

---

**Manual**

# **PlanMaker**

**© 1987-2016 SoftMaker Software GmbH**



# Contents

<b>Welcome!</b>	<b>21</b>
Technical support.....	22
About this manual.....	23
System requirements.....	23
<b>Installation and program startup</b>	<b>25</b>
Installing under Windows .....	25
Installing under Linux.....	26
Installing on an Android device .....	26
<b>Screen elements</b>	<b>29</b>
Title bar.....	29
Menu bar.....	30
Standard toolbar.....	31
Formatting toolbar .....	31
Edit toolbar.....	32
Document window.....	32
Status bar .....	33
<b>PlanMaker basics</b>	<b>37</b>
The structure of a spreadsheet .....	37
Moving around in a worksheet .....	39
Entering data.....	39
Deleting data.....	39
Undoing changes .....	40
Starting a new document.....	40
Opening a document.....	41
Printing a document.....	43
Saving a document.....	43
Exiting PlanMaker.....	44
<b>The PlanMaker Tour</b>	<b>45</b>
Five minutes of theory ... ..	45
First steps with PlanMaker .....	46
Entering values and formulas .....	47

Going three-dimensional .....	51
Changing the layout of worksheets .....	51
Charts .....	53
Outlook .....	54

## **Editing worksheets 55**

Entering data in cells .....	58
Undoing changes .....	61
Repeating commands .....	61
Selecting cells and cell contents .....	62
Selecting in the Windows/Linux version .....	62
Selecting in the Android version .....	64
Deleting cells and cell contents .....	65
Deleting the contents of cells .....	66
Deleting whole cells .....	67
Deleting empty rows .....	68
Deleting duplicate rows .....	68
Inserting new cells .....	69
Moving and copying cells .....	70
Pasting cells selectively .....	72
Filling cells automatically .....	76
Working with multiple worksheets .....	82
Creating new worksheets .....	83
Working with the worksheet register .....	83
Managing worksheets .....	84
Calculating in three dimensions .....	86
Naming cell ranges .....	86
Assigning names to cell ranges .....	87
Deleting and renaming names .....	88
Defining names automatically from the selection .....	89
Creating a list of all named ranges .....	90
Putting named ranges to use .....	90
Applying names in existing formulas .....	91
Sorting cells .....	92
Transposing cells .....	94
Distributing text into multiple columns .....	95
Filtering cells by their contents .....	96
Special filter .....	96
AutoFilter .....	99
Analyzing tables .....	101
Displaying formulas instead of results .....	102
Syntax highlighting .....	102
Watch window for cell contents .....	104

Formula auditing .....	105
Updating tables .....	110
Inserting comments.....	111
Goal-seeking.....	112
Scenarios.....	114
Creating scenarios .....	115
Viewing scenarios .....	116
Managing scenarios.....	117
Merging scenarios .....	117
Creating a scenario summary .....	118
Consolidating data .....	119
Consolidating data by position .....	120
Consolidating data by labels .....	122
Modifying and updating consolidations .....	124
Freezing rows and columns .....	125
Inserting special characters.....	127

## **Formatting worksheets**

**131**

Cell size .....	133
Changing cell sizes using the mouse.....	133
Changing cell sizes using menu commands .....	133
Hiding rows or columns .....	134
Number format .....	135
List of all number formats available .....	137
Working with user-defined number formats.....	140
Structure of a user-defined format.....	142
Borders and lines .....	147
Shading.....	150
Alignment .....	152
Protection.....	155
Character format .....	155
Typeface and font size.....	156
Text styles .....	157
Text color .....	158
Superscript and subscript .....	159
Letter spacing and character pitch.....	159
Kerning .....	160
Removing character formatting.....	160
Paragraph format (text frames only).....	161
Paragraph indents (text frames only) .....	161
Line spacing (text frames only).....	162
Paragraph alignment (text frames only).....	163
Spacing above/below a paragraph (text frames only) .....	164

Character styles.....	164
Creating character styles .....	165
Applying character styles.....	166
Modifying character styles .....	166
The character style Normal .....	167
Creating linked character styles .....	167
Cell styles .....	168
Creating cell styles .....	169
Applying cell styles.....	170
Modifying cell styles.....	170
The cell style Normal.....	171
Creating linked cell styles .....	171
Document templates .....	172
Creating document templates .....	172
Using document templates .....	173
Modifying document templates.....	173
The document template Normal.pmx .....	173
AutoFormat.....	174
Conditional formatting.....	174
Creating a new conditional formatting rule.....	175
Types of conditional formatting rules .....	176
Managing conditional formatting rules .....	180
Removing conditional formatting .....	182
Input validation.....	183
Transfer formatting .....	189
Page setup .....	190
Page format .....	190
Additional page setup options .....	192
Headers and footers.....	195
Page breaks .....	198

**Search & replace 201**

Search .....	201
Replace .....	202
Search again & replace again.....	203
Search and replace options .....	203
Jumping to specific cell addresses .....	205
Jumping to specific contents of a table .....	206

**Objects (pictures, drawings, etc.) 209**

Objects – basic procedures .....	209
Inserting objects .....	210

Selecting objects .....	210
Object mode .....	210
Changing position and size of objects .....	213
Rotating and flipping objects .....	213
Aligning and distributing objects .....	214
Duplicating objects .....	215
Changing the properties of objects .....	215
Objects – advanced procedures.....	225
Hiding objects .....	225
Changing the order of objects .....	225
Grouping objects .....	226
Charts.....	228
Text frames .....	228
Inserting text frames.....	228
Changing the properties of text frames .....	229
Pictures .....	231
Inserting pictures.....	231
Scanning pictures .....	232
Inserting pictures from the gallery (Android) .....	233
Changing the properties of picture frames .....	233
Using the Picture toolbar.....	235
OLE objects.....	236
Inserting OLE objects .....	237
Editing OLE objects.....	239
Editing links to OLE objects .....	239
Changing the properties of OLE objects .....	240
Using the SoftMaker Equation Editor .....	242
Drawings.....	243
Inserting drawings.....	243
Adding text to AutoShapes .....	246
Changing the properties of drawings .....	247

## Charts

**251**

Inserting charts .....	252
Editing charts .....	253
Changing the chart type .....	254
Changing the arrangement of data series .....	259
Working with chart elements.....	259
Changing common chart properties .....	278
Updating charts.....	283
Moving charts to another worksheet.....	283
Saving charts as images .....	284

## Forms

287

Working with forms objects.....	288
Inserting forms objects.....	289
Editing forms objects.....	290
Operating and evaluating forms objects.....	290
Forms objects and Excel macros and scripts.....	291
Forms objects in detail.....	291
Checkboxes.....	291
Radio buttons.....	293
Dropdowns.....	295
Listboxes.....	296
Pushbuttons.....	298
Spinners.....	298
Scrollbars.....	300
Labels and groupboxes.....	301

## Language tools

303

Setting up the language.....	303
Spell checking.....	304
Manual spell checking.....	304
Spell checking as you type.....	306
Editing user dictionaries.....	306
Hyphenation.....	307
Hyphenation in text frames.....	307
Hyphenation in table cells.....	308
SmartText.....	309
Creating SmartText entries.....	310
Inserting SmartText entries.....	311
Editing SmartText entries.....	312

## Managing documents

313

Quick paths.....	313
Defining quick paths.....	314
Using quick paths.....	315
Editing and deleting quick paths.....	315
Document summary.....	315
The file manager.....	316
The file manager's buttons.....	317
Searching with the file manager.....	318
Backup copies.....	320

<b>Outliner</b>	<b>323</b>
Grouping cells.....	325
Showing/hiding grouped cells .....	326
Outliner options .....	327
<b>Internet functions</b>	<b>329</b>
Working with links .....	329
Saving HTML documents.....	331
<b>Outputting documents</b>	<b>333</b>
Print preview.....	333
Printing .....	335
Exporting to a PDF file.....	338
E-mailing .....	343
<b>Protecting cells and documents</b>	<b>345</b>
Sheet protection .....	345
Step 1: Setting up protection settings for cells .....	346
Step 2: Activating sheet protection.....	346
Deactivating sheet protection.....	347
Workbook protection .....	348
Activating workbook protection .....	348
Deactivating workbook protection.....	348
Document protection .....	349
Enabling document protection .....	349
Disabling document protection .....	352
<b>Working with other file formats</b>	<b>353</b>
Saving and opening files in other file formats .....	353
Working with text files .....	355
Working with Excel files .....	357
Opening and saving Excel files.....	358
Differences between PlanMaker and Excel.....	359
<b>Working with Arabic text</b>	<b>361</b>
Activating extended support for Arabic text.....	361
Changing the text direction in table cells.....	362
Changing the text direction in text frames .....	362
Changing the direction of worksheets.....	363

