** button and specify the formatting options to be applied for the corresponding cells.

Format values above or below average

This type of rule reformats only those cells that contain values above or below the *average* of the current selection.

First, specify which values to reformat – for example, all values above the average.

Then, click on the **Format** button and specify the formatting options to be applied for the corresponding cells.

Format unique or double values

This type of rule reformats all *unique* values (or *double* values) within the currently selected cells.

First, specify which values to reformat:

- all **unique values** (values that occur just once)
- or all **duplicate values** (values that occur twice or more often)

Then, click on the **Format** button and specify the formatting options to be applied for the corresponding cells.

Use a formula to determine which cells to format

This type of rule reformats only those cells within the selection where the specified *formula* returns TRUE.

First, enter the desired formula in the dialog. Note that only formulas that return a logical value (i.e. TRUE or FALSE) are allowed. See also notes below.

Then, click on the **Format** button and specify the formatting options to be applied for all cells where this formula returns TRUE.

Some notes:

- **Creating suitable formulas**

You can enter any kind of formula – as long as it returns a logical value (i.e. TRUE or FALSE).

Examples:

If you enter the formula "SUM(\$A\$1:\$C\$3) > 42", the conditional format will be applied if the sum of the cells A1:C3 is greater than 42.

If you enter the formula "ISEVEN(ROW())", the conditional format will be applied if the current cell is located in a row with an even row number.

- **Using absolute and relative cell addresses**

You can use *absolute* cell addresses as well as *relative* cell addresses in such formulas:

Absolute cell addresses like \$A\$1 always refer to the cell A1.

Relative cell addresses like A1 refer to the cell in the upper left corner of the selection, as follows:

If you have not selected a cell range, A1 refers to the current cell.

If you have selected a cell range, A1 refers to the cell in the upper left corner of that range, A2 to the cell below it, etc.

Managing conditional formatting rules

The **Format > Conditional formatting > Manage rules** menu command gives you access to a dialog where you can manage all conditional formatting in a document. For example, you can edit conditional formatting rules, delete rules, etc.

You use this command as follows:

1. Navigate to the cell of interest (or select a range of cells).

2. Choose the menu command **Format > Conditional formatting > Manage rules**.

3. A dialog pops up.

Note: By default, this dialog displays only the rules for the *current* cell (or selection). If you want to see *all* rules created in the entire worksheet instead, set the **Source** option to **Current worksheet**. (See below for details.)

4. Edit the formatting rules to your liking. (See below for details.)

5. Close the dialog using the **Close** button.

Operating the dialog

The dialog window for this command has the following controls:

■ Source

Here you can choose which formatting rules the dialog should display:

Only selected cells: Show only rules that affect the currently selected cells (or, if no cells are selected, the current cell)

Current worksheet: Show all rules for the current worksheet

Sheet <name>: Show all rules for a different worksheet (if available)

■ Rules list

The **Rules** list displays all rules for the current selection or the entire worksheet (depending on what you have chosen at the **Source** option).

Rules that affect the currently selected cells are displayed in boldface.

Stop: The checkboxes in the **Stop** column are something you normally don't have to care about. They are needed only for compatibility reasons with older documents. (Background info: In older versions of PlanMaker and Excel, conditional formatting for a cell that had multiple formatting rules was "stopped" as soon as and *any* of these rules applied. All further rules for this cell were then ignored. With current versions of PlanMaker and Excel, this is no longer the case: Here, *all* rules defined for a cell are respected.)

■ Arrow buttons next to the **Rules** list

The arrow buttons next to the **Rules** list allow you to modify the ranking order of the formatting rules in the list.

To change the ranking of a rule, select it in the list and then click on the up button (=increase ranking) or down button (=decrease ranking).

This may be necessary when competing rules have been defined for a cell range – for example, one rule that wants to color the cell green, and another that wants to color it red.

The *higher* a rule is placed in the list, the higher its ranking is.

Note: Please note that the list does not reflect the order in which the rules are processed – on the contrary: The list is processed from bottom to top, so that the rules with the highest ranking are applied last.

- **Applies to**

Here you can change the target range for a rule.

To do so, select the rule in the **Rules** list and enter the desired cell range here.

- **New button**

Creates a new conditional formatting rule for the cells currently selected in the worksheet, just like the **Format > Conditional formatting > New rule** menu command.

For details on the dialog appearing when you invoke this button, see the section [Creating a new conditional formatting rule](#).

- **Edit button**

Lets you edit the conditional formatting rule currently selected in the **Rules** list.

Note: Changes on a rule will affect *all* cells it was defined for (no matter which cells currently are selected in the worksheet).

For details on the dialog appearing when you invoke this button, see the section [Creating a new conditional formatting rule](#).

- **Delete button**

Deletes the rule currently selected in the **Rules** list.

Note: This will remove the rule from *all* cells it was defined for (no matter which cells currently are selected in the worksheet).

For more information on the topic [Removing conditional formatting](#), see the next section.

- **Go to button**

Closes the dialog and jumps to the target area for the rule currently selected in the **Rules** list.

Removing conditional formatting

Conditional formatting can be removed in two different ways:

A) Deleting formatting rules

When you delete a conditional formatting rule, it will be removed from *all* cells it was defined for – no matter if you have currently selected cells in the worksheet or not.

Proceed as follows:

1. Choose the menu command **Format > Conditional formatting > Manage rules**.
2. A dialog pops up.

Note: By default, this dialog displays only the rules for the *current* cell (or selection). If you want to see *all* rules created in the entire worksheet instead, set the **Source** option to **Current worksheet**.

3. Select the rule to be deleted in the **Rules** list.
4. Click on the **Delete** button.

This will delete the rule – and accordingly remove it from all cells it was defined for.

B) Removing all conditional formatting from a cell range

There's another method for removing conditional formatting, which removes *all* conditional formatting from a particular cell range.

Proceed as follows:

1. Select the cells of interest.
2. Invoke the menu command **Format > Conditional formatting > Delete rules in selected cells**.
(Alternatively you can achieve exactly the same by invoking the menu command **Edit > Delete special > Conditional formatting**.)

This will "free" the selected cells from any conditional formatting rules applied to them.

Formatting rules that become superfluous because of that will be deleted automatically.

Input validation

When you apply *input validation* to a cell, you can achieve the following:

- Ensure that only certain types of values (for example, numbers) within certain bounds (for example, between 10 and 20) are considered valid in this cell.
- Display an informational text whenever the user goes to this cell (for example, "Please enter only numbers between 10 and 20.").
- Display an error, warning, or alert message window when the user tries to input values that do not pass validation.

This is useful when you are creating tables that will be filled out by other people and you want to prevent invalid values from being entered.

For instance, if you would like to limit the input of a certain cell to numeric values between 10 and 20, you would proceed as follows:

1. Navigate to the desired cell. Alternatively, you can select multiple cells to change their settings altogether.
2. Invoke the **Format > Input validation** menu command.
3. On the **Settings** tab, you can specify which types of values are permitted as well as their bounds.

For our example, you would choose the following:

Allow: "Decimal Numbers"

With Values: "between"

Minimum: 10

Maximum: 20

4. On the **Input message** tab, you can enter informational text that is displayed whenever the user goes to the cell.

For our example, enter here, "Please enter only numbers between 10 and 20." Of course, you can also leave the input message blank.

5. On the **Error message** tab, you can enter text that is displayed in a message box when the user attempts to input invalid data into the cell.

The icons in the **Type** area allow you to choose the type of error window that is shown. (See explanation below.)

Important: The type of the error window also determines whether the user is actually allowed to enter invalid values. PlanMaker strictly rejects invalid data *only* when the type **Error message** (first icon) is selected!

Furthermore, you can enter the actual text of the message. If nothing is entered, a standard message is given.

For our example, set the type to **Error message** by clicking the first icon and enter the desired message (e.g., the title "Invalid entry" and the text "Only numbers between 10 and 20 are allowed here.")

6. Click **OK** to confirm.

Now, only values between 10 and 20 will be permitted in the selected cells. Should the user input something else, an error message is displayed.

Note: Notice that input validation is only active when the user enters values by *typing* them in. Should the user paste invalid values into the cell through a copy and paste operation (for example, with the menu command **Edit > Paste**), input validation will not intervene!

If you would like to turn input validation off, select the desired cells and choose **Edit > Delete special > Input validation** from the menu. Alternatively, you could also invoke **Format > Input validation** and select "All values" under **Allow**.

The dialog box of the **Format > Input validation** menu command contains the following options:

Settings tab

- **Allow:**

With these options you can specify which types of values are allowed:

Option	Explanation
All values	Allow all types of values (effectively deactivate the input validation)
Integer Numbers	Allow only integer numbers

Decimal Numbers	Allow only decimal numbers
List entries	<p>Allow only values from a predefined list of permissible values.</p> <p>When you use this option, enter a comma-separated list of the allowed values in the Source field – for example, dog,cat,mouse or 1,2,3,4,5,6.</p> <p>Alternatively, you can enter an equal sign followed by a range of cells which contains a list of permissible values. For example, if the cells C1 through C3 hold the values "dog", "cat" and "mouse" and you enter =C1:C3 in Source, only those three values will be allowed.</p> <p>Additional settings are displayed when the Options button is clicked.</p>
Date	Allow only date values
Time	Allow only time values
Text length	Allow only entries whose length falls within the bounds specified here.
User defined	Allow only entries which satisfy the formula given in the Formula field. (For more information on this, see the end of this section.)

■ **With Values**

Here you can further narrow the bounds for allowable values. For instance, if you choose the **Between** option, you can specify minimum and maximum values, which the input value must lie between.

■ **Minimum, Maximum etc.**

Here you can specify the bounds of the entries. If you enter 10 as the **Minimum** and 20 as the **Maximum**, only values within 10 and 20 are accepted.

You may also use calculations here. If you enter C1 as the **Minimum**, the contents of the cell must be greater than or equal to the cell contents of cell C1. Should you enter SUM(D2:D8), the contents of the cell must be greater than or equal to the sum of cells D2 through D8.

■ **Use dropdown**

Only available when **List entries** is selected under **Allow**. When this option is selected, an arrow appears on the right edge of the cell when the user goes to it. When clicked, a dropdown list appears, which contains all available values for that cell, and from which the user can choose.

■ **Ignore empty cells**

If this option is checked, input validation is ignored for empty cells. If the user deletes the contents of a cell, the cell does not run any input validation until the user enters another value.

Input message tab

On this tab, you can enter informational text that pertains to the cell being filled out – for example, "Please enter only numbers between 10 and 20." This information is displayed when the user goes to the cell.

This tab has the following options:

- **Show input message when cell is selected**

Determines whether the input message should be shown or not.

- **Title**

Here you can specify the title of the message.

- **Message**

Here you can enter the text of the message.

Error message tab

On this tab, you can specify the error, warning, or information message, which appears when the user input does not pass validation.

You are presented with the following options:

- **Show error message after invalid data is entered**

Determines whether the message should be shown or not.

Note: Normally, you should leave this option checked, since input validation is of little use if the user isn't immediately notified of an invalid entry.

- **Type**

Here you can specify the type of the message. Simply click the desired symbol.

Important: The type of the error window also determines whether the user is actually allowed to enter invalid values. PlanMaker strictly rejects invalid data *only* when the type **Error message** (first icon) is selected!

Types available:

Error Message (first icon): PlanMaker displays an error message. The user is *forced* to enter a valid value; invalid values will not be accepted.

Warning Message (second icon): PlanMaker displays a warning message. The user can *decide* whether they proceed with the invalid entry anyway.

Information Message (third icon): PlanMaker only displays an information message. The user must only *acknowledge* this message and the invalid data is accepted (as long as the user does not click **Cancel**).

- **Title**

Here you can specify a title for the message.

If you enter nothing here, a standard text is used as the title.

- **Message**

Here you can enter the text of the message.

If you enter nothing here, a standard text is used as the message.

Tip: If you would like to have the specified minimum and maximum values displayed in the message, simply use the placeholders %min and %max. Example: "Error – Only values between %min and %max are allowed here."

Examples

Some examples of use:

- **Allow only values within the specified range**

On the **Settings** tab choose first the desired type of value. If only dates are to be allowed, set the option **Allow** to "Date". If only numbers are to be allowed, set the option to "Decimal numbers", etc.

After that, you can set the bounds using the **with values** options. For instance, if only values greater than one should be allowed, choose the "greater than" option and enter 1 as the **Minimum**.

- **Allow only values with a certain length**

If you would like to prevent the user from entering values with lengths greater than 40, choose the following options:

Allow: "Text length"

With values: "smaller or equal"

Maximum: 40.

Note: Characters such as numerals, periods, commas, symbols, etc. count here just as much as characters such as letters.

- **Using your own formula for input validation**

Advanced users can also choose "User defined" under **Allow**, and then give a formula for use in the input validation.

To do this, use a formula that returns a *logical* value (i.e., TRUE or FALSE). If the result of the formula is TRUE, the input is treated as valid; if not, it is treated as invalid.

An Example: If you use the formula $SUM(\$A\$1:\$C\$3) > 42$, the inputted data is only treated as valid if the sum of A1:C3 is greater than 42.

Note: Notice that not only *absolute* cell references, as above, can be used, but also *relative* cell references:

Absolute cell references, like \$A\$1, always refer to the cell A1.

Relative cell references, like A1, on the other hand, refer to the cell in the upper left corner of the selected cells. If you use input validation on only one cell, A1 refers to this cell. If, beforehand, you had marked a range of cells, A1 refers to the cell in the upper left corner, A2 to the cell below this cell, etc.

Transfer formatting

To transfer the character format and cell format from one cell to other cells, use the **Format > Transfer formatting** menu command as follows:

1. Click the cell whose format you want to transfer to other cells.
2. Invoke the menu command **Format > Transfer formatting**.

The mouse pointer will change to a little brush: 

3. Drag the mouse pointer over the desired cells while pressing and holding the left mouse button.
4. If you want to apply the format to additional cells, repeat step 3 as often as required.
5. When finished, invoke the **Transfer formatting** command once more or simply press the **Esc** key.

The character format (font, font style, etc.) and cell format (number format, alignment, etc.) will be applied to the selected cells.

Transferring the format of entire cell ranges

To transfer the format of an entire cell range, select the desired cells and proceed as described above.

Page setup

The *page setup* dialog allows you to set print options for the worksheet. This includes settings for paper size and orientation, margins, headers and footers, etc.

Covered in this section:

- [Page format](#)

Use the menu command **File > Page setup** to change paper size, orientation, and margins.

- [Additional page setup options](#)

The **Options** tab in the **File > Page setup** dialog provides extended page setup options for controlling page numbers, print order, etc.

- [Headers and footers](#)

The **Headers and footers** tab in the **File > Page setup** dialog lets you add headers and footers to your worksheet. Headers are printed above the worksheet; footers are printed below.

- [Page breaks](#)

PlanMaker automatically inserts page breaks as needed. If desired, you can insert "hard" page breaks to override them, using the **Insert > Page break** menu command.

See the following pages for detailed information.

Page format

Choose the menu command **File > Page setup** and switch to the **Page format** tab to modify the page format (paper size, orientation, margins) of the current worksheet.

Note: You can set up a different page format for each worksheet in a document. For example, within one document, the page orientation can be set to portrait in one worksheet, and landscape in another.

Options available:

Orientation

Click **Portrait** for a top-to-bottom page orientation (long edge vertical); click **Landscape** for a side-to-side page orientation (long edge horizontal).

Paper size

Lets you select a paper size. Letter size (8.5 by 11 inches) is the default. To use a custom paper size, enter the appropriate values in the **Width** and **Height** boxes.

Margins

Lets you enter values for the page margins.

Distance to edge

Lets you modify the distance between headers/footers and the top/bottom edge of the page.

Note: Headers/footers are printed inside the top/bottom margins. If they do not appear on the printout, check if a) the Distance to edge is too large, or b) the top/bottom margin is too small.

Paper bins

Available under Windows only: If your printer has multiple paper trays, you can select here which one(s) the printer should use.

Tip: If you right-click at the bottom on a worksheet tab, you can use the **Copy Page Setup** context menu command to copy all made page settings from one worksheet to another. See also the [Managing worksheets](#) section.

Additional page setup options

Choose the menu command **File > Page setup** and switch to the **Options** tab to modify extended page setup options for the current worksheet.

Options available:

Repeated rows/Repeated columns

Lets you set up rows/columns to be repeated on each page.

Use the following notation: *FirstRow:LastRow* (or *FirstColumn:LastColumn*, respectively)

For example, if you have created a table containing a large list of data, with a heading placed in the first row, enter 1:1 in the **Repeated rows** box to have this row repeated on every page of the printout.

Print

Check any of these options to include the following table components in the printout:

- **Row and column headers** (*Row headers* are located left of the table, labeled 1, 2, 3, etc. *Column headers* are located above the table, labeled A, B, C, etc.)
- **Grid** (gridlines between the cells)
- **Comments** (comments applied to cells with the **Insert > Comment** menu command)

Additionally, you can use the **Colors** option to specify if the printout should be rendered in color:

- **Original colors:** The printout is rendered in its original colors.
- **Grayscale:** Colored text is rendered in black/white, colored objects (pictures, charts, etc.) are converted to shades of gray.
- **Outlines only:** Colored text is rendered in black/white, colored objects are reduced to their outline in black/white.

Centering options

If **Center horizontally** is checked, the worksheet's content will be horizontally centered on the page when printed.

If **Center vertically** is checked, the worksheet's content will be vertically centered on the page when printed.

Page number

Allows you to modify the starting number for page numbers:

Auto: Pages are numbered starting with 1.

Value: Pages are numbered starting with the specified value.

Hint: To add page numbers to a worksheet, insert a **Page Number** field into the header or footer (see next section).

Print order

Lets you specify in which order worksheets larger than a page will be printed:

- **Left to right**

Print from left to right, then from top to bottom.

- **Top to bottom**

Print from top to bottom, then from left to right.

Print range

Here you can define a *print range* for the current worksheet.

When a print range is defined, only the cells inside this cell range will appear when the worksheet is output on a printer. The rest of the sheet will be omitted.

By default, this input field is empty, meaning that no print range is defined – so the *entire* worksheet will be printed. When you type in a cell range (or the name of a named cell range), from now on only this range will appear in the output when you print the worksheet.

A print range can be defined individually for each worksheet of the document.

Important: When you save a document, this setting will be stored in the document *permanently*. Thus, when you open and print this document once more in the future, the output will *still* be restricted to the specified print range. To have the entire worksheet printed, simply empty the **Print area** input field in this dialog. This will remove the print range.

Hint: There's an alternative and more comfortable way to work with print ranges: You can define the print range for a worksheet by selecting the desired cell range and invoking the **File > Print range > Define print range** menu command. To remove the print range from a worksheet, use the **File > Print range > Remove print range** menu command.

Scaling options

These options enable you to scale printouts of the document up or down.

By default, a fixed scaling factor of 100% is set (i.e. the original size is used).

To change the scaling, first select a **Scaling mode**, then set the desired value, as follows:

- **Use fixed scaling factor:** Here you can set the scaling factor manually (in percent). Only values between 20 and 200 percent are valid. For example, if you set the scaling factor to 50%, the printout will be scaled down to half its original size. If you set it to 200%, the printout will be doubled in size.

In the other 4 scaling modes, the scaling factor is calculated automatically according to your settings:

- **Specify height in pages:** Here you specify the desired height of the printout (in pages). PlanMaker will determine the suitable scaling factor automatically.
- **Specify width in pages:** Here you specify the desired width of the printout.
- **Specify height and width in pages:** Here you specify the maximum height and width of the printout.
- **Specify number of pages in total:** Here you specify how many pages the printout should have in total.

Note: PlanMaker does not allow the automatically determined scaling factor to fall below a value of 20%. If this limit is under-run, PlanMaker uses a scaling factor of 20%. The same goes for the maximum value of 200%.

Headers and footers

If desired, you can add *headers* and/or *footers* to a worksheet.

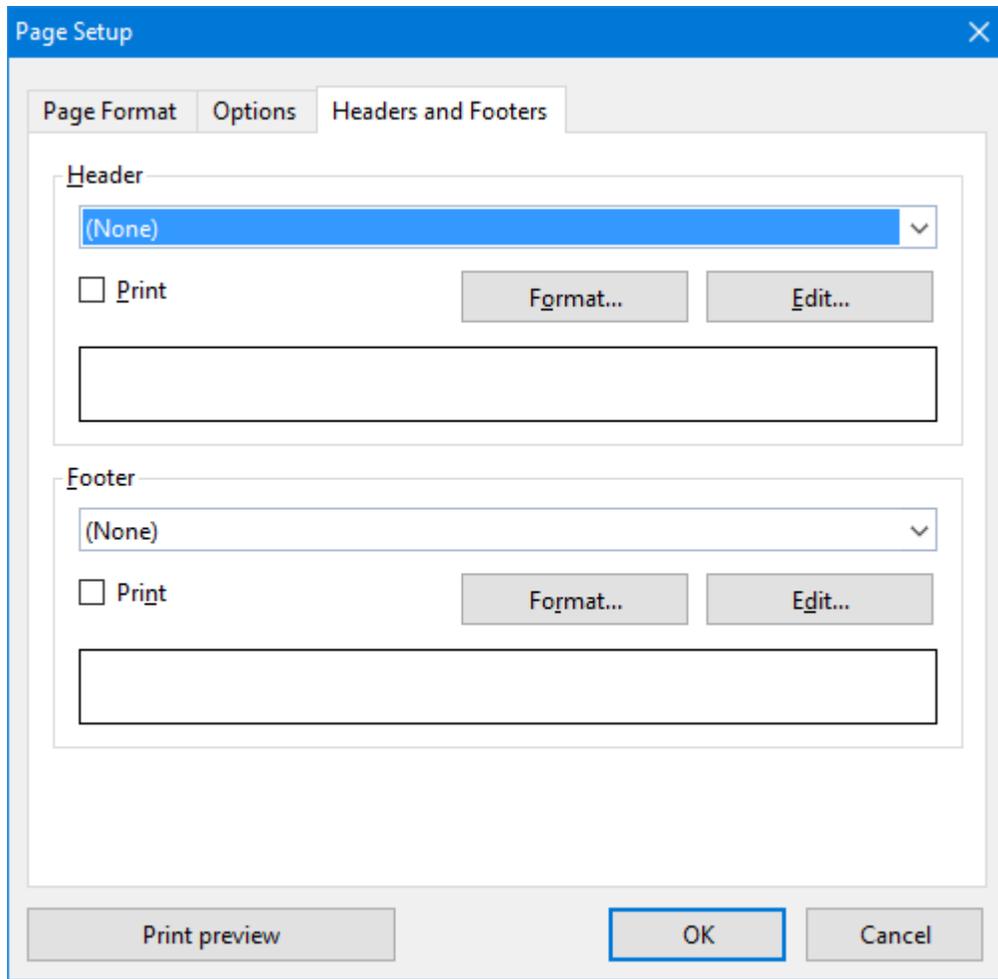
Headers/footers are repeated on the top/bottom of *each* printed page of a worksheet. They are useful for containing fields such as page number, file name, print date, etc.

Note: Each worksheet of a document can have its own headers/footers.

To modify, for example, the header of the current worksheet:

1. Choose the menu command **File > Page setup** and switch to the **Headers and footers** tab.

Alternatively, use the **Insert > Header and footer** menu command, which is doing exactly the same.



2. To apply one of the predefined headers, choose it from the dropdown list box in the upper half of the dialog.

To modify the header individually, click the **Edit** button (see also section "Editing headers and footers" below).

To change the format of the header, click the **Format** button (see also section "Formatting headers and footers" below).

3. Click **OK** to confirm.

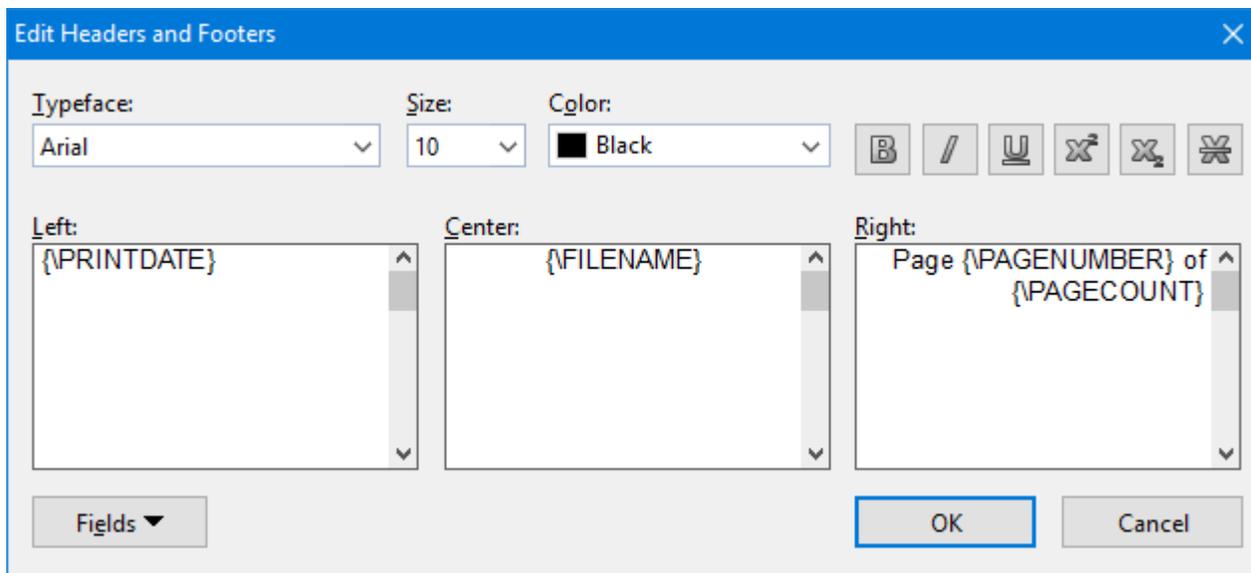
The header is changed accordingly.

Editing footers can be performed in the same manner as headers (using the controls in the lower half of the dialog).

Note: Headers/footers are not displayed in the worksheet on the screen – they appear in the *printout* only. To preview how the headers/footers will appear when printed, use the **File > Print preview** menu command.

Editing headers and footers

When you click on the **Edit** button in the dialog described above, you can modify the worksheet's headers and footers as desired.



Some notes:

- **Headers/footers can contain up to three sections**

The edit controls for entering headers/footers are split into three parts. This is due to the fact that headers/footers can consist of up to three sections: a left section (left-aligned), a middle section (centered), and a right section (right-aligned).

This allows you to display, for example, the date on the left, the filename in the middle, and the page number in the right section of the header/footer.

Of course, you can alternatively fill out only one of the three sections, in case you want to have e.g. only the filename displayed on the left.

- **Using fields for page numbers, file name, etc.**

To insert fields into headers/footers, click the **Fields** button in the dialog.

Fields are placeholders for information such as current date, document name, page number, etc. PlanMaker will automatically update them – i.e., when a document is printed, the Print Date field will reflect the current date.

Fields available:

Field name	Result
Document Name	File name of the document (e.g. "My Table.pmdx")
Document Name and Path	File name of the document (e.g. "C:\Tables\My Table.pmdx")
Worksheet Name	Name of the current worksheet
Page Number	Page number
Number of Pages	Total number of pages
Print Date	Current date (date of printing)

Print Time	Current time (time of printing)
Date of Last Change	Date the document was last changed (and saved)
Creation Date	Date the document was created

To insert one of these fields, click the **Fields** button, then click a field.

■ **Changing the character format**

To change the character format (typeface, font size, etc.) of text in the header/footer, use the controls located at the top of the dialog.

Important: Please note that you have to *select* the text that you want to format beforehand.

Formatting headers and footers

Apart from changing the character format of headers/footers (see above) you can also apply border lines and shades or change the alignment and margins. For this purpose, click on the **Format** button in the *main* dialog of the **Insert > Header and footer** menu command.

A dialog window containing the following tabs will appear:

■ **Shading tab**

Lets you add a colored shade or a pattern to the headers/footers. The controls in this dialog are identical to those described in section [Shading](#).

■ **Borders tab**

Lets you add a border or single border lines to the headers/footers. The controls in this dialog are identical to those described in section [Borders and lines](#).

■ **Alignment tab**

Lets you modify the inner margins and the vertical alignment of the headers/footers.

Hint: To change the distance between headers/footers and the top/bottom edge of the page, invoke the **File > Page setup** menu command and switch to the **Page format** tab.

Disabling headers/footers temporarily

If you want to print a document without its headers or footers, invoke the **Insert > Header and footer** menu command and deactivate the **Print** option in the dialog. The headers or footers will then no longer appear in printouts.

If you want the headers/footers to be printed again, simply reactivate the **Print** option.

Page breaks

Based on the selected paper size and margins, PlanMaker automatically inserts *page breaks* in a document. When printing, a new page will be started at each page break. If you take a closer look at a worksheet, you will notice that some of the gridlines between cells are darker. These lines indicate where PlanMaker has inserted automatic page breaks.

To manually control where PlanMaker starts a new page, insert "hard" page breaks. Hard page breaks override PlanMaker's automatic page breaks.

To insert a hard page break, choose the **Insert > Page break** menu command. A sub-menu with the following commands will open:

- **Insert before row** inserts a horizontal page break above the current row.
- **Delete before row** deletes such a page break. Navigate to a cell located directly below the page break before selecting this command.
- **Insert before column** inserts a vertical page break left of the current column.
- **Delete before column** deletes such a page break. Navigate to a cell located directly to the right of the page break before selecting this command.
- **Delete all page breaks** removes all manually inserted page breaks again.

Search & replace

This chapter covers information on searching (and replacing) in tables:

- [Search](#) and [Replace](#)

Use PlanMaker's search commands to search for a specific term – and, as needed, replace it with another value.

- [Jumping to specific cell addresses](#)

Use the **Go to ...** command to jump to a specific cell, cell range, or named cell range.

- [Jumping to specific contents of a table](#)

Use the three buttons in the lower right corner of the document window to jump to a specific content of a table (for example, to the next cell with an error value or a comment)

See the following pages for detailed information.

Search

Use the **Edit > Search** menu command to search for a specific term in a document.

Proceed as follows:

1. If you want to limit the search to a specific cell range, select the cell range first. If nothing is selected, the entire worksheet will be searched.
2. Invoke the **Edit > Search** menu command.
3. Under **Search for**, enter the search term.
4. As necessary, check the options for the search (see section [Search and replace options](#)).
5. Click on the **Search** button to begin the search.

PlanMaker scans the document for the search term and highlights the first cell that contains it.

To continue, choose one of the following options:

- A) Click the **Search again** button to find the next occurrence.
- B) Click the **Close** button to end the search.

Replace

Use the **Edit > Replace** menu command to find and replace values in a document.

Proceed as follows:

1. If you want to limit the search to a specific cell range, select the cell range first. If nothing is selected, the entire worksheet will be searched.
2. Invoke the **Edit > Replace** menu command.
3. Under **Search for**, enter the search term.
4. Under **Replace with**, enter the term that is to replace the search term.
5. As necessary, check the options for the search (see section [Search and replace options](#)).
6. Click on the **Search** button to start the search.

PlanMaker scans the document for the search term and highlights the first cell that contains it.

To continue, choose one of the following options:

- A) Click the **Replace** button to replace the selected occurrence of the search term and continue the search.
- B) Click the **Search again** button to jump to the next occurrence of the search term – without replacing the selected occurrence.
- C) Click the **Replace All** button to replace *all* occurrences of the search term.
- D) Click the **Close** button to end the search.

Search again & replace again

Choose the menu command **Edit > Search again** or **Edit > Replace again** or press the **F3** key to repeat the last **Search** or **Replace** command.

PlanMaker searches for the next occurrence of the last search request.

Search and replace options

When you click on the **Enlarge** button in the dialog of the menu command **Edit > Search** or **Edit > Replace**, the dialog expands to offer additional options.

When you click on **Reduce** the dialog contracts and the additional options are hidden. Thus you can specify the appearance of the dialog according to your preference for having the most options at your disposal or for having as much of the text as possible visible while you are searching.

The expanded search/replace dialog offers the following additional options:

"Search in" group box

Here, you can specify how to scan the document:

- **Search in**

Use this dropdown list to choose which parts of the table to scan: **cells**, **comments**, or object **frames** (text frames and drawings containing text).

- **Formulas**

Scan formulas as if they were just text strings.

For example, when you search for "sum", all cells using the SUM function will be found.

- **Results**

Scan the results of formulas.

For example, when you search for "4", cells containing the calculation =2+2 will also be found.

(Only available for the search command, not for the replace command.)

- **Values**

Scan all fixed values (e.g., numbers and text strings typed in manually).

- **Whole document**

If this option is checked, all worksheets in the document will be scanned.

If it is not checked, only the current worksheet will be scanned (or, respectively, all worksheets that are currently selected in the worksheet register.)

- **Search by column**

If this option is checked, the table will be scanned column by column.

If it is not checked, the table is scanned row by row.

"Options" group box

Here, you can specify the following options:

- **Case-sensitive**

By default, the search command is not case-sensitive. If you enter "Miller" in the **Search for** box, it will locate "MILLER", "miller", or any other upper/lower case combination of the term.

If you check the **Case sensitive** option, only "Miller" will be found.

■ Whole cell match

By default, the search command finds all cells that *contain* the search text at any position. If you enter "win" in the **Search for** box, PlanMaker will also find cells containing "windows" or "sales, winter 2018".

If you check the **Whole cell match** option, only cells that contain the term "win" – and nothing else – will be found.

"Special" button

The **Special** button allows you to use the following wildcard characters in your search terms:

- **Single arbitrary character** (^?) – represents a single arbitrary character. For example, when you search for "fo^?d", PlanMaker finds occurrences of "fold", "fond", "food", etc.
- **Multiple arbitrary characters** (^*) – represents any number of arbitrary characters. For example, when you search for "f*r", PlanMaker finds occurrences of "fair", "flyer", "freighter", etc.
- **Caret** (^) – searches for the character "^" (caret).
- **Line break** (^a) – searches for manual line breaks (inserted with **Ctrl+↵**).

To insert a wildcard character into the search term, click on the **Special** button and select the desired entry with a mouse click.

You can repeat and combine wildcards at will within the same search term. Of course, you can also use them together with normal text.

"Search all" button

You can click the **Search all** button to receive a list of *all* occurrences of the search term. When you click one of its entries, PlanMaker jumps to the corresponding occurrence in the document.

Note: This button is only available when the **Search in** option is set to **Cells**.

Jumping to specific cell addresses

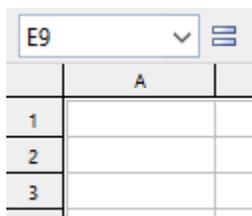
Use the **Edit > Go to** menu command to jump to a specific cell, cell range, or named cell range.

To do this, invoke the **Edit > Go to** menu command and type in the desired cell address. You can enter the address of a single cell (like D5), a cell range (like D2:D4), or the name of a named cell range (see **Worksheet > Names** menu command).

Click **OK** to jump to the specified cell(s).

Hint:

The control displaying the current cell address at the very left of the Edit toolbar works exactly like the edit box in the dialog of the **Edit > Go to** menu command.



To use this control to jump to a specific cell address, click inside this control, enter the cell address, and press the **Enter** ↵ key. You can enter a single cell address, a cell range, or the name of a named range.

Hint: Clicking on the small arrow right of the control opens a dropdown list of all named ranges.

Jumping to specific contents of a table

The three buttons in the lower right corner of the document window enable you to jump to specific contents of a table (for example, to the next cell containing an error value or a comment).



You use these buttons as follows:

- Click on the button with the red dot to bring up a small menu. Then select the type of target you want to jump to from the menu (see below).
- Click on the button with the up arrow to jump to the target prior to the current position. For example, if "Error Value" was selected as the target type, clicking on this button will result in a jump to the previous cell with an error value.
- Click on the button with the down arrow to jump to the target following the current position – to the next cell with an error value, for example.

Target types available:

Target Type	Explanation
Formula	Jump to cells that contain a formula
Array Formula	Jump to cells that contain an array formula
Constant	Jump to cells that contain a fixed value
Error Value	Jump to cells that contain an error value (see section Error values)
Faulty Cell	Jump to cells that have been imported incorrectly – for example, cells using an Excel arithmetic function that PlanMaker doesn't support.
Comment	Jump to cells that contain a comment
Conditional Format	Jump to cells that use conditional formatting

Input Validation

Jump to cells that use input validation

Search all worksheets

If this option is checked, PlanMaker searches all worksheets instead of just the current one.

Objects (pictures, drawings, etc.)

The **Object** menu contains commands for inserting and manipulating objects such as charts, pictures, text frames, and drawings.

This chapter covers information on working with objects in PlanMaker:

- [Objects – basic procedures](#)

Discusses basic procedures for working with objects (e.g., inserting, selecting, and modifying objects).

- [Objects – advanced procedures](#)

Discusses advanced procedures (e.g., hiding and grouping objects).

Following these sections, the different object types are introduced in detail:

- [Charts](#)
- [Text frames](#)
- [Pictures](#)
- [OLE objects](#)
- [Drawings](#)

Objects – basic procedures

This section discusses basic procedures for working with objects:

- [Inserting objects](#)
- [Selecting objects](#)
- [Object mode](#)
- [Changing position and size of objects](#)
- [Rotating and flipping objects](#)
- [Aligning and distributing objects](#)
- [Duplicating objects](#)
- [Changing the properties of objects](#)

More advanced procedures will follow later on, in section [Objects – advanced procedures](#).

Inserting objects

For example, to insert a picture into the current worksheet:

1. Choose the menu command **Object > New picture frame**.
2. A dialog box appears, allowing you to select the picture to be inserted. Choose a picture file and confirm with **OK**.
3. The picture is inserted.

In case you want to modify its position or size, do the following:

To change the position, click on the picture frame and (while still holding the mouse button down) drag it to the desired position.

To adjust its size, drag on one of the round handles surrounding the frame.

The process for inserting other types of objects is similar. For more information on the different types of objects, see sections [Charts](#), [Text frames](#), etc.

Selecting objects

If you want to modify an object, you must select it first. For most types of objects this can be achieved by clicking the object with the mouse. A selection frame will be displayed around the object, once it is selected.

Hint: Text frames can *not* be selected by clicking them. To select a text frame, click the surrounding *border*. Alternatively, switch to *Object mode* (see next section). In Object mode, text frames can be selected by clicking them.

Note: When an object is selected, table cells cannot be edited. To edit cells, click on any cell.

Object mode

Working with objects is a lot easier when you enable *Object mode*.

By default, PlanMaker runs in *Edit mode*. In this mode, table cells can be edited, formatted, etc.

When you switch to *Object mode*, table cells are no longer editable. Rather, various useful functions for object editing become available. For instance, in Object mode, you can select all types of objects with a simple mouse click.

Important: While in Object mode, only commands related to inserting and modifying objects are available. Cells can no longer be modified, and menu commands not related to objects are grayed out.

toggling between Edit mode and Object mode

To toggle between Edit mode and Object mode, use one of the following procedures:

- Choose the **View > Object mode** menu command to switch to Object mode. Choose again to return to Edit mode.
- Click the  icon in the Formatting toolbar to switch to Object mode. Click again to return to Edit mode.
- Right-click on any cell to open the context menu. Choose the **Object mode** command to switch to Object mode. Choose the **Exit Object mode** command to return to Edit mode.
- For the fastest method: Point to any cell and double-click using the *right* mouse button to switch between Object and Edit mode.
- Also, when in Object mode, you can return to Edit mode quickly by double-clicking on any position in your document where *no* object is located.

The Object toolbar

When in Object mode, the Formatting toolbar is automatically replaced by the *Object toolbar*.



The Object toolbar

This toolbar provides icons for working with objects. From left to right:

- Toggle between Object and Edit mode
- Insert text frame
- Insert picture frame
- Insert chart frame
- Insert OLE object frame (available under Windows only)
- Insert OLE object frame with an SoftMaker Equation Editor* object
- Insert OLE object frame with a TextMaker object
- Insert OLE object frame with a Presentations object
- Insert line or curve
- Insert rectangle
- Insert rounded rectangle
- Insert ellipse
- Insert AutoShape
- Insert TextArt object
- Group selected objects
- Modify object properties
- Object list (a dropdown list of all objects in the slide, see below)

* Not all versions of PlanMaker have this feature.

Hint: Move the mouse pointer over any of these icons, and a short explanation of its function is displayed.

Object list: At the right of the Object toolbar, a dropdown list containing all objects existing in the current document is displayed. Open this list and click on the name of an object; the corresponding object will be selected.

Selecting objects in object mode

In Object mode, all types of objects can be selected with a single mouse click.

Note: This is especially useful for objects with a transparent filling (e.g. text frames). In Edit mode, such objects can only be selected by clicking on their *borders*. In Object mode, they can be selected by simply clicking *anywhere* inside the object.

To select *multiple* objects, draw a frame around these objects with the mouse – or press and hold the **Shift**⬆ key and click each object you want to select.

Jumping from object to object

In Object mode, you can jump from object to object by using the following keys:

Key	Result
Tab	Select next object
Shift+Tab	Select previous object

For example, use of the **Tab** key will select the next object.

Changing position and size of objects

To change the position or size of an object, proceed as follows:

Changing the position of objects

To change the position of an object, select it and either move it using the arrow keys on the keyboard or drag it to another position using the mouse.

Note: By default, objects are anchored to the cell beneath their upper left corner. You can move objects at will, but when an object is dropped at its new position, it will again automatically be anchored to the cell beneath its upper left corner.

As a result, an object will move down if additional rows are inserted above it, and move up, if rows above are deleted.

If you do not want the object to behave like this, choose the menu command **Object > Properties**, switch to the **Format** tab and change the **Position** option. For example, if you choose **Independent of cell position and size**, the object will no longer move down when you insert new rows above. For more information on this option, see section [Object properties, Format tab](#).

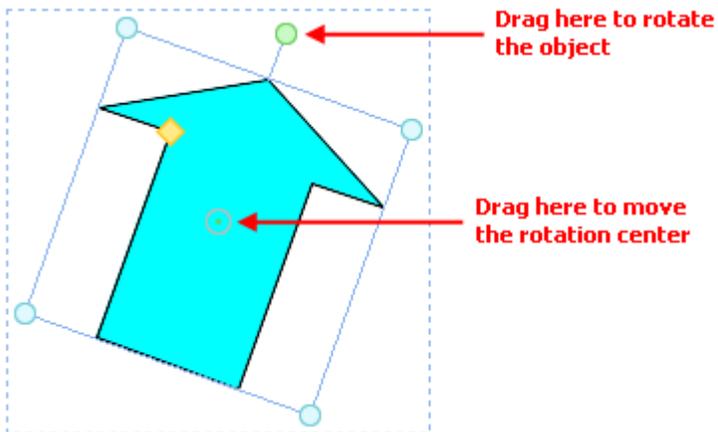
Changing the size of objects

To change the size of an object, select it and drag on one of the round handles appearing around the object.

Rotating and flipping objects

Note: Rotation and flipping can be performed only on *drawings* and *pictures*.

When you select an object that can be rotated, an additional green handle will appear on the selection frame surrounding it. To rotate the object, drag this handle with the mouse.



Alternatively, you can set the angle of rotation manually. For this purpose, select the object, invoke the **Object > Properties** menu command, switch to the **Format** tab and enter the desired angle under the **Rotation** option.

You can also rotate and flip (mirror) objects by invoking the **Object > Rotate or flip** menu command and choosing one of the commands offered in its submenu.

Aligning and distributing objects

To align or distribute objects, select them and invoke the menu command **Object > Align or distribute**.

A sub-menu appears, from which you can select the desired alignment or distribution:

- Align left
- Align center
- Align right
- Align top
- Align middle
- Align bottom

- Distribute horizontally
- Distribute vertically

The last two commands work only when at least *three* objects are selected. These commands are used to distribute the selected objects evenly within the area they occupy, so that the spacings between them are equal.

Duplicating objects

To obtain a copy of an object, you would normally copy it to the clipboard and paste it from there.

Alternatively, use the **Edit > Duplicate** menu command to create a copy of an object.

Hint: You can also duplicate objects with your mouse: Press and hold the **Ctrl** key, and drag a new object out of the object that you want to duplicate.

Changing the properties of objects

An object's *properties* include its size, fill style, line style, etc. The **Object > Properties** menu command provides one place to access all properties for editing or viewing.

To modify the properties of an object, first select the object with a mouse click (text frames can be selected by clicking on the object's *border* only). Then invoke the **Object > Properties** menu command to bring up the associated dialog.

Tip: For most types of objects, double-clicking on the object (or its border) provides a quick alternative way to invoke this command.

The dialog contains several tabs. On the next pages, you will find detailed information on each tab and the options it contains.

Object properties, Format tab

Use the **Format** tab to modify the size/positioning of objects, rotate objects, or flip objects.

Options available:

- **Size and Scaling** group boxes

Used to alter the size of the object. Either enter the **Width** and **Height** of the object, or use the **Horz. scaling** and **Vert. scaling** boxes to enter the scaling factor as percentages.

If the **Keep aspect ratio** option is checked, modifying the object's height adjusts its width automatically, keeping the object proportional (and vice versa when modifying the object's width).

For OLE objects, an additional option named **Keep scaling** is available. When enabled, any changes made to the object's size *inside its source application* are automatically adopted by the object in your PlanMaker document. When it is disabled, the object in PlanMaker won't change its size. (Note: Not all OLE servers support this feature.)

- **Position** group box

Here you can choose to what extent the object's position and size is dependent on the cells it covers. Options available:

Depends on cell position and size: The object behaves like its upper left corner was anchored to the cell beneath. For example, when you insert additional rows above this cell, the object moves down accordingly.

Furthermore, the object's size depends on the height and width of the cells it covers. For example, if you increase the width of some of these cells, the object grows accordingly.

Depends only on cell position: The object behaves like its upper left corner was anchored to the cell beneath as well, but it does not change its size, when you modify the size of the cells it covers.

Independent of cell position and size: The object always keeps its original position and size, independent of the cells it covers.

- **Rotation** group box

Available only for drawings and pictures.

Here you can rotate the object. To do this, enter the angle about which the object is to be rotated (positive values correspond to clockwise rotation).

- **Flip** group box

Available only for drawings and pictures.

Here you can flip the object vertically or horizontally.

Object properties, Filling tab

Note: This tab is available only for certain types of objects. When applied to pictures, the filling will be visible only in pictures that contain *transparent* areas.

Use the **Filling** tab to modify the filling of objects as follows:

First, select the desired type of filling in the **Fill type** list. Based on the fill type selected, a series of options will be displayed. You can then change those settings for the chosen fill type, as desired.

The following fill types and settings are available:

- **No Filling**

If you select the first fill type in the list, the object is not filled and thus remains transparent.

- **Color**

Fills the object using a uniform color shade. To change the color, select it in the **Colors** list.

If none of the existing colors suits you, you can always compose your own colors. To do this, click on the **More colors** button and proceed as described in the section [Document properties, Colors tab](#).

If desired, you can also change the **Transparency** of the fill. You can enter any value between 0% (no transparency) and 100% (full transparency). For example, if you set the **Transparency** value to 25, the filling will have 25% transparency.

- **Pattern**

Fills the object using a pattern. To specify the pattern, select the type of pattern from the **Patterns** list. Then, select the desired colors for foreground and background.

If desired, you can also change the **Transparency** of the fill. Values between 0% (no transparency) and 100% (full transparency) are permitted.

- **Picture**

Fills the object using a picture file. To select the picture file to be used, click the **Open** button to bring up a file selection dialog. Tip: The most recently used picture files are presented in the **Images** list and can be selected with a single mouse click.

Additional options:

Rotate with object: If you activate this option, the image will be rotated as well whenever you rotate the object to be filled.

Mirror: Allows you to mirror the picture horizontally or vertically.

Transparency: If desired, you can also change the transparency of the fill. Values between 0% (no transparency) and 100% (full transparency) are permitted.

Tile as texture: If this option is enabled, multiple copies of the picture are arranged like tiles to fill the object.

The options in the **Tile options** section then allow you to change the size and position of the tiles: **X scale** and **Y scale** change the size (in percent), while **X offset** and **Y offset** change the position. The **Alignment** option can be used to determine to which edge of the object the tiles should be aligned.

If the **Tile as texture** option is not enabled, only **Offsets** (relative to the edges of the object) can be set for the image.

Save: You can use this button to export the currently selected picture, that is, to save a copy of it on your hard disk.

- **Linear Gradient, Rectangular Gradient etc.**

The lowermost five fill types in the list allow you to fill the object using a gradient. First, open the **Fill type** list and select the desired type of gradient. Then, select one of the subtypes in the **Variants** list.

In the **Options** section, the following additional settings can be made:

X offset and **Y offset** can be used to move the center of the gradient. **Angle** rotates the gradient.

Hint: You can also modify these settings by moving or rotating the cross-hair displayed in the **Sample** field using the mouse.

If you check the **Double gradient** option, for example, a black-white gradient will become a black-white-black gradient.

In the **Colors** section, the colors can be adjusted as follows:

If you want to change the gradient colors, click one of the triangles below the bar representing the gradient. Then, select a color from the **Color** list.



Use the triangle on the left to change the start color and the triangle on the right to change the end color.

If desired, you can also change the **Transparency** of the selected color. Values between 0% (no transparency) and 100% (full transparency) are permitted.

Additional colors can be added to the gradient by double-clicking on the desired position in the bar and selecting a color. To remove a color, double-click the triangle representing that color.

Object properties, Lines tab

Note: This tab is available only for certain types of objects.

Use the **Lines** tab to modify the lines that encompass the object or its border lines.

When applied to drawings, these settings affect the lines used to paint the object itself. When applied to other types of objects, the border lines surrounding the object are affected.

Options available:

- **Line variants**

Offers some predefined line styles to choose from.

The entries in the list are merely samples. If required, you can specify the appearance of the lines more precisely with the options listed below.

- **Color**

Lets you change the color of the lines.

- **Dashed**

Lets you determine if solid or dashed lines will be used.

- **Thickness**

Lets you change the width of the lines (in points).

- **Transparency**

If desired, you can also change the **Transparency** of the lines. You can enter any value between 0% (no transparency) and 100% (full transparency). For example, if you set the **Transparency** value to 25, the lines will have 25% transparency.

- **Begin and End**

Available only for lines, curves and connectors.

If you select one of the symbols displayed here, it will be painted at the starting point or end point of the line. For example, if you select an arrow symbol for the end point, the line will look like an arrow. **Width** and **Height** settings are used for changing the width and/or height of the symbol.

Object properties, Shadow tab

Note: This tab is available only for certain types of objects.

Use the **Shadow** tab to add a shadow to the object.

Options available:

- **Shadow variants**

Offers a variety of predefined shadow styles to choose from.

The entries in the list are merely samples. If required, you can specify the way the shadow will appear more precisely with the options listed below.

- **Scaling**

Lets you change the size of the shadow (relative to the size of the object).

- **Offset**

Lets you change the position of the shadow (relative to the object).

- **Perspective**

Lets you change the **Skew angle** of the shadow.

For certain types of perspective shadows, you can also change the distance of the **Horizon**. Note: If **Horizon** is a positive value, the shadow will be painted in front of the object, and if it is negative, the shadow will be painted behind the object.

- **Color**

Lets you change the color of the shadow.

- **Blur**

If you enter a value greater than zero here, a blur effect is added to the shadow. The larger the value, the softer the edges of the shadow are painted.

- **Transparency**

Allows you to change the **Transparency** of the shadow. You can enter any value between 0% (no transparency) and 100% (full transparency). For example, if you set the **Transparency** value to 25, the shadow will have 25% transparency.

Object properties, 3D tab

Note: This tab is available only for text frames and drawings.

Use the **3D** tab to add a three dimensional effect to the object.

Options available:

- **3D effect variants**

Offers a variety of predefined 3D effect settings to choose from.

The entries in the list are merely samples. If required, you can specify the way the effect appears more precisely with the options listed below.

- **Options** group box

Lets you modify the depth of the 3D object and the angles about which it is rotated on the horizontal and vertical axes.

- **3D surface** group box

Side faces: By default, the color used for the side faces of the object is determined automatically. To use a different color, activate the **Side faces** option and select the desired color from the list.

Affect front side: If this option is checked, the front side of the object will also be lightened or darkened according to the lighting of the 3D effect. To change the lighting, click the **More** button.

Wire frame: If you check this option, the object is rendered as a wire frame model.

- **More** button

Click the **More** button to change the lighting of the 3D effect. An additional dialog box will appear. To change the position of the light source, click the corresponding position in the **Lighting** field. The other two options let you change the **Intensity** of the light source and the type of **Surface** to be simulated.

Object properties, Effects tab

Note: This tab is available only for certain types of objects.

On the **Effects** tab, you can add various effects to the object.

The following effects and settings are available:

- **Reflection**

When you check the **Use reflection effect** option, the object is rendered as if it was standing on a reflecting surface.

Options:

Visible part of object: Specifies how many percent of the object will be visible in the reflection.

Starting transparency: The reflection is smoothly faded out towards its bottom. This value specifies how transparent the reflection will be at its top (in percent).

Y offset: Moves the reflection upwards or downwards.

- **Soft edges**

When you check the **Use soft edges effect** option, the borders of the object will be rendered with a blur effect.

Options:

Width: Specifies the width of the blur effect.

- **Glow**

When you check the **Use glow effect** option, the borders of the object will be surrounded by a glow effect.

Options:

Width: Specifies the width of the glow effect.

Color: Specifies the color of the glow effect.

Object properties, Properties tab

The **Properties** tab can be used to modify common object settings.

Options available:

- **Name**

PlanMaker automatically assigns a unique name to every object in a document. Rectangles, for example, might be named Rectangle1, Rectangle2, Rectangle3, etc.

If you wish, you can give the object a different name by entering it here.

- **Visible**

This option is checked by default. If you deactivate it, the object will no longer be visible on the screen. See also section [Hiding objects](#).

- **Printable**

This option is checked by default. If you deactivate it, the object will no longer print. See also section [Hiding objects](#).

- **Locked**

This option is checked by default. If enabled, users will not be able to change the object's position, size, or any other object property when *worksheet protection* is activated. See also section [Sheet protection](#).

- **Text locked**

Available only for objects that contain text (e.g. text frames).

This option is checked by default. If enabled, users will not be able to change the text inside the object when *worksheet protection* is activated. See also section [Sheet protection](#).

- **Link**

Lets you apply a link to the object (e.g., a link to a website). For this purpose, click the **Select** button, select the type of link, and enter the target address. For more information on links, see section [Working with links](#).

Additionally, for pictures, some information on the picture is displayed in the right half of the dialog (resolution, color depth, etc.).

Additional tabs

With some object types, the dialog of the **Object > Properties** menu command displays additional tabs containing more options. To learn more about these tabs, see the sections referring to each particular object type.

Changing the default settings for objects

You can change the default settings for objects (drawings, images, etc.) anytime.

For example, if you don't like the default setting for the line width of drawings, simply set it to a different value. You can also alter other default settings – e.g. the default filling for drawings as well as the settings for shadows and 3D effects.

Note: Changes to the default settings solely affect objects that you will insert later on. Existing objects remain untouched.

To modify the default settings for objects, use the **Default** button in the dialog of the **Object > Properties** menu command.

For example, to change the default line width for drawings, proceed as follows:

1. Insert a new drawing (or click on an existing drawing).
2. Invoke the **Object > Properties** menu command.
3. Adjust the settings to your liking. For example, to change the default setting for the line width, switch to the **Lines** tab and simply choose the desired value in the **Thickness** field.

4. Now comes the distinctive step: Instead of clicking on **OK**, click on the **Default** button.
5. Another dialog pops up, allowing you to control exactly which settings to adopt as new default settings. Normally, there is no need to change anything in this dialog.
6. When you confirm with **OK**, the settings you just specified in the properties dialog will from now on be used as the default settings for new drawings.
7. To exit the dialog, click on **OK** once more.

When you insert a new drawing now, it will be painted in the given line width.

Note: The default settings for objects are stored inside the document, allowing you to specify different settings for each individual document.

Objects – advanced procedures

This section present some less commonly needed functions for working with objects. The following topics are covered:

- [Hiding objects](#)
- [Changing the order of objects](#)
- [Grouping objects](#)

Hiding objects

PlanMaker provides an option to *hide* objects. Hidden objects will not appear on screen and/or print.

To hide an object, select it, then choose the menu command **Object > Properties**, switch to the **Properties** tab, and use the following options:

- If you deactivate the **Visible** option, the object will not be displayed on screen.
- If you deactivate the **Printable** option, the object will not print.

Hint: If you have made an object invisible accidentally, choose the menu command **File > Properties**, switch to the **Options** tab, and activate the **Show hidden objects** option. This will make all invisible objects reappear, allowing you to select them and reactivate their **Visible** option (as described above).

Changing the order of objects

When two or more objects overlap, you can change the display order of these objects (which of the objects to display in the foreground, which in the background, etc.).

This can be accomplished as follows:

1. Select the desired object.
2. Invoke the **Object > Order** menu command and choose an option from its sub-menu:

Bring to front: Brings the object in front of all other objects.

Send to back: Sends the object behind all other objects.

Bring forward one level: Brings the object forward by one level.

Send backward one level: Sends the object back by one level.

Grouping objects

When you group objects, they will behave like a single object, allowing you to modify them altogether.

For example, when you select an object that is part of a group of objects, the whole group will be selected. When you move this object, the whole group will move.

To group objects:

1. Select the objects you want to group.

Hint: To select multiple objects, either click on individual objects while holding down the **Shift**⌘ key, or switch to Object mode and drag a frame around multiple objects.

2. Click the  icon in the Object toolbar or choose the menu command **Object > Group**.

Ungrouping grouped objects

To ungroup objects that have been grouped:

1. Select the group by clicking on one of the grouped objects.
2. Choose the menu command **Object > Ungroup**.

This closes the common section about working with objects. In the next sections, all available types of objects will be described in detail:

- Charts (see chapter [Charts](#))

- [Text frames](#)
- [Pictures](#)
- [OLE objects](#)
- [Drawings](#)

Charts

In spreadsheets consisting of nothing but long columns of numbers, it is often hard to interpret their meaning. PlanMaker provides easy ways to turn raw numbers into charts that get the point across.

Charts are discussed in a separate chapter, so if you want to learn more about charts, see chapter [Charts](#).

Text frames

Use *text frames* to insert text boxes into a document. Within text frames, you can enter, edit, and format text as desired.

In this section, you will find detailed information on working with text frames. The following topics are covered:

- [Inserting text frames](#)
- [Changing the properties of text frames](#)

See the next pages for details.

Inserting text frames

To insert a text frame:

1. Choose the menu command **Object > New text frame** or click the  icon in the Object toolbar (available only in Object mode).
2. The text frame is inserted.

In case you want to modify its position or size, do the following:

Important: To change the position, click on the *border* of the text frame and then (while still holding the mouse button down) drag the frame to the desired position.

To adjust its size, drag on one of the round handles surrounding the frame.

To edit text in a text frame, click inside the text frame. To edit table cells again, click on any cell.

Note: If the text frame is too small to hold the entered text, PlanMaker will display a red bar at its bottom. To fix this, enlarge the text frame, reduce the amount of text, or choose a smaller font size.

Changing the properties of text frames

To modify the properties of a text frame, first select the frame by clicking on the border that surrounds it. Then invoke the **Object > Properties** menu command to bring up the associated dialog.

Hint: This command can also be invoked by double-clicking on the border of the text frame.

The following settings can be made in this dialog:

Format, Filling, Lines, etc. tabs

The tabs listed below are present for almost all object types. They allow you to modify the following settings:

- **Format:** For changing the size and positioning of the object. See section [Object properties, Format tab](#).
- **Filling:** For changing the filling of the object. See section [Object properties, Filling tab](#).
- **Lines:** For adding border lines. See section [Object properties, Lines tab](#).
- **Shadow:** For adding a shadow. See section [Object properties, Shadow tab](#).
- **3D:** For adding a 3D effect. See section [Object properties, 3D tab](#).
- **Effects:** For adding various types of effects. See section [Object properties, Effects tab](#).
- **Properties:** For modifying common object settings. See section [Object properties, Properties tab](#).

For text frames, there are additional tabs with further options:

Inner text tab

Use this tab to change settings affecting the text in the text frame.

Options available:

- **Inner margins** group box

Lets you modify the margins between text frame and inner text. If you check the **Automatic** option, PlanMaker will calculate suitable settings automatically.

- **Overlapping objects** group box

These settings determine what happens when the text frame overlaps another object.

With the default setting **Ignore object**, PlanMaker does nothing. Thus, in the region of overlap, the contents of both frames are rendered on top of one another.

If, on the other hand, you check the **Wrap text** option, PlanMaker automatically reformats the text in this frame so that it flows around the area of overlap.

- **Rotate by...** group box

Lets you rotate the inner text in 90 degrees increments.

- **Vertical alignment** group box

Lets you change the vertical alignment of the inner text as follows:

Option	Result
Top	Align inner text at the top of the frame
Centered	Vertically center text between top and bottom of the frame
Bottom	Align inner text at the bottom of the frame
Justified	Vertically justify text (so that it is evenly distributed between top and bottom of the frame)

AutoShapes tab

A text frame is actually an *AutoShape* that has been filled with text. *AutoShapes* are drawings with a predefined shape (for example, rectangles, ellipses, arrows, banners, callouts, etc.).

By default, the AutoShape used for text frames is a simple rectangle. To use a different shape, select it on the **AutoShapes** tab.

To learn more about AutoShapes, see section [Drawings](#).

Pictures

In this section, you will find detailed information on working with pictures. The following topics are covered:

- [Inserting pictures](#)
- [Scanning pictures](#)
- [Inserting pictures from the gallery/camera \(Android\)](#)
- [Changing the properties of picture frames](#)

See the next pages for details.

Inserting pictures

To insert a picture into the current worksheet:

1. Choose the menu command **Object > New picture frame** or click the  icon in the Object toolbar (available only in Object mode).
2. A dialog box appears, allowing you to select the picture that you want to be displayed in the frame. Choose a picture file and confirm with **OK**.
3. The picture is inserted.

In case you want to modify its position or size, do the following:

To change the position, click on the picture frame and (while still holding the mouse button down) drag it to the desired position.

To adjust its size, drag on one of the round handles surrounding the frame.

Dialog options

Options available in the dialog of the **Object > New picture frame** menu command:

- **Save within document**

Check this option if you want the picture file to be saved within the document. If you do not check this option, just a link is preserved to it, and you will need to make sure the picture file is available the next time you open the document. *Note:* Saving pictures with the document can significantly increase the size of the document.

- **Copy to document's folder**

If this option is checked, PlanMaker will create a copy of the picture file (in the folder where the document is stored) and use this copy instead of the original file.

This option is not available if the document has not yet been saved.

Scanning pictures

Note: Scanning pictures directly into a document is possible only with the **Windows** version of PlanMaker.

With PlanMaker for Windows, you can scan originals directly into a document. You must have connected a scanner to your computer and installed the corresponding software.

To scan something into the current document, complete the following steps:

1. Power up the scanner and insert the original to scan.

2. Choose the menu command **File > Acquire**.

PlanMaker now activates your scanner's software. Make the desired settings and start the scanning process (see scanner manual). When it is finished, the scanned result will appear as a new picture frame in your PlanMaker document.

Selecting another source

If multiple scan devices are connected to your computer, the menu command **File > Select source** lets you select from which of these you want to acquire documents when using the **File > Acquire** command.

Inserting pictures from the gallery/camera (Android)

Note: This feature is available only in the **Android** version.

With the Android version you can also insert pictures using the *Gallery* or *Camera* application on your device.

Proceed as follows:

Inserting a picture from the gallery

1. Invoke the **Object > New picture frame from gallery** menu command.
2. Your Android device opens its *Gallery* app. Choose the image to insert by tapping on it.

The picture is now inserted into the text.

Inserting a picture from the camera

1. Invoke the **Object > New picture frame from camera** menu command.
2. Your Android device opens its *Camera* app. Take a picture.

The picture is now inserted into the text.

Changing the properties of picture frames

To modify the properties of a picture frame, first select it with a mouse click. Then invoke the **Object > Properties** menu command to bring up the associated dialog.

Hint: This command can also be invoked by double-clicking on the picture.

The following settings can be made in this dialog:

Format, Filling, Lines, etc. tabs

The tabs listed below are present for almost all object types. They allow you to modify the following settings:

- **Format:** For changing the size and positioning of the object. See section [Object properties, Format tab](#).
- **Filling:** For changing the filling of the object. Only visible in pictures that have transparent areas. See section [Object properties, Filling tab](#).
- **Lines:** For adding border lines. See section [Object properties, Lines tab](#).
- **Shadow:** For adding a shadow. See section [Object properties, Shadow tab](#).
- **Effects:** For adding various types of effects. See section [Object properties, Effects tab](#).
- **Properties:** For modifying common object settings. Also displays some information on the picture. See section [Object properties, Properties tab](#).

For pictures, there is an additional tab with further options:

Picture tab

On the **Picture** tab, you can change settings that are specific to pictures.

Tip: Some of these settings can also be modified using the *Picture toolbar* that appears automatically when you select a picture. See section [Using the Picture toolbar](#).

Options available on this tab:

■ Variants

In this list, a number of predefined variations of the picture are presented – for example different color modes (grayscale, black & white, etc.) as well as colorized variants of the image.

To choose one of these variants, simply click on it, and the options in the dialog will be adjusted accordingly.

■ Settings group box

Here you can change brightness, contrast, saturation and gamma (color balance, with an effect on brightness).

■ More button

This button opens a dialog with the following additional options:

When you activate the **Mix with color** option and choose a color below, the picture will be colorized accordingly.

The options in the **Cropping** group box can be used to crop the picture. This is useful when you need only a segment of the picture. For example, if you want to cut off the upper fourth of the picture, first select **Use relative values** and enter "25" (percent) at **Top**.

If you select **Use absolute values**, the entries are cut off in absolute length units and not as a percentage. If you enter negative values, the areas of your picture are not cut off, but it is extended with a frame.

- **Transparency** group box

Lets you modify the transparency settings of the image. Options available:

Detect automatically: Reads the transparency settings stored in the picture file and displays the image accordingly. Note: Only files in GIF or PNG format can contain transparency settings.

No transparency: Ignores the transparency settings stored in the picture file. Even pictures containing transparent areas will not be displayed transparently.

Color: Lets you choose the color to be displayed transparently. For example, if you select white, all white areas of the picture will become transparent.

- **File** button

To use a different picture file, click this button and choose a new file.

- **Export** button

Available only for pictures that are saved in the document.

You can use this button to export the picture, that is, to save a copy of it on your hard disk.

If you check the **Create link to file** option in the Export dialog, PlanMaker first copies the picture from the document to a file and then removes the picture from the document, replacing it with a reference to the new file. Thus, the picture is no longer saved in the document.

Using the Picture toolbar

Some of the properties of pictures can also be changed using the *Picture toolbar*.



The Picture toolbar

This toolbar appears automatically when you select a picture in the document. From left to right, its icons represent the following functions:

- Invoke the **Object > Properties** menu command for this image
- Add a photo frame effect to the image
- Use the original colors of the image
- Reduce the colors to shades of gray
- Reduce the colors to black and white
- Increase brightness
- Decrease brightness
- Increase contrast
- Decrease contrast
- Increase gamma
- Decrease gamma
- Rotate 90 degrees clockwise
- Rotate 90 degrees counter-clockwise

- Revert all changes made with this toolbar
- Enter/exit *Crop mode*. In this mode, additional handles are displayed on the borders of the picture. Drag these handles around to crop the picture.

Note: These settings can also be changed using the dialog of the **Object > Properties** menu command. See section [Changing the properties of picture frames](#).

OLE objects

Note: The use of OLE objects is possible only with the **Windows** version of PlanMaker.

With PlanMaker for Windows, you can embed objects created with other applications (drawings, pictures, etc.) in your document.

An example: From PlanMaker, you can use the menu command **Object > New OLE object frame** to start Windows' *Paint* program and then draw something. When you exit Paint, the drawing appears in the PlanMaker document. It is now embedded in the document.

Advantage: To edit the drawing in the PlanMaker document all you have to do is double-click on it – Paint is then restarted automatically. When you have finished editing and closed Paint, your changes are imported by PlanMaker.

For this to work, the application invoked from PlanMaker must support *OLE*. OLE stands for "Object Linking and Embedding". The object that is imported from the other application into PlanMaker is called an *OLE object*.

In this section, you will learn everything you need to know about OLE objects. It covers the following topics:

- [Inserting OLE objects](#)
- [Editing OLE objects](#)
- [Editing links to OLE objects](#)
- [Changing the properties of OLE objects](#)
- [Using the SoftMaker Equation Editor](#)

See the next pages for details.

Inserting OLE objects

Note: The use of OLE objects is possible only with the **Windows** version of PlanMaker.

The **Object > New OLE object frame** menu command allows you to embed an OLE object into the document.

The command opens a dialog box containing a list of all applications that are able to create OLE objects. The entries displayed in the list depend on the OLE-capable programs installed on your system.

Selecting "Paintbrush Picture", for example, will open Windows' *Paint* program (called *Paintbrush* in older versions of Windows). There you can create a picture. Simply exit Paint, and the picture will be embedded into your document. It is displayed in the spreadsheet, and you can edit the picture whenever you wish. To do so, simply double-click on the picture.

Step by step, the procedure for embedding an OLE object is as follows:

1. Choose the menu command **Object > New OLE object frame**.
2. A dialog box appears. From the **Object type** list displayed in this window, select the type of OLE object that PlanMaker should embed.
3. When you confirm with **OK**, PlanMaker starts the application that is appropriate to the type of object selected.
4. Create the object in the application.
5. Exit the application.
6. At this point, it is possible that the application will ask you if you want to insert the object into the PlanMaker document. Confirm with "Yes".
7. The OLE object is inserted.

In case you want to modify its position or size, do the following:

To change the position, click on the OLE object and (while still holding the mouse button down) drag it to the desired position.

To adjust its size, drag on one of the round handles surrounding the object.

The OLE object created in the other application is now embedded in the PlanMaker document.

Acquiring an OLE object from a file

If you don't want to create a new OLE object, but want to embed as an OLE object a document that already exists in the form of a file created previously in another application, you still invoke the menu command **Object > New OLE object frame** command, but in this case, instead of choosing the option **Create new** in the dialog, you select the **Create from file** option.

With this selection, the look of the dialog changes: Instead of the **Object type** list, a **File** entry field is displayed. Here, enter the full file name of the document file, or click on the **Browse** button to bring up a dialog box that will enable you to search your hard disk for the file.

When you have specified a file and confirmed with **OK**, the file is inserted as an OLE object.

When the OLE object is being inserted, Windows checks the file name extension to see if it is associated with a program that can be started. If the file name extension is not registered, the embedded file is merely represented by a symbol. On the other hand, if Windows can relate the file name extension to an OLE-capable program, the content of the embedded file is displayed.

Creating a link to the original file

The dialog box described above provides an additional option that allows you to specify whether the object to be inserted from the file should be *embedded* in or *linked* to the document. If you leave the **Link** option unchecked, PlanMaker inserts a copy of the file into the document as an OLE object and saves this copy in the document – thus, the object is *embedded* in the usual way.

On the other hand, if you check the **Link** option, PlanMaker inserts the OLE object in the form of a link to the original file. In this case, if you should ever modify the original file with another application and then reopen the PlanMaker document that contains the link to this file, the OLE object will appear modified accordingly – thus, the OLE object remains *linked* to the original file.

Editing OLE objects

OLE objects can be modified as follows:

Tip: To edit an OLE object, simply double-click on it. The object will be opened immediately in its native application, where it can be edited.

Alternatively, you can use the menu to edit an OLE object. Proceed as follows:

1. Click on the OLE object to select it.
2. Open the **Edit** menu. At the bottom of the menu, you will find an item that refers to the object by name (for example, **Bitmap object**). Selecting this menu item opens a sub-menu containing all the OLE commands that are available for this object. There is an **Edit** command for editing the object. Invoke this command.
3. The application associated with the OLE object now starts. Make the desired changes there.

To return to PlanMaker, simply exit the object's source application.

When exiting some applications, you will be asked if you want to update the object in the PlanMaker document. Answer "Yes" – otherwise your changes will be discarded.

Editing links to OLE objects

If you acquire an OLE object from a file with the **Link** option checked, you can edit the resulting link to the source file with the **Edit > Link** menu command.

When you invoke this command, a dialog box appears and displays a list of all the existing links in the current document. When you select a link from the list, the name and type of the source file to which the link refers are displayed in the lower part of the dialog box.

The dialog's buttons allow you to perform the following functions:

Button	Function
Update now	Updates the OLE object. Use this button if the source file has been modified by another program and the changes are not visible in the PlanMaker document.
Open source	Starts the application associated with the OLE object, allowing you to edit the object in the application. Tip: Double-clicking on the object has the same effect.
Change source	Lets you select a different file as the source of the OLE object.
Cancel link	Cuts the link to the source file. As a result, the object is embedded permanently in the PlanMaker document. Changes to the source file no longer have any effect on the document. However, the object can still be edited by double-clicking on it.

Changing the properties of OLE objects

To modify the properties of an OLE object frame, first select it with a mouse click. Then invoke the **Object > Properties** menu command to bring up the associated dialog.

The following settings can be made in this dialog:

Format, Filling, Lines, etc. tabs

The tabs listed below are present for almost all object types. They allow you to modify the following settings:

- **Format:** For changing the size and positioning of the object. See section [Object properties, Format tab](#).
- **Filling:** For changing the filling of the object. Not supported by all OLE applications. See section [Object properties, Filling tab](#).
- **Lines:** For adding border lines. See section [Object properties, Lines tab](#).
- **Shadow:** For adding a shadow. See section [Object properties, Shadow tab](#).
- **Effects:** For adding various types of effects. See section [Object properties, Effects tab](#).
- **Properties:** For modifying common object settings. See section [Object properties, Properties tab](#).

For OLE objects, there is an additional tab with further options:

Picture tab

On the **Picture** tab, you can change settings that affect the graphical representation of the OLE object.

Note: Depending on the application associated with the OLE object, some of the options may be not supported.

Options available:

- **Variants**

In this list, a number of predefined variations of the object are presented – for example different color modes (grayscaled, black & white, etc.) as well as colorized variants of the object.

To choose one of these variants, simply click on it, and the options in the dialog will be adjusted accordingly.

- **Settings** group box

Here you can change brightness, contrast, saturation and gamma (color balance, with an effect on brightness).

- **More** button

This button opens a dialog with the following additional options:

When you activate the **Mix with color** option and choose a color below, the object will be colorized accordingly.

The options in the **Cropping** group box can be used to crop the object. This is useful when you need only a segment of the object. For example, if you want to cut off the upper forth of the object, first select **Use relative values** and enter "25" (percent) at **Top**.

If you select **Use absolute values**, the entries are cut off in absolute length units and not as a percentage. If you enter negative values, the areas of your object are not cut off, but it is extended with a frame.

- **Export** button

You can use this button to export a copy of the graphical representation of the object, that is, to save an image of the object on your hard disk.

Using the SoftMaker Equation Editor

Note: The *SoftMaker Equation Editor* is available only for **Windows** and is not included in all versions of PlanMaker.

The *SoftMaker Equation Editor* allows you to display mathematical formulas in graphical form.

PlanMaker communicates with the Equation Editor via *OLE*, as described in the previous sections. Thus, to add a graphical representation of a formula to your document, you insert an OLE object, and choose the Equation Editor as the source application.

To do this, proceed as follows:

1. Invoke the **Object > New OLE object frame** menu command.
2. Select the **SoftMaker Equation Editor** entry from the **Object type** list.
3. Confirm with **OK** to start the Equation Editor.
4. Create the desired formula.

5. When you have finished building the formula, simply exit the Equation Editor.

The formula is immediately embedded in the PlanMaker document as an OLE object.

You can edit objects created with the Equation Editor by double-clicking on them. Following a double-click, the Equation Editor is restarted and the formula object is opened in it. After you make the desired changes, simply close the Equation Editor again.

Moreover, you can change the properties of an Equation Editor object by selecting the object with a (single!) mouse click and then invoking the **Object > Properties** menu command.

Information from the creators of the Equation Editor

The SoftMaker Equation Editor is a special version of the *MathType* program from Design Science. If you make frequent use of formulas in your documents, you might find that MathType itself is even better suited to your needs than the SoftMaker Equation Editor. While just as easy to use as the Equation Editor, MathType has a number of additional functions that can help you be more productive and create more complex formulas.

MathType is available in English, French, German, and other languages. You can obtain information about the purchase of MathType from your software distributor or directly from Design Science.