<b>Scripts (BasicMaker)</b>	<b>365</b>
<b>Document windows</b>	<b>367</b>
Creating document windows .....	367
Activating document windows .....	367
Closing document windows .....	368
Maximizing document windows .....	368
Minimizing document windows .....	368
Arranging document windows .....	369
Using document tabs .....	369
Moving data between document windows .....	371
<b>Customizing PlanMaker</b>	<b>373</b>
Preferences .....	374
Preferences, View tab .....	374
Preferences, General tab .....	375
Preferences, Edit tab .....	377
Preferences, Appearance tab .....	380
Preferences, Language tab .....	383
Preferences, Files tab .....	385
Preferences, System tab .....	387
Preferences, Fonts tab .....	391
Document properties .....	392
Document properties, Summary tab .....	392
Document properties, Colors tab .....	393
Document properties, Statistics tab .....	395
Document properties, Options tab .....	395
Document properties, Calculate tab .....	398
Document properties, Protection tab .....	400
Document properties, Fonts tab .....	401
Worksheet properties .....	401
Customizing the document display .....	402
Zoom level .....	403
Full screen view .....	404
Customizing toolbars .....	404
Displaying and hiding toolbars .....	405
Positioning toolbars on the screen .....	406
Managing toolbars .....	407
Customizing toolbar icons .....	409
Creating user-defined toolbar icons .....	410
Using the toolbar menu .....	411
Customizing keyboard shortcuts .....	412

Activating a keyboard mapping .....	413
Creating a new keyboard mapping .....	414
Renaming or deleting a keyboard mapping .....	415
Editing the shortcuts in a keyboard mapping .....	415
Resetting the shortcuts in a keyboard mapping .....	418
Customizing AutoFill lists .....	418
Creating a new AutoFill list .....	419
Editing AutoFill lists .....	419
Deleting AutoFill lists .....	419
Importing AutoFill list from cells .....	420
Installing additional dictionaries .....	420
Installing additional SoftMaker dictionaries (Windows) .....	421
Installing additional SoftMaker dictionaries (Android) .....	421
Installing additional SoftMaker dictionaries (Linux) .....	422
Installing Hunspell dictionaries .....	422
Choosing a different dictionary for a language .....	423

## Formulas and functions

**425**

Formula basics .....	426
Arithmetic operators in formulas .....	426
Entering formulas .....	427
Relative vs. absolute cell references .....	430
External cell references .....	431
Entering external cell references .....	431
Updating and managing external cell references .....	433
Error values .....	435
Working with arrays .....	436
Working with database functions .....	438
Functions from A to Z .....	441
ABS (absolute value) .....	441
ACOS (arccosine) .....	441
ACOSH (inverse hyperbolic cosine) .....	442
ACOT (arccotangent) .....	443
ACOTH (inverse arccotangent) .....	443
ADDRESS (cell address as text) .....	444
AND (logical AND function) .....	445
AREAS (number of areas) .....	446
ASIN (arcsine) .....	446
ASINH (inverse hyperbolic sine) .....	447
ATAN (arctangent) .....	448
ATAN2 (arctangent 2) .....	448
ATANH (inverse hyperbolic tangent) .....	449
AVEDEV (average deviation) .....	449

AVERAGE (arithmetic mean).....	450
AVERAGEA (arithmetic mean).....	451
AVERAGEIF (average if condition is true).....	452
AVERAGEIFS (average if conditions are true).....	453
B (Compatibility function).....	454
BASE (convert decimal number to another base).....	455
BESSELI (modified Bessel function $I_n(x)$ ).....	456
BESSELJ (Bessel function $J_n(x)$ ).....	457
BESSELK (modified Bessel function $K_n(x)$ ).....	457
BESSELY (Bessel function $Y_n(x)$ ).....	458
BETADIST (beta distribution).....	458
BETAINV (percentiles of the beta distribution).....	459
BIN2DEC (binary number to decimal number).....	460
BIN2HEX (binary number to hexadecimal number).....	460
BIN2OCT (binary number to octal number).....	461
BINOMDIST (binomial distribution).....	462
CEILING (round up to a multiple of base).....	463
CELL (information about a cell).....	464
CHAR (character from ANSI code).....	466
CHIDIST (chi-square distribution).....	466
CHIINV (percentiles of the chi-square distribution).....	467
CHITEST (chi-square test for independence).....	467
CHOICE ( $x>0$ , $x=0$ , $x<0$ ?).....	468
CHOOSE (choose value from list).....	469
CLEAN (remove unprintable characters).....	469
CODE (ANSI code of a character).....	470
COLUMN (column number of a reference).....	470
COLUMNS (number of columns in a range).....	471
COMBIN (combinations).....	472
COMPLEX (create complex number).....	472
CONCATENATE (concatenate text strings).....	473
CONFIDENCE (confidence interval).....	474
CONVERT (unit conversion).....	475
CORREL (correlation coefficient).....	478
COS (cosine).....	478
COSH (hyperbolic cosine).....	479
COT (cotangent).....	479
COTH (hyperbolic cotangent).....	480
COUNT (number of cells filled with numbers).....	481
COUNTA (number of cells filled).....	481
COUNTBLANK (number of empty cells).....	482
COUNTIF (count if condition is true).....	482
COUNTIFS (count if conditions are true).....	483
COUNTP (PlanMaker 97 compatibility function).....	485

COVAR (Covariance) .....	486
CREATEDATE (date the document was created) .....	486
CRITBINOM .....	487
CUMIPMT (cumulative interest) .....	488
CUMPRINC (cumulative principal) .....	489
CURRENCY (format number as currency) .....	490
DATE (create a date value) .....	491
DATEDIF (date difference) .....	492
DATEVALUE (convert text into date value) .....	493
DAVERAGE (database function) .....	494
DAY (day of a date) .....	494
DAYS (days between two dates) .....	495
DAYS360 (days between two dates) .....	496
DAYSP (compatibility function) .....	497
DAYSPERMONT (days per month) .....	498
DAYSPERYEAR (days per year) .....	499
DB (fixed-declining balance depreciation) .....	499
DCOUNT (database function) .....	500
DCOUNTA (database function) .....	501
DDB (double-declining balance depreciation) .....	502
DEC2BIN (decimal number to binary number) .....	503
DEC2HEX (decimal number to hexadecimal number) .....	504
DEC2OCT (decimal number to octal number) .....	505
DECIBEL (decibel value of two quantities) .....	506
DECIMAL (convert number from any base to decimal) .....	506
DECIMALS (fractional part of a number) .....	507
DEGREES (convert radians to degrees) .....	508
DELTA (test for equality) .....	508
DEVSQ (average square deviation) .....	509
DGET (database function) .....	510
DMAX (database function) .....	510
DMIN (database function) .....	511
DOLLARDE (dollar price, decimal) .....	512
DOLLARFR (dollar price, fraction) .....	513
DPRODUCT (database function) .....	513
DSTDEV (database function) .....	514
DSTDEVP (database function) .....	515
DSUM (database function) .....	515
DVAR (database function) .....	516
DVARP (database function) .....	517
EDATE (date before/after n months) .....	518
EFFECT (effective interest rate) .....	518
EOMONTH (end of month in n months) .....	519
ERF (Gaussian error function) .....	520