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Drawings

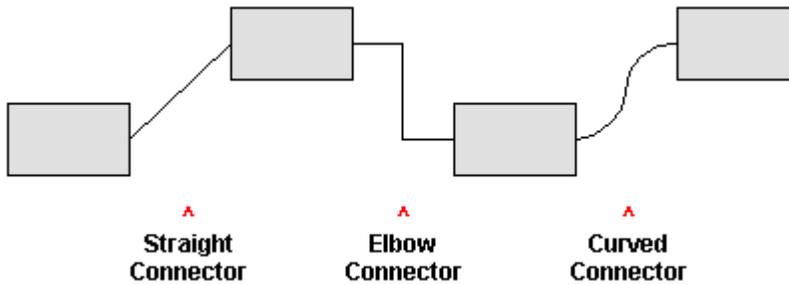
PlanMaker provides tools to create drawings in your documents. The following types of drawings are available:

- Lines and curves (lines, arrows, connectors, curves)
- Rectangles and ellipses
- AutoShapes (predefined shapes)
- TextArt objects (text effects)

In this section, you will find detailed information on working with drawings. The following topics are covered:

- [Inserting drawings](#)
- [Adding text to AutoShapes](#)
- [Changing the properties of drawings](#)

See the next pages for details.



To use one of these tools, select it and then drag the mouse pointer from one object to another, holding down the mouse button.

Tip: When you move the mouse pointer over an object, small blue boxes appear at various points on the object. These boxes indicate where the connector line can "dock" to the object.

■ Curves

Use the tools in this category to draw curves, as follows:

The **Curve** tool  allows you to draw Bezier curves.

To draw a curve, click on the position where you want to have its starting point; then click on as many other points as you like. The curve will automatically follow your clicks.

To quit drawing, you can either a) click on the curve's starting point (which will automatically make it a *closed* curve) or b) *double-click* on any other position to set its end point there (which will make it an *open* curve).

The **Freehand form** tool  allows you to draw irregular curves as you would be able to do by hand with a pencil.

To draw freehand, move the mouse to the desired starting point, press and hold the left mouse button, and start drawing as if using a pencil. To draw a straight line, release the mouse button and click on the desired position.

To quit drawing, you can either a) click on the curve's starting point (which will automatically make it a *closed* curve) or b) *double-click* on any other position to set its end point there (which will make it an *open* curve).

Rectangles, rounded rectangles, and ellipses

Use one of the tools    to insert rectangles, rounded rectangles, or ellipses.

Every time you click on one of these tools, the corresponding drawing object is inserted in a standard size. You can change its position by dragging it with your mouse. To change its size, drag one of the round handles on its corners.

In the case of rounded rectangles, you can additionally change the rounding of the corners. To do this, select the rectangle. A *yellow* handle will then appear at one of its corners. By dragging this handle you can change the rounding accordingly.

AutoShapes

Use the **AutoShape** tool  to insert AutoShapes. *AutoShapes* are drawings with a predefined shape (e.g., rectangles, ellipses, arrows, banners, callouts, etc.).

As soon as you choose the desired AutoShape, it is inserted in a standard size. If necessary, you can change its position by dragging it with your mouse. To adjust its size, drag one of the round handles on its corners.

Note: With some types of AutoShapes, *yellow* handles appear on the object when it is selected. If you drag on one of these handles, a parameter controlling the shape of the object is changed. For example, stars have handles that let you change the size of their tines.

Hint: You can even add text to AutoShapes. It will be displayed inside the shape – just like in a text frame. To learn more about this feature, see section [Adding text to AutoShapes](#).

TextArt objects

Use the **TextArt** tool  to insert TextArt objects. *TextArt objects* are used to create text effects.

When you activate this tool a dialog appears. Enter your text in the dialog's **Text** field and then click on **Variants** to choose one of the ready-made effects to be applied to the text. Confirm with **OK** to leave the dialog.

Adding text to AutoShapes

You can add text to an AutoShape if you wish. The text is then displayed inside the AutoShape – exactly as it would be in a text frame.

To add text to an AutoShape, complete the following steps:

1. Select the desired AutoShape.
2. Right-click on it to open its context menu.
3. Choose the **Add Text** command.

You can now type text inside the AutoShape.

Hint: There's a faster way to add text to an AutoShape: First select the AutoShape with a mouse click, then simply start typing.

If you want to change the formatting of the text, use the menu commands **Format > Character** and **Format > Paragraph** as usual.

To finish editing the text, click outside the AutoShape. To continue editing the text later, click inside the AutoShape or choose the **Edit Text** command from the context menu.

Note: If the AutoShape object is too small to hold the entered text, PlanMaker will display a red bar at its bottom. To fix this, enlarge the object, reduce the amount of text, or choose a smaller font size.

Hint: *Text frames* are basically AutoShapes (rectangles, in this case) with text added. To learn more about text frames, see chapter [Text frames](#).

Changing the properties of drawings

To modify the properties of a drawing, first select it with a mouse click. Then invoke the **Object > Properties** menu command to bring up the associated dialog.

Hint: This command can also be invoked by double-clicking on the drawing.

The following settings can be made in this dialog:

Format, Filling, Lines, etc. tabs

The tabs listed below are present for almost all object types. They allow you to modify the following settings:

- **Format:** For changing the size and positioning of the object. See section [Object properties, Format tab](#).
- **Filling:** For changing the filling of the object. See section [Object properties, Filling tab](#).
- **Lines:** For modifying the lines used to draw the object. See section "[Object properties, Lines tab](#)".
- **Shadow:** For adding a shadow. See section [Object properties, Shadow tab](#).
- **3D:** For adding a 3D effect. See section [Object properties, 3D tab](#).
- **Effects:** For adding various types of effects. See section [Object properties, Effects tab](#).
- **Properties:** For modifying common object settings. See section [Object properties, Properties tab](#).

For certain types of drawings additional tabs will appear on the dialog, giving you access to more options (as described on the following pages).

AutoShapes tab (available only for AutoShapes)

Note: This tab appears only for AutoShapes.

The **AutoShapes** tab allows you to change the shape of an AutoShape. For example, you can turn a rectangle into a speech balloon or any other shape you like.

To change the shape, simply click on the desired AutoShape in the list.

For more information on AutoShapes, see the chapter [Inserting drawings](#).

Inner text tab (available for AutoShapes with text added)

Note: This tab appears only for AutoShapes containing text (see the section [Adding text to AutoShapes](#)) and for [Text frames](#).

Use the **Inner Text** tab to change settings affecting the text inside the AutoShape.

Options available:

- **Inner margins** group box

Lets you modify the margins between AutoShape and inner text. If you check the **Automatic** option, PlanMaker will calculate suitable settings automatically.

- **Overlapping objects** group box

These settings determine what happens when the object overlaps another object.

With the default setting **Ignore object** PlanMaker does nothing. Thus, in the region of overlap, the contents of both objects are rendered on top of one another.

If, on the other hand, you check the **Wrap text** option, PlanMaker automatically reformats the text in this object so that it flows around the area of overlap.

- **Rotate by...** group box

Lets you rotate the inner text in 90 degrees increments.

- **Vertical alignment** group box

Lets you change the vertical alignment of the inner text as follows:

Option	Result
Top	Align inner text at the top of the object
Centered	Vertically center text between top and bottom of the object
Bottom	Align inner text at the bottom of the object
Justified	Vertically justify text (so that it is evenly distributed between top and bottom of the object)

Text tab (available only for TextArt objects)

Note: This tab appears only for TextArt objects.

Use the **Text** tab to select the desired TextArt effect and to edit or format the text to be displayed.

Options available:

- **Text**

Here you can edit the text to be displayed.

- **Variants**

Here you can choose which TextArt effect to apply.

- **Font** group box

Here you can change the font and apply the text styles **Bold** and **Italic**.

If you check the **Same height** option, all letters (including lower case letters) will be stretched to a uniform height.

- **Spacing** group box

The **Character** option affects the spacing between characters. Values below 100% produce spacings that are closer together than normal, values above 100% produce spacings that are wider apart.

The **Line** option affects the spacing between lines. This setting is effective only for text that consists of multiple lines.

- **Alignment** group box

Here you can change the alignment of the text. This setting is effective only for text that consists of multiple lines.

- **Placement** group box

If you check the **Vertical text** option, the letters will be rotated by 90 degrees.

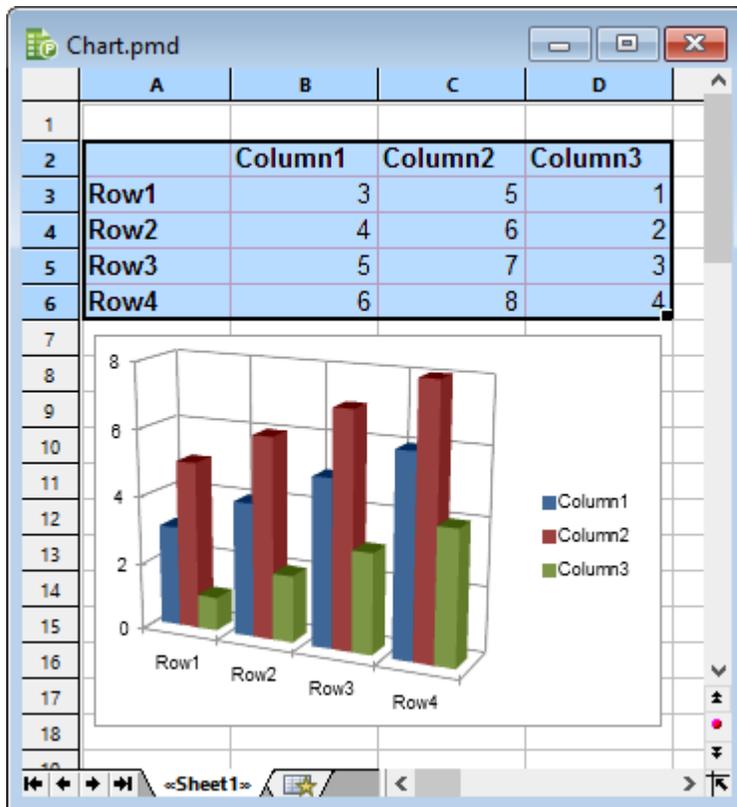
Deformation tab (available only for TextArt objects)

Note: This tab appears only for TextArt objects.

Use the **Deformation** tab to change the type of shaping effect to be applied to the characters. To do this, click the desired type of deformation.

Charts

In spreadsheets containing nothing but long columns of numbers, it is often hard to interpret their meaning. PlanMaker offers easy ways to turn raw numbers into charts that get the point across.



In this chapter, you will learn everything you need to know about charts. Topics covered:

- [Inserting charts](#)

The first section describes how to insert a chart: Select the cells containing the data to be displayed, choose the menu command **Object > New chart frame**, select a chart type.

- [Editing charts](#)

This section contains information on editing charts, for example, changing chart type, arrangement of the data series, working with chart elements (data series, axes, legends, etc.), editing chart properties, and so on.

- [Updating charts](#)

By default, charts are automatically updated when you change the content of any of the cells they are based on. If desired, this feature can be turned off, requiring that charts be updated manually.

- [Moving charts to another worksheet](#)

The menu command **Object > Chart > Change chart location** allows you to move a chart to a different worksheet – or even create a dedicated *chart worksheet* for it. A chart worksheet contains no table cells but solely the chart in its full size.

- [Saving charts as images](#)

The menu command **Object > Chart > Save as image** allows you to save an image of a chart in a picture file.

Inserting charts

To insert a chart into the current worksheet:

1. Select the cells containing the values to be displayed in a chart.

Hint: If the selection contains row and/or column headings, these headings can be used to automatically label the axes and the legend.

2. Choose the menu command **Object > New chart frame** or click the  icon in the Object toolbar (available only in Object mode).
3. In the resulting dialog box, click the desired **Chart type** and **Subtype** to specify how the chart will look. (For more information about chart types, see section [Changing the chart type.](#))
4. Click **OK** to confirm.
5. The chart is inserted.

In case you want to modify its position or size, do the following:

To change the position, click on the chart and (while still holding the mouse button down) drag it to the desired position.

To adjust its size, drag on one of the round handles surrounding the chart.

Editing charts

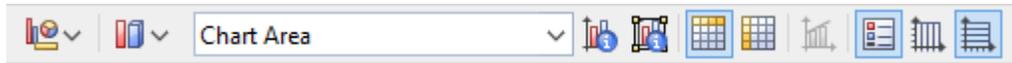
On the next pages you will learn how to edit charts. The following topics are covered:

- [Changing the chart type](#)
- [Changing the arrangement of data series](#)
- [Working with chart elements](#)
- [Changing common chart properties](#)

Note: Basic procedures for editing objects are discussed in the chapter [Objects \(pictures, drawings, etc.\)](#).

Tip: Using the Chart toolbar

When you select a chart, a toolbar named *Chart toolbar* will automatically appear.



The Chart toolbar

This toolbar provides icons helpful for working with charts. From left to right:

- Change chart type
- Change chart subtype
- Dropdown list of all chart elements (open it and click an element to select it for editing)
- Edit properties of the current chart element
- Edit common chart properties
- Data series are in columns
- Data series are in rows
- Add trend line
- Legend on/off
- Vertical gridlines on/off
- Horizontal gridlines on/off

Hint: Move the mouse pointer over any of these icons, and a short explanation of its function is displayed.

For detailed information on each icon, read the following pages.

Changing the chart type

The *chart type* determines how data will be displayed in a chart – for example, as columns, as bars, as lines, etc.

To change the type of a chart:

1. Select the chart by clicking it.
2. Choose the menu command **Object > Properties**.
3. Switch to the **Chart Type** tab.
4. Choose the desired chart type and chart subtype.

Hint: Alternatively, use the first two icons in the Chart toolbar to change the type of a chart: The first icon represents the chart type; the second icon represents the subtype (if available).

Chart types available:

**Column chart**

Column charts display values as columns. The higher the value, the taller the corresponding column. Column charts are often used to compare values.

**Bar chart**

Bar charts are horizontally oriented versions of column charts. The data is displayed as horizontal bars instead of vertical columns.

**Line chart**

Line charts display values as points and/or connecting lines.

**Area chart**

Area charts are identical to line charts, except that the area below the lines is filled with color.

**XY scatter chart**

XY scatter charts display values as points and/or lines. Unlike line charts, the data area must contain both the x and the y coordinate of the data points.

**Bubble chart**

Bubble charts display values as filled circles ("bubbles"). Bubble charts are usually based on data series containing three values: x coordinate, y coordinate, and bubble size.

**Radar chart**

Radar charts display values along spokes that radiate from the center point.

**Surface chart**

Surface charts display values as a three-dimensional shape. Areas plotted in the same color indicate similar values.

The values to be displayed should have the following structure:

	y_1	y_2	y_3	...
x_1	z_{11}	z_{12}	z_{13}	...
x_2	z_{21}	z_{22}	z_{23}	...
x_3	z_{31}	z_{32}	z_{33}	...
...

(Z values determine the height.)



Pie chart

Pie charts display values as pie slices. Pie charts are often used to conceptualize how values contribute to a whole.

Hint: You can highlight values by selecting them with the mouse and dragging them out of the pie.



Doughnut chart

Doughnut charts display values as ring segments. They are similar to pie charts, except that they are able to display multiple data series (= rings).



Cylinder, Cone, and Pyramid chart

Cylinder, cone, and pyramid charts are identical to column and bar charts, except that they display values as cylinders, cones, or pyramids.



Stock chart

Stock charts (a.k.a. **high-low charts**) are often used for illustrating the development of stock prices. They are able to display e.g. the highest, the lowest, and the closing price at the same time.

The following subtypes are available:

- **Stock chart (High, Low, Close)**

Displays the following values:

Highest price, lowest price, closing price

Requires 3 data series in the quoted order.

An example for the structure of the data (with the date added in column A):



	A	B	C	D
1		High	Low	Closing
2	10/24	24.94	20.55	21.04
3	10/25	22.76	19.73	20.44
4	10/26	21.09	18.18	20.71
5	10/27	25.83	20.46	24.59
6	10/28	28.04	25.09	27.76
7				

- **Stock chart (Open, High, Low, Close)**

Displays the following values:

Opening price, highest price, lowest price, closing price

Requires 4 data series in the quoted order.

- **Stock chart (Volume, High, Low, Close)**

Displays the following values:

Volume traded, highest price, lowest price, closing price

Requires 4 data series in the quoted order.

The *volume traded* is displayed as an additional column (which has its own value axis).

- **Stock chart (Volume, Open, High, Low, Close)**

Displays the following values:

Volume traded, opening price, highest price, lowest price, closing price

Requires 5 data series in the quoted order.

The *volume traded* is displayed as an additional column (which has its own value axis).



Box plot chart

Box plots (or **box and whisker plots**) can be used for data analysis in statistics. Detailed explanations on the application of box plots would go beyond the scope of this manual. You can find elaborate information on this in the Internet search engine of your choice.

There are two subtypes: **Horizontal** and **Vertical**.

Depending on the number of data series passed to the chart, a different type of box plot will be rendered, as follows:

(Note: The values listed below are just examples; you can display *any* types of values in a box plot.)

- **3 point box plot**

Displays, for example, the following values:

Lower quartile (lower border of the box)
Median (position of the bar inside the box)
Upper quartile (upper border of the box)

Requires exactly **3** data series in the quoted order.

■ **5 point box plot**

Displays, for example, the following values:

Lower whisker (line below the box)
Lower quartile (lower border of the box)
Median (position of the bar inside the box)
Upper quartile (upper border of the box)
Upper whisker (line above the box)

Requires exactly **5** data series in the quoted order.

■ **7 point box plot**

Displays, for example, the following values:

Minimum (as a single marker)
Lower whisker (line below the box)
Lower quartile (lower border of the box)
Median (position of the bar inside the box)
Upper quartile (upper border of the box)
Upper whisker (line above the box)
Maximum (as a single marker)

Requires exactly **7** data series in the quoted order.

Changing the arrangement of data series

The two  icons in the Chart toolbar determine how the selected data will be arranged in the chart: *by columns* or *by rows*.

■ **By columns**

By default, the first icon is selected, meaning that the data is evaluated column by column: The values in the first *column* will be the first data series, the values in the second *column* will be the second data series, etc.

■ **By rows**

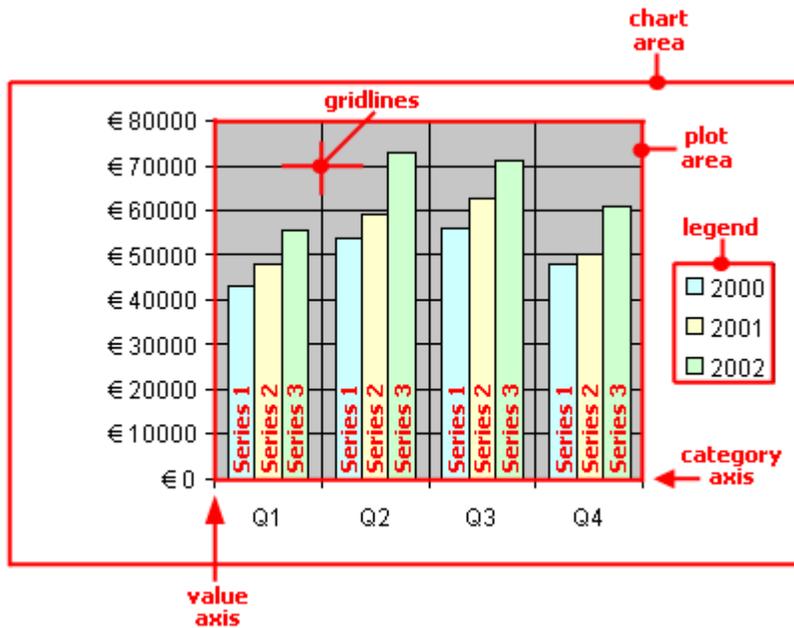
If you click the second icon, the data will be evaluated row by row: The values in the first *row* will be the first data series, the values in the second *row* will be the second data series, etc.

Alternatively, this setting can be switched by choosing the menu command **Object > Chart > Data in columns** or **Data in rows**, respectively.

Working with chart elements

Charts consist of various components (data series, axes, legends, etc.), referred to as *chart elements*.

The picture below illustrates all chart elements:



Series 1, Series 2, etc. represent the chart's *data series*.

Three-dimensional charts types contain some additional chart elements (walls, floor, etc.), which will also be discussed on the following pages.

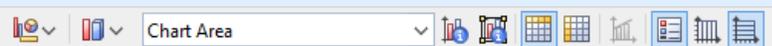
Each of these chart elements can be selected and modified.

Selecting chart elements

To select a chart element, first click on the chart itself to select it (if it isn't already selected). Then, click on the desired chart element.

Note: To select a *single* value within a data series, first click on the data series to select the entire series, and then click on the desired value.

Hint: Alternatively, open the chart elements dropdown list in the middle of the Chart toolbar and select the desired element.



Changing position and size of chart elements

Some chart elements can be moved or resized – for example, the legend. To move an element, select it and drag it to the desired position. To change its size, drag one of the round handles appearing around the element (when it is selected).

Modifying chart elements properties

As described in the section [Changing common chart properties](#) later on, charts have *common* properties that you can modify whenever needed. Apart from those common properties, you can also change the properties of *single* chart elements.

For example, to change the properties of the legend displayed in a chart, proceed as follows:

1. Select the legend by clicking on it.
2. Right-click on the legend to open its context menu.

Android: In the Android version, you can also open the context menu with your finger: Just tap on the screen and *hold* your finger there for about a second.

3. In the context menu, choose the **Legend: Properties** command (*not* the **Chart: Properties** command).

This command will open a dialog containing legend-specific properties.

Hint: Clicking the  icon in the Chart toolbar or double-clicking a chart element will also access the element's properties dialog.

A different dialog appears for each type of chart element. The following sections provide detailed information on each individual chart element, including their properties, as follows.

- [Chart area](#)
- [Plot area](#)
- [Walls \(three-dimensional charts only\)](#)
- [Floor \(three-dimensional charts only\)](#)
- [Corners \(three-dimensional charts only\)](#)
- [Data series and data points](#)
- [Trend lines](#)
- [Category axis \(x axis\)](#)
- [Value axis \(y axis\)](#)
- [Series axis \(z axis\)](#)
- [Gridlines](#)
- [Legend](#)

Chart area

The *chart area* is the complete area covered by the chart frame.

Modifying properties: To change the properties of the chart area, select it, right-click it, and choose the **Chart area: Properties** command from the context menu.

Hint: Alternatively, select the chart area and either click the  icon in the Chart toolbar, or double-click the chart area.

Options available:

Format tab

Use this tab to modify the following settings:

- **Border** group box

Lets you add border lines in the selected line style to the chart.

If the **Shadow** option is checked, a drop shadow effect will be added to the border. The **Adjust** button can be used to customize the appearance of the shadow.

- **Filling** group box

Lets you change the filling of the chart area.

To use complex fill types (gradients, bitmaps, etc.), select the **Effects** option and click the **Customize** button. For more information on fill types, see section [Object properties, Filling tab](#).

Font tab

Use this tab to change the default character format (font, font size, font styles, etc.) of the chart.

Important: Changing the font settings for the chart area will also change the font settings for *all* other chart elements.

Plot area

The *plot area* of a chart is the area where data series, axes, and gridlines are painted.

Modifying properties: To change the properties of the plot area, select it, right-click it, and choose the **Plot area: Properties** command from the context menu.

Hint: Alternatively, select the plot area and either click the  icon in the Chart toolbar, or double-click the plot area to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Border** group box

Lets you add border lines in the selected line style to the plot area.

- **Filling** group box

Lets you change the filling of the plot area.

To use complex fill types (gradients, bitmaps, etc.), select the **Effects** option and click the **Customize** button. For more information on fill types, see section [Object properties, Filling tab](#).

Walls (three-dimensional charts only)

Walls exist in three-dimensional charts only.

Modifying properties: To change the properties of the walls, select one of the walls, right-click it, and choose the **Walls: Properties** command from the context menu.

Hint: Alternatively, select a wall and either click the  icon in the Chart toolbar, or double-click a wall to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Border** group box

Lets you modify the line style used to draw the walls.

- **Filling** group box

Lets you change the filling of the walls.

To use complex fill types (gradients, bitmaps, etc.), select the **Effects** option and click the **Customize** button. For more information on fill types, see section [Object properties, Filling tab](#).

3D View tab

Use this tab to modify the 3D settings for the entire chart. For more information, see section [Chart properties, 3D View tab](#).

Floor (three-dimensional charts only)

Floors exist in three-dimensional charts only.

Modifying properties: To change the properties of the floor, select it, right-click it, and choose the **Floor: Properties** command from the context menu.

Hint: Alternatively, select the floor and either click the  icon in the Chart toolbar, or double-click the floor to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Border** group box

Lets you modify the line style used to draw the floor.

- **Filling** group box

Lets you change the filling of the floor.

To use complex fill types (gradients, bitmaps, etc.), select the **Effects** option and click the **Customize** button. For more information on fill types, see section [Object properties, Filling tab](#).

3D View tab

Use this tab to modify the 3D settings for the entire chart. For more information, see section [Chart properties, 3D View tab](#).

Corners (three-dimensional charts only)

Corners exist in three-dimensional charts only.

Modifying properties: To change the properties of the corners, select one of them, right-click it, and choose the **Corners: Properties** command from the context menu.

Hint: Alternatively, select a corner and either click the  icon in the Chart toolbar, or double-click a corner to access its properties dialog.

Options available:

3D View tab

Use this tab to modify the 3D settings for the entire chart. For more information, see section [Chart properties, 3D View tab](#).

Data series and data points

Data series are the most important chart elements. They represent the data to be displayed in a chart. For example, in a column chart, the height of each column stands for the size of the corresponding value.

A **data series** is the graphical representation of one *row* (or *column*) of the cells the chart is based on. Every data series consists of multiple **data points**, i.e., the graphical representation of one *cell*.

Modifying properties: To change the properties of data series or single data points:

- When you click on any of the data points of a data series, the *entire* data series will be selected. To edit its properties, right-click it to display its context menu and choose the **Series: Properties** command.
- When you click the *same* data point once again, only this *single* data point will be selected. To edit its properties, right-click it and choose the **Point: Properties** command.

Options available (for both data series and data points):

Format tab

Use this tab to modify the following settings:

- **Border** group box (or **Line** group box)
Lets you modify the line style used to draw the graph.
- **Filling** group box
Lets you change the filling used to draw the graph.
To use complex fill types (gradients, bitmaps, etc.), select the **Effects** option and click the **Customize** button. For more information on fill types, see section [Object properties, Filling tab](#).
- **Marker** group box (available only for certain chart types)

Some chart types (e.g. certain types of line charts) draw *markers* for each data point. Here, you can modify the appearance of such markers. For this purpose, choose the **Custom** option and select the desired style, size, color, etc.

3D Format tab

Note: The options on this tab are available only for certain chart types.

Use this tab to add a light effect or bevels to the data points to be displayed.

- **Material**

Lets you specify what type of material will be simulated to display the data points.

- **Light**

Lets you specify what type of light to simulate.

- **Angle**

Lets you change the angle of the light source.

Hint: The above effects usually look better when you additionally add bevels to the data points (see the next option).

- **Bevel group box**

Lets you add a bevel effect to graphical representation of the data points. For example, in a bar chart, you can use these options to round the edges of the bars. The larger the value, the rounder the edges will be displayed.

Data labels tab

Use this tab to add *labels* to the selected data points. This is useful, for example, if you want to have the exact values displayed for each data point.

- **Display group box**

Lets you specify what type of label will be displayed. By default, **Don't show** is selected (meaning that *no* label will be displayed). If, for example, you choose **Show value**, the value in the cell represented by the data point will be displayed.

- **Display legend key in label**

If this option is checked, the legend key is displayed in each label. The *legend key* is a small square shaded in the color used to paint the data point.

- **Placement group box**

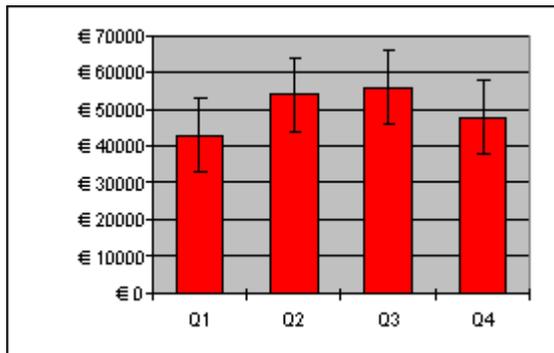
Lets you modify the placement of the labels (relative to the corresponding data points).

Note: Labels can be modified like any other kind of chart element. For example, to change their properties, select one of them, right-click it, and choose the **Data label: Properties** command from the context menu.

Error bar Y tab

Note: This tab is available only for certain chart types (including column, bar, and line charts).

Use this tab to add *error bars* to the data points of the selected data series. Error bars display the possible/tolerable error of the values in the form of lines ending with short dashes at their ends.



A chart using both "Plus" and "Minus" error bars

To add error bars, select the desired type of error bar in the **Display** group box: **Plus only** displays a positive error bar, **Minus only** displays a negative error bar, **Plus and minus** displays both error bars.

The **Show as** group box lets you modify the appearance of the error bars: with or without end dashes.

The **Value** group box lets you determine the length of error bars: If you choose **Fixed**, the error bars will have a fixed length; if you choose **Percent**, the length will be determined by the specified percentage of each value, and so on.

Error bar X tab

Note: This tab is available only for certain chart types (including column, bar, and line charts).

This tab is identical to the **Error bar Y** tab (see above), except that it displays error bars for the x values instead of the y values.

Helper Lines tab

Note: This tab is available only for certain chart types (including two-dimensional column, bar, and line charts).

Use this tab to add "helper lines" representing statistical information to the selected data series. For example, if you choose the **Average** option, a dashed line indicating the average of the selected data series will be displayed in the chart.

Options available: **Average**, **Minimum/Maximum**, **Standard deviation**, and **Linear approximation** (displays a trend line calculated using linear regression).

Hint: Alternatively, you can add a large variety of other types of trend lines using the **Object > Chart > Add trendline** menu command. See section [Trend lines](#).

Options tab

This tab contains several additional options for the selected chart type.

Trend lines

Note: Trend lines are available only for certain chart types (including two-dimensional column, bar, and line charts).

If desired, you can add *trend lines* to the data series of a chart.

Trend lines can be used to graphically display the *trend* of a data series (i.e., to what extent the data series rises/falls on average). Trend lines can also be extended beyond the given data points, so that they display a forecast for future values.

A statistical technique called *regression analysis* is used to calculate trend lines.

Adding trend lines: To add a trend line to a data series, select the data series, right-click it, and choose the **Add trendline** command from the context menu.

Hint: Alternatively, select the data series and either click the  icon in the Chart toolbar or choose the **Object > Chart > Add trendline** menu command.

Removing trend lines: To remove a trend line, select it and press the **Del** key.

Modifying properties: To change the properties of a trend line, select it, right-click it, and choose the **Trendline: Properties** command from the context menu.

Hint: Alternatively, select the trend line and either click the  icon in the Chart toolbar, or double-click the trend line to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Line** group box
Lets you modify the line style used to draw the trend line.

Trendline tab

- **Type** group box
Lets you determine the type of trend line (linear trend, exponential trend, etc.).

The available types of trend lines are based on the following formulas:

Linear: $y = ax + b$

Polynomial: $y = b + c_1x + c_2x^2 + c_3x^3 + \dots + c_6x^6$

Exponential: $y = ce^{bx}$ (e = Euler's number)

Logarithmic: $y = c \ln(x) + b$

Potential: $y = cx^b$

Moving average: $f(x_i) = (x_i + x_{i-1} + x_{i-2} + \dots + x_{i-n+1}) / n$

- **Based on series**

Lets you choose the data series for which the trend line is displayed.

- **Forecast group box**

Lets you extend the trend line beyond the given data points.

Example: If 3 data points are given (e.g., the sales figures of the 1st, 2nd, and 3rd year) and you enter 1 in the **Forward** box, the trend line will be extended by one unit (= data point), so that it displays a forecast for the sales in the 4th year.

- **Crossing point**

To force the trend line to intersect the y axis at a specific y coordinate, check this option and enter the desired y coordinate. Available for certain types of trend lines only.

- **Show formula in chart**

If this option is checked, the formula used to calculate the trend line will be displayed in the chart.

- **Show correlation in chart**

If this option is checked, the correlation coefficient R^2 of the data series will be displayed in the chart.

- **Name group box**

Lets you modify the name of the trend line (displayed in the legend). Select the **Custom** option and enter the desired name.

Category axis (x axis)

The x axis of a chart is also called *category axis*.

Showing/hiding axes: To show/hide axes, select the chart, choose the menu command **Object > Properties**, and switch to the **Elements** tab. Check the axes to be displayed. For example, if you check the **X axis** option, the x axis (category axis) will be displayed.

Modifying properties: To change the properties of the category axis, select it, right-click it, and choose the **Category Axis: Properties** command from the context menu.

Hint: Alternatively, select the axis and either click the  icon in the Chart toolbar, or double-click the axis to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Line group box**
Lets you modify the line style used to draw the axis.
- **Major ticks** and **Minor ticks** group boxes
Lets you modify the placement of the tick marks displayed on the axis.
- **Tick labels** group box
Lets you modify the placement of the tick labels displayed at the tick marks.

Scale tab

Use this tab to change the scaling of the axis.

Annotation: The first, second, third, etc., data point of *all* data series is called a *category*.

- **Axis ends** group box
Lets you determine where to end the visible part of the axis: **In categories** or **Between categories**.
- **Number of categories between** group box
By default, PlanMaker draws a tick mark on the axis at *every* category and adds a tick label to *every* tick mark. To alter these settings:

The **Tick marks** option determines the frequency tick marks are set. Enter 1, and a tick mark is set for every category. Enter 2, and a tick mark is set for every second category, etc.

The **Tick labels** option determines the frequency tick marks are labeled. Enter 1, and every tick mark is labeled. Enter 2, and every second tick mark is labeled, etc.
- **Intersection between X and Y axis** group box
Use this option to determine where the x axis (category axis) will cross the y axis (value axis): **At low end** (where the axis begins), **At high end** (where the axis ends), or at the specified category number.
- **Invert axis direction**
If this option is checked, the direction of the axis is reversed.

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the axis labels.

Note: If desired, the axis labels can be rotated by choosing the **Custom** option and selecting the desired angle under **Rotation**.

Value axis (y axis)

The y axis of a chart is also called *value axis*.

Showing/hiding axes: To show/hide axes, select the chart, choose the menu command **Object > Properties**, and switch to the **Elements** tab. Check the axes to be displayed. For example, if you check the **Y axis** option, the y axis (value axis) will be displayed.

Modifying properties: To change the properties of the value axis, select it, right-click it, and choose the **Value Axis: Properties** command from the context menu.

Hint: Alternatively, select the axis and either click the  icon in the Chart toolbar, or double-click the axis to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Line group box**
Lets you modify the line style used to draw the axis.
- **Major ticks and Minor ticks group boxes**
Lets you modify the placement of the tick marks displayed on the axis.
- **Tick labels group box**
Lets you modify the placement of the tick labels displayed at the tick marks.

Scale tab

Use this tab to change the scaling of the axis.

- **Lowest value and Highest value group boxes**
These options determine where the axis will begin and end. **Auto** chooses a suitable value automatically. To use a different value, select **Custom** and enter the desired value.

- **Intersection between X and Y axis** group box

Use this option to determine where the x axis (category axis) will cross the y axis (value axis): **Auto** chooses a suitable value automatically, **Maximum value** places the x axis at the end of the y axis, and **Custom** uses a user-defined value.

- **Major step value** group box

Lets you modify the interval between major tick marks on the axis.

- **Minor step value** group box

Lets you modify the interval between minor tick marks on the axis.

- **Invert axis direction**

If this option is checked, the direction of the axis is reversed.

- **Logarithmic scale**

If this option is checked, the axis will use a logarithmic scale (e.g., 10, 100, 1000, etc.) rather than a linear scale.

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the axis labels.

Note: If desired, the axis labels can be rotated by choosing the **Custom** option and selecting the desired angle under **Rotation**.

Series axis (z axis)

The z axis of a chart is also called *series axis*. It is only available for certain three-dimensional charts.

Showing/hiding axes: To show/hide axes, select the chart, choose the menu command **Object > Properties**, and switch to the **Elements** tab. Check the axes to be displayed. For example, if you check the **Z axis** option, the z axis (series axis) will be displayed.

Modifying properties: To change the properties of the series axis, select it, right-click it, and choose the **Series Axis: Properties** command from the context menu.

Hint: Alternatively, select the axis and either click the  icon in the Chart toolbar, or double-click the axis to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Line** group box
Lets you modify the line style used to draw the axis.
- **Major ticks** and **Minor ticks** group boxes
Lets you modify the placement of the tick marks displayed on the axis.
- **Tick labels** group box
Lets you modify the placement of the tick labels displayed at the tick marks.

Scale tab

Use this tab to change the scaling of the axis.

- **Number of series between** group box
By default, PlanMaker draws a tick mark on the axis at *every* data series and adds a tick label to *every* tick mark. To alter these settings:

The **Tick marks** option determines the frequency at which tick marks are set. Enter 1, and a tick mark is set for every data series. Enter 2, and a tick mark is set for every second data series, etc.

The **Tick labels** option determines the frequency at which tick marks are labeled. Enter 1, and every tick mark is labeled. Enter 2, and every second tick mark is labeled, etc.
- **Invert axis direction**
If this option is checked, the direction of the axis is reversed.

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the axis labels.

Note: If desired, the axis labels can be rotated by choosing the **Custom** option and selecting the desired angle under **Rotation**.

Gridlines

Adding *gridlines* to a chart can improve its readability.

Two types of gridlines are available:

- *Major gridlines* are painted at every major tick mark on the axis.
- *Minor gridlines* subdivide the major grid into a finer grid.

Showing/hiding gridlines: Gridlines can be enabled for each axis. To determine which gridlines to display, select the chart, choose the menu command **Object > Properties**, switch to the **Elements** tab, and check all major or minor grids you want to be plotted.

Hint: Alternatively, use the two   icons in the Chart toolbar, or choose the menu command **Object > Chart > Show vertical grid lines** or **Show horizontal grid lines** to activate grid lines.

Modifying properties: To change the properties of, e.g., the major grid of the value axis, select one of its gridlines, right-click it, and choose the **Value Axis Major Gridlines: Properties** command from the context menu.

Hint: Alternatively, select one of the lines and either click the  icon in the Chart toolbar, or double-click one of the lines to access the properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Line group box**
Lets you modify the line style used to draw the gridlines.

Changing the scaling of gridlines

To change the scaling of gridlines, modify the properties of the corresponding *axis* (**Scaling** tab).

Legend

If desired, you can add a legend to a chart. A *legend* is a small box indicating which colors/patterns are assigned to the data series displayed in the chart.

Showing/hiding the legend: To show/hide the legend, select the chart, choose the menu command **Object > Properties**, and switch to the **Elements** tab. Open the **Legend** dropdown list, and choose the desired location.

If you choose **Custom**, the legend can be moved to any position (using the mouse). If you choose **None**, the legend will not be displayed.

Hint: Alternatively, use the  icon in the Chart toolbar or the **Object > Chart > Show Legend** menu command to show/hide the legend.

Modifying properties: To change the properties of the legend, select it, right-click it, and choose the **Legend: Properties** command from the context menu.

Hint: Alternatively, select the legend and either click the  icon in the Chart toolbar, or double-click the legend to access its properties dialog.

Options available:

Format tab

Use this tab to modify the following settings:

- **Border** group box

Lets you add border lines in the selected line style to the legend.

If the **Shadow** option is checked, a drop shadow effect will be added to the border. The **Adjust** button can be used to customize the appearance of the shadow.

- **Filling** group box

Lets you change the filling of the legend.

To use complex fill types (gradients, bitmaps, etc.), select the **Effects** option and click the **Customize** button. For more information on fill types, see section [Object properties, Filling tab](#).

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the legend entries.

Legend tab

Use this tab to change the placement of the legend.

If you choose **Custom**, the legend can be moved to any position (using the mouse). If you choose **None**, the legend will not be displayed.

Changing common chart properties

The previous sections discussed how to change the properties of specific chart *elements*. The following section details the *common* chart properties. This includes layout options, the chart type, settings related to the data series, etc.

To modify the common properties of a chart, select the chart and choose the **Object > Properties** menu command.

Hint: Clicking the  icon in the Chart toolbar will also access the Object Properties dialog.

The options available in this dialog are covered on the pages that follow.

Chart properties, Format tab

Use the **Format** tab to change size and positioning of the chart. For details, see section [Object properties, Format tab](#).

Chart properties, Properties tab

Use the **Properties** tab to modify common object settings. For details, see section [Object properties, Properties tab](#).

Chart properties, Chart Type tab

Use the **Chart Type** tab to change the chart type. For details on chart types, see section [Changing the chart type](#).

Chart properties, Data Source tab

Use the **Data Source** tab to modify settings related to the chart's data source area (i.e., the cells containing the data the chart is based on).

Options available:

- **Data source area**

Lets you specify the cell range containing the data the chart is based on. By default, the cells selected when the chart was created are used.

- **Data series are in** group box

Lets you specify how the data source area will be arranged in the chart: *by columns* or *by rows*. See also section [Changing the arrangement of data series](#).

- **Data source area contains** group box

Lets you specify what kind of data the data source area consists of.

Hint: If the first row of the data source area contains headings for the data listed below, check the **Names** option. PlanMaker will automatically label the data series with the corresponding headings.

- **Include hidden cells**

When the data source area contains cells that have been hidden, PlanMaker usually does *not* display them in the chart. Check this option if you want hidden cells to be displayed as well.

Chart properties, Series tab

Data series are the most important chart elements. They represent the data to be displayed in a chart. For example, in a column chart, the height of each column stands for the size of the corresponding value.

The **Series** tab allows you to modify settings related to the data series of a chart.

Before making any changes, make sure you have selected the desired data series in the **Series** list.

Options available:

- **Series**

The **Series** list contains a list of all data series defined in the current chart.

The arrow buttons change the order of data series.

The **Add** and **Delete** buttons add/delete a series.

- **Data sources** group box

Allows you to specify which cells' contents are used to build up the selected data series.

The fields in this section are filled in automatically (using the cells selected when the chart was created), and there is usually no need to change them.

Fields in this section:

Name: Lets you modify the name of the data series. Either enter the cell containing the name or type in a text string directly, or, leave this box empty, and PlanMaker will automatically assign a name (Series 1, Series 2, etc.).

Y values: Lets you choose a different cell range for the y values of the data series.

Annotation: With most chart types, the *y values* represent the data to be displayed in the chart. For example, in a column chart, the y values determine the height of the columns.

X values: Lets you choose a different cell range for the x values of the data series.

Annotation: With most chart types, the *x values* are irrelevant and therefore set to "Auto" (= automatic). All they do is providing labels for the category axis (x axis). Exception: E.g. in XY scatter charts and bubble charts, the x and y values determine the coordinates of the data points.

Bubble size: Lets you choose a different cell range for the bubble sizes of the data points (only available in bubble charts). If omitted, all bubbles will have the same size.

- **Display this series as** group box

Allows you to modify the way the selected data series is displayed in the chart. For example, in a column chart, you can change the appearance of one or more data series to lines instead of columns.

- **Use secondary axis for this series**

If you check this option, the selected data series will be displayed using a secondary value axis (y axis). Secondary axes can have a different scale than primary axes.

Annotation: Using a secondary axis is helpful if one or more data series require a completely different scale on the axis because they contain values many times larger or smaller than the other data series.

Chart properties, Elements tab

Use the **Elements** tab to show/hide certain chart elements or to add captions to them.

Options available:

- **Chart title**

Lets you enter a title for the chart. The title will be displayed above the chart.

- **Primary Axes** group box

Allows you to configure the primary axes:

The checkbox in front of the axis determines if it will be displayed in the chart.

The text box to the right lets you enter a caption for the axis.

The options **Major grid** and **Minor grid** determine if a grid will be displayed in the background of the chart. For more details on gridlines, see section [Gridlines](#).

- **Secondary Axes** group box

Allows you to configure the secondary axes (only available for charts that contain a secondary axis).

- **Legend**

Allows you to change the position of the legend. A *legend* is a small box indicating which colors/patterns are assigned to the data series displayed in the chart. For more details, see section [Legend](#).

Chart properties, 3D View tab

Note: This tab is only available for three-dimensional chart types.

Use the **3D View** tab to modify the 3D effect settings for the chart.

Options available:

- **Rotation angle** and **Elevation angle**

Lets you modify the viewing position. **Rotation angle** rotates the chart around the vertical axis; **Elevation angle** changes the height of the viewing position.

- **Perspective**

To display the chart with perspective distortion, check this option and choose the amount of distortion (0 to 100 percent).

- **Height and Depth**

Lets you modify the height and depth of the chart (as a percentage of its original size).

Chart properties, Radar tab

Note: This tab is only available for Radar charts.

Use the **Radar** tab to modify settings specific to Radar charts.

Options available:

- **Starting angle**

Rotates the chart by the specified angle.

- **Orientation**

Specifies if the data points are arranged clockwise or counterclockwise.

- **Round chart**

If this option is checked, circle segments are drawn between the axes instead of lines.

- **Polar coordinates**

If this option is checked, polar coordinates are used instead of Cartesian coordinates. Only available if **Round chart** is checked.

If **Angle between axes** is set to x , an axis is plotted every x degrees.

If **Angle between axis descriptions** is set to x , an axis label is plotted every x degrees.

- **Limit plot area to radar**

If this option is checked, only the area inside the radar will be filled. If it is not checked, the rectangle surrounding the radar will be filled as well.

Updating charts

By default, charts are automatically updated when the content of one of the cells it is based on changes. If desired, this feature can be disabled, requiring charts to be updated manually.

Deactivating automatic update

To deactivate the automatic update of charts, choose the menu command **File > Properties**, switch to the **Calculate** tab, and uncheck the **Update automatically** option in the **Charts** group box.

As a result, charts will only be updated when the **Tools > Update charts** menu command is invoked.

Moving charts to another worksheet

When you create a new chart, it will always be inserted into the current worksheet. Of course you can change its position whenever needed:

To move a chart to another place within the current worksheet, just select it with a mouse click and drag to the desired location.

In case you want to move a chart to a *different* worksheet, proceed as follows:

1. Select the chart of interest.
2. Invoke the menu command **Object > Chart > Change chart location**.
3. Choose the desired option (see below) and click on **OK**.

The chart is moved accordingly.

Options available:

- **As new sheet**

When you choose this option, the chart will be transferred to its own *chart sheet*. PlanMaker removes the chart from the current sheet, creates a new chart sheet for it, and places the chart there.

A "chart sheet" is a special type of worksheet: It doesn't contain any table cells, but solely the chart in its full size. Note: On such sheets, only commands related to editing charts are available.

- **As object in ...**

When you choose this option, the chart is placed as an object in the specified worksheet, as usual.

Saving charts as images

Whenever needed, you can save an image of a chart as a picture file. This makes it easier, for example, to share the chart with others or to insert it into a web page or any other document.

Proceed as follows:

1. Select the chart of interest.
2. Invoke the menu command **Object > Chart > Save as picture**.
3. In the **Save as type** list, choose the desired image format. (PNG format is recommended.)

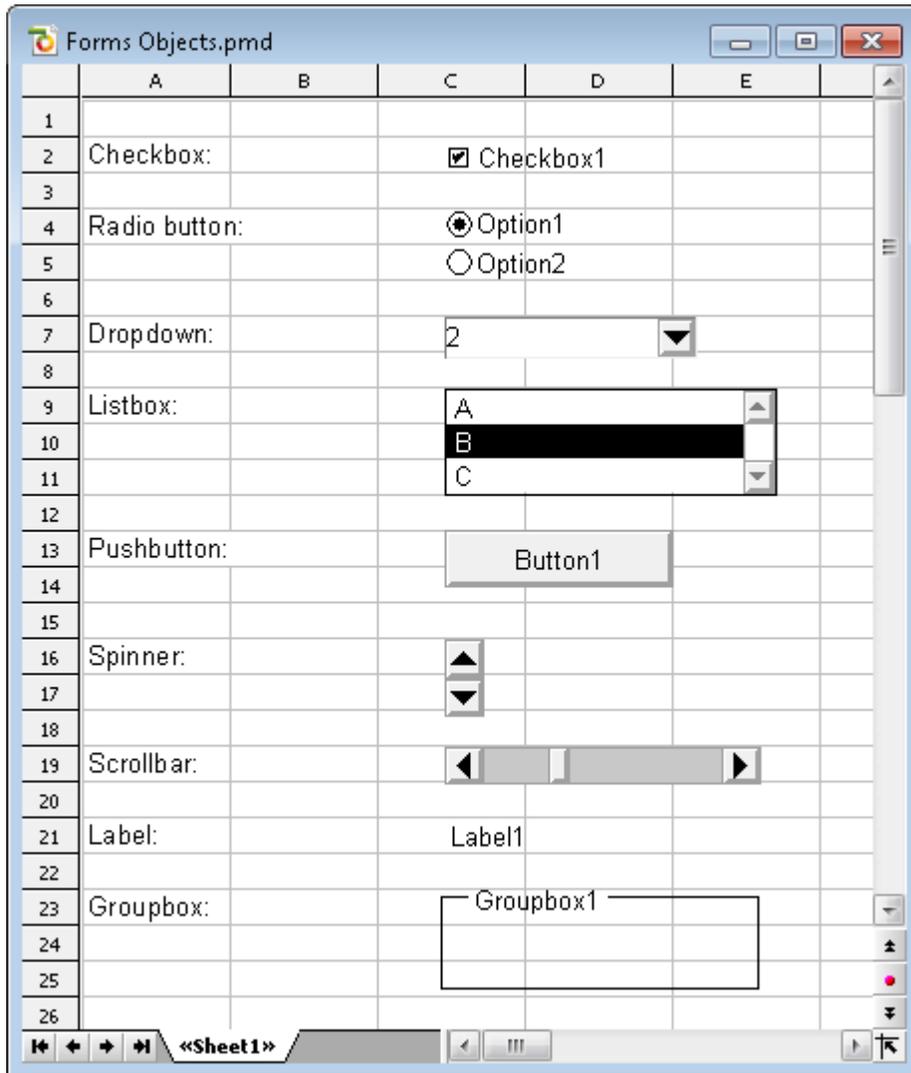
Tip: The *PNG format* is always a good choice here, since it offers a fairly good and at the same time lossless compression.

4. Enter a filename for the image file and confirm with **OK**.
5. Another dialog appears where you can select an image resolution or enter your own values for width and height. Confirm with **OK**.

PlanMaker creates the specified picture file and stores an image of the chart in it.

Forms

You can insert *form objects* into your tables and, in this way, create forms.



The following types of form objects are available:

- **Checkboxes** for checking
- **Radio buttons** for selection among multiple alternatives
- **Dropdowns** for selection from an expanding list
- **Listboxes** for selection from a list
- **Pushbuttons** for clicking

- **Spinners** for increasing/decreasing values by mouse click
- **Scrollbars** for increasing/decreasing values by mouse click
- **Labels** for static descriptions
- **Groupboxes** for visually grouping related items

Form objects always have a **Result cell**. This is the cell, which holds the value that the form object returns. Each form object can be assigned to a different result cell.

If, for instance, you insert a listbox with several entries in it, 1 is displayed in the result cell when the first entry is clicked, 2 when the second entry is clicked, etc.

In this chapter, you will find detailed information on forms. It contains the following sections:

- [Working with form objects](#)

The first section covers general information on working with form objects. You will learn how to insert, edit, operate, and evaluate form objects.

- [Form objects in detail](#)

The second section contains detailed information on each individual type of form object.

Working with form objects

In the following sections, you will find general information regarding the use and application of form objects:

- [Inserting form objects](#)
- [Editing form objects](#)
- [Operating and evaluating form objects](#)
- [Form objects and Excel macros and scripts](#)

Then, in the section [Form objects in detail](#), we will cover the individual types of form objects in detail.

Inserting form objects

Inserting form objects is not much different from inserting other kinds of objects. For more information about that, see the chapter [Objects \(pictures, drawings, etc.\)](#).

To insert a form object, proceed as follows:

1. Select the **Object > New form object** menu command.
2. A sub-menu opens; choose the desired type of form object from it.

3. The form object is inserted.

In case you want to modify its position or size, do the following:

To change the position, click on the object and (while still holding the mouse button down) drag it to the desired position.

To adjust its size, drag on one of the round handles surrounding the object.

You will find detailed information about each individual type of form object in the section [Form objects in detail](#).

Using the Forms toolbar

You can also use the *Forms toolbar* to insert form objects. To activate or deactivate this toolbar, invoke the **View > Toolbars** menu command and click on the checkbox in front of **Forms**.



The icons in this toolbar represent the following functions (from left to right):

- Insert text frame
- Insert checkbox
- Insert radio button
- Insert dropdown
- Insert listbox
- Insert button
- Insert spinner
- Insert scrollbar
- Insert label
- Insert groupbox
- Toggle cell protection (see the section [Sheet protection](#))
- Toggle sheet protection (see the section [Sheet protection](#))

Hint: Move the mouse pointer over any of these icons, and a short explanation of its function is displayed.

Editing form objects

Editing form objects is not very different from editing other types of objects. See the chapter [Objects \(pictures, drawings, etc.\)](#).

There is, however, one important difference:

Important: Form objects *cannot* be selected with a left-click by the mouse. To select a form object, click on it with the *right* mouse button.

Alternatively, you can switch to Object mode (for example, by invoking the menu command **View > Object mode**), where you can select form objects with a left click.

When you have selected a form object, you can edit it just as any other type of object; for example, move it with the mouse, change its dimensions, modify its properties with the **Object > Properties** menu command, etc.

Information about the properties of the individual types of form objects can be found in the section [Form objects in detail](#).

Operating and evaluating form objects

Using form objects is very much like using control elements in dialog windows. For instance, checkboxes can be checked or unchecked with a mouse click, a listbox entry can be selected by clicking on it, etc.

Evaluation of form objects

Form objects are evaluated through the *result cell* of the object. This is the cell to which the result of the form object is returned.

The location of the result cell can be determined individually for each form object. To do this, select the form object and invoke the **Object > Properties** menu command. In the dialog, switch to the **Form object** tab and enter the desired cell address in the **Result cell** field.

For example: You have given a list the result cell D4. If you click the first entry in the list, 1 will be displayed in D4. If you click the fifth entry, 5 will be displayed, etc.

The relationship between a form object and its result cell is also two-way: If you enter 3 into the result cell, the third entry in the list is selected.

Form objects and Excel macros and scripts

Microsoft Excel files can contain macros and VBA scripts that can be used by form objects. In PlanMaker, this isn't possible, however:

Important: If you open an Excel file that has macros or scripts, you won't be able to run them; however, they do remain in the file. So, if you open and edit such an Excel file in PlanMaker and then save it, the macros and scripts will *not* be lost.

Form objects in detail

In this section we describe in detail the individual types of form objects. The following objects are covered:

- [Checkboxes](#)
- [Radio buttons](#)
- [Dropdowns](#)
- [Listboxes](#)
- [Pushbuttons](#)
- [Spinners](#)
- [Scrollbars](#)
- [Labels and groupboxes](#)

Checkboxes

To insert a *checkbox*, use the **Object > New form object > Checkbox** menu command.

Checkboxes can be used for yes/no questions in forms. A checked checkbox stands for **Yes**, an unchecked one stands for **No**.

Operating checkboxes

Click the box to check it. If you click it again, it will become unchecked.

Changing the properties of checkboxes

To modify the properties of a checkbox, first select it (for example, by *right*-clicking on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to checkboxes:

- **Text**

Here you can enter the text that is displayed to the right of the box.

- **Value**

Here you can specify the initial state of the checkbox, whether it should appear checked or unchecked in the document.

- **Result cell**

Here you specify to which cell the result of the form object should be returned.

One of the following values will appear in this cell:

TRUE, when the checkbox is checked.

FALSE, when the checkbox is unchecked.

The error value #N/A, when the state of the checkbox is ambiguous.

- **Appearance group box**

Here you can specify the font styles (font face, size, color, etc.) for the text.

- **3D effect**

If you check this option, the checkbox is drawn with a 3D effect.

Radio buttons

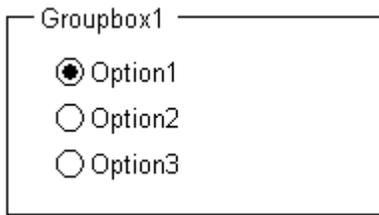
To insert a *radio button*, use the **Object > New form object > Radio button** menu command.

Radio buttons can be used in forms to select a single option from multiple options.

Using groupboxes to combine radio buttons

Important: Radio buttons must always be used in groups of at least two.

To indicate that a group of radio buttons belongs together, enclose them in a groupbox.



First, insert the radio buttons that belong together into the document (one under the other, for example), then wrap a group box around them with the menu command **Object > New form object > Groupbox**.

Operating radio buttons

Click one of the radio buttons to select it. Only one radio button within a group can be selected at a time.

Changing the properties of radio buttons

To modify the properties of a radio button, first select it (for example, by *right-clicking* on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to radio buttons:

- **Text**

Here you can enter the text that is displayed to the right of the radio button.

- **Value**

Here you can specify the initial state of the radio button, whether it should appear selected or unselected in the document.

- **Result cell**

Here you specify to which cell the result of the form object should be returned.

As mentioned previously, radio buttons must always be used in groups of at least two. The result cell displays which among the radio buttons is selected. When the first is selected, 1 is displayed, when the second is selected, 2 is displayed, etc.

- **Appearance** group box

Here you can specify the font styles (font face, size, color, etc.) for the text.

- **3D effect**

If you check this option, the radio button is drawn with a 3D effect.

Dropdowns

To insert an expandable *dropdown list*, use the **Object > New form object > Dropdown** menu command.

Dropdown lists figure prominently in many dialog windows. When you expand a dropdown, a list of available options is shown. Naturally, this is ideal for forms, as it saves typing and eliminates the possibility of typos.

Operating dropdowns

Click the arrow at the right of the list to open the dropdown. Then you can select an entry by clicking on it.

Changing the properties of dropdowns

To modify the properties of a dropdown, first select it (for example, by *right-clicking* on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to dropdown lists:

- **Lines (max.)**

Here you can specify the maximum number of lines to be displayed when the list is opened.

- **List area**

Here you specify the cell range that contains the items to be displayed in the dropdown list.

If, for example, you fill the cells F5 through F7 with the values "dog", "cat" and "mouse" and enter F5:F7 in the list area, those three values will appear in the list.

- **Result cell**

Here you specify to which cell the result of the form object should be returned.

The result cell displays which entry in the list is selected. When the first entry is selected, 1 appears. When the second entry is selected, 2 appears, etc.

- **Appearance group box**

Here you can specify the font styles (font face, size, color, etc.) for the text.

- **3D effect**

If you check this option, the list is drawn with a 3D effect.

Listboxes

To insert a *listbox*, use the **Object > New form object > Listbox** menu command.

Listboxes figure prominently in many dialog windows. They display several entries which the user can choose by clicking on them. Naturally, this is ideal for forms, as it saves typing and eliminates the possibility of typos.

Changing the properties of listboxes

To modify the properties of a listbox, first select it (for example, by *right-clicking* on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to listboxes:

- **Selection Type**

You should always use the **Single** option here.

The other options **Multi** and **Extended** allow multiple items to be selected in the list box, but return nothing to the result cell. They are only there for compatibility with Excel.

- **List area**

Here you specify the cell range that contains the items to be displayed in the listbox.

If, for example, you fill the cells F5 through F7 with the values "dog", "cat" and "mouse" and enter F5:F7 in the list area, those three values will appear in the list.

- **Result cell**

Here you specify to which cell the result of the form object should be returned.

The result cell displays which entry in the list is selected. When the first entry is selected, 1 appears. When the second entry is selected, 2 appears, etc

- **Appearance** group box

Here you can specify the font styles (font face, size, color, etc.) for the text.

- **3D effect**

If you check this option, the list is drawn with a 3D effect.

Pushbuttons

To insert a *pushbutton*, use the **Object > New form object > Pushbutton** menu command.

Note: In PlanMaker, pushbuttons *cannot* be used to execute macros or VBA scripts; they are merely present for compatibility with Excel.

Changing the properties of pushbuttons

To modify the properties of a pushbutton, first select it (for example, by *right-clicking* on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to pushbuttons:

- **Text**

Here you can specify the text that should appear on the button.

- **Appearance** group box

Here you can specify the font styles (font face, size, color, etc.) for the text.

Spinners

To insert a *spinner*, use the **Object > New form object > Spinner** menu command.

Spinners allow you to increment or decrement a value by mouse click. Clicking the upward pointing arrow increments the value, clicking on the downward pointing arrow decrements it.

Changing the properties of spinners

To modify the properties of a spinner, first select it (for example, by *right*-clicking on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to spinners:

- **Parameters** group box

Here you can specify the following parameters:

Current value: The current value (corresponding to the value in the result cell).

Minimum value: The lowest value allowed.

Maximum value: The highest value allowed.

Incremental change: The value that will be added/subtracted to the current value when one of the two arrows is clicked.

- **Result cell**

Here you specify to which cell the result of the form object should be returned.

- **3D effect**

If you check this option, the spinners are drawn with a 3D effect.

Scrollbars

To insert a *scrollbar*, use the **Object > New form object > Scrollbar** menu command.

With scrollbars, values can be incremented or decremented by mouse click. Clicking the upward pointing arrow increments the value by the specified incremental value, while clicking the downward pointing arrow decrements it.

Furthermore, you can make larger changes by moving the slider on the scrollbar with the mouse.

Changing the properties of scrollbars

To modify the properties of a scrollbar, first select it (for example, by *right*-clicking on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to scrollbars:

- **Parameters** group box

Here you can specify the following parameters:

Current value: The current value (corresponding to the value in the result cell).

Minimum value: The lowest value allowed.

Maximum value: The highest value allowed.

Incremental change: The value that will be added/subtracted to the current value when you click on one of the two arrows in the scrollbar.

Page change: The value that will be added/subtracted when you click somewhere between the scrollbar's slider and one of the arrow buttons.

- **Result cell**

Here you specify to which cell the result of the form object should be returned.

- **3D effect**

If you check this option, the scrollbar is drawn with a 3D effect.

Labels and groupboxes

Aside from the aforementioned form objects there are two more types of form objects that cannot be filled out, but are instead intended for labeling and grouping:

- **Labels**

In a *label* you can enter any text that you want to be displayed in a form.

- **Groupboxes**

Groupboxes are rectangles that have a text label in their upper left corner. They can be used to visually group form elements together.

To insert a label or a groupbox, use the menu command **Object > New form object > Label** or, respectively, the menu command **Object > New form object > Groupbox**.

The corresponding form object is inserted in a standard size. If necessary, you can change its position by dragging it with your mouse. To adjust its size, drag one of the round handles appearing around the object.

Changing the properties of labels and groupboxes

To modify the properties of a label or a groupbox, first select it (for example, by *right*-clicking on it). Then invoke the **Object > Properties** menu command.

A dialog window with the following options will appear:

Format tab

On this tab, you can modify the size and positioning of the object. See the section [Object properties, Format tab](#).

Properties tab

On this tab, you can modify common object settings. See the section [Object properties, Properties tab](#).

Form Object tab

On this tab, you can make settings that are specific to labels/groupboxes:

- **Text** groupbox

Here you specify the text to be displayed.

- **Appearance** group box

Here you can specify the font styles (font face, size, color, etc.) for the text.

- **3D effect**

If you check this option, the object is drawn with a 3D effect.

Language tools

PlanMaker comes with an integrated spell checker, allowing you to check the spelling of text. Additionally, multiline text can be hyphenated automatically.

This chapter provides information on working with this tool, as follows:

- [Setting up the language](#)

The *language* for spell checker and hyphenator can be set with the menu command **Tools > Options** (**Language** tab).

- [Spell checking](#)

The *spell checker* examines the text in your document for spelling mistakes. When it finds mistakes, it suggests corrections.

- [Hyphenation](#)

The *hyphenator* automatically hyphenates long words at the ends of lines. By default, it is active only in text frames, but you can also activate hyphenation for multiline text in table cells.

- [SmartText](#)

With PlanMaker's *SmartText* feature, you can have your "favorite" typing errors corrected automatically and create short-cuts for frequently needed phrases, such as "sd" for "sales department."

Setting up the language

If you have installed several languages, you can change the language for the spell checker, hyphenator and thesaurus, as needed.

To do this, proceed as follows:

1. Invoke the **Tools > Options** menu command.
2. Switch to the **Language** tab.
3. Select the desired language from the **Language** list.

Spell checking

The *spell checker* examines the text in your document for spelling mistakes. When it finds mistakes, it suggests corrections.

This section describes the different spell checking tools in detail. It covers the following topics:

- [Manual spell checking](#)

The *manual spell checker* lets you check and correct the spelling of the entire text in a worksheet, word by word.

- [Spell checking as you type](#)

The *on-the-fly spell checker* checks each word you type immediately. When a typing mistake is detected, a dialog box that lets you correct the word pops up.

- [Editing user dictionaries](#)

When you teach the spell checker new words, they are added to your *user dictionary*. You can edit this dictionary at any time in order to, for example, delete incorrect entries.

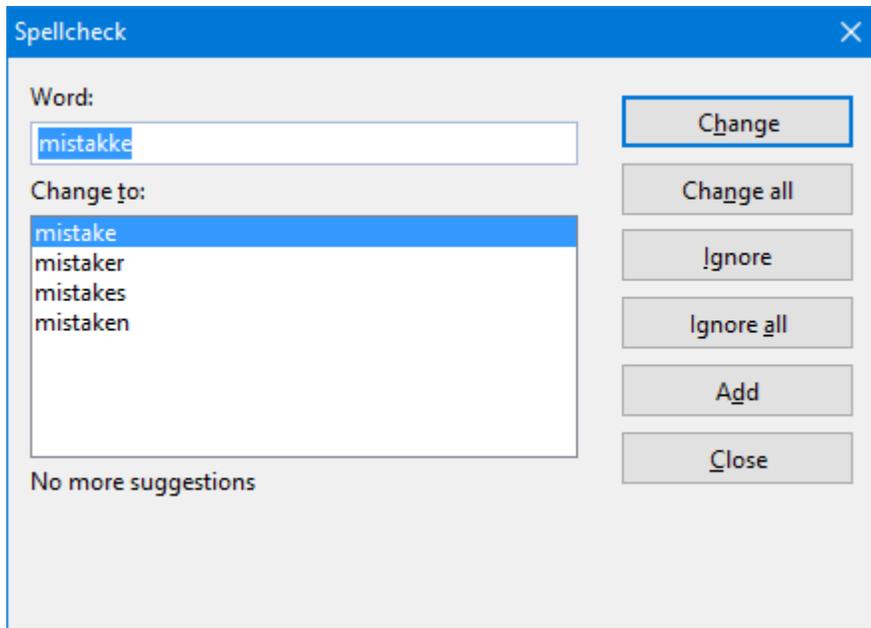
See the following pages for detailed information.

Manual spell checking

Note: Cells containing calculations are skipped by the spell checker.

You activate the manual spell checker with the **Tools > Check spelling** menu command.

This checks the text word for word for spelling errors. If an unrecognized word is found, the spell checker stops and displays the word in a dialog box.



You can then choose to correct the word, add it to the dictionary, or simply ignore the supposed error. Additionally, in the list under **Change to**, some suggestions for the correct spelling of the word are presented (if any are found).

Use the dialog buttons to specify what to do with the unknown word, as follows:

Button	Explanation
Change	Lets you correct the word. Before you use this button, type the correct spelling in the Change to input field or select one of the suggested words from the list.
Change all	Works like the Change button, but changes <i>all</i> further instances of the word (from here to the end of the document).
Ignore	Ignores the supposed spelling error and continues with the spelling check.
Ignore All	Ignores <i>all</i> further instances of this word.
	Note: Use Ignore or Ignore All only for words that are correctly written but are <i>not</i> to be added to the dictionary. When you exit PlanMaker, it forgets the list of ignored words.
Add	Advises PlanMaker to add the word to the user dictionary and in this way to enlarge its vocabulary.
	Note: Use this option for correctly spelled words that PlanMaker does not yet know. PlanMaker remembers these words permanently.

If you want to exit the spell checker before it reaches the end of the document, click on **Close**.

Spell checking as you type

If the **Check spelling as you type** option is activated, spelling is checked as the text is typed, and the spell check dialog box will open automatically when an unknown word is typed.

Note: When you enter a calculation into a cell, its spelling will *not* be checked.

To activate the on-the-fly spell checker, choose the menu command **Tools > Options**, switch to the **Language** tab, and activate the **Check spelling as you type** option.

Now, every time you type a word, PlanMaker quickly looks up that word in its dictionaries. As long as you type words that the spell checker knows, nothing visible happens. But if you type an unknown word, the spell checker displays a dialog box.

This dialog box is like the one for manual spell checker that was presented in the preceding section. You can read there about how to use this dialog.

You will notice that there is also a **SmartText** button in the dialog box. This is for creating a SmartText entry from the word. You will learn more about this feature in section [SmartText](#).

Editing user dictionaries

When you teach the spell checker new words, they are added to your *user dictionary*. You can edit this dictionary at any time in order to, for example, delete incorrect entries.

To do this, invoke the menu command **Tools > Edit user dictionaries**. A dialog opens, providing the following controls:

- **Language**

Every language has its *own* user dictionary. You can select the user dictionary to be edited from the **Language** dropdown list.

- **Entries**

This list contains all words that have been added to your user dictionary (for the selected language).

- **"Close" button**

This button closes the dialog.

- **"Add" button**

This button enables you to add a word to your user dictionary manually. A dialog appears, allowing you to enter the word.

Words added this way are treated exactly the same way as words that have been added using the **Add** button in the spell checker.

- **"Change" button**

Use this button to edit the word that is currently selected in the list. This is useful for misspelled words that you have added to your user dictionary accidentally. Clicking on the button opens a dialog that allows you to correct the spelling of the word.

- **"Delete" button**

This button removes the selected word from your user dictionary – thus, the spell checker will now view this word as incorrectly spelled, as it did before the word was added.

Hyphenation

The *hyphenator* automatically hyphenates long words at the ends of lines. Hyphenation is performed completely automatically and takes effect as you type.

However, the hyphenator is available only in the following cases:

- [Hyphenation in text frames](#)

In text frames, the hyphenator is active by default.

- [Hyphenation in table cells](#)

In table cells, the hyphenator is *not* active by default, but it can be activated by the user (for cells that contain multiple lines of text).

For detailed information, see the pages that follow.

Important: For the hyphenator to function properly, make sure that you have selected the correct *language* in the program preferences (typically, your native language). To set the language, invoke the menu command **Tools > Options**, switch to the **Language** tab, and choose a language from the **Language** list.

Hyphenation in text frames

Whenever you enter text in a text frame, PlanMaker will automatically hyphenate it. This is performed fully automatically in the background, as you type.

All you have to do is to make sure that the correct language is set in PlanMaker's preferences (see section [Setting up the language](#)).

Setting the hyphenation frequency

If desired, you can specify how often the hyphenator should break words – or you can turn the hyphenator off. You can do this separately for each individual paragraph as follows:

Select the paragraph(s) of interest, invoke the menu command **Format > Paragraph**, and select an option in the **Hyphenation** dropdown list.

The following options are available:

Option	Result
None	No hyphenation is performed.
Always	Hyphenation is attempted in successive lines without limit. This is the default setting.
Every 2 lines	Hyphenation is attempted only in every second line.
Every 3 lines	Hyphenation is attempted only in every third line.

Thus, with **None** you turn hyphenation off completely for the selected paragraph. With **Always**, on the other hand, you allow hyphenation to be performed whenever possible on any line of the paragraph.

In some cases, it is not always a good idea to hyphenate at every point possible, and this is where the other two options come in handy. For example, text that is in narrow columns could lead to a broken word at the end of almost every line and, consequently, to a reduction of the document's legibility. Therefore, instead, you may want to use the **Every 2 Lines** or **Every 3 Lines** option to direct PlanMaker to attempt hyphenation only in every second or third line.

Hyphenation in table cells

In table cells, the hyphenator is *not* active by default, but it can be activated by the user. When you do so, hyphenation will also be performed in table cells – but only in cells that contain *multiple* lines of text.

Accordingly, in order to get text in table cells hyphenated, two steps are required:

Step 1: Activating hyphenation in cells

By default, hyphenation in cells is turned *off*. To activate it, proceed as follows:

1. Invoke the **File > Properties** menu command.
2. Switch to the **Options** tab.
3. Activate the **Hyphenation** option.

From now on, automatic hyphenation will also be performed in table cells.

Note: This option is a *document* option, so you can turn it on or off for each document individually.

Step 2: Activating the Wrap Text option for cells

Hyphenations will be performed only in table cells that have the **Wrap Text** option turned on. When you activate this option, the cell content will automatically be wrapped to multiple lines if it doesn't fit into a single line.

To turn the **Wrap Text** option on, proceed as follows:

1. Select the cells of interest.
2. Invoke the **Format > Cell** menu command.
3. Switch to the **Alignment** tab.
4. Activate the **Wrap Text** option.

Text entered in these cells will from now on be wrapped to multiple lines automatically, and automatic hyphenation will be performed where necessary.

SmartText

PlanMaker's *SmartText* feature can save you a lot of work: you can define SmartText entries for frequently needed phrases and then call them out in your text quickly and easily.

For example, you can define a SmartText entry named "sd" containing "sales department". Now you can call out this SmartText entry at any time. Simply type "sd" and then press the space bar, the **Enter** ↵ key, or a punctuation character key. Immediately, "sd" is replaced with "sales department".

In this way, you can use PlanMaker to put together a personal "computer shorthand" and save significant typing time.

In this section, you will learn details about PlanMaker's SmartText feature, including the following:

- [Creating SmartText entries](#)

SmartText entries can be created either with the **Insert > SmartText** menu command or the on-the-fly spell checker. You give the SmartText entry a name (e.g., "sd") and then enter the desired content (e.g., "sales department").

- [Inserting SmartText entries](#)

To call up a SmartText entry, simply type its name and then press the space bar, the **Enter** ↵ key, or a punctuation character. The name will be immediately replaced by the content of the SmartText entry.

Alternatively, SmartText entries can be inserted manually using the menu command **Insert > SmartText**.

- [Editing SmartText entries](#)

You can create new SmartText entries with the menu command **Insert > SmartText**, and you can also edit, rename, and delete existing entries.

Detailed information is provided on the following pages.

Creating SmartText entries

To create a new SmartText entry, choose one of the following methods:

A) Using the **Insert > SmartText** dialog

To create, for example, a SmartText entry with the name "sd" containing "sales department", proceed as follows:

1. Invoke the menu command **Insert > SmartText**.
2. Click on the **New** button to create a new SmartText entry.
3. Give the SmartText entry a name ("sd" in our example).

Later, the SmartText entry can be called up by using the specified name.

4. Confirm with **OK**, which takes you back to the main dialog.
5. Type the text of the SmartText entry in the large input field ("sales department" in our example).
6. Click on **Save** to save your new SmartText entry.
7. Exit the dialog by clicking on the **Close** button.

The SmartText entry has now been created. In the next section ([Inserting SmartText entries](#)), you will learn how to use your new SmartText entry.

B) Using the "Check spelling as you type" option

Alternatively, SmartText entries can be created using the on-the-fly spell checker (activated by the **Check spelling as you type** option).

Note: This procedure is faster only if you have the **Check spelling as you type** option turned on *permanently*. Otherwise, the previous procedure is more efficient.

To create a SmartText entry named "sd" containing the text "sales department":

1. Make sure the **Check spelling as you type** option in the dialog of the **Tools > Options** menu command (**Language** tab) is activated.
2. Type "sd" and press the space bar.
3. The on-the-fly spell checker displays a dialog indicating that the word "sd" is unknown.
4. Click the **SmartText** button.
5. Type "sales department".
6. Confirm with **OK**.

The result is the same: the SmartText entry "sd" has now been created.

To learn more about the on-the-fly spell checker, see the section [Spell checking as you type](#).

Inserting SmartText entries

Once you define a SmartText entry, you can use it anytime as you compose your documents.

Type the name of the SmartText entry (e.g., "sd" in our example) in the text, and then press either the space bar, the **Enter** ↵ key, or a punctuation character. PlanMaker immediately replaces "sd" with the content of the SmartText entry, in our example, "sales department".

Note: If this does not work, the **Expand SmartText entries** option might be disabled. If so, invoke the menu command **Tools > Options**, switch to the **Language** tab, and turn on this option.

Alternatively, you can use a dialog to insert SmartText entries in the text by invoking the menu command **Insert > SmartText**, choosing the desired entry, and then clicking the **Insert** button.

Editing SmartText entries

You can edit SmartText entries that you have previously defined with the menu command **Insert > SmartText** as follows:

- **Creating a new SmartText entry**

To create a new SmartText entry, click the **New** button (see section [Creating SmartText entries](#)).

- **Deleting a SmartText entry**

To delete an entry, select it from the **SmartText entries** list and then click on the **Delete** button.

- **Renaming a SmartText entry**

If you want to change the name of an entry, select it from the list and click on the **Rename** button. A dialog box appears, and you can enter the new name there.

- **Editing a SmartText entry**

To edit an entry, select it from the list and then click in the large input field. Now you can modify the content of the SmartText entry.

When you have made the desired changes, click on the **Save** button.

- **Inserting a SmartText entry**

To insert a SmartText entry into the text, select it from the list and click on the **Insert** button (see also the section [Inserting SmartText entries](#)).

To exit the dialog, click the **Close** button. If the active SmartText entry has been changed and not yet saved, PlanMaker will ask automatically if it should save the changes.

Managing documents

PlanMaker provides the following functions for efficiently managing and accessing documents:

- [Quick paths](#)

You can set up *quick paths* to change immediately to folders that are frequently used to save or retrieve files.

- [Document summary](#)

Every document can have a *document summary* that you can display and edit using the **Summary** tab in the dialog of the **File > Properties** menu command. You can specify the document's title, subject and author, enter keywords for the file manager's search function, and compose a brief description of the document's contents.

- [The file manager](#)

The integrated file manager provides a convenient way to access your documents. It allows you to see at a glance the names and summaries of your documents, and to examine, open, print or delete them with the press of a key. With the search function, you can look for documents not only by filename, but also by subject, title, author, etc.

- [Backup copies](#)

Whenever you save a document, PlanMaker can automatically create a backup copy containing its previous version. There is even an option to keep multiple generations of backup copies for each document.

You will find detailed information for each of these functions on the following pages.

Quick paths

PlanMaker gives you the capability to define up to twenty *quick paths* and use them to change to specific folders where you open or save files frequently.

A *quick path* is a symbolic statement like "Taxes" that stands for a specific folder on the hard disk (for example, the folder `c:\Accounting\Taxes`).

When you want to open a file in this folder, all you need to do is click on the **Quick path** button in the dialog of the **File > Open** menu command and select its quick path. The dialog changes immediately to the `c:\Accounting\Taxes` folder.

Quick paths are available not only in the **File > Open** dialog, but also in all other dialog boxes that have to do with opening or saving files.

See the next pages for details.

Defining quick paths

To define a new quick path, complete the following steps:

1. Open any type of file dialog, for example, by invoking the **File > Open** menu command.
2. Click the **Quick path** button.
3. A menu opens below the button. Select the **Create new quick path** command from it.
4. At **Name of quick path** enter a meaningful name for the quick path – for example, "Taxes".
5. At **Path** enter the desired folder – for example, `c:\Accounting\Taxes`.

Tip: Alternatively, click on the button with the three dots next to this text field. This opens a dialog where you can browse to the folder of interest.

6. Confirm with **OK**.

From now on, PlanMaker will change to the folder `c:\Accounting\Taxes` when the quick path "Taxes" is invoked.

Quick paths with search patterns: Quick paths can also include search patterns for file names. For example, you can define a quick path as `c:\Accounting\Taxes\2018*.*`, which tells PlanMaker to change to the folder `c:\Accounting\Taxes` and display only those files whose names begin with "2018".

Keyboard shortcut: The **&** sign can be used in a quick path name to give the name a keyboard shortcut. For example, if you enter "&Taxes" as the name, the quick path of this name can be invoked by pressing the **T** key whenever the list of quick paths is opened.

Using quick paths

Quick paths are available in all file dialogs – for example in the dialogs of the **File > Open** and the **Object > New picture** menu command.

To invoke a quick path, do the following:

1. Click on the **Quick path** button in a file dialog.
2. A menu of all the previously defined quick paths opens. Select the desired quick path.

PlanMaker now changes to the folder specified for the quick path.

Editing and deleting quick paths

To modify or delete an existing quick path, do the following:

1. Click on the **Quick path** button in a file dialog.
2. A menu opens. Select the **Change quick paths** command from it.
3. A dialog box appears. Select the desired quick path from the list box.
4. Click on **Change** to edit the name or path, or on **Delete** to remove the quick path.

Document summary

You can use the menu command **File > Properties** not only to make document specific settings, but also to enter *summary* information about the document.

The *summary* contains additional information (subject, author, keywords, etc.) about a document. To view or edit it, invoke the menu command **File > Properties** and switch to the **Summary** tab. Enter your modifications, and confirm with **OK**.

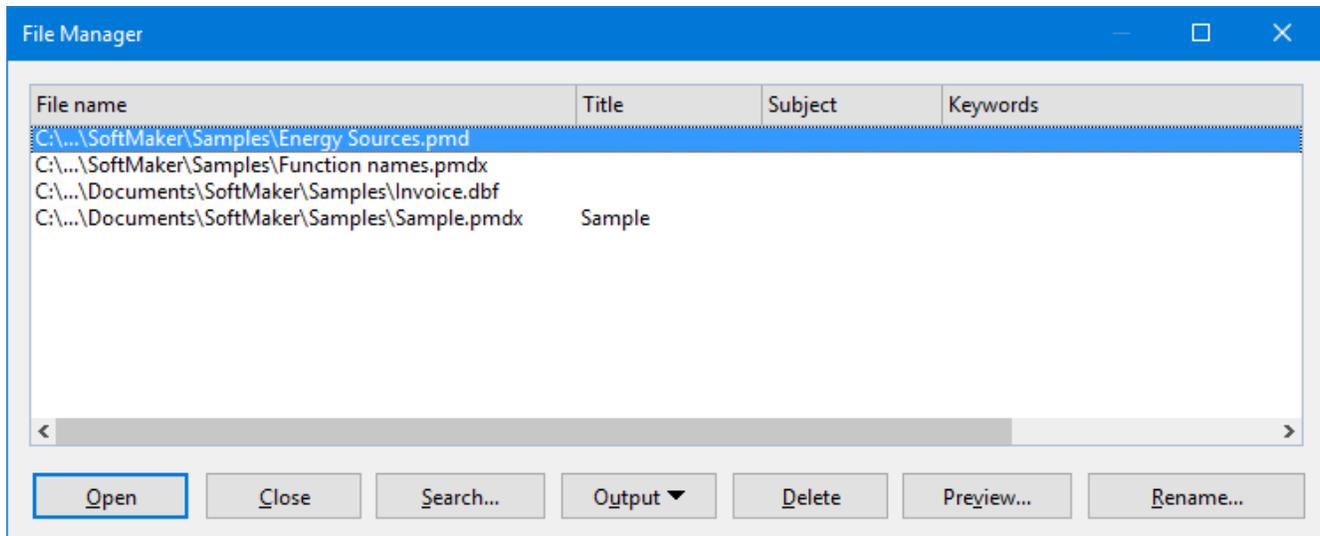
Tip: Using the file manager (see the next section), you can search for documents based on the contents of their summaries. For example, you can have the file manager find all documents from a specific author.

Automatic prompt for summary information when saving: At your option, you can have PlanMaker prompt you to fill in the document summary whenever you save a newly created document. To enable this function, invoke the menu command **Tools > Options**, switch to the **Files** tab, and enable the **Prompt for summary information when saving** option. Now, each time you save a new document for the first time, the dialog box for the entry of summary information will appear.

The file manager

The *file manager* displays a list of documents from one or more folders and lets you open, print, delete or view any document with a click of the mouse.

To start the file manager, use the menu command **File > File manager**.



Using your mouse, you can resize the File manager window or move it to a different position anytime. The widths of the columns can be changed by dragging the lines that separate the column headers.

By clicking on one of the column headers, you can sort the files according to the contents of the column under that header.

You can use the **Search** button to change to another folder. Apart from that, this button also provides access to search functions that work with document summary information, so that you can search for specific titles, subjects, authors, keywords, etc.

You can select a file and then invoke a function to be performed on the file by clicking on one of the buttons. The functions associated with these buttons are described in the next section.

The file manager's buttons

The buttons in the file manager have the following functions:

- **Open**

When you click on this button, PlanMaker opens the selected file.

Tip: You can also open a file by double-clicking on its filename.

- **Close**

Use this button to exit the file manager.

- **Search**

You can click on this button to search for specific files or simply to select a new folder for display in the file manager. For more information on this topic, see the next section (entitled [Searching with the file manager](#)).

■ Output

Use this button to print or e-mail the selected file. When you click on the button, a menu opens with the following functions (depending on the operating system):

E-mail: send document via e-mail

Print: print the document

■ Rename

Click on this button if you want to change the name of the selected file.

■ Delete

If you click on this button, the selected file will be deleted (after confirmation).

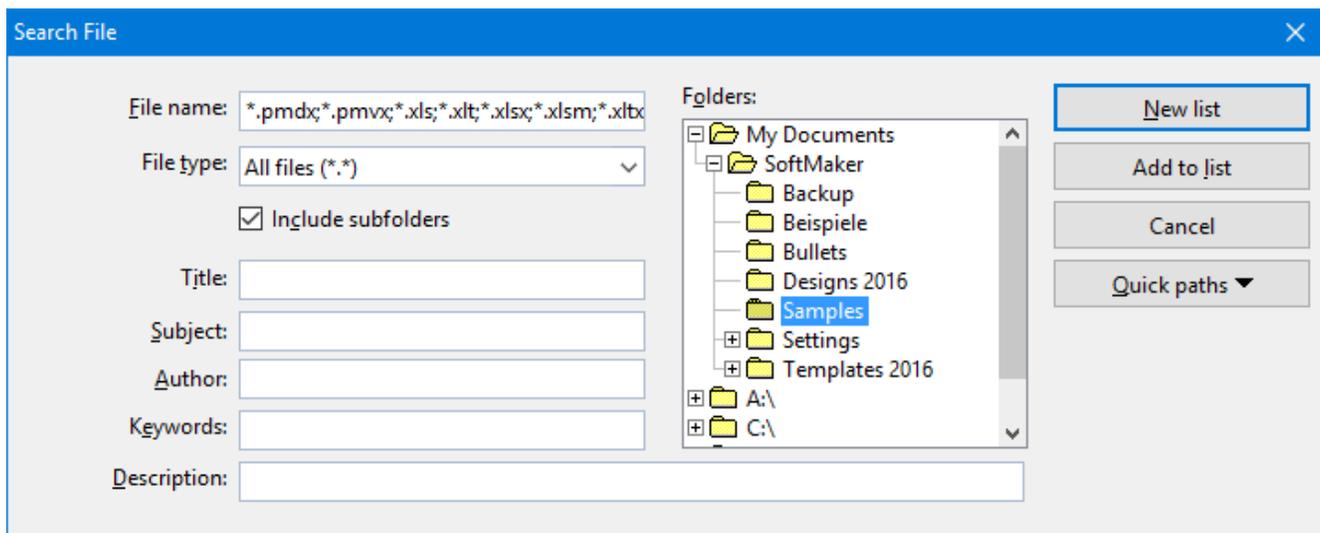
■ Preview

Click on this button to preview the selected file.

A preview window appears. To open the document displayed in the preview window, click **Open**. To close the preview, click **Cancel**.

Searching with the file manager

With the help of the file manager's **Search** button, you can have PlanMaker look for specific files or simply choose the folder to be displayed in the file manager.



You can search for files that meet criteria of the following types: filename, folder, file type, as well as the items in the document summary (title, subject, author, keywords, and description).

Moreover, you can combine several search criteria. For example, if you only specify a particular folder in the search dialog, PlanMaker will display *all* the documents in this folder. But if you also enter a search term in the

Title field, PlanMaker will find only those documents that are both in the selected folder *and* contain the given search term in the **Title** field of their summaries.

The search dialog has the following functions:

- **File name**

Allows you to search for a specific file or a filename pattern.

With the default setting, the search function will find *all* documents of the chosen file type in the chosen folder.

If you specify a unique filename like `MyReport.pmdx`, only files with exactly this name will be found.

If you specify a filename pattern like `My*.pmdx`, all documents whose filenames begin with "My" will be found.

- **File type**

From this list, you can choose the type of the files to be targeted in the search. For example, if you want to search for files in Excel Format, select this format from the **File type** list.

- **Title, Subject, Author, etc.**

By making entries in these fields, you can target your search to the contents of the summaries that are included in your documents (see the section [Document summary](#)).

If you fill in several fields, the file manager will search for documents that meet *all* of your specified conditions. For example, if you enter "tax" in the **Keywords** field and "Smith" in the **Author** field, only documents whose summaries contain corresponding entries for *both* fields will be found.

You will get different search results depending on the precision with which you specify the search terms. For example, if you typed "tax" as the search term in the **Keywords** field, your search would also turn up documents whose keywords contain "tax increase" and "my income tax", etc. – that is, all the documents in which "tax" was contained *anywhere* in the keywords.

Case is of no significance in search terms. If the search term is entered as "tax", the search will also find documents whose keywords contain "Tax".

- **Folders**

Here you can select the folder in which the file manager is to carry out the search.

- **Include subfolders**

If this option is enabled, the file manager searches not only the selected folder, but also all folders below the selected folder.

- **"New list" button**

Starts a new search using the current settings.

- **"Add to list" button**

Also starts a new search; however, any previous search results remain in the list rather than being cleared from the list.

Backup copies

Note: This feature is *not* available in the **Android** version. On Android, only an option for simple (single) backups is available: the option **Create backup files** in the preferences.

Whenever you save a document, PlanMaker can automatically create a *backup copy* containing its previous version. There is even an option to keep multiple generations of backup copies for each document.

You will find the related settings in the dialog of the **Tools > Options** menu command, **Files** tab. The dropdown list in the **Backup** section allows you to specify if and how backup copies will be generated. Options available:

- **No backup**

When you choose this option, *no* backup copy is created when you save a document. (Not recommended.)

- **Simple backup**

Here, exactly *one* backup copy is created when you save a document. This copy contains the previous (i.e. last saved) version of the document. It is saved as a file with the name extension `.bak`, stored in the same folder as the document.

For example, when you save the document `test.pmdx`, the existing `test.pmdx` file is first renamed `test.bak`, and then the edited document is saved under the name `test.pmdx`.

(This option is identical to the **Create backup files** option in previous versions of SoftMaker Office.)

- **Advanced backup**

With this option, *multiple* generations of backup copies are kept for each document. All of these copies are stored in a special **Backup** folder.

Tip: When this option is selected, also the **File > Revert to previous version** menu command becomes available. It provides a comfortable means of returning to a previous version of the current document (see below).

Additional options:

Folder for backup files: Here you can change the location of the **Backup** folder in which all backup copies are stored.

Number of backup files per document: Here you can specify the maximum number of backup copies (= generations) to be kept for each document.

"Clean Up" button: Offers the following two commands for deleting backup copies:

Delete orphaned backup files: Removes any backup file that has lost its original file (for example, because the original file has been deleted).

Delete all backup files: Removes *all* backup files that reside in the folder for backup files.

How to use the "File > Return to previous version" command

When you have selected the **Advanced Backup** option (see above), all backup copies are stored in a special **Backup** folder. This folder is maintained automatically by the application. It is *not* recommended to move or rename the files in this folder manually.

To restore a previous version of a document, you don't have to worry about this folder anyway. PlanMaker has a special menu command for this: the menu command **File > Revert to previous version**.

You can use this command to revert to a previous version of a document as follows:

1. Open the document of interest (in case it isn't opened already).
2. Invoke the menu command **File > Revert to previous version**.
3. A dialog opens, listing all backup copies available for the current document along with their creation date. Select the version that you want to revert to.

Hint: The **Preview** button opens a preview of the selected version.

4. Click on **Restore** to revert the document in the current window to the selected previous version.

Note: Please note that this action will replace the current document with a previous version. Accordingly, when you save it now, its current version is overwritten by an older version!

Alternatively, a button named **Open as Copy** is available. When you click this button, the backup copy will open in a *new* window instead (rather than replacing the document in the current window). This is useful when you want to compare the current version with an older version.

But what to do when the original file is no longer available?

The procedure described above only works as long as the original document is still available. But what to do when the original file has been lost, for example, because it was accidentally deleted?

Even in that case you can still access the backup copies of this document (unless they have been deleted as well, naturally). Simply open the backup copy itself.

To find out where the backup copies are located, have a look at the dialog of the **Tools > Options** menu command. The folder is listed as the **Folder for backup files** on the **Files** tab. By default, a folder named **Backup** is used, located in the **SoftMaker** folder in your documents folder.

The backup copies in this folder can be opened in PlanMaker directly, using e.g. the following procedure:

1. In Windows Explorer, navigate to the **Backup** folder (location: see above).
2. Browse this folder for file names that start with the name of the original document. For example, a backup copy of the file `Test.pmdx` might be called `Test.pmdx.135.pmbak`. (As you can see, a running number and the extension `.pmbak` are added to the original file's name.)

Hint: The higher the number, the more recent the version of the backup copy is.

3. In Windows Explorer, double-click on the backup file that you want to open.
4. PlanMaker detects that you are trying to open a backup copy and asks you how to proceed. It displays a dialog with the following options:

Open the backup file: Opens the backup copy.

Invoke the version manager: Invokes the menu command **File > Revert to previous version** that displays a dialog with *all* available previous versions of the original document. For more details on this command, see above.

Open the original file: Opens the original file for this backup copy. (Of course this only works as long as the original file still exists.)

5. Make your choice, and then click on **OK**.

Once again, please note that PlanMaker creates and manages the files in the **Backup** folder automatically. It is not recommended to e.g. manually rename or move files in this folder.

In case you want to clean up your drive to gain more space, you can always delete the files in this folder. However, you will of course lose all backup files for all your documents by doing that.

Outliner

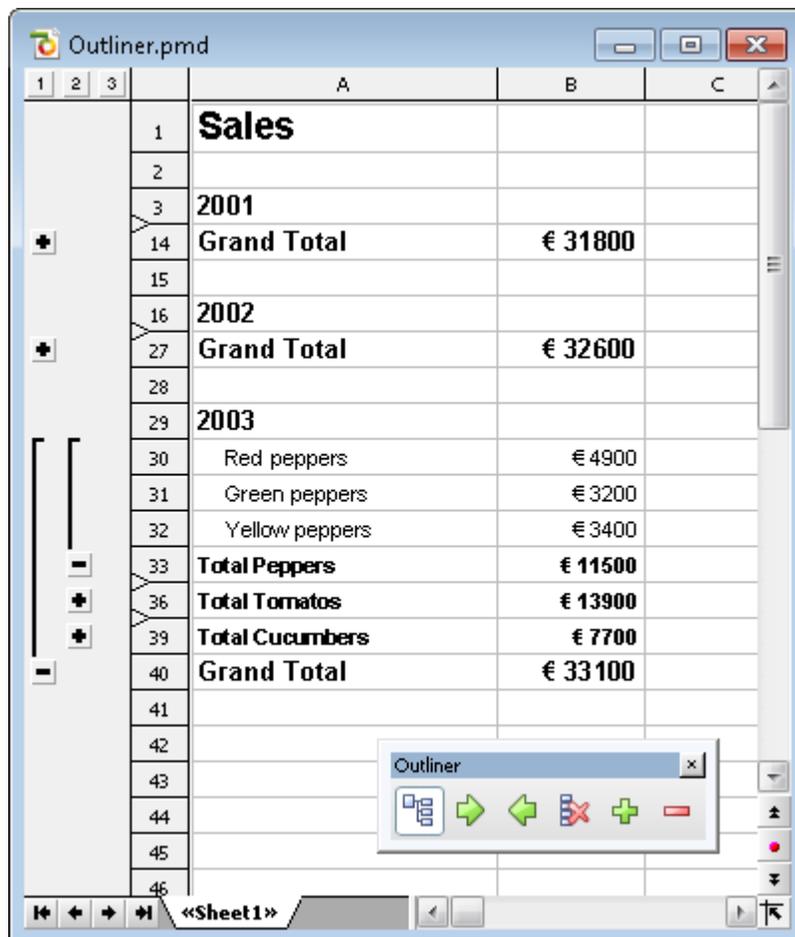
The *Outliner* allows you to create an *outline* for a worksheet. In outlined worksheets, you can easily decide whether just the *summarized* data should be displayed, or the *detail* data should appear as well.

The process of creating an outline is about *grouping* consecutive cell rows that contain related detail data. For example, if a table contains sales figures for the last few years, with the monthly sales listed below each year, *group* each list of monthly figures. After that, you can hide/unhide (or, collapse/expand) the monthly sales for each year with a single mouse click.

Outlines can contain various outline levels, allowing you to nest the data to be displayed as desired.

Using the Outline pane

In worksheets containing an outline, a pane named *Outline pane* is displayed to the left of the document window.



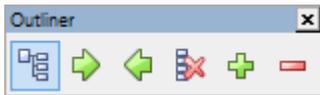
Use the Outline pane to hide/unhide grouped cells:

- Click the Plus  and Minus  signs to hide/unhide groups of cells.
- Click the    buttons on top of the Outline pane to determine which outline levels to display. For example, if you click the "2" button, all cells with an outline level between 1 and 2 will be displayed.

Note: Worksheets can be outlined by row, or by column. In a column outline, *columns* are grouped instead of rows, and the Outline pane is displayed above the table instead of to the left of the table.

Using the Outline toolbar

In addition to the Outline pane, a toolbar called the *Outline toolbar* is displayed in every document that contains an outline.



This toolbar provides icons for creating and modifying the outline of the document. From left to right:

- Show/hide Outline pane (only available in documents containing an outline)
- Group the selected cells
- Ungroup the selected cells
- Clear outline of the selected cells
- Show details (equivalent to clicking on the Plus icon in the Outline pane)
- Hide details (equivalent to clicking on the Minus icon in the Outline pane)

For more information on working with outlines, read the following pages.

Grouping cells

To create an outline, *group* the rows (or columns) containing detail data. After that, you can hide/unhide such groups with a single click.

To group cells:

1. Select the rows (or columns) to be grouped.
2. Choose the menu command **Worksheet > Outliner > Group**.

Alternatively, click the  icon in the Outline toolbar.

The cells are now grouped.

Note: Ungrouped cells have an outline level of 1. When you group cells, their outline level is set to 2. You can even group a subset of cells within a group of cells, thereby increasing the outline level to 3, etc. Outlines can contain up to 8 outline levels.

Ungrouping grouped cells

To ungroup grouped cells:

1. Select the rows (or columns) to be ungrouped.
2. Choose the menu command **Worksheet > Outliner > Ungroup**.

Alternatively, click the  icon in the Outline toolbar.

The cells are now ungrouped. To be precise, their outline level is reduced by 1. This means, that if you ungroup cells with an outline level of 3, they will not be completely ungrouped, but their outline level will be reduced to 2.

Completely removing the outline of grouped cells

To completely remove the outline of cells:

1. Select the rows (or columns) whose outline you want to remove. **Note:** If you do not select any cells, the outline of the *entire* worksheet will be removed.
2. Choose the menu command **Worksheet > Outliner > Clear outline**.

Alternatively, click the  icon in the Outline toolbar.

The outline is removed; all cells now have outline level 1.

Showing/hiding grouped cells

After creating an outline for a worksheet (as described in the previous section), you can hide/unhide detail data (i.e., grouped cells) as desired.

To hide/unhide grouped cells, use the *Outline pane* displayed to the left of (or above) the worksheet. If the Outline pane is not displayed, verify that the **Worksheet > Outliner > Automatically show outline pane** menu command is activated.

To hide/unhide grouped cells:

- If a bar with a minus sign  is displayed, the cells are grouped. To hide them, click the minus sign.
- A plus sign  indicates grouped cells that are currently hidden. To unhide them, click the plus sign.
- The  buttons on top of the Outline pane allow you to determine which outline levels to display. For example, if you click the "2" button, all cells with an outline level between 1 and 2 will be displayed.

Note: When you hide cells, the cells are not only hidden on the screen, but also ignored by charts evaluating these cells.

Outliner options

The **Worksheet > Outliner > Options** menu command allows you to modify options related to the outline of the current worksheet:

- **Title below group rows**

Check this option if the cell groups have a title (a row containing, for example, a heading or summary) *below* the data rather than *above* the data.

This option only affects the placement of the minus sign displayed in the Outline pane. If enabled, the minus sign will be displayed below the cells; if disabled, it will be displayed above the cells.

- **Title right of the group columns**

Similar to above, except this option only affects worksheets with a column outline. If enabled, the minus sign will be displayed to the *right* of the cells; if disabled, it will be displayed to the *left* of the cells.

- **Automatically show Outline pane**

If this option is enabled, the Outline pane will be displayed automatically if the worksheet contains grouped cells. If disabled, the Outline pane will not be displayed.

Hint: This option can also be toggled using the **Worksheet > Outliner > Automatically show outline pane** menu command.

- **Protect outline**

If this option is enabled, the outline will be protected if sheet protection is activated for the worksheet (see also section [Sheet protection](#)).

The current state of the outline will then be frozen. Users will not be able to group/ungroup cells or hide/unhide grouped cells.

Internet functions

This chapter introduces some of PlanMaker's Internet functions:

- [Working with links](#)

You can create hyperlinks in PlanMaker documents (e.g., to an Internet address or to another PlanMaker document).

- [Saving HTML documents](#)

You can save documents in HTML format using the **File > Save as** menu command.

See the following pages for detailed information.

Working with links

You can put *hyperlinks* in your PlanMaker documents and then follow them by clicking with the mouse.

For example, you can place a link to a web page in a document. When the user clicks on it, the web browser starts automatically and presents the page.

Creating a link

To create a link, proceed as follows:

1. Select the text that is to be made into a link.
2. Invoke the menu command **Format > Link**.
3. Enter the target of the link in the **URL or file name** box; that is, enter the path and name of the internet resource or file to which the selected text is to refer.

Links to web pages must be entered as "http://" followed by the address of the page – for example, "http://www.example.com/index.htm".

4. Below, in the **Bookmark** field, you can specify, if desired, a position in the target document to be opened (see below). However, this field is normally left empty.
5. Confirm with **OK**.

The link is now created. You recognize this by a change in the color of the text, which indicates the presence of a link.

Hint: Alternatively, hyperlinks can also be added using the [HYPERLINK](#) function (which is much more flexible)

Jumping to specific bookmarks or cell references

Using hyperlinks, you can not only specify the target URL or file name, but also specify a bookmark (for HTML documents) or cell reference (for PlanMaker documents) for the link to jump to.

For example: If you set **URL or file name** to "Sales.pmdx" and under **Jump target** enter "D42", the link will open the file `Sales.pmdx` and jump to cell D42.

Using placeholders in links

Hint: In hyperlinks, you can use an asterisk (*) as a placeholder for the cell content.

For example: In an empty cell, choose **Format > Link** and enter `http://*` in the **URL or file name** box. After that, if you enter e.g. `www.example.com` in that cell, the link will point to the internet address `http://www.example.com`.

This also works with other protocols – for example `mailto:*` can be used to create a link to the e-mail address in a cell.

Following links

To follow a link, position the text cursor at any character within the link text. Then invoke the menu command **Edit > Go to link**. PlanMaker responds by opening the linked document.

Tip: You can also follow links by clicking on the link text with the mouse.

Editing or removing a link

To edit an existing hyperlink, first select the link text. Then invoke the menu command **Format > Link**. A dialog box like the one described above then appears. Here you can edit the target of the link.

To remove a link, proceed as follows:

- **Removing a link by deleting the link text**

When you delete text that has been formatted as a link, the link is removed with the text.

- **Removing only the link**

If you want to remove only the link and leave the text in place, select the text and invoke the menu command **Format > Remove link**.

Saving HTML documents

To save the current document in HTML format, proceed as follows:

1. Invoke the menu command **File > Save as**.
2. Choose the **HTML** format from the **Save as Type** list.
3. Enter the filename under which the file is to be saved and confirm with **OK**.

The document is now saved in HTML format. All formatting not supported in HTML format is automatically removed.

Tip: After saving the document, open it with your web browser to check its appearance.

Outputting documents

In this chapter, you will find detailed information about outputting documents (printing, e-mailing, etc.).

The following topics are covered:

- [Print preview](#)

The first section covers the use of the **File > Print preview** menu command which displays a preview of the printed document on the screen.

- [Printing](#)

The next section introduces the **File > Print** menu command which actually prints a document.

- [Exporting to a PDF file](#)

Using the **File > Export as PDF** menu command, you can export a document to a PDF file. Such files can be viewed on virtually any computer, provided that it has a PDF viewer installed.

- [Sending a document by e-mail](#)

When you would like to send a document by e-mail, you can use the menu command **File > Send**.

Detailed explanations are presented in the following pages.

Print preview

The *print preview* displays a preview of the printed document on the screen. Using this feature can help you avoid wasting paper on test prints.

To open the print preview, choose the **File > Print preview** menu command.

To close it, click on the **Close** button or press the **Esc** key.

Using the print preview toolbar

The print preview window provides a toolbar with the following controls (from left to right):



Use these controls to jump from page to page.

The first/last button jumps to the first/last page.

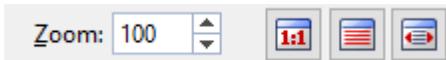
The buttons labeled with a left/right arrow jump to the previous/next page.

The edit field in the middle lets you jump to a specific page. Type in the desired page number and press the **Enter** ↵ key.



The next three buttons have the following functions:

- The left button invokes the **File > Page setup** menu command to modify the page format (paper size, orientation, margins, headers and footers, etc.). See also section [Page format](#).
- The middle button invokes the **File > Print** menu command which prints the document. See also section [Printing](#).
- The right button invokes the **File > Export as PDF file** menu command which generates a PDF file from the document. See also section [Exporting to a PDF file](#).



These controls can be used to change the zoom level. Either type in a zoom level in the **Zoom** box and press the **Enter** ↵ key, or click the arrows to gradually decrease/increase the zoom level.

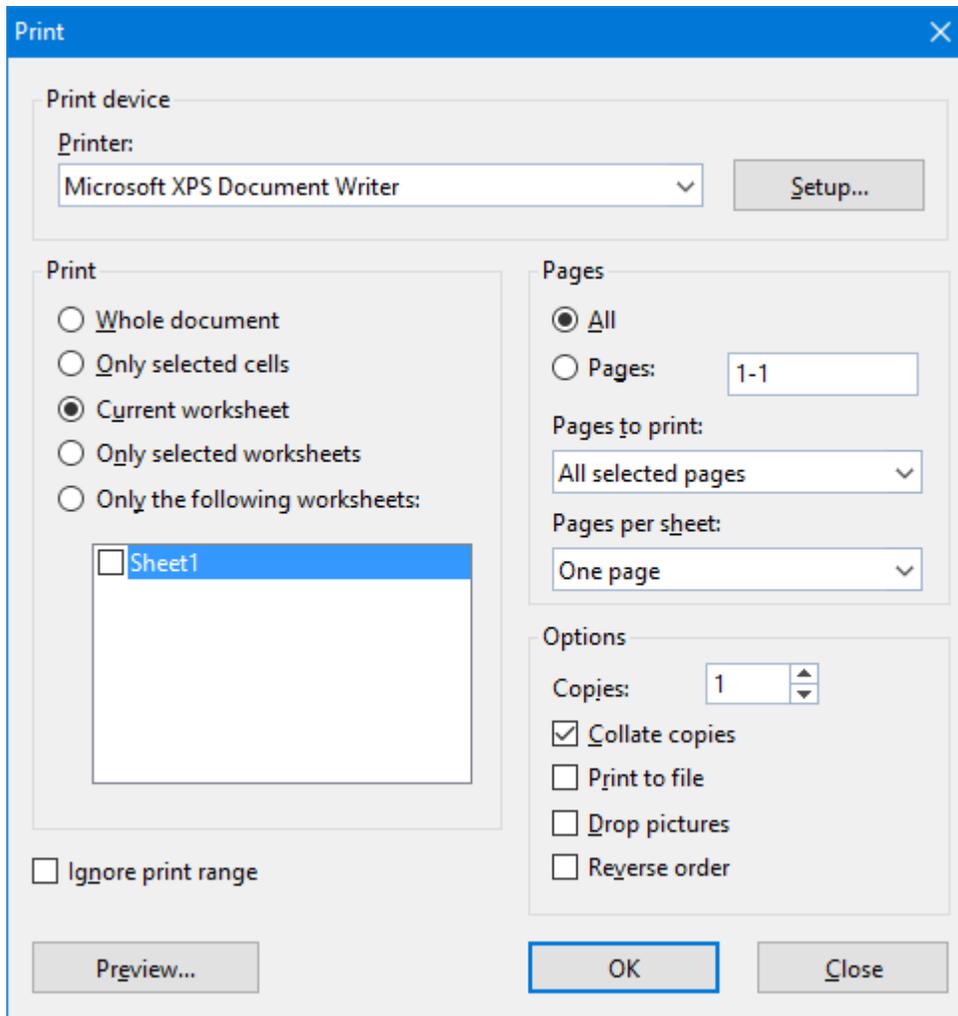
The three buttons at the right let you switch to a predefined zoom level:

- Actual document size (zoom level 100%)
- Fit page in window
- Fit margins in window

To close the print preview window, click the **Close** button.

Printing

To print the current document, choose the menu command **File > Print**.



A dialog box appears, allowing you to make the following settings:

Printer

Lets you choose the desired printer.

The **Setup** button opens a window with options to set up and configure the connected printer(s).

Linux users can also specify the command to be used for printing here.

Print

Lets you choose which parts of the document to print:

- **Whole document**

Print the entire document (all worksheets).

- **Only selected cells**

Print only those cells that are currently selected on the current worksheet.

- **Current worksheet**

Print only the current worksheet.

- **Only selected worksheets**

Print only those worksheets that are currently selected in the worksheet register.

- **Only the following worksheets**

Print only the selected worksheets. To specify which sheets to print, check the desired worksheets in the list displayed below this option.

Ignore print range

When you activate this option, any *print ranges* defined in the document will be ignored.

Background information: You can define a *print range* for each worksheet in a document. When a print range is defined, only the cells inside this cell range will appear in printouts. The rest of the sheet will be omitted.

You can temporarily disable this feature anytime by activating this option.

More information on print ranges can be found in the section [Additional page setup options](#).

Pages

Lets you choose which pages to print:

- **All**

Print all pages.

- **Pages:**

Print only the specified pages. Enter the desired page number(s) in the input box. For example:

12	Prints page 12 only
12-15	Prints pages 12 to 15
12-	Print page 12 and all pages following
-12	Print pages 1 through 12

You can enter as many page ranges as you like provided you separate them with commas, for example:

2-5, 12 Prints pages 2 through 5 and page 12

- In addition, you can specify with the **Pages to print** option, whether all pages or only the odd or even numbered pages in the given range are to be printed.
- Furthermore, the **Pages per sheet** option allows you to print more than just one page on each sheet of paper. For example, when you select **Four Pages**, each sheet of the printout will contain four pages (scaled down accordingly).

Options

This part of the dialog contains additional printing options:

- **Copies**

Here you can specify the number of copies of the document to be printed.

- **Collate copies**

When you print multiple copies of a document, this option determines if the printout will be sorted after page numbers.

If you check this option and print multiple copies of a document with e.g. three pages, the pages will be output in the following order: 1-2-3, 1-2-3, 1-2-3, ...

If it is not checked, the order will be: 1-1-1..., 2-2-2..., 3-3-3...

Note: Not all printers support this feature.

- **Print to file**

Redirects the print output to a file instead of a physical printer.

- **Drop pictures**

Skips over all pictures and drawings when printing (useful for fast test printing).

- **Reverse order**

Prints the pages from last to first.

To start printing, click **OK**.

Hint: Before actually printing a document, you can preview the printout using the **File > Print preview** menu command.

Exporting to a PDF file

You can export documents to a PDF file.

PDF files can be viewed on virtually any computer, provided that it has a PDF viewer installed (for example, the "Adobe Reader"). Text formatting and objects (pictures, drawings, etc.) are retained exactly as in the original file.

To export a document to a PDF file, proceed as follows:

1. Choose the **File > Export as PDF** menu command.
2. A dialog window appears where you can change the settings described below. After that, confirm with **OK**.

3. Another dialog window appears where you can specify the filename and location of the PDF file to create. After that, confirm with **OK**.

The PDF file will then be created. To view it, open the PDF file in a PDF viewer of your choice.

Hint: If your device does not have a PDF viewer installed, you can find suitable programs in the Internet by performing a search for "PDF viewer" in your web browser.

The dialog mentioned above provides the following options:

General tab

On this tab, you can specify which parts of the document to export, and change several other settings. The options available are mostly identical to the ones provided in the dialog of the **File > Print** menu command, which is described in the section [Printing](#).

Apart from that, the following additional options are available:

- **Create a bookmark for each worksheet**

If this option is checked, PlanMaker will store a bookmark in the PDF file for each worksheet that your document contains.

Your PDF viewer will then display these bookmarks in a pane left of the document. You can utilize this pane as an interactive table of contents: just click on a bookmark to jump to the corresponding worksheet.

Hint: If your PDF viewer does not display a bookmark pane, search for a command to display bookmarks and activate it.

- **Create tagged PDF**

If this option is checked, information about the logical structure of the document will be included in the PDF file.

This information is required in order to produce barrier-free PDF files that, for example, can also be used with screen readers or PDF viewers that are able to read the text in a PDF out loud.

Preferences tab

This tab contains options for modifying the output quality, including the following:

- **AutoShape options**

Sets the quality (resolution) in which AutoShapes and all other types of drawings are exported. The higher the setting, the larger the resulting file will be.

- **Image options**

Lets you choose if images should be stored using a **lossless compression** method or the (lossy) **JPEG compression** method. If you choose the latter option, the **JPEG quality** option becomes available and lets you modify the quality level of the compression.

Hint: Lossless compression provides perfect image quality. However, if your document contains a large number of images (especially photographs), the resulting file can become rather large. If this is the case, you may want to switch to JPEG compression, which provides a much higher compression rate for photographic images.

The option **Use alpha channel for transparencies** determines whether an "alpha channel" should be used when rendering transparencies in images or drawings. Usually, these look best when this option is enabled. However, some PDF viewers are unable to render alpha channels flawlessly, so we included an option to deactivate this feature.

■ Other options

Include PlanMaker document: Stores a copy of your PlanMaker document inside the PDF file. This enables users to open the resulting PDF file directly in PlanMaker. The program will then extract the original PlanMaker document from the PDF file and display it.

Open file in PDF viewer after exporting: Launches your PDF viewer and displays the PDF file after it has been exported (provided that you have a PDF viewer installed on your computer).

Use relative paths for file links: Automatically converts any hyperlink to a file into a relative path (instead of an absolute path). For example, when you have inserted a link to the file `c:\Documents\Lists\test.txt` and export the PDF document to the folder `c:\Documents`, the file path for this link will be changed to `"Lists\text.txt"`.

■ Font options

The **Font embedding** options let you choose if the fonts used in the document should be included in the PDF file.

If font embedding is enabled, the resulting PDF file can be viewed in its original fonts on *any* computer – even if this computer does not have the fonts installed. If it is disabled, text will be rendered using some replacement fonts selected automatically by the system.

If the **Embed only used characters** option is enabled, only those characters of a font will be embedded that actually occur in the document. Advantage: The resulting PDF file is smaller in size.

View tab

This tab contains advanced options for the display of the PDF file in a PDF viewer, including the following:

■ Navigation pane

Use this option to specify what to display in the navigation pane of the PDF viewer. (The navigation pane is a panel displayed left of the PDF document.)

Options available:

Default: Use the PDF viewer's default setting.

Empty: Do not display anything in the navigation pane.

Bookmarks: Display the document's bookmarks in the navigation pane.

Page thumbnails: Display miniatures of the document's pages in the navigation pane.

■ Zoom

Use this option to set the default zoom level of the PDF file, as follows:

Default: Use the PDF viewer's default setting.

Full page: Select the zoom level at which the entire page fits in the window.

Fit width: Select the zoom level at which the page width fits in the window.

Fit height: Select the zoom level at which the page height fits in the window.

Custom: Set the zoom level to a custom value (in percent).

■ Page layout

Use this option to specify the page layout to display, as follows:

Default: Use the PDF viewer's default setting.

Single pages: Display as single pages.

Two pages - odd pages left: Display as two facing pages (odd pages on the left).

Two pages - odd pages right: Display as two facing pages (odd pages on the right).

■ Additional options

This section provides the following additional options:

Display document title: Display the document's title in the title bar of the PDF viewer (instead of its file name). Hint: You can change the title of a document on the **Summary** tab in the dialog of the **File > Properties** menu command.

Center viewer on screen: Automatically center the program window of the PDF viewer on the screen when the PDF file is opened.

Full-screen mode: Automatically switch the PDF viewer to full-screen mode when the PDF file is opened.

Hide menu bar: Hide the menu bar of the PDF viewer.

Hide toolbars: Hide all toolbars of the PDF viewer.

Hide navigation pane controls: Hide all controls of the navigation pane.

Security tab

This tab provides options that allow you to encrypt the resulting PDF file and to set up passwords that protect the file against opening or changing it.

■ Encryption type

Here you can select if the PDF file should be encrypted. You can choose between **40 bit encryption** (low level of security) and **128 bit encryption** (high level of security).

Note: The other options on this tab are not available until you have chosen an encryption method.

- **Password to open the document**

If you enter a password here, the PDF viewer will ask for this password when users try to open the PDF file. If they don't enter the correct password, the viewer will refuse to display the file.

If you leave this field empty, any user can open the file without having to enter a password.

- **Password to set permissions**

Additionally, you can restrict the access rights for the PDF file. To do this, first enter a password required to change the access rights. Then, use the options in the **Permission** section of the dialog to specify which permissions should be granted.

Background information: In some PDF viewers, a command for changing the access rights is available. If users try to invoke this command, they will be asked for the password you have entered here.

- **Permissions**

Here you can specify which types of actions should be permitted. Only available when you have specified a password to set permissions (see above).

Sending a document by e-mail

Provided an appropriate e-mail program is installed on your device, you can send documents by e-mail directly from PlanMaker.

To do this, proceed as follows:

1. Create or open the document that is to be e-mailed.
2. Invoke the menu command **File > Send**.
3. Select the format in which the document is to be sent.

Note: If you choose the **PlanMaker document** format, the recipient receives an e-mail with the PlanMaker document as an attachment. In order to read the attachment, the recipient needs to have PlanMaker installed.

Your default e-mail application is invoked and a blank e-mail message is generated, with the document as an attachment. You can specify the recipients and type in a subject and message, if desired, and then send the e-mail.

Protecting cells and documents

PlanMaker provides options for protecting documents or specific document contents. For example, cells can be protected from unintentional changes, or entire documents can be password-protected.

The following options are available:

- [Sheet protection](#)

Use *sheet protection* to protect individual cells against changes, and/or to hide their content on screen or in printouts.

- [Workbook protection](#)

Use *workbook protection* to prevent users from adding, deleting, or hiding/unhiding worksheets.

- [Document protection](#)

Use *document protection* to password-protect the current document against reading and/or writing. Note: If read protection is enabled, PlanMaker will additionally encrypt the document.

See the following pages for detailed information.

Sheet protection

Use *sheet protection* to protect individual cells against changes, and/or to hide their content on screen or in printouts.

Protecting cells requires two steps:

- [Step 1: Setting up protection settings for cells](#)

- [Step 2: Activating sheet protection](#)

See the following pages for detailed information.

Step 1: Setting up protection settings for cells

To protect cells, first determine *which* cells to protect by changing the cells' protection settings:

1. Select the cells whose protection settings you want to modify.
2. Choose the menu command **Format > Cell**.

3. Switch to the **Protection** tab.
4. Choose the desired protection settings (see below).
5. Click **OK** to confirm.

Protection settings available:

- **Protect cell**

Protect cell against changes, if sheet protection is activated.

Use this option to prevent users from changing the content or the format of the cell.

Important: By default, this option is enabled for *all* cells in the worksheet. To allow users to alter specific cells when sheet protection is activated, select those cells, and *disable* the **Protect cell** option.

- **Hide formula**

Do not display the formula used to calculate the cell content, but only show the result, if sheet protection is activated.

- **Hide cell**

Hide the cell content on screen, if sheet protection is activated.

- **Do not print cell**

Hide the cell content in printouts, if sheet protection is activated.

Step 2: Activating sheet protection

After having specified the protection settings for cells (as described in Step 1 "Setting up protection settings for cells"), activate sheet protection to enable settings.

Note: Activating sheet protection affects the current worksheet only.

To activate sheet protection:

1. Choose the menu command **Tools > Sheet protection**.
2. If desired, enter a password required to deactivate sheet protection. Leave blank if you do not want to assign a password.
3. Click **OK** to confirm.

Sheet protection is now activated.

After that, only cells *not* flagged with the **Protect cell** option can be modified. Note: These cells are displayed with a green triangle in their lower right corner.

Hint: If sheet protection is active, you can use the **Tab** key to jump from one editable cell to the next.

In addition, if sheet protection is activated, the following restrictions apply:

- Most menu commands for editing the worksheet are unavailable.
- Size, position and all other properties of objects cannot be changed anymore (except for objects where you have deactivated the **Locked** property)
- Text in text frames cannot be changed anymore (except for objects where you have deactivated the **Text locked** property)
- New objects can no longer be inserted into the worksheet.

Deactivating sheet protection

To deactivate sheet protection, choose the menu command **Tools > Disable sheet protection**.

Once deactivated, all cells will be editable and displayable again, no matter what protection settings they have.

Hint: The current state of sheet protection is saved within the document. If a password has been assigned, users will be required to enter the password to disable sheet protection.

Workbook protection

If you activate *workbook protection* for a document, PlanMaker disables the **Worksheet > Worksheet** menu command as well as the context menu of the worksheet register.

As a result:

- Users can't add worksheets anymore.
- Users can't copy, delete, or rename worksheets anymore.
- Users can't hide/unhide worksheets anymore.

To activate workbook protection, choose the menu command **Tools > Workbook protection**. To turn it off, invoke the same command once more.

See the following pages for more information.

Activating workbook protection

To activate workbook protection for the current document:

1. Choose the menu command **Tools > Workbook protection**.
2. If desired, enter a password required to deactivate workbook protection. Leave blank if you do not want to assign a password.
3. Click **OK** to confirm.

Workbook protection is now activated. Users are no longer able to add, delete, rename, or hide/unhide worksheets etc.

In addition, most of the options in the dialog of the **File > Properties** menu command unavailable.

Deactivating workbook protection

To deactivate workbook protection for the current document, choose the menu command **Tools > Disable workbook protection**.

As a result, users will be allowed to add, delete, rename, and hide/unhide worksheets again.

Hint: The current state of workbook protection is saved within the document. And: If a password has been assigned, users will be required to enter the password to disable workbook protection.

Document protection

You can protect your documents from being read or saved by unauthorized persons by applying *document protection* – or, to be more precise, read and/or write protection – to them. For example, you can require the entry of a password to open or save a protected document.

To protect the current document, invoke the menu command **File > Properties**, switch to the **Protection** tab and select the kind of protection you want. Then enter whatever password you like for reading and/or writing.

The following types of protection are available:

- **No protection**
- **Write protection** (the document can be opened, but saving is only possible if the correct password is given)
- **Read protection** (the document can be opened only if the correct password is given)
- **Protection depending on password** (a combination of read and write protection)

Detailed information about enabling and disabling document protection is given on the following pages.

Enabling document protection

You can protect your documents from being read or saved by unauthorized persons by applying *document protection* – or, to be more precise, read and/or write protection – to them. For example, you can require the entry of a password to open or save a protected document.

When a document is read protected it is also encrypted, so that it cannot be examined with the use of programs other than PlanMaker.

To protect a document, do the following:

1. Invoke the menu command **File > Properties**.
2. Switch to the **Protection** tab.
3. Select the kind of document protection desired (see below).
4. Enter the read and/or write password (at least 4, and no more than 15 characters).

Important: If you forget a password you can no longer open, or save, the document. Therefore, it is advisable to write down the password, paying attention to the cases of letters!

5. Confirm with **OK**.
6. A dialog appears and requires you to verify the read and/or write password by reentering it.
7. Confirm with **OK**.
8. Exit the dialog box with **OK**.
9. Save the document to make the changes effective.

From now on anyone who attempts to open this document will be asked automatically for the password. If the correct password is entered, the protection will be lifted for the duration of the edit session.

Using the above described dialog, you can select any of the following types of protection:

- **No protection**

The document is not protected. This is the default setting.

- **Write protection**

When the document is opened, the user is given the opportunity to enter the write password. The document can be saved only when the correct write password has been entered.

If the user enters a false password, or no password at all, the document is opened *write protected* and cannot be saved – not even under another name.

- **Read protection**

When the user tries to open the document, he is prompted to enter the read password. If he enters a false password, or no password at all, the document is not opened.

Furthermore, the document is saved in an encrypted form, so that it cannot be examined with programs other than PlanMaker.

■ Protection depending on password

Here, *two* dialogs prompting for a password appear successively when the document is opened. The first one asks for the read password, the second one asks for the write password.

If the user enters the *read password*, he is permitted to open the document but not to save it.

If he also enters the *write password*, he has full access. Thus, he can both read and save the document.

If he enters a *false password*, or nothing at all, access to the document is denied.

Encryption method: "Most compatible" or "Most secure"?

For documents with **read protection** or **protection depending on password**, you can also choose the **Encryption method** to be used.

Note: This setting primarily concerns the creation of *new* documents. When you open an *existing* encrypted document, the encryption method used in the document is determined automatically and this option is set accordingly.

Choosing an encryption method is of importance especially for documents in Excel format (.xls and .xlsx), since some older versions of Microsoft Office are unable to read documents using the new encryption method ("Most secure").

The following two encryption methods are available:

■ Most compatible

When the document is saved, an old encryption method is used that can be read by *all* versions of Microsoft Office. However, this method is *less secure* than the other method.

■ Most secure

Here, a more modern and *more secure* encryption method is used. However, some older versions of Microsoft Office may *not* be able to read documents encrypted with this method.

Detailed information about the currently selected encryption method is displayed at the bottom of the dialog.

Disabling document protection

When you succeed in opening a read or write protected document by entering the correct password, protection is disabled – but only *temporarily*. When you close the document, protection is again "armed" and the query for the password reappears the next time someone makes an attempt to open the document.

To disable the protection on a document *permanently*, do the following:

1. Open the document.
2. Invoke the menu command **File > Properties**.

3. Switch to the **Protection** tab.
4. Select the **No protection** option.
5. Confirm with **OK**.
6. Save the document, so that the changes will take effect.

Document protection is now permanently disabled.

The next time someone opens the document, no password query will interfere. All users can now open and save it.

Working with other file formats

Normally, PlanMaker saves a document in its native file format, namely, the "*PlanMaker document*" format. PlanMaker documents can be recognized easily by the filename extension `.pmdx`. When you save a document, PlanMaker automatically appends this extension to the name you give it. For example, if you save a document under the name "Taxes", its complete filename will be `taxes.pmdx`.

You can save a file in various other file formats as well, which is useful, for example, when you want to do additional work on a document using another program. And you can also open documents in PlanMaker that have been created with other applications.

In this chapter you will learn how to work with other file formats. It covers the following topics:

- [Saving and opening files in other file formats](#)

The first section describes how to save or open a document in a different file format. You simply invoke the **File > Save as** menu command (or, the **File > Open** menu command respectively) and choose the file format in the **Save as type** list.

- [Working with text files](#)

When you open or save plain text files, a dialog box providing additional options appears. This section contains information on these options.

- [Working with Excel files](#)

The last section provides information on working with Microsoft Excel files.

See the following pages for detailed information.

Saving and opening files in other file formats

This section provides information on saving and opening documents in a different file format.

Saving a document in a different file format

To save the active document in a different file format, invoke the menu command **File > Save as** and open the dropdown list **Save as Type**. Choose the desired format, enter a new filename if desired, and confirm by clicking on **OK**.

Opening a document stored in a different file format

To open a document stored in a different file format, invoke the menu command **File > Open**, open the file types list box, and select the format of the file to be opened. Then select the file and confirm with **OK**.

Supported file formats

The list of available file types in Open and Save dialogs contains (among others) the following file formats:

- **PlanMaker document**

The native file format and default for PlanMaker documents. This is the format in which you will typically save your documents (name extension: .pmdx).

- **PlanMaker template**

Document template for PlanMaker documents (name extension: .pmvx). See also section [Document templates](#)

- **Microsoft Excel document**

You can also open and save documents in Microsoft Excel file format. Supports .xls files (Excel 5.0 through 2003) as well as .xlsx files (Excel 2007 or later).

For detailed information on this format, see section [Working with Excel files](#).

- **Microsoft Excel template**

Template for Microsoft Excel documents.

- **PlanMaker 2012 document**

For storing documents in the file format of PlanMaker 2012, an older version of PlanMaker (name extension: .pmd).

- **TextMaker document** (export only)

For exporting PlanMaker files to SoftMaker's word processor TextMaker.

- **dBase**

dBase database file format, either with DOS, Windows or Unicode character set. An additional dialog, where you can choose the character set, will appear before the file is opened.

Note: Most dBase databases are stored in **dBase/DOS** file format rather than **dBase/Windows** file format – even if they were created with a Windows application.

- **Text file**

Plain text file format, for example, with the cell values separated by tabs or commas. For detailed information, see the section [Working with text files](#).

Working with text files

As described in the previous section, you can also open and save plain text files (including e.g. CSV files) with PlanMaker:

- To *open* a text file, invoke the menu command **File > Open**, select the desired text file, and click on **Open**.

- To *save* a document as a text file, invoke the menu command **File > Save as**, open the **Files of type** list, and choose the entry **Text file**. Then, enter a file name and confirm with **Save**.

In both cases, a dialog where you can specify the format of the text file appears.

The dialog provides the following options:

Options available when saving text files

When you *save* a document as a text file, the following settings can be made in the dialog:

- **Character set**

Here you can specify which character set to use when the text file is saved.

Note: PlanMaker automatically suggests a suitable character set. Usually, there is no need to change this setting.

- **Data format**

Here you can specify in which way the cell contents should be stored in the text file. The following two options are available:

Separators between fields: If you choose this option, the cell contents will be separated by a certain character (for example, a semicolon or a tab).

Example:

```
Peter;Miller;24;Main Street
Elizabeth;Jones-Nightingdale;1733;University Drive
```

Fixed field widths: If you choose this option, the cell contents will be distributed over columns with a fixed width. Gaps will be filled with spaces.

Example:

```
Peter      Miller           24   Main Street
Elizabeth  Jones-Nightingdale 1733  University Drive
```

- **Separator**

Here you can choose which character should be used to separate the individual cell contents from each other (e.g., semicolons or tabs).

Note: The character used as a separator should *not* occur *within* cell contents. Otherwise, PlanMaker would split such cells into two entries.

- **Text marker**

If desired, PlanMaker can surround the content of all cells that contain *text* with a certain character (e.g. quotation marks).

If you want this, choose the desired character here.

- **Encoding of newlines**

Here you can specify the control characters that are added at the end of lines (in order to indicate the beginning of a new line).

Note: PlanMaker suggests suitable control characters automatically. Usually, there is no need to change this setting.

Available options:

CR+LF: This is the recommended setting for **Windows**.

LF: This is the recommended setting for **Linux** and **Mac**.

CR: This control character used to be common on older Apple Mac systems (prior to Mac OS X).

Options available when opening text files

When you *open* a text file, the same options are available as for saving. Use them to specify the format of the text file you want to open.

There's one additional option when opening files:

- **Number of header lines**

If the first few lines of your text file contain headings (or, lines with some explanatory text, etc.), enter the number of these lines here. This will instruct PlanMaker *not* to split these lines into columns. They will be left unchanged and stored into just one cell per line.

The default value is 0 (i.e., no header lines).

Working with Excel files

The following pages provide information on working with Microsoft Excel files in PlanMaker.

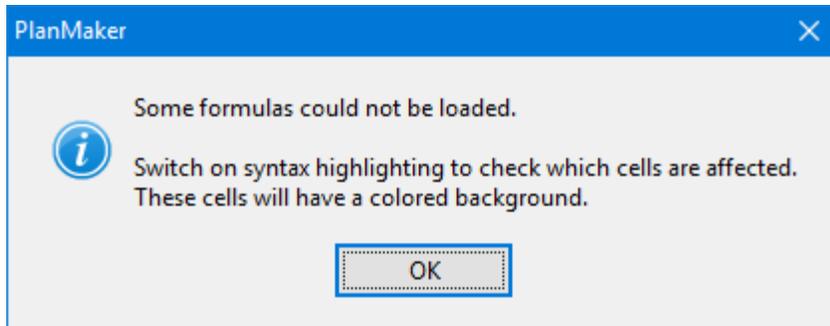
Opening and saving Excel files

As described in the section [Saving and opening files in other file formats](#), PlanMaker is able to open and save documents in Microsoft Excel format.

However, some arithmetic functions are either incompatible, or not supported by PlanMaker or Excel. This section provides help resolving these issues:

Warning message issued when opening an Excel file

When you open an Excel file containing arithmetic functions that are not compatible with PlanMaker, the following warning message is displayed:



To resolve, proceed as follows:

1. Choose the **View > Syntax highlighting** menu command to activate syntax highlighting.
2. All cells containing formulas where the conversion failed will be highlighted with a colored background.

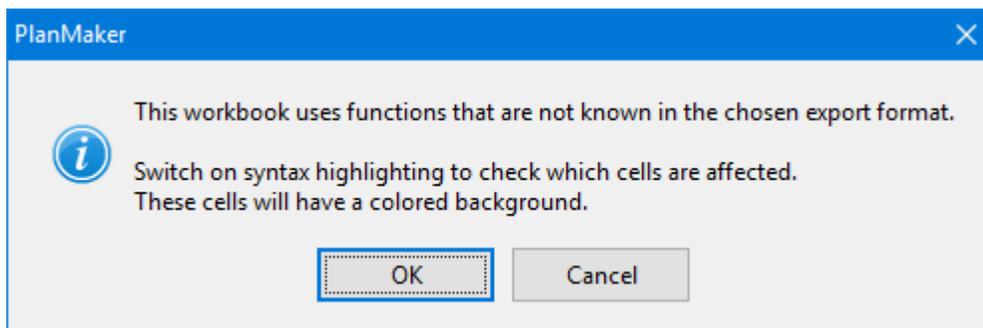
These cells must be revised individually. Compare their content with the content of the corresponding cells in the Excel document, and replace incompatible arithmetic functions with PlanMaker functions. For detailed descriptions of all arithmetic functions supported by PlanMaker, see section [Functions from A to Z](#).

3. When all cells are revised, deactivate syntax highlighting.

Save the document (in PlanMaker format) to finalize changes.

Warning message issued when saving a document in Excel format

When you save a PlanMaker document in Excel format, if the document contains formulas that are not Excel-compatible, the following warning message is displayed:



To resolve, proceed as follows:

1. Choose the **View > Syntax highlighting** menu command to activate syntax highlighting.
2. All cells containing formulas that are not Excel-compatible will be highlighted with a colored background.

These cells must be revised individually. Replace all Excel incompatible arithmetic functions with Excel functions. For help, see function description of the affected function in this manual.

3. When all cells are revised, deactivate syntax highlighting.

Save the document in Excel format again. If no further warning messages are displayed, all incompatibilities have been eliminated.

Differences between PlanMaker and Excel

This section provides a list of the most significant differences between PlanMaker and Excel:

General

- PlanMaker is not able to execute **macros** and **VBA scripts** stored in Excel documents. When an Excel file is opened that contains macros or scripts, they will be ignored. However, PlanMaker will not remove them – if the file is saved in Excel format, the macros and scripts will remain functional.

Arithmetic functions

- Some of PlanMaker's **arithmetic functions** are not supported by Excel (and vice versa). If you open or save a document in Excel format, a warning message will be displayed if the file contains incompatible arithmetic functions. For more information, see section [Opening and saving Excel files](#).

Working with Arabic text

In this chapter, you will learn everything you need to know about editing text in *Arabic* script in your documents. The following topics are covered:

- [Activating extended support for Arabic text](#)
- [Changing the text direction in table cells](#)
- [Changing the text direction in text frames](#)
- [Changing the direction of worksheets](#)

See the next pages for details.

Important: The features described in this chapter are only available when you have activated the **Extended support for Arabic text** option in the program settings (see next section).

Activating extended support for Arabic text

PlanMaker includes an "Extended Support for Arabic Text" option that provides some additional features for editing text in Arabic script.

To activate this option, proceed as follows:

1. Invoke the **Tools > Options** menu command.
2. Switch to the **General** tab.
3. Activate the **Extended support for Arabic text** option.

Important: The features described in this chapter are only available when this option is activated.

Changing the text direction in table cells

When the **Extended support for Arabic text** option is enabled, you can change the text direction in any given table cell whenever needed.

To do so, proceed as follows:

1. Invoke the **Format > Cell** menu command.
2. Switch to the **Alignment** tab.
3. Under **Text direction**, choose the desired option: context sensitive, left-to-right, or right-to-left.

Tip: With the default setting **Context sensitive**, PlanMaker automatically chooses the appropriate text direction: When you enter text in Arabic into a cell, the text direction is set to right-to-left, otherwise, it is set to left-to-right.

Changing the text direction in text frames

In *text frames*, when the **Extended support for Arabic text** option is enabled, you can change the text direction of a paragraph whenever needed.

To do so, proceed as follows:

1. Place the text cursor in the desired paragraph within the text frame.
2. Invoke the **Format > Paragraph** menu command.
3. Switch to the **Paragraph** tab.
4. Under **Text direction**, activate the option **Right to left** to change the text direction to right-to-left.

To set the text direction to left-to-right, deactivate the option.

Tip: Using the keyboard

A much quicker way to change the text direction of a paragraph in a text frame is provided with the following keyboard shortcuts:

- When you press **Ctrl** and the *left Shift*⬅ key simultaneously, the text direction changes to left-to-right.
- When you press **Ctrl** and the *right Shift*➡ key simultaneously, the text direction changes to right-to-left.

Mac/Linux: On some systems (including macOS and several Linux distributions), these keyboard shortcuts might be not available. In this case, you can alternatively use the keyboard shortcuts **Ctrl+Shift+A** (for left-to-right) and **Ctrl+Shift+D** (for right-to-left).

Changing the direction of worksheets

When the **Extended support for Arabic text** option is enabled, you can change the direction of a worksheet whenever needed.

To do so, proceed as follows:

1. Invoke the **Worksheet > Properties** menu command in the desired worksheet.
2. Under **Text direction**, activate the option **Right to left** to change the direction to right-to-left.

To set the direction to left-to-right, deactivate the option.

The direction of the worksheet changes accordingly.

Thus, when you change the direction of a worksheet to right-to-left, the column on the very *right* becomes the first column (instead of the column at the very *left*).

In other words, the horizontal direction of the table is reversed – as follows:

A1	A2	A3
B1	B2	B3
C1	C2	C3

A3	A2	A1
B3	B2	B1
C3	C2	C1

Left: Table direction set to left-to-right

Right: Table direction set to right-to-left

Note: Of course you can still change the writing direction of each table cell individually (as described in the section [Changing the text direction in table cells](#)).

Scripts (BasicMaker)

Note: BasicMaker is not included in some versions of SoftMaker Office. Available only under Windows.

BasicMaker is a tool that allows you to compose and execute scripts written in the programming language *SoftMaker Basic*. *SoftMaker Basic* is modeled after the industry standard *Visual Basic for Applications (VBA)* from Microsoft.

Scripts can be used to automate tasks in the word processor TextMaker and the spreadsheet application PlanMaker.

Invoking BasicMaker

To start BasicMaker, or to execute a BasicMaker script, use one of the following procedures:

- **Starting BasicMaker from the Start menu**

You can start BasicMaker by clicking on **Start > Programs > SoftMaker Office > Utilities > BasicMaker** in the **Start** menu.

- **Starting BasicMaker from within TextMaker/PlanMaker**

Alternatively, you can start BasicMaker from within TextMaker or PlanMaker. From the main menu in TextMaker/PlanMaker, choose the menu command **Tools > Edit script**.

- **Running a script directly from within TextMaker/PlanMaker**

To execute a script, invoke the menu command **Tools > Start script** in TextMaker/PlanMaker. A file dialog appears. Choose a script, confirm with **OK**, and the script will be executed immediately.

For more information on BasicMaker and details on "programming" TextMaker and PlanMaker, see the BasicMaker online documentation (which is available in BasicMaker's **Help** menu).

Working with multiple documents

You can have multiple documents open at any time – to compare them, edit them at the same time, exchange data between them, etc.

You work with multiple documents as follows:

- **Opening multiple documents in the same program window**

You can open any number of documents at the same time in the current program window.

There are many ways to switch between these documents, including a bar that contains *document tabs* for each currently open document (displayed above the current document):



- **Opening documents in a new program window**

You can also open documents in a new program window. This allows you, for example, to place documents side by side on the monitor.

To do so, switch on the option **New program window** in the dialog window of the menu command **File > New** or **File > Open** when you create/open the document. (Note: This option is not available in the Android version.)

These two methods can be combined as desired. You can open as many program windows as you like and open any number of documents in each of these windows. Or you can open all documents in just one program window. Or you can let the software create a separate program window for each document. Any way you like it.

In this chapter you will learn everything you need to know about working with multiple documents at the same time. See the next pages for details.

Creating or opening a document

To create a new document, or to open a document, proceed as follows:

- Select the menu command **File > New** to create a new document.
- Select the menu command **File > Open** to open an existing document.

These two commands are described in detail in the chapter [PlanMaker basics](#).

"New program window" option

The option **New program window** in the dialog box for these two commands has the following meaning: If it is switched on, the document will appear in a new program window. If it is switched off, the document will appear in the existing program window with an additional tab. (Note: This option is not available in the Android version.)

Switching between open documents

When working with multiple documents open at the same time, you have the following options for switching to a specific document – and thus making it the active document:

- **Menu: "Window" menu**

In the **Window** menu you will find a list of all currently open documents. Select the entry for the document you want to switch to.

- **Ribbon: "Windows" icon**

In the ribbon you will find an icon named **Windows** on the **View** tab, which works in a similar way: When you click on it, a list of all open documents appears, allowing you to choose the document of interest.

- **Mouse: Clicking on a document tab**

Under the toolbars or ribbon you will find a bar containing *document tabs* for each currently open document. Click on the tab for the document you want to switch to.



- **Mouse: Clicking into the program window containing the document**

If you have opened documents in more than one program window (see previous section), you can of course also simply click into the program window containing the desired document.

- **Keyboard: Pressing Ctrl+F6**

You can also use the keyboard to switch between the currently open documents: **Ctrl+F6** switches to the next document and **Ctrl+Shift+F6** switches to the previous one.

Mac: On a Mac, the key combinations **Cmd+F6** and **Cmd+Shift+F6** have to be used instead.

Closing a document

If you want to conclude your work on a document, you can close it at any time. You have the following options:

- **Menu:** Choose the **File > Close** menu command to close the current document.

Tip: You can close all currently open documents in one step with the menu command **Window > Close all**.

- **Ribbon:** The **File** tab contains a **Close** icon that closes the current document.
- **Document tabs:** Under the toolbars or ribbon, you will see a bar with *document tabs* for each currently open document. When you click on one of these tabs with the *middle* mouse button, the corresponding document is closed.



Alternatively, you can close a document by left-clicking on the **x** icon displayed on the right of its tab.

And when you right-click on a tab, a small menu appears. It contains commands for closing the current document (**Close tab**) or all other open documents (**Close all other tabs**).

- **Keyboard:** You can also use the keyboard shortcut **Ctrl+F4** or alternatively **Ctrl+W** to close the current document.

Mac: On a Mac, the key combination **Cmd+F4** or **Cmd+W** has to be used instead.

Whenever you close a document that has been modified since it was last saved, the program automatically asks you if you want to save the document first.

Arranging documents on the screen

Android: The *View side by side* feature is not available in the Android version.

If you have documents open in multiple program windows, you can arrange them on the screen as follows:

- Of course you can move the individual program windows manually and change their size – just as it is possible with all kinds of program windows.
- If you select **Window > View side by side**, the current program window and another (already opened) program window are arranged next to each other on the screen. If more than two program windows are currently open, the program first asks which other window should be used.

Customizing PlanMaker

PlanMaker gives you control over numerous program settings, allowing you to adapt the program to your personal working style.

This chapter covers all the details. It is divided into the following sections:

- [Preferences](#)

To modify PlanMaker's *global* preferences, use the **Tools > Options** menu command. These settings apply to the program as a whole, and thus to *all* documents.

- [Document properties](#)

To modify the properties of a *document*, use the **File > Properties** menu command. These settings affect the current document only.

- [Worksheet properties](#)

To modify the properties of a *worksheet*, use the **Worksheet > Properties** menu command. These settings affect the current worksheet only.

- [Customizing the document display](#)

This section describes how to adjust the way a document is displayed on the screen. Most of the necessary commands are found in the **View** menu.

- [Customizing toolbars](#)

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use "classic menus and toolbars".

You will learn here how to configure the program's *toolbars* (Standard toolbar, Formatting toolbar, etc.) using the **View > Toolbars** menu command and how to customize the icons displayed on them using the **Tools > Customize** command.

- [Customizing the ribbon](#)

"Ribbons" only: This section is relevant only for users who have configured the program to use the "ribbon" interface.

You will learn here how to configure and customize the *ribbon*.

- [Creating user-defined toolbar/ribbon icons](#)

You can create *user-defined icons* and add them to a toolbar or to the ribbon. Such icons can be used to start other programs of your choosing.

- [Customizing keyboard shortcuts](#)

The dialog box of the **Tools > Customize** menu command also allows you to customize the keyboard shortcuts for commands.

- [Customizing AutoFill lists](#)

To customize the lists used to automatically fill cells with the **Edit > Fill** command, use the **Tools > Edit lists** menu command.

- [Installing additional dictionaries](#)

This section contains instructions on installing additional dictionaries (for example, Hunspell dictionaries).

See the following pages for detailed information.

Preferences

To modify PlanMaker's *global* preferences, use the **Tools > Options** menu command. These settings apply to *all* documents.

The dialog box associated with this command contains several tabs, each of which presents options relating to a different topic area. If you click on the **Files** tab, for example, you will be able to make settings that control the opening and saving of files.

On the next pages, you will find detailed information on each of the individual options available.

Preferences, View tab

The **View** tab in the dialog of the **Tools > Options** menu command contains settings related to the display of tables:

Markers

The options in this section allow you to modify the appearance of the little triangles that are displayed in cells that contain a comment and cells that are protected.

- **Color of comment markers**

Here you can change the color of the little triangle that is displayed inside cells that contain a comment.

- **Color of protection markers**

Here you can change the color of the little triangle that is displayed inside cells that are not protected (when sheet protection is enabled).

- **Size**

This option allows you to change the size of these markers.

Snapping

Allows you to configure the available aids for positioning objects (text frames, picture frames, etc.) with your mouse:

- **Snap to cells**

Normally, this option is disabled, meaning that you can move objects arbitrarily with your mouse.

When you enable this option and try to change the position of an object with your mouse, the object jumps from one table cell to the next.

- **Snap to other objects**

When this option is enabled, the software automatically creates "magic" guides for the edges of *each* object in the current worksheet. These guides make it a lot easier to place objects perfectly aligned or distributed.

"Magic" guides are usually invisible. They become visible only when you move an object to a position close to any of these guides with your mouse. As soon as the guide appears, the object automatically snaps to it. The same happens when you change the size of an object with your mouse.

Some examples for "magic" guides:

When you drag an object to a position where it is *roughly* left-aligned with another object, a guide will appear representing the left edge of the other object. If you let your object snap to it, it will be *exactly* left-aligned with the existing object.

The same applies for the right edge of objects.

When you drag an object to a place where it is *roughly* centered with another object, a guide will appear representing the center of the object. If you let your object snap to it, it will be aligned *exactly* centered with the other object.

When you drag an object to a position below two other objects, you will also see a horizontal guide at the position where this third object would have exactly the same relative distance as the two other objects. (The three objects would then be distributed evenly.)

All of the above works in both directions (horizontally and vertically) – for example, there are also magic guides for the top edge and the bottom edge of each object.

- **Snap tolerance**

Here you can specify the tolerance for the **Snap to other objects** option described above. The higher the value, the earlier an object that you resize/move will snap to one of the "magical" guides for existing objects.

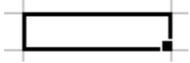
The default value is a distance of 8 pixels.

Paint grid behind cells

When you activate this option, the gray gridlines displayed between the table cells are no longer painted in front of the cells but behind the cells. As a result, the gridlines will no longer be visible for cell ranges that have a colored background.

Cell marker

Here you can change the color and line width of the *cell frame* (the dark frame that indicates the currently active cell in a worksheet).



Worksheet tabs

The *worksheet register* at the bottom of the document window displays tabs for each worksheet in the document.

This option allows you to change the font size used to display the worksheet name on each tab.

Preferences, General tab

The **General** tab in the dialog of the **Tools > Options** menu command contains common program settings:

Maximum number of undo steps

Here you can specify the number of actions that can be reversed with the **Edit > Undo** menu command. You can increase this number up to a maximum of 999 undo operations.

Note: On devices with little main memory, it is not recommended to increase this value.

Button "User info"

Click on this button to open a dialog where you can enter your personal information such as name, address, phone number, etc.

To insert this information in documents, use the [USERFIELD](#) function

Extended support for Asian fonts

Note: This option affects only *text frames*, not table cells.

When this option is enabled, in *text frames*, the dialog box for the **Format > Character** menu command presents lists for typeface, font size, style and language under not only a single category, but under *three*:

- For Latin scripts (e.g. English)
- For East Asian scripts (Chinese, Japanese, and Korean)
- For complex scripts (e.g. Arabic)

Thus, in text frames you can specify the settings for each kind of script separately.

For example, if you specify "Arial" as the typeface for Latin characters and "SimHei" as the typeface for Asian characters, all the Latin characters that you type will appear in Arial, and all the Asian characters you type will appear in SimHei.

Note: PlanMaker recognizes automatically whether given characters are part of the Latin, Asian, or complex scripts.

Extended support for Arabic text

When you activate this option, additional features for editing text in *Arabic* script will become available. See the chapter [Working with Arabic text](#) for details.

Show warning when loading OLE objects

Mac, Linux, and Android only: When this option is enabled, the program displays a warning that OLE objects cannot be displayed when you open a document containing such objects. (OLE objects can be displayed only under *Windows*.)

Preferences, Edit tab

The **Edit** tab in the dialog of the **Tools > Options** menu command contains settings related to editing cells:

Move selection after input

Determines where to move the selection after the user has entered data in a cell and pressed the **Enter** ↵ key. For example, if you choose "Down", the selection will move down to the cell below the current cell.

In-cell editing

If this option is checked, cells can be edited directly in the worksheet. If it is unchecked, cells can only be edited using the Edit toolbar (displayed above the spreadsheet).

Automatic percent input

Determines how PlanMaker reacts when you type numbers into a cell that contains a percent value or that is formatted with the "Percent" number format. If enabled, a percent sign is automatically added to your input.

Autocomplete cells

When you enter text in a cell with this option enabled, PlanMaker automatically makes suggestions from the existing text entries found in the cells above and below this cell.

Example: You have entered the values "New York", "Rio" and "Tokyo" into a column. If you type the letter "N" in the cell below these entries now, the program automatically suggests "New York". If you type the letter "T", "Tokyo" is suggested, etc.

New York
Rio
Tokyo
New York

To accept the suggestion, press the **Enter** ↵ key. To reject it, simply continue typing or press the **Del** key.

If you do not want PlanMaker to make such suggestions while you are typing, you can always turn this option off.

Left arrow key never exists cell editing

Use this option to specify what should happen when you navigate to a cell, type in a value and press the left arrow key ←:

- **On:** The text cursor is moved to the left (within your input).
- **Off:** The cell frame is moved to the left. In other words, your input is accepted, and the cell left of the current cell is made the active cell.

Warning if a formula contains errors

If you enter a formula that contains an error (e.g., missing a closing parenthesis), PlanMaker issues an error message when you press Enter. If you do not want an error message to be displayed, uncheck this option.

Note: Independent from this option, erroneous formulas are generally replaced by the text #NULL! when you save the document.

Formula tooltips

If this option is enabled, whenever you enter an arithmetic function in a cell, a tooltip providing information about the required function parameters appears below the cell.