ERFC (complement of Gaussian error function) .....	520
ERROR.TYPE (error type) .....	521
EUROCONVERT (convert EU currencies) .....	522
EVEN (round up to next even number) .....	523
EXACT (compare texts) .....	524
EXP (power of e) .....	525
EXPONDIST (exponential distribution) .....	525
FACT (factorial) .....	526
FACTDOUBLE (double factorial) .....	527
FALSE (logical value FALSE) .....	527
FDIST (F distribution) .....	528
FILENAME (file name of the document) .....	528
FIND (search for text) .....	529
FINV (percentiles of the F distribution) .....	530
FISHER (Fisher transformation) .....	531
FISHERINV (inverse of the Fisher transformation) .....	531
FIXED (format number as text with fixed decimals) .....	531
FLOOR (round down to a multiple of base) .....	533
FORECAST (forecast using linear regression) .....	533
FORMULATEXT (display the formula a cell contains) .....	534
FREQUENCY (frequency) .....	535
FTEST (F-test) .....	536
FV (future value) .....	537
FVSCCHEDULE (future value) .....	537
GAMMA (gamma function) .....	538
GAMMADIST (gamma distribution) .....	539
GAMMAINV (percentiles of the gamma distribution) .....	539
GAMMALN (logarithm of the gamma function) .....	540
GAUSS (standard normal distribution) .....	541
GCD (greatest common divisor) .....	541
GEOMEAN (geometric mean) .....	542
GESTEP (greater or equal to threshold value?) .....	543
GROWTH (values of an exponential regression) .....	543
HARMEAN (harmonic mean) .....	544
HEX2BIN (hexadecimal number to binary number) .....	545
HEX2DEC (hexadecimal number to decimal number) .....	546
HEX2OCT (hexadecimal number to octal number) .....	546
HLOOKUP (look up row-wise) .....	547
HOLIDAY (dates of movable Christian holidays) .....	548
HOUR (hour) .....	549
HYPERLINK (hyperlink) .....	550
HYPGEOMDIST (hypergeometric distribution) .....	551
IF (if-then-else condition) .....	552
IFERROR (return a text string on errors) .....	553

IMABS (absolute value of a complex number).....	554
IMAGINARY (imaginary coefficient of a complex number) .....	554
IMARGUMENT (angle of a complex number) .....	555
IMCONJUGATE (conjugate complex number).....	556
IMCOS (cosine of a complex number) .....	556
IMDIV (division of complex numbers) .....	557
IMEXP (exponential of a complex number) .....	557
IMLN (natural logarithm of a complex number) .....	558
IMLOG10 (base-10 logarithm of a complex number) .....	559
IMLOG2 (base-2 logarithm of a complex number) .....	559
IMNEG (negative value of a complex number) .....	560
IMPOWER (power of a complex number) .....	561
IMPRODUCT (product of complex numbers).....	561
IMREAL (real coefficient of a complex number) .....	562
IMSIN (sine of a complex number) .....	562
IMSQRT (square root of a complex number).....	563
IMSUB (difference of complex numbers).....	564
IMSUM (sum of complex numbers) .....	564
INDEX (cell in a particular row/column of a range).....	565
INDIRECT (create reference from text) .....	566
INT (round down to nearest integer).....	567
INTERCEPT (intercept point of a linear trend) .....	567
INTERSECTION (intersection of two ranges) .....	568
IPMT (interest payment) .....	569
IRR (internal rate of return) .....	570
ISBLANK (is empty?) .....	571
ISERR (is an error value except #N/A?).....	571
ISERROR (is an error value?).....	572
ISEVEN (is an even number?).....	573
ISFORMULA (is a formula?) .....	573
ISLOGICAL (is a logical value?) .....	574
ISNA (is not available?).....	575
ISNONTEXT (is no text?) .....	575
ISNUMBER (is numeric?).....	576
ISNUMBERP (PlanMaker 97 compatibility function) .....	577
ISODD (is an odd number?) .....	578
ISOWEEK (ISO week number) .....	578
ISOWEEKNUM (ISO week number).....	580
ISPMT (interest payment).....	581
ISREF (is a valid reference?) .....	581
ISTEXT (is text?).....	582
KURT (kurtosis).....	583
LARGE (k-th largest number).....	584
LASTPRINTED (date last printed).....	585

LASTSAVED (date last saved)	585
LCM (least common multiple)	586
LEFT (left part of a text string)	586
LEN (length)	587
LINEST (statistics of a linear regression)	588
LN (natural logarithm)	590
LOG (logarithm)	591
LOG10 (base-10 logarithm)	591
LOGEST (statistics of an exponential regression)	592
LOGINV (percentiles of the gamma distribution)	594
LOGNORMDIST (lognormal distribution)	594
LOOKUP (search cell range)	595
LOWER (convert text to lower case)	598
MATCH (relative position in a range)	598
MAX (maximum)	599
MAXA (maximum)	600
MDETERM (matrix determinant)	601
MEDIAN	602
MID (part of a text string)	602
MILLISECONDS (milliseconds)	603
MIN (minimum)	604
MINA (minimum)	604
MINUTE (minute)	605
MINVERSE (inverse matrix)	606
MIRR (modified internal rate of return)	607
MMULT (product of matrices)	607
MOD (remainder of a division, Excel method)	608
MODE (most frequently occurring value)	609
MODP (remainder of a division, PlanMaker method)	610
MONTH (month of a date)	611
MROUND (round to a multiple of base)	612
MSOLVE (solution of matrix equation $Ax=B$ )	613
MULTINOMIAL (multinomial coefficient)	614
N (convert value into number)	615
NA (error value #N/A)	616
NEG (negative value)	616
NEGBINOMDIST (negative binomial distribution)	617
NETWORKDAYS (number of workdays)	618
NOMINAL (nominal interest rate)	619
NORMDIST (normal distribution)	619
NORMINV (percentiles of the normal distribution)	620
NORMSDIST (standard normal distribution)	621
NORMSINV (percentiles of the standard distribution)	621
NOT (logical NOT function)	622

NOW (current date and time).....	623
NPER (number of periods).....	623
NPV (net present value).....	624
OCT2BIN (octal number to binary number).....	625
OCT2DEC (octal number to decimal number).....	626
OCT2HEX (octal number to hexadecimal number).....	626
ODD (round up to next odd number).....	627
OFFSET (shifted reference).....	628
OR (logical OR function).....	629
RRI (interest for fixed-interest investments).....	629
PEARSON (Pearson correlation coefficient).....	630
PERCENTILE (percentiles of a data set).....	631
PERCENTRANK (percent rank in a data set).....	632
PERIOD (duration of fixed-interest investments).....	633
PERMUT (permutations).....	634
PHI (standard normal distribution).....	634
PI (pi).....	635
PMT (payment).....	635
POISSON (Poisson distribution).....	636
POWER (power).....	637
PPMT (payment on the principal).....	638
PROB (probability).....	639
PRODUCT (product).....	640
PROPER (convert text to upper/lower case).....	640
PV (present value).....	641
QUARTILE (quartiles of a data set).....	642
QUOTIENT (quotient of a division).....	643
RADIANS (convert degrees to radians).....	643
RAND (random value).....	644
RANDBETWEEN (random value).....	644
RANK (rank in a data set).....	645
RATE (rate per period).....	646
REPLACE (replace text in a text string).....	647
REPT (repeat text string).....	648
RIGHT (right part of a text string).....	648
ROMAN (Roman numeral).....	649
ROOTN (n-th root).....	650
ROUND (round).....	651
ROUNDDOWN (round down).....	651
ROUNDUP (round up).....	652
ROW (row number of a reference).....	653
ROWS (number of rows in a range).....	654
RSQ (square of Pearson).....	654
SEARCH (search for text).....	655