Apply character formatting to entire words

Enabling this option has the following effect:

When the text cursor is inside a word and you change the character formatting (i.e. choose a different font or activate boldface), the entire word will be affected.

This allows you to format single words more quickly (without having to select them first).

Insert frames and drawings immediately

Here you can specify what should happen when you insert a frame or a drawing into a document (Text frame, Picture frame, AutoShape, etc.) – for example, using the menu command **Object > New text frame:**

- **Always:** The corresponding object is inserted immediately. Its position and size are fixed without further action.

(Of course you can always change the object's position after that, by simply dragging it to a different place with the mouse. And you can also modify its size, by dragging on one of the round handles that appear around the object.)

- **Never:** Before the object is actually inserted, the mouse cursor changes to a cross-hair. To proceed, draw a rectangle in the document with your mouse, in order to determine the exact position and size of the object. After that, the object will be inserted accordingly.
- **Auto:** An intelligent combination of the two options above that is already preset in PlanMaker for each specific object type. The AutoShape and Text frame objects are inserted directly (as with **Always**), all other objects are inserted via mouse cursor control (as with **Never**).

Expand tables automatically

As described in the section [Tables in worksheets](#), the menu command **Worksheet > New table** allows you to create "Tables in worksheets".

This option has the following effect on such tables:

- **On:** When you enter something into one of the cells directly to the right of the table, the table is automatically expanded by another column. The same goes with rows: When you type something directly below the table, another row is added automatically.
- **Off:** The table is not expanded automatically.

Middle mouse button

Mac and Linux only: Here you can specify what should happen when you click somewhere using the *middle* mouse button. Options available:

- **No function:** The middle mouse button doesn't have any function.
- **Paste selected content:** A click with the middle mouse button inserts the content of the selection (e. g. the currently selected text) at the corresponding position.

Expand SmartText entries

As described in the section [SmartText](#), you can create SmartText entries (e.g. "sd" for "sales department") with PlanMaker.

When this option is enabled, your SmartText entries can be expanded right in the text. All you have to do is type the abbreviation for the SmartText entry (e.g., "sd") and then press the space bar, **Enter** key or a punctuation key in order to signal PlanMaker to replace the abbreviation with the content of the SmartText entry.

If this option is disabled, SmartText entries can be called out only with the **Insert > SmartText** menu command.

Use left Alt as shortcut key

Mac only: This option determines which function the left **Alt** key on your keyboard should have:

- **Off:** The left **Alt** key does the same as the right **Alt** key: It inserts symbols into the text.
Alt+E, for example, gives you a Euro sign.
- **On:** The left **Alt** key can be used to open menus in the classic menu. (Note: This only works if you use the program with classic menus instead of the ribbon.)
Here, **Alt+E** no longer returns a Euro sign, but opens the **E**dit menu instead.

Number separators

Here you can change which characters to use as decimal separator and as thousands separator for numbers.

- If you choose **System default**, PlanMaker determines the decimal separator and thousands separator from your current system settings automatically. (This is the default setting.)
- If you switch to **Custom**, PlanMaker lets you to specify a custom decimal separator and thousands separator.

Warning: If you specify custom settings that are incorrect, calculations may return invalid or wrong results!

Calculation in status bar

When you select multiple cells, their sum is automatically displayed in the status bar. To have a different calculation displayed there, select the desired type of calculation.

Preferences, Appearance tab

The **Appearance** tab in the dialog of the **Tools > Options** menu command allows you to customize the appearance of the program's user interface.

Dialog language

Here you can select the language to be used for the user interface (menus, dialog boxes, etc).

User interface

When you click on the **User interface** button, a dialog box appears in which you can select the type of user interface that the applications in SoftMaker Office should use:

- **Ribbon** (upper row)

When you select one of the items from the top row, the programs will use a ribbon interface. The differences between the individual entries are only in the color scheme used.

- **Classic menus and toolbars** (lower row)

When you select one of the entries from the bottom row, the programs will use classic menus and toolbars. Also for this, different color variants are offered.

In addition, the following settings can be made in the dialog box:

- **Quick Access Toolbar**

Ribbons only: Determines where the *Quick Access Toolbar*, which contains icons for some of the most frequently used commands, should be displayed: to the left of the document tabs – or in a separate toolbar directly below the ribbon.

- **Touch mode**

If you activate this option, all icons in the ribbon or in menus/toolbars are enlarged a bit. This is useful when operating the software with your finger (for example, on a tablet).

Tip: In addition to this option, you can also switch touch mode on/off with the following commands:

Menu: command **View > Touch mode**

Quick Access Toolbar: command **Touch mode**

Android: If you are using the Android version, you do not have a button with a dialog box for the *User interface* settings, but a dropdown list. The options *Quick Access Toolbar* and *Touch mode (for larger icons and menu entries)* can be found separately elsewhere on this **Appearance** tab and have the same effect as described above.

Show status bar in ribbon mode

Applies for *ribbon mode* only: Here you can enable/disable the display of the status bar. To change the display of the status bar for the *classic menu*, see section [Displaying and hiding toolbars](#).

Show fonts in font list

When this option is enabled, PlanMaker renders the names of fonts that appear in lists (such as the font list in the Formatting toolbar) using their corresponding fonts. This lets you see at a glance how each font looks like.

Show tooltips

Lets you specify whether or not tooltips should be displayed.

Tooltips are little text boxes that are displayed next to the mouse pointer when you position the pointer over certain screen elements, for example a button on a toolbar.

Beep on errors

When this option is enabled, a sound plays when PlanMaker displays an error or warning message.

Live preview

Enable/disables a live preview for the dropdown lists in the Formatting toolbar.

When this option is enabled, you can e.g. select some text, open the font dropdown in the Formatting toolbar and hover over the fonts with your mouse. While you do that, the selected text is updated "live" to give you an impression how it would look like in the corresponding font.

To actually apply the font, simply click on it. To discard the change, click anywhere outside the list or press the **Esc** key.

Use system menus

Mac only: This option determines whether or not the program should display its main menu in the menu bar at the very top of the screen (as is customary for Mac applications).

Depending on the type of user interface you have chosen ("Ribbon" or "Classic menus and toolbars"), this option has the following effect:

- **Off:** The main menu is *not* displayed in the menu bar at the top of the screen.

Details:

Classic menus and toolbars: With the classic user interface, the main menu is no longer displayed at the top of the screen, but in its own bar (below the title bar).

Ribbon: If you have chosen the "Ribbon" user interface, only the "hamburger menu button" (i.e. the  icon in the Quick Access Bar) is available to you if you want to access the classic main menu.

- **On:** The main menu is displayed in the menu bar at the top of the screen.

Details:

Classic menus and toolbars: The main menu is now displayed in the menu bar at the top of the screen, not in its own bar below the title bar.

Ribbon: Ribbon users now have access not only to the Ribbon user interface but can *additionally* use the classic menu in the menu bar whenever desired.

Use system file dialogs

Windows, Mac, and Linux only: This option controls the type of dialogs that appear when commands to open and save files are issued. The options are:

- **Off:** PlanMaker uses its own file dialogs.
- **On:** PlanMaker uses the file dialogs provided by the operating system.

The former are easier to use; the latter offer more options.

Smooth edges of screen fonts

When this option is enabled, PlanMaker uses a technology called "anti-aliasing" to smooth the edges of fonts and improve their appearance on the screen.

The options available vary according to the operating system.

Workspace color

This option allows you to change the background color of document windows.

User interface size

Mac, Linux, and Android only: This button opens a dialog where you can decrease or increase the scaling of the application's user interface (menu, toolbars, dialogs, etc.).

Choosing a smaller setting will scale all user interface elements down, allowing you to see more elements at a time. A larger setting, on the other hand, increases the legibility.

While the **Controls size** option changes the scaling in large steps, the **Font size adjustment** option can be used to perform some fine-tuning in smaller steps.

The **Sample** field is there to help you find a decent setting: It gives you a preview of how a checkbox in a dialog will look like when you apply your changes.

Note: With inappropriate settings, the user interface might become far too small or too large, especially on devices with a rather low resolution. In case this happens, you can always click on the **Reset to default** button in the lower left of this dialog to return to the original settings.

Document scaling (DPI)

Mac, Linux, and Android only: You can scale the document higher or lower for a larger/smaller view. To do this, select *Custom* and enter the preferred value.

Measurement

Mac, Linux, and Android only: Here you can specify the units of measure PlanMaker should use by default: **Metric** (centimeter) or **U.S.** (inch).

(Under Windows, this option is not necessary, since the program automatically uses the setting chosen in the "Regional and Language" options of Windows' Control Panel.)

Tip: You can always override this setting and enter a value into a dialog field in another unit of measure by typing one of the following unit abbreviations after the value:

Unit	Explanation
------	-------------

cm	centimeter
----	------------

in inch – 1 in equals 2.54 cm.

pt point – 72 pt equals 1 in.

pi Pica (for characters)

For example if you typed "5.08 cm" for the left margin, PlanMaker would set the margin to 5.08 cm (= 2 in).

Use ribbon animations

Android only: The sections of the ribbon tabs can be expanded and collapsed when you tap them with your finger (only in ribbon mode). If you enable this option, expanding and collapsing will be performed in animated mode.

Preferences, Language tab

The **Language** tab in the dialog of the **Tools > Options** menu command contains settings that are related to the program's language tools (spell checker, hyphenator, etc.).

Language

Here you can select the language to be used for spell checking and hyphenation. To choose your setting, open the dropdown list and select the desired language from the available options.

Spell-checking

In this section you can configure the spell-checker. Settings available:

- **Check spelling as you type**

If you activate this option, PlanMaker will check the spelling of text *as you type*. As soon as you make a mistake, a dialog box will appear to facilitate a correction. See section [Spell checking as you type](#).

Note: When this option is turned off, you can still check the spelling in a document using the *manual* spell-checker. To launch it, use the **Tools > Check spelling** menu command. See section [Manual spell checking](#).

- **Beep on errors:** When this option is enabled, PlanMaker issues a warning tone when it encounters an unknown word while checking spelling as you type.

- **Ignore words that start with a number**

Check this option if you would like the spell checker to ignore all words that start with a number (for example, "42nd").

■ Hunspell dictionaries

As an alternative to its own dictionaries, SoftMaker Office also supports the use of *Hunspell* dictionaries. These dictionaries are available as free downloads. Most of them were created by private users or non-profit organizations.

The **Hunspell dictionaries** button allows you to a) install Hunspell dictionaries that you have downloaded and b) specify which languages should use a Hunspell dictionary.

For details, see section [Installing additional dictionaries](#).

Preferences, Files tab

The **Files** tab in the dialog of the **Tools > Options** menu command contains settings related to opening and saving files:

Template folder

Here you can specify the folder in which the templates for PlanMaker documents are stored. The dialog that appears when you invoke the menu command **File > New** presents templates for your selection that are found in this folder.

Note: Normally, this setting should not be changed. Change it only in the event that you have actually moved the template folder to another place.

Default file format

Here you can select the file format that PlanMaker will use by default to save newly created documents.

The available choices include PlanMaker's own file format and the Microsoft Excel file format in several versions.

Important: The Excel format is not able to accommodate features specific to PlanMaker. If you save a PlanMaker document in Excel format, certain formatting options and other features could be lost. Accordingly, it is recommended to use the default setting "PlanMaker".

Saving group box

Here you can make settings related to saving documents:

■ Create backup files

Android only: If this option is enabled, whenever you save a document, the application will first create a backup copy of the last saved version in a file with the name extension `.bak`.

(In SoftMaker Office for Windows, Mac, and Linux, more advanced options are available for backup copies – see section **Backup** below.)

- **Prompt for summary information when saving**

When you enable this option, a dialog box will appear automatically the first time you save a new document to enable you to enter some additional information about it (for more information, see the section [Document summary](#)).

- **Auto recovery: Save state every ... minutes**

When this option is enabled, PlanMaker automatically makes a temporary backup copy of every open document on a periodic basis. You can enter a period of 1 to 100 minutes.

Note: These temporary backup copies are totally independent of the regular backup copies that you can set up in the **Backup** section on this tab (see below).

When you exit PlanMaker in the normal manner, these temporary backup copies are automatically deleted. However, if PlanMaker is abruptly shut down by a power failure, for example, while you are working on open documents, these copies become available when the program is restarted. PlanMaker recognizes that there has been a failure and offers to open the backup copies of all the documents that had been modified but not saved just prior to the failure.

You can then check each of the restored documents to determine if any of the most recently made changes have actually been lost, and then save them.

Opening group box

Here you can make settings that affect the way documents are opened:

- **Recently used files**

PlanMaker displays a list of the files most recently opened in it in the **File** menu. If you select an item on the list, the corresponding file will be opened immediately. Using the **Recently used files** option you can specify the number of files to be displayed in the list.

Backup group box

Note: This feature is *not* available in the **Android** version. On Android, only an option for simple (single) backups is available: the option **Create backup files** (described above).

Here you can specify if the program should, whenever you save a document, automatically create a backup copy containing its previous version.

The dropdown list in this section offers the following options:

- **No backup**

When you choose this option, *no* backup copy is created when you save a document. (Not recommended.)

- **Simple backup**

Here, exactly *one* backup copy is created when you save a document. This copy contains the previous (i.e. last saved) version of the document. It is saved as a file with the name extension `.bak`, stored in the same folder as the document.

■ Advanced backup

With this option, *multiple* generations of backup copies are kept for each document. All of these copies are stored in a special **Backup** folder.

Tip: When this option is selected, also the **File > Revert to previous version** menu command becomes available. It provides a comfortable means of returning to a previous version of the current document.

Additional options:

Folder for backup files: Here you can change the location of the **Backup** folder in which all backup copies are stored.

Number of backup files per document: Here you can specify the maximum number of backup copies (= generations) to be kept for each document.

"Clean Up" button: Offers the following two commands for deleting backup copies:

Delete orphaned backup files: Removes each backup file for which the corresponding original file no longer exists.

Delete all backup files: Removes *all* backup files that reside in the folder for backup files.

More detailed information on the usage of backup copies can be found in the section [Backup copies](#).

Preferences, System tab

The **System** tab in the dialog of the **Tools > Options** menu command contains the following system settings:

Compress pictures in memory

If this option is enabled, pictures inserted into documents will be stored (losslessly) *compressed* in memory. Advantage: Documents containing many pictures consume significantly less main memory. Disadvantage: The compression of course consumes some CPU time.

As a general rule, you should leave this option enabled.

Note: Changes to this setting become effective only after PlanMaker is restarted.

Limit internal picture cache

PlanMaker uses an internal picture cache to speed up the display of images in a document. If this option is enabled, the size of this cache is restricted to a maximum of 20% of your main memory.

As a general rule, you should leave this option enabled.

If you frequently work with documents containing many high-resolution pictures, you may consider deactivating this option. Pictures will then usually be displayed faster throughout the document; however, it can occur that PlanMaker consumes a large amount of main memory.

Smooth edges of pictures

When this option is enabled, PlanMaker uses anti-aliasing to smooth edges and lines in images. Advantage: The display quality of scaled images is improved. Disadvantage: This of course consumes some CPU time.

Check for updates

Windows, Mac, and Linux only: Here you can specify if (and how often) the software should check if updates for SoftMaker Office are available. Updates provide bug fixes and feature improvements.

Note: Checking for updates is possible only when your device has Internet access.

In case you want to disable the automatic update check (not recommended), choose the **Never** option from the list. In that case you have to check for updates manually (by clicking on the **Check Now** button.)

Tip: Subscribe to our free **newsletter** at www.softmaker.com to get an e-mail automatically whenever updates are available. The newsletter will also provide you with other useful information and special offers related to SoftMaker Office.

Android: When you have installed an application via Google Play Store, your device will inform you about software updates automatically (unless you have deactivated automatic updates in the Play Store settings).

Associate file types

Windows only: This button opens a dialog where you can associate certain file types with PlanMaker. This will make PlanMaker the *default* application for the corresponding file types.

For example, when you associate the file type "Microsoft Excel documents" with PlanMaker, from now on, files of this type will always be opened in PlanMaker when you double-click on such a file in Windows Explorer.

Show/hide keyboard automatically

Android only: When checked, the on-screen keyboard will pop up automatically whenever you are given an opportunity to enter text (for example, when you double-tap on a cell, or when you tap into an input field in a dialog).

Change keyboard layout automatically

Android only: When checked, the layout of the on-screen keyboard will automatically adapt to the current situation. For example, in a dialog, when you tap into an input field that accepts only numbers, the keyboard will automatically be switched into numeric mode.

Additionally, when you enter data into table cells, PlanMaker will lock the current input mode of the keyboard when this option is enabled. If it is disabled, the keyboard will be reset to its standard mode (alpha-numeric) with every cell you enter.

Use OpenGL engine

Linux only: When this option is enabled, the software utilizes the OpenGL graphics library. This will increase the responsiveness of the display, so you usually want to keep this option turned on.

Note: On systems with an outdated or faulty OpenGL installation, you may experience rendering issues within the application. This depends on your individual system configuration and especially the graphics driver used. In this case, turn this option off and restart the application.

Also, the application checks for OpenGL support at startup and will automatically deactivate this option if any problems are detected.

Use SHM extensions

Linux only: This option is only available if the **Use OpenGL engine** option has been turned *off* (not recommended).

When the SHM extensions are turned on, the application tries to use shared memory to speed up the responsiveness of the display.

Use XIM

Linux only: When this option is enabled, PlanMaker supports the composition of accented characters (à, ô, é, etc.) using "XIM".

For example, with a German keyboard, you can insert the character "ô" by first pressing the ^ key and then pressing the O key.

If you disable this option, composing characters like this is no longer possible.

Note: On some systems, disabling this option improves the responsiveness of the display when you are typing text fast.

Show hidden files and folders

Mac, Linux only: When this option is enabled, file lists in file dialogs (e.g. the **File > Open** menu command) will also display hidden files and folders.

Mouse wheel

Mac, Linux only: If your mouse has a mouse wheel, you can set the scrolling increment for a turn of the wheel either by page (one complete page) or by a certain number of lines.

External applications

Mac, Linux only: This button opens a dialog where you can specify which external applications to start on certain actions. For example, when a PDF file is created, the application specified in the **PDF Viewer** field will be launched to display the result.

Note: You don't *have to* fill out these fields. For all fields that are left empty, your system's default application for the corresponding action will be used. Make changes to this dialog only when you want applications *different* from the default applications to be used. To do so, enter the file name of the corresponding executable (including the entire file path, if necessary).

User-defined font paths

Mac, Linux, and Android only: Here you can specify paths to supplementary fonts for PlanMaker. To do this, enter the subdirectory in which the font files reside. If you want to enter multiple directories, separate them with colons.

PlanMaker can then use these fonts in addition to the fonts available to it from the operating system.

Note: Changes to this setting become effective only after the program is restarted.

Preferences, Fonts tab

The **Fonts** tab in the dialog of the **Tools > Options** menu command allows you to specify which fonts to display in font lists (e.g. in the dialog of the **Format > Character** menu command).

The tab presents a list of all fonts installed on your system. To activate or deactivate a font in the list, click on the checkbox in front of its name. Fonts where you have removed the checkmark are no longer displayed in font lists.

Background information: The fonts installed on your system by default contain several fonts that you will probably never need – for example, fonts that contain solely glyphs for foreign languages that you don't use. If you like, you can hide such fonts as described above.

Use font filtering of the operating system

Windows only: Windows users will additionally find an option named **Use font filtering of the operating system** on this tab. When activated, Windows will automatically hide *all* fonts that contain solely glyphs for foreign languages in font lists.

Document properties

With the **File > Properties** menu command you can make settings that apply only to the current document and are saved with it. These settings are called *document properties*.

The settable document properties are grouped by topic and each group is presented on one of several tabs. For example, if you click on the **Summary** tab, you can enter summary information about the document.

On the next pages, you will find detailed information on each of the individual document properties available.

Document properties, Summary tab

The **Summary** tab in the dialog of the **File > Properties** menu command allows you to enter *summary information* about the current document.

The summary information can include descriptive entries about the document (subject, author, keywords, etc.) that the file manager can use in searches.

For more information, see section [Document summary](#).

Document properties, Colors tab

The **Colors** tab in the dialog of the **File > Properties** menu command allows you to add and edit custom colors for the current document.

When you open a color list – for example, the color list in the Formatting toolbar – you see only a small subset of the more than 16 million colors that are available. This subset is called the *color palette* of the document.

You can modify this color palette at any time. You can add new colors and modify colors you have added. However, the first 24 colors in the palette are default colors than cannot be changed.

Important: Changes in the color palette are saved *in the document*. Thus, you can compose a different color palette for every document.

Adding a color

To add a color to the palette of the current document, do the following:

1. Invoke the menu command **File > Properties** and switch to the **Colors** tab.

Tip: Alternatively, you can gain access to this dialog from any other dialog box that contains a color list. To do this, select the **Define color...** entry in the color list (the last entry).

2. Set the desired color (see the section "Working with the color controls" below).
3. Click on the **New** button.
4. Give the new color whatever name you like and confirm with **OK**.
5. Exit the dialog with **OK**.

PlanMaker now adds the new color to the document's color palette. From now on, it will be available in all dialog boxes that permit color selection.

Changing a color

Note: You can change only those colors that you have added. The first 24 colors in the palette are default colors that cannot be changed.

To change a color, do the following:

1. Invoke the menu command **File > Properties** and switch to the **Colors** tab.
Or: Select the **Define color...** entry in any color list.
2. Select the color to be changed from the **Color palette** list.
3. Make the desired changes (see the section "Working with the color controls" below).
4. Click on **Change**.

The color is now changed for the current document.

Deleting or renaming a color

You can delete or rename user-defined colors at any time. To do this, invoke the colors dialog, select a color from the **Color palette** list, and click the **Delete** or **Rename** button.

Working with the color controls

The controls in the colors dialog allow you to set colors in a number of different ways. All these ways lead to the same results – just choose the method that suits you the best:

■ Using the color field and luminance slider

Setting colors is easiest when you use the large color field and the luminance slider to its right. The color field presents all the available hues in all available saturations, while the luminance slider next to it provides a means of varying the luminance.

To set a color, first click on the desired color in the large color field. Then click on the desired luminance in the luminance slider.

■ Using the hue, saturation and luminance controls

Alternatively you can set colors with the controls labeled **Hue**, **Sat** (saturation) and **Lum** (luminance). Values between 0 and 240 are allowed for each.

■ Using the Red, Green and Blue controls

Colors can also be specified by their red, green and blue components. The controls labeled **Red**, **Green** and **Blue** are provided for this purpose. Here, values between 0 and 255 are allowed.

■ Entering the hex code of a color

Additionally, you can specify a color by entering its hex code (like in the HTML code for web pages) into the edit control labeled with a # sign.

The hex code for colors consists of 3 two-digit hexadecimal values, standing for red, green, and blue (RRGGBB). For example, 00FF00 represents pure green.

Document properties, Statistics tab

The **Statistics** tab in the dialog of the **File > Properties** menu command displays statistical information about the current document:

- The **Cells** section displays how many cells are filled with text, numbers, formulas, etc.
- The **General** section displays the number of worksheets and the number of pages.
- The **Objects** section displays the number of objects (charts, pictures, etc.) in the current documents.
- The **Actions** section displays when the document has been created, saved, and printed.

Document properties, Options tab

The **Options** tab in the dialog of the **File > Properties** menu command contains common settings for the current document:

"Text frames" group box

- **Tab width**
Determines the tab width for text entered in text frames.

"Cell contents" group box

- **Syntax highlighting**
If this option is checked, cells will be colorized according to their content.
Equivalent to the **View > Syntax highlighting** menu command (see section [Syntax highlighting](#)).
- **Show formulas**
If this option is checked, cells containing a calculation will display the formula instead of the result.
Equivalent to the **View > Show formulas** menu command (see section [Displaying formulas instead of results](#)).
- **Protection indicator**
If this option is checked, a green triangle will be displayed in all unprotected cells when sheet protection is activated. See also section [Sheet protection](#).

- **Hyphenation**

If this option is checked, cells where the option **Wrap text** is activated (using the **Format > Cell** menu command) will be hyphenated. See also section [Hyphenation](#).

"Comments" group box

- **Show indicators**

If this option is checked, a yellow triangle is displayed in cells that contain a comment. See also section [Inserting comments](#).

- **Always show comments**

Normally, comments are displayed only when you point with your mouse to a cell that contains a comment. If you check this option, all comments in the current document will be displayed permanently.

"Decimal point after input" group box

- **Move by ... decimals**

If this option is checked, numbers entered in cells will be shifted by the specified number of decimal places.

This is helpful if, for example, many numbers with two decimal places have to be entered. If this option is set to 2 and the number 42 is entered, it will be converted to 0.42. If 234 is entered, it will be converted to 2.34. The decimal points do not have to be entered manually.

"Window" group box

- **Vertical scrollbar**

If this option is checked, a vertical scrollbar is displayed in the document window.

- **Horizontal scrollbar**

If this option is checked, a horizontal scrollbar is displayed in the document window.

- **Sheet tabs**

If this option is checked, the *worksheet register* with tabs for each worksheet is displayed below the document. These tabs can be used for switching between worksheets and creating/managing worksheets.

"Objects" group box

- **Guidelines for text frames**

If this option is checked, non-printing border lines are displayed around text frames. These lines make it easier to determine and change the position/size of text frames.

- **Show hidden objects**

As described in the section [Hiding objects](#), you can make inserted objects invisible on the screen.

If you enable this option, any object whose **Visible** property has been disabled becomes visible on the screen again.

Default currency

Use this option to change the default currency of the current document.

Note: Normally, this option should be set to **System default**. This will cause PlanMaker to use your system's default currency.

Setting this option to a different currency has the following consequence:

Whenever PlanMaker *automatically* applies the **Currency** number format to a cell (for example, because it uses an arithmetic function that returns a monetary value), the currency chosen here will be used instead of the system's default currency.

"Compatibility" button

This button provides access to settings that affect functions internal to the program, in order to improve compatibility with documents created in older versions of PlanMaker or in Microsoft Excel. These options are set automatically when such a document is opened and normally should not be changed.

Document properties, Calculate tab

The **Calculate** tab in the dialog of the **File > Properties** menu command contains document-specific settings related to calculations:

"Recalculation" group box

Determines if the calculations in the current document should be kept up-to-date automatically:

- **Recalc automatically**

If this option is enabled, calculations are updated automatically when the content of a cell is changed.

This is the default setting. It guarantees that all calculations are up-to-date.

- **Recalc only before ...**

If this option is enabled, calculations will be updated only when **saving** or **printing** the document, or when **copying** or cutting cells.

If all of the above options are deactivated, calculations will no longer be updated.

Hint: You can instruct PlanMaker to update all calculations by choosing the **Tools > Recalculate** menu command at any time.

"External references" group box

These options are related to *external* cell references (i.e. cell references that refer to cells in a different file). For details, see the section [External cell references](#).

Options available:

- **Update data on opening**

Lets you choose if all external cell references in a document should be updated (once) when the document is opened. Options available:

Always: When the document is opened, update its external references.

Never: When the document is opened, *do not* update its external references.

Ask user: When the document is opened, ask the user if external references should be updated.

- **Save external data in document**

If this option is activated, PlanMaker saves a copy of all values returned by external cell references in the document. If the file for an external reference is missing when the external reference is updated, the value last stored will still be displayed.

If you turn this option off, PlanMaker instead displays an error value when you update an external reference while the corresponding file cannot be accessed.

"Rounding" group box

Checking these options increases the accuracy of calculations.

Since computers use a different numeral system than humans, some calculations may, in very rare cases, lead to very small rounding errors. This issue is not PlanMaker-specific but affects practically all computer applications.

However, PlanMaker has two options that, when activated, almost eliminate such rounding problems:

- If **Round final result** is checked, PlanMaker automatically rounds the final result of each calculation to 15 decimal places.
- If **Round intermediate results** is checked, PlanMaker also rounds any intermediate result within a calculation to 15 places.

The first option reduces the probability of receiving a rounding error significantly; the second option reduces it even more. However, the disadvantage of checking these options is that the time required to recalculate the document increases.

A classical example for such rounding errors:

If these options are deactivated, the formula $(0.1+0.2-0.3)=0$ returns FALSE, though TRUE would be the correct result. If both options are activated, the calculation returns the correct result.

- A third option is **Precision as displayed**: If you activate this option, all values are taken over as they are displayed to you after rounding to decimal places. The entered values are reduced to the decimal places set in the cell options for the number format.

An example:

You have the sum of $2.3 + 2.4$. The exact result is 4.7, but you decide not to display the decimal places after the decimal point. Therefore, you set the decimal places in the cell options to 0. The table shows 2 + 2 now.

Without activating the option *Precision as displayed*: You get the result 5 (because the values $2.3 + 2.4$ still exist in the background and are rounded to 5). You can also continue to calculate with the exact result 4.7.

By activating the option *Precision as displayed*: You get the result 4 (because only the values $2 + 2$ exist, exactly as they are displayed in the cell). However, the exact result 4.7 has been lost for further calculation.

Note on the *Precision as displayed* option: For longer decimal numbers than the decimal places that you have set for the number format in the cell options, the original, more accurate values are permanently lost. You should therefore be sure that you want to use this option in your calculation.

"Charts" group box

Like calculations, charts are updated automatically when the content of any cell changes. To disable this feature, uncheck the **Update automatically** option.

Hint: You can instruct PlanMaker to update all charts in the current document by choosing the **Tools > Update charts** menu command at any time.

"Iterations" group box

This option affects only cells containing a *circular reference*. For example, if cell A1 contains the formula $=A1*2$, this is called a circular reference, because the calculation in cell A1 refers to cell A1 itself.

If the **Use iterations** option is checked, such calculations are repeated until a) the number of **Maximum iterations** is exceeded, or b) the difference between the current result and the previous result of the iteration is less than **Maximum change**.

By default, this option is not checked.

Note: Unless you actually use circular references in calculations on purpose, this option should *not* be checked, since it significantly increases the time required to recalculate the document.

Document properties, Protection tab

The **Protection** tab in the dialog of the **File > Properties** menu command allows you to apply *document protection* to the current document.

Opening and/or saving a protected document is possible only following the entry of a correct password. Documents with read protection are also encrypted, so that they cannot be examined with programs other than PlanMaker.

You will find information about this topic in chapter [Document protection](#).

Document properties, Fonts tab

The **Fonts** tab in the dialog of the **File > Properties** menu command displays a list of all fonts used in the current document.

The list is divided into fonts that are available on the current device – and fonts that are not available (i.e. not installed).

Worksheet properties

To modify the *worksheet properties*, use the **Worksheet > Properties** menu command. These settings affect the current *worksheet* only.

Options available:

- **Row headers**

Determines whether row headers are displayed in the worksheet.

Row headers are buttons labeled with the row number, displayed to the left of the worksheet.

- **Column headers**

Determines whether column headers are displayed in the worksheet.

Column headers are buttons labeled with the column number, displayed above the worksheet.

Hint: Alternatively, row and column headers can be turned on/off using the **View > Row & column headers** menu command.

- **Page breaks**

Determines whether dark gray lines indicating the location of page breaks are displayed in the spreadsheet.

- **Show zero values**

A cell contains a *zero value* when it contains either the number 0 (zero) or a calculation that returns zero.

If this option is enabled, the number "0" will be displayed in such cells as usual. If you disable it, nothing will be displayed there.

- **Gridlines**

Determines whether gridlines are displayed between cells on-screen. Also, you can change the color of these lines as desired.

Hint: By default, gridlines do not appear in printouts. To include gridlines in a printout, choose the menu command **File > Page setup**, switch to the **Options** tab, and check the **Gridlines** option.

- **Sheet tab**

The *worksheet register* at the bottom of the document window displays tabs for each worksheet in the document.

With this option, you can change the **color** of the tab for the current worksheet.

- **Background**

When you activate the **Alternating shade** option, alternating shading is applied to the lines of the table: Odd lines are shaded as specified with the **Shading 1** button, even lines are shaded as specified with the **Shading 2** button.

- **Sheet direction**

For tables in *Arabic* script, you can change the direction of the worksheet to right-to-left here.

Doing this will reverse the horizontal direction of the worksheet – so that the cell A1 is no longer in the top left corner but in the top right corner.

See also chapter [Working with Arabic text](#).

Customizing the document display

This section provides information on how to adjust the way the document appears on the screen:

- [Zoom level](#)

There are several zoom commands that allow you to change the zoom level of a worksheet.

- [Full screen view](#)

In *full screen* view mode, PlanMaker maximizes its program window and hides all toolbars in order to display as much of the document as possible. To enter this mode, use the **View > Full screen** menu command.

See the following pages for detailed information.

Zoom level

The zoom level can be set individually for each worksheet.

Choose the menu command **View > Actual size** to display the worksheet in its original size.

Choose the menu command **View > Zoom level** to set any other zoom level:

Zoom level	Explanation
Fit to selection	Zooms in to the current selection as far as possible
Previous zoom	Restores the previous zoom level
50%, 75%, etc.	Sets the zoom level to the desired level

Alternatively, custom values can be entered into the input box (50 to 400 percent).

Tip: Using the zoom slider

You can also use the zoom slider at the bottom right of the screen to modify the zoom level.



To change the zoom level, either drag the slider with your mouse, or click on the minus icon or the plus icon.

Tip: And when you click on the percent value displayed to the right of the slider, the dialog of the **View > Zoom level** command mentioned above will open.

Full screen view

In *full screen* view mode, PlanMaker maximizes its program window and hides all toolbars in order to display as much of the document content as possible.

To enter this mode, use the **View > Full screen** menu command.

To exit it, choose the **View > Full Screen** menu command again or press the **Esc** key.

Using the toolbar of the full screen view

When you activate the full screen view mode, an additional toolbar appears on the screen.



The "Fullscreen" toolbar

The icons in this toolbar have the following functions (from left to right):

- Show/hide menu bar
- Show/hide side bar
- Enter/exit "Drag sheet" mode

If this mode is activated, you can scroll your document using the mouse. Simply click into the document and drag the mouse pointer into the desired direction (with the mouse button still held down).

Note: Selecting cells, text or objects is not possible in this mode.

To exit the "Drag sheet" mode, click this button once again.

- A click on the **Close** button leaves full screen mode.

Customizing toolbars

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use **classic menus and toolbars**. (Information on customizing the **ribbon** can be found in the section [Customizing the ribbon](#).)

Hint: You can switch the user interface between *ribbon* and *classic menus and toolbars* at any time. To do this, invoke the menu command **Tools > Options** (or, in the ribbon, the command **File > Options**). In the dialog, switch to the **Appearance** tab and click on the **User Interface** button. A dialog box appears in which you can select the type of user interface you prefer.

In this section you will learn how to configure the program's *toolbars* (Standard toolbar, Formatting toolbar, etc.) using the **View > Toolbars** menu command and how to customize the icons displayed on them using the **Tools > Customize** command.



A toolbar (here: the Standard toolbar)

Topics covered in this section:

- [Displaying and hiding toolbars](#)
- [Positioning toolbars on the screen](#)
- [Managing toolbars](#) (creating, deleting, renaming, or resetting toolbars)
- [Customizing toolbar icons](#) (adding, removing or repositioning icons)
- [Using the toolbar menu](#) (for quick access to the features listed above)

See the following pages for details.

Displaying and hiding toolbars

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use **classic menus and toolbars**. (Information on customizing the **ribbon** can be found in the section [Customizing the ribbon](#).)

You can enable or disable individual toolbars at any time.

Proceed as follows:

1. Invoke the **View > Toolbars** menu command.
2. Click on the checkbox in front of a toolbar's name to enable or disable it.
3. Exit the dialog box with **Close**.

The toolbars you have checked or unchecked are now enabled or disabled.

Tip: There is a faster way to do this: When you click on any toolbar with the *right* mouse button, a list of all available toolbars is displayed. To enable or disable a toolbar, click on the corresponding list entry.

Visible in mode...

Some toolbars are visible only in particular situations. The Picture toolbar, for example, appears only when you select a picture.

The **Visible in mode** option controls this behavior. With it, you can specify when a toolbar will be visible, for example:

Option	Meaning
All modes	The selected toolbar is always visible (provided that it is not disabled).
Edit mode	The toolbar is visible only in normal <i>Edit mode</i> , and not in Object mode (see also section Object mode). Example: the Formatting toolbar
Object mode	The toolbar is visible only in <i>Object mode</i> and not in normal Edit mode (see also section Object mode). Example: the Object toolbar
Chart	The toolbar appears only when a <i>chart</i> is selected. Example: the Chart toolbar
Outline	The toolbar appears only if the current worksheet contains an <i>outline</i> (also see section Outliner). Example: the Outline toolbar
Picture	The toolbar appears only when a picture is selected. Example: the Picture toolbar

To change the setting for one of the toolbars, invoke the menu command **View > Toolbars**, select the toolbar in the list, and choose the desired option for **Visible in mode**.

Note: Normally, it does not make sense to change this setting for any of the default toolbars (Standard toolbar, Formatting toolbar, etc.). These options are primarily meant for user-defined toolbars.

Positioning toolbars on the screen

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use **classic menus and toolbars**. (Information on customizing the **ribbon** can be found in the section [Customizing the ribbon](#).)

You change the position of toolbars to your liking. To do this, use one of the following procedures:

Changing the position with the **View > Toolbars** command

The position of a toolbar can be changed with the help of the **View > Toolbars** menu command. Proceed as follows:

1. Invoke the **View > Toolbars** menu command.
2. Select the toolbar you want to move in the **Toolbars** list.
3. Select the desired position for the toolbar in the **Position** list.

Note: If you choose the **Floating** option, the toolbar icons are displayed in a window that can be moved or sized just like an application window.

Changing the position with the mouse

Some toolbars can also be repositioned with the mouse. Proceed as follows:

1. Position the mouse pointer over an *empty* area of the toolbar.
2. Press and hold the left mouse button.
3. While still holding the mouse button down, drag the toolbar to the desired position.
4. Release the mouse button to place the toolbar at the new position.

Note: By default, most toolbars are *locked* against moving with the mouse, in order to protect them from being moved accidentally. To remove the lock, invoke the menu command **View > Toolbars**, select the toolbar of interest, and disable the **Locked** option.

Hint: A positioning aid is active while dragging a toolbar: When you drag the toolbar near one of the edges of the program window, it jumps automatically to that edge. If you leave the toolbar at the top edge of the window, for example, the result is the same as if you selected the **Top** position in the dialog box of the **View > Toolbars** menu command.

Managing toolbars

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use **classic menus and toolbars**. (Information on customizing the **ribbon** can be found in the section [Customizing the ribbon](#).)

You can create new toolbars, delete, and rename existing toolbars, etc. To perform these tasks, use the buttons in the dialog box for the **View > Toolbars** menu command.

Creating new toolbars

You can create your own toolbars whenever you wish.

For example, if you frequently need to use commands in the **Windows** menu that are not present in the Standard toolbar, it might be worthwhile for you to set up your own toolbar for them.

You create a new toolbar as follows:

1. Click the **New** button (in the dialog box of the **View > Toolbars** menu command).
2. A dialog box appears and prompts you to enter a name for the new toolbar – "My toolbar" for example. Enter a name and confirm with **OK**.
3. The new toolbar is set up. Close the dialog box or click on the **Customize** button to add icons to the toolbar. You can read more about this in the section entitled [Customizing toolbar icons](#).

Customizing the icons on a toolbar

You can edit the icons on toolbars with the **Customize** button. Information about this is provided in the next section.

Deleting toolbars

The **Delete** button allows you to delete a user-created toolbar, as follows:

1. Select the toolbar to be deleted in the list.
2. Click on the **Delete** button.

Note: You can delete only toolbars that you have created yourself. The default toolbars (Standard toolbar, Formatting toolbar, etc.) cannot be removed.

However, you can always disable toolbars that you do not need at the moment (see section [Displaying and hiding toolbars](#)).

Renaming toolbars

The **Rename** button can be used to rename a user-created toolbar, as follows:

1. Select the toolbar of interest in the list.
2. Click on the **Rename** button.
3. Type in a new name and confirm with **OK**.

Note: You can rename only toolbars that you have created yourself. The default toolbars (Standard toolbar, Formatting toolbar, etc.) cannot be renamed.

Resetting toolbars

You can undo any changes you have made to one of the default toolbars by selecting the toolbar in the **View > Toolbars** dialog box and clicking **Reset**.

When you do that, the toolbar is reset to its default icons. In addition, the default settings for **Visible in mode** and **Position** are restored.

Note: This command is applicable only to the default toolbars (Standard toolbar, Formatting toolbar, etc.), and not to user-created toolbars.

Resetting all toolbars

To reset *all* toolbars at once, click on the **Reset All** button.

Note: This command only resets the default toolbars. User-created toolbars will not be touched.

Customizing toolbar icons

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use **classic menus and toolbars**. (Information on customizing the **ribbon** can be found in the section [Customizing the ribbon](#).)

The **Tools > Customize** menu command allows you to customize the icons contained in a toolbar. Among other things, you can add, remove and reposition icons.

Proceed as follows:

1. Invoke the **Tools > Customize** menu command.
2. Use one of the procedures described below to add, remove, or reposition icons.
3. Exit the dialog with **Close**.

Tip: This command can also be invoked by double-clicking on an *empty* area in any of the toolbars.

When you invoke this command, a dialog box appears.

This dialog contains two list boxes:

- **Left list: all available commands**

The *left* list shows all commands available in the program.

Tip: You can use the **Categories** dropdown list (displayed above the list) to filter the list for a specific category (for example, show only commands of the "File" category).

You can also search the list by typing something in the **Quicksearch** field.

■ Right list: icons contained in the currently selected toolbar

The *right* list displays the icons contained in the currently selected toolbar.

You can choose which toolbar to display here using the **Customize** dropdown list (displayed above the right list).

The following actions can be performed in this dialog box:

Adding an icon

To add an icon to a toolbar, follow these steps (in the **Tools > Customize** dialog box):

1. Select the toolbar to which you want to add an icon in the **Customize** dropdown list (displayed above the right list).

The right list now displays all icons that are currently contained in the selected toolbar.

2. Optional: In the *right* list, select the icon after which the new icon is to be inserted.
3. Select the icon to be added from the *left* list.
4. Click on the >> button (displayed between the lists).

The icon is now added to the toolbar.

Tip: Alternatively, you can add an icon to a toolbar as follows: Invoke the **Tools > Customize** command. With your mouse, simply drag the icon out of the dialog window and drop it at the desired position in the toolbar. (Do this in the toolbar itself, not in the dialog!) Of course this procedure only works when the toolbar is currently visible on the screen.

Removing an icon

To remove an icon from a toolbar, follow these steps (in the dialog box):

1. Select the toolbar of interest in the **Customize** dropdown list (displayed above the right list).
2. Select the icon to be removed from the right list.
3. Click on the << button (displayed between the lists).

The icon is now removed from the toolbar.

Tip: Alternatively, you can remove an icon from a toolbar as follows: Invoke the **Tools > Customize** command. Then simply drag the icon out of the toolbar with your mouse and drop it somewhere outside the toolbar, for example in the document. (Do this in the toolbar itself, not in the dialog!)

Moving an icon

To move a toolbar icon to a different position, follow these steps (in the dialog box):

1. Select the toolbar of interest in the **Customize** dropdown list.

2. Select the icon to be moved from the right list.
3. Use the up or down arrow buttons (displayed left of the list) to change the icon's position within the toolbar.

Note: If you want to move an icon to a different toolbar, you must first remove it from its current toolbar and then add it to the other toolbar.

Tip 1: Alternatively, you can move an icon as follows: Invoke the **Tools > Customize** command. Then drag the icon to the desired position with your mouse (in the toolbar itself, not in the dialog!). With this method, you can even move an icon from one toolbar to another.

Tip 2: By the way, moving icons works even if this dialog box is not open: When you hold down the **Alt** key, you can move a toolbar icon by clicking on it and then (with the mouse button still pressed) dragging it to the desired position.

Inserting a separator line

To add a separator line to the left of a toolbar icon, follow these steps:

1. Select the toolbar of interest in the **Customize** dropdown list.
2. In the right list, select the icon in front of which the separator line is to be inserted.
3. Click the **New Separator** button (displayed below the right list).

The separator line is now inserted.

Tip: Alternatively, you can also use the following procedure: Invoke the **Tools > Customize** command. Then, in order to insert a separator to the left of a toolbar icon, simply drag this icon a small distance to the right using your mouse. (Do this in the toolbar itself, not in the dialog!)

Removing a separator line

To remove a separator line from a toolbar, follow these steps (in the dialog box):

1. Select the toolbar of interest in the **Customize** dropdown list.
2. Select the separator line to be removed from the right list.
3. Click on the << button (displayed between the lists).

The separator line is now removed from the toolbar.

Tip: Alternatively, you can remove an icon from a toolbar as follows: Invoke the **Tools > Customize** command. If you now drag the icon that is to the immediate right of the separator a little bit to the left, the separator will be removed. (Do this in the toolbar itself, not in the dialog!)

Assigning keyboard shortcuts

When you click on the **Shortcut keys** button in the dialog, the dialog box expands to include an additional section called **Shortcut**. This section can be used to edit the keyboard shortcuts for commands.

In short: You can assign a keyboard shortcut of your choice to any command here: Select the command in either of the two lists, click into the **Please press accelerator** field and then press the key combination with which you want to call this command in the future.

For details, refer to the section [Customizing keyboard shortcuts](#).

Managing toolbars

The dialog box for the **Tools > Customize** command also provides buttons for managing toolbars, as follows:

- **New**
Creates a new, empty toolbar.
- **Rename**
Renames the toolbar selected in the **Customize** list (only available for user-created toolbars).
- **Reset**
Resets the toolbar selected in the **Customize** list back to its factory defaults.
- **Delete**
Deletes the toolbar selected in the **Customize** list (only available for user-created toolbars).
- **Reset all** (displayed below the right list)
Resets all toolbars back to their factory defaults.

Further options for managing and configuring toolbars are available in the dialog box of the **View > Toolbars** menu command (see section [Managing toolbars](#)).

Using the toolbar menu

"Classic menus and toolbars" only: This section is relevant only for users who have configured the program to use **classic menus and toolbars**. (Information on customizing the **ribbon** can be found in the section [Customizing the ribbon](#).)

Some toolbars end with a double arrow », as shown in the following picture:



When you click on this double arrow, the *toolbar menu* will open.

This menu gives you quick access to all the toolbar related commands mentioned in the previous sections. In detail, the toolbar menu includes the following commands:

- **Add/remove buttons**

This command opens a list of all icons available for the toolbar. When you click on one of its entries, the corresponding icon will instantaneously be activated or deactivated in the toolbar.

(Note: This command is meant for quickly turning icons on or off. If you want to perform further customizations to the icons displayed in a toolbar, follow the instructions given in the section [Customizing toolbar icons](#).)

- **Position**

Use this command to change the position of a toolbar. Available options: top, bottom, left, right, or floating (in a little window that can be moved and resized with the mouse).

- **Toolbars**

Invokes the **View > Toolbars** menu command that allows you to activate or deactivate, configure, and manage toolbars.

See section [Customizing toolbars](#).

- **Customize**

Invokes the **Tools > Customize** menu command that allows you to edit the icons on a toolbar (add, remove, move icons).

See section [Customizing toolbar icons](#).

- **Reset this toolbar**

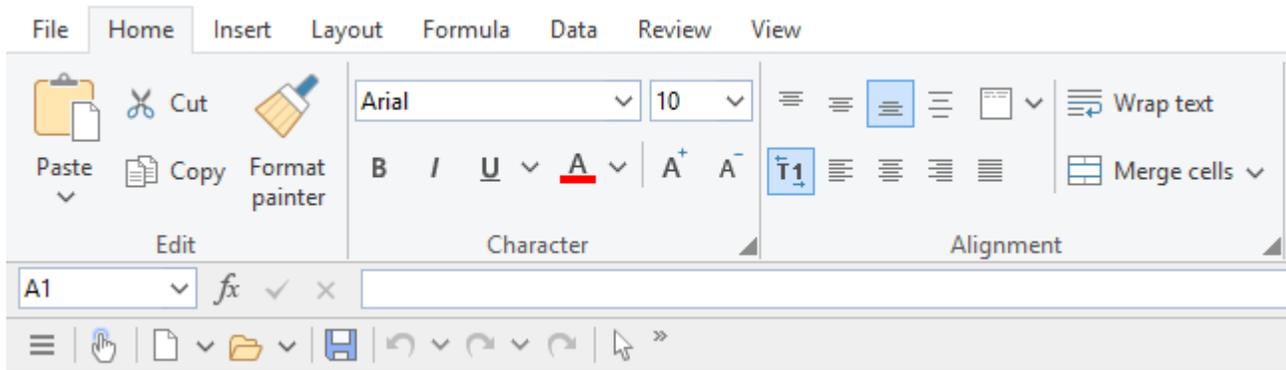
Resets the toolbar. All customizations made to the toolbar's icons and settings will be reverted.

Customizing the ribbon

"Ribbons" only: This section is relevant only for users who have configured the program to use the **ribbon** interface. (Information on customizing the **classic menus and toolbars** can be found in the section [Customizing toolbars](#).)

Hint: You can switch the user interface between *ribbon* and *classic menus and toolbars* at any time. To do this, invoke the menu command **Tools > Options** (or, in the ribbon, the command **File > Options**). In the dialog, switch to the **Appearance** tab and click on the **User Interface** button. A dialog box appears in which you can select the type of user interface you prefer.

In this section you will learn how to configure and customize the *ribbon* (e.g. by adding additional icons).



The ribbon and the Quick Access Toolbar (at the bottom)

Topics covered in this section:

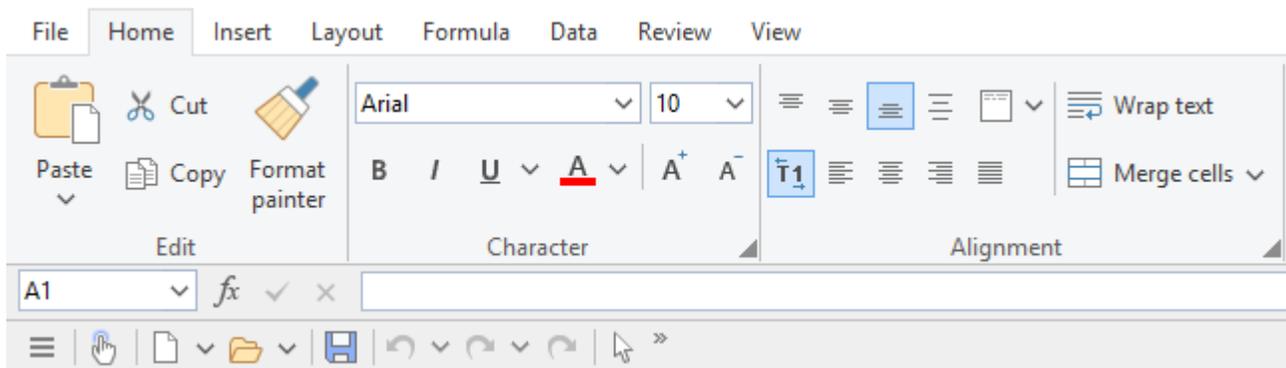
- [Showing and hiding the ribbon](#)
- [Changing the position of the Quick Access Toolbar](#)
- [Customizing icons on the ribbon](#)
- [Customizing icons on the Quick Access Toolbar](#)

See the following pages for details.

Showing and hiding the ribbon

"Ribbons" only: This section is relevant only for users who have configured the program to use the **ribbon** interface. (Information on customizing the **classic menus and toolbars** can be found in the section [Customizing toolbars](#).)

The ribbon is usually fully visible, as in the following picture:



The ribbon and the Quick Access Toolbar (at the bottom)

However, you can hide the ribbon at any time by *minimizing* it. This is useful if you want to save as much space on the screen as possible for displaying the document.

Proceed as follows:

1. In the ribbon, click the **Customize** icon on the **File** tab.
2. A menu opens. There you will find an option called **Minimized ribbon**, which can be turned on or off by clicking on it. (A tick appears in front of the option if it is currently on.)

When you enable this option, the ribbon is minimized – only its tabs will still be visible.

Tip: Alternatively, you can minimize the ribbon by clicking on the  icon in the upper right corner of the program window. Click on the icon again to bring the ribbon back in its full size.

In addition, the key combination **Ctrl+F1** (Mac: **Cmd+F1**) is available for minimizing/restoring the ribbon.

Working with the ribbon minimized

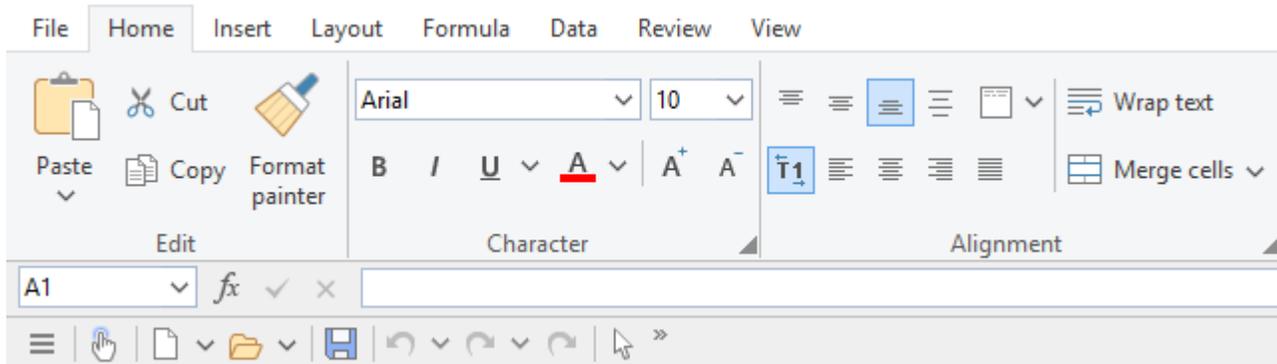
When the ribbon is minimized, you can operate it as follows:

- When you click on one of the tabs of the minimized ribbon, the ribbon will *temporarily* become fully visible again and display the corresponding tab. As soon as you trigger a command (e. g. click on the icon for a command) the ribbon will be minimized again.
- When you *double-click* on one of the tabs, the ribbon will be *permanently* visible again.
- As mentioned above, you can also use the  icon in the upper right corner of the program window to enable/disable minimizing the ribbon.

Changing the position of the Quick Access Toolbar

"Ribbons" only: This section is relevant only for users who have configured the program to use the **ribbon** interface. (Information on customizing the **classic menus and toolbars** can be found in the section [Customizing toolbars](#).)

The *Quick Access Toolbar* is displayed below the ribbon. It provides a selection of the most frequently used commands.



The ribbon and the *Quick Access Toolbar* (at the bottom)

The Quick Access Toolbar can either share the space with the documents tabs – or reside in its own toolbar. To change this, proceed as follows:

1. In the ribbon, click the **Customize** icon in the **File** tab.
2. A menu opens which contains either of the following two commands:

Show Quick Access Toolbar as separate toolbar: By default, the Quick Access Toolbar is displayed in the bar that also contains the document tabs. When you invoke this command, the Quick Access Toolbar moves to its own toolbar instead.

Show Quick Access Toolbar beside the document tabs: This command does exactly the opposite: If the Quick Access Toolbar is currently displayed as a separate toolbar, invoking this command causes the Quick Access Toolbar to move back to the bar containing the document tabs.

Customizing icons on the ribbon

"Ribbons" only: This section is relevant only for users who have configured the program to use the **ribbon** interface. (Information on customizing the **classic menus and toolbars** can be found in the section [Customizing toolbars](#).)

The ribbon command **File > Customize > Customize Ribbon** allows you to customize the ribbon to a certain extent. Primarily this command is intended to add *additional* icons, sections or even complete tabs to the ribbon.

Important: The icons in the *predefined* sections on the ribbon can not be modified. In the existing sections, you can neither add icons nor remove icons nor change their order. Only adding icons in a *new* section at the end of a ribbon tab (or alternatively in a completely new tab) is allowed.

To customize the ribbon, proceed as follows:

1. Invoke the ribbon command **File > Customize > Customize ribbon**.
2. Use one of the procedures described below to edit the icons on a ribbon tab.
3. Exit the dialog with **Close**.

Tip: This command can also be invoked by double-clicking on any *empty* area inside the ribbon.

When you invoke this command, a dialog box appears.

This dialog contains two list boxes:

- **Left list: all available commands**

The *left* list shows all commands available in the program.

Tip: You can use the **Categories** dropdown list (displayed above the list) to filter the list for a specific category (for example, show only commands of the "File" category).

You can also search the list by typing something in the **Quicksearch** field.

■ Right list: icons contained in the currently ribbon tab

The *right* list displays the icons contained in the currently selected tab of the ribbon.

You can choose which tab to display here using the **Customize** dropdown list (displayed above the right list).

The following actions can be performed in the dialog box:

Adding an icon

Note: You can add icons only in sections that you created yourself (or on a completely new tab). It is not possible to insert an icon within the predefined sections.

To add an icon to a ribbon tab, follow these steps (in the dialog box of the ribbon command **File > Customize > Customize ribbon**):

1. Select the ribbon tab to which you want to add an icon in the **Customize** dropdown list (displayed above the right list).

The right list now displays all icons that are currently contained in the selected tab.

2. Select the icon to be added from the *left* list.
3. Click on the >> button (displayed between the lists).

The icon is now added to the selected ribbon tab. If necessary, the program automatically creates a new section at the end of the tab.

Removing an icon

Note: You can only remove icons that you added to the ribbon yourself. It is not possible to delete any of the predefined icons.

To remove an icon from a ribbon tab, follow these steps (in the dialog box):

1. Select the ribbon tab of interest in the **Customize** dropdown list.
2. Select the icon to be removed from the right list.
3. Click on the << button (displayed between the lists).

The icon is now removed from the ribbon tab.

Moving an icon

Note: You can only move icons that you added to the ribbon yourself. It is not possible to change the position of any of the predefined icons.

To move an icon within a ribbon tab, follow these steps (in the dialog box):

1. Select the ribbon tab of interest in the **Customize** dropdown list.

2. Select the icon to be moved from the right list.
3. Use the up or down arrow buttons (displayed left of the list) to change the icon's position within the ribbon tab.

Note: If you want to move an icon to a different ribbon tab, you must first remove it from its current tab and then add it to the other tab.

Adding a new section

Note: New sections can be added only *after* the predefined sections. It is not possible to insert a section between the predefined sections.

To add a new section to a ribbon tab, follow these steps (in the dialog box):

1. Select the ribbon tab of interest in the **Customize** dropdown list.
2. Click on the **New section** button (displayed below the right list).

The new section is now added (appended) to the ribbon tab.

Renaming a section

Note: You can only rename sections that you added yourself. It is not possible to rename any of the predefined sections.

To rename a user-created section on a ribbon tab, follow these steps (in the dialog box):

1. Select the ribbon tab of interest in the **Customize** dropdown list.
2. Select the section to be renamed in the right list.
3. Click on the **Rename** button (displayed below the right list).
4. Type in a new name and confirm.

The section is now renamed accordingly.

Removing a section

Note: You can only remove sections that you added yourself. It is not possible to delete any of the predefined sections.

To delete a user-created section on a ribbon tab, follow these steps (in the dialog box):

1. Select the ribbon tab of interest in the **Customize** dropdown list.
2. Select the section to be removed in the right list.
3. Click on the << button (displayed between the lists).

The section is now removed from the ribbon tab.

Assigning keyboard shortcuts

When you click on the **Shortcut keys** button in the dialog, the dialog box expands to include an additional section called **Shortcut**. This section can be used to edit the keyboard shortcuts for commands.

In short: You can assign a keyboard shortcut of your choice to any command here: Select the command in either of the two lists, click into the **Please press accelerator** field and then press the key combination with which you want to call this command in the future.

For details, refer to the section [Customizing keyboard shortcuts](#).

Managing ribbon tabs

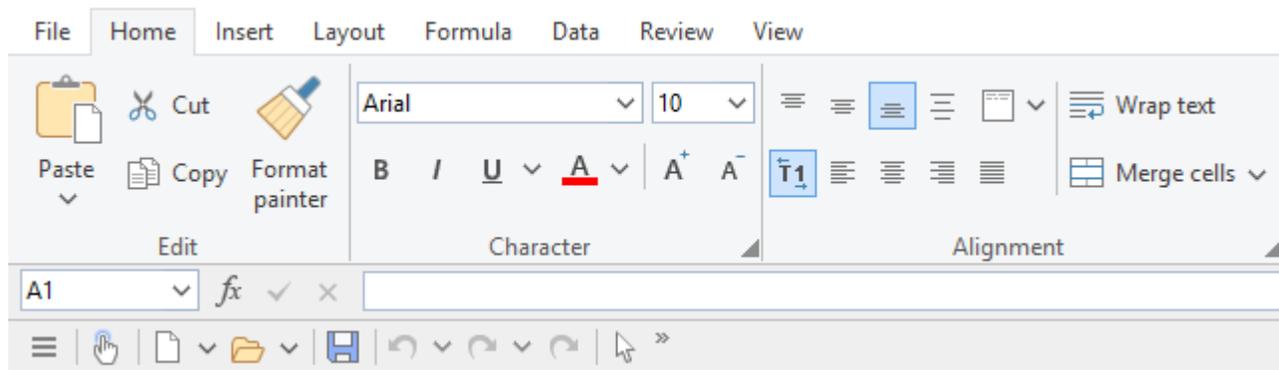
The dialog box for this command also provides buttons for managing ribbon tabs, as follows:

- **New**
Creates a new, empty ribbon tab.
- **Rename**
Renames the tab selected in the **Customize** list (only available for user-created tabs).
- **Reset**
Resets the tab selected in the **Customize** list back to its factory defaults.
- **Delete**
Deletes the tab selected in the **Customize** list (only available for user-created tab).
- **Reset all** (displayed below the right list)
Resets all tabs back to their factory defaults.

Customizing icons on the Quick Access Toolbar

"Ribbons" only: This section is relevant only for users who have configured the program to use the **ribbon** interface. (Information on customizing the **classic menus and toolbars** can be found in the section [Customizing toolbars](#).)

The *Quick Access Toolbar* is displayed below the ribbon. It provides a selection of the most frequently used commands.



The ribbon and the Quick Access Toolbar (at the bottom)

If you wish, you can customize the icons on the Quick Access Toolbar at any time, for example, you can add, remove, and reposition icons.

To do this, invoke the ribbon command **File > Customize > Customize Quick Access Toolbar**. A dialog box for customizing toolbars will appear in which you can make the desired changes.

The Quick Access Toolbar behaves exactly like a classic toolbar. To customize its icons, you can proceed exactly as described in the section [Customizing toolbar icons](#). All explanations given there also apply to the Quick Access Toolbar – except for the section "Managing toolbars".

Creating user-defined toolbar/ribbon icons

You can create *user-defined icons* and add them to a toolbar or to the ribbon. Such icons can be used to start other programs of your choosing.

To set up a user-defined icon, for example, an icon for starting Windows' Notepad application, proceed as follows:

1. Invoke the following command in the menu or ribbon:

Menu: **Tools > Customize**

Ribbon: **File > Customize > Customize Ribbon**

2. In the **Categories** dropdown list, choose the **User** category.
3. Select one of the icons from the **Commands** list.

The first three icons are already assigned to the Windows Calculator, the Windows Character Map, and the Windows Control Panel to serve as examples. Select e.g. the fourth icon for this exercise.

4. Click on the **Edit** button displayed below the list. Another dialog box appears.
5. Enter a short description of the program to be started in the **Description** field. In this example, you could enter "Notepad".
6. Enter the complete path and filename for the program to be started in the **Command line** field, for example, `c:\windows\notepad.exe`.

7. *Optional*: If the program's own icon is not the one you want to use, you can enter the path and name of a different icon file in the **Icon file** field.

Note, however, that toolbars icons are a bit smaller than standard Windows icons.

As soon as you confirm with **OK**, the icon is created.

If you want to add your custom icon to a toolbar or ribbon tab right now, proceed as described in one of the following sections:

- Toolbars: section [Customizing toolbar icons](#)
- Ribbon: section [Customizing icons on the ribbon](#)

Customizing keyboard shortcuts

The most commonly used commands in a program have *keyboard shortcuts*. For example, the command for saving the current document can be invoked very quickly by pressing the key combination **Ctrl+S**.

The predefined keyboard shortcuts can be customized in the dialog box of the menu command **Tools > Customize**. There, you can assign keyboard shortcuts to commands and also change or remove existing shortcuts.

Proceed as follows:

Adding keyboard shortcuts

To assign a keyboard shortcut to a command, perform the following steps:

1. Invoke the following command in the menu or ribbon:

Menu: **Tools > Customize**

Ribbon: **File > Customize > Customize Ribbon**

2. Click on the **Shortcut keys** button.

The dialog box now expands to include an additional section called **Shortcut**. This section can be used to edit the keyboard shortcuts for commands.

3. Select the command to which you want to assign a keyboard shortcut from either the left list or the right list.

The *left* list shows all commands available in the program. (Hint: The **Categories** dropdown list allows you to filter the list by category, and the **Quicksearch** field can be used to search the list).

The *right* list shows only those icons that are contained in the currently selected toolbar or ribbon tab.

4. Once you have selected the desired command, click into the **Please press accelerator** field and press the key combination with which you want to call this command in the future.

Hint: If you make a typing mistake, you can always press the **Backspace** ⌫ key to remove the keyboard shortcut you entered.

5. *Do not forget:* Click on **Add** to assign this shortcut to the command now.
6. Exit the dialog with **Close**.

From now on, you can execute the selected command with the specified key combination.

Editing keyboard shortcuts (remove, change, etc.)

You can edit existing keyboard shortcuts for commands (for example, delete or change them) at any time. Proceed as follows:

1. Invoke the following command in the menu or ribbon:

Menu: **Tools > Customize**

Ribbon: **File > Customize > Customize Ribbon**

2. Click on the **Shortcut keys** button.

The dialog box now expands to include an additional section called **Shortcut**. This section can be used to edit the keyboard shortcuts for commands.

3. Select the command whose keyboard shortcut you want to edit from either the left or the right list.
4. Perform one of the following actions:

Removing shortcuts: The **Current shortcut keys** listbox displays all keyboard shortcuts currently assigned to the selected command. To remove a shortcut, select it from the list and click on **Remove**.

Changing shortcuts: To change the keyboard shortcut for a command, first remove it (as just described) and then assign it a new shortcut (as described at the beginning of this section).

Resetting shortcuts: To reset all keyboard shortcuts for the entire program to their default values, click the **Reset all accelerators** button and confirm. Any changes made to the default keyboard shortcuts are then discarded.

Display a list of all shortcuts: When you click on the **Export** button, a table listing all currently assigned keyboard shortcuts is displayed. The buttons placed next to the table allow you to copy it to the clipboard, for example.

Available keyboard shortcuts

Notice that some of the keystroke combinations that are possible on your keyboard are not allowed as keyboard shortcuts.

As a rule, you should use **alphabetic keys**, **numeric keys** or **function keys** for shortcuts. You can combine them with **Ctrl**, **Alt** and/or the **Shift** key.

You can easily check to see if the key combination you want to use is allowed. Click in the **Please press accelerator** field, and then try to enter your key combination. If it does not appear in the field, it is not allowed.

Some examples of valid keyboard shortcuts include:

- **Ctrl+A**

- **Alt+A** (However, key combinations including the Alt key are not recommended, since they are usually occupied by the main menu entries).
- **Ctrl+Alt+A**
- **Ctrl+Shift+A**
- **Ctrl+Alt+Shift+A**
- **Ctrl+F2**
- etc.

Note: Alphabetic keys by themselves are of course *not* allowed. Thus, you cannot use **A** or **Shift+A** as a shortcut.

Shortcut already assigned: If you press a shortcut that is already assigned, the current assignment will be shown just below the entry field. You should press the **Backspace**⌫ key to delete your shortcut and try a different shortcut. Otherwise, you will overwrite the existing assignment for the shortcut.

Two part shortcuts: You can also use two part shortcuts (in accordance with the WordStar standard), for example, **Ctrl+K+X**. Please note that only shortcuts of the form "Ctrl + letter + letter" are allowed here.

Customizing AutoFill lists

As described in section [Filling cells automatically](#), the **Edit > Fill** menu command can be used to fill a cell range with a repeating values or a sequence of values.

The **Tools > Edit lists** menu command allows you to create custom lists for the **Fill** command.

For example, if you create a list with the content "Red", "Green", and "Blue" and later start a fill operation from a cell that contains the text "Red", PlanMaker will continue the series and fill with Green, Blue, Red, Green, Blue, etc.

To create or modify an AutoFill list, choose the menu command **Tools > Edit lists** and use one of buttons available in the dialog:

- **New** button: [Create a new list](#)
- **Edit** button: [Edit a list](#)
- **Delete** button: [Delete a list](#)
- **Import** button: [Generate a new list from the currently selected cells](#)

See the following pages for detailed information.

Creating a new AutoFill list

To create a new AutoFill list for the **Edit > Fill** menu command:

1. Choose the menu command **Tools > Edit lists**.
2. Click the **New** button.
3. Another dialog appears. Use it to enter the desired list entries. Press the **Enter** ↵ key after each entry to start a new line.
4. Click **OK** to confirm.

Editing AutoFill lists

To edit a user-defined AutoFill list created with the **Edit > Fill** menu command:

1. Choose the menu command **Tools > Edit lists**.
2. Select the desired list.

Note: The predefined sample lists cannot be edited.
3. Click the **Edit** button.
4. Use the resulting dialog to edit the list entries.
5. Click **OK** to confirm.

Deleting AutoFill lists

To delete a user-defined AutoFill list created with the **Edit > Fill** menu command:

1. Choose the menu command **Tools > Edit lists**.
2. Select the desired list.

Note: The predefined sample lists cannot be deleted.
3. Click the **Delete** button.

Importing AutoFill list from cells

If a PlanMaker document contains a cell range whose contents you want to save as an AutoFill list:

1. Select the desired cells.
2. Choose the menu command **Tools > Edit lists**.
3. Click the **Import** button.

PlanMaker reads the contents of the selected cells and creates a new AutoFill list from them. Each cell becomes a list entry.

Installing additional dictionaries

You can install additional dictionaries for the spell-checker whenever needed. Just follow the instructions given in the following sections:

- [Installing additional SoftMaker dictionaries](#)

This section explains how to add additional SoftMaker dictionaries to your installation.

Note: This is only relevant for the **Android** version. When you install SoftMaker Office for **Windows**, **Mac**, or **Linux**, *all* available SoftMaker dictionaries are included already.

- [Installing Hunspell dictionaries](#)

Apart from SoftMaker dictionaries, SoftMaker Office additionally supports the use of *Hunspell* dictionaries. Read this section to learn more.

- [Choosing a different dictionary for a language](#)

In case you have installed more than one dictionary for a certain language (e.g. a SoftMaker dictionary *and* a Hunspell dictionary), you can switch between these dictionaries anytime. Read this section for details.

More information on these topics can be found on the next pages.

Installing additional SoftMaker dictionaries

SoftMaker Office comes with high-quality dictionaries for numerous languages. This section explains how to install dictionaries that are not currently installed:

Windows, Mac and Linux

When you install SoftMaker Office for **Windows, Mac, or Linux**, *all* available SoftMaker dictionaries are included already – so there is no need to add additional SoftMaker dictionaries later.

Android

This is different with the **Android** version: It allows you to download and automatically install SoftMaker dictionaries that are currently not installed from our server whenever needed, free of charge.

Proceed as follows:

1. Launch any of the apps (TextMaker, PlanMaker, or Presentations) on your Android device.
2. Invoke the **Tools > Options** menu command and switch to the **Language** tab.
3. Tap on the **Get more dictionaries** button.
4. A dialog with a list of all available languages opens. To download and install a language, tap on the corresponding download button displayed **at its right**.

When the download has finished, the dictionary is installed and from now on available in any SoftMaker Office application.

Installing Hunspell dictionaries

Apart from SoftMaker's own dictionaries, SoftMaker Office also supports the use of *Hunspell* dictionaries. These dictionaries are available as free downloads. Most of them were created by private users or non-profit organizations.

Hunspell dictionaries are available for very many languages. In case you don't find a SoftMaker dictionary for a certain language, it might be worth checking if a Hunspell dictionary is available for that language.

For a list of all Hunspell dictionaries supported by SoftMaker Office, visit the "Downloads" area of our website www.softmaker.com. You can also download the dictionaries there, free of charge.

To download and install a Hunspell dictionary, proceed as follows:

1. With your web browser, navigate to our homepage www.softmaker.com
2. In the menu of the web page, choose "Downloads", then choose "Dictionaries".
3. Your browser now displays a page presenting a list of all Hunspell dictionaries that SoftMaker Office supports. Download the dictionary of interest.
4. Launch any SoftMaker Office application (TextMaker, PlanMaker, or Presentations).
5. Invoke the **Tools > Options** menu command and switch to the **Language** tab.
6. Click on the **Hunspell dictionaries** button.

7. A dialog showing a list of all languages/dictionaries installed appears. Click on the **Add Hunspell dictionary** button.
8. A file dialog is displayed. Use it to browse to the folder where the downloaded dictionary has been stored.
9. Select the dictionary file from the files list and click on **Open**.

The dictionary will be installed and is from now on available in any SoftMaker Office application.

Choosing a different dictionary for a language

In case you have installed more than one dictionary for a certain language (e.g. a SoftMaker dictionary *and* a Hunspell dictionary), you can switch between these dictionaries anytime. Proceed as follows:

1. Invoke the **Tools > Options** menu command and switch to the **Language** tab.
2. Click on the **Hunspell dictionaries** button.
3. A dialog showing a list of all languages/dictionaries installed appears. First, select the **language** of interest in that list.
4. Then, select the dictionary to use for the chosen language in the **Dictionary** dropdown list. The list can have the following entries:
 - SoftMaker:** The SoftMaker dictionary shipped with SoftMaker Office.
 - Hunspell:** A Hunspell dictionary (free dictionary, see previous section)
5. Confirm with **OK**.

From now on, the spell-checker will use the selected dictionary for the specified language.

Formulas and functions

This chapter provides instructions on working with formulas, including comprehensive descriptions of PlanMaker's arithmetic functions:

- [Formula basics](#)

The first section provides basic information on formulas.

- [Entering formulas](#)

This section provides information on entering formulas in cells.

- [Relative vs. absolute cell references](#)

This section explains the difference between *relative* cell references (like =A1) and *absolute* cell references (like =\$A\$1) in formulas.

- [External cell references](#)

The next section is about *external* cell references in formulas (i.e. cell references that refer to cells in a different file).

- [Error values](#)

If a formula results in an error, an *error value* is displayed instead of the result. This section provides information on error values.

- [Working with arrays](#)

This section provides instructions on working with arrays and array formulas.

- [Working with database functions](#)

This section provides information on database functions such as DCount, DSum, etc.

- [Functions from A to Z](#)

This section contains comprehensive descriptions of PlanMaker's arithmetic functions.

Hint: A short introduction to working with formulas is also provided in chapter "[The PlanMaker Tour](#)".

Formula basics

Formulas can be composed of the following components:

- Fixed values (e.g., numbers or text)
- Cell references (e.g., A1 or D2:D3)

- Arrays (see section [Working with arrays](#))
- Arithmetic operators (e.g., + or -, see section [Operators in formulas](#))
- Arithmetic functions (e.g., SUM)

For example, a formula can look as follows:

```
= 67 + (A3 * Sum(B1:C5))
```

Operators in formulas

Formulas can contain any of the operators listed below.

Please note that operators follow a strict *order of precedence*, which defines the evaluation order of expressions containing operators: Operators with higher precedence are evaluated before operators with lower precedence.

Parentheses can be used to override the order of precedence and force parts of a formula to be evaluated before other parts. For example, 1+2*2 returns 5, since multiplication has precedence over addition. If the formula (1+2)*2 is used instead, the result will be 6, since the parentheses override the order of precedence.

Operators available, listed in order of precedence (top = highest):

1st	Spacebar	Intersection (see also INTERSECTION function)
2nd	%	Percentage
3rd	+	Positive sign (not addition!)
	-	Negative sign (negation)* (not subtraction!)
4th	^	Exponentiation*
5th	*	Multiplication
	/	Division
6th	+	Addition
	-	Subtraction
7th	&	Concatenation (For example, "Plan" & "Maker" returns "PlanMaker")
8th	=	Is equal
	<>	Is not equal
	<	Is less
	>	Is greater
	<=	Is less or equal
	>=	Is greater or equal

* **Note:** To ensure compatibility with Microsoft Excel, the order of precedence for the **exponentiation operator** (^) and the **negation operator** (-) is changed, but mathematically incorrect. For example, the correct mathematical order (first exponentiation, then sign) for the formula -2^2 would lead to the mathematically correct result -4. However, the actual result in PlanMaker (and in Excel) is 4.

Entering formulas

Hint: A short introduction to entering formulas is also provided in the chapter [The PlanMaker Tour](#).

To enter a formula in a cell, use one of the following procedures:

Entering formulas manually

Important: Formulas have to begin with an *equal sign* (=). For example, to calculate 2+2, enter =2+2.

To enter formulas manually, type them in starting with an equal sign. Then, press the **Enter** ↵ key to confirm, or the **Esc** key to abort.

Alternatively, use the following buttons of the Edit toolbar:

- To accept the input, click the  button (identical to pressing the **Enter** ↵ key).
- To cancel the input, click the  button (identical to pressing the **Esc** key).

To edit a formula later, navigate to the cell containing the formula and press the **F2** key. Alternatively, double-click the cell.

Using the mouse to enter formulas

When entering a formula, you can use the mouse to select a single cell or a cell range, and have its address pasted into the formula.

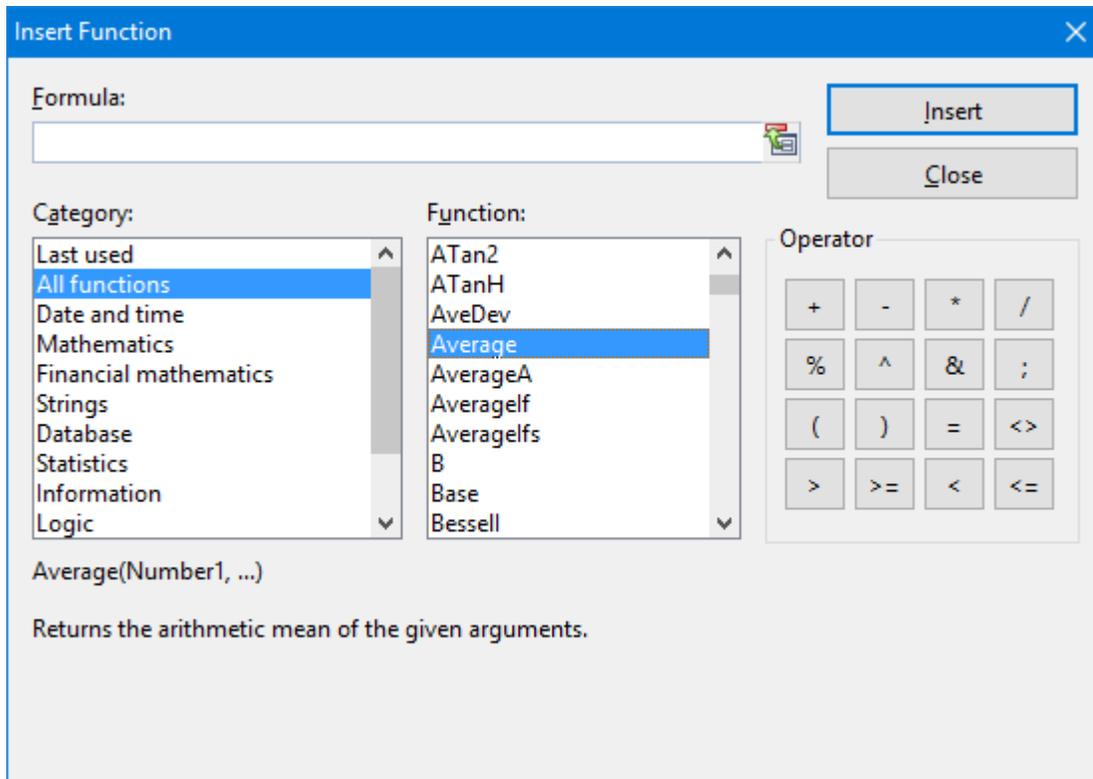
For example, to enter the formula =SUM(B2:D4), proceed as follows:

1. Enter =SUM(
2. With the mouse, select cells B2 to D4 by dragging a rectangle from B2 to D4 with the left mouse button pressed.
3. When you release the mouse button, the cell address is automatically pasted into the formula. The formula now displays: =SUM(B2:D4
4. Enter the closing parenthesis) and press the **Enter** ↵ key to complete the formula.

The cell will now contain the formula =SUM(B2:D4).

Using the Insert > Function command

To utilize arithmetic functions in formulas, either just type in the function name manually or use the lists provided in the dialog box for the **Insert > Function** menu command.



Components of the **Insert > Function** dialog box:

- **Formula** input box

Lets you edit the formula.

- **Category**

Determines which type of functions to display in the **Function** list box.

In the *Named ranges* category at the end of the list, you can access your existing named cell ranges to insert them into formulas (see section [Putting named ranges to use](#)).

- **Function**

Displays all functions of the selected category. To copy a function to the **Formula** input box, double-click it.

Tip: If you select a function, a short description is automatically displayed in the lower part of the dialog. In the Windows version of PlanMaker, you can also call up a help page for each function by clicking on it and then pressing the **F1** key.

- **Operator** group box

Contains buttons for common arithmetic operators. To copy an operator to the **Formula** input box, click the corresponding button.

- **Insert** button

To finish editing the formula in the **Formula** input box, click **Insert**. The dialog will close, and the formula will be inserted in the current cell.

- **Close** button

To close the dialog *without* inserting the formula, click **Close**.

Relative vs. absolute cell references

Cell references in calculations can be entered either as *relative* cell references (like =A1) or as *absolute* cell references (like =\$A\$1).

This section explains the difference between relative and absolute cell addressing:

Relative cell references

When you enter a reference to another cell into a formula, normally *relative* cell addressing is used.

You see that when you enter the formula =B1+B2 in cell B3, and copy or move B3 to C3 afterwards. The formula will automatically adapt and change to =C1+C2.

Absolute cell references

If you do *not* want formulas to automatically adapt when they are copied or moved, use *absolute* cell addressing instead of relative cell addressing. To make a relative cell reference absolute, type a dollar sign (\$) in front of the column number and row number.

For example, if you enter =\$B\$1+\$B\$2 in cell B3, and move B3 to C3 afterwards, the formula will *not* adapt. It will still add the cells B1 and B2.

Note: If desired, you can also make just one component of a cell reference absolute by typing a dollar sign only in front of the column number (e.g., \$B1) or the row number (e.g., B\$1).

Tip: Using the F4 key to change cell addressing

When you enter a cell reference in a formula, you can use the **F4** key to switch the type of addressing.

For example, after having typed =A4,

=SA4 will be displayed, when you press **F4**,

=A\$4 will be displayed, when you press **F4** once again,

=\$A\$4 will be displayed, when you press **F4** once again.

If you press **F4** once again, the old entry =A4 will be displayed again.

External cell references

In calculations, you can use cell references that refer to cells located in a *different* PlanMaker or Excel document. Such references are called *external* cell references.

In this section, you will learn everything you need to know about this. The following topics are covered:

- [Entering external cell references](#)
- [Updating and managing external cell references](#)

See the next pages for details.

Entering external cell references

Cell references that refer to cells in a different document have to be entered in calculations as follows:

`='C:\My Folder\[My Workbook.pmdx]Sheet1'!A1`

This example returns a cell reference to the cell A1 in the worksheet "Sheet1" in the PlanMaker document "My Workbook.pmdx" in the folder "C:\My Folder".

As you can see, external cell references must consist of the following components:

- **Quotation mark**
External cell references should always start with a quotation mark. You can use either single quotes (') or double quotes (").
- **Folder**
Next, enter the entire path to the folder where the external file is located – for example: C:\My Folder\
Hint: If the external file is in the same folder as your document, you can omit the path.
- **File name in square brackets**
Next comes the file name, enclosed in square brackets. Only PlanMaker and Excel files are allowed.
- **Sheet name**
The next component is the name of the worksheet that holds the desired cell.
- **Quotation mark**
Next comes another quotation mark.
- **Exclamation mark**
Then an exclamation mark.

■ Cell reference

The last component is the address of the cell that you want to refer to.

To complete your input, press the **Enter** ↵ key. PlanMaker will now read the content of the cell in the specified external file.

For information on updating and managing external cell references, see the next pages.

Notes

- If PlanMaker is unable to find the specified file, a dialog where you can select the file will appear when you press the **Enter** ↵ key.

Tip: If you don't want to type in the entire path and file name manually, you can use the following trick: In the cell reference, simply enter [x.pmdx] instead of the path and file name – for example: [x.pmdx] Sheet1!A1. This will "force" PlanMaker to display a file dialog where you can comfortably choose the file you want to refer to.

- If PlanMaker is unable to find the specified worksheet, a dialog where you can select the worksheet from the specified file will appear when you press Enter.
- Normally, PlanMaker remembers the entire (absolute) path of the external file. However, if the external file is located in the same folder as your document (or one of its subfolders), PlanMaker stores only the relative path.

This means in practice: If your document and the external file reside in the same folder, references to this external file will stay intact even when you move both files to a different folder.

- **Tip:** There's an alternative way to create external references, where you don't have to type in *anything* manually:

1. Open the document containing the cell you want to refer to.
2. Copy this cell to the clipboard.
3. Switch back to the current document.
4. Navigate to the cell where you want the reference to be inserted.
5. Invoke the **Edit > Paste special** menu command.
6. Click on the **Create references** button.

PlanMaker now creates an external reference to this cell.

Updating and managing external cell references

Use the **Worksheet > External references** menu command to update and manage external cell references in a document.

Invoking this command opens a dialog that lists all files the current document refers to.

The buttons in this dialog allow you to perform the following actions:

- **Update**

Updates only those external cell references that refer to the file currently selected in the list.

(Also see the notes on updating below.)

- **Update all**

Updates all external references in the entire document.

Hint: There's an alternative way to trigger the **Update All** command: the **Tools > Update external references** menu command.

- **Open**

Opens the external file currently selected in the list.

- **Change**

Lets you choose a different file for the external file currently selected in the list. All references to this file in your document will be adopted accordingly.

- **Previous**

Jumps to the previous cell that contains a reference to the file selected in the list.

- **Next**

Jumps to the next cell that contains a reference to the file selected in the list.

The **Close** button closes the dialog.

Notes on updating external cell references

Note: The values returned by external cell references are *not* updated automatically every time the worksheet is recalculated.

External cell references are updated only in the following cases:

- When you open a document, all external cell references it contains are updated automatically (once).

If required, you can turn this automatic update off – see the options described below.

- After that, you can update external references manually whenever needed.

To do so, choose the menu command **Worksheet > External references** and use the **Update** or **Update all** buttons as described above.

Alternatively, you can invoke the **Tools > Update external references** menu command which does the same as the **Update all** button.

Options for updating external cell references

There are some options related to updating external references in the document properties.

To change them, choose the menu command **File > Properties** and switch to the **Calculate** tab. There, the following options are available in the **External references** section:

- **Update data on opening**

Lets you choose if all external cell references in a document should be updated (once) when the document is opened. Options available:

Always: When the document is opened, update its external references.

Never: When the document is opened, do not update its external references.

Ask user: When the document is opened, ask the user if its external references should be updated.

- **Save external data in document**

If this option is activated, PlanMaker saves a copy of all values returned by external cell references in the document. If the file for an external reference is missing when the external reference is updated, the value last stored will still be displayed.

If you turn this option off, PlanMaker instead displays an error value when you update an external reference while the corresponding file cannot be accessed.

Note: The above options aren't global settings but *document* properties. This means that you can set them up individually for each document.

Error values

If a formula results in an error, an *error value* is displayed instead of the result.

For example, if a cell contains the formula $=1/A1$ and a zero is entered in cell A1, the error value **#DIV/0!** will be displayed in the cell, because numbers cannot be divided by zero.

The following error values exist:

Error value	Explanation
#REF!	Invalid cell reference. Displayed when a formula contains a cell reference that is invalid or nonexistent.
#DIV/0!	Division by zero. Displayed when a formula contains a division by zero (which is undefined for any number).
#NULL!	Invalid formula. Displayed when a formula contains syntax errors (for example, a missing parenthesis or missing arguments).

#NAME?	Invalid name. Displayed when a formula refers to a table name or named range that is nonexistent.
#N/A	Not available. Displayed when a cell contains a) a #N/A error value, or b) a formula referring to a cell containing a #N/A error value. See NA (error value #N/A) for details.
#VALUE!	Invalid value. Displayed when a function is used with an inappropriate parameter type (for example, if a number is passed to a function that is expecting a text string).
#NUM!	Invalid number. Displayed when a function is used with a number that is out of range (for example, too large, or negative instead of positive)

Hint: To test if a cell returns an error value, use the functions [ISERROR](#) and [ISERR](#)

Tip: Additionally, you can use the **Tools > Formula auditing** menu command to find and analyze cells that contain an error value. See the section [Analyzing tables](#) for details.

Working with arrays

PlanMaker allows you to enter *arrays* (also known as *matrices*) in spreadsheets and perform calculations with them.

An array is a rectangular table of numbers, structured as follows:

$$\mathbf{A} = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & & & \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{pmatrix}$$

The entries a_{11} through a_{mn} are called the elements of array \mathbf{A} .

An array consisting of m rows and n columns is called an m by n array (or $m \times n$ array).

Entering arrays into cells

To enter an array in PlanMaker, distribute the array's rows and columns over the spreadsheet's rows and columns.

For example, the following array ...

$$\begin{pmatrix} 1 & 2 & 3 \\ 3 & -1 & 1 \\ 2 & 2 & 4 \end{pmatrix}$$

... has to be entered as follows:

	E	F	G
6	1	2	3
7	3	-1	1
8	2	2	4

As you can see, for PlanMaker arrays are nothing but rectangular cell ranges.

Entering array formulas

PlanMaker provides *array functions* that allow you to perform calculations with arrays. A formula containing an array function is called an *array formula*.

Since most array formulas return an entire array of values rather than a single value, entering array formulas differs from entering other formulas.

For example, to calculate the inverse of the 3x3 array shown above, proceed as follows:

1. Select a cell range for the resulting array

Before entering the formula, you have to select the cell range where the resulting array should be placed.

The inverse of a 3x3 array also has 3x3 elements. Therefore, you have to select a range of 3 by 3 cells – for example E10:G12.

2. Enter the array formula

After that, enter the array formula, for example =MINVERSE(E6:G8).

3. Press Ctrl+Shift+Enter

Important: To finalize the formula, do not press just Enter, but press the key combination **Ctrl+Shift+↵**.

The cells E10:G12 now contain the resulting array, i.e., the inverse of the array in E6:G8:

	E	F	G
6	1	2	3
7	3	-1	1
8	2	2	4
9			
10	3	1	-2.5
11	5	1	-4
12	-4	-1	3.5
13			
14			

Notes:

- If you have selected a cell range larger than the resulting array, the error value #N/A ("not available") will be displayed in the superfluous cells. **Important:** If the selected cell range is too small, parts of the array will not be displayed.
- There are array functions that return just a single value rather than an entire array – for example, the MDETERM function (that returns the determinant of an array). In that case the procedure described above is not necessary, and the formula can be entered just like any other formula.
- To edit an existing array formula: Select all cells covered by the resulting array, edit the formula, and press **Ctrl+Shift+↵**. If you press just the **Enter ↵** key instead, PlanMaker issues a warning and asks you if you want to overwrite the array by a single value.
- **Hint:** To select all cells covered by an array formula, click any of the involved cells and press **Ctrl+7**.

Entering array constants in formulas

If desired, arrays can be entered as *constants* instead of cell references. For this purpose, surround the array by braces { }, and separate columns by commas and rows by semicolons.

For example, the following array ...

$$\begin{pmatrix} 1 & 2 & 3 \\ 3 & -1 & 1 \\ 2 & 2 & 4 \end{pmatrix}$$

... can be entered as follows:

={1,2,3; 3,-1,1; 2,2,4}

Notes:

- The notation described above is suitable for *fixed* values only; formulas and cell references are not allowed.
- You can also enter *vectors* in the notation described above. For a horizontal vector enter, e.g., {1,2,3}; for a vertical vector enter {1;2;3}.

Working with database functions

PlanMaker provides *database functions* that allow you to query and evaluate a cell range that is structured like a database.

Database functions expect the following syntax:

FUNCTION_NAME(DatabaseArea, Column, CriteriaArea)

For example, the DSUM function returns the sum of all cells in the **DatabaseArea** cell range that are in the specified **Column** and match the conditions defined in the **CriteriaArea** cell range.

To utilize database functions, proceed as follows:

Creating a database area

A *database area* can be any cell range containing data to evaluate.

It has to be structured as follows:

- Its first row must contain labels for the database columns (e.g., Amount, Price, etc.).
- The data has to be arranged row by row (one row for each record).

The rows of the database area represent what is called a *record* in database applications, with the cells being the *fields* of the database.

Creating a criteria area

The *criteria area* is a cell range containing conditions that the database records have to match.

It has to be structured as follows:

- **Important:** The criteria area has to be located *above* the database area.
- The criteria area must not overlap the database area.
- Like the database area, the first row of the criteria area must also contain labels for the columns below (e.g., Amount, Price, etc.).
- Below the labels, conditions can be entered. You can enter either single values or comparisons like ">42" or "<=10".
- If multiple conditions have been entered in the same row, the database contents have to match the conditions in column 1 *and* column 2 *and* column 3, etc.
- If multiple rows with conditions have been entered, the database contents have to match the conditions in row 1 *or* row 2 *or* row 3, etc.

Utilizing database functions

After having filled out database area and criteria area, you are ready to apply database functions.

Some examples, assuming that the following spreadsheet has been created:

	A	B	C	D
1	(Criteria area:)			
2	Color			
3	blue			
4				
5	(Another criteria area:)			
6	Amount	Amount	Color	
7	>25	<75		
8			red	
9				
10	(Database area:)			
11	Amount	Item	Color	
12	10	Running shoes	red	
13	100	Running shoes	blue	
14	50	Running shoes	black	
15	30	Training shoes	red	
16	50	Training shoes	blue	
17				

In this spreadsheet, for example, the following calculations can be performed:

DCOUNT(A11:C16, , A2:A3) returns 2. This formula counts the number of records matching the condition Color = blue.

DCOUNT(A11:C16, , A6:B7) returns 3. This formula counts the number of records matching the condition (Amount > 25 and Amount < 75).

DCOUNT(A11:C16, , A6:C8) returns 4. This formula counts the number of records matching the condition (Amount > 25 and Amount < 75) *or* (Color = red).

DSUM(A11:C16, "Amount", A2:A3) returns 150. This formula calculates the sum of the values in the "Amount" column for all records matching the condition Color = blue.

DSUM(A11:C16, 1, A2:A3) returns 150. Same as above, except that the column was specified by its relative number instead of its label.

Functions from A to Z

This section provides an alphabetical list of PlanMaker's arithmetic functions, including comprehensive descriptions of each function.

ABS (absolute value)

Syntax:

ABS(Number)

Description:

Returns the absolute value of a number, i.e., removes its sign.

Example:

ABS(42) returns 42

ABS(0) returns 0

ABS(-42) returns 42

See also:

[SIGN](#), [NEG](#)

ACOS (arccosine)

Syntax:

ACOS(Number)

Description:

Returns the arccosine of **Number**, i.e., the angle whose cosine is **Number**.

Number must be in the range -1 to 1.

Example:

ACOS(1) returns 0

ACOS(COS(0.1234)) returns 0.1234

Tip:

You can use the [DEGREES](#) function to convert the result from radians to degrees.

See also:

[COS](#), [ASIN](#), [ATAN](#)

ACOSH (inverse hyperbolic cosine)

Syntax:

ACOSH(Number)

Description:

Returns the inverse hyperbolic cosine of **Number**, i.e., the value whose hyperbolic cosine is **Number**.

Example:

ACOSH(1.1) returns 0.44357

ACOSH(COSH(0.1234)) returns 0.1234

See also:

[COSH](#)

ACOT (arccotangent)

Syntax:

ACOT(Number)

Description:

Returns the arccotangent of **Number**, i.e., the angle whose cotangent is **Number**.

Example:

ACOT(1) returns 0.7854 (45°)

ACOT(COT(0.1234)) returns 0.1234

Tip:

You can use the [DEGREES](#) function to convert the result from radians to degrees.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[COT](#)

ACOTH (inverse arccotangent)

Syntax:

ACOTH(Number)

Description:

Returns the inverse arccotangent of **Number**, i.e., the value whose hyperbolic tangent is **Number**.

Example:

ACOTH(2) returns 0.54931

ACOTH(COTH(0.1234)) returns 0.1234

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[COTH](#)

ADDRESS (cell address as text)

Syntax:

ADDRESS(Row, Column [, Abs] [, Mode] [, SheetName])

Description:

Returns a text string containing the address of the cell in the specified **Row** and **Column**.

Row is the row number of the cell.

Column is the column number of the cell.

The optional argument **Abs** specifies the type of reference to be returned:

1 or omitted: Absolute row and column

2: Absolute row, relative column

3: Relative row, absolute column

4: Relative row and column

The optional argument **Mode** specifies the format of the cell address returned:

TRUE or omitted: Normal cell address (e.g. A1)

FALSE: Cell address in R1C1 format (an alternative type of cell addressing, supported by Microsoft Excel only)

The optional argument **SheetName** lets you specify a worksheet name. If specified, it will be placed before the resulting cell reference. In other words:

If it is not specified, only the cell address will be returned.

If it is specified, *SheetName!Address* will be returned (see example).

Example:

ADDRESS(1, 5) returns \$E\$1

ADDRESS(1, 5, 4) returns E1

ADDRESS(1, 5, 4, , "MySheet1") returns MySheet1!E1

See also:

[INDIRECT](#), [OFFSET](#), [COLUMN](#), [ROW](#)

AND (logical AND function)

Syntax:

AND(Value1 [, Value2, Value3 ...])

Description:

Returns the logical value TRUE if all of the given arguments are TRUE, otherwise returns FALSE.

Example:

AND(TRUE, TRUE) returns TRUE

AND(TRUE, FALSE) returns FALSE

AND(FALSE, FALSE) returns FALSE

AND(A1>0, A1<1) returns TRUE, if A1 is greater than zero *and* less than one.

See also:

[OR](#), [XOR](#), [NOT](#)

AREAS (number of areas)

Syntax:

AREAS(Reference)

Description:

Returns the number of contiguous cell ranges the specified cell reference consists of.

Example:

AREAS(A1:B2) returns 1

AREAS((A1:B2, E5:G7)) returns 2

See also:

[INDEX](#), [COLUMNS](#), [ROWS](#)

ASIN (arcsine)

Syntax:

ASIN(Number)

Description:

Returns the arcsine of **Number**, i.e., the angle whose sine is **Number**.

Number must be in the range -1 to 1.

Example:

ASIN(1) returns 1.5708... (90°)

ASIN(SIN(0.1234)) returns 0.1234

Tip:

You can use the [DEGREES](#) function to convert the result from radians to degrees.

See also:

[SIN](#), [ACOS](#), [ATAN](#)

ASINH (inverse hyperbolic sine)

Syntax:

ASINH(Number)

Description:

Returns the inverse hyperbolic sine of **Number**, i.e., the value whose hyperbolic sine is **Number**.

Example:

ASINH(1.1) returns 0.9503

ASINH(SINH(0.1234)) returns 0.1234

See also:

[SINH](#)

ATAN (arctangent)

Syntax:

ATAN(Number)

Description:

Returns the arctangent of **Number**, i.e., the angle whose tangent is **Number**.

Example:

ATAN(1) returns 0.7854 (45°)

ATAN(TAN(0.1234)) returns 0.1234

Tip:

You can use the [DEGREES](#) function to convert the result from radians to degrees.

See also:

[ATAN2](#), [TAN](#), [ACOS](#), [ASIN](#)

ATAN2 (arctangent 2)

Syntax:

ATAN2(x, y)

Description:

Returns the arctangent of the given coordinates, i.e., the angle between the x axis and a line from the origin (0, 0) to a point with the coordinates (x, y).

Example:

ATAN2(1, 1) returns 0.7854 (45°)

Tip:

You can use the [DEGREES](#) function to convert the result from radians to degrees.

See also:

[ATAN](#), [TAN](#)

ATANH (inverse hyperbolic tangent)

Syntax:

ATANH(Number)

Description:

Returns the inverse hyperbolic tangent of **Number**, i.e., the value whose hyperbolic tangent is **Number**.

Number must be > -1 and < 1.

Example:

ATANH(0.5) returns 0.54931

ATANH(TANH(0.1234)) returns 0.1234

See also:

[TANH](#)

AVEDEV (average deviation)

Syntax:

AVEDEV(Number1 [, Number2, Number3 ...])

Description:

Returns the average deviation of the given numbers from their mean.

Number1, **Number2**, etc., are the numbers to be evaluated. Empty cells, text, and logical values are ignored.

Example:

AVEDEV(2, 2, 2, 2) returns 0

AVEDEV(2, 2, 2, 3) returns 0.375

See also:

[DEVSQ](#), [STDEV.S/STDEV](#), [VAR.S/VAR](#)

AVERAGE (arithmetic mean)

Syntax:

AVERAGE(Number1 [, Number2, Number3 ...])

Description:

Returns the arithmetic mean of the given numbers (i.e., their sum divided by their number).

Number1, **Number2**, etc., are the numbers to be evaluated. Empty cells, text, and logical values are ignored.

Example:

AVERAGE(1, 2, 6) equals $(1+2+6) / 3$, which is 3.

See also:

[AVERAGEA](#), [GEOMEAN](#), [HARMEAN](#), [TRIMMEAN](#), [MEDIAN](#)

AVERAGEA (arithmetic mean)

Syntax:

AVERAGEA(Value1 [, Value2, Value3 ...])

Description:

Returns the arithmetic mean of the given values (i.e., their sum divided by their number), including logical values and text.

Value1, **Value2**, etc., are the values to be evaluated. Empty cells are ignored.

Note:

Unlike the AVERAGE function, AVERAGEA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Example:

AVERAGEA(1, 2, 6) equals $(1+2+6) / 3$, which is 3.

If the cells A1:A4 contain the values 0, 1, 4, and TRUE:

AVERAGEA(A1:A4) equals $(0+1+4+1) / 4$, which is 1.5.

See also:

[AVERAGE](#)

AVERAGEIF (average if condition is true)

Syntax:

AVERAGEIF(Range, Criterion [, AverageRange])

Description:

Returns the arithmetic mean of those values in a cell range that fulfill the specified criterion.

Range is the cell range to be evaluated.

Criterion is the criterion that the values in **Range** have to fulfill to be included.

Use numbers or text (like "42" or "bolts") to obtain the average of all cells that contain that value.

Use conditions (like ">10" or "<=5") to obtain the average of all cells that match the specified condition (see examples below).

Note: Criteria always have to be surrounded by double quotation marks (").

AverageRange (optional) lets you specify the cell range containing the values to be used for calculating the average. If omitted, the values in **Range** will be used.

Compatibility notes:

This function is *not* supported by the **.xls** file format (used in Microsoft Excel 2003 and earlier). If you save a document in this format, all calculations using this function will be replaced by their last result as a *fixed* value.

Accordingly, if you use this function, you should not save your document in the "Microsoft Excel 97-2003 (.xls)" file format, but choose one of the following formats instead:

- "PlanMaker document (.pmdx or .pmd)"
- or: "Microsoft Excel 2007-2016 (.xlsx)"

Example:

If the cells A1:A5 contain 1, 2, 3, 2, 1:

AVERAGEIF(A1:A5, "2") returns 2

AVERAGEIF(A1:A5, ">=2") returns (2+3+2)/3, which gives 2.33333

See also:

[AVERAGE](#), [AVERAGEIFS](#), [COUNTIF](#), [COUNTIFS](#), [SUMIF](#), [SUMIFS](#)

AVERAGEIFS (average if conditions are true)

Syntax:

AVERAGEIFS(AverageRange, Range1, Criterion1 [, Range2, Criterion2 ...])

Description:

Returns the arithmetic mean of those values in a cell range that fulfill *all* of the specified criteria.

This function is similar to the [AVERAGEIF](#) function, but allows you to specify more than just one range/criterion to be searched

Apart from that, the order of the parameters is different: In [AVERAGEIF](#), **AverageRange** is the last parameter – in [AVERAGEIFS](#), it is the first.

AverageRange is the cell range containing the values to be used for calculating the average.

Range1 is the first cell range to be checked for the specified criterion. This range must have the same dimensions as **AverageRange**.

Criterion1 is the criterion that the values in **Range1** have to fulfill to be included.

Use numbers or text (like "42" or "bolts") to obtain the average of all cells that contain that value.

Use conditions (like ">10" or "<=5") to obtain the average of all cells that match the specified condition (see examples below).

Note: Criteria always have to be surrounded by double quotation marks ("").

Unlike the [AVERAGEIF](#) function, [AVERAGEIFS](#) allows you to specify more than just one cell range and criterion to be checked. If you do so, only occurrences where *all* criteria are fulfilled are included in the calculation of the average.

Compatibility notes:

This function is *not* supported by the **.xls** file format (used in Microsoft Excel 2003 and earlier). If you save a document in this format, all calculations using this function will be replaced by their last result as a *fixed* value.

Accordingly, if you use this function, you should not save your document in the "Microsoft Excel 97-2003 (.xls)" file format, but choose one of the following formats instead:

- "PlanMaker document (.pmdx or .pmd)"
- or: "Microsoft Excel 2007-2016 (.xlsx)"

Example:

`AVERAGEIFS(A1:A10, C1:C10, ">1", C1:C10, "<2")`

This formula returns the average of only those cells in the cell range A1:A10 where the corresponding cell in the range C1:C10 is greater than 1 and less than 2.

See also:

[AVERAGE](#), [AVERAGEIF](#), [COUNTIF](#), [COUNTIFS](#), [SUMIF](#), [SUMIFS](#)

B (Compatibility function)

Syntax:

B(n, p, k1 [, k2])

Description:

Returns the probability to get a) exactly **k1** successes, or b) between **k1** and **k2** successes in a binomial experiment with **n** independent trials.

n is the number of independent trial runs.

p is the probability of a success for each trial run. Must be > 0 and < 1.

k1 is the lower limit for the number of successes.

k2 (optional) is the upper limit for the number of successes.

Note:

This function was retained only for compatibility with PlanMaker 97. Use of the following Excel-compatible function is recommended instead:

B(n, p, k1) equals BINOMDIST(k1, n, p, FALSE) or BINOM.DIST(k1, n, p, FALSE)

B(n, p, k1, k2) equals BINOM.DIST.RANGE(n, p, k1, k2)

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

In Excel 2013, a function identical to the B function was introduced: [BINOM.DIST.RANGE](#). PlanMaker supports this function as well. However, please keep in mind that older versions of Excel (and PlanMaker) do not know this function.

See also:

[BINOM.DIST.RANGE](#)/[BINOM.DIST](#)/[BINOMDIST](#)

BASE (convert decimal number to another base)

Syntax:

BASE(Number, Base [, Digits])

Description:

Converts the given decimal number (base 10) to a number with a different base – for example a binary number (base 2) or a hexadecimal number (base 16).

Note: Please note that the result of this function is a text string – not a number.

Number is the number to be converted. Only positive numbers are allowed.

Base is the target base. Only integers between 2 and 32 are allowed.

The optional argument **Digits** lets you specify the *minimum* number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically. **Digits** must be a positive integer.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

BASE(42, 2) returns 101010 (decimal number 42 displayed as binary number)

BASE(42, 2, 8) returns 00101010 (ditto, with the minimum places set to 8)

See also:

[DECIMAL](#), [DEC2BIN](#), [DEC2HEX](#), [DEC2OCT](#)

BESSELI (modified Bessel function In(x))

Syntax:

BESSELI(x, n)

Description:

Returns the modified Bessel function $I_n(x)$.

x is the value to be evaluated.

n is the order of the Bessel function. Must be > 0 .

See also:

[BESSELJ](#), [BESSELK](#), [BESSELY](#)

BESSELJ (Bessel function $J_n(x)$)**Syntax:**

BESSELJ(x , n)

Description:

Returns the Bessel function $J_n(x)$.

x is the value to be evaluated.

n is the order of the Bessel function. Must be > 0 .

See also:

[BESSELI](#), [BESSELK](#), [BESSELY](#)

BESSELK (modified Bessel function $K_n(x)$)**Syntax:**

BESSELK(x , n)

Description:

Returns the modified Bessel function $K_n(x)$.

x is the value to be evaluated.

n is the order of the Bessel function. Must be > 0 .

See also:

[BESSELI](#), [BESSELJ](#), [BESSELY](#)

BESSELY (Bessel function $Y_n(x)$)

Syntax:

BESSELY(x, n)

Description:

Returns the Bessel function $Y_n(x)$ (also known as the Weber function or the Neumann function).

x is the value to be evaluated.

n is the order of the Bessel function. Must be > 0 .

See also:

[BESSELI](#), [BESSELJ](#), [BESSELK](#)

BETADIST (beta distribution)

Note: BETADIST is supplemented by the new function [BETA.DIST](#) with additional functionality, which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

BETADIST(X, Alpha, Beta [, A, B])

Description:

Returns the beta cumulative distribution function.

X is the value to be evaluated. Must be in the range A to B.

Alpha and **Beta** are shape parameters of the function. They both have to be > 0 .

A and **B** (optional) are the lower and upper bound to the interval of **X**. If they are omitted, **A** is set to 0 and **B** is set to 1 (thus leading to a standard cumulative beta distribution).

X must be in the range **A** to **B**.

See also:

[BETA.DIST](#), [BETA.INV/BETA.INV](#)

BETA.DIST (beta distribution)

Syntax:

BETA.DIST(**X**, Alpha, Beta, Cumulative [, **A**, **B**])

Description:

Returns the (cumulative) beta distribution function.

X is the value to be evaluated. Must be in the range **A** to **B**.

Alpha and **Beta** are shape parameters of the function. They both have to be > 0.

Cumulative determines the type of function as a switch: If you enter the value TRUE, the cumulative distribution function of the beta distribution is calculated. By entering the value FALSE, the density function of the beta distribution is calculated.

A and **B** (optional) are the lower and upper bound to the interval of **X**. If they are omitted, **A** is set to 0 and **B** is set to 1 (thus leading to a standard cumulative beta distribution).

X must be in the range **A** to **B**.

Note:

The BETA.DIST function supplements the previous [BETADIST](#) function with the additional argument **Cumulative**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

The inverse function is [BETA.INV](#).

See also:

[BETADIST](#), [BETA.INV/BETA.INV](#)

BETA.INV (percentiles of the beta distribution)

Note: BETA.INV is supplemented by the new identical function [BETA.INV](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

BETA.INV(Probability, Alpha, Beta [, A, B])

Description:

Returns the inverse of the beta cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be > 0 and ≤ 1 .

Alpha and **Beta** are shape parameters of the function. They both have to be greater than zero.

A and **B** (optional) are the lower and upper bound to the interval of X. If they are omitted, **A** is set to 0 and **B** is set to 1 (thus leading to a standard cumulative beta distribution).

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[BETA.INV](#), [BETA.DIST/BETADIST](#)

BETA.INV (percentiles of the beta distribution)**Syntax:**

BETA.INV(Probability, Alpha, Beta [, A, B])

Description:

Returns the inverse of the beta cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be > 0 and ≤ 1 .

Alpha and **Beta** are shape parameters of the function. They both have to be greater than zero.

A and **B** (optional) are the lower and upper bound to the interval of X. If they are omitted, **A** is set to 0 and **B** is set to 1 (thus leading to a standard cumulative beta distribution).

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

BETA.INV is the inverse function of [BETA.DIST](#).

See also:

[BETA.INV](#), [BETA.DIST/BETADIST](#)

BIN2DEC (binary number to decimal number)

Syntax:

BIN2DEC(Number)

Description:

Converts the given binary number (base 2) to a decimal number (base 10).

Number is the number to be converted. It must not contain more than 32 places. Negative numbers have to be transformed to two's complement notation (see last example).

Example:

BIN2DEC("101010") returns 42

BIN2DEC("00101010") returns 42 as well

BIN2OCT (binary number to octal number)

Syntax:

BIN2OCT(Number [, Digits])

Description:

Converts the given binary number (base 2) to an octal number (base 8).

Number is the number to be converted. It must not contain more than 32 places. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

BIN2OCT("101010") returns 52

BIN2OCT("00101010") returns 52 as well

BIN2OCT("1111111111111111111111111111010110") returns 3777777726 (negative value)

See also:

[OCT2BIN](#), [BIN2DEC](#), [BIN2HEX](#)

BINOMDIST (binomial distribution)

Note: BINOMDIST is supplemented by the new identical function [BINOM.DIST](#) and the completely new function [BINOM.DIST.RANGE](#) which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

BINOMDIST(k, n, p, Cumulative)

Description:

Returns the binomial distribution function.

The binomial distribution can be used to determine the probability to get **k** successes in an experiment with **n** independent trials with only two possible outcomes (success or failure) with a fixed probability of **p** for each trial.

For example, a coin flip experiment is a binomial experiment (see example below).

k is the number of successes. Must be in the range 0 to **n**.

n is the number of independent trial runs.

n and **k** should be integers, digits right of the decimal point were ignored by PlanMaker.

p is the probability of a success for each trial run. Must be in the range 0 to 1.

The logical value **Cumulative** lets you specify which type of function will be used:

FALSE: BINOMDIST uses the probability density function, which returns the probability that there are *exactly* **k** successes.

TRUE: BINOMDIST uses the cumulative distribution function, which returns the probability that there are *at most* **k** successes.

Example:

When you flip a coin 10 times ($n=10$), what is the probability that it lands on "heads" ($p=50\%$) exactly 4 times?

BINOMDIST(4, 10, 50%, FALSE) returns 0.20508 =20.5%

What is the probability that it lands on "heads" *at most* 4 times?

BINOMDIST(4, 10, 50%, TRUE) returns 0.37695. =37.7%

See also:

[BINOM.DIST/BINOM.DIST.RANGE](#), [BINOM.INV/CRITBINOM](#), [B](#), [COMBIN](#), [NEGBINOM.DIST/NEGBINOMDIST](#), [POISSON.DIST/POISSON](#)

BINOM.DIST (binomial distribution)**Syntax:**

BINOM.DIST(*k*, *n*, *p*, Cumulative)

Description:

Returns the binomial distribution function.

The binomial distribution can be used to determine the probability to get **k** successes in an experiment with **n** independent trials with only two possible outcomes (success or failure) with a fixed probability of **p** for each trial.

For example, a coin flip experiment is a binomial experiment (see example below).

k is the number of successes. Must be in the range 0 to **n**.

n is the number of independent trial runs.

n and **k** should be integers, digits right of the decimal point were ignored by PlanMaker.

p is the probability of a success for each trial run. Must be in the range 0 to 1.

The logical value **Cumulative** lets you specify which type of function will be used:

FALSE: BINOM.DIST uses the probability density function, which returns the probability that there are *exactly* **k** successes.

TRUE: BINOM.DIST uses the cumulative distribution function, which returns the probability that there are *at most* **k** successes.

Example:

When you flip a coin 10 times ($n=10$), what is the probability that it lands on "heads" ($p=50\%$) exactly 4 times?

BINOM.DIST(4, 10, 50%, FALSE) returns 0.20508 =20.5%

What is the probability that it lands on "heads" *at most* 4 times?

BINOM.DIST(4, 10, 50%, TRUE) returns 0.37695. =37.7%

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[BINOMDIST/BINOM.DIST.RANGE](#), [BINOM.INV/CRITBINOM](#), [B](#), [COMBIN](#), [NEGBINOM.DIST/NEGBINOMDIST](#), [POISSON.DIST/POISSON](#)

BINOM.DIST.RANGE (binomial distribution)

Syntax:

BINOM.DIST.RANGE(n, p, k1 [,k2])

Description:

Returns the probability of success for a number of trials using a binomial distribution.

n is the number of independent trial runs. Must be > 0

p is the probability of a success for each trial run. Must be in the range 0 to 1. (0=0% ; 1=100%)

k1 is the number of successes. Must be in the range 0 to n.

k2 is optional and returns the probability that the number of successes will fall between k1 and k2. k2 Must be in the range k1 to n.

n and **k1,k2** should be integers, digits right of the decimal point were ignored by PlanMaker.

Annotation:

If the optional argument **k2** is omitted, the probability of the *exact* number of successes is calculated.

Example:

When you flip a coin 10 times (n=10), what is the probability that it lands on "heads" (p=50%) *exactly* 4 times?

BINOM.DIST.RANGE(10, 50%, 4) returns 0.20508 =20.5%

What is the probability that it lands on "heads" *between 4 and 8* times?

BINOM.DIST.RANGE(10, 50%, 4, 8) returns 0.81738 =81.7%

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[BINOMDIST/BINOM.DIST](#), [BINOM.INV/CRITBINOM](#), [B](#), [COMBIN](#),
[NEGBINOM.DIST/NEGBINOMDIST](#), [POISSON.DIST/POISSON](#)

BINOM.INV (binomial distribution)

Syntax:

BINOM.INV(n, p, Alpha)

Description:

Returns the smallest value for which the cumulative binomial distribution is greater than or equal to the criterion value **Alpha**.

This function is applicable to binomial distributions only (i.e., experiments with only two possible outcomes: "success" or "failure").

n is the number of independent trial runs.

p is the probability of a success for each trial run. Must be in the range 0 to 1.

Alpha is the criterion value. Must be in the range 0 to 1.

Example:

BINOM.INV(100, 7%, 1%) returns 2

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[CRITBINOM](#), [BINOM.DIST/BINOM.DIST.RANGE/BINOMDIST](#)

CEILING (round up to a multiple of base)

Syntax:

CEILING(Number, Base)

Description:

Rounds **Number** up (away from zero) to the nearest multiple of **Base**.

Positive numbers are rounded to the nearest multiple of **Base** that is *larger* than **Number**.

Negative numbers are rounded to the nearest multiple of **Base** that is *smaller* than **Number**.

Number and **Base** must have the same sign, otherwise the function returns a #NUM! error value.

Example:

CEILING(42.5, 1) returns 43

CEILING(-42.5, -1) returns -43

CEILING(21, 5) returns 25

CEILING(12.3456, 0.01) returns 12.35

See also:

[FLOOR](#), [MROUND](#), [ROUND](#), [TRUNC](#)

CELL (information about a cell)

Syntax:

CELL(Type [, Reference])

Description:

Returns various types of information about a cell.

Type specifies the type of information to return. **Type** can be one of the following text strings:

Type	Description
"address"	Returns the address of the cell (as a text string).
"col"	Returns the column number of the cell (as a number).
"color"	Returns 1 if the cell uses the number format option Negative numbers in red , or 0 if not.
"contents"	Returns the value stored in the cell.
"filename"	Returns the full path and filename of the document that contains the cell.
"format"	(Not supported. Returns a #N/A error value.)
"parentheses"	(Not supported. Returns a #N/A error value.)
"prefix"	Returns one of the following text strings: ' if the cell contains left-aligned text

	^ if the cell contains centered text
	" if the cell contains right-aligned text
	\ if the cell contains fill-aligned text
	"" if the cell contains anything else
"protect"	Returns 1 if the cell is protected, or 0 if not.
"row"	Returns the row number of the cell.
"type"	Returns one of the following text strings: b (for <u>b</u> lank) if the cell is empty l (for <u>l</u> abel) if the cell contains text v (for <u>v</u> alue) if the cell contains anything else
"width"	(<i>Not supported.</i> Returns a #N/A error value.)

Reference (optional) is the address of the cell to be evaluated.

If **Reference** is a range of cells, only the top left cell will be evaluated.

If **Reference** is omitted, the current cell will be evaluated. (Excel behaves differently, see the note below.)

Compatibility notes:

This function is not fully identical to Microsoft Excel's CELL function. The following restrictions apply:

1. Some types of information are not supported by PlanMaker (see the table above).
2. When the parameter **Reference** is omitted, PlanMaker evaluates the current cell, whereas Excel evaluates the cell that was *last changed*.

Example:

=CELL("row", B5) returns the row number of the cell B5, i.e. 5.

See also:

[FILENAME](#), [COLUMN](#), [ROW](#)

CHAR (character from ANSI code)

Syntax:

CHAR(Number)

Description:

Returns a single character with the specified ANSI code.

Number must be at least 10.

Example:

CHAR(65) returns A

CHAR(32) returns a blank

CHAR(CODE("X")) returns X

See also:

[CODE](#)

CHIDIST (chi-square distribution)

Note: CHIDIST is supplemented by the new identical function [CHISQ.DIST.RT](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

CHIDIST(X, DegreesFreedom)

Description:

Returns the **one-tailed** probability of the chi-square distribution.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 and $< 10^{10}$.

See also:

[CHISQ.DIST.RT](#), [CHISQ.INV.RT/CHIINV](#), [CHISQ.TEST/CHITEST](#)

CHIINV (percentiles of the chi-square distribution)

Note: CHIINV is supplemented by the new identical function [CHISQ.INV.RT](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

CHIINV(Probability, DegreesFreedom)

Description:

Returns the inverse of the **right-tailed** probability of the chi-square distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 and $< 10^{10}$.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[CHISQ.INV.RT](#), [CHISQ.DIST.RT/CHIDIST](#), [CHISQ.TEST/CHITEST](#)

CHISQ.DIST.RT (chi-square distribution)

Syntax:

CHISQ.DIST.RT(X, DegreesFreedom)

Description:

Returns the **right-tailed** probability of the chi-square distribution.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 and $< 10^{10}$.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[CHIDIST](#), [CHISQ.INV.RT/CHIINV](#), [CHISQ.TEST/CHITEST](#)

CHISQ.INV.RT (percentiles of the chi-square distribution)

Syntax:

CHISQ.INV.RT(Probability, DegreesFreedom)

Description:

Returns the inverse of the **right-tailed** probability of the chi-square distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 and $< 10^{10}$.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[CHIINV](#), [CHISQ.DIST.RT/CHIDIST](#), [CHISQ.TEST/CHITEST](#)

CHISQ.TEST (chi-square test for independence)

Syntax:

CHISQ.TEST(ObservedValues, ExpectedValues)

Description:

Returns the chi-square test for independence.

ObservedValues are the observed values to be tested against the expected values.

ExpectedValues are the expected values.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[CHITEST](#), [CHISQ.DIST.RT/CHIDIST](#), [CHISQ.INV.RT/CHIINV](#)

CHITEST (chi-square test for independence)

Note: CHITEST is supplemented by the new identical function [CHISQ.TEST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

CHITEST(ObservedValues, ExpectedValues)

Description:

Returns the chi-square test for independence.

ObservedValues are the observed values to be tested against the expected values.

ExpectedValues are the expected values.

See also:

[CHISQ.TEST](#), [CHISQ.DIST.RT/CHIDIST](#), [CHISQ.INV.RT/CHIINV](#)

CHOICE (x>0, x=0, x<0?)

Syntax:

CHOICE(Number, IfGreater [, IfZero, IfLess])

Description:

Returns one of the following values:

IfGreater, if **Number** is greater than zero.

IfZero, if **Number** equals zero.

IfLess, if **Number** is less than zero.

The last two arguments are optional.

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

Example:

CHOICE(42, "Greater", "Zero", "Smaller") returns Greater

CHOICE(0, "Greater", "Zero", "Smaller") returns Zero

CHOICE(-42, "Greater", "Zero", "Smaller") returns Smaller

See also:

[IF](#)

CHOOSE (choose value from list)

Syntax:

CHOOSE(Index, Value1 [, Value2, Value3 ...])

Description:

Returns the value with the specified index from a list of values.

Index specifies the value to be returned. If **Index** is 1, the first value will be returned, if **Index** is 2, the second value will be returned, and so on.

If **Index** is smaller than 1 or greater than the total number of values, the function returns a #VALUE! error value.

Example:

CHOOSE(2, "One", "Two", "Three") returns Two

See also:

[INDEX](#), [VLOOKUP](#), [HLOOKUP](#)

CLEAN (remove unprintable characters)

Syntax:

CLEAN(Text)

Description:

Removes all unprintable characters (characters with an ANSI code below 32) from the specified text string.

See also:

[TRIM](#)

CODE (ANSI code of a character)

Syntax:

CODE(Text)

Description:

Returns the ANSI code of the first character in the specified text string.

Example:

CODE("A") returns 65

CODE("Arthur") returns 65 as well

CODE(CHAR(123)) returns 123

CODE("") returns 0

See also:

[CHAR](#)

COLUMN (column number of a reference)

Syntax:

COLUMN([Reference])

Description:

Returns the column number(s) of a cell reference:

If **Reference** is a single cell, the column number of this cell is returned.

If **Reference** is a range of cells, their column numbers are returned as a horizontal array. Note: In this case, the formula has to be entered as an *array formula* (see section [Working with arrays](#)).

If **Reference** is omitted, the column number of the cell that invokes this function is returned.

Example:

COLUMN(D2) returns 4

COLUMN(D2:F4) returns {4,5,6}

COLUMN() returns 3 when you use this calculation in cell C5

See also:

[ROW](#), [COLUMNS](#), [CELL](#), [ADDRESS](#), [OFFSET](#), [INDIRECT](#)

COLUMNS (number of columns in a range)

Syntax:

COLUMNS(Range)

Description:

Returns the number of columns in the specified cell range.

Example:

COLUMNS(A1:D5) returns 4

See also:

[ROWS](#), [COLUMN](#), [AREAS](#)

COMBIN (combinations)

Syntax:

COMBIN(n, k)

Description:

Returns the number of combinations of size **k** in a population of size **n**.

n is the total number of items. Must be > **k**.

k is the number of items in each combination. Must be > 0 and < **n**.

n and **k** should be integers, digits right of the decimal point are ignored.

Example:

In a lottery called "6 out of 49", 6 balls are picked out of 49 numbered balls. How many combinations are possible?

COMBIN(49, 6) returns 13983816

See also:

[PERMUT](#), [BINOM.DIST.RANGE](#)/[BINOM.DIST](#)/[BINOMDIST](#)

COMPLEX (create complex number)

Syntax:

COMPLEX(Real, Imag [, Suffix])

Description:

Creates a complex number $x + yi$ or $x + yj$ out of the given real and imaginary coefficients.

Real is the real coefficient.

Imag is the imaginary coefficient.

Suffix (optional) is the suffix used for the imaginary component:

i or omitted: A complex number of the form $x + yi$ is returned.

j: A complex number of the form $x + yj$ is returned.

Hint:

To enter complex numbers in cells, you can either make use of the COMPLEX function or simply type them in. For example, the complex number $2+4i$ can be entered either as =COMPLEX(2, 4) or simply as $2+4i$.

The same applies for formulas – *except* for the fact that complex numbers have to be surrounded by double quotation marks ("). For example, instead of typing =IMPOWER(COMPLEX(2, 4)), you could also type =IMPOWER("2+4i").

Example:

COMPLEX(2, 4) returns $2+4i$

COMPLEX(2, 4, "i") returns $2+4i$ as well

COMPLEX(2, 4, "j") returns $2+4j$

See also:

[IMAGINARY](#), [IMREAL](#)

CONCATENATE (concatenate text strings)

Syntax:

CONCATENATE(Text1 [, Text2, Text3 ...])

Description:

Combines two or more text strings into one text string.

Annotation:

The & operator does exactly the same: CONCATENATE("Text1", "Text2") is equivalent to "Text1" & "Text2".

Example:

CONCATENATE("Good ", "Morning") returns Good Morning

CONCATENATE(2, " slices", " of ", "bread") returns 2 slices of bread

CONFIDENCE (confidence interval)

Note: CONFIDENCE is supplemented by the new identical function [CONFIDENCE.NORM](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

CONFIDENCE(Alpha, Sigma, n)

Description:

Returns a value that allows you to determine the 1-alpha confidence interval for the population mean of a distribution.

The 1-alpha confidence interval is a range of values around the sample mean x covering the interval from $(x - \text{CONFIDENCE})$ to $(x + \text{CONFIDENCE})$. The probability that this interval contains the population mean is 1-Alpha.

Alpha is the significance level to compute the confidence level. Must be in the range 0 to 1.

For example, if **Alpha** is 5%, the probability that the population mean is *outside* the confidence interval is 5%. The probability that it is *inside* is 1-**Alpha**, i.e., 95%. Therefore, 1-alpha is also called the "confidence level".

Sigma is the population standard deviation. Must be > 0 .

n is the size of the sample. Must be > 0 .

Example:

CONFIDENCE(0.05, 1.6, 65) returns 0.38897

See also:

[CONFIDENCE.NORM](#)

CONFIDENCE.NORM (confidence interval)

Syntax:

CONFIDENCE.NORM(Alpha, Sigma, n)

Description:

Returns a value that allows you to determine the 1-alpha confidence interval for the population mean of a distribution.

The 1-alpha confidence interval is a range of values around the sample mean x covering the interval from ($x - \text{CONFIDENCE}$) to ($x + \text{CONFIDENCE}$). The probability that this interval contains the population mean is 1-**Alpha**.

Alpha is the significance level to compute the confidence level. Must be in the range 0 to 1.

For example, if **Alpha** is 5%, the probability that the population mean is *outside* the confidence interval is 5%. The probability that it is *inside* is 1-**Alpha**, i.e., 95%. Therefore, 1-alpha is also called the "confidence level".

Sigma is the population standard deviation. Must be > 0 .

n is the size of the sample. Must be > 0 .

Example:

CONFIDENCE.NORM(0.05, 1.6, 65) returns 0.38897

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:[CONFIDENCE](#)

CONVERT (unit conversion)**Syntax:**

CONVERT(Number, From, To)

Description:

Converts a number between different measurement systems.

Number is the number to be converted.

From is the unit of **Number** (see table below).

To is the target unit (see table below).

Both units have to be in the same category. For example, you can convert meters to miles, but of course not to minutes.

A #N/A error value is displayed if a) **From** and **To** are not from the same category, or b) invalid unit codes.

Note: Unit codes are case-sensitive!

The following unit codes are available:

Mass	Code
Gram	g
Slug	sg
Pound (avoirdupois)	lbm
u (atom mass)	u
Ounce (avoirdupois)	ozm

Distance	Code
Meter	m
Statute mile	mi
Nautical mile	Nmi
Inch	in

Foot	ft
Yard	yd
Ångström	ang
Pica	Pica
Light year*	ly
Parsec (parallax second)*	parsec

* These units are not supported by Microsoft Excel.

Time	Code
Second	sec
Minute	mn
Hour	hr
Day	day
Year**	yr
Fortnight*	ftn

* This unit is not supported by Microsoft Excel.

** Based on a year with 365.25 days

Liquid measure	Code
Liter	l (lower case "L")
Teaspoon	tsp
Tablespoon	tbs
Fluid Ounce	oz
Cup	cup
Pint (U.S.)	pt
Pint (U.K.)	uk_pt
Quart	qt
Gallon	gal

Force	Code
Newton	N
Dyne	dyn
Pound-force	lbf

Power	Code
Watt	W
HP (Horsepower)	HP

Magnetism	Code
Tesla	T
Gauss	ga

Energy	Code
Joule	J
Erg	e
Thermodynamic calorie	c
IT calorie	cal
Electron volt	eV
Horsepower-hour	HPh
Watt-hour	Wh
Foot-pound force	flb
BTU (British Thermal Unit)	BTU

Pressure	Code
Pascal	Pa
Atmosphere	atm
mm of Mercury	mmHg

Temperature	Code
Degree Fahrenheit	F
Degree Celsius	C
Degree Kelvin	K

Additionally, prefixes can be added to metric units, "mg", for instance, stands for milligrams.

The following prefixes are available:

Prefix (and factor)	Code
----------------------------	-------------

Exa (10 ¹⁸)	E
Peta (10 ¹⁵)	P
Tera (10 ¹²)	T
Giga (10 ⁹)	G
Mega (10 ⁶)	M
Kilo (1000)	k
Hecto (100)	h
Deka (10)	e
Deci (0.1)	d
Centi (0.01)	c
Milli (0.001)	m
Micro (10 ⁻⁶)	u
Nano (10 ⁻⁹)	n
Pico (10 ⁻¹²)	p
Femto (10 ⁻¹⁵)	f
Atto (10 ⁻¹⁸)	a

Example:

CONVERT(1, "day", "sec") returns 86400 (days -> seconds)

CONVERT(1, "mi", "km") returns 1.60934 (miles -> kilometers)

CONVERT(100, "kW", "HP") returns 134.10201 (100 kW -> HP)

CONVERT(1, "aparsec", "cm") returns 3.08568 (Attoparsec -> cm)

CORREL (correlation coefficient)**Syntax:**

CORREL(Range1, Range2)

Description:

Returns the correlation coefficient of two data sets.

The correlation coefficient is a measure of the relationship between two data sets.

Range1 and **Range2** are references to the two cell ranges containing the two data sets. Empty cells and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise the function returns a #N/A error value.

Example:

If A1:A3 contains the values 2, 5, 3 and B1:B3 contains 2, 7, 4:

CORREL(A1:A3, B1:B3) returns 0.99718

See also:

[FISHER](#), [FISHERINV](#), [COVARIANCE.P](#)/[COVARIANCE.S](#)/[COVAR](#)

COS (cosine)

Syntax:

COS(Number)

Description:

Returns the cosine of **Number**.

Tip:

You can use the [RADIANS](#) function to convert an angle given in degrees into radians.

Example:

COS(PI()) returns -1

COS(RADIANS(180)) returns -1

See also:

[ACOS](#), [SIN](#), [TAN](#)

COSH (hyperbolic cosine)

Syntax:

COSH(Number)

Description:

Returns the hyperbolic cosine of **Number**.

Example:

COSH(0.1) returns 1.005

See also:

[ACOSH](#), [SINH](#), [TANH](#)

COT (cotangent)

Syntax:

COT(Number)

Description:

Returns the cotangent of **Number**.

Tip:

You can use the [RADIANS](#) function to convert an angle given in degrees into radians.

Example:

COT(PI()/4) returns 1

COT(RADIANS(45)) returns 1

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[TAN](#), [ACOT](#)

COTH (hyperbolic cotangent)**Syntax:**

COTH(Number)

Description:

Returns the hyperbolic cotangent of **Number**.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

COTH(0.45) returns 2.37024

See also:

[ACOTH](#), [TANH](#)

COUNT (number of cells filled with numbers)**Syntax:**

COUNT(Range1 [, Range2, Range3 ...])

Description:

Counts the number of cells containing numbers.

This functions counts only cells with numbers (including dates) and text representing a number. To count cells with *any* content, use the [COUNTA](#) function instead

Example:

If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNT(A1:A4) returns 1

See also:

[COUNTA](#), [COUNTBLANK](#), [COUNTP](#), [FREQUENCY](#), [ISBLANK](#), [ISNUMBER](#), [COUNTIF](#), [COUNTIFS](#)

COUNTA (number of cells filled)

Syntax:

COUNTA(Range1 [, Range2, Range3 ...])

Description:

Counts the number of cells containing any kind of value (i.e., cells that are not empty).

Example:

If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNTA(A1:A4) returns 3

Hint:

The [COUNT](#) function works similarly, but only counts cells with *numbers*.

See also:

[COUNT](#), [ISBLANK](#)

COUNTBLANK (number of empty cells)

Syntax:

COUNTBLANK(Range)

Description:

Counts the number of cells in a cell range that are empty.

Example:

If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNTBLANK(A1:A4) returns 1

See also:

[ISBLANK](#), [COUNT](#)

COUNTIF (count if condition is true)

Syntax:

COUNTIF(Range, Criterion)

Description:

Counts those cells in a cell range that fulfill the specified criterion.

Range is the cell range to be evaluated.

Criterion is the criterion that the values in **Range** have to fulfill to be included.

Use numbers or text (like "42" or "bolts") to count all cells that contain that value.

Hint: To count all non-empty cells, use "*" as criterion. For example COUNTIF(D2:D4, "*") counts all cells in the specified area that are not empty.

Use conditions (like ">10" or "<=5") to count all cells that match the specified condition (see examples below).

Note: Criteria always have to be surrounded by double quotation marks (").

Example:

If the cells A1:A5 contain 1, 2, 3, 2, 1:

COUNTIF(A1:A5, "2") returns 2

COUNTIF(A1:A5, ">=2") returns 3

See also:

[AVERAGEIF](#), [AVERAGEIFS](#), [COUNT](#), [COUNTIFS](#), [SUMIF](#), [SUMIFS](#)

COUNTIFS (count if conditions are true)

Syntax:

COUNTIFS(Range1, Criterion1 [, Range2, Criterion2 ...])

Description:

Applies criteria to the cells in the specified cell ranges and counts how often *all* of these criteria are fulfilled.

This function is similar to the [COUNTIF](#) function, but allows you to specify more than just one range/criterion to be searched

Range1 is the first cell range to be checked for a criterion. Please note that all of the cell ranges specified must have the same dimensions.

Criterion1 is the criterion that the values in **Range1** have to fulfill.

Use numbers or text (like "42" or "bolts") to check if the cell contains a certain value.

Use conditions (like ">10" or "<=5") to check if the cell matches a certain condition.

Note: Criteria always have to be surrounded by double quotation marks (").

Unlike the COUNTIF function, COUNTIFS allows you to specify more than just one cell range and criterion to be checked. If you do so, the function counts only occurrences where *all* criteria are fulfilled.

Compatibility notes:

This function is *not* supported by the .xls file format (used in Microsoft Excel 2003 and earlier). If you save a document in this format, all calculations using this function will be replaced by their last result as a *fixed* value.

Accordingly, if you use this function, you should not save your document in the "Microsoft Excel 97-2003 (.xls)" file format, but choose one of the following formats instead:

- "PlanMaker document (.pmdx or .pmd)"

- or: "Microsoft Excel 2007-2016 (.xlsx)"

Example:

COUNTIFS(C1:C10, ">1", C1:C10, "<2")

This formula counts how many cells in the cell range C1:C10 are greater than 1 and less than 2.

COUNTIFS(A1:D4, "tuna", G10:K14, ">500")

This formula counts how often the following conditions are met: The cell in A1:D4 contains "tuna" *and* the corresponding cell in G10:K14 contains a value greater than 500.

See also:

[AVERAGEIF](#), [AVERAGEIFS](#), [COUNT](#), [COUNTIF](#), [SUMIF](#), [SUMIFS](#)

COUNTP (PlanMaker 97 compatibility function)

Syntax:

COUNTP(Range1 [, Range2, Range3 ...])

Description:

Counts the number of cells containing numbers or logical values.

Note:

This function was retained only for compatibility with PlanMaker 97. Using the Excel-compatible functions COUNT or COUNTA is recommended instead.

The difference between these three functions is:

COUNTA counts all cells that are not empty.

COUNT counts only cells that contain *numbers*.

COUNTP counts only cells that contain *numbers* or *logical values*.

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

Example:

If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNTA(A1:A4) returns 3

COUNT(A1:A4) returns 1

COUNTP(A1:A4) returns 2

See also:

[COUNT](#), [COUNTA](#)

COVAR (Covariance population)

Note: COVAR is supplemented by the new identical function [COVARIANCE.P](#) (population covariance) and the completely new function [COVARIANCE.S](#) (sample covariance), which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

COVAR(Range1, Range2)

Description:

Returns the **population** covariance of two data sets.

The covariance is the average of the products of the deviations for each pair of values. It can be used to determine the extent to which two data sets vary ("co-vary").

Range1 and **Range2** are references to the two cell ranges containing the two data sets. Empty cells, text, and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise the function returns a #N/A error value.

Example:

If A1:A3 contains the values 2, 5, 3 and B1:B3 contains 2, 7, 4:

COVAR(A1:A3, B1:B3) returns 2.55556

See also:

[COVARIANCE.P/COVARIANCE.S](#), [CORREL](#), [FISHER](#), [FISHERINV](#)

COVARIANCE.P (Covariance population)

Syntax:

COVARIANCE.P(Range1, Range2)

Description:

Returns the **population** covariance of two data sets.

The covariance is the average of the products of the deviations for each pair of values. It can be used to determine the extent to which two data sets vary ("co-vary").

Range1 and **Range2** are references to the two cell ranges containing the two data sets. Empty cells, text, and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise the function returns a #N/A error value.

Example:

If A1:A3 contains the values 2, 5, 3 and B1:B3 contains 2, 7, 4:

COVARIANCE.P(A1:A3, B1:B3) returns 2.55556

Note:

The COVARIANCE.P function supplements together with [COVARIANCE.S](#) the previous [COVAR](#) function, whereby COVARIANCE.P, just like COVAR, returns the **population** covariance and COVARIANCE.S the **sample** covariance.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[COVARIANCE.S/COVAR](#), [CORREL](#), [FISHER](#), [FISHERINV](#)

COVARIANCE.S (Covariance sample)

Syntax:

COVARIANCE.S(Range1, Range2)

Description:

Returns the **sample** covariance of two data sets.

The covariance is the average of the products of the deviations for each pair of values. It can be used to determine the extent to which two data sets vary ("co-vary").

Range1 and **Range2** are references to the two cell ranges containing the two data sets. Empty cells, text, and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise the function returns a #N/A error value.

Example:

If A1:A3 contains the values 2, 5, 3 and B1:B3 contains 2, 7, 4:

COVARIANCE.S(A1:A3, B1:B3) returns 3.83333

Note:

The COVARIANCE.S function supplements together with [COVARIANCE.P](#) the previous [COVAR](#) function, whereby COVARIANCE.S returns the **sample** covariance and COVARIANCE.P, just like KOVAR, the **population** covariance.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[COVARIANCE.P/COVAR](#), [CORREL](#), [FISHER](#), [FISHERINV](#)

CREATEDATE (date the document was created)

Syntax:

CREATEDATE()

Description:

Returns the date/time the current document was created.

Example:

In a document created on the 24th of August, 2018 at 9:03 AM:

CREATEDATE() returns 08/24/18 9:03 AM

Note: To change the format of the resulting date, choose the **Format > Cell** menu command and select the desired date format (e.g., date only, date and time, or time only).

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[NOW](#), [TODAY](#)

CRITBINOM (binomial distribution)

Note: CRITBINOM is supplemented by the new identical function [BINOM.INV](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

CRITBINOM(n, p, Alpha)

Description:

Returns the smallest value for which the cumulative binomial distribution is greater than or equal to the criterion value **Alpha**.

This function is applicable to binomial distributions only (i.e., experiments with only two possible outcomes: "success" or "failure").

n is the number of independent trial runs.

p is the probability of a success for each trial run. Must be in the range 0 to 1.

Alpha is the criterion value. Must be in the range 0 to 1.

Example:

CRITBINOM(100, 7%, 1%) returns 2

See also:

[BINOM.INV](#), [BINOM.DIST.RANGE](#)/[BINOM.DIST](#)/[BINOMDIST](#)

CUMIPMT (cumulative interest)

Syntax:

CUMIPMT(Rate, NPer, PV, P1, P2, Type)

Description:

Returns the cumulative interest payments between period **P1** and period **P2**. This function is applicable to loans with periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

NPer is the total number of payment periods.

PV is the present value (the loan amount).

P1 and **P2** define the time interval to be evaluated. P1 is the first period, and P2 is the last.

Type is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Example:

Loan terms: \$100,000 at 10% per year, to be repaid over 72 months with monthly payments at the end of each month.

How much interest has to be paid in the periods (= months) 24 through 36?

CUMIPMT(10%/12, 6*12, 100000, 24, 36, 0) returns -7219.88.

Note that all values have to use the same time unit, months in this case, since the payments are made *monthly*. Therefore, in the above formula, the yearly interest rate had to be divided by 12 to get the monthly interest rate.

See also:

[CUMPRINC](#), [PPMT](#), [IPMT](#), [PMT](#)

CUMPRINC (cumulative principal)

Syntax:

CUMPRINC(Rate, NPer, PV, P1, P2, Type)

Description:

Returns the cumulative principal payments between period **P1** and period **P2**. This function is applicable to loans with periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

NPer is the total number of payment periods.

PV is the present value (the loan amount).

P1 and **P2** define the time interval to be evaluated. P1 is the first period, and P2 is the last.

Type is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Example:

Loan terms: \$100,000 at 10% per year, to be repaid over 72 months with monthly payments at the end of each month.

How much principal has to be paid in the periods (= months) 24 through 36?

CUMPRINC(10%/12, 6*12, 100000, 24, 36, 0) returns -16863.71.

Note that all values have to use the same time unit, *months* in this case, since the payments are made *monthly*. Therefore, in the above formula, the yearly interest rate had to be divided by 12 to get the *monthly* interest rate.

See also:

[CUMIPMT](#), [PPMT](#), [IPMT](#), [PMT](#)

CURRENCY (format number as currency)

Syntax:

CURRENCY(Number [, n])

Description:

Returns a text string containing **Number** formatted in currency format and rounded to **n** decimal places.

The currency symbol applied depends on your computer's language settings. For example, in the U.S. a dollar sign \$ is applied, in Germany, a euro sign € is applied, etc.

Number is the number to be converted.

n (optional) is the number of decimal places. If **n** is omitted, **Number** is rounded to two places.

If **n** is a negative value, **Number** is rounded to the left of the decimal point. For example, if **n** is -2, **Number** is rounded to the nearest multiple of hundred (see last example).

Annotation:

Please keep in mind that the result of this function is a **text string**. To round a number *without* converting it to a text string, use one of the round functions (e.g., [ROUND](#)) instead

Alternatively, you can let PlanMaker display a number rounded and formatted as a currency by applying one of the currency formats to the number (using the **Format > Cell** menu command).

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

CURRENCY(123.456) returns the text string \$123.46

CURRENCY(123.456, 2) returns the text string \$123.46

CURRENCY(123.456, -2) returns the text string \$100

DATE (create a date value)

Syntax:

DATE(Year, Month, Day)

Description:

Returns a date created out of the specified **Year**, **Month**, and **Day**.

Example:

DATE(2018, 9, 25) returns the date 09/25/2018

See also:

[DATEVALUE](#), [TIME](#), [TIMEVALUE](#)

DATEDIF (date difference)

Syntax:

DATEDIF(StartDate, EndDate, Mode)

Description:

Returns the number of days, months, or years between two dates.

StartDate and **EndDate** are the two dates to be evaluated. **StartDate** must be less (i.e., earlier) than **EndDate**.

Mode lets you specify the kind of value to be returned:

- "y" Number of years between StartDate and EndDate
- "m" Number of months between StartDate and EndDate
- "d" Number of days between StartDate and EndDate
- "ym" Number of months, excluding years (as if StartDate and EndDate were in the same year)
- "yd" Number of days, excluding years (as if StartDate and EndDate were in the same year)

"md" Number of months, excluding month and years (as if StartDate and EndDate were in the same month and year)

Note:

This function is an undocumented Excel function. It still exists in Microsoft Excel, but has been removed from Excel's help file and therefore seems to be no longer officially supported.

Example:

To calculate the age of a person, enter the date of birth in cell A1 (e.g. 4/3/1970). In A2, enter the current date (e.g. 6/8/2012). Then, use any of the following calculations:

Age in years:

DATEDIF(A1, A2, "y") returns 42 (years)

Age in months:

DATEDIF(A1, A2, "m") returns 506 (months)

Age in days:

DATEDIF(A1, A2, "d") returns 15407 (days)

Age in years, months and days:

DATEDIF(A1, A2, "y") returns 42 (years)

DATEDIF(A1, A2, "ym") returns 2 (months)

DATEDIF(A1, A2, "md") returns 5 (days)

(Accordingly, the person's age is 42 years, 2 months, and 5 days.)

See also:

[NOW](#), [NETWORKDAYS](#), [DAYS/DAYSP](#)

DATEVALUE (convert text into date value)

Syntax:

DATEVALUE(Text)

Description:

Converts a text string representing a date to a serial date value.

Note:

This function was retained only for compatibility with older spreadsheet applications. It is no longer commonly used, as current spreadsheet applications (including PlanMaker) automatically convert text representing a date to a serial date value, where necessary.

Example:

DATEVALUE("09/25/2013") returns 41542.

See also:

[TIMEVALUE](#), [DATE](#), [TIME](#)

DAVERAGE (database function)

Syntax:

DAVERAGE(DatabaseArea, Column, CriteriaArea)

Description:

Returns the average of those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[AVERAGE](#), [DPRODUCT](#), [DSUM](#)

DAY (day of a date)

Syntax:

DAY(Date)

Description:

Returns the day of a date.

Example:

DAY("09/25/2018") returns 25

See also:

[WEEKDAY](#), [ISOWEEK](#), [ISOWEEKNUM](#), [WEEKNUM](#), [MONTH](#), [YEAR](#)

DAYS (days between two dates)

Syntax:

DAYS(EndDate, StartDate)

Description:

Returns the number of days between two dates.

Please note the order of the parameters: The *end* date has to be specified first, the start date second.

Note:

This function was revised in PlanMaker 2016: The order of its two parameters was swapped.

Background information: The DAYS function has been available in PlanMaker since a long time, whereas Excel did not have it implemented. In Excel 2013, a function with the same name was added. It returns exactly the same results – however, the order of its parameters is different: first the end date, then the start date. In order to be compatible with Excel, the parameter order was swapped in PlanMaker 2016.

The previous version of the function was renamed to [DAYSP](#). Thus, the functions DAYS and DAYSP are identical, only the order of their parameters differs:

DAYS(EndDate, StartDate) equals

DAYSP(StartDate, EndDate)

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

DAYS("01/14/2018", "01/01/2018") returns 13

See also:

[DAYSP](#), [DATEDIF](#), [NETWORKDAYS](#), [DAYS360](#), [TIMEDIFF](#)

DAYS360 (days between two dates)

Syntax:

DAYS360(StartDate, EndDate [, Mode])

Description:

Returns the number of days between two dates – based on a year with 360 days (12 months with 30 days each).

StartDate and **EndDate** are the two dates to be evaluated.

Mode (optional) is a logical value that lets you specify how dates occurring on the 31st of a month should be evaluated:

FALSE or omitted: The **U.S. (NASD) method** is used: If **StartDate** is the 31st of a month, the 30th of the same month will be used instead. If **EndDate** is the 31st of a month, the 1st of the following month will be used instead. Exception: If **StartDate and EndDate** are the 31st of a month, the 30th of the same month will be used instead (for both dates).

TRUE: The **European method** is used: If **StartDate** or **EndDate** is the 31st of a month, the 30th of the same month will be used instead.

Example:

DAYS360("01/01/2018", "02/01/2018") returns 30

DAYS360("02/01/2018", "03/01/2018") returns 30

DAYS360("01/01/2012", "01/01/2013") returns 360

See also:

[DATEDIF](#), [NETWORKDAYS](#), [DAYS/DAYSP](#), [TIMEDIFF](#)

DAYSP (compatibility function)

Syntax:

DAYSP(StartDate, EndDate)

Description:

Compatibility function for older PlanMaker documents.

This function has been replaced by the [DAYS](#) function (Please note that DAYS expects its parameters in reversed order)

See the notes below.

Note:

DAYSP is merely a compatibility function. When you open a document created with PlanMaker 2012 or earlier, all occurrences of the DAYS function are automatically converted into DAYSP. Reason: In PlanMaker 2016, the parameter order of the DAYS function was swapped.

For new documents, it is recommended to use the Excel 2013 compatible function DAYS instead, which is identical – except for the order of its parameters:

DAYS(EndDate, StartDate) equals

DAYSP(StartDate, EndDate)

For more details, see the [DAYS](#) function.

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

Example:

DAYSP("01/01/2018", "01/14/2018") returns 13

See also:

[DAYS](#), [DATEDIF](#), [NETWORKDAYS](#), [DAYS360](#), [TIMEDIFF](#)

DAYSPERMONTH (days per month)

Syntax:

DAYSPERMONTH(Date)

Description:

Returns the number of days in the specified month.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

DAYSPERMONTH("09/25/2018") returns 30

DAYSPERMONTH("10/25/2018") returns 31

See also:

[DAYSPERYEAR](#), [YEAR](#), [DAYS/DAYSP](#), [DAYS360](#)

DAYSPERYEAR (days per year)

Syntax:

DAYSPERYEAR(Date)

Description:

Returns the number of days in the specified year.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

DAYSPERYEAR("01/01/2012") returns 366 (2012 was a leap year)

DAYSPERYEAR("01/01/2013") returns 365 (2013 was not a leap year)

See also:

[YEAR](#), [DAYSPERMONTH](#), [DAYS/DAYSP](#), [DAYS360](#)

DB (fixed-declining balance depreciation)

Syntax:

DB(Cost, Salvage, Life, Per [, Months])

Description:

Returns the depreciation of an asset for the specified period, using the fixed-declining balance method.