SECOND (second).....	656
SERIESSUM (sum of a power series) .....	656
SHEET (index of a worksheet) .....	657
SHEETNAME (name of a worksheet).....	658
SHEETNUMBER (compatibility function).....	659
SIGN (sign of a number).....	660
SIN (sine).....	660
SINH (hyperbolic sine) .....	661
SKEW (skewness of a distribution) .....	661
SLN (straight-line depreciation) .....	662
SLOPE (slope of a linear trend) .....	663
SMALL (k-th smallest number).....	664
SORTM (sort) .....	665
SORTV (sort) .....	666
SQRT (square root) .....	668
SQRTPI (square root of $x \cdot \pi$ ).....	668
STANDARDIZE (standardized value).....	669
STDEV (standard deviation of a sample).....	670
STDEVA (standard deviation of a sample) .....	670
STDEVP (standard deviation of entire population) .....	671
STDEVPA (standard deviation of entire population) .....	672
STEYX (standard error of a linear regression) .....	673
SUBSTITUTE (replace text in a text string).....	674
SUBTOTAL (calculations ignoring hidden cells) .....	675
SUM (Sum).....	676
SUMIF (sum if condition is true).....	678
SUMIFS (sum if conditions are true).....	679
SUMPRODUCT (sum of products) .....	680
SUMSQ (sum of squares) .....	681
SUMX2MY2 (sum of $x^2 - y^2$ ).....	681
SUMX2PY2 (sum of $x^2 + y^2$ ) .....	682
SUMXMY2 (sum of $(x - y)^2$ ) .....	683
SYD (sum-of-years' digits depreciation) .....	684
T (convert value into text string).....	685
TAN (tangent) .....	685
TANH (hyperbolic tangent) .....	686
TDIST (t-distribution).....	686
TEXT (convert number into text string).....	687
TIME (create time).....	688
TIMEDIFF (time difference) .....	688
TIMEVALUE (convert text into time) .....	690
TINV (percentiles of the t-distribution) .....	690
TODAY (current date).....	691
TRANSPOSE (transposed matrix).....	691

TREND (values of a linear regression) .....	692
TRIM (remove spaces from text) .....	694
TRIMMEAN (mean ignoring marginal values) .....	694
TRUE (logical value TRUE) .....	695
TRUNC (truncate a number) .....	696
TTEST (t-test) .....	696
TYPE (type of a value) .....	697
UPPER (convert text to upper case) .....	698
USERFIELD (user field) .....	698
VALUE (convert text into a number) .....	700
VAR (variance of a sample) .....	701
VARA (variance of a sample) .....	701
VARP (variance of entire population) .....	702
VARPA (variance of entire population) .....	703
VLOOKUP (look up column-wise) .....	704
WEEKDAY (weekday) .....	705
WEEKNUM (week number) .....	705
WEIBULL (Weibull distribution) .....	706
WORKDAY (date after x workdays) .....	707
XIRR (internal rate of return) .....	708
XNPV (net present value) .....	709
XOR (logical XOR function) .....	709
YEAR (year of a date) .....	710
ZTEST (z-test) .....	711

## **Keyboard shortcuts 713**

Keyboard shortcuts for editing spreadsheets .....	713
Keyboard shortcuts for menu commands .....	714

## **Index 717**



---

# Welcome!

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, Linux, and Android**
- More than **330 built-in arithmetic functions**
- Integrated **charting module** that lets you present numbers vividly in charts
- Makes creating attractive worksheets easy through **numerous formatting options**. Long, boring columns of numbers can be turned into attractive tables with the **AutoFormat** command. With **cell styles** and **character styles**, you apply frequently needed formatting with a key press.
- The full range of PlanMaker functions is available through a **well-designed, ergonomic user interface** that includes user-configurable toolbars and keyboard mappings, as well as context menus for commonly used commands (accessible with the right mouse button).
- ...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 versions

PlanMaker is also available for Android devices. There are two different versions:

- **PlanMaker HD for Android**

This version contains practically *all* features of the Windows version. It is designed to be used on *tablets*.

## ■ PlanMaker *Mobile* for Android

This version contains only *parts* of the features of the Windows version. It is designed to be used on *smart phones*.

All instructions in this manual refer to the *HD* version. (The *Mobile* version comes with its own user manual.)

---

# 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](http://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](http://forum.softmaker.com)

## E-mail

Please send your support related e-mails to: [\*\*support@softmaker.com\*\*](mailto:support@softmaker.com)

---

## 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**” (page 25): Describes how to install and start PlanMaker.
- Chapter “**Screen elements**” (page 29): Describes the individual components of PlanMaker’s application window.
- Chapter “**PlanMaker basics**” (page 37): Acquaints you with PlanMaker’s basic functions and explains basic spreadsheet terminology.
- Chapter “**The PlanMaker Tour**” (page 45): Introduces you to the operation of PlanMaker with some practical examples.
- Chapters “**Editing worksheets**” (page 55) 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, 8, 7, Vista, or XP (with Service Pack 2)

### Linux version

- Any x86 Linux (32 or 64 bit)

## **Android-Version**

- Android 4.0 or better
- ARM compatible CPU
- Display size: 7 inch or larger recommended

---

# 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 Linux**
- **Installing on an Android device**

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

---

## Installing under Windows

### Download

If you obtained PlanMaker 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 PlanMaker 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. For example, to start PlanMaker, click successively on **Start > All Programs > SoftMaker Office > PlanMaker**.

*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”, page 375).

---

# Installing under Linux

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

## Starting

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

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

- **textmaker16** launches TextMaker
- **planmaker16** launches PlanMaker
- **presentations16** launches Presentations

To start an application, execute the corresponding script (e.g. in a shell).

*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”, page 375).

---

# Installing on an Android device

The installation procedure on Android devices depends on where you purchased the software:

## 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.

## Purchased in Amazon App Shop (or “Amazon Underground”)

The same applies when you purchase an app in the **Amazon App Shop** on your device: The app will be downloaded and installed automatically right afterwards.

**Note:** In case the installation aborts with an error message saying that apps from “unknown sources” cannot be installed, please read the section “Allowing the installation of apps from unknown sources” below.

## Purchased on our website [www.softmaker.com](http://www.softmaker.com)

If you have purchased SoftMaker Office directly on our website **www.softmaker.com**, proceed as follows to install the software:

1. Immediately after your purchase, you will receive an e-mail containing download links for each of the individual components of SoftMaker Office. Click on each of these links to download the respective installation archives (APK files).
2. If you are downloading these files on your *Android device*, the installation might start automatically as soon as the download is finished – this depends on the device. If the installation does not start automatically, you can always start it manually: Launch any file manager of your choice and open the **Download** folder on your **SD card** in it. There, tap once on each of the downloaded files.

If, on the other hand, you have performed the download on a *different device* (for example, a PC), first copy the downloaded APK files to your Android device, and then tap on each of the files in a file manager.

This will start the installation process of the respective application.

**Note:** In case the installation aborts with an error message saying that apps from “unknown sources” cannot be installed, please read the section “Allowing the installation of apps from unknown sources” below.

## Allowing the installation of apps from unknown sources

If you have purchased the apps via the **Amazon App Shop** or directly from **our website**, you might encounter an error message when trying to install the software:

Most Android devices are configured to allow the installation of applications *only* from within **Google Play Store**. When you try to install an installation archive directly, an error message will appear, saying that apps from “unknown sources” cannot be installed.

In order to be able to install the software, you must first allow the installation of software from “unknown sources”. This can be achieved as follows:

1. Open the **Settings** of your Android device.
2. Tap on **Security**.
3. Activate the option **Unknown Sources**.

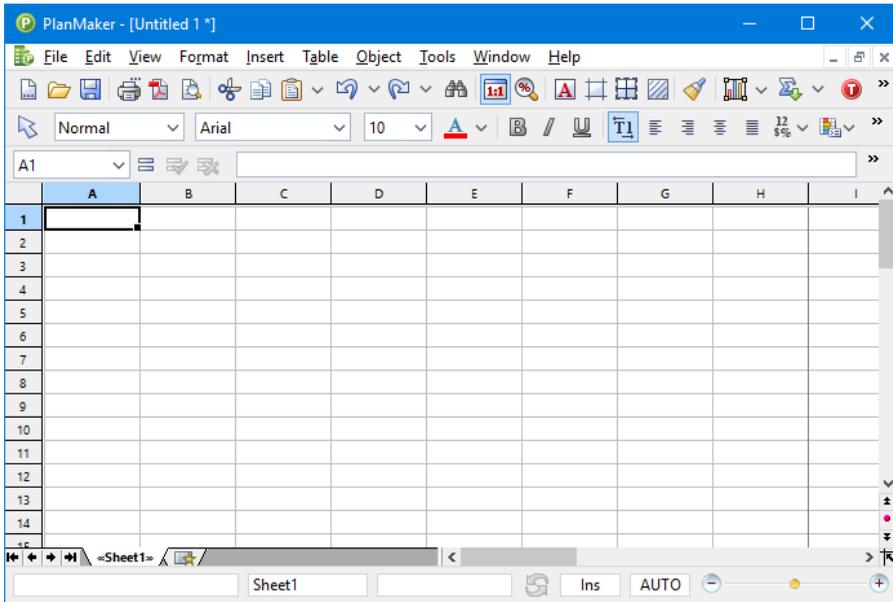
After that, you will be able to install SoftMaker Office as described above.

Hint: When the installation is complete, you should consider turning this option off again for security reasons.

---

# 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*.



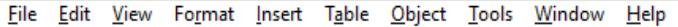
The title bar indicates the name of the application and the name of the current document.

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.



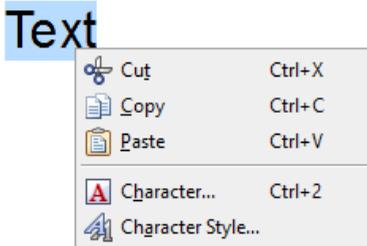
File Edit View Format Insert Table Object Tools Window Help

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.



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 change the default toolbars at will and create your own toolbars. For more information, see the section “Customizing toolbars”, page 404.

---

## 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”, page 58.

The Edit toolbar icons have the following functions:

Icon	Function
	Invokes the <b>Insert &gt; Function</b> command
	Accepts the user input in the input field (identical to pressing the Enter key  )
	Cancel the user input in the input field (identical to pressing the  <code>Esc</code> key)

For more information on entering formulas, see section “Entering formulas”, page 427.

---

## Document window

The *document window*, used for editing documents, occupies the largest part of the screen.

Every document that you create or open is displayed in its own document window. This feature provides you with the capability to edit several documents at the same time and move data back and forth between them.

A document window consists of the following components:

## Document

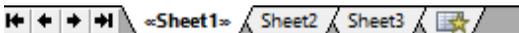
The document itself takes up the largest area of the document window. This is the work area where you enter data, carry out calculations, etc.

Detailed information on editing the document and entering data can be found throughout this manual; in particular, in the chapter “Editing worksheets”, page 55.

## 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”, page 82).

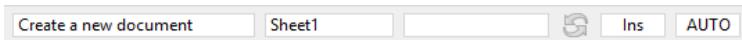


In the illustration above, the document consists of three worksheets, with “Sheet1” as the active worksheet.

---

## Status bar

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



When you move the mouse pointer over a toolbar icon or menu command, a short explanation of its function is displayed in the status bar.

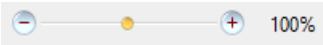
Apart from that, the following information is displayed in the status bar (from left to right):

**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 <b>Calculation in status bar</b> option in the <b>Tools &gt; Options</b> dialog).
	<p>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.</p> <p>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).</p>
Ins	<p>Shows whether Insert Mode (Ins) or Overstrike Mode (Ovr) is active.</p> <p><b>Ins:</b> Insert mode is active – newly entered text will be inserted into existing text.</p> <p><b>Ovr:</b> Overwrite mode is active – newly entered text will be written over existing text.</p> <p>The default setting is Insert Mode. You switch between these modes by pressing the  key.</p>
AUTO	<p>Indicates the current input mode:</p> <p><b>AUTO:</b> Normal input mode – numbers are automatically recognized as numbers, and formulas as formulas. This is the standard setting.</p> <p><b>TEXT:</b> Text input mode – everything you enter is interpreted as <i>text</i>, including formulas and numbers.</p> <p>To switch between these two modes, either click on the text “AUTO” in the status bar or press the key combination   .</p> <p><b>Note:</b> If you switch to TEXT input mode, a single quotation mark (') is automatically prepended to all numbers and formulas that you enter, converting them into text – which can <i>not</i> 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.)</p>

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”, page 403.)



---

# PlanMaker basics

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

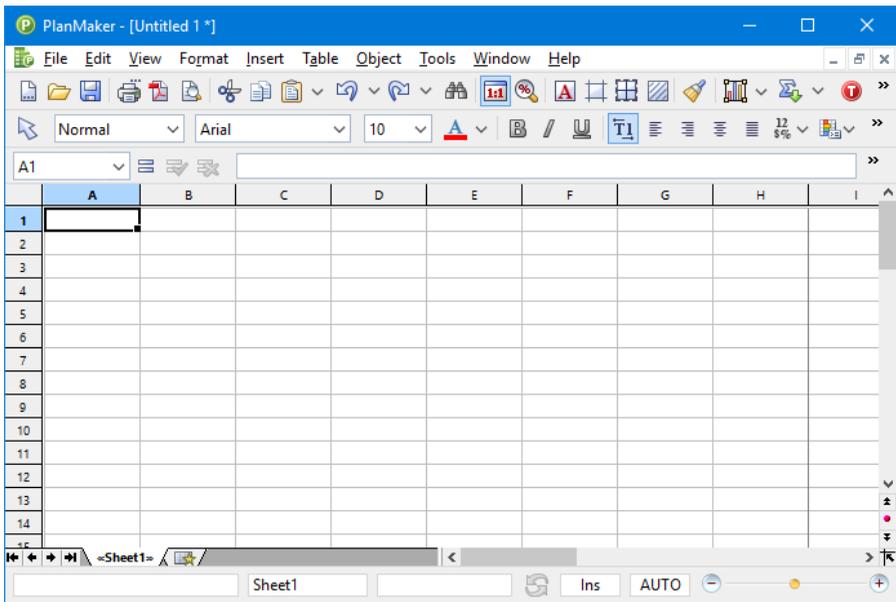
Topics covered in this chapter:

- **The structure of a spreadsheet**
- **Moving around in a worksheet**
- **Entering data and Deleting data**
- **Undoing changes**
- **Starting 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*.

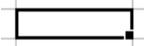
The cell address is very important because calculations often refer to other cells: If, for example, you want to put twice the value of cell A1 in cell A2, you would enter in cell A2:  $=A1*2$ .

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. A list of available keystroke commands can be found in section “Keyboard shortcuts for editing spreadsheets”, page 713.

---

## 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  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 .
- To cancel the input, click the  button (identical to pressing .

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

For detailed information on this topic, see section “Entering data in cells”, page 58.

---

## 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** command. For information on how to select cells, see section “Selecting cells and cell contents”, page 62.

More detailed information on this topic can be found in the section “Deleting cells and cell contents”, page 65.

---

## Undoing changes

The **Edit > Undo** 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 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”, page 61.

---

## Starting a new document

To begin a new document, invoke the menu command **File > New** or press the key combination **Ctrl** **N**.

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.

**New window:** If the **New window** checkbox in this dialog is turned on, the new document will appear in a new document window. Otherwise, the document already in the active window will be closed and the new document will be opened in its stead.

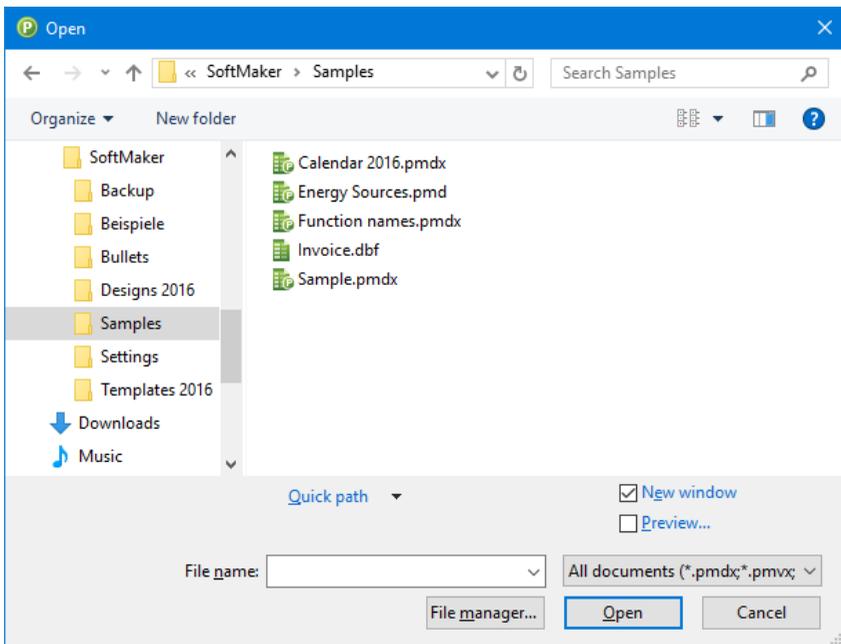
For detailed information on using document templates, see section “Document templates”, page 172.