Cost = Initial cost of asset

Salvage = Salvage value (value at the end of the depreciation)

Life = Life of asset (in number of periods)

Per = Period to evaluate (in the same time unit as **Life**)

Months (optional) = Number of Months in the first year (12 if omitted)

Example:

Asset parameters: initial cost = 100000, salvage value = 20000, life = 10 years

DB(100000, 20000, 10, 1) returns 14900.00 (depreciation in year 1)

DB(100000, 20000, 10, 2) returns 12679.90 (depreciation in year 2)

etc.

See also:

[DDB](#), [SYD](#), [SLN](#)

DCOUNT (database function)

Syntax:

DCOUNT(DatabaseArea, Column, CriteriaArea)

Description:

Returns the number of those values in a column of a database area that match the conditions specified in the criteria area.

Only cells containing numbers (including dates) are counted, cells with text or logical values are ignored.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[DCOUNTA](#)

DCOUNTA (database function)

Syntax:

DCOUNTA(DatabaseArea, Column, CriteriaArea)

Description:

Returns the number of those values in a column of a database area that match the conditions specified in the criteria area.

Unlike the DCOUNT function, DCOUNTA not only counts cells containing numbers but also counts cells with text or logical values.

Detailed instructions on the use of database-related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[DCOUNT](#)

DDB (double-declining balance depreciation)

Syntax:

DDB(Cost, Salvage, Life, Per [, Factor])

Description:

Returns the depreciation of an asset for the specified period, using the double-declining balance method (or a variable-declining balance method, if **Factor** is specified).

Cost = Initial cost of asset

Salvage = Salvage value (value at the end of the depreciation)

Life = Life of asset (in number of periods)

Per = Period to evaluate (in the same time unit as **Life**)

Factor (optional) = Rate at which the balance declines (2 if omitted)

Example:

Asset parameters: initial cost = 100000, salvage value = 20000, life = 10 years

DDB(100000, 20000, 10, 1) returns 20000 (depreciation in year 1)

DDB(100000, 20000, 10, 2) returns 16000 (depreciation in year 2)

etc.

See also:

[DB](#), [SYD](#), [SLN](#)

DEC2BIN (decimal number to binary number)

Syntax:

DEC2BIN(Number [, Digits])

Description:

Converts the given decimal number (base 10) to a binary number (base 2).

Note: Please note that the result of this function is a text string – not a number.

Number is the number to be converted. It must be in the range $-(2^{31})$ to $(2^{31})-1$. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

DEC2BIN(42) returns 101010

DEC2BIN(42, 8) returns 00101010

DEC2BIN(42, 4) returns the error value #NUM! because the number 42 cannot be represented with fewer than 6 binary digits

DEC2BIN(-42) returns 111111111111111111111111111111010110

See also:

[BIN2DEC](#), [DEC2HEX](#), [DEC2OCT](#), [BASE](#)

DEC2HEX (decimal number to hexadecimal number)

Syntax:

DEC2HEX(Number [, Digits])

Description:

Converts the given decimal number (base 10) to a hexadecimal number (base 16).

Note: Please note that the result of this function is a text string – not a number.

Number is the number to be converted. It must be in the range $-(2^{31})$ to $(2^{31})-1$. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

DEC2HEX(42) returns 2A

DEC2HEX(42, 8) returns 0000002A

DEC2HEX(42, 1) returns the error value #NUM! because the number 42 cannot be represented with fewer than 2 hexadecimal digits

DEC2HEX(-42) returns FFFFFFFD6

See also:

[HEX2DEC](#), [DEC2BIN](#), [DEC2OCT](#), [BASE](#)

DEC2OCT (decimal number to octal number)

Syntax:

DEC2OCT(Number [, Digits])

Description:

Converts the given decimal number (base 10) to an octal number (base 8).

Note: Please note that the result of this function is a text string – not a number.

Number is the number to be converted. It must be in the range $-(2^{31})$ to $(2^{31})-1$. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

DEC2OCT(42) returns 52

DEC2OCT(42, 8) returns 00000052

DEC2OCT(42, 1) returns the error value #NUM! because the number 42 cannot be represented with fewer than 2 octal digits

DEC2OCT(-42) returns 3777777726

See also:

[OCT2DEC](#), [DEC2BIN](#), [DEC2HEX](#), [BASE](#)

DECIBEL (decibel value of two quantities)

Syntax:

DECIBEL(P2 [, P1])

Description:

Returns the decibel value (dB) for the ratio of two quantities.

The calculation is based on the following formula:

$DECIBEL(P2, P1) = 10 * LOG10(P2/P1)$

Note the order of the two parameters: The dividend **P2** of the quotient has to be specified first, the divisor **P1** second – not vice versa.

P2 and **P1** have to be numbers. Their quotient has to be greater than zero.

The parameter **P1** is optional. If it is not specified, PlanMaker sets it to 1 (one) automatically.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

DECIBEL(1000, 10) returns 20

DECIMAL (convert number from any base to decimal)**Syntax:**

DECIMAL(Number, Base)

Description:

Converts a number from any base to decimal (base 10) – for example a binary number (base 2) or a hexadecimal number (base 16).

Number is the number to be converted.

Base is the base of the number. Only integers between 2 and 32 are allowed.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

DECIMAL("00101010", 2) returns 42

DECIMAL("FF", 16) returns 255

See also:

[BASE](#), [BIN2DEC](#), [HEX2DEC](#), [OCT2DEC](#)

DECIMALS (fractional part of a number)

Syntax:

DECIMALS(Number)

Description:

Returns the fractional part of the given number (i.e., the digits to the right of the decimal point).

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

DECIMALS(5.779) returns 0.779

Hint:

To obtain the places before the decimal point use the TRUNC function.

See also:

[TRUNC](#)

DEGREES (convert radians to degrees)

Syntax:

DEGREES(Number)

Description:

Converts radians into degrees.

The following conversion formula is used:

$DEGREES(x) = x * 180 / \text{PI}()$

Example:

DEGREES(PI()) returns 180

See also:

[RADIANS](#)

DELTA (test for equality)

Syntax:

DELTA(Number1, Number2)

Description:

Tests if two values are equal. If they are, 1 is returned, otherwise 0 is returned.

Number1 and **Number2** have to be numbers or text strings representing numbers, otherwise a #VALUE! error value is returned.

Example:

DELTA(1, 2) returns 0

DELTA(2, 2) returns 1

DELTA(2, "2") returns 1

DELTA("Text", "Text") returns a #VALUE! error value

See also:

[EXACT](#)

DEVSQ (average square deviation)

Syntax:

DEVSQ(Number1 [, Number2, Number3 ...])

Description:

Returns the sum of squares of deviations of the specified numbers from their sample mean.

Empty cells, text strings, and logical values are ignored.

Example:

DEVSQ(2, 2, 2, 3) returns 0.75

See also:

[AVEDEV](#), [STDEV.S/STDEV](#), [SUM](#), [VAR.S/VAR](#)

DGET (database function)

Syntax:

DGET(DatabaseArea, Column, CriteriaArea)

Description:

Returns the value in a column of a database area that matches the given criteria.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

Note:

If more than one value matches the specified criteria, the function returns a #NUM! error value.

DMAX (database function)

Syntax:

DMAX(DatabaseArea, Column, CriteriaArea)

Description:

Returns the largest of those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[MAX](#), [DMIN](#)

DMIN (database function)

Syntax:

DMIN(DatabaseArea, Column, CriteriaArea)

Description:

Returns the smallest of those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[MIN](#), [DMAX](#)

DOLLARDE (dollar price, decimal)

Syntax:

DOLLARDE(Value, Divisor)

Description:

Converts a dollar price, expressed as a fraction, into a decimal dollar price.

Value is the number to be converted.

Divisor is the denominator of the fraction. It must be greater than or equal to 1. **Divisor** should be an integer, digits right of the decimal point are ignored.

Example:

DOLLARDE(27.4, 8) converts the fraction 27 4/8 into the decimal value 27.5.

See also:

[DOLLARFR](#)

DOLLARFR (dollar price, fraction)

Syntax:

DOLLARFR(Value, Divisor)

Description:

Converts a decimal dollar price into a dollar price expressed as a fraction.

Value is the number to be converted.

Divisor is the denominator of the fraction. It must be greater than or equal to 1. **Divisor** should be an integer, digits right of the decimal point are ignored.

Example:

DOLLARFR(27.5, 8) returns 27.4 (since 27.5 equals the fraction 27 4/8)

See also:

[DOLLARDE](#)

DPRODUCT (database function)

Syntax:

DPRODUCT(DatabaseArea, Column, CriteriaArea)

Description:

Returns the product of those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[PRODUCT](#), [DAVERAGE](#), [DSUM](#)

DSTDEV (database function)

Syntax:

DSTDEV(DatabaseArea, Column, CriteriaArea)

Description:

Estimates the standard deviation of a population based on a sample, using those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[STDEV.P/STDEV.P](#), [DSTDEVP](#)

DSTDEVP (database function)

Syntax:

DSTDEVP(DatabaseArea, Column, CriteriaArea)

Description:

Calculates the standard deviation of a population based on the entire population, using those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[STDEV.S/STDEV](#), [DSTDEV](#)

DSUM (database function)

Syntax:

DSUM(DatabaseArea, Column, CriteriaArea)

Description:

Returns the sum of those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (Amount, Price, etc.).

See also:

[SUM](#), [DAVERAGE](#), [DSUM](#)

DVAR (database function)

Syntax:

DVAR(DatabaseArea, Column, CriteriaArea)

Description:

Estimates the variance of a population based on a sample, using those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also:

[VAR.S/VAR](#), [DVARP](#)

DVARP (database function)

Syntax:

DVARP(DatabaseArea, Column, CriteriaArea)

Description:

Calculates the variance of a population based on the entire population, using those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section [Working with database functions](#).

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (Amount, Price, etc.).

See also:

[VAR.P/VARP](#), [DVAR](#)

EDATE (date before/after n months)

Syntax:

EDATE(StartDate, m)

Description:

Returns the date that is **m** months before/after **StartDate**.

StartDate is the start date.

m is the number of months.

If **m** is positive, a date in the *future* will be returned.

If **m** is negative, a date in the *past* will be returned.

Example:

EDATE("03/30/2018", 1) returns 04/30/2018

EDATE("03/31/2018", 1) returns 04/30/2018 as well, because April has just 30 days.

See also:

[EOMONTH](#)

EFFECT (effective interest rate)

Syntax:

EFFECT(NomRate, NPerYear)

Description:

Returns the effective annual interest rate, given the nominal annual interest rate and the number of compounding periods per year.

NomRate is the nominal annual interest rate.

NPerYear is the number of compounding periods per year.

Example:

To calculate the effective annual interest rate of an investment with a nominal annual interest rate of 5%, compounded quarterly:

EFFECT(5%, 4) returns approx. 5.09%

See also:

[NOMINAL](#)

EOMONTH (end of month in n months)

Syntax:

EOMONTH(StartDate, m)

Description:

Returns the last day of the month that is **m** months before/after **StartDate**.

StartDate is the start date.

m is the number of months.

If **m** is positive, a date in the *future* will be returned.

If **m** is negative, a date in the *past* will be returned.

If **m** is zero, the last day of the *current* month will be returned.

Example:

EOMONTH("09/25/2018", 0) returns 09/30/2018

EOMONTH("09/25/2018", 1) returns 10/31/2018

EOMONTH("09/25/2018", -1) returns 08/31/2018

See also:

[EDATE](#)

ERF (Gaussian error function)

Syntax:

ERF(LowerLimit [, UpperLimit])

Description:

Return the Gaussian error function.

LowerLimit is the lower bound for the integral.

UpperLimit (optional) is the upper bound for the integral. If omitted, the integral between zero and **LowerLimit** will be returned.

See also:

[ERFC](#)

ERFC (complement of Gaussian error function)

Syntax:

ERFC(LowerLimit)

Description:

Return the complement to the Gaussian error function.

LowerLimit is the lower bound of the integral. Must be ≥ 0 .

See also:

[ERF](#)

ERROR.TYPE (error type)

Syntax:

ERROR.TYPE(Reference)

Description:

Returns a number representing the type of error value in a cell.

Reference is a reference to a single cell.

Possible results of this function:

Error value in cell	Result
No error value	#N/A
#NULL!	1
#DIV/0!	2
#VALUE!	3
#REF!	4
#NAME?	5
#NUM!	6
#N/A	7

For more details about error values, see section [Error values](#).

Example:

If A1 contains 1/0 and A2 contains 1/1:

ERROR.TYPE(A1) returns 2 (i.e., #DIV/0!)

ERROR.TYPE(A2) returns #N/A (i.e., no error)

The calculation below returns "Error!" if any kind of error occurs in cell A1, otherwise it returns the contents of A1:

IF(ISNA(ERROR.TYPE(A1)), A1, "Error!")

See also:

[IFERROR](#), [ISERR](#), [ISERROR](#), [ISNA](#), [NA\(\)](#), [TYPE](#), section [Error values](#)

EUROCONVERT (convert EU currencies)

Syntax:

EUROCONVERT(Number, From, To)

Description:

Converts a number from one EU currency to another. Applicable only to currencies of countries that are members of the EU (European Union) and have adopted the European currency *Euro*.

This function can perform three types of conversions:

- a) Convert a number from one of these currencies **to Euros**, e.g., French francs to euros.
- b) Convert a number **from Euros** to one of these currencies, e.g. euros to French francs.
- c) Convert a number from **one of these currencies to another** by first converting it to euros and then to the other currency (a method called "triangulation"), e.g., French francs -> euros -> Spanish pesetas. **Note:** This method can lead to rounding errors of up to 0.01.

Number is the number to be converted.

From and **To** are codes representing the source and target currency (see table below). Use either PM codes or ISO codes.

Note: Microsoft Excel *only* supports ISO codes. If you want to keep your calculations Excel-compatible, make sure you solely use ISO codes (right column) with this function.

Country	PM code	ISO code
All euro countries (euro)	€	EUR
Austria (schilling)	öS	ATS
Belgium (franc)	BF	BEF
Estonia (kroon)	kr	EEK
Finland (markka)	mk	FIM
France (franc)	F	FRF
Germany (mark)	DM	DEM
Greece (drachma)	Dr	GRD
Ireland (pound)	IR£	IEP

Italy (lira)	L	ITL
Latvia (lats)	Ls	LVL
Lithuania (litas)	Lt	LTL
Luxembourg (franc)	LF	LUF
Malta (lira)	Lm	MTL
Netherlands (guilder)	fl	NLG
Portugal (escudo)	esc	PTE
Slovakia (koruna)	Sk	SKK
Slovenia (tolar)	SIT	SIT
Spain (peseta)	pts	ESP

Example:

EUROCONVERT (100, "DM", "€") converts 100 German marks to euros. The result is 51.13 (euro).

EUROCONVERT (100, "DEM", "EUR") does the same, but uses ISO codes. The result is of course identical: 51.13 (euro).

EUROCONVERT (100, "DEM", "ATS") returns 703.55 (Austrian schillings).

EVEN (round up to next even number)

Syntax:

EVEN(Number)

Description:

Rounds **Number** up (away from zero) to the nearest even integer.

Example:

EVEN(42) returns 42

EVEN(43) returns 44

EVEN(-43) returns -44

See also:

[ODD](#), [ROUND](#), [ROUNDUP](#), [MROUND](#), [FIXED](#), [INT](#), [TRUNC](#), [CEILING](#), [FLOOR](#)

EXACT (compare texts)

Syntax:

EXACT(Text1, Text2)

Description:

Returns TRUE if **Text1** and **Text2** are exactly the same. This function is case-sensitive.

Example:

EXACT("aaa", "aaa") returns TRUE

EXACT("aaa", "Aaa") returns FALSE

EXACT(UPPER("aaa"), UPPER("Aaa")) returns TRUE

See also:

[FIND](#), [SEARCH](#), [DELTA](#)

EXP (power of e)

Syntax:

EXP(Number)

Description:

Returns e raised to the power of **Number**.

The constant e (2.71828...) is the base of the natural logarithm (LN).

Number is the exponent.

Example:

EXP(5) returns 148.4132

EXP(LN(0.1234)) returns 0.1234

Hint:

The inverse function is [LN](#).

See also:

[LN](#), [LOG](#), [LOG10](#), [POWER](#)

EXPONDIST (exponential distribution)

Note: EXPONDIST is supplemented by the new identical function [EXPON.DIST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

EXPONDIST(x, Lambda, Cumulative)

Description:

Returns the exponential distribution function.

An exponential distribution can be used to model time intervals like the time between phone calls or the time customers have to wait at a counter.

x is the value to be evaluated. Must be ≥ 0 .

Lambda (λ) is the average number of successes per time interval. Must be > 0 .

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.

See also:

[EXPON.DIST](#), [POISSON.DIST/POISSON](#), [WEIBULL.DIST/WEIBULL](#)

EXPON.DIST (exponential distribution)

Syntax:

EXPON.DIST(x, Lambda, Cumulative)

Description:

Returns the exponential distribution function.

An exponential distribution can be used to model time intervals like the time between phone calls or the time customers have to wait at a counter.

x is the value to be evaluated. Must be ≥ 0 .

Lambda (λ) is the average number of successes per time interval. Must be > 0 .

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[EXPON.DIST](#), [POISSON.DIST/POISSON](#), [WEIBULL.DIST/WEIBULL](#)

FACT (factorial)

Syntax:

FACT(Number)

Description:

Returns the factorial of the specified number.

The factorial of a number is the product of all positive integers in the range from 1 to **Number**, i.e., $1*2*3*...*Number$.

Number must be ≥ 0 .

Example:

FACT(9) equals $1*2*3*4*5*6*7*8*9$, which is 362880.

See also:

[FACTDOUBLE](#), [MULTINOMIAL](#), [POLYNOMIAL](#)

FACTDOUBLE (double factorial)

Syntax:

FACTDOUBLE(Number)

Description:

Returns the double factorial of the specified number.

The double factorial is calculated as follows:

If **Number** is even, its double factorial is $2*4*6*...*\text{Number}$.

If **Number** is odd, its double factorial is $1*3*5*...*\text{Number}$.

Number must be ≥ 0 .

Example:

FACTDOUBLE(10) equals $2*4*6*8*10$, which equals 3840.

FACTDOUBLE(11) equals $1*3*5*7*9*11$, which equals 10395.

See also:

[FACT](#)

FALSE (logical value FALSE)

Syntax:

FALSE()

Description:

Returns the logical value FALSE.

See also:

[TRUE](#)

FDIST (F distribution)

Note: FDIST is supplemented by the new identical function [F.DIST.RT](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

FDIST(X, DegreesFreedom1, DegreesFreedom2)

Description:

Returns the **right-tailed** F probability distribution function.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom1 is the numerator degrees of freedom.

DegreesFreedom2 is the denominator degrees of freedom.

Both degrees of freedom must be ≥ 1 and $< 10^{10}$.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[F.DIST.RT](#), [F.INV.RT/FINV](#), [F.TEST/FTEST](#)

F.DIST.RT (F distribution)**Syntax:**

F.DIST.RT(X, DegreesFreedom1, DegreesFreedom2)

Description:

Returns the **right-tailed** F probability distribution function.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom1 is the numerator degrees of freedom.

DegreesFreedom2 is the denominator degrees of freedom.

Both degrees of freedom must be ≥ 1 and $< 10^{10}$.

See also:

[FDIST](#), [F.INV.RT/FINV](#), [F.TEST/FTEST](#)

FILENAME (file name of the document)**Syntax:**

FILENAME([IncludePath])

Description:

Returns the file name of the current document.

IncludePath (optional) determines if the path (drive and folder) should be included:

FALSE or omitted: don't include path

TRUE: include path

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

If you save a document as *Balance.pmdx* in folder *c:\Documents*:

FILENAME() returns *Balance.pmdx*

FILENAME(TRUE) returns *c:\Documents\Balance.pmdx*

See also:

[USERFIELD](#), [SHEET](#), [SHEETNAME](#), [CELL](#)

FIND (search for text)

Syntax:

FIND(SearchedText, Text [, StartPos])

Description:

Returns the position of the text string **SearchedText** within the text string **Text**.

StartPos (optional) lets you specify the position (= character) at which to start the search. If omitted, the search starts at the first character.

The FIND function is case-sensitive. To perform a non case-sensitive search, use the [SEARCH](#) function instead

Example:

FIND("a", "Banana") returns 2

FIND("A", "Banana") returns the error value #VALUE!, since the text string does not contain an upper case "A".

FIND("a", "Banana", 3) returns 4

See also:

[SEARCH](#), [REPLACE](#), [SUBSTITUTE](#), [EXACT](#), [MID](#)

FINV (percentiles of the F distribution)

Note: FINV is supplemented by the new identical function [F.INV.RT](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

FINV(Probability, DegreesFreedom1, DegreesFreedom2)

Description:

Returns the inverse of the **right-tailed** F probability distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom1 is the numerator degrees of freedom.

DegreesFreedom2 is the denominator degrees of freedom.

Both degrees of freedom must be ≥ 1 and $< 10^{10}$.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[F.INV.RT](#), [F.TEST/FTEST](#), [F.DIST.RT/FDIST](#)

F.INV.RT (percentiles of the F distribution)

Syntax:

F.INV.RT(Probability, DegreesFreedom1, DegreesFreedom2)

Description:

Returns the inverse of the **right-tailed** F probability distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom1 is the numerator degrees of freedom.

DegreesFreedom2 is the denominator degrees of freedom.

Both degrees of freedom must be ≥ 1 and $< 10^{10}$.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[FINV](#), [F.TEST/FTEST](#), [F.DIST.RT/FDIST](#)

FISHER (Fisher transformation)

Syntax:

FISHER(Number)

Description:

Returns the Fisher transformation.

Number must be > -1 and < 1 .

Hint:

The inverse function is [FISHERINV](#).

See also:

[FISHERINV](#), [CORREL](#), [COVARIANCE.P/COVARIANCE.S/COVAR](#)

FISHERINV (inverse of the Fisher transformation)

Syntax:

FISHERINV(Number)

Description:

Returns the inverse of the [FISHER](#) transformation.

See also:

[FISHER](#), [CORREL](#), [COVARIANCE.P/COVARIANCE.S/COVAR](#)

FIXED (format number as text with fixed decimals)

Syntax:

FIXED(Number [, n] [, NoThousandsSep])

Description:

Returns a text string containing **Number** rounded to **n** decimal places.

Number is the number to be converted.

n (optional) is the number of decimal places. If **n** is omitted, **Number** is rounded to two places.

If **n** is a negative value, **Number** is rounded to the left of the decimal point. For example, if **n** is -2, **Number** is rounded to the nearest multiple of hundred (see last example).

NoThousandsSep (optional) is a logical value that lets you specify if the resulting text string should contain thousands separators:

FALSE or omitted: Add thousands separators

TRUE: Do not add thousands separators

Annotation:

Please keep in mind that the result of this function is a **text string**. To round a number *without* converting it to a text string, use one of the round functions (e.g., [ROUND](#)) instead

Alternatively, you can let PlanMaker display a number rounded by applying one of the number formats to the number (using the **Format > Cell** menu command).

Example:

FIXED(1234.5678, 2) returns the text string 1,234.57

FIXED(1234.5678, 2, TRUE) returns the text string 1234.57 (without thousands separators)

FIXED(1234.5678, -2) returns the text string 1,200

See also:

[ROUND](#), [ROUNDDOWN](#), [ROUNDUP](#), [TRUNC](#), [TEXT](#), [INT](#)

FLOOR (round down to a multiple of base)

Syntax:

FLOOR(Number, Base)

Description:

Rounds **Number** down (towards zero) to the nearest multiple of **Base**.

Positive numbers are rounded to the nearest multiple of **Base** that is *smaller* than **Number**.

Negative numbers are rounded to the nearest multiple of **Base** that is *larger* than **Number**.

Number and **Base** must have the same sign, otherwise the function returns a #NUM! error value.

Example:

FLOOR(42.5, 1) returns 42

FLOOR(-42.5, -1) returns -42

FLOOR(21, 5) returns 20

FLOOR(12.3456, 0.01) returns 12.34

See also:

[CEILING](#), [ROUNDDOWN](#), [ROUNDUP](#), [ROUND](#), [MROUND](#), [TRUNC](#)

FORECAST (forecast using linear regression)

Syntax:

FORECAST(x, y_values, x_values)

Description:

Returns the y coordinate for the given x coordinate on a best-fit line based on the given values.

A *best-fit line* is the result of a *linear regression*, a statistical technique that adapts a line to a set of data points (for example, the results of a series of measurements).

This function can be used, for example, to predict the resistance of a temperature-sensitive resistor at a specific temperature after having measured the resistance at several other temperatures.

x is the x value for which a prediction is desired.

y_values are the known y values (e.g., the resistance).

x_values are the known x values (e.g., the temperature).

Example:

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns an estimate for the resistance at 15 degrees:

FORECAST(15, B1:B4, A1:A4) returns 405.21805 (Ohm)

See also:

[INTERCEPT](#), [SLOPE](#), [SKEW](#), [STEYX](#), [TREND](#)

FORMULATEXT (display the formula a cell contains)

Syntax:

FORMULATEXT(Cell)

Description:

Displays the formula that the specified cell contains.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

If the cell A1 contains the formula =SUM(D2:D4), then FORMULATEXT(A1) will return the text "=SUM(D2:D4)".

See also:

[ISFORMULA](#)

FREQUENCY (frequency)

Syntax:

FREQUENCY(Values, Bounds)

Description:

Returns a frequency distribution for the given set of values. Use this function to count how many values are part of the specified intervals.

The result of this function is a vertical array (see notes below).

Values is a cell range or an array containing the values to be evaluated. Blank cells and text strings are ignored.

Bounds is a cell range or an array containing the bounds for the intervals. For example, if **Bounds** is the array {10; 15; 42}, the function returns an array with the following values:

1. The number of values that are ≤ 10 .
2. The number of values that are > 10 and ≤ 15 .
3. The number of values that are > 15 and ≤ 42 .
4. The number of values that are > 42 .

Both **Values** and **Bounds** have to be vertical arrays (i.e., must not consist of more than one column).

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Please note that the array returned by this function contains *one element more* than the number of values in **Bounds**.

See also:

[COUNT](#)

FTEST (F-test)

Note: FTEST is supplemented by the new identical function [F.TEST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

FTEST(Array1, Array2)

Description:

Returns the result of an F-test, i.e., the one-tailed probability that the variances in the two given data sets are not significantly different.

Array1 and **Array2** are the two arrays to be evaluated.

They both have to consist of at least 2 values.

If the variance of **Array1** or **Array2** is zero, the function returns a #DIV/0! error value.

See also:

[F.TEST](#), [F.INV.RT/FINV](#), [F.DIST.RT/FDIST](#)

F.TEST (F-test)

Syntax:

F.TEST(Array1, Array2)

Description:

Returns the result of an F-test, i.e., the one-tailed probability that the variances in the two given data sets are not significantly different.

Array1 and **Array2** are the two arrays to be evaluated.

They both have to consist of at least 2 values.

If the variance of **Array1** or **Array2** is zero, the function returns a #DIV/0! error value.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[FTEST](#), [F.INV.RT/FINV](#), [F.DIST.RT/FDIST](#)

FV (future value)

Syntax:

FV(Rate, NPer, Pmt [, PV] [, Type])

Description:

Returns the future value of an investment based on periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

NPer is the total number of payment periods.

Pmt is the payment made for each period.

PV (optional) is the present value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

See also:

[FVSCHEDULE](#), [IPMT](#), [NPER](#), [PMT](#), [PPMT](#), [PV](#), [RATE](#)

FVSCHEDULE (future value)

Syntax:

FVSCHEDULE(PV, Rates)

Description:

Returns the future value of an initial principal after applying a series of *variable* compound interest rates.

The function expects the following arguments:

PV is the present value (the initial principal).

Rates is a cell range or an array containing the different interest rates (in their actual order, namely, rate for the first period, rate for the second period, etc.)

Example:

To calculate the future value of an investment of \$10,000 that pays 5% interest in the first, 5.2% in the second, 5.5% in the third, and 5.9% in the fourth year, you enter the four interest rates (in the correct order) in cells A1 to A4 and then employ the following formula:

FVSCHEDULE(10000, A1:A4) returns 12341.09

The different interest rates can also be entered directly using the following form:

FVSCHEDULE(10000, {5%, 5.2%, 5.5%, 5.9%})

See also:

[FV](#)

GAMMA (gamma function)

Syntax:

GAMMA(Number)

Description:

Calculates the gamma function for the given number.

Number must be > 0.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[GAMMALN](#), [GAMMA.DIST/GAMMADIST](#), [GAMMA.INV/GAMMAINV](#)

GAMMADIST (gamma distribution)

Note: GAMMADIST is supplemented by the new identical function [GAMMA.DIST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

GAMMADIST(X, Alpha, Beta, Cumulative)

Description:

Returns the gamma distribution.

X is the value to be evaluated. Must be ≥ 0 .

Alpha and **Beta** are shape parameters of the function. They both have to be greater than zero.

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.

See also:

[GAMMA.DIST](#), [GAMMA.INV/GAMMAINV](#), [GAMMA](#), [GAMMALN](#)

GAMMA.DIST (gamma distribution)**Syntax:**

GAMMA.DIST(X, Alpha, Beta, Cumulative)

Description:

Returns the gamma distribution.

X is the value to be evaluated. Must be ≥ 0 .

Alpha and **Beta** are shape parameters of the function. They both have to be greater than zero.

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

The inverse function is [GAMMA.INV](#).

See also:

[GAMMADIST](#), [GAMMA.INV/GAMMAINV](#), [GAMMA](#), [GAMMALN](#)

GAMMAINV (percentiles of the gamma distribution)

Note: GAMMAINV is supplemented by the new identical function [GAMMA.INV](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

GAMMAINV(Probability, Alpha, Beta)

Description:

Returns the inverse of the gamma cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Alpha and **Beta** are shape parameters of the function. They both have to be greater than zero.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[GAMMA.INV](#), [GAMMA.DIST/GAMMADIST](#), [GAMMA](#), [GAMMALN](#)

GAMMA.INV (percentiles of the gamma distribution)

Syntax:

GAMMA.INV(Probability, Alpha, Beta)

Description:

Returns the inverse of the gamma cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Alpha and **Beta** are shape parameters of the function. They both have to be greater than zero.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

GAMMA.INV is the inverse function of [GAMMA.DIST](#).

See also:

[GAMMAINV](#), [GAMMA.DIST/GAMMADIST](#), [GAMMA](#), [GAMMALN](#)

GAMMALN (logarithm of the gamma function)

Syntax:

GAMMALN(Number)

Description:

Returns the natural logarithm of the gamma function.

Number is the value to be evaluated. Must be > 0.

See also:

[GAMMA](#), [GAMMA.DIST/GAMMADIST](#), [GAMMA.INV/GAMMAINV](#)

GAUSS (standard normal distribution)

Syntax:

GAUSS(x)

Description:

Returns the integral of the PHI function (standard normal distribution) minus 0.5.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

It is therefore recommended to use the function NORMSDIST instead, since it is compatible with all versions of Excel:

GAUSS(x) equals NORMSDIST(x) - 0.5

See also:

[PHI](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

GCD (greatest common divisor)

Syntax:

GCD(Number1 [, Number2, Number3 ...])

Description:

Returns the GCD (greatest common divisor) of the specified integers. The GCD is the largest integer that will divide all of the given integers without a remainder.

Number1, **Number2**, etc., are the numbers to be evaluated. All of them should be integers, digits right of the decimal point are ignored.

Example:

GCD(25, 100, 250) returns 25

GCD(25, 105, 250) returns 5

If cells A1 to A3 contain the values 4, 8, and 6, respectively:

GCD(A1:A3) returns 2

See also:

[LCM](#)

GEOMEAN (geometric mean)

Syntax:

GEOMEAN(Number1 [, Number2, Number3...])

Description:

Returns the geometric mean of the specified numbers.

The geometric mean is the n -th root of the product of the given values (n is the total number of values).

Number1, **Number2**, etc., are the numbers to be evaluated. All of them have to be greater than zero. Empty cells, text strings, and logical values are ignored.

Example:

GEOMEAN(1, 2, 6) returns 2.28943

See also:

[HARMEAN](#), [TRIMMEAN](#), [AVERAGE](#)

GESTEP (greater or equal to threshold value?)

Syntax:

GESTEP(Number, Step)

Description:

Returns 1 if **Number** \geq **Step**, else returns 0.

Example:

GESTEP(41, 42) returns 0

GESTEP(42, 42) returns 1

GESTEP(42.1, 42) returns 1

See also:

[DELTA](#)

GETPIVOTDATA

Syntax:

GETPIVOTDATA(ValueField, PivotRange [, Field1, Label1, Field2, Label2,...])

Description:

Returns the values of an existing pivot table by retrieving certain fields from the pivot table structure.

Value field: The name of the field that you have placed in the *Values* area of the pivot table and whose data you want to retrieve. The argument must be entered with double quotes.

PivotRange: The referenced pivot table. Just address any cell of the pivot table target range to specify it. The argument is entered without quotes.

Field1, Label1, Field2, Label2,...: You can narrow the output of the values by retrieving a specific field in conjunction with an element from this field. It is possible to add several combinations. The argument must be entered with double quotes.

ValueField and **PivotRange** are required as arguments, **Fields/Labels** are optional.

Annotation:

For the **PivotRange** you can also enter a *Named range* here, but you first have to give the cell range of the pivot table report a name. To do this, select a cell in the pivot table report (you do not have to select the entire range) and follow the description in the [Naming cell ranges](#) section.

You cannot use the name automatically generated by PlanMaker (e.g. "Pivot table 1") as the *Named Range*. Only names created using the menu command **Worksheet > Names > Edit** can actually be assigned as names for the *PivotRange*.

Example:

Here are example data from the [Pivot tables](#) section. Assuming your pivot table report is in cell range F1:G12 and the "Amount" field is in the *Values* area, the "Employee" and "Order" fields are in the *Row labels* area:

	A	B	C	D	E	F	G	H
1	Date	Employee	Order	Amount		Row labels	Sum of Amount	
2	01/10/2018	Anna	Coffee	\$35		Anna	123	
3	02/15/2018	Toni	Cream	\$15		Coffee	75	
4	04/13/2018	Anna	Snacks	\$20		Cream	12	
5	05/15/2018	Toni	Tea	\$15		Snacks	36	
6	06/18/2018	Maria	Coffee	\$30		Maria	30	
7	06/20/2018	Anna	Cream	\$12		Coffee	30	
8	08/11/2018	Anna	Snacks	\$16		Toni	47	
9	08/18/2018	Toni	Sweetener	\$7		Cream	25	
10	10/28/2018	Anna	Coffee	\$40		Sweetener	7	
11	11/15/2018	Toni	Cream	\$10		Tea	15	
12						Grand total	200	

GETPIVOTDATA("AMOUNT", F1) returns 200, because the grand total for all values of *Amount* is displayed.

GETPIVOTDATA("AMOUNT", F1, "Employee", "Anna") returns 123, since the result of *Amount* is restricted to the *Person* field containing the item *Anna*.

GETPIVOTDATA("AMOUNT", F1, "Employee", "Anna", "Order", "Coffee") returns 75, since the result of *Amount* is restricted to the field *Employee/item Anna* in combination with the field *Order/item Coffee*.

GROWTH (values of an exponential regression)

Syntax:

GROWTH(y_values [, x_values] [, New_x_values] [, Constant])

Description:

Returns the values of an exponential regression.

Exponential regression is a statistical technique that adapts an exponential curve to a set of data points (for example, the results of a series of measurements).

The GROWTH function returns an array with the y values of a best-fit exponential curve based on the given y values and x values.

y_values are the known y values. All of them must be positive, otherwise a #NUM! error value is returned.

x_values (optional) are the known x values. If omitted, the values 1, 2, 3, ... will be used.

New_x_values (optional) are the x values for which you want to determine the corresponding y values on the curve. If omitted, the values in **x_values** will be used.

Constant (optional) is a logical value that lets you specify if the constant b should be calculated automatically or forced to equal one:

TRUE or omitted: b will be calculated from the given data.

FALSE: b is forced to equal 1 (one), the m values are adjusted accordingly.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

See also:

[LINEST](#), [LOGEST](#), [TREND](#)

HARMEAN (harmonic mean)

Syntax:

HARMEAN(Number1 [, Number2, Number3 ...])

Description:

Returns the harmonic mean of the specified numbers.

The harmonic mean is obtained by dividing n by the sum of reciprocals of the given values (n is the total number of values).

Number1, **Number2**, etc., are the numbers to be evaluated. All of them must be > 0 . Empty cells, text strings, and logical values are ignored.

Example:

HARMEAN(1, 2, 6) returns 1.8

See also:

[GEOMEAN](#), [TRIMMEAN](#), [AVERAGE](#)

HEX2BIN (hexadecimal number to binary number)

Syntax:

HEX2BIN(Number [, Digits])

Description:

Converts the given hexadecimal number (base 16) to a binary number (base 2).

Number is the number to be converted.

The number must be in the range 80000000 to 7FFFFFFF. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

HEX2BIN("2A") returns 101010

HEX2BIN("2A", 8) returns 00101010

HEX2BIN("2A", 2) returns the error value #NUM!, because this number cannot be represented with fewer than 5 binary digits

HEX2BIN("FFFFFFD6") returns 1111111111111111111111111010110 (negative value)

See also:

[BIN2HEX](#), [HEX2DEC](#), [HEX2OCT](#)

HEX2DEC (hexadecimal number to decimal number)

Syntax:

HEX2DEC(Number)

Description:

Converts the given hexadecimal number (base 16) to a decimal number (base 10).

Number is the number to be converted.

The number must be in the range 80000000 to 7FFFFFFF. Negative numbers have to be transformed to two's complement notation (see last example).

Example:

HEX2DEC("2A") returns 42

HEX2DEC("FFFFFFD6") returns -42

See also:

[DEC2HEX](#), [HEX2BIN](#), [HEX2OCT](#), [DECIMAL](#)

HEX2OCT (hexadecimal number to octal number)

Syntax:

HEX2OCT(Number [, Digits])

Description:

Converts the given hexadecimal number (base 16) to an octal number (base 8).

Number is the number to be converted.

The number must be in the range 80000000 to 7FFFFFFF. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

HEX2OCT("2A") returns 52

HEX2OCT("2A", 4) returns 0052

HEX2OCT("2A", 1) returns the error value #NUM!, because this number cannot be represented with fewer than 2 octal digits

HEX2OCT("FFFFFFD6") returns 3777777726 (negative value)

See also:

[OCT2HEX](#), [HEX2BIN](#), [HEX2DEC](#)

HLOOKUP (look up row-wise)

Syntax:

HLOOKUP(Crit, Range, n [, Sorted])

Description:

Scans the first row of **Range** for a value. If found, the function returns the content of the cell located in the same column and **n**-th row of **Range**.

If no exact match is found, the next smallest value will be taken. If no smaller value exists, a #N/A error value is returned.

Note: HLOOKUP can search horizontally only. To search vertically, use [VLOOKUP](#) instead

Crit is the value to be searched for (case insensitive).

Range is the cell range or array to be evaluated. Its first row should contain the values to be scanned.

n is the relative row number in **Range** from which a value will be returned.

If **n** is less than 1, a #VALUE! error value is returned. If **n** is greater than the total number of rows in **Range**, a #REF! error value is returned.

Sorted is a logical value determining whether the values in the first row of **Range** are in sorted order:

TRUE or omitted: Values have to be sorted in ascending order.

FALSE: Values do not have to be sorted.

See also:

[VLOOKUP](#), [LOOKUP](#), [INDEX](#), [MATCH](#), [TRUE](#)

HOLIDAY (dates of movable Christian holidays)

Syntax:

HOLIDAY(Year, Type)

Description:

Returns the date of the specified movable Christian holiday in the given year.

Year is an integer number that specifies the year to evaluate.

Type is an integer number that specifies which holiday to calculate, as follows:

0: Good Friday

1: Easter Sunday

2: Easter Monday

3: Ascension Day

4: Whitsunday (Pentecost)

5: Whitmonday

6: (Feast of) Corpus Christi

7: Ash Wednesday

8: Repentance Day (Germany)

9: 1st Sunday of Advent

Example:

HOLIDAY(2014, 1) returns 04/20/2014 (Easter Sunday in 2014)

HOLIDAY(YEAR(TODAY()), 1) returns the date of Easter Sunday in the current year

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[WORKDAY](#), [NETWORKDAYS](#)

HOUR (hour)

Syntax:

HOUR(Time)

Description:

Returns the hour of a time value.

Example:

HOUR("12:34:56 AM") returns 12

See also:

[MINUTE](#), [SECOND](#), [MILLISECONDS](#)

HYPERLINK (hyperlink)

Syntax:

HYPERLINK(TargetAddress [, Text])

Description:

Displays a hyperlink to the specified **target address** in the cell. The text displayed is either the target address or the text specified in the optional parameter **Text**.

For example, you can place a link to a web page in a cell. When the user clicks on it, the web browser starts and presents the page.

Links to other PlanMaker documents are possible as well. When clicked, PlanMaker opens the specified document.

TargetAddress is the address you want the link to point to. You can use a fixed text string, a calculation, or a reference to a cell that contains the target address. See the examples below.

Text (optional) is the text to be displayed in the cell. If it is not specified, the target address will be displayed instead.

Example:

```
=HYPERLINK("http://www.softmaker.com")
```

The above hyperlink opens the web page www.softmaker.com in the web browser.

```
=HYPERLINK("http://www.softmaker.com", "Our Homepage")
```

Ditto, but instead of the target address, the text "Our Homepage" is displayed as link text.

```
=HYPERLINK("http://www.softmaker.com#MyAnchor")
```

The above link opens the web page www.softmaker.com in the browser and jumps to the anchor (target) named "MyAnchor". Alternatively, you could also use the syntax `=HYPERLINK("[http://www.softmaker.com]MyAnchor")` for this.

```
=HYPERLINK("c:\My Folder\Filename.pmdx")
```

The above link opens the file `c:\My Folder\Filename.pmdx` in PlanMaker.

Note: You can not only open PlanMaker files with this function, but practically any kind of document (provided that it is associated with an application that will open it).

```
=HYPERLINK("[c:\My Folder\Filename.pmdx]Sheet1!A5")
```

The above link opens the file `c:\My Folder\Filename.pmdx` in PlanMaker and jumps to the cell A5 on the worksheet "Sheet1". Note: The entire file path and name has to be enclosed in brackets. Behind the file name, add the name of the worksheet, an exclamation mark, and the address of the target cell.

```
=HYPERLINK("[c:\My Folder\Filename.pmdx]Sheet1!MyRange")
```

The above link opens the file `c:\My Folder\Filename.pmdx` in PlanMaker and jumps to the top left corner of the named range "MyRange" on the worksheet "Sheet1".

```
=HYPERLINK(E1, E2)
```

The above link opens the target address given in the cell E1. As a link text, the text given in cell E2 is displayed.

See also:

Links can also be created using the procedure described in section [Working with links](#). However, the HYPERLINK function is more flexible.

HYPGEOMDIST (hypergeometric distribution)

Note: HYPGEOMDIST is supplemented by the new function [HYPGEOM.DIST](#) with additional functionality, which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

HYPGEOMDIST(k, n, K, N)

Description:

Returns the hypergeometric distribution.

The hypergeometric distribution can be used to calculate the probability to, for example, obtain **k** red balls when randomly drawing **n** balls (*without* replacement) from an urn containing **N** balls, with **K** of them red balls.

k is the number of successes in the sample (success = drawing a red ball).

n is the size of the sample (the number of balls to be drawn)

K is the total number of successes in the population (the total number of *red* balls).

N is the size of the population (the total number of balls).

All of these values should be integers, digits right of the decimal point are ignored.

Example:

An urn contains 10 balls (N=10) with 2 of them red (K=2). To determine the probability to obtain *exactly* 1 red ball (k=1) when drawing 5 balls (n=5), use the following calculation:

HYPGEOMDIST(1, 5, 2, 10) returns 0.55556

See also:

[HYPGEOM.DIST](#), [NEGBINOM.DIST/NEGBINOMDIST](#)

HYPGEOM.DIST (hypergeometric distribution)

Syntax:

HYPGEOM.DIST(k, n, K, N, Cumulative)

Description:

Returns the hypergeometric distribution.

The hypergeometric distribution can be used to calculate the probability to, for example, obtain **k** red balls when randomly drawing **n** balls (*without* replacement) from an urn containing **N** balls, with **K** of them red balls.

k is the number of successes in the sample (success = drawing a red ball).

n is the size of the sample (the number of balls to be drawn)

K is the total number of successes in the population (the total number of *red* balls).

N is the size of the population (the total number of balls).

Cumulative determines the type of function as a switch: If you enter the value TRUE, the cumulative distribution function of the hypergeometric distribution is calculated. By entering the value FALSE, the density function of the hypergeometric distribution is calculated.

All of these values should be integers, digits right of the decimal point are ignored.

Example:

An urn contains 10 balls (N=10) with 2 of them red (K=2). To determine the probability to obtain *exactly* or *at most* 1 red ball (k=1) when drawing 5 balls (n=5), use the following calculation:

HYPGEOM.DIST(1, 5, 2, 10, FALSE) returns 0.55556

HYPGEOM.DIST(1, 5, 2, 10, TRUE) returns 0.77778

The probability of obtaining *exactly* 1 red ball is 55.6% (density function). The probability of obtaining *at most* 1 red ball is 77.8% (cumulative distribution function).

Note:

The HYPGEOM.DIST function supplements the previous [HYPGEOMDIST](#) function with the additional argument **Cumulative**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[HYPGEOMDIST](#), [NEGBINOM.DIST](#)/[NEGBINOMDIST](#)

IF (if-then-else condition)

Syntax:

IF(Condition, IfTrue [, IfFalse])

Description:

Returns **IfTrue**, if the specified condition is TRUE, else returns **IfFalse** (if given).

Condition can be any kind of value or expression that returns TRUE or FALSE.

IfTrue and **IfFalse** can be any kind of value or expression (including formulas).

Example:

IF(A1<5, "Order!", "ok") returns "Order!" if A1<5, otherwise it returns "ok".

See also:

[CHOICE](#), [IFERROR](#)

IFERROR (return a value on errors)

Syntax:

IFERROR(Value, ValueIfError)

Description:

Normally returns **Value**. However, if **Value** contains any type of error value, returns the defined **ValueIfError** instead.

Compatibility notes:

This function is *not* supported by the **.xls** file format (used in Microsoft Excel 2003 and earlier). If you save a document in this format, all calculations using this function will be replaced by their last result as a *fixed* value.

Accordingly, if you use this function, you should not save your document in the "Microsoft Excel 97-2003 (.xls)" file format, but choose one of the following formats instead:

- "PlanMaker document (.pmdx or .pmd)"
- or: "Microsoft Excel 2007-2016 (.xlsx)"

Example:

IFERROR(A1, "Error!") returns the value in cell A1, as long as A1 doesn't contain an error value. If it does, the text string "Error!" is returned instead.

See also:

[ISERR](#), [ISERROR](#), [ISNA](#), [ERRORTYPE](#), section [Error values](#)

IMABS (absolute value of a complex number)

Syntax:

IMABS(ComplexNumber)

Description:

Returns the absolute value (modulus) of a complex number.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMABS("2+4i") returns 4.47214

See also:

[COMPLEX](#), [IMARGUMENT](#), [IMEXP](#), [IMCONJUGATE](#)

IMAGINARY (imaginary coefficient of a complex number)

Syntax:

IMAGINARY(ComplexNumber)

Description:

Returns the imaginary coefficient of a complex number.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMAGINARY("2+4i") returns 4

See also:

[COMPLEX](#), [IMREAL](#)

IMARGUMENT (angle of a complex number)

Syntax:

IMARGUMENT(ComplexNumber)

Description:

Returns the angle (in radians) from the real axis to the representation of a complex number in polar coordinates.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMARGUMENT("2+4i") returns 1.10715

See also:

[COMPLEX](#), [IMABS](#), [IMEXP](#), [IMCONJUGATE](#)

IMCONJUGATE (conjugate complex number)

Syntax:

IMCONJUGATE(ComplexNumber)

Description:

Returns the complex conjugate of a complex number.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMCONJUGATE("2+4i") returns 2-4i

See also:

[COMPLEX](#), [IMABS](#), [IMARGUMENT](#), [IMEXP](#)

IMCOS (cosine of a complex number)

Syntax:

IMCOS(ComplexNumber)

Description:

Returns the cosine of a complex number.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMCOS("2+4i") returns -11.3642347064011 - 24.8146514856342i

See also:

[COMPLEX](#), [IMSIN](#)

IMDIV (division of complex numbers)

Syntax:

IMDIV(ComplexNumber1, ComplexNumber2)

Description:

Returns the quotient of two complex numbers, i.e., divides **ComplexNumber1** by **ComplexNumber2**.

ComplexNumber1 and **ComplexNumber2** must be complex numbers in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMDIV("4+12i", "2+4i") returns 2.8+0.4i

See also:

[COMPLEX](#), [IMPRODUCT](#), [IMSUB](#), [IMSUM](#)

IMEXP (exponential of a complex number)

Syntax:

IMEXP(ComplexNumber)

Description:

Returns the exponential of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMEXP("2+4i") returns -4.82980938326939 - 5.59205609364098i

See also:

[COMPLEX](#), [IMABS](#), [IMARGUMENT](#), [IMCONJUGATE](#), [IMLN](#)

IMLN (natural logarithm of a complex number)

Syntax:

IMLN(ComplexNumber)

Description:

Returns the natural logarithm (base e) of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMLN("2+4i") returns 1.497866136777 + 1.10714871779409i

See also:

[COMPLEX](#), [IMEXP](#), [IMLOG10](#), [IMLOG2](#)

IMLOG10 (base-10 logarithm of a complex number)

Syntax:

IMLOG10(ComplexNumber)

Description:

Returns the base-10 logarithm of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMLOG10("2+4i") returns 0.650514997831991 + 0.480828578784234i

See also:

[COMPLEX](#), [IMLN](#), [IMLOG2](#)

IMLOG2 (base-2 logarithm of a complex number)

Syntax:

IMLOG2(ComplexNumber)

Description:

Returns the base-2 logarithm of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMLOG2("2+4i") returns 2.16096404744368 + 1.59727796468811i

See also:

[COMPLEX](#), [IMLN](#), [IMLOG10](#)

IMNEG (negative value of a complex number)

Syntax:

IMNEG(ComplexNumber)

Description:

Returns the negative of a complex number.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMNEG("2+4i") returns -2-4i

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

Hint: As an alternative to IMNEG(A1) the following calculation can be used:

COMPLEX(-IMREAL(A1), -IMAGINARY(A1))

See also:

[COMPLEX](#)

IMPOWER (power of a complex number)

Syntax:

IMPOWER(ComplexNumber, Exponent)

Description:

Returns a complex number raised to a power.

ComplexNumber must be a complex number in $x+yi$ or $x+yj$ format.

Exponent is the power the complex number will be raised to.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMPOWER("2+4i", 2) returns -12+16i

See also:

[COMPLEX](#), [IMSQRT](#)

IMPRODUCT (product of complex numbers)**Syntax:**

IMPRODUCT(ComplexNum1 [, ComplexNum2, ComplexNum3 ...])

Description:

Returns the product of the given complex numbers.

ComplexNum1, **ComplexNum2**, etc., must be complex numbers in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMPRODUCT("2+4i", "1+2i") returns -6+8i

See also:

[COMPLEX](#), [IMDIV](#), [IMSUB](#), [IMSUM](#)

IMREAL (real coefficient of a complex number)**Syntax:**

IMREAL(ComplexNumber)

Description:

Returns the real coefficient of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMREAL("2+4i") returns 2

See also:

[COMPLEX](#), [IMAGINARY](#)

IMSIN (sine of a complex number)

Syntax:

IMSIN(ComplexNumber)

Description:

Returns the sine of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMSIN("2+4i") returns 24.8313058489464 - 11.3566127112182i

See also:

[COMPLEX](#), [IMCOS](#)

IMSQRT (square root of a complex number)

Syntax:

IMSQRT(ComplexNumber)

Description:

Returns the square root of a complex number.

ComplexNumber must be a complex number in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMSQRT("2+4i") returns 1.79890743994787 + 1.11178594050284i

See also:

[COMPLEX](#), [IMPOWER](#)

IMSUB (difference of complex numbers)

Syntax:

IMSUB(ComplexNumber1, ComplexNumber2)

Description:

Returns the difference of two complex numbers, i.e., subtracts **ComplexNumber2** from **ComplexNumber1**.

ComplexNumber1 and **ComplexNumber2** must be complex numbers in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMSUB("2+4i", "1+2i") returns 1+2i

See also:

[COMPLEX](#), [IMDIV](#), [IMPRODUCT](#), [IMSUM](#)

IMSUM (sum of complex numbers)

Syntax:

IMSUM(ComplexNum1 [, ComplexNum2, ComplexNum3 ...])

Description:

Returns the sum of the given complex numbers.

ComplexNum1, **ComplexNum2**, etc., must be complex numbers in x+yi or x+yj format.

Annotation: Complex numbers can be created with the [COMPLEX](#) function

Example:

IMSUM("2+4i", "1+2i") returns 3+6i

See also:

[COMPLEX](#), [IMDIV](#), [IMPRODUCT](#), [IMSUB](#)

INDEX (cell in a particular row/column of a range)

Syntax:

INDEX(Range, Row, Column [, PartRange])

Description:

Returns a reference to the cell at the intersection of the specified row and column in **Range**.

Range is the cell range from which to return a reference.

Row is the relative number of the row in **Range**.

Column is the relative number of the column in **Range**.

If **Row** or **Column** refers to a cell outside **Range**, a #REF! error value is returned.

The optional argument **PartRange** is just a placeholder (for compatibility with Microsoft Excel). It will not be evaluated.

Compatibility notes:

This function is not fully identical to Microsoft Excel's INDEX function. The following restrictions apply:

1. The argument **Range** must consist of exactly one contiguous cell range. Nonadjacent ranges are not supported.
2. The optional argument **PartRange** is ignored.

Example:

INDEX(B2:D4, 2, 2) returns a reference to cell C3

See also:

[MATCH](#), [VLOOKUP](#), [HLOOKUP](#)

INDIRECT (create reference from text)

Syntax:

INDIRECT(Text [, Mode])

Description:

Returns a cell reference from the specified text string.

Text is a text string containing a cell address like "A1", "\$A\$1", etc., or a named range.

The optional argument **Mode** specifies the format of the cell address to be evaluated:

TRUE or omitted: Normal cell address (e.g. A1)

FALSE: Cell address in R1C1 format (an alternative type of cell addressing, supported by Microsoft Excel only)

Example:

INDIRECT("A1") returns a reference to cell A1.

If cell D2 contains the text string "E5", INDIRECT(D2) returns a reference to cell E5.

See also:

[ADDRESS](#), [OFFSET](#), [COLUMN](#), [ROW](#)

INT (round down to nearest integer)

Syntax:

INT(Number)

Description:

Rounds **Number** down to the nearest integer.

Example:

INT(5.9) returns 5

INT(-5.1) returns -6

See also:

[TRUNC](#), [ROUNDDOWN](#), [ROUNDUP](#), [ROUND](#), [MROUND](#), [FIXED](#), [EVEN](#), [ODD](#), [CEILING](#), [FLOOR](#)

INTERCEPT (intercept point of a linear trend)

Syntax:

INTERCEPT(y_values, x_values)

Description:

Returns the y coordinate of the point where a best-fit line based on the given values intersects the y axis.

A *best-fit line* is the result of a *linear regression*, a statistical technique that adapts a line to a set of data points (for example, the results of a series of measurements).

This function can be used to predict, for example, the resistance of a temperature-sensitive resistor at 0° after having measured the resistance at several other temperatures.

y_values are the known y values (e.g., the resistance).

x_values are the known x values (e.g., the temperature).

Example:

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns an estimate for the resistance at 0 degrees:

INTERCEPT(B1:B4, A1:A4) returns 93.69817 (Ohm)

Annotation:

INTERCEPT(y_values, x_values) equals FORECAST(0, y_values, x_values).

See also:

[FORECAST](#), [SKEW](#), [SLOPE](#), [STEYX](#), [PEARSON](#)

INTERSECTION (intersection of two ranges)

Syntax:

INTERSECTION(Range1, Range2)

Description:

Returns a reference to the intersection of **Range1** and **Range2** (i.e. the cell range where **Range1** and **Range2** overlap).

Annotation:

Alternatively, you can use the *spacebar* operator to obtain the intersection of two ranges. For example:

SUM(INTERSECTION(A1:D4, C3:E6))

is identical to:

SUM(A1:D4 C3:E6).

Compatibility notes:

This function is not supported by Microsoft Excel. When you save a document in Excel format, PlanMaker will automatically replace all occurrences of this function by spacebar operators (see annotation above).

Example:

INTERSECTION(A1:D4, C3:E6) returns a reference to the range C3:D4

IPMT (interest payment)

Syntax:

IPMT(Rate, Per, NPer, PV [, FV] [, Type])

Description:

Returns the interest due in the specified period of an investment based on periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

Per is the payment period to be evaluated.

NPer is the total number of payment periods.

PV is the present value.

FV (optional) is the future value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Example:

Loan terms: \$100,000 at 10% per year, to be repaid over 72 months with monthly payments at the end of each month.

How much interest has to be paid in the 32nd period (i.e., the 32nd month)?

IPMT(10%/12, 32, 72, 100000) returns -534

Note that all values have to use the same time unit, *months* in this case, since the payments are made *monthly*. Therefore, in the above formula, the yearly interest rate had to be divided by 12 to get the *monthly* interest rate.

See also:

[CUMPRINC](#), [CUMIPMT](#), [FV](#), [ISPMT](#), [NPER](#), [PMT](#), [PPMT](#), [PV](#), [RATE](#)

IRR (internal rate of return)

Syntax:

IRR(Values [, Guess])

Description:

Returns an estimate for the internal rate of return for a series of cash flows.

The calculation is based on the cash flows specified in the **Values** argument. Payments have to be entered as negative values, incomes as positive values. The cash flows do not have to be even but they must occur in regular intervals (e.g., monthly).

Values is a cell range or array containing the cash flows (in their actual order, namely cash flow for the first period, cash flow for the second period, etc.). At least one payment and one income have to be given.

Guess (optional) lets you specify an estimate for the result (see note below).

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 20 iterations, a #NUM error value is returned. If this occurs, try altering the **Guess** parameter.

See also:

[NPV](#), [MIRR](#), [RATE](#), [XIRR](#)

ISBLANK (is empty?)

Syntax:

ISBLANK(Reference)

Description:

Returns TRUE if the specified cell is empty.

Example:

If A1 contains any kind of value, C7 is empty:

ISBLANK(A1) returns FALSE

ISBLANK(C7) returns TRUE

See also:

[ISNA](#), [COUNT](#), [COUNTA](#)

ISERR (is an error value except #N/A?)

Syntax:

ISERR(Reference)

Description:

Returns TRUE if the specified cell contains any kind of error value **except** #N/A.

Example:

ISERR(A1) returns TRUE if A1 contains an error, e.g., a division by zero.

ISERR(A1) returns FALSE if A1 contains the error value #N/A or any kind of value that is not leading to an error value.

See also:

[ISERROR](#), [ISNA](#), [NA\(\)](#), [ERRORTYPE](#), [IFERROR](#), section [Error values](#)

ISERROR (is an error value?)

Syntax:

ISERROR(Reference)

Description:

Returns TRUE if the specified cell contains any kind of error value.

Example:

ISERROR(A1) returns TRUE if A1 contains an error, e.g., a division by zero.

See also:

[ISERR](#), [ISNA](#), [NA\(\)](#), [ERRORTYPE](#), [IFERROR](#), [ISREF](#), section [Error values](#)

ISEVEN (is an even number?)

Syntax:

ISEVEN(Number)

Description:

Returns TRUE if the specified value is even, FALSE if it is odd.

Number should be an integer, digits right of the decimal point are ignored.

Example:

ISEVEN(2) returns TRUE

ISEVEN(2.75) returns TRUE

ISEVEN(3) returns FALSE

ISEVEN(3.75) returns FALSE

See also:

[ISODD](#)

ISFORMULA (is a formula?)

Syntax:

ISFORMULA(Reference)

Description:

Returns TRUE if the specified cell contains a formula.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

If A1 contains a formula, and C7 contains a fixed number or text string, then:

ISFORMULA(A1) returns TRUE

ISFORMULA(C7) returns FALSE

See also:

[ISREF](#), [FORMULATEXT](#)

ISLOGICAL (is a logical value?)

Syntax:

ISLOGICAL(Reference)

Description:

Returns TRUE if the specified cell contains a logical value (i.e., TRUE or FALSE).

Example:

If A1 contains TRUE, and C7 contains a text string, then:

ISLOGICAL(A1) returns TRUE

ISLOGICAL(C7) returns FALSE

See also:

[ISTEXT](#), [ISNUMBER](#), [ISREF](#), [ISNONTEXT](#)

ISNA (is not available?)

Syntax:

ISNA(Reference)

Description:

Returns TRUE if the specified cell contains a #N/A error value.

Cells contain a #N/A error value if they contain a) the formula =NA(), or b) a calculation resulting in a #N/A error. More details about the usage of #N/A error values can be found in section [NA \(error value #N/A\)](#).

Example:

If A1 contains a #N/A error value, then:

ISNA(A1) returns TRUE

See also:

[NA\(\)](#), [ERRORTYPE](#), [IFERROR](#), [ISERR](#), [ISERROR](#), section [Error values](#)

ISNONTEXT (is no text?)

Syntax:

ISNONTEXT(Value)

Description:

Returns TRUE if the specified value is not text.

Example:

If A1 contains a text string, C7 contains a number, then:

ISNONTEXT(A1) returns FALSE

ISNONTEXT(C7) returns TRUE

See also:

[ISTEXT](#), [ISLOGICAL](#), [ISNUMBER](#)

ISNUMBER (is numeric?)

Syntax:

ISNUMBER(Value)

Description:

Returns TRUE if the specified value is a number.

Dates are considered as numbers as well, whereas logical values are *not*.

Example:

If the cells A1 to A4 contain the values:

"Text", 42, 09/25/2018, and TRUE, respectively, then:

ISNUMBER(A1) returns FALSE

ISNUMBER(A2) returns TRUE

ISNUMBER(A3) returns TRUE

ISNUMBER(A4) returns FALSE

See also:

[ISNUMBERP](#), [ISLOGICAL](#), [ISTEXT](#), [ISNONTEXT](#), [ISREF](#), [COUNT](#)

ISNUMBERP (PlanMaker 97 compatibility function)

Syntax:

ISNUMBERP(Value)

Description:

Returns TRUE if the specified value is a number or a logical value.

Dates are considered as numbers as well.

Note:

This function was retained only for compatibility with PlanMaker 97. Using the Excel-compatible function ISNUMBER is recommended instead.

The difference between these two functions is that ISNUMBERP treats logical values as numbers, whereas ISNUMBER does not.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

If the cells A1 to A4 contain the following values:

"Text", 42, 09/25/2018, and TRUE, respectively, then:

ISNUMBERP(A1) returns FALSE

ISNUMBERP(A2) returns TRUE

ISNUMBERP(A3) returns TRUE

ISNUMBERP(A4) returns TRUE (!)

See also:

[ISNUMBER](#)

ISODD (is an odd number?)

Syntax:

ISODD(Number)

Description:

Returns TRUE if the specified number is odd, FALSE if it is even.

Number should be an integer, digits right of the decimal point are ignored.

Example:

ISODD(1) returns TRUE

ISODD(1.75) returns TRUE

ISODD(2) returns FALSE

ISODD(2.75) returns FALSE

See also:

[ISEVEN](#)

ISOWEEK (ISO week number)

Syntax:

ISOWEEK(Date [, ReturnYear])

Description:

Returns the ISO week number of a date (i.e. the week number according to the ISO 8601 standard).

Unlike the [WEEKNUM](#) function, this function follows the rules defined in the ISO 8601 standard (used e.g. in Germany, Austria, Switzerland), including:

1. Weeks start on Monday (not Sunday).
2. The first week of a year is defined as the week that contains January 4th.

Note:

This may lead to situations where December 29, 30, and 31 are considered part of the first week of the next year – or where January 1, 2, and 3 are considered part of the last week of the previous year.

For this reason, ISOWEEK can be invoked with an additional parameter named **ReturnYear** which leads to the following results:

If set to 0 or omitted, the function returns the *week number*.

If set to 1, the function instead returns the *year* to which the week belongs to (according to ISO 8601 standard). See examples below.

Example:

ISOWEEK("01/01/2014") returns 1.

ISOWEEK("01/01/2011") returns 52 (since this day was a Saturday).

ISOWEEK("01/01/2011", 1) accordingly returns 2010 – not 2011.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Hint: There's an Excel-compatible alternative to this function: the [ISOWEEKNUM](#) function. It returns exactly the same results, but does not have the optional parameter for displaying the year.

See also:

[ISOWEEKNUM](#), [WEEKNUM](#), [YEAR](#), [MONTH](#), [DAY](#), [WEEKDAY](#)

ISOWEEKNUM (ISO week number)

Syntax:

ISOWEEKNUM(Date)

Description:

Returns the ISO week number of a date (i.e. the week number according to the ISO 8601 standard).

Unlike the [WEEKNUM](#) function, this function follows the rules defined in the ISO 8601 standard (used eg in Germany, Austria, Switzerland), including:

1. Weeks start on Monday (not Sunday).
2. The first week of a year is defined as the week that contains January 4th.

Annotation:

This may lead to situations where December 29, 30, and 31 are considered part of the first week of the next year – or where January 1, 2, and 3 are considered part of the last week of the previous year. See examples.

Hint: For this reason, PlanMaker provides an alternative (not Excel-compatible) function named [ISOWEEK](#). It returns the same results, but is also additionally to return the *year* to which the week belongs to (according to ISO 8601 standard) instead.

Example:

ISOWEEKNUM("01/01/2014") returns 1.

ISOWEEKNUM("01/01/2011") returns 52 (since this day was a Saturday).

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[ISOWEEK](#), [WEEKNUM](#), [YEAR](#), [MONTH](#), [DAY](#), [WEEKDAY](#)

ISPMT (interest payment)

Syntax:

ISPMT(Rate, Per, NPer, PV)

Description:

Returns the interest due in the specified period of an investment.

Rate is the interest rate (per payment period).

Per is the payment period to be evaluated.

NPer is the total number of payment periods.

PV is the present value.

See also:

[IPMT](#), [PMT](#), [PPMT](#)

ISREF (is a valid reference?)

Syntax:

ISREF(Reference)

Description:

Returns TRUE if the specified value is a valid reference.

Example:

ISREF(A1) returns TRUE

ISREF(\$A\$1) returns TRUE

ISREF(A1:C7) returns TRUE

ISREF("some text") returns FALSE

ISREF(FirstQuarter) returns FALSE, as long as the name "FirstQuarter" does not exist. As soon as you assign the name "FirstQuarter" to a range of cells, the calculation will return TRUE.

See also:

[ISFORMULA](#), [ISERROR](#), [ISLOGICAL](#), [ISNUMBER](#), [ISTEXT](#)

ISTEXT (is text?)

Syntax:

ISTEXT(Value)

Description:

Returns TRUE if the specified value is text.

Example:

If A1 contains a text string, and C7 contains a number, then:

ISTEXT(A1) returns TRUE

ISTEXT(C7) returns FALSE

See also:

[ISNONTEXT](#), [ISLOGICAL](#), [ISNUMBER](#), [ISREF](#)

KURT (kurtosis)

Syntax:

KURT(Number1, Number2, Number3, Number4 [, Number5 ...])

or

KURT(Range1 [, Range2, Range3 ...])

Description:

Returns the Kurtosis of a probability distribution.

The Kurtosis is a measure of the "peakedness" of a distribution compared to a normal distribution (see [NORM.DIST/NORMDIST](#) function)

A normal distribution has a kurtosis of zero. A more peaked distribution has a positive kurtosis, a more flat distribution has a negative kurtosis.

Number1, **Number2**, etc., are the values to be evaluated. Empty cells, text strings, and logical values are ignored.

At least four values have to be given, otherwise, the function returns a #DIV/0! error value.

Note:

This function does not accept value pairs (x value and y value) as arguments, but only the values of the distribution. If the same values appear multiple times, they must be repeated in the argument list accordingly (see example).

Example:

Measuring the height of several test persons led to the following results: 1 x 1.60m, 2 x 1.65m, 4 x 1.70m, 2 x 1.75m, and 1x1.80m.

To calculate the kurtosis of this distribution, the following formula can be used:

KURT(1.60, 1.65, 1.65, 1.70, 1.70, 1.70, 1.70, 1.75, 1.75, 1.80) returns 0.08036.

See also:

[SKEW](#), [NORM.DIST/NORMDIST](#)

LARGE (k-th largest number)

Syntax:

LARGE(Range, k)

Description:

Returns the **k**-th largest value in a data set.

Range is the cell range or array to be evaluated.

k determines which number to return. If k=1, the largest value will be returned, if k=2, the second largest value will be returned, etc.

k must not be smaller than 1 or greater than the total number of values in **Range**. Otherwise, the function returns a #NUM! error value.

Example:

If the cells A1:A5 are filled with the numbers 4, 2, 6, 5, and 9:

LARGE(A1:A5, 1) returns 9

LARGE(A1:A5, 2) returns 6

LARGE(A1:A5, 3) returns 5

etc.

See also:

[SMALL](#), [MAX](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [RANK.AVG/RANK.EQ/RANK](#)

LASTPRINTED (date last printed)

Syntax:

LASTPRINTED()

Description:

Returns the date the current document was last printed.

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

See also:

[LASTSAVED](#)

LASTSAVED (date last saved)

Syntax:

LASTSAVED()

Description:

Returns the date the current document was last saved.

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

See also:

[LASTPRINTED](#)

LCM (least common multiple)

Syntax:

LCM(Number1 [, Number2, Number3 ...])

Description:

Returns the LCM (least common multiple) of the specified integers. The LCM is the smallest positive integer that is a multiple of the given integers.

Number1, **Number2**, etc., are the numbers to be evaluated. All of them must be ≥ 1 . Additionally, all of them should be integers, digits right of the decimal point are ignored.

Example:

LCM(5, 10, 15) returns 30

If cells A1 to A3 contain the values 4, 8, and 6:

LCM(A1:A3) returns 24

See also:

[GCD](#)

LEFT (left part of a text string)

Syntax:

LEFT(Text [, n])

Description:

Returns the first **n** characters of **Text**.

If **n** is omitted, only the first character is returned.

Example:

LEFT("peanut", 3) returns pea

LEFT("peanut") returns p

See also:

[RIGHT](#), [MID](#), [REPLACE](#), [LEN](#)

LEN (length)

Syntax:

LEN(Value)

Description:

Returns the number of characters in a text string.

Value is the value to be evaluated, usually a text string. If **Value** is a number, a date, or a logical value, it will be converted to a text string automatically.

Example:

LEN("Text") returns 4

LEN(42) returns 2

LEN(-42) returns 3

LEN(42.5) returns 4

LEN(TRUE) returns 4

See also:

[LEFT](#), [RIGHT](#), [MID](#)

LINEST (statistics of a linear regression)

Syntax:

LINEST(y_values [, x_values] [, Constant] [, Stats])

Description:

Returns statistics of a linear regression.

Linear regression is a statistical technique that adapts a line (called "trend line" or "best-fit line") to a set of data points (for example, the results of a series of measurements).

The LINEST function calculates a trend line from the given y values and x values, and then returns an array in the form {m,b}. The coefficient m is the slope of the trend line, the constant b is the y-intercept point (the point where the trend line intersects the y axis).

The equation for trend lines is:

$$y = m*x + b$$

If more than one range of x-values is given, the equation is:

$$y = (m_1*x_1) + (m_2*x_2) + \dots + (m_n*x_n) + b$$

In this case, LINEST returns an array in the form {m_n, m_{n-1}, ..., m₂, m₁, b}.

Additionally, if the optional argument **Stats** is used, several statistics of the regression (standard error, coefficient of determination, etc.) are appended to the resulting array.

y_values are the known y values.

x_values (optional) are the known x values. If omitted, the values 1, 2, 3, ... will be used.

Constant (optional) is a logical value that lets you specify if the constant b (the y-intercept point) should be calculated automatically or forced to equal zero:

TRUE or omitted: b will be calculated from the given data.

FALSE: b is forced to equal 0 (zero), the m coefficient(s) are adjusted accordingly.

Stats (optional) is a logical value that lets you specify if additional regression statistics should be returned:

FALSE or omitted: Do not return additional statistics.

TRUE: Return additional regression statistics. In this case, a matrix in the following form will be returned:

$\{m_n, m_{n-1}, \dots, m_2, m_1, b; sm_n, sm_{n-1}, \dots, sm_2, sm_1, sb; R^2, sey; F, df; ssreg, ssresid\}$

A graphical representation of this array would look like this:

m_n	m_{n-1}	...	m_2	m_1	b
sm_n	sm_{n-1}	...	sm_2	sm_1	sb
R^2	sey				
F	df				
ssreg	ssresid				

The abbreviations used in this illustration represent the following values:

Abbreviation	Description
$sm_1, sm_2, \text{etc.}$	Standard error for the coefficients $m_1, m_2, \text{etc.}$
sb	Standard error for constant b
R^2	Square of the Pearson product moment correlation coefficient
sey	Standard error for y
F	F statistic
df	Degrees of freedom
ssreg	Regression sum of squares
ssresid	Residual sum of squares

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

LINEST({4;5;6}) returns the matrix {1,3}, which indicates that the coefficient m equals 1 and the constant b equals 3.

See also:

[LOGEST](#), [TREND](#), [GROWTH](#)

LN (natural logarithm)

Syntax:

LN(Number)

Description:

Returns the natural logarithm (base e) of **Number**.

Number must be > 0 .

Example:

LN(0.7) returns -0.3567

LN(EXP(1.234)) returns 1.234

Hint:

The inverse function is [EXP](#).

See also:

[EXP](#), [LOG](#), [LOG10](#), [POWER](#)

LOG (logarithm)

Syntax:

LOG(Number [, Base])

Description:

Returns the logarithm of **Number** to the specified base.

Number must be > 0 .

If **Base** is omitted, base 10 is used.

Example:

LOG(100) equals $\log_{10}(100)$, and returns 2

LOG(10 ^ 0.1234) returns 0.1234

LOG(8, 2) equals $\log_2(8)$, and returns 3

See also:

[LOG10](#), [LN](#), [EXP](#), [POWER](#)

LOG10 (base-10 logarithm)

Syntax:

LOG10(Number)

Description:

Returns the base-10 logarithm of **Number**.

Number must be > 0 .

Example:

LOG10(100) returns 2

LOG10(10 ^ 0.1234) returns 0.1234

See also:

[LOG](#), [LN](#), [EXP](#)

LOGEST (statistics of an exponential regression)

Syntax:

LOGEST(y_values [, x_values] [, Constant] [, Stats])

Description:

Returns statistics of an exponential regression.

Exponential regression is a statistical technique that adapts an exponential curve to a set of data points (for example, the results of a series of measurements).

The equation for this exponential curve is:

$$y = b * m^x$$

If more than one range of x-values is given, the equation is:

$$y = b * (m_1^{x_1}) * (m_2^{x_2}) * \dots * (m_n^{x_n})$$

The LOGEST function calculates this exponential line from the given y values and x values, and then returns an array in the form $\{m_n, m_{n-1}, \dots, m_2, m_1, b\}$.

y_values are the known y values.

x_values (optional) are the known x values. If omitted, the values 1, 2, 3, ... will be used.

Constant (optional) is a logical value that lets you specify if the constant b should be calculated automatically or forced to equal one:

TRUE or omitted: b will be calculated from the given data.

FALSE: b is forced to equal 1 (one), the m values are adjusted accordingly.

Statistics (optional) is a logical value that lets you specify if additional regression statistics should be returned:

FALSE or omitted: Do not return additional statistics.

TRUE: Return additional regression statistics. In this case, a matrix in the following form will be returned:

$$\{m_n, m_{n-1}, \dots, m_2, m_1, b; sm_n, sm_{n-1}, \dots, sm_2, sm_1, sb; R^2, sey; F, df; ssreg, ssresid\}$$

A graphical representation of this array would look like this:

m_n	m_{n-1}	...	m_2	m_1	b
sm_n	sm_{n-1}	...	sm_2	sm_1	sb
R^2	sey				
F	df				
$ssreg$	$ssresid$				

The abbreviations used in this illustration represent the following values:

Abbreviation	Description
$sm_1, sm_2, \text{etc.}$	Standard error for the coefficients $m_1, m_2, \text{etc.}$
sb	Standard error for constant b
R^2	Square of the Pearson product moment correlation coefficient
sey	Standard error for y
F	F statistic
df	Degrees of freedom
$ssreg$	Regression sum of squares
$ssresid$	Residual sum of squares

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

See also:

[LINEST](#), [TREND](#), [GROWTH](#)

LOGINV (percentiles of the gamma distribution)

Note: LOGINV is supplemented by the new identical function [LOGNORM.INV](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

LOGINV(Probability, Mean, StdDev)

Description:

Returns the inverse of the lognormal cumulative distribution function (i.e., percentiles of this distribution)

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Mean is the mean of LN(x).