---

## Opening a document

To open an existing document, use the **File > Open** command, or press the keyboard shortcut for this 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. Then click the **Open** button.

**New window:** In order to open the document in a new window, check the **New window** checkbox. Otherwise, the current document will be closed and the new file will be opened in the same window.

## 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 **Files of type** list. 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", page 353.

## 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.

## 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", page 313.

## 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", page 316.

## 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** command or use the keyboard shortcut for this command: **Ctrl P**.

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”, page 333.

---

## Saving a document

To save a document, choose **File > Save**, or use the **Ctrl S** keystroke. 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 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 **File > Save as** 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”, page 353.

### Saving all open documents

If you have several document windows open at the same time, you can use the 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** 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

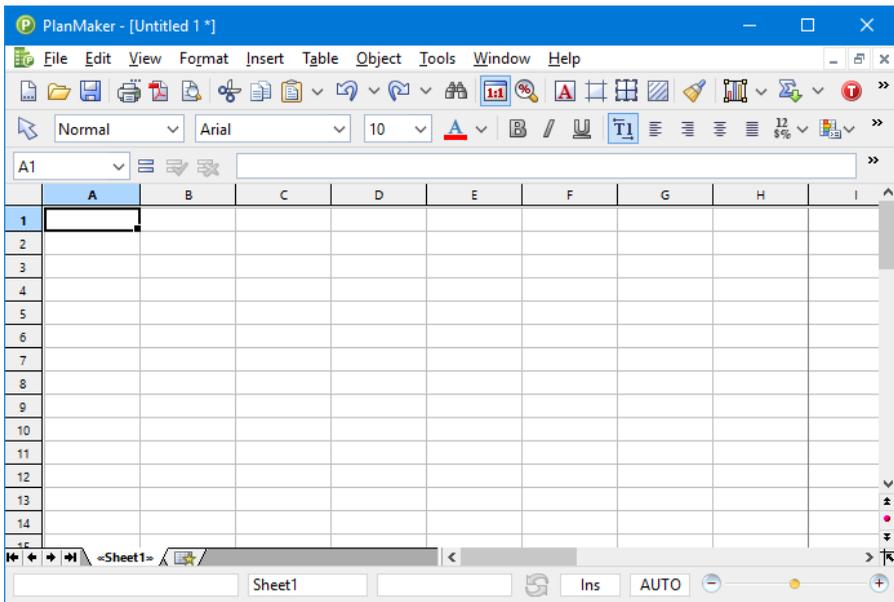
times. The calculator asks for the values one by one, and then shows the total value. This is not much of an improvement over repeated individual calculations...

---

## 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):



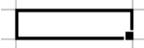
Most of the application window is taken up by your new worksheet. On the top, it is bordered by a row of alphabetic characters, on the left by a column of numbers.

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.

Press the  and  keys to move the cell frame from one cell to another. 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 **↵**, 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 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:

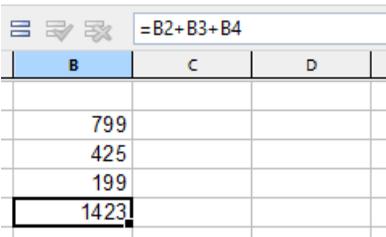
Go to cell B5 and type an = (equal sign). The equal sign shows PlanMaker that you would like to begin entering a formula.

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

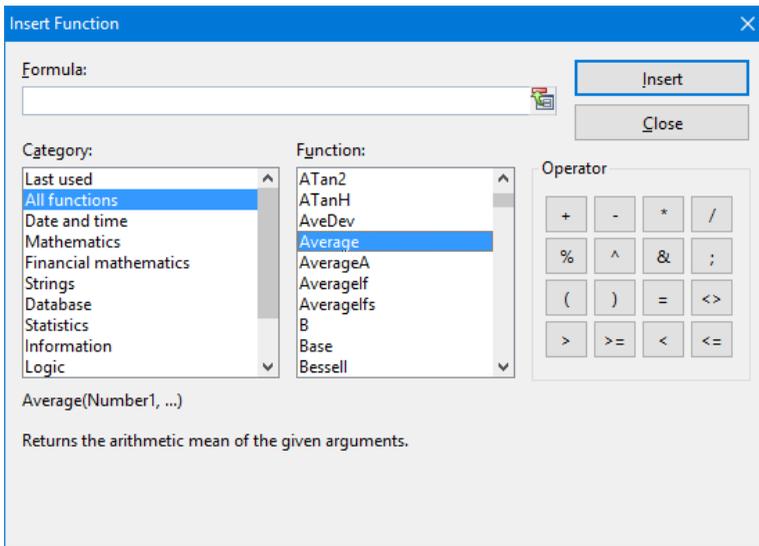
PlanMaker has over 330 built-in arithmetic functions, and one of them is SUM. The SUM function calculates the sum of the values that your formula references. The expression in parentheses after the function name tells PlanMaker where to start and stop totaling.

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** 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”, page 441.

---

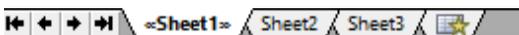
## Going three-dimensional

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 **Table > Worksheet > Insert** 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”, page 82.

---

## 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.

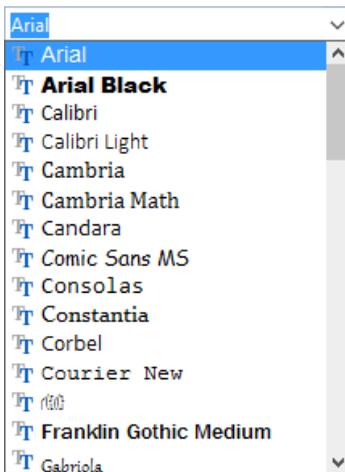
Click on cell B1 to make it the active cell. Then, for example, type the following text:

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” (page 62).

When you have selected the cells to be changed, invoke the **Format > Cell** 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” (beginning on page 131).

---

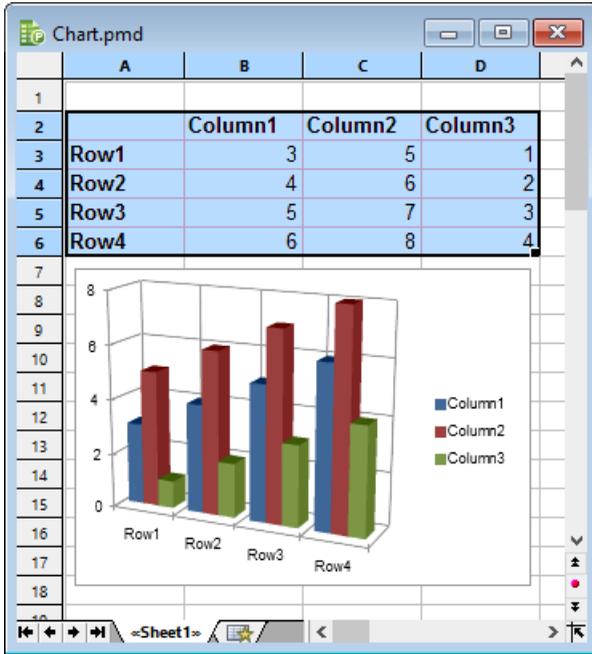
## Charts

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 **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”, page 251.

---

## 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** command. The **Edit > Redo** command is the counterpart to this, and reverses the Undo command.

## ■ Repeating commands

The **Edit > Repeat** 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 command **Edit > Delete** to delete just the contents of cells, or **Table > Delete cells** to remove cells completely.

## ■ Inserting new cells

The **Table > Insert cells** 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** 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** 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 **Table > Names** 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 **Table > Sort** sorts ranges of cells according to one or more criteria.

## ■ Transposing cells

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

## ■ Distributing text into multiple columns

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

## ■ Filtering cells by their contents

The **Table > Filter** 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** command to update the table manually.

## ■ Inserting comments

With the **Insert > Comment** 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** 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 pre-defined result from the calculation.

## ■ Scenarios

The **Tools > Scenarios** 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” analyses.