StdDev is the standard deviation of LN(x). Must be > 0.

See also:

[LOGNORM.INV](#), [LN](#), [LOGNORM.DIST/LOGNORMDIST](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

LOGNORMDIST (lognormal distribution)

Note: LOGNORMDIST is supplemented by the new function [LOGNORM.DIST](#) with additional functionality, which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

LOGNORMDIST(x, Mean, StdDev)

Description:

Returns the lognormal cumulative distribution.

x is the value to be evaluated. Must be > 0.

Mean is the mean of LN(x).

StdDev is the standard deviation of LN(x). Must be > 0.

See also:

[LOGNORM.DIST](#), [LN](#), [LOGNORM.INV/LOGINV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

LOGNORM.DIST (lognormal distribution)

Syntax:

LOGNORM.DIST(x, Mean, StdDev, Cumulative)

Description:

Returns the lognormal (cumulative) distribution.

x is the value to be evaluated. Must be > 0.

Mean is the mean of LN(x).

StdDev is the standard deviation of LN(x). Must be > 0.

Cumulative determines the type of function as a switch: If you enter the value TRUE, the cumulative normal distribution function is calculated. By entering the value FALSE, the normal probability density function is calculated.

Note:

The LOGNORM.DIST function supplements the previous [LOGNORMDIST](#) function with the additional argument **Cumulative**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

The inverse function is [LOGNORM.INV](#).

See also:

[LOGNORMDIST](#), [LN](#), [LOGNORM.INV/LOGINV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

LOGNORM.INV (percentiles of the gamma distribution)

Syntax:

LOGNORM.INV(Probability, Mean, StdDev)

Description:

Returns the inverse of the lognormal cumulative distribution function (i.e., percentiles of this distribution)

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Mean is the mean of LN(x).

StdDev is the standard deviation of LN(x). Must be > 0.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

LOGNORM.INV is the inverse function of [LOGNORM.DIST](#).

See also:

[LOGINV](#), [LN](#), [LOGNORM.DIST/LOGNORMDIST](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

LOOKUP (search cell range)

Annotation:

The LOOKUP function scans a cell range for the specified value and then returns another cell located at a matching position (e.g., in the same row, but a different column). **Important:** The data to be searched in has to be sorted in ascending order.

Hint: There are two alternatives to this function that can also search unsorted data and are more flexible in general: [VLOOKUP](#) and [HLOOKUP](#)

The LOOKUP function can be used in two different ways:

Usage with two one-dimensional ranges: Scans a vector (i.e., a one-dimensional cell range) for the specified value and returns the corresponding cell in another vector.

Usage with one two-dimensional range: Scans the first row (or column) of a range for the specified value and returns the corresponding cell in another column (or row, respectively) of the same range.

Usage with two one-dimensional ranges

Syntax:

LOOKUP(Crit, LookupVector, ResultVector)

Description:

This variant of LOOKUP scans **LookupVector** for the specified value. If found, the function returns the content of the cell located in the same row (or column) of the **ResultVector**.

If no exact match is found, the next smallest value will be taken. If no smaller value exists, a #N/A error value is returned.

Crit is the value to search for (case insensitive).

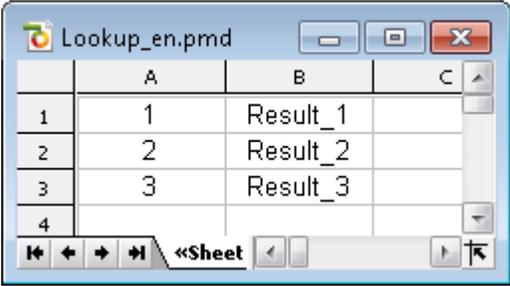
LookupVector is the cell range or array to search in. It must be a vector, which is a range of either just *one* row or *one* column.

Important: The data in **LookupVector** must be sorted in ascending order, otherwise this function might return wrong results. If the values are not sorted, use [VLOOKUP](#) or [HLOOKUP](#) instead of LOOKUP

ResultVector is the cell range or array with the values to pick the result from. It also has to be a vector. Additionally, its size and its orientation (horizontal or vertical) must be identical to **LookupVector**.

Example:

In the following table ...



	A	B	C
1	1	Result_1	
2	2	Result_2	
3	3	Result_3	
4			

... LOOKUP returns the following results:

LOOKUP(1, A1:A3, B1:B3) returns Result_1

LOOKUP(2, A1:A3, B1:B3) returns Result_2

LOOKUP(3, A1:A3, B1:B3) returns Result_3

LOOKUP(2.5, A1:A3, B1:B3) returns Result_2 (because it is the next smallest value)

LOOKUP(10, A1:A3, B1:B3) returns Result_3 (because it is the next smallest value)

LOOKUP(0, A1:A3, B1:B3) returns #N/A

See also:

[VLOOKUP](#), [HLOOKUP](#), [INDEX](#), [MATCH](#)

Usage with one two-dimensional range**Syntax:**

LOOKUP(Crit, Range)

Description:

This variant of LOOKUP scans the *first* column (or row) of **Range** for the specified value. If found, the function returns the content of the cell located at the same position in the *last* column (or row, respectively) of **Range**.

If no exact match is found, the next smallest value will be taken. If no smaller value exists, a #N/A error value is returned.

Crit is the value to search for (case insensitive).

Range is the cell range or array to search in.

The dimensions of **Range** determine in which direction it will be scanned:

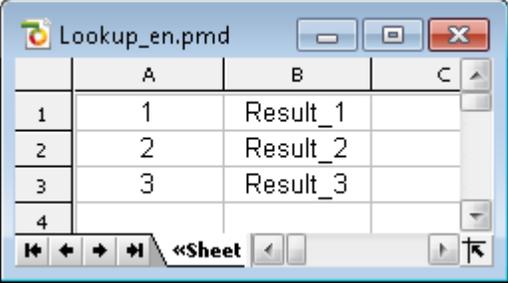
If **Range** has more columns than rows, the first *row* is scanned.

If **Range** has more rows than columns, the first *column* is scanned.

Important: The scanned data in the first row (or column) of **Range** must be sorted in ascending order, otherwise this function might return wrong results. If the values are not sorted, use [VLOOKUP](#) or [HLOOKUP](#) instead of LOOKUP

Example:

In the following table ...



	A	B	C
1	1	Result_1	
2	2	Result_2	
3	3	Result_3	
4			

... LOOKUP returns the following results:

LOOKUP(1, A1:B3) returns Result_1

LOOKUP(2, A1:B3) returns Result_2

LOOKUP(3, A1:B3) returns Result_3

LOOKUP(2.5, A1:B3) returns Result_2 (because it is the next smallest value)

LOOKUP(10, A1:B3) returns Result_3 (because it is the next smallest value)

LOOKUP(0, A1:B3) returns #N/A

See also:

[VLOOKUP](#), [HLOOKUP](#), [INDEX](#), [MATCH](#)

LOWER (convert text to lower case)

Syntax:

LOWER(Text)

Description:

Converts all characters in a text string to lower case letters.

Example:

LOWER("PlanMaker") returns planmaker

See also:

[UPPER](#), [PROPER](#)

MATCH (relative position in a range)

Syntax:

MATCH(Crit, Vector [, Mode])

Description:

Returns the relative position of **Crit** in **Vector**. For example, if **Crit** is the third element of **Vector**, the function returns 3.

Crit is the value to be searched for. **Crit** can be any kind of value or a cell reference.

Vector is the cell range or array to be evaluated. **Vector** must be a vector, which is an array or a cell range of either just *one* row or *one* column.

Mode specifies the type of search to be performed:

1 or omitted: Find the largest value that is equal to or *smaller* than **Crit**. **Important:** In this mode, the elements in **Vector** have to be sorted in *ascending* order. Otherwise, erroneous results might be returned.

0: Find the first value that is equal to **Crit**. In this mode, the elements in **Vector** do *not* have to be in sorted order.

-1: Find the smallest value that is equal to or *larger* than **Crit**. **Important:** In this mode, the elements in **Vector** have to be sorted in *descending* order. Otherwise, erroneous results might be returned.

Annotation: If you use mode 0 and **Crit** is a text string, wildcard characters can be used in **Crit**: A question mark (?) stands for any single character, an asterisk (*) stands for any sequence of characters.

Example:

MATCH("b", {"a";"b";"c";"d"}, 0) returns 2, because "b" is the second element of the given vector.

See also:

[INDEX](#), [LOOKUP](#), [HLOOKUP](#), [VLOOKUP](#)

MAX (maximum)

Syntax:

MAX(Number1 [, Number2, Number3 ...])

Description:

Returns the largest value in the given numbers.

Number1, **Number2**, etc., are the numbers to be evaluated. Empty cells, text strings, and logical values are ignored.

Example:

MAX(5, 7, 4, 9) returns 9

If the cells A1:A3 contain -1, -2, and TRUE:

MAX(A1:A3) returns -1 (the logical value TRUE is ignored)

See also:

[MAXA](#), [MIN](#), [LARGE](#)

MAXA (maximum)**Syntax:**

MAXA(Value1 [, Value2, Value3 ...])

Description:

Returns the largest value in the given values.

Value1, **Value2**, etc., are the values to be evaluated. Empty cells are ignored.

Note:

Unlike MAX, MAXA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Example:

MAXA(5, 7, 4, 9) returns 9

If the cells A1:A3 contain -1, -2, and TRUE:

MAXA(A1:A3) returns 1 (since TRUE evaluates as 1)

See also:

[MAX](#)

MDETERM (matrix determinant)

Syntax:

MDETERM(Array)

Description:

Returns the determinant of a matrix.

Array is a cell range or array containing the matrix to be evaluated. It must contain numeric values only. Its number of rows has to equal its number of columns.

Example:

MDETERM({9,8,8; 2,4,6; 1,2,1}) returns -40

See also:

Section [Working with arrays](#), [MINVERSE](#), [MMULT](#), [MSOLVE](#), [TRANSPOSE](#)

MEDIAN

Syntax:

MEDIAN(Number1 [, Number2, Number3 ...])

Description:

Returns the median of the given set of numbers.

The *median* is the number in the middle of a set of numbers – half of the numbers are smaller than the median, half of them are greater.

Number1, **Number2**, etc., are the numbers to be evaluated. Empty cells, text strings, and logical values are ignored.

Note:

If the total number of values is *odd*, MEDIAN returns the number in the middle of the set of numbers.

If the total number of values is *even*, MEDIAN returns the average of the two numbers in the middle (see second example).

Example:

MEDIAN(1, 2, 3, 4, 5) returns 3

MEDIAN(1, 2, 3, 4, 5, 1000) returns 3.5

See also:

[AVERAGE](#), [MODE.SNGL/MODE](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#)

MID (part of a text string)

Syntax:

MID(Text, Start, Count)

Description:

Returns the section of a text string that starts at character **Start** and is **Count** characters long.

Example:

MID("peanut", 2, 3) returns ean

MID("peanut", 2, 5) returns eanut

MID("peanut", 2, 100) returns eanut as well

MID("peanut", 100, 100) returns an empty text string

See also:

[LEFT](#), [RIGHT](#), [REPLACE](#), [FIND](#), [SEARCH](#), [LEN](#)

MILLISECONDS (milliseconds)

Syntax:

MILLISECONDS(Time)

Description:

Returns the milliseconds of a time value.

Compatibility notes:

This function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

Example:

MILLISECONDS("12:34:56.555") returns 555

See also:

[HOUR](#), [MINUTE](#), [SECOND](#)

MIN (minimum)

Syntax:

MIN(Number1 [, Number2, Number3 ...])

Description:

Returns the smallest value in the given numbers.

Number1, **Number2**, etc., are the numbers to be evaluated. Empty cells, text strings, and logical values are ignored.

Example:

MIN(5, 7, 4, 9) returns 4

If the cells A1:A3 contain 5, 2, and TRUE:

MIN(A1:A3) returns 2 (the logical value TRUE is ignored)

See also:

[MINA](#), [MAX](#), [SMALL](#)

MINA (minimum)

Syntax:

MINA(Value1 [, Value2, Value3 ...])

Description:

Returns the smallest value in the given values.

Value1, **Value2**, etc., are the values to be evaluated. Empty cells are ignored.

Note:

Unlike MIN, MINA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Example:

MINA(5, 7, 4, 9) returns 4

If the cells A1:A3 contain 5, 2, and TRUE:

MINA(A1:A3) returns 1 (since TRUE evaluates as 1)

See also:

[MIN](#)

MINUTE (minute)

Syntax:

MINUTE(Time)

Description:

Returns the minutes of a time value.

Example:

MINUTE("12:34:56 AM") returns 34

MINUTE("09/25/2018 10:30:56 AM") returns 30

See also:

[HOUR](#), [SECOND](#), [MILLISECONDS](#)

MINVERSE (inverse matrix)

Syntax:

MINVERSE(Array)

Description:

Return the inverse of a matrix.

The inverse A^{-1} of a matrix A is the matrix that A has to be multiplied by to receive the identity matrix 1.

Array is a cell range or array containing the matrix to be evaluated. It must contain numeric values only. Its number of rows has to equal its number of columns.

Matrices whose determinant is zero cannot be inverted. In this case, the function returns a #NUM! error value.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

MINVERSE({9,8,8;2,4,6;1,2,1}) returns:

{0.2,-0.2,-0.4;-0.1,-0.025,0.95;0,0.25,-0.5}

See also:

Section [Working with arrays](#), [MDETERM](#), [MMULT](#), [MSOLVE](#), [TRANSPOSE](#)

MIRR (modified internal rate of return)

Syntax:

MIRR(Values, FinanceRate, ReinvestRate)

Description:

Returns the modified internal rate of return for a series of cash flows. Unlike the IRR function, MIRR considers the finance rate (for investments) and the reinvest rate (for reinvestments).

The calculation is based on the cash flows specified in the **Values** argument. Payments have to be entered as negative values, incomes as positive values. The cash flows do not have to be even but they must occur in regular intervals (e.g., monthly).

Values is a cell range or an array containing the cash flows (in their actual order, namely, cash flow for the first period, cash flow for the second period, etc.). At least one payment and one income have to be given.

FinanceRate is the interest rate paid for investments.

ReinvestRate is the interest rate received for reinvestments.

See also:

[IRR](#), [NPV](#), [RATE](#), [XIRR](#)

MMULT (product of matrices)

Syntax:

MMULT(Array1, Array2)

Description:

Returns the product of two matrices.

Array1 and **Array2** are cell ranges or arrays containing the matrices to be evaluated. They must contain numeric values only.

Please note: The number of *columns* in **Array1** must equal the number of *rows* in **Array2**, otherwise, multiplication is not possible.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

MMULT({1,2;3,4}, {5,6;7,8}) returns {19,22;43,50}

See also:

Section [Working with arrays](#), [MDETERM](#), [MINVERSE](#), [MSOLVE](#), [TRANSPOSE](#)

MOD (remainder of a division, Excel method)

Syntax:

MOD(x, y)

Description:

Returns the remainder of the division of **x** by **y**, using the erroneous "Excel method".

Important: This function returns wrong results in some cases (see annotation below)!

Example:

MOD(5, 3) returns 2

MOD(5, 0) returns a #DIV/0! error value

MOD(5, -3) returns -1 (which is wrong – see below!)

Annotation:

Microsoft Excel returns **wrong results** when you use the MOD function with a negative numerator or denominator.

PlanMaker also returns wrong results in this case (for compatibility reasons), but additionally offers a function named [MODP](#) that returns correct results

The following table shows the differences between MOD and MODP (the results highlighted in green color are wrong):

	A	B	C
1	Arguments	Mod	ModP
2	(5, 3)	2	2
3	(5, -3)	-1	2
4	(-5, 3)	1	-2
5	(-5, -3)	-2	-2
6			

Compatibility notes:

Note: The MODP function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[MODP](#), [QUOTIENT](#)

MODE (most frequently occurring value)

Note: MODE is supplemented by the new identical function [MODE.SNGL](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

MODE(Number1 [, Number2, Number3 ...])

Description:

Returns the mode of a data set.

The *mode* is the value occurring most frequently in a set of numbers.

Number1, **Number2**, etc., are the numbers to be evaluated.

If the given numbers contain more than one mode, their smallest mode will be returned.

If the given numbers do not contain any value occurring more than once, a #N/A error value will be returned.

Example:

MODE(1, 2, 4, 4, 4, 2, 1) returns 4

MODE(1, 2, 4, 4, 2, 1) returns 1 (if there are multiple modes, the smallest one is returned)

MODE(1, 4, 2) returns #N/A because no value occurs more than once.

See also:

[MODE.SNGL](#), [MEDIAN](#), [NORM.DIST/NORMDIST](#)

MODE.SNGL (most frequently occurring value)

Syntax:

MODE.SNGL(Number1 [, Number2, Number3 ...])

Description:

Returns the mode of a data set.

The *mode* is the value occurring most frequently in a set of numbers.

Number1, **Number2**, etc., are the numbers to be evaluated.

If the given numbers contain more than one mode, their smallest mode will be returned.

If the given numbers do not contain any value occurring more than once, a #N/A error value will be returned.

Example:

MODE.SNGL(1, 2, 4, 4, 4, 2, 1) returns 4

MODE.SNGL(1, 2, 4, 4, 2, 1) returns 1 (if there are multiple modes, the smallest one is returned)

MODE.SNGL(1, 4, 2) returns #N/A because no value occurs more than once.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[MODE](#), [MEDIAN](#), [NORM.DIST/NORMDIST](#)

MODP (remainder of a division, PlanMaker method)

Syntax:

MODP(x, y)

Description:

Returns the remainder of the division of x by y , using the "PlanMaker method" (see annotation below).

Example:

MODP(5, 3) returns 2

MODP(5, 0) returns a #DIV/0! error value

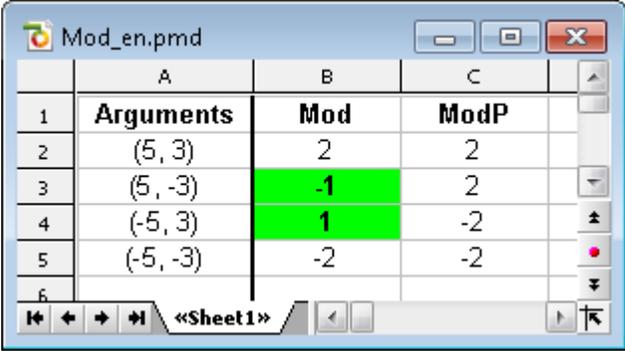
MODP(5, -3) returns 2 (see below)

Annotation:

Microsoft Excel returns **wrong results** when you use the [MOD](#) function with a negative numerator or denominator

PlanMaker also returns wrong results in this case (for compatibility reasons), but additionally offers the MODP function described here that returns correct results.

The following table shows the differences between MOD and MODP (the results highlighted in green color are wrong):



	A	B	C
1	Arguments	Mod	ModP
2	(5, 3)	2	2
3	(5, -3)	-1	2
4	(-5, 3)	1	-2
5	(-5, -3)	-2	-2

Compatibility notes:

Note: The MODP function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[MOD](#), [QUOTIENT](#)

MONTH (month of a date)

Syntax:

MONTH(Date)

Description:

Returns the month of a date.

Example:

MONTH("09/25/2018") returns 9

See also:

[YEAR](#), [ISOWEEK](#), [WEEKNUM](#), [DAY](#), [WEEKDAY](#)

MROUND (round to a multiple of base)

Syntax:

MROUND(Number, Base)

Description:

Rounds **Number** to the nearest multiple of **Base**.

Base must be > 0.

If the remainder of the division of **Number** by **Base** is smaller than half the value of **Base**, MROUND rounds *down*. If it is greater than or equal to half the value of **Base**, MROUND rounds *up* (see examples below).

Example:

MROUND(1234.5678, 1) returns 1235

MROUND(1234.5678, 0.01) returns 1234.57

MROUND(22, 5) returns 20

MROUND(23, 5) returns 25

MROUND(22.5, 5) returns 25

See also:

[FLOOR](#), [CEILING](#), [ROUNDDOWN](#), [ROUNDUP](#), [ROUND](#), [TRUNC](#), [INT](#)

MSOLVE (solution of matrix equation $Ax=B$)

Syntax:

MSOLVE(ArrayA, VectorB)

Description:

Returns the solution to a linear system of equations by solving the matrix equation $Ax=B$.

ArrayA is the cell range or array containing matrix **A**. It must contain numeric values only. Its number of rows has to equal its number of columns.

The determinant of this matrix must not be zero, otherwise, the equation cannot be solved.

VectorB is the cell range or array containing vector **B**. **VectorB** must be a vector, which is an array or a cell range of just *one* column.

The result of this function is a vector with the solutions.

Please note: The MSOLVE function only calculates correctly if the vector with the solutions is arranged as a *column*. To arrange the vector with the solutions in a *row*, you also need to use the [TRANSPOSE](#) function with the following syntax:

TRANSPOSE(MSOLVE(ArrayA, VectorB))

Annotation:

The result of this function is calculated using singular value decomposition. When applied to large matrices (more than 10, 20 rows), significant rounding errors can occur.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

To solve the following linear system of equations...

$$2x + 3y = 4$$

$$2x + 2y = 8$$

...use the following formula:

MSOLVE({2,3;2,2}, {4,8})

The result is the vector {8;-4}, which means that $x=8$ and $y=-4$.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

Section [Working with arrays](#), [MDETERM](#), [MINVERSE](#), [MMULT](#), [TRANSPOSE](#)

MULTINOMIAL (multinomial coefficient)

Syntax:

MULTINOMIAL(Number1 [, Number2, Number3 ...])

Description:

Returns the multinomial coefficient ("polynomial coefficient") of a set of numbers.

Number1, **Number2**, etc., are the numbers to be evaluated. All of them have to be ≥ 1 .

Example:

MULTINOMIAL(1, 2, 3, 4, 5) returns 37837800

Note:

The functions MULTINOMIAL and [POLYNOMIAL](#) are completely identical.

See also:

[POLYNOMIAL](#), [FACT](#)

N (convert value into number)

Syntax:

N(Value)

Description:

Converts a value to a number.

Note:

This function was retained only for compatibility with older spreadsheet applications. It is no longer commonly used, as current spreadsheet applications (including PlanMaker) automatically convert values into numbers, where necessary.

Example:

N("Text") returns 0

N("42") returns 0

N(42) returns 42

N(TRUE) returns 1

If A1 contains the date 09/25/2014:

N(A1) returns 41907 (the serial number of that date)

See also:

[I](#), [VALUE](#), [TEXT](#)

NA (error value #N/A)

Syntax:

NA()

Description:

Returns the error value #N/A ("not available"). Entering =NA() in a cell indicates that the value in this cell is currently not available.

Use this function in a cell that is empty, but definitely has to be filled out later in order to receive correct results in calculations made with this cell. As a result, all calculations referring to this cell will also return a #N/A error value (instead of an incorrect result).

If, for example, you calculate the sum of your assets in a balance sheet, but some of the required values are still missing, enter =NA() in these empty cells. As a result, the sum will be a #N/A error value instead of an incomplete value.

Annotation:

Instead of entering =NA() into a cell you can also type #N/A, which will lead to the same result.

See also:

[ISNA](#), [ISERR](#), [ISERROR](#), [ERRORTYPE](#), section [Error values](#)

NEG (negative value)

Syntax:

NEG(Number)

Description:

Return the negative value of **Number**.

Example:

NEG(42) returns -42

NEG(-42) returns 42

NEG(0) returns 0

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Instead of using NEG, you can simply multiply the value by -1:

NEG(x) equals $(-1) * x$.

See also:

[ABS](#), [SIGN](#)

NEGBINOMDIST (negative binomial distribution)

Note: NEGBINOMDIST is supplemented by the new function [NEGBINOM.DIST](#) with additional functionality, which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

NEGBINOMDIST(k, r, p)

Description:

Returns the negative binomial distribution (also known as Pascal distribution).

The negative binomial distribution can be used to calculate the probability to receive **k** failures before the **r**-th success in an experiment with independent trials and only two possible outcomes (success or failure) with a fixed probability of **p** for each trial.

k is the number of failures. Must be ≥ 0 .

r is the number of successes. Must be ≥ 0 .

p is the probability of a success for each trial run. Must be in the range 0 to 1.

Example:

In an urn there are 1 red and 5 black balls. What is the probability (with the balls being returned) to draw *exactly* 10 black balls (=failures) before the 2nd red ball (=success) is drawn?

NEGBINOMDIST(10, 2, 1/6) returns 0.04935.

See also:

[NEGBINOM.DIST](#), [BINOM.DIST.RANGE/BINOM.DIST/BINOMDIST](#), [HYPGEOM.DIST/HYPGEOMDIST](#)

NEGBINOM.DIST (negative binomial distribution)

Syntax:

NEGBINOM.DIST(k, r, p, Cumulative)

Description:

Returns the negative binomial distribution (also known as Pascal distribution).

The negative binomial distribution can be used to calculate the probability to receive **k** failures before the **r**-th success in an experiment with independent trials and only two possible outcomes (success or failure) with a fixed probability of **p** for each trial.

k is the number of failures. Must be ≥ 0 .

r is the number of successes. Must be ≥ 0 .

p is the probability of a success for each trial run. Must be in the range 0 to 1.

Cumulative determines the type of function as a switch: If you enter the value TRUE, the cumulative distribution function of the negative binomial distribution is calculated. By entering the value FALSE, the probability mass function of the negative binomial distribution is calculated.

Example:

In an urn there are 1 red and 5 black balls. What is the probability (with the balls being returned) to draw *exactly* or *at most* 10 black balls (=failures) before the 2nd red ball (=success) is drawn?

NEGBINOM.DIST(10, 2, 1/6, FALSE) returns 0.04935

NEGBINOM.DIST(10, 2, 1/6, TRUE) returns 0.61867

The probability of having to draw *exactly* 10 black balls is 4.9% (probability mass function). The probability of having to draw *at most* 10 black balls is 61.9% (cumulative distribution function).

Note:

The NEGBINOM.DIST function supplements the previous [NEGBINOMDIST](#) function with the additional argument **Cumulative**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[NEGBINOMDIST](#), [BINOM.DIST.RANGE/BINOM.DIST/BINOMDIST](#), [HYPGEOM.DIST/HYPGEOMDIST](#)

NETWORKDAYS (number of workdays)

Syntax:

NETWORKDAYS(StartDate, EndDate [, Holidays])

Description:

Returns the number of workdays between **StartDate** and **EndDate**.

The function counts workdays only, Saturdays and Sundays are skipped. Optionally, you can specify a list of holidays to be skipped as well (see **Holidays** parameter).

StartDate and **EndDate** are the first and the last day of the time interval to be evaluated.

Holidays (optional) is a cell range or an array containing a list of dates to be skipped (e.g. holidays).

Example:

NETWORKDAYS("01/01/2010", "01/31/2010") returns 22.

See also:

[WORKDAY](#), [DAYS/DAYSP](#), [DAYS360](#), [DATEDIF](#), [HOLIDAY](#)

NOMINAL (nominal interest rate)

Syntax:

NOMINAL(EffRate, NPerYear)

Description:

Returns the nominal annual interest rate, given the effective annual interest rate and the number of compounding periods per year.

EffRate is the effective annual interest rate.

NPerYear is the number of compounding periods per year.

Example:

To calculate the nominal annual interest rate of an investment with an effective annual interest rate of 5%, compounded quarterly:

NOMINAL(5%, 4) returns approx. 4.91%

See also:

[EFFECT](#)

NORMDIST (normal distribution)

Note: NORMDIST is supplemented by the new identical function [NORM.DIST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

NORMDIST(x, Mean, StdDev, Cumulative)

Description:

Returns the normal distribution (also known as Gaussian distribution).

The normal distribution is one of the most important distributions in statistics, since many distributions follow it.

X is the value to be evaluated.

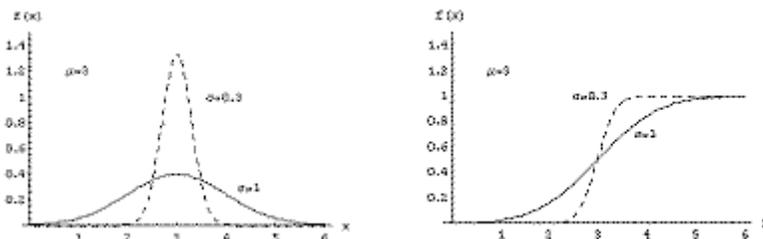
Mean is the arithmetic mean of the distribution.

StdDev is the standard deviation of the distribution. Must be > 0.

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.



Left: density function ("bell curve"), right: distribution function

See also:

[NORM.DIST](#), [NORM.INV/NORMINV](#), [NORM.S.DIST/NORMSDIST](#), [NORM.S.INV/NORMSINV](#)

NORM.DIST (normal distribution)

Syntax:

NORM.DIST(x, Mean, StdDev, Cumulative)

Description:

Returns the normal distribution (also known as Gaussian distribution).

The normal distribution is one of the most important distributions in statistics, since many distributions follow it.

X is the value to be evaluated.

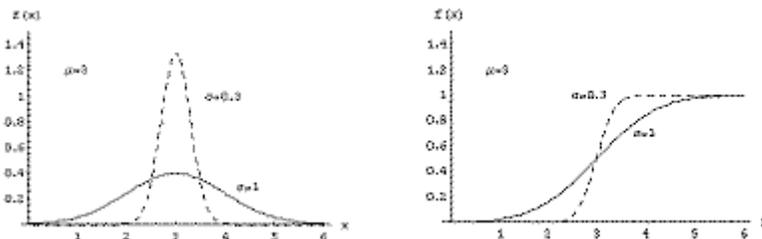
Mean is the arithmetic mean of the distribution.

StdDev is the standard deviation of the distribution. Must be > 0 .

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.



Left: density function ("bell curve"), right: distribution function

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[NORMDIST](#), [NORM.INV/NORMINV](#), [NORM.S.DIST/NORMSDIST](#), [NORM.S.INV/NORMSINV](#)

NORMINV (percentiles of the normal distribution)

Note: NORMINV is supplemented by the new identical function [NORM.INV](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

NORMINV(Probability, Mean, StdDev)

Description:

Returns the inverse of the normal cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Mean is the arithmetic mean of the distribution.

StdDev is the standard deviation of the distribution. Must be > 0.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[NORM.INV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#), [NORM.S.INV/NORMSINV](#)

NORM.INV (percentiles of the normal distribution)

Syntax:

NORM.INV(Probability, Mean, StdDev)

Description:

Returns the inverse of the normal cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Mean is the arithmetic mean of the distribution.

StdDev is the standard deviation of the distribution. Must be > 0.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

NORM.INV is the inverse function of [NORM.DIST](#).

See also:

[NORMINV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#), [NORM.S.INV/NORMSINV](#)

NORMSDIST (standard normal distribution)

Note: NORMSDIST is supplemented by the new function [NORM.S.DIST](#) with additional functionality, which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

NORMSDIST(x)

Description:

Returns the standard normal cumulative distribution function.

The standard normal distribution is a normal distribution (see [NORM.DIST/NORMDIST](#) function) with a mean of zero and a standard deviation of one

x is the value to be evaluated.

See also:

[NORM.S.DIST](#), [NORM.INV/NORMINV](#), [NORM.S.INV/NORMSINV](#), [STANDARDIZE](#), [GAUSS](#), [LOGNORM.INV/LOGINV](#), [LOGNORM.DIST/LOGNORMDIST](#)

NORM.S.DIST (standard normal distribution)

Syntax:

NORM.S.DIST(x, cumulative)

Description:

Returns the standard normal (cumulative) distribution function.

The standard normal distribution is a normal distribution (see [NORM.DIST/NORMDIST](#) function) with a mean of zero and a standard deviation of one

x is the value to be evaluated.

Cumulative determines the type of function as a switch: If you enter the value TRUE, the cumulative distribution function of the standard normal distribution is calculated. By entering the value FALSE, the density function of the standard normal distribution is calculated.

Note:

The NORM.S.DIST function supplements the previous [NORMSDIST](#) function with the additional argument **Cumulative**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

The inverse function is [NORM.S.INV](#).

See also:

[NORMSDIST](#), [NORM.INV/NORMINV](#), [NORM.S.INV/NORMSINV](#), [STANDARDIZE](#), [GAUSS](#), [LOGNORM.INV/LOGINV](#), [LOGNORM.DIST/LOGNORMDIST](#)

NORMSINV (percentiles of the standard distribution)

Note: NORMSINV is supplemented by the new identical function [NORM.S.INV](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

NORMSINV(Probability)

Description:

Returns the inverse of the standard normal cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[NORM.S.INV](#), [NORM.INV/NORMINV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

NORM.S.INV (percentiles of the standard distribution)**Syntax:**

NORM.S.INV(Probability)

Description:

Returns the inverse of the standard normal cumulative distribution function (i.e., percentiles of this distribution).

Probability is the probability to be evaluated. Must be in the range 0 to 1.

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

Hint:

NORM.S.INV is the inverse function of [NORM.S.DIST](#).

See also:

[NORMSINV](#), [NORM.INV/NORMINV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

NOT (logical NOT function)

Syntax:

NOT(Value)

Description:

Performs a logical negation.

Value must be a logical value or a calculation returning a logical value.

Example:

NOT(TRUE) returns FALSE

NOT(FALSE) returns TRUE

NOT(A1=0) returns TRUE, if A1 contains a value different from zero.

See also:

[OR](#), [AND](#), [XOR](#)

NOW (current date and time)

Syntax:

NOW()

Description:

Returns the current date and time.

Note:

The result is a serial date number. PlanMaker automatically formats it in time format so that it will be displayed as a time. To select a different date/time format (e.g., to have date and time displayed), use the **Format > Cell** menu command.

See also:

[TODAY](#), [CREATEDATE](#)

NPER (number of periods)

Syntax:

NPER(Rate, Pmt, PV [, FV] [, Type])

Description:

Returns the number of payment periods of an investment based on periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

Pmt is the payment made for each period.

PV is the present value.

FV (optional) is the future value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

See also:

[FV](#), [IPMT](#), [PMT](#), [PPMT](#), [PV](#), [RATE](#)

NPV (net present value)

Syntax:

NPV(Rate, Value1 [, Value2, Value3 ...])

Description:

Returns the net present value of an investment based on regular cash flows and a fixed discount rate.

Rate is the discount rate (per payment period).

Value1, Value2 are the cash flows. You can specify either single values or a cell range. **Important:** All cash flows have to occur at the *end* of each period.

Payments have to be entered as negative values, incomes as positive values. The cash flows do not have to be even but they must occur in regular intervals (at the *end* of each period) and be entered in their actual order, namely, cash flow for the first period, cash flow for the second period, etc.

A zero has to be entered for periods where no cash flow occurred.

Differences to the [PV](#) function:

1. Cash flows do not have to be even.
2. Cash flows must occur at the end of each period.

Example:

NPV(6.5%, 4000, 5000) returns 8164.16

See also:

[PV](#), [XNPV](#), [IRR](#)

OCT2BIN (octal number to binary number)

Syntax:

OCT2BIN(Number [, Digits])

Description:

Converts the given octal number (base 8) to a binary number (base 2).

Number is the number to be converted. It must be in the range 20000000000 to 17777777777. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

OCT2BIN("52") returns 101010

OCT2BIN("52", 8) returns 00101010

OCT2BIN("52", 2) returns the error value #NUM!, because this number cannot be represented with fewer than 6 binary digits

OCT2BIN("3777777726") returns 1111111111111111111111111111010110 (negative value)

See also:

[BIN2OCT](#), [OCT2DEC](#), [OCT2HEX](#)

OCT2DEC (octal number to decimal number)

Syntax:

OCT2DEC(Number)

Description:

Converts the given octal number (base 8) to a decimal number (base 10).

Number is the number to be converted. It must be in the range 20000000000 to 17777777777. Negative numbers have to be transformed to two's complement notation (see last example).

Example:

OCT2DEC("52") returns 42

OCT2DEC("0052") returns 42 as well

OCT2DEC("3777777726") returns -42

See also:

[DEC2OCT](#), [OCT2BIN](#), [OCT2HEX](#), [DECIMAL](#)

OCT2HEX (octal number to hexadecimal number)

Syntax:

OCT2HEX(Number [, Digits])

Description:

Converts the given octal number (base 8) to a hexadecimal number (base 16).

Number is the number to be converted. It must be in the range 20000000000 to 17777777777. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example:

OCT2HEX("52") returns 2A

OCT2HEX("0052") returns 2A as well

OCT2HEX("52", 1) returns the error value #NUM!, because this number cannot be represented with fewer than 2 hexadecimal digits

OCT2HEX("37777777726") returns FFFFFFFD6 (negative value)

See also:

[HEX2OCT](#), [OCT2BIN](#), [OCT2DEC](#)

ODD (round up to next odd number)

Syntax:

ODD(Number)

Description:

Rounds **Number** up (away from zero) to the nearest odd integer.

Example:

ODD(41) returns 41

ODD(42) returns 43

ODD(-42) returns -43

See also:

[EVEN](#), [ROUNDDOWN](#), [ROUNDUP](#), [ROUND](#), [MROUND](#)

OFFSET (shifted reference)

Syntax:

OFFSET(Reference, Rows, Columns [, Height] [, Width])

Description:

Returns a cell reference shifted by the specified number of rows and columns. Additionally, the size of the reference can be modified.

Reference is the cell reference to be evaluated.

Rows is the number of rows **Reference** will be shifted. Positive values shift downwards, negative values shift upwards.

Columns is the number of columns **Reference** will be shifted. Positive values shift to the right, negative values shift to the left.

Height (optional) changes the height of **Reference** to the specified number of rows. **Height** must be a positive value.

Width (optional) changes the width of **Reference** to the specified number of columns. **Width** must be a positive value.

Example:

OFFSET(A1, 2, 0) returns a reference to A3

OFFSET(A1:C3, 1, 1) returns a reference to B2:D4

OFFSET(A1:C3, 1, 1, 5, 3) returns a reference to B2:D6

SUM(OFFSET(A1:C3, 1, 1, 5, 3)) returns the sum of the values in B2:D6

See also:

[ADDRESS](#), [INDIRECT](#), [COLUMN](#), [ROW](#)

OR (logical OR function)

Syntax:

OR(Value1 [, Value2, Value3 ...])

Description:

OR returns the logical value TRUE if at least one of the given arguments is TRUE, otherwise it returns FALSE.

You can use this function to verify that *at least one* of multiple conditions is fulfilled.

Example:

OR(TRUE, TRUE) returns TRUE

OR(TRUE, FALSE) returns TRUE

OR(FALSE, FALSE) returns FALSE

OR(A1=0, A1>10) returns TRUE, if A1 is either zero *or* greater than ten.

See also:

[XOR](#), [AND](#), [NOT](#)

PEARSON (Pearson correlation coefficient)

Syntax:

PEARSON(Range1, Range2)

Description:

Returns the Pearson product-moment correlation coefficient r .

This coefficient is a measure of the strength of the linear relationship between two data sets.

The result of the PEARSON function is in the range -1 to 1:

1 indicates a perfect linear relationship.

-1 indicates a perfect inverse linear relationship (the values in **Range2** decrease as the values in **Range1** increase).

0 indicates that there is no linear relationship at all.

Range1 is the cell range or array containing the independent values. Empty cells, text and logical values are ignored.

Range2 is the cell range or array containing the dependent values. Empty cells, text and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise the function returns a #N/A error value.

Example:

If A1:A3 contains the values 1, 2, 3 and B1:B3 contains 2, 3, 4:

PEARSON(A1:A3, B1:B3) returns 1

If A1:A3 contains the values 1, 2, 3 and B1:B3 contains 4, 3, 2:

PEARSON(A1:A3, B1:B3) returns -1

See also:

[RSQ](#), [SLOPE](#), [INTERCEPT](#)

PERCENTILE (percentiles of a data set)

Note: PERCENTILE is supplemented by the new identical function [PERCENTILE.INC](#) and the completely new function [PERCENTILE.EXC](#), which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

PERCENTILE(Range, k)

Description:

Returns the **k**-th percentile of a data set.

For example, if **k** is 0.5, the 0.5 percentile (i.e., the median) will be returned.

Range is the cell range containing the values to be evaluated.

k is the percentile to be returned. Must be in the range 0 to 1 (**inclusive**) with 0=0% and 1=100%.

Example:

If A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

PERCENTILE(A1:A9, 0.75) returns 7

See also:

[PERCENTILE.INC/PERCENTILE.EXC](#), [QUARTILE.EXC/QUARTILE.INC/QUARTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [MEDIAN](#), [MODE.SNGL/MODE](#), [RANK.AVG/RANK.EQ/RANK](#)

PERCENTILE.EXC (percentiles of a data set)

Syntax:

PERCENTILE.EXC(Range, k)

Description:

Returns the **k**-th percentile of a data set.

For example, if **k** is 0.5, the 0.5 percentile (i.e., the median) will be returned.

Range is the cell range containing the values to be evaluated.

k is the percentile to be returned. Must be in the range 0 to 1 (**exclusive**) with 0=0% and 1=100%.

Example:

If A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

PERCENTILE.EXC(A1:A9, 0.75) returns 7.5

Note:

The PERCENTILE.EXC function supplements together with [PERCENTILE.INC](#) the previous [PERCENTILE](#) function.

PERCENTILE.INC returns the same result as PERCENTILE (values 0 to 1 **inclusive**).

PERCENTILE.EXC (values 0 to 1 **exclusive**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[PERCENTILE.INC/PERCENTILE](#), [QUARTILE.EXC/QUARTILE.INC/QUARTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [MEDIAN](#), [MODE.SNGL/MODE](#), [RANK.AVG/RANK.EQ/RANK](#)

PERCENTILE.INC (percentiles of a data set)

Syntax:

PERCENTILE.INC(Range, k)

Description:

Returns the **k**-th percentile of a data set.

For example, if **k** is 0.5, the 0.5 percentile (i.e., the median) will be returned.

Range is the cell range containing the values to be evaluated.

k is the percentile to be returned. Must be in the range 0 to 1 (**inclusive**) with 0=0% and 1=100%.

Example:

If A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

PERCENTILE.INC(A1:A9, 0.75) returns 7

Note:

The PERCENTILE.INC function supplements together with [PERCENTILE.EXC](#) the previous [PERCENTILE](#) function.

PERCENTILE.INC returns the same result as PERCENTILE (values 0 to 1 **inclusive**).

PERCENTILE.EXC (values 0 to 1 **exclusive**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[PERCENTILE.EXC/PERCENTILE](#), [QUARTILE.EXC/QUARTILE.INC/QUARTILE](#),
[PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [MEDIAN](#), [MODE.SNGL/MODE](#),
[RANK.AVG/RANK.EQ/RANK](#)

PERCENTRANK (percent rank in a data set)

Note: PERCENTRANK is supplemented by the new identical function [PERCENTRANK.INC](#) and the completely new function [PERCENTRANK.EXC](#), which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

PERCENTRANK(Range, Number [, Digits])

Description:

Returns the percentile rank (between 0 and 1 **inclusive**) of a value in a data set.

Range is a cell range containing the values to be evaluated.

Number is the value whose rank you want to determine. If **Number** is not included in the given values, interpolation will be used.

Digits (optional) is the number of significant digits for the returned value. Must be ≥ 1 . If omitted, 3 digits will be used.

Example:

If A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

PERCENTRANK(A1:A9, 5) returns 0.5 (=50%) middle of the given values; median

PERCENTRANK(A1:A9; 1) returns 0 (=0%) minimum value

PERCENTRANK(A1:A9; 9) returns 1 (=100%) maximum value

See also:

[PERCENTRANK.INC/PERCENTRANK.EXC](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE.QUANTILE.EXC/QUANTILE.INC/QUANTILE](#), [RANK.AVG/RANK.EQ/RANK](#)

PERCENTRANK.EXC (percent rank in a data set)

Syntax:

PERCENTRANK.EXC(Range, Number [, Digits])

Description:

Returns the percentile rank (between 0 and 1 **exclusive**) of a value in a data set.

Range is a cell range containing the values to be evaluated.

Number is the value whose rank you want to determine. If **Number** is not included in the given values, interpolation will be used.

Digits (optional) is the number of significant digits for the returned value. Must be ≥ 1 . If omitted, 3 digits will be used.

Example:

If A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

PERCENTRANK.EXC(A1:A9, 5) returns 0.5 (=50%) middle of the given values; median

PERCENTRANK.EXC(A1:A9, 1) returns 0.1 (=10%) minimum value

PERCENTRANK.EXC(A1:A9, 9) returns 0.9 (=90%) maximum value

Note:

The PERCENTRANK.EXC function supplements together with [PERCENTRANK.INC](#) the previous [PERCENTRANK](#) function.

PERCENTRANK.INC returns the same result as PERCENTRANK (values 0 to 1 **inclusive**).

PERCENTRANK.EXC (values 0 to 1 **exclusive**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[PERCENTRANK/PERCENTRANK.INC](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [QUARTILE.EXC/QUARTILE.INC/QUARTILE](#), [RANK.AVG/RANK.EQ/RANK](#)

PERCENTRANK.INC (percent rank in a data set)

Syntax:

PERCENTRANK.INC(Range, Number [, Digits])

Description:

Returns the percentile rank (between 0 and 1 **inclusive**) of a value in a data set.

Range is a cell range containing the values to be evaluated.

Number is the value whose rank you want to determine. If **Number** is not included in the given values, interpolation will be used.

Digits (optional) is the number of significant digits for the returned value. Must be ≥ 1 . If omitted, 3 digits will be used.

Example:

If A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

PERCENTRANK.INC(A1:A9, 5) returns 0.5 (=50%) middle of the given values; median

PERCENTRANK.INC(A1:A9, 1) returns 0 (=0%) minimum value

PERCENTRANK.INC(A1:A9, 9) returns 1 (=100%) maximum value

Note:

The PERCENTRANK.INC function supplements together with [PERCENTRANK.EXC](#) the previous [PERCENTRANK](#) function.

PERCENTRANK.INC returns the same result as PERCENTRANK (values 0 to 1 **inclusive**).

PERCENTRANK.EXC (values 0 to 1 **exclusive**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[PERCENTRANK/PERCENTRANK.EXC](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [QUARTILE.EXC/QUARTILE.INC/QUARTILE](#), [RANK.AVG/RANK.EQ/RANK](#)

PERIOD (duration of fixed-interest investments)

Syntax:

PERIOD(Rate, PV, FV)

Description:

Returns the duration (i.e., the number of periods) required to obtain a specific future value in a fixed-interest investment. This function is applicable to investments with just one payment (made at the beginning) and a fixed interest rate.

Rate is the interest rate (per period).

PV is the present value.

FV is the future value.

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Example:

To obtain \$5000 with a fixed-interest investment of \$3000 and a yearly interest rate of 6%:

PERIOD(6%, 3000, 5000) returns 8.76669 periods (i.e., years)

See also:

[RRI](#)

PERMUT (permutations)

Syntax:

PERMUT(*n*, *k*)

Description:

Returns the number of permutations of size **k** in a population of size **n**.

Use this function to find out in how many ways **n** distinct objects can be arranged in groups of **k** elements, without repetition, and with the order being important.

Permutations are similar to combinations (see [COMBIN](#) function), except that the *order* of the objects is important

n is the total number of items. Must be > **k**.

k is the number of items in each permutation. Must be > 0 and < **n**.

n and **k** should be integers, digits right of the decimal point are ignored.

Example:

To calculate how many different three-letter words can be built out of an alphabet with 26 letters:

PERMUT(26, 3) returns 15600

See also:

[COMBIN](#)

PHI (standard normal distribution)

Syntax:

PHI(*x*)

Description:

Returns the standard normal distribution.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown. It is therefore recommended to use the function NORMDIST instead, since it is compatible with all versions of Excel:

PHI(x) equals NORMDIST(x, 0, 1, FALSE)

See also:

[NORM.DIST/NORMDIST](#), [GAUSS](#)

PI (pi)

Syntax:

PI()

Description:

Returns the mathematical constant π (pi), which expresses the ratio of a circle's circumference ($2r\pi$) to its diameter ($2r$).

Example:

PI() returns 3.14159265...

PMT (payment)

Syntax:

PMT(Rate, NPer, PV [, FV] [, Type])

Description:

Returns the payment (principal plus interest) in the given period. This function is applicable to loans with periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

NPer is the total number of payment periods.

PV is the present value.

FV (optional) is the future value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Example:

PMT(6.5%, 10, 1000) returns -139.10

See also:

[FV](#), [IPMT](#), [ISPMT](#), [NPER](#), [PPMT](#), [CUMIPMT](#), [CUMPRINC](#), [PV](#), [RATE](#)

POISSON (Poisson distribution)

Note: POISSON is supplemented by the new identical function [POISSON.DIST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

POISSON(x, Lambda, Cumulative)

Description:

Returns the Poisson distribution.

The Poisson distribution describes the occurrence of *rare* events in a *large* number of independent trials. It can simulate the binomial distribution for small values of *p* (probability) and large values of *n* (number of trials).

X is the value to be evaluated. Must be ≥ 0 .

Lambda is the expected (average) value. Must be ≥ 0 .

Example:

In a multi-story building, an average of 4 light bulbs become defective per week.

To determine the probability that just 3 light bulbs become defective in one week:

POISSON(3, 4, FALSE) returns 0.195366815 (i.e., about 19.5%)

To determine the probability that *at most* 3 light bulbs become defective in one week:

POISSON(3, 4, TRUE) returns 0.43347 (i.e., about 43.3%)

See also:

[POISSON.DIST](#), [BINOM.DIST.RANGE/BINOM.DIST/BINOMDIST](#), [EXPON.DIST/EXPONDIST](#)

POISSON.DIST (Poisson distribution)

Syntax:

POISSON.DIST(x, Lambda, Cumulative)

Description:

Returns the Poisson distribution.

The Poisson distribution describes the occurrence of *rare* events in a *large* number of independent trials. It can simulate the binomial distribution for small values of *p* (probability) and large values of *n* (number of trials).

X is the value to be evaluated. Must be ≥ 0 .

Lambda is the expected (average) value. Must be ≥ 0 .

Example:

In a multi-story building, an average of 4 light bulbs become defective per week.

To determine the probability that just 3 light bulbs become defective in one week:

POISSON.DIST(3, 4, FALSE) returns 0.195366815 (i.e., about 19.5%)

To determine the probability that *at most* 3 light bulbs become defective in one week:

POISSON.DIST(3, 4, TRUE) returns 0.43347 (i.e., about 43.3%)

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[POISSON](#), [BINOM.DIST.RANGE/BINOM.DIST/BINOMDIST](#), [EXPON.DIST/EXPONDIST](#)

POLYNOMIAL (multinomial coefficient)

Syntax:

POLYNOMIAL(Number1 [, Number2, Number3 ...])

Description:

Returns the polynomial coefficient ("multinomial coefficient") of a set of numbers.

Number1, **Number2**, etc., are the numbers to be evaluated. All of them have to be ≥ 1 .

Example:

POLYNOMIAL(1, 2, 3, 4, 5) returns 37837800

Note:

The functions POLYNOMIAL and [MULTINOMIAL](#) are completely identical.

See also:

[MULTINOMIAL](#), [FACT](#)

POWER (power)

Syntax:

POWER(x, y)

Description:

Returns x raised to the y-th power.

x is the base.

y is the exponent.

Annotation:

The ^ operator does exactly the same:

POWER(x, y) is equivalent to x^y .

Example:

POWER(2, 4) equals 2^4 , which equals 16

See also:

[LOG](#), [LN](#), [EXP](#), [SQRT](#), [ROOTN](#), [SERIESSUM](#), section [Operators in formulas](#)

PPMT (payment on the principal)

Syntax:

PPMT(Rate, Per, NPer, PV [, FV] [, Type])

Description:

Returns the principal due in the given period of an investment based on periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

Per is the payment period to be evaluated.

NPer is the total number of payment periods.

PV is the present value.

FV (optional) is the future value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Example:

Loan terms: \$100,000 at 10% per year, to be repaid over 72 months with monthly payments at the end of each month.

How much is the principal in the 32nd period (i.e., the 32nd month)?

PPMT(10%/12, 32, 72, 100000) returns -1.318.

Note that all values have to use the same time unit, *months* in this case, since the payments are made *monthly*. Therefore, in the above formula, the yearly interest rate had to be divided by 12 to get the *monthly* interest rate.

See also:

[IPMT](#), [ISPMT](#), [PMT](#), [CUMIPMT](#), [CUMPRINC](#), [FV](#), [NPER](#), [PV](#), [RATE](#)

PROB (probability)

Syntax:

PROB(Values, Probabilities, k1 [, k2])

Description:

Returns the probability that a value is inside the specified interval of values, when the individual probabilities for each value are given.

Values are the given values.

Probabilities are the probabilities associated with these values. All of them have to be in the range 0 to 1. Their sum has to be 1.

Values and **Probabilities** must have the same number of values, otherwise the function returns a #N/A error value.

k1 and **k2** are the bounds of the interval whose cumulative probabilities you want to calculate. If **k2** is omitted, just the probability of **k1** will be returned.

Example:

Cells A1:A3 contain the values 1, 2, 3. Cells B1:B3 contain the probabilities associated with these values: 17%, 33%, 50%.

To calculate the probability that a value is between 2 and 3:

PROB(A1:A3, B1:B3, 2, 3) returns 33% + 50%, which equals 83%

PRODUCT (product)

Syntax:

PRODUCT(Number1 [, Number2, Number3 ...])

Description:

Returns the product of the given numbers.

Number1, **Number2**, etc., are the numbers to be multiplied.

Annotation:

When you use this function with cell references or arrays, text strings and logical values are ignored.

But when you use this function with *fixed* values, both text strings that represent a number and logical values (TRUE=1, FALSE=0) are counted.

Example:

PRODUCT(2, 3, 4) equals $2*3*4$, which equals 24

See also:

[SUM](#)

PROPER (convert text to upper/lower case)**Syntax:**

PROPER(Text)

Description:

Converts all characters in a text string as follows: The first letter of each word is converted to an uppercase letter, all other letters are converted to lowercase letters.

Example:

PROPER("good morning") returns Good Morning

PROPER("Good Morning") returns Good Morning

PROPER("GoOd MoRnInG") returns Good Morning

See also:

[UPPER](#), [LOWER](#)

PV (present value)

Syntax:

PV(Rate, NPer, Pmt [, FV] [, Type])

Description:

Returns the present value of an investment based on periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

NPer is the total number of payment periods.

Pmt is the payment made for each period.

FV (optional) is the future value.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

See also:

[FV](#), [IPMT](#), [NPER](#), [NPV](#), [PMT](#), [PPMT](#), [RATE](#)

QUARTILE (quartiles of a data set)

Note: QUARTILE is supplemented by the new identical function [QUARTILE.INC](#) and the completely new function [QUARTILE.EXC](#), which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

QUARTILE(Range, n)

Description:

Returns one of the quartiles of a data set, based on a percentile range between 0 to 1 (**inclusive**).

Range is the cell range or array to be evaluated.

n determines which quartile to return:

- 0: The minimum
- 1: The 1st quartile (25th percentile)
- 2: The 2nd quartile (50th percentile or median)
- 3: The 3rd quartile (75th percentile)
- 4: The maximum

If n is < 0 or > 4 , a #NUM! error value will be returned.

Example:

If cells A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

QUARTILE(A1:A9, 3) is equivalent to PERCENTILE(A1:A9, 0.75), which returns 7

See also:

[QUARTILE.INC/QUARTILE.EXC](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [MEDIAN](#), [MODE.SNGL/MODE](#)

QUARTILE.EXC (quartiles of a data set)

Syntax:

QUARTILE.EXC(Range, n)

Description:

Returns one of the quartiles of a data set, based on a percentile range between 0 to 1 (**exclusive**).

Range is the cell range or array to be evaluated.

n determines which quartile to return:

- 0: The minimum
- 1: The 1st quartile (25th percentile)
- 2: The 2nd quartile (50th percentile or median)
- 3: The 3rd quartile (75th percentile)
- 4: The maximum

If n is < 0 or > 4 , a #NUM! error value will be returned.

Example:

If cells A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

QUARTILE.EXC(A1:A9, 3) is equivalent to PERCENTILE.EXC(A1:A9, 0.75), which returns 7.5

Note:

The QUARTILE.EXC function supplements together with [QUARTILE.INC](#) the previous [QUARTILE](#) function. QUARTILE.INC returns the same result as QUARTILE (values 0 to 1 **inclusive**).

PERCENTRANK.EXC (values 0 to 1 **exclusive**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[QUARTILE](#) / [QUARTILE.INC](#), [PERCENTILE.EXC](#) / [PERCENTILE.INC](#) / [PERCENTILE](#), [PERCENTRANK.EXC](#) / [PERCENTRANK.INC](#) / [PERCENTRANK](#), [MEDIAN](#), [MODE.SNGL](#) / [MODE](#)

QUARTILE.INC (quartiles of a data set)

Syntax:

QUARTILE.INC(Range, n)

Description:

Returns one of the quartiles of a data set, based on a percentile range between 0 to 1 (**inclusive**).

Range is the cell range or array to be evaluated.

n determines which quartile to return:

0: The minimum

1: The 1st quartile (25th percentile)

2: The 2nd quartile (50th percentile or median)

3: The 3rd quartile (75th percentile)

4: The maximum

If n is < 0 or > 4, a #NUM! error value will be returned.

Example:

If cells A1:A9 contain the values 1, 2, 3, 4, 5, 6, 7, 8, 9:

QUARTILE.INC(A1:A9, 3) is equivalent to PERCENTILE.INC(A1:A9, 0.75), which returns 7

Note:

The QUARTILE.INC function supplements together with [QUARTILE.EXC](#) the previous [QUARTILE](#) function. QUARTILE.INC returns the same result as QUARTILE (values 0 to 1 **inclusive**).

PERCENTRANK.EXC (values 0 to 1 **exclusive**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[QUARTILE/QUARTILE.EXC](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [MEDIAN](#), [MODE.SNGL/MODE](#)

QUOTIENT (quotient of a division)

Syntax:

QUOTIENT(x, y)

Description:

Returns the integer part of the division of **x** by **y**.

Example:

QUOTIENT(6, 4) returns 1

See also:

[MOD](#), [MODP](#)

RADIANS (convert degrees to radians)

Syntax:

RADIANS(Number)

Description:

Converts degrees to radians.

Example:

RADIANS(180) returns 3.14159...

See also:

[DEGREES](#)

RAND (random value)

Syntax:

RAND()

Description:

Returns a random number ≥ 0 and < 1 .

A new random number will be generated every time the document is recalculated.

Hint: To manually recalculate a document, use the **Tools > Recalculate** menu command.

Example:

RAND() returns a random number.

See also:

[RANDBETWEEN](#)

RANDBETWEEN (random value)

Syntax:

RANDBETWEEN(LowerLimit, UpperLimit)

Description:

Returns an integer random number \geq **LowerLimit** and \leq **UpperLimit**.

A new random number will be generated every time the document is recalculated.

Hint: To manually recalculate a document, use the **Tools > Recalculate** menu command.

Example:

RANDBETWEEN(1, 6) returns a random integer number in the range of 1 through 6, thereby simulating a dice roll.

See also:

[RAND](#)

RANK (rank in a data set)

Note: RANK is supplemented by the new identical function [RANK.EQ](#) and the completely new function [RANK.AVG](#), which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

RANK(Number, Range [, Ascending])

Description:

Returns the rank of a number in a data set. The largest number's rank is 1, the 2nd largest number's rank is 2, etc.

Number is the number whose rank you want to determine. If number does not occur in **Range**, a #N/A error value is returned.

Range is a cell range or array containing the given numbers.

Ascending (optional) is a logical value that lets you specify whether to use ascending or descending order:

FALSE or omitted: Use descending order (the *largest* number's rank is 1).

TRUE: Use ascending order (the *smallest* number's rank is 1).

Example:

If the cells A1:A6 contain 3, 2, 7, 5, 9, 7:

RANK(9, A1:A6) returns 1

RANK(9, A1:A6, TRUE) returns 6

RANK(5, A1:A6) returns 4

RANK(7, A1:A6) returns 2

See also:

[RANK.EQ/RANK.AVG](#), [SMALL](#), [LARGE](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#)

RANK.AVG (rank in a data set)

Syntax:

RANK.AVG(Number, Range [, Ascending])

Description:

Returns the rank of a number in a data set. The largest number's rank is 1, the 2nd largest number's rank is 2, etc. If there are duplicate values in the list, these are given the **average rank**.

Number is the number whose rank you want to determine. If number does not occur in **Range**, a #N/A error value is returned.

Range is a cell range or array containing the given numbers.

Ascending (optional) is a logical value that lets you specify whether to use ascending or descending order:

FALSE or omitted: Use descending order (the *largest* number's rank is 1).

TRUE: Use ascending order (the *smallest* number's rank is 1).

Example:

If the cells A1:A6 contain 3, 2, 7, 5, 9, 7:

RANK.AVG(9, A1:A6) returns 1

RANK.AVG(9, A1:A6, TRUE) returns 6

RANK.AVG(3, A1:A6) returns 5

RANK.AVG(7, A1:A6) returns 2.5

Note:

The RANK.AVG function supplements together with [RANK.EQ](#) the previous [RANK](#) function.

RANK.EQ returns the same result as RANK (for duplicate values in the list **higher rank**).

The RANK.AVG (for duplicate values in the list **average rank**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[RANK/RANK.EQ](#), [SMALL](#), [LARGE](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#)

RANK.EQ (rank in a data set)

Syntax:

RANK.EQ(Number, Range [, Ascending])

Description:

Returns the rank of a number in a data set. The largest number's rank is 1, the 2nd largest number's rank is 2, etc. If there are duplicate values in the list, these are given the **higher rank**.

Number is the number whose rank you want to determine. If number does not occur in **Range**, a #N/A error value is returned.

Range is a cell range or array containing the given numbers.

Ascending (optional) is a logical value that lets you specify whether to use ascending or descending order:

FALSE or omitted: Use descending order (the *largest* number's rank is 1).

TRUE: Use ascending order (the *smallest* number's rank is 1).

Example:

If the cells A1:A6 contain 3, 2, 7, 5, 9, 7:

RANK.EQ(9, A1:A6) returns 1

RANK.EQ(9, A1:A6, TRUE) returns 6

RANK.EQ(5, A1:A6) returns 4

RANK.EQ(7, A1:A6) returns 2

Note:

The RANK.EQ function supplements together with [RANK.AVG](#) the previous [RANK](#) function.

RANK.EQ returns the same result as RANK (for duplicate values in the list **higher rank**).

The RANK.AVG (for duplicate values in the list **average rank**) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[RANK/RANK.AVG](#), [SMALL](#), [LARGE](#), [PERCENTILE.EXC/PERCENTILE.INC/PERCENTILE](#), [PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#)

RATE (rate per period)

Syntax:

RATE(NPer, Pmt, PV [, FV] [, Type] [, Guess])

Description:

Returns an estimate for the interest rate per period of an annuity.

NPer is the total number of payment periods.

Pmt is the payment made for each period.

PV is the present value.

FV (optional) is the future value (the total value after the last payment). If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Guess (optional) lets you specify an estimate for the result (see note below).

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 20 iterations, a #NUM error value is returned. If this occurs, try altering the **Guess** parameter.

See also:

[FV](#), [IPMT](#), [NPER](#), [PMT](#), [PPMT](#), [PV](#), [RRI](#), [IRR](#), [MIRR](#), [XIRR](#)

REPLACE (replace text in a text string)

Syntax:

REPLACE(Text, Start, Count, NewText)

Description:

Replaces the specified part of a text string with other text.

Text is the given text string.

Start is the position of the first character to be replaced.

Count is the number of characters to be replaced.

NewText is the replacement text.

Example:

REPLACE("aaaaaa", 3, 2, "bb") returns aabbaa

REPLACE("aaaaaa", 3, 4, "bb") returns aabb

REPLACE("cccccc", 3, 2, "ddddddd") returns ceddec

REPLACE("cccccc", 3, 4, "ddddddd") returns cdddd

REPLACE("cccccc", 3, 6, "ddddddd") returns cdddddd

See also:

[FIND](#), [SEARCH](#), [MID](#), [SUBSTITUTE](#), [LEFT](#), [RIGHT](#), [REPT](#)

REPT (repeat text string)

Syntax:

REPT(Text, n)

Description:

Repeats the specified text string **n** times.

n should be an integer, digits right of the decimal point are ignored.

Example:

REPT("Text", 3) returns TextTextText

See also:

[REPLACE](#), [SUBSTITUTE](#)

RIGHT (right part of a text string)

Syntax:

RIGHT(Text [, n])

Description:

Returns the last **n** characters of **Text**.

If **n** is omitted, only the last character is returned.

Example:

RIGHT("peanut", 3) returns nut

RIGHT("peanut") returns t

See also:

[LEFT](#), [MID](#), [REPLACE](#), [LEN](#)

ROMAN (Roman numeral)

Syntax:

ROMAN(Number [, Format])

Description:

Converts an Arabic numeral into a Roman numeral (as a text string).

Number is the number to be converted. Must be ≥ 0 and < 4000 . **Number** should be an integer, digits right of the decimal point are ignored.

If **Number** equals zero, an empty text string will be returned.

If the optional argument **Format** is used, PlanMaker tries to create a shorter form of the Roman numeral. **Format** can be any integer from 0 (do not shorten) through 4 (shorten as much as possible).

Example:

ROMAN(1999) returns MCMXCIX

ROMAN(1999, 0) returns MCMXCIX as well

ROMAN(1999, 1) returns MLMIL

ROMAN(1999, 2) returns MXMIX

ROMAN(1999, 3) returns MVMIV

ROMAN(1999, 4) returns MIM

ROOTN (n-th root)

Syntax:

ROOTN(Number [, n])

Description:

Returns the **n**-th root of a number. If **n** is omitted, the square root is returned ($n=2$).

n should be an integer, digits right of the decimal point are ignored.

If **n** is even, **Number** must be ≥ 0 .

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Hint: Alternatively, the n-th root of a number can be calculated using the following Excel compatible function:

ROOTN(Number, n) equals POWER(Number, 1/n)

Example:

ROOTN(25) returns 5

ROOTN(-25) returns a #NUM! error value

ROOTN(125, 3) returns 5

ROOTN(-125, 3) returns -5

See also:

[SQRT](#), [POWER](#)

ROUND (round)

Syntax:

ROUND(Number, n)

Description:

Rounds **Number** to **n** decimal places.

n is the number of decimal places.

If **n** is omitted, **Number** is rounded to the nearest integer.

If **n** is a negative value, **Number** is rounded to the left of the decimal point. For example, if **n** is -2, **Number** is rounded to the nearest multiple of hundred (see last example).

Example:

ROUND(1.234, 2) returns 1.23

ROUND(1.235, 2) returns 1.24

ROUND(444.222, 0) returns 444

ROUND(444.222, -2) returns 400

See also:

[ROUNDDOWN](#), [ROUNDUP](#), [MROUND](#), [TRUNC](#), [FIXED](#), [INT](#), [EVEN](#), [ODD](#), [CEILING](#), [FLOOR](#)

ROUNDDOWN (round down)

Syntax:

ROUNDDOWN(Number, n)

Description:

Rounds **Number** down (towards zero) to **n** decimal places.

n is the number of decimal places.

If **n** is omitted, **Number** is rounded to the nearest integer.

If **n** is a negative value, **Number** is rounded to the left of the decimal point. For example, if **n** is -2, **Number** is rounded to the nearest multiple of hundred (see last example).

Example:

ROUNDDOWN(1.234, 2) returns 1.23

ROUNDDOWN(1.235, 2) returns 1.23

ROUNDDOWN(888.999, 0) returns 888

ROUNDDOWN(888.999, -2) returns 800

See also:

[ROUNDUP](#), [ROUND](#), [MROUND](#), [TRUNC](#), [FIXED](#), [INT](#), [EVEN](#), [ODD](#), [CEILING](#), [FLOOR](#)

ROUNDUP (round up)

Syntax:

ROUNDUP(Number, n)

Description:

Rounds **Number** up (away from zero) to **n** decimal places.

n is the number of decimal places.

If **n** is omitted, **Number** is rounded to the nearest integer.

If **n** is a negative value, **Number** is rounded to the left of the decimal point. For example, if **n** is -2, **Number** is rounded to the nearest multiple of hundred (see last example).

Example:

ROUNDUP(1.234, 2) returns 1.24

ROUNDUP(1.235, 2) returns 1.24

ROUNDUP(444.222, 0) returns 445

ROUNDUP(444.222, -2) returns 500

See also:

[ROUNDDOWN](#), [ROUND](#), [MROUND](#), [TRUNC](#), [FIXED](#), [INT](#), [EVEN](#), [ODD](#), [CEILING](#), [FLOOR](#)

ROW (row number of a reference)

Syntax:

ROW([Reference])

Description:

Returns the row number(s) of a cell reference:

If **Reference** is a single cell, the row number of this cell is returned.

If **Reference** is a range of cells, their row numbers are returned as a vertical array. Note: In this case, the formula has to be entered as an *array formula* (see section [Working with arrays](#)).

If **Reference** is omitted, the row number of the cell that invokes this function is returned.

Example:

ROW(D2) returns 2

ROW(D2:F4) returns {2;3;4}

ROW() returns 5 when you use this calculation in cell A5

See also:

[COLUMN](#), [ROWS](#), [CELL](#), [ADDRESS](#), [INDIRECT](#), [OFFSET](#)

ROWS (number of rows in a range)

Syntax:

ROWS(Range)

Description:

Returns the number of rows in the specified cell range.

Example:

ROWS(A1:D5) returns 5

See also:

[ROW](#), [COLUMNS](#), [AREAS](#)

RRI (interest for fixed-interest investments)

Syntax:

RRI(Per, PV, FV)

Description:

Returns the interest rate required to obtain a specific future value after a specific period. This function is applicable to investments with just one payment (made at the beginning) and a fixed interest rate.

Per is the number of periods.

PV is the present value.

FV is the future value.

Example:

To obtain \$5000 with a fixed-interest investment of \$3000 after 10 years, the yearly interest rate has to be:
RRI(10, 3000, 5000) returns 0.05241 (i.e., about 5.24%)

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown. In older versions of PlanMaker this function was called PCF.

See also:

[PERIOD, RATE](#)

RSQ (square of Pearson)

Syntax:

RSQ(Range1, Range2)

Description:

Returns the square of Pearson's product moment correlation coefficient r .

This coefficient is a measure of the strength of the linear relationship between two data sets. For more information, see [PEARSON](#) function

Range1 is the cell range or array containing the independent values. Empty cells, text and logical values are ignored.

Range2 is the cell range or array containing the dependent values. Empty cells, text and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise the function returns a #N/A error value.

Example:

If A1:A3 contains the values 2, 5, 3 and B1:B3 contains 2, 7, 4:

RSQ(A1:A3, B1:B3) returns 0.99436

See also:

[PEARSON](#)

SEARCH (search for text)

Syntax:

SEARCH(Text, SearchedText [, StartPos])

Description:

Returns the position of the text string **SearchedText** within the text string **Text**.

StartPos (optional) lets you specify the position (= character) at which to start the search. If omitted, the search starts at the first character.

The SEARCH function is not case-sensitive, i.e., it will *not* distinguish between uppercase and lowercase letters. To perform a case-sensitive search, use the [FIND](#) function instead

Example:

SEARCH("a", "Banana") returns 2

SEARCH("A", "Banana") returns 2

SEARCH("a", "Banana", 3) returns 4

SEARCH("x", "Banana") returns a #VALUE! error value, since "x" does not occur in "Banana".

See also:

[FIND](#), [REPLACE](#), [SUBSTITUTE](#), [EXACT](#), [MID](#)

SECOND (second)

Syntax:

SECOND(Time)

Description:

Returns the seconds of a time value.

Example:

SECOND("12:34:56 AM") returns 56

See also:

[HOUR](#), [MINUTE](#), [MILLISECONDS](#)

SERIESSUM (sum of a power series)**Syntax:**

SERIESSUM(x, n, m, Coefficients)

Description:

Returns a power series based on the following formula:

$SERIESSUM(x,n,m,a) =$

$a_1 * x^n + a_2 * x^{(n+m)} + a_3 * x^{(n+2m)} + a_4 * x^{(n+3m)} + \dots$

x is the base.

n is the exponent for the first element in the series.

m is the increment for **n**.

Coefficients is a one-dimensional cell range or array containing the coefficients that the series elements will be multiplied by.

The number of coefficients also determines the number of elements the power series will consist of. For example, if 10 coefficients are given, the series will consist of 10 elements.

Example:

SERIESSUM(2, 2, 1, {1; 2; 3; 4; 5}) returns 516

See also:

[POWER](#)

SHEET (index of a worksheet)**Syntax:**

SHEET([SheetName])

Description:

Returns the index of a worksheet in the current document. The first worksheet in a document returns 1, the second sheet returns 2, etc.

If the optional argument **SheetName** is given, the index of the worksheet with the specified name is returned. Otherwise, the index of the current worksheet is returned.

Note:

The SHEET function replaces the (almost) identical [SHEETNUMBER](#) function

Background information: The SHEETNUMBER function formerly was available in PlanMaker, but not in Excel. In Excel 2013, Microsoft introduced the same function – but with a different name: SHEET.

There is only one little difference: When the specified parameter is a cell reference, SHEET will return the index of the worksheet that contains this reference. SHEETNUMBER, on the other hand, will read the content of the corresponding cell and return the index of the worksheet carrying that name.

Example:

On the third worksheet in a document, SHEET() returns 3.

SHEET("Expenses") returns the index of the worksheet named "Expenses".

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

See also:

[SHEETNUMBER](#), [SHEETNAME](#), [FILENAME](#)

SHEETNAME (name of a worksheet)

Syntax:

SHEETNAME([n])

Description:

Returns the name of a worksheet.

n is the number of the worksheet whose name you want to determine. The first worksheet in the workbook is number 1, the second is number 2, etc. If **n** is omitted, the current worksheet is used.

Example:

If a document contains four worksheets named "Spring", "Summer", "Autumn", and "Winter" (in this order), and "Autumn" is the current worksheet:

SHEETNAME() returns Autumn

SHEETNAME(1) returns Spring

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[FILENAME](#), [SHEET](#)

SHEETNUMBER (compatibility function)

Syntax:

SHEETNUMBER([SheetName])

Description:

Compatibility function for older PlanMaker documents.

This function has been replaced by the (almost) identical [SHEET](#) function

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Hint: Instead of this function, use the Excel 2013-compatible function SHEET.

See also:

[SHEET](#), [SHEETNAME](#)

SIGN (sign of a number)

Syntax:

SIGN(Number)

Description:

Returns a value representing the sign of a number:

1, if **Number** is positive,

-1, if **Number** is negative,

0, if **Number** is zero.

Example:

SIGN(-5) returns -1

See also:

[ABS](#), [NEG](#)

SIN (sine)

Syntax:

SIN(Number)

Description:

Returns the sine of **Number**.

Tip:

You can use the [RADIANS](#) function to convert an angle given in degrees into radians.

Example:

SIN(PI()/2) returns 1

SIN(RADIANS(90)) returns 1

See also:

[ASIN](#), [COS](#), [TAN](#)

SINH (hyperbolic sine)

Syntax:

SINH(Number)

Description:

Returns the hyperbolic sine of **Number**.

Example:

SINH(0.45) returns 0.4653

See also:

[ASINH](#), [COSH](#), [TANH](#)

SKEW (skewness of a distribution)

Syntax:

SKEW(Number1, Number2, Number3 [, Number4 ...])

or

SKEW(Range1 [, Range2, Range3 ...])

Description:

Returns the skewness of a probability distribution.

The skewness is a measure of the asymmetry of a distribution.

If the skewness is zero, the distribution is symmetric. If it is positive, the positive tail is larger; if negative, the negative tail is larger.

Number1, **Number2**, etc., are the values to be evaluated. Empty cells, text strings, and logical values are ignored.

At least three values have to be given, otherwise the function returns a #DIV/0! error value.

Example:

Measuring the height of several test persons led to the following results: 1 x 1.60m, 2 x 1.65m, 4 x 1.70m, 2 x 1.75m, and 1x1.80m.

To calculate the skewness of this distribution, use the following formula:

SKEW(1.60, 1.65, 1.65, 1.70, 1.70, 1.70, 1.70, 1.75, 1.75, 1.80) returns 4.66562E-15.

See also:

[INTERCEPT](#), [FORECAST](#), [KURT](#), [NORM.DIST/NORMDIST](#)

SLN (straight-line depreciation)

Syntax:

SLN(Cost, Salvage, Life)

Description:

Returns the depreciation per period of an asset, using the straight-line depreciation method.

Cost = Initial cost of asset

Salvage = Salvage value (value at the end of the depreciation)

Life = Life of asset (in number of periods)

Example:

Asset parameters: initial cost = 6000, salvage value = 3000, life = 5 years

SLN(6000, 3000, 5) returns 600 (per year)

See also:

[SYD](#), [DDB](#), [DB](#)

SLOPE (slope of a linear trend)

Syntax:

SLOPE(y_values, x_values)

Description:

Returns the slope of a best-fit line for the given values. The slope of a line is the value the y value grows when the x value is raised by 1.

A *best-fit line* is the result of a *linear regression*, a statistical technique that adapts a line to a set of data points (for example, the results of a series of measurements).

y_values are the known y values.

x_values are the known x values.

Example:

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns the slope of a best-fit line based on these values:

SLOPE(B1:B4, A1:A4) returns 20.76799

See also:

[INTERCEPT](#), [FORECAST](#), [PEARSON](#), [STEYX](#)

SMALL (k-th smallest number)

Syntax:

SMALL(Range, k)

Description:

Returns the **k**-th smallest value in a data set.

Range is the range of data to be evaluated.

k determines which number to return. If **k**=1, the smallest value will be returned, if **k**=2, the second smallest value will be returned, etc.

k must not be smaller than 1 or greater than the total number of values in **Range**. Otherwise, the function returns a #NUM! error value.

Example:

If the cells A1:A5 are filled with the numbers 4, 2, 6, 5, and 9:

SMALL(A1:A5, 1) returns 2

SMALL(A1:A5, 2) returns 4

SMALL(A1:A5, 3) returns 5

etc.

See also:

[LARGE](#), [MIN](#), [PERCENTILE.INC/PERCENTILE](#),
[PERCENTRANK.EXC/PERCENTRANK.INC/PERCENTRANK](#), [RANK.AVG/RANK.EQ/RANK](#)

SORTM (sort)

Syntax:

SORTM(Range, Key [, Mode] [, Columnwise] [, Column])

Description:

Returns an array containing the values of the given cell range, sorted by one or more sort keys.

Range is the cell range or array containing the data to be sorted.

Key is a two-row cell range or array containing the sort key(s):

Its first row must contain the relative row numbers of the rows to be sorted by. If, for example, you enter {1,3}, the cell range is sorted by the first and by the third row of **Range**.

Its second row (optional) can contain logical values that specify the sort order:

FALSE or omitted: Ascending order

TRUE: Descending order

For example, if you use {1,3; true,false} as the sort key, the cell range is sorted by the first row in *descending* order and by the third row in *ascending* order.

Mode (optional) is a logical value that lets you specify if PlanMaker should distinguish between uppercase and lowercase letters:

FALSE or omitted: Ignore case of letters

TRUE: Distinguish between uppercase and lowercase letters, i.e., place text strings starting with a lowercase letter above text strings starting with an uppercase letter.

Columnwise (optional) is a logical value that lets you specify if the data should be sorted row-wise or column-wise:

FALSE or omitted: Sort row-wise

TRUE: Sort column-wise

Column (optional) is the number of the column to be returned:

If omitted, all columns are returned.

If set to n, only the n-th column is returned.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

`SORTM({4;2;3}, {1})` returns {2;3;4}

`SORTM({4;2;3}, {1;TRUE})` returns {4;3;2} (descending order)

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[SORTV](#), section [Sorting cells](#)

SORTV (sort)

Syntax:

`SORTV(Range [, Descending] [, Mode] [, Data])`

Description:

Returns a vector containing the values of the given one-dimensional cell range, in sorted order.

Note:

Unlike the SORTM function, SORTV is applicable to *one*-dimensional cell ranges (vectors) only.

Range is the cell range or array containing the data to be sorted. It must be a vector (a range of either just *one* row or *one* column).

Descending (optional) lets you specify the sort order:

FALSE or omitted: Ascending order

TRUE: Descending order

Mode (optional) is a logical value that lets you specify if PlanMaker should distinguish between uppercase and lowercase letters:

FALSE or omitted: Ignore case of letters

TRUE: Distinguish between uppercase and lowercase letters, i.e., place text strings starting with a lowercase letter above text strings starting with an uppercase letter.

Data (optional) is the cell range or array containing the values to be returned. **Data** must be of exactly the same size as **Range**.

If it is omitted, the data in **Range** is returned.

If it set to another cell range, the data from this cell range will be returned – in the same order as **Range** (after it was sorted).

Example: If you have created a table with the names and grades of students, you can set **Range** to the cell range with their grades, but set **Data** to the cell range with their names. The result will be a list of their names, sorted by grade.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

`SORTV({4;2;3})` returns {2;3;4}

`SORTV({4;2;3}, TRUE)` returns {4;3;2}

`SORTV({4,2,3})` returns {2,3,4}

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[SORTM](#), section [Sorting cells](#)

SQRT (square root)

Syntax:

SQRT(Number)

Description:

Returns the square root of a number.

Number must be ≥ 0 .

Example:

SQRT(25) returns 5

SQRT(-25) returns a #NUM! error value

See also:

[POWER](#), [ROOTN](#)

SQRTPI (square root of x*Pi)

Syntax:

SQRTPI(Number)

Description:

Returns the square root of (**Number** * pi).

Number must be ≥ 0 .

Example:

SQRTPI(42) equals SQRT(42*PI()), which is 11.48681381

See also:

[PI](#), [ROOTN](#), [SQRT](#)

STANDARDIZE (standardized value)**Syntax:**

STANDARDIZE(x, Mean, StdDev)

Description:

Returns the normalized value of x for a distribution given by mean and standard deviation.

x is the value to be normalized.

Mean is the arithmetic mean of the distribution.

StdDev is the standard deviation of the distribution.

Example:

STANDARDIZE(5, 4, 1.25) returns 0.8

See also:

[AVERAGE](#), [STDEV.S/STDEV](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

STDEV (standard deviation of a sample)

Note: STDEV is supplemented by the new identical function [STDEV.S](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

STDEV(Number1, Number2 [, Number3 ...])

Description:

Estimates the standard deviation of a population based on a sample.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated.

Empty cells, text strings, and logical values are ignored.

Annotation:

The standard deviation is calculated using the "unbiased" or "n-1" method.

Example:

STDEV(2, 2, 3, 4, 1) returns 1.14018

See also:

[STDEV.S](#), [STDEVA](#), [STDEV.P/STDEVP](#), [VAR.P/VARP](#), [VAR.S/VAR](#), [AVEDEV](#), [DEVSQ](#), [STANDARDIZE](#)

STDEVA (standard deviation of a sample)

Syntax:

STDEVA(Value1, Value2 [, Value3 ...])

Description:

Estimates the standard deviation of a population based on a sample, including logical values and text.

Value1, **Value2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated.

Empty cells are ignored.

Note:

Unlike the STDEV function, STDEVA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Annotation:

The standard deviation is calculated using the "unbiased" or "n-1" method.

Example:

STDEVA(2, 2, 3, 4, 1) returns 1.14018

See also:

[STDEV.S/STDEV](#), [STDEVPA](#)

STDEVP (standard deviation of entire population)

Note: STDEVP is supplemented by the new identical function [STDEV.P](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

STDEVP(Number1, Number2 [, Number3 ...])

Description:

Returns the standard deviation of an entire population.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated. Please note that *all* values of the *entire* population have to be given. To calculate the standard deviation of a sample, use the [STDEV.S/STDEV](#) function instead.

Empty cells, text strings, and logical values are ignored.

Annotation:

The standard deviation is calculated using the "biased" or "n" method.

Example:

STDEVP(2, 2, 3, 4, 1) returns 1.0198

See also:

[STDEV.P](#), [STDEVPA](#), [STDEV.S/STDEV](#), [VAR.P/VARP](#), [VAR.S/VAR](#)

STDEV.P (standard deviation of entire population)

Syntax:

STDEV.P(Number1, Number2 [, Number3 ...])

Description:

Returns the standard deviation of an entire population.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated. Please note that *all* values of the *entire* population have to be given. To calculate the standard deviation of a sample, use the [STDEV.S/STDEV](#) function instead.

Empty cells, text strings, and logical values are ignored.

Annotation:

The standard deviation is calculated using the "biased" or "n" method.

Example:

STDEV.P(2, 2, 3, 4, 1) returns 1.0198

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[STDEV.P](#), [STDEVPA](#), [STDEV.S/STDEV](#), [VAR.P/VARP](#), [VAR.S/VAR](#)

STDEVPA (standard deviation of entire population)

Syntax:

STDEVPA(Value1, Value2 [, Value3 ...])

Description:

Returns the standard deviation of an entire population, including logical values and text.

Value1, Value2, etc., are single values, cell ranges, or arrays containing the values to be evaluated. Please note that *all* values of the *entire* population have to be given. To calculate the standard deviation of a sample, use the [STDEVA](#) function instead

Empty cells are ignored.

Note:

Unlike the STDEVP function, STDEVPA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Annotation:

The standard deviation is calculated using the "biased" or "n" method.

Example:

STDEVPA(2, 2, 3, 4, 1) returns 1.0198

See also:

[STDEV.P/STDEVP](#)

STEYX (standard error of a linear regression)

Syntax:

STEYX(y_values, x_values)

Description:

Returns the standard error of a linear regression.

y_values are the known y values.

x_values are the known x values.

Example:

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns the standard error of the resistances predicted by linear regression:

STEYX(B1:B4, A1:A4) returns 4.97351

See also:

[INTERCEPT](#), [SLOPE](#), [FORECAST](#)

STDEV.S (standard deviation of a sample)

Syntax:

STDEV.S(Number1, Number2 [, Number3 ...])

Description:

Estimates the standard deviation of a population based on a sample.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated.

Empty cells, text strings, and logical values are ignored.

Annotation:

The standard deviation is calculated using the "unbiased" or "n-1" method.

Example:

STDEV.S(2, 2, 3, 4, 1) returns 1.14018

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[STDEV](#), [STDEV.P/STDEVP](#), [VAR.P/VARP](#), [VAR.S/VAR](#)

SUBSTITUTE (replace text in a text string)

Syntax:

SUBSTITUTE(Text, OldText, NewText [, n])

Description:

Searches for **OldText** in a text string. If found, **OldText** will be replaced by **NewText**.

Text is the text string in which you want to replace text.

OldText is the text to be replaced. Note: This function is case-sensitive, i.e. it distinguishes between uppercase and lowercase letters.

NewText is the replacement text.

n (optional) lets you specify which occurrence of **OldText** to replace. If omitted, all occurrences will be replaced.

Example:

SUBSTITUTE("aabbaabb", "aa", "xx") returns xxbxxbb

SUBSTITUTE("aabbaabb", "aa", "xx", 2) returns aabbxxbb

SUBSTITUTE("aabbaabb", "AA", "xx") returns aabbaabb

See also:

[FIND](#), [SEARCH](#), [REPLACE](#), [REPT](#)

SUBTOTAL (calculations ignoring hidden cells)

Syntax:

SUBTOTAL(FunctionID, Range1 [, Range2, Range3 ...])

Description:

Applies one of the arithmetic functions listed below to the specified cell range(s), ignoring all cells that are currently *hidden*.

In details: When you apply a filter to a cell range (using the **Worksheet > Filter** menu command) and then perform arithmetic calculations on this range, cells that have been filtered out are *still* included. If, however, you use the SUBTOTAL function, filtered cells will be ignored.

Range1, Range2, etc. are the cell ranges you want to evaluate.

FunctionID is a number between 1 and 11 that specifies which arithmetic function to apply:

Value	Function	Explanation
1:	AVERAGE	(arithmetic mean)
2:	COUNT	(number of cells filled with numbers)
3:	COUNTA	(number of cells not empty)
4:	MAX	(maximum)
5:	MIN	(minimum)
6:	PRODUCT	(product)
7:	STDEV	(standard deviation of a sample)
8:	STDEVP	(standard deviation of entire population)
9:	SUM	(sum)
10:	VAR	(variance of a sample)
11:	VARP	(variance of entire population)

For example, if you set **FunctionID** to 9, SUBTOTAL returns the sum of the specified cell range(s) – ignoring all cells that have been filtered out by the **Worksheet > Filter** menu command.

Ignoring manually hidden cells as well:

There's a second variant of this function. It additionally ignores all cells that have been hidden *manually* (using e.g. the menu command **Worksheet > Row > Hide** or **Worksheet > Outliner > Group**). To use this variant, simply set the **FunctionID** to a value between 101 and 111 instead of a value between 1 and 11, as shown in the following table:

Value	Function	Explanation
101:	AVERAGE	(arithmetic mean)
102:	COUNT	(number of cells filled with numbers)
103:	COUNTA	(number of cells not empty)
104:	MAX	(maximum)
105:	MIN	(minimum)
106:	PRODUCT	(product)
107:	STDEV	(standard deviation of a sample)
108:	STDEVP	(standard deviation of entire population)
109:	SUM	(sum)

- 110: VAR (variance of a sample)
- 111: VARP (variance of entire population)

For example, if you set **FunctionID** to 109, SUBTOTAL returns the sum of the specified cell range(s) – ignoring all cells that have been filtered out by the **Worksheet > Filter** menu command. *Additionally*, it ignores all cells that have been hidden manually (using **Worksheet > Row > Hide** or **Worksheet > Outliner > Group**).

Please note: Only hidden *rows* will be ignored, hidden *columns* are still included in the calculations.

Example:

SUBTOTAL(9, A1:A10) returns the sum of the values in A1:A10, ignoring all cells filtered by the **Worksheet > Filter** menu command.

See also:

For information on filters, see section [Filtering cells by their contents](#)

SUM (Sum)

Syntax:

SUM(Number1 [, Number2, Number3 ...])

Description:

Returns the sum of the given numbers.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be summed.

If you use this function with *cell references*, text strings and logical values occurring in the referenced cells are ignored.

If you use this function with *fixed values* that you typed in directly, text strings and logical values evaluate as follows:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text representations of numbers (for example, "42") evaluate like numbers.

See examples below.

Example:

SUM(1, 2, 3, 4) equals 10

If the cells A1:A4 contains the values 1, 2, 3, and 4:

SUM(A1:A4) equals 10

Please note:

If the cells A1:A3 contain 1, "2", and TRUE:

SUM(A1:A3) returns 1, since the text string and the logical value are ignored. They are counted only if they were typed in *directly*:

SUM(1, "2", TRUE) returns 1+2+1, which is 4

Hint:

You can also use the **AutoSum** icon  in the standard toolbar to calculate the SUM of cell contents:

When you click this icon in a cell directly below a group of cells containing numbers, it will insert the SUM function for this cell range there.

When you first select a range of cells containing numbers, it will insert the sum of this cell range directly below these cells.

You can use this icon with several other arithmetic functions as well. When you click on the arrow to the right of this icon, a dropdown list containing all available functions will open (for example, Count, Product, Average, etc.). Select the desired function and proceed as described above.

See also:

[PRODUCT](#), [SUMPRODUCT](#), [SUMIF](#), [SUMIFS](#), [SUMXMY2](#), [SUMX2MY2](#), [SUMX2PY2](#)

SUMIF (sum if condition is true)

Syntax:

SUMIF(Range, Criterion [, SumRange])

Description:

Returns the sum of those values in a cell range that fulfill the specified criterion.

Range is the cell range to be evaluated.

Criterion is the criterion that the values in **Range** have to fulfill to be included.

Use numbers or text (like "42" or "bolts") to sum all cells that contain that value.

Use conditions (like ">10" or "<=5") to sum all cells that match the specified condition (see examples below).

Note: Criteria always have to be surrounded by double quotation marks (").

SumRange (optional) lets you specify the cell range containing the values to be summed. If omitted, the values in **Range** will be summed.

Example:

If the cells A1:A5 contain the values 1, 2, 3, 2, 1:

SUMIF(A1:A5, "2") returns 2+2, which is 4

SUMIF(A1:A5, ">=2") returns 2+3+2, which is 7

See also:

[AVERAGEIF](#), [AVERAGEIFS](#), [COUNTIF](#), [COUNTIFS](#), [SUM](#), [SUMIFS](#)

SUMIFS (sum if conditions are true)

Syntax:

SUMIFS(SumRange, Range1, Criterion1 [, Range2, Criterion2 ...])

Description:

Returns the sum of those values in a cell range that fulfill *all* of the specified criteria.

This function is similar to the [SUMIF](#) function, but allows you to specify more than just one range/criterion to be searched

Apart from that, the order of the parameters is different: In SUMIF, **SumRange** is the last parameter – in SUMIFS, it is the first.

SumRange is the cell range containing the values to be summed.

Range1 is the first cell range to be checked for the specified criterion. This range must have the same dimensions as **SumRange**.

Criterion1 is the criterion that the values in **Range1** have to fulfill to be included.

Use numbers or text (like "42" or "bolts") to obtain the sum of all cells that contain that value.

Use conditions (like ">10" or "<=5") to obtain the sum of all cells that match the specified condition (see examples below).

Note: Criteria always have to be surrounded by double quotation marks (").

Unlike the SUMIF function, SUMIFS allows you to specify more than just one cell range and criterion to be checked. If you do so, only occurrences where *all* criteria are fulfilled are included in the calculation of the sum.

Compatibility notes:

This function is *not* supported by the **.xls** file format (used in Microsoft Excel 2003 and earlier). If you save a document in this format, all calculations using this function will be replaced by their last result as a *fixed* value.

Accordingly, if you use this function, you should not save your document in the "Microsoft Excel 97-2003 (.xls)" file format, but choose one of the following formats instead:

- "PlanMaker document (.pmdx or .pmd)"
- or: "Microsoft Excel 2007-2016 (.xlsx)"

Example:

```
SUMIFS(A1:A10, C1:C10, ">1", C1:C10, "<2")
```

This formula returns the sum of only those cells in the cell range A1:A10 where the corresponding cell in the range C1:C10 is greater than 1 and less than 2.

See also:

[AVERAGEIF](#), [AVERAGEIFS](#), [COUNTIF](#), [COUNTIFS](#), [SUM](#), [SUMIF](#)

SUMPRODUCT (sum of products)

Syntax:

```
SUMPRODUCT(Range1 [, Range2, Range3 ...])
```

Description:

Multiplies the corresponding elements of two or more arrays, and returns the sum of these products.

Range1, **Range2**, etc., are cell ranges or arrays containing the values to be evaluated.

All ranges must have the same dimensions (height and width). If not, the function returns a #N/A error value.

Empty cells, text strings, and logical values evaluate as zero.

Example:

If A1:A3 contains the values 1, 2, 3, and B1:B3 contains 20, 30, 40:

SUMPRODUCT(A1:A3, B1:B3) equals $1*20 + 2*30 + 3*40$, which is 200.

See also:

[SUM](#), [SUMSQ](#), [SUMXMY2](#), [SUMX2MY2](#), [SUMX2PY2](#)

SUMSQ (sum of squares)

Syntax:

SUMSQ(Number1 [, Number2, Number3 ...])

Description:

Returns the sum of the squares of the given numbers.

Example:

SUMSQ(1, 2, 3) equal $1^2 + 2^2 + 3^2$, which is 14.

See also:

[SUM](#), [SUMPRODUCT](#), [SUMXMY2](#), [SUMX2MY2](#), [SUMX2PY2](#)

SUMX2MY2 (sum of $x^2 - y^2$)

Syntax:

SUMX2MY2(Range1, Range2)

Description:

Returns the sum of the difference of squares of corresponding values in two arrays.

The equation for this function is:

$$\text{SUMX2MY2} = \sum(x^2 - y^2)$$

Range1 and **Range2** are cell ranges or arrays containing the values to be evaluated.

Both ranges must have the same dimensions (height and width). If not, the function returns a #N/A error value.

Pairs of values where at least one value is an empty cell or a non-numerical value (text string or logical value) are ignored.

Example:

If A1:A3 contains the values 9, 4, 7, and B1:B3 contains 1, 0, 5:

SUMX2MY2(A1:A3, B1:B3) equals $(9^2) - (1^2) + (4^2) - (0^2) + (7^2) - (5^2)$, which is 120.

See also:

[SUM](#), [SUMPRODUCT](#), [SUMX2PY2](#), [SUMXMY2](#), [SUMSQ](#)

SUMX2PY2 (sum of $x^2 + y^2$)

Syntax:

SUMX2PY2(Range1, Range2)

Description:

Returns the sum of the sum of squares of corresponding values in two arrays.

The equation for this function is:

$$\text{SUMX2PY2} = \sum(x^2 + y^2)$$

Range1 and **Range2** are cell ranges or arrays containing the values to be evaluated.

Both ranges must have the same dimensions (height and width). If not, the function returns a #N/A error value.

Pairs of values where at least one value is an empty cell or a non-numerical value (text string or logical value) are ignored.

Example:

If A1:A3 contains the values 9, 4, 7, and B1:B3 contains 1, 0, 5:

SUMX2PY2(A1:A3, B1:B3) equals $(9^2) + (1^2) + (4^2) + (0^2) + (7^2) + (5^2)$, which is 172.

See also:

[SUM](#), [SUMPRODUCT](#), [SUMX2MY2](#), [SUMXMY2](#), [SUMSQ](#)

SUMXMY2 (sum of (x - y)^2)

Syntax:

SUMXMY2(Range1, Range2)

Description:

Returns the sum of squares of differences of corresponding values in two arrays.

The equation for this function is:

$$\text{SUMXMY2} = \sum(x - y)^2$$

Range1 and **Range2** are cell ranges or arrays containing the values to be evaluated.

Both ranges must have the same dimensions (height and width). If not, the function returns a #N/A error value.

Pairs of values where at least one value is an empty cell or a non-numerical value (text string or logical value) are ignored.

Example:

If A1:A3 contains the values 9, 4, 7, and B1:B3 contains 1, 0, 5:

SUMXMY2(A1:A3, B1:B3) equals $(9-1)^2 + (4-0)^2 + (7-5)^2$, which is 84.

See also:

[SUM](#), [SUMPRODUCT](#), [SUMX2MY2](#), [SUMX2PY2](#), [SUMSQ](#)

SYD (sum-of-years' digits depreciation)

Syntax:

SYD(Cost, Salvage, Life, Per)

Description:

Returns the depreciation of an asset for the specified period, using the sum-of-years' digits method.

Cost = Initial cost of asset

Salvage = Salvage value (value at the end of the depreciation)

Life = Life of asset (in number of periods)

Per = Period to evaluate (in the same time unit as **Life**)

Example:

Asset parameters: initial cost = 200000, salvage value = 10000, life = 10 years

SYD(200000, 10000, 10, 1) returns 34545.45 (depreciation in year 1)

See also:

[DDB](#), [DB](#), [SLN](#)

T (convert value into text string)

Syntax:

T(Value)

Description:

Converts a value to a text string.

Value is the value to be converted. If **Value** is not a text string, an empty text string is returned.

Note:

This function was retained only for compatibility with older spreadsheet applications. It is no longer commonly used, as current spreadsheet applications (including PlanMaker) automatically convert values into text strings, where necessary.

Example:

T("Text") returns Text

T("42") returns 42

T(42) returns an empty text string

T(TRUE) returns an empty text string

See also:

[N](#), [VALUE](#), [TEXT](#)

TAN (tangent)

Syntax:

TAN(Number)

Description:

Returns the tangent of **Number**.

Tip:

You can use the [RADIANS](#) function to convert an angle given in degrees into radians.

Example:

TAN(PI()/4) returns 1

TAN(RADIANS(45)) returns 1

See also:

[ATAN](#), [ATAN2](#), [COT](#), [SIN](#), [COS](#)

TANH (hyperbolic tangent)

Syntax:

TANH(Number)

Description:

Returns the hyperbolic tangent of **Number**.

Example:

TANH(0.45) returns 0.4219

See also:

[ATANH](#), [COSH](#), [SINH](#)

TDIST (t-distribution)

Note: TDIST is supplemented by the new functions [T.DIST.2T](#), [T.DIST.RT](#) and [T.DIST](#) with additional functionalities, which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

TDIST(X, DegreesFreedom, Tails)

Description:

Returns the probability of the Student's t-distribution.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 . Integer numbers are expected; if this is not the case, PlanMaker automatically truncates the decimal digits after the point.

Tails is the number of distribution tails:

1: One-tailed distribution

2: Two-tailed distribution

See also:

[T.DIST.2T/T.DIST.RT/T.DIST](#), [T.INV.2T/T.INV/TINV](#), [T.TEST/TTEST](#)

T.DIST (t-distribution)**Syntax:**

T.DIST(X, DegreesFreedom, Cumulative)

Description:

Returns the probability of the Student's t-distribution.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 . Integer numbers are expected; if this is not the case, PlanMaker automatically truncates the decimal digits after the point.

Cumulative determines the type of function as a switch: If you enter the value TRUE, the cumulative distribution function of the left-tailed Student's t-distribution is calculated. By entering the value FALSE, the probability density function of the Student's t-distribution is calculated.

Note:

The T.DIST function supplements together with [T.DIST.2T](#) and [T.DIST.RT](#) the previous [TDIST](#) function, whereby T.DIST has the additional argument **Cumulative**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[T.DIST.2T/T.DIST.RT/TDIST](#), [T.INV.2T/T.INV/TINV](#), [T.TEST/TTEST](#)

T.DIST.2T (t-distribution two-tailed)

Syntax:

T.DIST.2T(X, DegreesFreedom)

Description:

Returns the probability of the **two-tailed** Student's t-distribution.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 . Integer numbers are expected; if this is not the case, PlanMaker automatically truncates the decimal digits after the point.

Note:

The T.DIST.2T function supplements together with [T.DIST.RT](#) and [T.DIST](#) the previous [TDIST](#) function, whereby T.DIST.2T returns the same result as TDIST with the argument **Tails=2**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[T.DIST.RT/T.DIST/TDIST](#), [T.INV.2T/T.INV/TINV](#), [T.TEST/TTEST](#)

T.DIST.RT (t-distribution right-tailed)**Syntax:**

T.DIST.RT(X, DegreesFreedom)

Description:

Returns the probability of the **right-tailed** Student's t-distribution.

X is the value to be evaluated. Must be ≥ 0 .

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 . Integer numbers are expected; if this is not the case, PlanMaker automatically truncates the decimal digits after the point.

Note:

The T.DIST.RT function supplements together with [T.DIST.2T](#) and [T.DIST](#) the previous [TDIST](#) function, whereby T.DIST.RT returns the same result as TDIST with the argument **Tails=1**.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[T.DIST.2T/T.DIST/TDIST](#), [T.INV.2T/T.INV/TINV](#), [T.TEST/TTEST](#)

TEXT (convert number into text string)**Syntax:**

TEXT(Number, Format)

Description:

Converts a number to a text string in the specified number format.

Number is the number to convert.

Format is a text string specifying the desired format. It has to be built like a format string for user-defined number formats (see section [Structure of a user-defined format](#)).

Annotation:

To change the format of numbers without having to convert them to a text string, choose the **Format > Cell** menu command and select the desired number format.

Example:

TEXT(2.715, "0.00 ""USD"") returns 2.72 USD (as a text string)

See also:

[VALUE](#), [T](#), [N](#), [FIXED](#)

TIME (create time)

Syntax:

TIME(Hour, Minute, Second)

Description:

Returns a serial date value based on the specified **Hour**, **Minute**, and **Second**.

Example:

TIME(0, 20, 0) returns 0.01389, the serial date value for the corresponding time. PlanMaker automatically applies the number format "Date/Time" to it (e.g., 00:20:00 is displayed).

See also:

[TIMEVALUE](#), [DATE](#), [DATEVALUE](#)

TIMEDIFF (time difference)

Syntax:

TIMEDIFF(StartTime, EndTime)

Description:

Returns the time elapsed between two time values.

StartTime is the start time.

EndTime is the end time.

Both can be either time values or date values including a time. Please note that in the latter case, both **StartTime** and **EndTime** have to include a date, otherwise a #VALUE! error value is returned.

Note:

Compared to simply subtracting time values, this function has the following advantage when **EndTime** is *smaller* than **StartTime**:

An employee starts his shift, for example, at 10:00 pm and leaves at 6:00 am. If calculating his hours of work by subtracting 10:00 pm from 6:00 am, the result would be -16 hours. If the TIMEDIFF function is used, the correct result (8 hours) is returned.

Example:

TIMEDIFF("8:00 AM", "4:00 PM") returns 8:00

TIMEDIFF("10:00 PM", "6:00 AM") returns 8:00

TIMEDIFF("10/01/2018 10:00 PM", "10/02/2018 6:00 AM") returns 8:00

Compatibility notes:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

See also:

[TIME](#), [TIMEVALUE](#), [DAYS/DAYSP](#), [DAYS360](#)

TIMEVALUE (convert text into time)

Syntax:

TIMEVALUE(Text)

Description:

Converts a text string representing a date to a serial time value.

Note:

This function was retained only for compatibility with older spreadsheet applications. It is no longer commonly used, as current spreadsheet applications (including PlanMaker) automatically convert values into date/time values, where necessary.

Example:

TIMEVALUE("10:30:00 am") returns 0.4375.

See also:

[DATEVALUE](#), [DATE](#), [TIME](#)

TINV (percentiles of the t-distribution)

Note: TINV is supplemented by the new identical function [T.INV.2T](#) and the completely new function [T.INV](#), which are available in newer versions of Microsoft Excel (2010 or later).

Syntax:

TINV(Probability, DegreesFreedom)

Description:

Returns the inverse of the **two-tailed** Student's t-distribution function (i.e., percentiles of this distribution).

Probability is the two-tailed probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 .

Please note: The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

See also:

[T.INV.2T/T.INV](#), [T.TEST/TTEST](#), [T.DIST.2T/T.DIST.RT/T.DIST/TDIST](#)

T.INV (percentiles of the t-distribution left-tailed)

Syntax:

T.INV(Probability, DegreesFreedom)

Description:

Returns the inverse of the **left-tailed** Student's t-distribution function (i.e., percentiles of this distribution).

Probability is the two-tailed probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 .

Please note: The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Note:

The T.INV function supplements together with [T.INV.2T](#) the previous [TINV](#) function.

T.INV.2T returns the same result as TINV (**two-tailed** percentiles).

T.INV (**left-tailed** percentiles) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[TINV/T.INV.2T](#), [T.TEST/TTEST](#), [T.DIST.2T/T.DIST.RT/T.DIST/TDIST](#)

T.INV.2T (percentiles of the t-distribution two-tailed)

Syntax:

T.INV.2T(Probability, DegreesFreedom)

Description:

Returns the inverse of the **two-tailed** Student's t-distribution function (i.e., percentiles of this distribution).

Probability is the two-tailed probability to be evaluated. Must be in the range 0 to 1.

DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 .

Please note: The result of this function is calculated using an iterative search technique. If the search does not converge after 100 iterations, a #N/A error value is returned.

Note:

The T.INV.2T function supplements together with [T.INV](#) the previous [TINV](#) function.

T.INV.2T returns the same result as TINV (**two-tailed** percentiles).

T.INV (**left-tailed** percentiles) is completely new.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[TINV/T.INV](#), [T.TEST/TTEST](#), [T.DIST.2T/T.DIST.RT/T.DIST/TDIST](#)

TODAY (current date)

Syntax:

TODAY()

Description:

Returns the current date (without time).

Note:

The result is a serial date number. PlanMaker automatically formats it in date format so that it will be displayed as a date. To select a different date format, use the **Format > Cell** menu command.

See also:

[NOW](#), [CREATEDATE](#)

TRANSPOSE (transposed matrix)

Syntax:

TRANSPOSE(Array)

Description:

Returns the transpose of a matrix, i.e., swaps its columns with its rows. When you transpose, for example, a 2x4 matrix, the result is a 4x2 matrix.

Array is the cell range or array containing the matrix to be evaluated. The matrix must contain numeric values only.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Important: Please note that the range you have to select before entering the formula must have the correct *dimensions*. If the matrix consists of **x** rows and **y** columns, the resulting range must have **y** rows and **x** columns.

Example:

TRANSPOSE({1,2,3;4,5,6}) returns {1,4;2,5;3,6}

See also:

Section [Working with arrays](#), [MDETERM](#), [MINVERSE](#), [MMULT](#), [MSOLVE](#)

TREND (values of a linear regression)

Syntax:

TREND(y_values [, x_values] [, New_x_values] [, Constant])

Description:

Returns the values of a linear regression.

Linear regression is a statistical technique that adapts a line (called "trend line" or "best-fit line") to a set of data points (for example, the results of a series of measurements).

The TREND function returns an array with the y values of a trend line calculated from the given y values and x values.

y_values are the known y values.

x_values (optional) are the known x values. If omitted, the values 1, 2, 3, ... will be used.

New_x_values (optional) are the x values for which you want to determine the corresponding y values on the curve. If omitted, the values in **x_values** will be used.

Constant (optional) is a logical value that lets you specify if the constant b (the y-intercept point) should be calculated automatically or forced to equal zero:

TRUE or omitted: b will be calculated from the given data.

FALSE: b is forced to equal 0 (zero), the m values are adjusted accordingly.

Note:

Formulas using this function have to be entered as an *array formula* (see section [Working with arrays](#)).

Example:

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns an array with the y coordinates of a best-fit line calculated from these values:

TREND(B1:B4, A1:A4)

See also:

[LINEST](#), [LOGEST](#), [GROWTH](#), [FORECAST](#)

TRIM (remove spaces from text)

Syntax:

TRIM(Text)

Description:

Removes all spaces from the beginning and the end of the specified text string.

Example:

TRIM(" Text ") returns Text

See also:

[CLEAN](#)

TRIMMEAN (mean ignoring marginal values)

Syntax:

TRIMMEAN(Area, Percentage)

Description:

Returns the mean of the values in the *middle* of a data set (by excluding the specified percentage of top and bottom values).

For example, TRIMMEAN(A1:A42, 10%) averages the middle 90% of the data points in A1:A42.

Area is the cell range or array to evaluate.

Percentage is the percentage of values to be excluded.

If, for example, 100 values are given and **Percentage** is set to 10%, 10 values will be excluded: 5 from the bottom and 5 from the top.

Note: For symmetry, the number of excluded values will automatically be rounded down to a multiple of 2. For example, if 30 values are given and **Percentage** is set to 10%, only 2 values will be excluded instead of 3.

Example:

Cells A1:A10 contain the following values:

43, 45, 42, 0, 44, 45, 42, 1234, 40, 41

As you can see, two values are exceptionally low/high (e.g., because of a measuring error): 0 and 1234. Thus, using the AVERAGE function would return an unusable result:

AVERAGE(A1:A10) returns 159.2

If using TRIMMEAN instead, the top and bottom values are ignored:

TRIMMEAN(A1:A10, 20%) returns 42.75

In this case, 20% of the values (i.e., 2 values) were excluded: 0 at the bottom and 1234 at the top.

See also:

[AVERAGE](#), [GEOMEAN](#), [HARMEAN](#)

TRUE (logical value TRUE)

Syntax:

TRUE()

Description:

Returns the logical value TRUE.

See also:

[FALSE](#)

TRUNC (truncate a number)

Syntax:

TRUNC(Number [, n])

Description:

Returns the given number truncated to **n** digits after the decimal point.

n (optional) is the number of decimal places.

If **n** is omitted, **Number** is truncated to an integer.

If **n** is a negative value, **Number** is truncated to the left of the decimal point. For example, if **n** is -2, **Number** is truncated to the nearest multiple of hundred (see last example).

Example:

TRUNC(5.779) returns 5

TRUNC(5.779, 2) returns 5.77

TRUNC(1234, -2) returns 1200

Hint:

To obtain the decimal places use the DECIMALS function.

See also:

[ROUNDDOWN](#), [ROUNDUP](#), [DECIMALS](#), [ROUND](#)

TTEST (t-test)

Note: TTEST is supplemented by the new identical function [T.TEST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

TTEST(Array1, Array2, Tails, Type)

Description:

Returns the result of a Student's t-test.

The t-Test is typically used to test the difference of the means of two samples.

Array1 and **Array2** are the two arrays to be evaluated.

Tails is the number of distribution tails:

1: One-tailed distribution

2: Two-tailed distribution

Type is the type of t-test:

1: dependent samples ("paired")

2: independent samples, equal variances ("homoscedastic")

3: independent samples, different variances ("heteroscedastic")

See also:

[T.TEST](#), [T.INV.2T/T.INV/TINV](#), [T.DIST.2T/T.DIST.RT/T.DIST/TDIST](#)

T.TEST (t-test)

Syntax:

T.TEST(Array1, Array2, Tails, Type)

Description:

Returns the result of a Student's t-test.

The t-Test is typically used to test the difference of the means of two samples.

Array1 and **Array2** are the two arrays to be evaluated.

Tails is the number of distribution tails:

1: One-tailed distribution

2: Two-tailed distribution

Type is the type of t-test:

1: dependent samples ("paired")

2: independent samples, equal variances ("homoscedastic")

3: independent samples, different variances ("heteroscedastic")

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[TTEST](#), [T.INV.2T/T.INV/TINV](#), [T.DIST.2T/T.DIST.RT/T.DIST/TDIST](#)

TYPE (type of a value)

Syntax:

TYPE(Value)

Description:

Returns the type of the specified value.

The result is one the following numbers:

Value is a ...	Result
Number or empty cell	1
Text string	2
Logical value	4
Error value	16
Array	64

Example:

TYPE(42) returns 1

If A1 contains the text string "Text":

TYPE(A1) returns 2

See also:

[ERRORTYPE](#)

UPPER (convert text to upper case)

Syntax:

UPPER(Text)

Description:

Converts all characters in a text string to upper case letters.

Example:

UPPER("PlanMaker") returns PLANMAKER

See also:

[PROPER](#), [LOWER](#)

USERFIELD (user field)**Syntax:**

USERFIELD(FieldName)

Description:

Returns the content of one of the fields with your user information (name, address, etc.) entered in PlanMaker's preferences dialog.

Note: To edit the content of these fields, choose the **Tools > Options** menu command, switch to the **General** tab, and click on the **User info** button.

FieldName is the name of the field to be returned (see table below).

Uppercase and lowercase letters can be mixed. But please note that, if entered directly, **FieldName** has to be surrounded by double quotation marks (") – as in USERFIELD("User.City").

FieldName can be one of the following text strings:

User info field	FieldName
Title	User.Title
Name	User.Name
Initials	User.Initials
Company	User.Company
Department	User.Department
Address 1	User.Address 1
Address 2	User.Address 2
State, ZIP	User.ZIP

City	User.City
Phone 1	User.Phone 1
Phone 2	User.Phone 2
Phone 3	User.Phone 3
Fax	User.Fax
E-mail 1	User.E-mail 1
E-mail 2	User.E-mail 2
E-mail 3	User.E-mail 3
Web site	User.Website

Compatibility note 1:

This function is not supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a fixed value.

Compatibility note 2:

In PlanMaker 2016 and older, there were *two* sets of user data: "User (home)" and "User (business)". This was reduced to one set in PlanMaker 2018. When you open an old document that uses this function, its parameters are automatically converted accordingly.

Example:

USERFIELD("User.Website") returns www.softmaker.com

VALUE (convert text into a number)**Syntax:**

VALUE(Text)

Description:

Converts a text string representing a number into a number.

Text is the text string to convert. It must contain the text representation of a number, otherwise a #VALUE! error value is returned.

Note:

This function was retained only for compatibility with older spreadsheet applications. It is no longer commonly used, as current spreadsheet applications (including PlanMaker) automatically convert text strings into numbers, where necessary.

Example:

VALUE("42") returns 42

VALUE("42 DM") returns 42, since "DM" is a valid currency unit.

VALUE("42 bolts") returns a #VALUE! error value.

VALUE("TRUE") returns 1

VALUE("09/25/2008") returns 39716, the serial date value for the date 09/25/2008.

See also:

[TEXT](#), [T](#), [N](#)

VAR (variance of a sample)

Note: VAR is supplemented by the new identical function [VAR.S](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

VAR(Number1, Number2 [, Number3 ...])

Description:

Estimates the variance of a population based on a sample.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated.

Empty cells, text strings, and logical values are ignored.

Example:

VAR(2, 2, 3, 4, 1) returns 1.3

See also:

[VAR.S](#), [VARA](#), [VARPA](#), [VAR.P/VARP](#), [STDEV.S/STDEV](#), [STDEV.P/STDEVP](#)

VARA (variance of a sample)

Syntax:

VARA(Value1, Value2 [, Value3 ...])

Description:

Estimates the variance of a population based on a sample, including logical values and text.

Value1, **Value2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated.

Empty cells are ignored.

Note:

Unlike the VAR function, VARA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Example:

VARA(2, 2, 3, 4, 1) returns 1.3

See also:

[VAR.S/VAR](#), [VARPA](#)

VARP (variance of entire population)

Note: VARP is supplemented by the new identical function [VAR.P](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

VARP(Number1, Number2 [, Number3 ...])

Description:

Returns the variance of an entire population.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated. Please note that *all* values of the *entire* population have to be given. To calculate the variance of a sample, use the [VAR.S/VAR](#) function instead

Empty cells, text strings, and logical values are ignored.

Example:

VARP(2, 2, 3, 4, 1) returns 1.04

See also:

[VAR.P](#), [VAR.S/VAR](#), [STDEV.S/STDEV](#), [STDEV.P/STDEVP](#)

VAR.P (variance of entire population)

Syntax:

VAR.P(Number1, Number2 [, Number3 ...])

Description:

Returns the variance of an entire population.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated. Please note that *all* values of the *entire* population have to be given. To calculate the variance of a sample, use the [VAR.S/VAR](#) function instead

Empty cells, text strings, and logical values are ignored.

Example:

VAR.P(2, 2, 3, 4, 1) returns 1.04

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[VARP](#), [VAR.S/VAR](#), [STDEV.S/STDEV](#), [STDEV.P/STDEVP](#)

VARPA (variance of entire population)

Syntax:

VARPA(Value1, Value2 [, Value3 ...])

Description:

Returns the variance of an entire population, including logical values and text.

Value1, **Value2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated. Please note that *all* values of the *entire* population have to be given. To calculate the variance of a sample, use the [VARA](#) function instead

Empty cells are ignored.

Note:

Unlike the VARP function, VARPA also evaluates logical values and text:

FALSE evaluates as 0.

TRUE evaluates as 1.

Text evaluates as 0.

Example:

VARPA(2, 2, 3, 4, 1) returns 1.04

See also:

[VAR.P/VARP](#), [VAR.S/VAR](#), [VARA](#)

VAR.S (variance of a sample)

Syntax:

VAR.S(Number1, Number2 [, Number3 ...])

Description:

Estimates the variance of a population based on a sample.

Number1, **Number2**, etc., are single values, cell ranges, or arrays containing the values to be evaluated.

Empty cells, text strings, and logical values are ignored.

Example:

VAR.S(2, 2, 3, 4, 1) returns 1.3

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[VAR](#), [VARA](#), [VAR.P/VARP](#), [VARPA](#), [STDEV.S/STDEV](#), [STDEV.P/STDEVP](#)

VLOOKUP (look up column-wise)

Syntax:

VLOOKUP(Crit, Range, n [, Sorted])

Description:

Scans the first column of **Range** for the given value. If found, the function returns the content of the cell located in the same row and **n**-th column of **Range**.

If no exact match is found, the next smallest value will be taken. If no smaller value exists, a #N/A error value is returned.

Note: VLOOKUP can search vertically only. To search horizontally, use [HLOOKUP](#) instead

Crit is the value to be searched for (case insensitive).

Range is the cell range or array to be evaluated. Its first column should contain the values to be scanned.

n is the relative column number in **Range** from which a value will be returned.

If **n** is less than 1, a #VALUE! error value is returned. If **n** is greater than the total number of columns in **Range**, a #REF! error value is returned.

Sorted is a logical value determining whether the values in the first column of **Range** are in sorted order:

TRUE or omitted: Values have to be sorted in ascending order.

FALSE: Values do not have to be sorted.

See also:

[HLOOKUP](#), [LOOKUP](#), [CHOOSE](#), [INDEX](#), [MATCH](#)

WEEKDAY (weekday)

Syntax:

WEEKDAY(Date [, Mode])

Description:

Returns the day of the week of a date as a number.

Date is the date to be evaluated.

Mode (optional) lets you change the type of values to be returned:

1 or omitted: Numbers from 1 (Sunday) to 7 (Saturday) are returned.

2: Numbers from 1 (Monday) to 7 (Sunday) are returned.

3: Numbers from 0 (Monday) to 6 (Sunday) are returned.

Example:

WEEKDAY("09/25/1966") returns 1 (i.e., Sunday)

WEEKDAY("09/25/1966", 2) returns 7 (i.e., Sunday)

See also:

[ISOWEEK](#), [ISOWEEKNUM](#), [WEEKNUM](#), [YEAR](#), [MONTH](#), [DAY](#)

WEEKNUM (week number)

Syntax:

WEEKNUM(Date [, WeekStartsOn])

Description:

Returns the week number of a date.

Date is the date to be evaluated.

WeekStartsOn (optional) lets you specify on which day a week begins:

1 or omitted: Week begins on Sunday.

2: Week begins on Monday.

Example:

On Sunday, the 5th of January, 2014:

WEEKNUM("01/05/2014", 1) returns 2

WEEKNUM("01/05/2014", 2) returns 1

See also:

[ISOWEEKNUM](#), [ISOWEEK](#), [YEAR](#), [MONTH](#), [DAY](#), [WEEKDAY](#)

WEIBULL (Weibull distribution)

Note: WEIBULL is supplemented by the new identical function [WEIBULL.DIST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

WEIBULL(x, Alpha, Beta, Cumulative)

Description:

Returns the Weibull distribution function.

x is the value to be evaluated. Must be ≥ 0 .

Alpha is a shape parameter of the function. It has to be greater than zero. Note: If Alpha = 1, the Weibull distribution equals an exponential distribution with Lambda = 1/**Beta**.

Beta is the scale parameter of the function. It has to be greater than zero.

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.

Example:

WEIBULL(42, 2, 100, TRUE) returns 0.16172

WEIBULL(42, 2, 100, FALSE) returns 0.00704

See also:

[WEIBULL.DIST](#), [EXPON.DIST/EXPONDIS](#), [POISSON.DIST/POISSON](#)

WEIBULL.DIST (Weibull distribution)

Syntax:

WEIBULL.DIST(x, Alpha, Beta, Cumulative)

Description:

Returns the Weibull distribution function.

x is the value to be evaluated. Must be ≥ 0 .

Alpha is a shape parameter of the function. It has to be greater than zero. Note: If Alpha = 1, the Weibull distribution equals an exponential distribution with Lambda = 1/**Beta**.

Beta is the scale parameter of the function. It has to be greater than zero.

The logical value **Cumulative** lets you specify which type of function will be returned:

FALSE: The probability density function is returned.

TRUE: The cumulative distribution function is returned.

Example:

WEIBULL.DIST(42, 2, 100, TRUE) returns 0.16172

WEIBULL.DIST(42, 2, 100, FALSE) returns 0.00704

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[WEIBULL](#), [EXPON.DIST/EXPONDIST](#), [POISSON.DIST/POISSON](#)

WORKDAY (date after x workdays)

Syntax:

WORKDAY(StartDate, Days [, Holidays])

Description:

Returns the date that is the specified number of workdays before/after **StartDate**.

This function counts workdays only, Saturdays and Sundays are skipped. Optionally, you can specify a list of holidays to be skipped as well (see **Holidays** parameter).

StartDate is the start date.

Days is the number of workdays. A positive value will return a date in the future, a negative value will return a date in the past.

Holidays (optional) is a cell range or an array containing a list of dates to be skipped (e.g. holidays).

Example:

WORKDAY("10/1/2016", 10) returns 10/13/2016.

See also:

[HOLIDAY](#), [NETWORKDAYS](#)

XIRR (internal rate of return)

Syntax:

XIRR(Values, Dates [, Guess])

Description:

Returns an estimate for the internal rate of return of an investment with *irregular* cash flows.

The calculation is based on the cash flows specified in the **Values** argument. Payments have to be entered as negative values, incomes as positive values. The date of each cash flow has to be specified using the **Dates** argument.

Values is a cell range or array containing the cash flows. At least one payment and one income have to be given.

Dates is a cell range or array containing the dates for each cash flow specified in **Values**.

Guess (optional) lets you specify an estimate for the result (see note below).

Note:

The result of this function is calculated using an iterative search technique. If the search does not converge after 20 iterations, a #NUM error value is returned. If this occurs, try altering the **Guess** parameter.

See also:

[IRR](#), [NPV](#), [MIRR](#), [RATE](#), [XNPV](#)

XNPV (net present value)

Syntax:

XNPV(Rate, Values, Dates)

Description:

Returns the net present value of an investment with *irregular* cash flows.

The calculation is based on the cash flows specified in the **Values** argument. Payments have to be entered as negative values, incomes as positive values. The date of each cash flow has to be specified using the **Dates** argument.

Rate is the discount rate to apply to the cash flows.

Values is a cell range or array containing the cash flows. At least one payment and one income have to be given.

Dates is a cell range or array containing the dates for each cash flow specified in **Values**.

See also:

[NPV](#), [XIRR](#)

XOR (logical XOR function)

Syntax:

XOR(Value1 [, Value2, Value3 ...])

Description:

XOR ("exclusive or") returns the logical value TRUE if an *odd* number of the arguments is TRUE, otherwise it returns FALSE.

Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

Example:

XOR(TRUE, TRUE) returns FALSE

XOR(TRUE, FALSE) returns TRUE

XOR(FALSE, TRUE) returns TRUE

XOR(FALSE, FALSE) returns FALSE

See also:

[OR](#), [AND](#), [NOT](#)

YEAR (year of a date)

Syntax:

YEAR(Date)

Description:

Returns the year of a date.

Example:

YEAR("09/25/2018") returns 2018

See also:

[ISOWEEK](#), [ISOWEEKNUM](#), [WEEKNUM](#), [MONTH](#), [DAY](#), [DAYSPERYEAR](#), [WEEKDAY](#)

ZTEST (z-test)

Note: ZTEST is supplemented by the new identical function [Z.TEST](#), which is available in newer versions of Microsoft Excel (2010 or later).

Syntax:

ZTEST(Area, x [, Sigma])

Description:

Returns the one-tailed probability of a z-test.

Area is the cell range or array containing the values **x** will be tested against.

x is the value to be tested.

Sigma (optional) is the standard deviation of the entire population (if known). If omitted, the standard deviation of the given sample (i.e., the values in **Area**) is used.

See also:

[Z.TEST](#), [STANDARDIZE](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

Z.TEST (z-test)**Syntax:**

Z.TEST(Area, x [, Sigma])

Description:

Returns the one-tailed probability of a z-test.

Area is the cell range or array containing the values **x** will be tested against.

x is the value to be tested.

Sigma (optional) is the standard deviation of the entire population (if known). If omitted, the standard deviation of the given sample (i.e., the values in **Area**) is used.

Compatibility notes:

Microsoft Excel supports this function only in version 2010 or later. In older versions, the function is unknown.

See also:

[ZTEST](#), [STANDARDIZE](#), [NORM.DIST/NORMDIST](#), [NORM.S.DIST/NORMSDIST](#)

Addendum

In the addendum, the following information is given:

- [Menu commands and corresponding ribbon commands](#)

In this section you will find a table of each menu command, together with the corresponding command in the ribbon.

- [Keyboard shortcuts](#)

This section provides tables for the most frequently used keyboard shortcuts in the program.

Menu commands and corresponding ribbon commands

In this section you will find a table of each menu command, together with the corresponding command in the ribbon.

Tip: You can switch the user interface between *ribbon* and *classic menus and toolbars* at any time. To do this, invoke the menu command **Tools > Options** (or, in the ribbon, the command **File > Options**). In the dialog, switch to the **Appearance** tab and click on the **User Interface** button. A dialog box appears in which you can select the type of user interface you prefer.

The table contains the following columns:

- **Left column: menu command**

The left column lists all menu commands in the program, sorted by the order in the main menu.

- **Right column: corresponding command in the ribbon**

In the right column you will find the corresponding command in the ribbon – in the following notation:

Tab > Section > Command

Example:

The command **File > Document > Save** on the ribbon can be found as follows: **File** tab, **Document** section, **Save** icon.

With some commands, an additional fourth entry is displayed. Here, you can find the corresponding command in the list that opens when you click on the specified icon (or the arrow to the right of it).

So here is the announced table:

Menu	Ribbon
 File > New	File > File > New >> More
 File > Open	File > File > Open
 File > Close	File > File > Close
 File > Save	File > Document > Save
 File > Save as	File > Document > Save as
 File > Save all	File > Document > Save all
 File > Revert to previous version	File > File management > Versions
 File > Acquire	Insert > Objects > Picture frame >> From scanner
File > Select source	Insert > Objects > Picture frame >> Select source
 File > Properties	File > File management > Properties
 File > File manager	File > File management > File manager
 File > Page setup	File > Print > Page setup
 File > Print preview	File > Print > Print preview
 File > Print range > Define print range	File > Print > Define print range
File > Print range > Remove print range	File > Print > Define print range >> Remove print range
 File > Print	File > Print > Print
 File > Export as PDF	File > Document > PDF export
 File > Send	File > Document > Send
 Edit > Undo	Quick Access Toolbar > Undo

Menu	Ribbon
 Edit > Redo	Quick Access Toolbar > Redo
 Edit > Repeat	Quick Access Toolbar > Repeat
 Edit > Cut	Home > Edit > Cut
 Edit > Copy	Home > Edit > Copy
 Edit > Paste	Home > Edit > Paste
 Edit > Duplicate	Layout > Objects > Duplicate
 Edit > Paste special	Home > Edit > Paste > Paste special
 Edit > Select all	Home > Selection > Select all
 Edit > Fill	Home > Contents > Fill
Edit > Delete special	Home > Contents > Delete
Edit > Delete special > Formatting	Home > Contents > Delete >> Formatting
Edit > Delete special > Contents	Home > Contents > Delete >> Contents
 Edit > Delete special > Comments	Home > Contents > Delete >> Comments
 Edit > Delete special > Conditional formatting	Home > Contents > Delete >> Conditional formatting
Edit > Delete special > Input validation	Home > Contents > Delete >> Input validation
 Edit > Search	Home > Search > Search
 Edit > Replace	Home > Search > Replace
 Edit > Search again	Home > Search > Search again
 Edit > Go to	Home > Search > Go to
 Edit > Link	OLE object > OLE > Edit link

Menu	Ribbon
 Edit > OLE object	OLE object > OLE > OLE object
 View > Touch mode	Quick Access Toolbar > Touch mode
 View > Freeze	View > Windows > Freeze cells
 View > Actual size	View > Zoom > Actual size
 View > Zoom level	View > Zoom > Set zoom
 View > Object mode	View > Mode > Object mode
 View > Show formulas	View > View > Show formulas
 View > Syntax highlighting	View > View > Syntax highlighting
 View > Row & column headers	View > View > Row and column headers
 View > Watch window	Formula > Watch > Show watch list
 View > Full screen	View > Windows > Full screen
View > Pivot table sidebar > Show at left	View > Windows > Pivot table sidebar >> Show at left
View > Pivot table sidebar > Show at right	View > Windows > Pivot table sidebar >> Show at right
 Format > Cell	Home > Number and Home > Alignment
 Format > Character	Home > Character
 Format > Standard	Home > Contents > Delete >> Reset character formatting
 Format > Paragraph	Home > Alignment
 Format > Borders	Home > Format > Borders
 Format > Shading	Home > Format > Shading

Menu**Ribbon**

Format > Link

Insert > Links > Hyperlink



Format > Remove link

Home > Contents > Delete >> Remove link



Format > Cell style

Home > Format > Cell styles >> Manage cell styles



Format > Conditional formatting > New rule

Home > Format > Conditional formatting >> New rule



Format > Conditional formatting > Manage rules

Home > Format > Conditional formatting >> Manage rules



Format > Input validation

Review > Input validation > Input validation



Format > Transfer formatting

Home > Edit > Format painter



Insert > Function

Formula > Function > Function



Insert > Comment

Insert > Comments > Comment



Insert > Symbol

Insert > Text > Insert symbol



Insert > SmartText

Insert > Text > SmartText



Insert > Header and footer

Insert > Text > Header / footer

Insert > Page break > Insert before row

Layout > Page setup > Page break >> Insert before row

Insert > Page break > Delete before row

Layout > Page setup > Page break >> Delete before row

Insert > Page break > Insert before column

Layout > Page setup > Page break >> Insert before column

Insert > Page break > Delete before column

Layout > Page setup > Page break >> Delete before column



Worksheet > Column > Width

Layout > Cells > Cell size



Worksheet > Column > Optimum width

Layout > Cells > Optimum width

Worksheet > Column > Show

Home > Cells > Visibility >> Show columns

Worksheet > Column > Hide

Home > Cells > Visibility >> Hide columns

Menu**Ribbon**

Worksheet > Row > Height

Layout > Cells > Cell size



Worksheet > Row > Optimum height

Layout > Cells > Optimum height

Worksheet > Row > Show

Home > Cells > Visibility >> Show rows

Worksheet > Row > Hide

Home > Cells > Visibility >> Hide rows



Worksheet > Worksheet > Insert

Insert > Tables > Sheet >> Insert

Worksheet > Worksheet > Copy

Insert > Tables > Sheet >> Copy

Worksheet > Worksheet > Move

Insert > Tables > Sheet >> Move



Worksheet > Worksheet > Delete

Insert > Tables > Sheet >> Delete

Worksheet > Worksheet > Rename

Insert > Tables > Sheet >> Rename

Worksheet > Worksheet > Show > Show all

Worksheet > Worksheet > Hide

Home > Cells > Visibility >> Hide sheet



Worksheet > Worksheet > Properties

Insert > Tables > Sheet >> Properties



Worksheet > Insert copied cells

Home > Cells > Insert >> Insert copied cells



Worksheet > Insert cells

Home > Cells > Insert



Worksheet > Delete cells

Home > Cells > Delete



Worksheet > Remove > Empty rows

Data > Edit > Remove empty rows



Worksheet > Remove > Duplicate rows

Data > Edit > Remove empty rows >> Remove duplicate rows



Worksheet > Names > Edit

Formula > Named areas > Edit names



Worksheet > Names > Apply

Formula > Named areas > Apply names



Worksheet > Names > Import

Formula > Named areas > Create names

Menu**Ribbon**

Worksheet > Names > Insert list

Formula > Named areas > Export names



Worksheet > Sort

Home > Contents > Sort and filter >> Sort



Worksheet > Transpose

Data > Edit > Transpose



Worksheet > Filter > AutoFilter

Home > Contents > Sort and filter >> AutoFilter



Worksheet > Filter > Show all

Home > Contents > Sort and filter >> Show all



Worksheet > Filter > Reapply filter

Home > Contents > Sort and filter >> Reapply filter



Worksheet > Filter > Special filter

Home > Contents > Sort and filter >> Special filter



Worksheet > Text to columns

Data > Edit > Text to columns



Worksheet > Outliner > Automatically show outline pane



Worksheet > Outliner > Group

Data > Outliner > Group



Worksheet > Outliner > Ungroup

Data > Outliner > Ungroup



Worksheet > Outliner > Clear outline

Data > Outliner > Remove all groups



Worksheet > Outliner > Show details

Data > Outliner > Show details



Worksheet > Outliner > Hide details

Data > Outliner > Hide details

Worksheet > Outliner > Options

Data > Outliner



Worksheet > External references

Data > Edit > External references



Worksheet > Data consolidation

Data > Analyze > Data consolidation



Worksheet > Pivot table

Insert > Tables > Pivot table



Worksheet > New table

Insert > Tables > Table

Menu	Ribbon
 Worksheet > Table > Table range	Table > Table > Range
 Worksheet > Table > Table settings	Table > Table > Properties
 Worksheet > Table > Create pivot table	Table > Table > Summarize as pivot
 Worksheet > Table > Convert to range	Table > Table > Convert to range
 Worksheet > Table > Delete table	Table > Table > Delete table
 Worksheet > Table > Select > Select rows	Table > Selection > Select rows
 Worksheet > Table > Select > Select columns	Table > Selection > Select columns
 Worksheet > Table > Select > Select table	Table > Selection > Select table
 Worksheet > Table > Insert > Insert rows above	Table > Edit > Insert above
 Worksheet > Table > Insert > Insert rows below	Table > Edit > Insert below
 Worksheet > Table > Insert > Insert columns at left	Table > Edit > Insert left
 Worksheet > Table > Insert > Insert columns at right	Table > Edit > Insert right
 Worksheet > Table > Delete > Delete rows	Table > Edit > Delete rows
 Worksheet > Table > Delete > Delete columns	Table > Edit > Delete columns
Worksheet > Table > Header row	Table > Style > Header row
Worksheet > Table > Total row	Table > Style > Total row
 Object > New chart frame	Insert > Objects > Chart frame
 Object > New text frame	Insert > Objects > Text frame
 Object > New picture frame	Insert > Objects > Picture frame

Menu**Ribbon**

Object > New OLE object frame

Insert > Objects > OLE object frame



Object > New form object > Checkbox

Insert > Objects > Form object >> Checkbox



Object > New form object > Radio button

Insert > Objects > Form object >> Radio button



Object > New form object > Dropdown

Insert > Objects > Form object >> Dropdown



Object > New form object > Listbox

Insert > Objects > Form object >> Listbox



Object > New form object > Pushbutton

Insert > Objects > Form object >> Pushbutton



Object > New form object > Spinner

Insert > Objects > Form object >> Spinner



Object > New form object > Scrollbar

Insert > Objects > Form object >> Scrollbar



Object > New form object > Label

Insert > Objects > Form object >> Label



Object > New form object > Groupbox

Insert > Objects > Form object >> Groupbox



Object > New drawing > Line

Insert > Objects > Lines



Object > New drawing > Curve

Insert > Objects > Lines



Object > New drawing > Freehand form

Insert > Objects > Lines



Object > New drawing > Straight connector

Insert > Objects > Lines



Object > New drawing > Elbow connector

Insert > Objects > Lines



Object > New drawing > Curved connector

Insert > Objects > Lines



Object > New drawing > Rectangle

Insert > Objects > AutoShape



Object > New drawing > Rounded rectangle

Insert > Objects > AutoShape



Object > New drawing > Ellipse/circle

Insert > Objects > AutoShape

Menu	Ribbon
 Object > New drawing > AutoShape	Insert > Objects > AutoShape
 Object > New drawing > TextArt	Insert > Objects > TextArt object
 Object > Group	Layout > Objects > Group
 Object > Order > Bring to front	Layout > Position > Bring to front
 Object > Order > Send to back	Layout > Position > Send to back
 Object > Order > Bring forward one level	Layout > Position > Bring to front >> Bring forward one level
 Object > Order > Send backward one level	Layout > Position > Send to back >> Send backward one level
 Object > Rotate or flip > Flip horizontally	Layout > Position > Rotate object >> Flip horizontally
 Object > Rotate or flip > Flip vertically	Layout > Position > Rotate object >> Flip vertically
 Object > Rotate or flip > Rotate left	Layout > Position > Rotate object >> Rotate left
 Object > Rotate or flip > Rotate right	Layout > Position > Rotate object >> Rotate right
 Object > Align or distribute > Align left	Layout > Position > Align objects >> Align left
 Object > Align or distribute > Align center	Layout > Position > Align objects >> Align center
 Object > Align or distribute > Align right	Layout > Position > Align objects >> Align right
 Object > Align or distribute > Align top	Layout > Position > Align objects >> Align top
 Object > Align or distribute > Align middle	Layout > Position > Align objects >> Align middle
 Object > Align or distribute > Align bottom	Layout > Position > Align objects >> Align bottom
 Object > Align or distribute > Distribute horizontally	Layout > Position > Align objects >> Distribute horizontally

Menu	Ribbon
 Object > Align or distribute > Distribute vertically	Layout > Position > Align objects >> Distribute vertically
 Object > Chart > Data in columns	Chart > Data > Series in columns
 Object > Chart > Data in rows	Chart > Data > Series in rows
 Object > Chart > Change chart location	Chart > Position > Chart location
 Object > Chart > Save as picture	Chart > Export > Save chart as a picture
 Object > Chart > Element properties	Chart > Chart elements > Edit properties
 Object > Properties	Object > Format > AutoShape templates >> More
 Tools > Check spelling	Review > Spelling > Spell check
Tools > Edit user dictionaries	Review > Spelling > Spell check >> Edit user dictionaries
 Tools > Sheet protection	Review > Protection > Sheet protection
 Tools > Workbook protection	Review > Protection > Workbook protection
 Tools > Start script	File > Scripts > Run script
 Tools > Edit script	File > Scripts > Edit script
Tools > Edit lists	
 Tools > Scenarios	Data > Analyze > Scenario manager
 Tools > Goal seek	Data > Analyze > Goal seek
 Tools > Comments > Edit comment	Review > Comments > Edit
 Tools > Comments > Previous comment	Review > Comments > Previous comment
 Tools > Comments > Next comment	Review > Comments > Next comment

Menu**Ribbon**

 Tools > Comments > Show this comment	Review > Comments > Comment visibility >> Show this comment
 Tools > Comments > Show all comments	Review > Comments > Comment visibility >> Show all comments
 Tools > Comments > Reset comment position	Review > Comments > Comment visibility >> Restore all comment positions
 Tools > Formula auditing > Trace predecessors	Formula > Traces > Trace predecessors
 Tools > Formula auditing > Remove traces to predecessors	Formula > Traces > Remove all traces >> Remove traces to predecessors
 Tools > Formula auditing > Trace successors	Formula > Traces > Trace successors
 Tools > Formula auditing > Remove traces to successors	Formula > Traces > Remove all traces >> Remove traces to successors
 Tools > Formula auditing > Remove all traces	Formula > Traces > Remove all traces
Tools > Formula auditing > Select predecessors	Formula > Traces > Trace predecessors >> Select predecessors
Tools > Formula auditing > Select successors	Formula > Traces > Trace successors >> Select successors
 Tools > Formula auditing > Trace to error	Formula > Traces > Trace to error
 Tools > Formula auditing > Go to previous error	Formula > Traces > Previous error
 Tools > Formula auditing > Go to next error	Formula > Traces > Next error
 Tools > Formula auditing > Mark invalid data	Data > Validation > Mark invalid data
 Tools > Formula auditing > Remove invalid data marks	Data > Validation > Remove marks
 Tools > Formula auditing > Go to previous invalid cell	Data > Validation > Previous invalid cell
 Tools > Formula auditing > Go to next invalid cell	Data > Validation > Next invalid cell
 Tools > Recalculate	Formula > Update > Update data >> Update calculations

Menu

Tools > Update charts

Tools > Refresh all pivot tables

Tools > Update external references

Tools > Customize



Tools > Options

Ribbon

Formula > Update > Update data >> Update charts

Formula > Update > Update data >> Update pivot tables

Formula > Update > Update data >> Update external references

File > Settings > Customize >> Customize ribbon

File > Settings > Options

Keyboard shortcuts

The following pages provide tables for the most frequently used keyboard shortcuts in the program:

- [Keyboards shortcuts in the Windows and the Linux version](#)
- [Keyboards shortcuts in the Mac version](#)

Tip: You can customize the predefined keyboard shortcuts and create new shortcuts with the menu command **Tools > Customize** (see section [Customizing keyboard shortcuts](#)).

Keyboards shortcuts in the Windows and the Linux version

In the **Windows** and the **Linux** version, the following keyboard shortcuts are available:

Keyboard shortcuts for editing spreadsheets

Command	Keyboard shortcut
Move to the next cell	←/→/↑/↓
Move to the next / previous cell horizontally	Tab / Shift+Tab
Move to the next / previous cell vertically	Enter / Shift+Enter
Move to the next <i>filled</i> cell	Ctrl + ←/→/↑/↓
Move to the first cell in the current column	Ctrl+PgUp
Move to the last cell in the current column	Ctrl+PgDn
Move to the first cell in the current row	Home
Move to the last <i>filled</i> cell in the current row	End
Move to the first cell in the worksheet (A1)	Ctrl+Home
Move to the last <i>filled</i> cell in the worksheet	Ctrl+End
Move to the next circular reference	Shift+F5
Move to the next error	Ctrl+F3
Copy cell above	Ctrl+, (comma)

Command	Keyboard shortcut
Copy value from cell above	Ctrl+Shift+, (comma)
Enter an array formula	Ctrl+Shift+↵
Select current array formula	Ctrl+7
Select current conditional formatting	Ctrl+6
Open a selection list with the contents of the cells above or below a cell	Alt+Shift+↓
Switch between AUTO and TEXT input mode (see section Status bar)	Ctrl+Shift+F4
Insert an <i>em dash</i> (—)	Ctrl+Alt+Minus(numeric pad)
Insert a non-breaking space	Ctrl+Shift+Space
Convert a hexadecimal character code into the respective Unicode character*	Ctrl+Alt+Shift+X

* For example, when you type in 20AC and then press this keyboard shortcut, a euro sign € will appear (since the euro sign's character code is 20AC in the Unicode character set table).

Keyboard shortcuts for menu commands

Menu command	Keyboard shortcut
File > New	Ctrl+N
File > Open	Ctrl+O
File > Close	Ctrl+W or Ctrl+F4
File > Save	Ctrl+S
File > File manager	F12
File > Print	Ctrl+P
File > Exit	Ctrl+Q or Alt+F4
Edit > Undo	Ctrl+Z
Edit > Redo	Ctrl+Y
Edit > Repeat	Ctrl+Shift+Y
Edit > Cut	Ctrl+X
Edit > Copy	Ctrl+C

Menu command	Keyboard shortcut
Edit > Paste	Ctrl+V
Edit > Paste special	Ctrl+Alt+V
Edit > Select all	Ctrl+A
Edit > Search	Ctrl+F
Edit > Replace	Ctrl+H
Edit > Search again	F3
Edit > Go to	Ctrl+G or F5
View > Full Screen	F6
Format > Cell	Ctrl+1
Number format: Number	Ctrl+Shift+1
Number format: Scientific	Ctrl+Shift+2
Number format: Currency	Ctrl+Shift+4
Number format: Percentage	Ctrl+Shift+5
Format > Character	Ctrl+2
Select font (in the Formatting toolbar)	Ctrl+D
Boldface on/off	Ctrl+B
Italics on/off	Ctrl+I
Underlining on/off	Ctrl+Shift+U
Superscript	Ctrl+Shift+Plus(numeric pad)
Subscript	Ctrl+Shift+Minus(numeric pad)
Remove super- or subscript	Ctrl+Shift+*(numeric pad)
Alignment: default	Ctrl+T
Alignment: left	Ctrl+L
Alignment: centered	Ctrl+E
Alignment: right	Ctrl+R
Alignment: justified	Ctrl+J
Format > Link	Ctrl+K

Menu command	Keyboard shortcut
Format > Transfer formatting (step copy)	Ctrl+Shift+C
Format > Transfer formatting (step paste)	Ctrl+Shift+V
Insert > Function	F7
Insert > Comment	Shift+F2
Insert current date	Ctrl+. (period)
Insert current time	Ctrl+Shift+. (period)
Hide current row	Ctrl+9
Show current row	Ctrl+Shift+9
Hide current column	Ctrl+0
Show current column	Ctrl+Shift+0
Worksheet > Insert cells	Ctrl+Plus
Worksheet > Delete cells	Ctrl+Minus
Tools > Recalculate	F9
Recalculate the current worksheet only	Shift+F9
Tools > Update charts	F8

Other useful keyboard shortcuts

Command	Keyboard shortcut
Expand or collapse the ribbon	Ctrl+F1
Move to the next ribbon tab	Ctrl+F12
Move to the previous ribbon tab	Ctrl+Shift+F12
Move to the next worksheet (with dialogs open: to the next tab)	Ctrl+Tab
Move to the previous worksheet (with dialogs open: to the previous tab)	Ctrl+Shift+Tab

Keyboards shortcuts in the Mac version

Note: For most keyboard shortcuts with the **Cmd** key, you can alternatively use the **Ctrl** key instead of the **Cmd** key. For example, for the shortcut key **Cmd+S** you can also press **Ctrl+S** if desired.

In the **Mac** version, the following keyboard shortcuts are available:

Keyboard shortcuts for editing spreadsheets

Command	Keyboard shortcut
Move to the next cell	←/→/↑/↓
Move to the next / previous cell horizontally	Tab / Shift+Tab
Move to the next / previous cell vertically	Enter / Shift+Enter
Move to the next <i>filled</i> cell	Cmd + ←/→/↑/↓
Move to the first cell in the current column	Cmd+PgUp
Move to the last cell in the current column	Cmd+PgDn
Move to the first cell in the current row	Home
Move to the last <i>filled</i> cell in the current row	End
Move to the first cell in the worksheet (A1)	Cmd+Home
Move to the last <i>filled</i> cell in the worksheet	Cmd+End
Move to the next circular reference	Shift+F5
Move to the next error	Cmd+F3
Copy cell above	Cmd+, (comma)
Copy value from cell above	Cmd+Shift+, (comma)
Enter an array formula	Cmd+Shift+↵
Select current array formula	Cmd+7
Select current conditional formatting	Cmd+6
Open a selection list with the contents of the cells above or below a cell	Alt+Shift+↓

Command	Keyboard shortcut
Switch between AUTO and TEXT input mode (see section Status bar)	Cmd+Shift+F4
Insert an <i>em dash</i> (—)	Cmd+Alt+Minus(numeric pad)
Insert a non-breaking space	Cmd+Shift+Space
Convert a hexadecimal character code into the respective Unicode character*	Cmd+Alt+Shift+X

* For example, when you type in 20AC and then press this keyboard shortcut, a euro sign € will appear (since the euro sign's character code is 20AC in the Unicode character set table).

Keyboard shortcuts for menu commands

Menu command	Keyboard shortcut
File > New	Cmd+N
File > Open	Cmd+O
File > Close	Cmd+W or Cmd+F4
File > Save	Cmd+S
File > File manager	F12
File > Print	Cmd+P
File > Exit	Cmd+Q or Alt+F4
Edit > Undo	Cmd+Z
Edit > Redo	Cmd+Y
Edit > Repeat	Cmd+Shift+Y
Edit > Cut	Cmd+X
Edit > Copy	Cmd+C
Edit > Paste	Cmd+V
Edit > Paste special	Cmd+Alt+V
Edit > Select all	Cmd+A
Edit > Search	Cmd+F
Edit > Replace	Cmd+H
Edit > Search again	F3

Menu command	Keyboard shortcut
Edit > Go to	Cmd+G or F5
View > Full screen	F6
Format > Cell	Cmd+1
Number format: Number	Cmd+Shift+1
Number format: Scientific	Cmd+Shift+2
Number format: Currency	Cmd+Shift+4
Number format: Percentage	Cmd+Shift+5
Format > Character	Cmd+2
Select font (in the Formatting toolbar)	Cmd+D
Boldface on/off	Cmd+B
Italics on/off	Cmd+I
Underlining on/off	Cmd+U
Superscript	Cmd+Shift+Plus (numeric pad)
Subscript	Cmd+Shift+Minus (numeric pad)
Remove super- or subscript	Cmd+Shift+* (numeric pad)
Alignment: default	Cmd+T
Alignment: left	Cmd+L
Alignment: centered	Cmd+E
Alignment: right	Cmd+R
Alignment: justified	Cmd+J
Format > Link	Cmd+K
Format > Transfer formatting (step copy)	Cmd+Shift+C
Format > Transfer formatting (step paste)	Cmd+Shift+V
Insert > Function	F7
Insert > Comment	Shift+F2
Insert current date	Cmd+. (period)
Insert current time	Cmd+Shift+. (period)

Menu command	Keyboard shortcut
Hide current row	Cmd+9
Show current row	Cmd+Shift+9
Hide current column	Cmd+0
Show current column	Cmd+Shift+0
Worksheet > Insert cells	Cmd+Plus
Worksheet > Delete cells	Cmd+Minus
Tools > Recalculate	F9
Recalculate the current worksheet only	Shift+F9
Tools > Update charts	F8

Other useful keyboard shortcuts

Command	Keyboard shortcut
Expand or collapse the ribbon	Cmd+F1
Move to the next ribbon tab	Cmd+F12
Move to the previous ribbon tab	Cmd+Shift+F12
Move to the next worksheet (with dialogs open: to the next tab)	Cmd+Tab
Move to the previous worksheet (with dialogs open: to the previous tab)	Cmd+Shift+Tab

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