## ■ Consolidating data

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

## ■ Freezing rows and columns

With the **View > Freeze** 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** 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  key instead of . 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 ).
- To cancel the input, click the  button (identical to pressing ).

To modify the contents of a cell, navigate to the cell and press the function key , 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** command. See section “Number format”, page 135.

## Notes on entering dates

- Dates can be entered in various formats; for example, 09/25/16 or 9/25/2016 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 also be entered in various formats; for example, 09:30:00 PM, 21:30, 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 9/25/16 6:00, PlanMaker knows that you mean the 25th of September 2016 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", page 135.

## 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** 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", page 425.

- For descriptions of all arithmetic functions, see section “Functions from A to Z”, page 441.

## 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    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  key.

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

---

## Undoing changes

With the 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 **Edit > Undo** 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.

By the way, you can also invoke this frequently needed command with the key combination **Ctrl Z**.

### Redoing undone actions

There is also an opposite to the **Undo** command, the 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.

There is also a keyboard shortcut for this command: the key combination **Ctrl Y**.

---

## Repeating commands

The **Edit > Repeat** command (keyboard shortcut: **Ctrl Shift Y**) 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** command, you can navigate to other cells and choose **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.

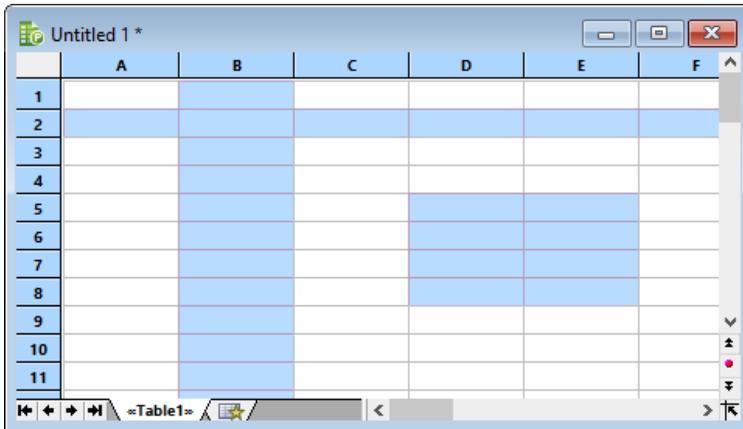
There are many other commands that can be repeated as well.

---

## 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** command, *all* of these cells will be deleted.



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

Depending on whether you are using PlanMaker under Windows/Linux or on an Android device, 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/Linux version**
- **Selecting in the Android version**

---

## Selecting in the Windows/Linux version

In the Windows and the 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** 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).

## ■ Canceling a selection

To cancel any selection, just click on an arbitrary cell.

## 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 section “Keyboard shortcuts for editing spreadsheets”, page 713.

## ■ 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   and  .

## ■ 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  key (in order to edit the cell). Then, use the arrow keys together with the Shift key  to select text in the usual manner.

## ■ Canceling a selection

Press any navigation key to cancel an existing selection.

---

## Selecting in the Android version

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

### ■ Selecting cell ranges

On Android devices, select cell ranges 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:

*Lorem ipsum dolor*



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.

---

## 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** command, only the contents of the selected cells are removed.

### ■ Deleting whole cells

If you use the **Table > Delete cells** 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 command **Table > 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 command **Table > 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”, page 62.)

2. Invoke the **Edit > Delete** 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 **Edit > Delete Special** command 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”, page 111).

- **Conditional Formatting**

Remove only the conditional formatting (see section “Conditional formatting”, page 174).

## ■ Input Validation

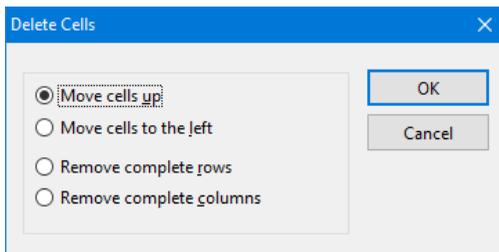
Remove only the input validation (see section “Input validation”, page 183).

---

## Deleting whole cells

The **Table > Delete cells** 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 command **Table > 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 command **Table > 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

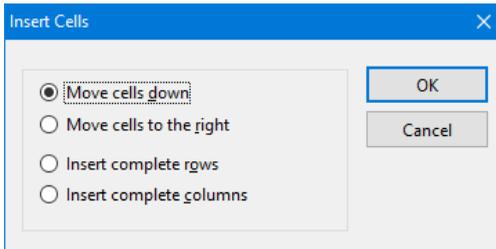
Normally, you use this command with a range of *entire* rows selected. However, you can also select a cell range that doesn't consist of entire rows. In that case, PlanMaker will first ask you if you want it to delete matching rows *entirely*:

- 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 **Table > Insert Cells** 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.

---

# 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
<b>Cut</b>	The <b>Edit &gt; Cut</b> command removes the selection and places it on the clipboard. The keyboard shortcut for this command is <b>Ctrl X</b> .
<b>Copy</b>	The <b>Edit &gt; Copy</b> command copies the selection to the clipboard. Keyboard shortcut: <b>Ctrl C</b> .
<b>Paste</b>	The <b>Edit &gt; Paste</b> command inserts the contents of the clipboard to the active cell. You can paste the content of the clipboard repeatedly. Keyboard shortcut: <b>Ctrl V</b> .

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 pasting them with **Edit > Paste**, 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 supported by the Windows and the Linux version only.

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 formattings.

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”, page 430).

---

## Pasting cells selectively

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

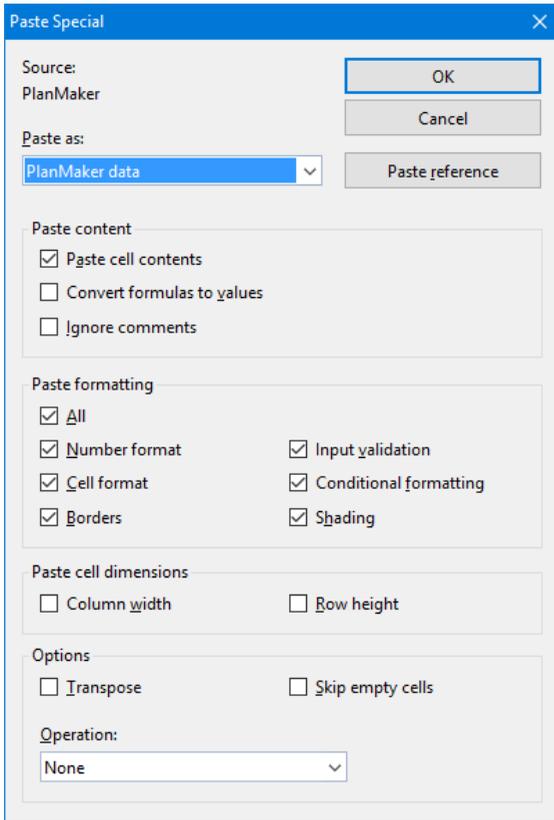
In detail:

When you place information in the clipboard using **Edit > Cut** or **Edit > Copy**, 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 an **Edit > Paste** command. However, if you need to, you can select the format in which the content is to be inserted yourself. You use the **Edit > Paste Special** command 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** 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 **Edit > Paste Special** 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”, page 431 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.

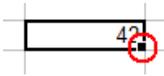
There are two ways to use this function:

### 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.

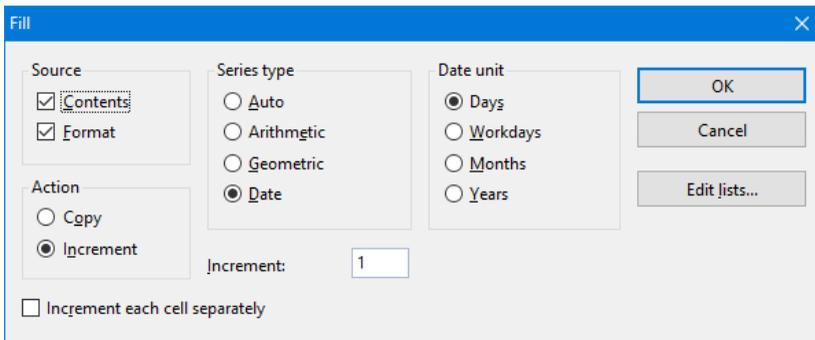
To control the fill function precisely, press and hold the Alt key while dragging. A dialog box (described below) will appear, providing full control over how the cells are filled.

## 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 **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:

### ■ 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 1/1/2016, the increment is set to 1, and the **Date unit** is set to “Months”, the new cells will be filled with 2/1/2016, 3/1/2016, 4/1/2016, 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** command that allows you to create such lists. See section “Customizing AutoFill lists”, page 418.

## **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** 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** 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”, page 418.

---

# 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”, page 86).

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 **Table > Worksheet > Insert** 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 **Table > Worksheet** 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

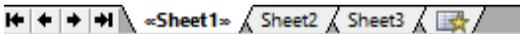
To create a new worksheet, use the **Table > Worksheet** command. Select **Insert** from the sub-menu and provide a name for the new worksheet.

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.

### ■ 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 commands **Table > Row** and **Table > 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 **Table > Worksheet** 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** 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”, page 190.
- 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** 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 **Table > Properties** command in the main menu. It allows you to alter common properties of a worksheet. See section “Worksheet properties”, page 401.

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 *workbook protection* is activated for the current document, users cannot make any changes to the worksheet register, and the **Table > Worksheet** command is disabled. For additional information, see section “Workbook protection”, page 348.

---

## 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, prepend the name of the desired worksheet to 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 **Table > Names** 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 choose the **Table > Names** command, a sub-menu opens. It contains all commands needed to work with named cell ranges.

**Note:** The **Table > Names** command will not be available if at least one worksheet in your workbook has *worksheet protection* turned on (see also section “Sheet protection”, page 345).

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

- **Assigning names to cell ranges**
- **Deleting and renaming names**
- **Defining names automatically from the selection**
- **Creating a list of all named ranges**
- **Putting named ranges to use**
- **Applying names in existing formulas**

---

## Assigning names to cell ranges

To assign a name to a range of cells:

1. Select the cell range that you want to name.
2. Choose **Table > 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).

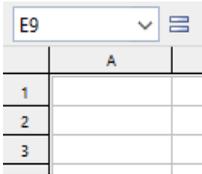
**Note:** Names may only consist of alphanumeric characters, underscores and periods. The first character must be a letter or an underscore.

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 drop-down list that normally displays the current cell address.



Use this drop-down 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 drop-down 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 **Table > 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 **Table > 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 **Table > Names > Import** 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 **Table > Names > Insert List**.

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

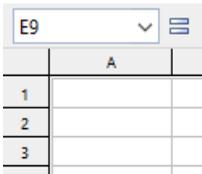
---

## Putting named ranges to use

After creating named ranges with the **Table > Names** 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 drop-down list that displays the address of the currently selected cell.



When you open this drop-down 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** 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 **Table > Names** 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 **Table > 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 **Table > Names > Apply** 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:**

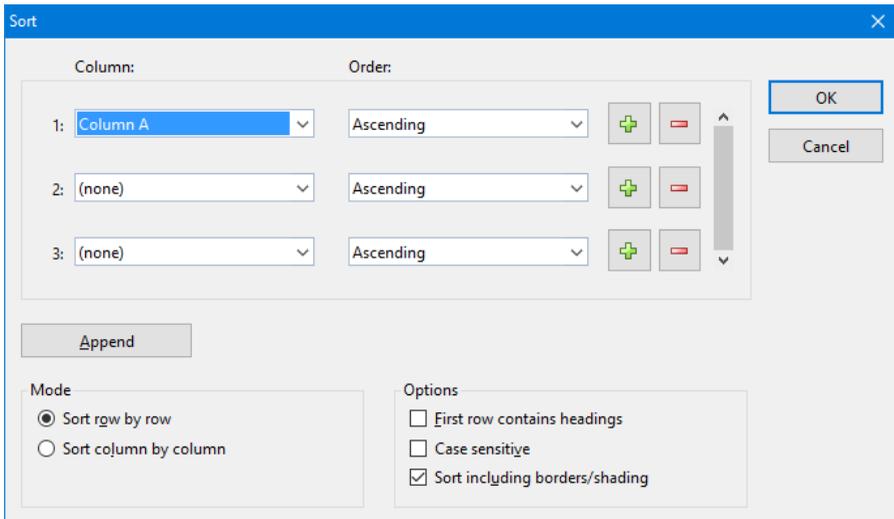
Assume the range from A1 to A10 (more precisely:  $\$A\$1:\$A\$10$ ) was named “January”. If you apply the **Apply** function to the formula =SUM( $\$A\$1:\$A\$10$ ), this formula will always be converted to =SUM(January). But if you apply it to the formula =SUM(A1:A10), the formula will be converted 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”, page 430.

---

## Sorting cells

The **Table > Sort** allows you to sort a cell range.



Proceed as follows:

1. Select the cell range to be sorted.
2. Choose **Table > 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 **Table > Transpose** 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 **Table > Text to Columns** 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 **Table > 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 three commands for filtering data available in the sub-menu of the **Table > Filter** command:

- 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 Special Filter inactive.
- The **AutoFilter** command offers an alternative way 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 drop-down menu where you can easily choose between the values contained in the corresponding column – and other pre-defined filter conditions.

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

---

## Special filter

Use the **Table > Filter > Special Filter** command to filter data in a range of cells according to one or more selected conditions. PlanMaker will hide all rows that do not match the filter conditions.

Proceed as follows:

1. Select the desired range of cells.

2. Invoke the **Table > 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 drop-down 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 Filters** 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. Addi-

tionally, it will display these headers in the **Special Filter** dialog instead of just “Column A”, “Column B”, etc.

### ■ **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:

Selecting **Filter at current position**, the original data will be filtered. Rows/columns that do not satisfy the filter condition will be hidden.

If you choose **Copy to position** instead, PlanMaker creates a copy of the original cells at the indicated cell address. This copy contains only the filtered data.

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. Caution: If the copy of the data is larger than the cell range entered, cells will be cut off.

## **Making all filtered rows visible again**

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

---

## AutoFilter

As an alternative to the **Special Filter** command (described in the previous section), the data in a cell range can also be filtered using the **Table > Filter > AutoFilter** command.

When you select a cell range and invoke this command, from now on, an arrow will appear on top of each column in this range. Clicking on one of these arrows opens a drop-down menu where you can easily choose between the values contained in the corresponding column – and other pre-defined conditions that allow you to apply a filter to the cell range.

Proceed as follows:

1. Select the desired range of cells. **Important:** The first row of this range should contain headings for the data below.
2. Invoke the **Table > 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 drop-down 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 (see below).
- **Sort descending:** Sorts the filter results (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).

- **More filters:** Opens a submenu with additional filters (see below).
- **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.

## 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 **Table > Filter > AutoFilter** 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”. 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.

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.

## Sorting the filter results

The first two commands in the AutoFilter menu allow you to sort the table rows returned by the filter:

- **Sort ascending:** Sorts the table rows returned by the filter, in ascending order.
- **Sort descending:** Ditto, in descending order.

**Note 1:** The table rows will not be just displayed in a sorted order, they will actually (physically) be relocated.

**Note 2:** This command sorts the *entire* table rows, not only the cells inside the cell range the AutoFilter is applied to.

## The menu entry “More filters”

The menu entry **More Filters** in the AutoFilter menu opens a submenu that offers the following additional filter conditions:

- **Custom filter:** Open a dialog where the user can define more specific filter conditions (similar to the **Special Filter** command).
- **Top 10:** Display only rows where the value in this column is amongst e.g. the 10 highest (or lowest) values.
- **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).

## Making all filtered rows visible again

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

## Deactivating the AutoFilter

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

---

# 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** command is activated, cells containing a calculation will display the formula rather than the result.

### ■ **Syntax highlighting**

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

### ■ **Watch window for cell contents**

The **View > Watch Window** 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** 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** 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 **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	<p><b>Formula returns an error value.</b> The calculation in this cell returns an error value (caused, for example, by a division by zero).</p> <p><b>Hint:</b> 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”, page 435.</p>
Cyan	<p><b>Syntax error in formula.</b> The calculation in this cell has a syntax error (caused, for example, by a missing parenthesis or missing arguments).</p> <p><b>Hint:</b> If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. <i>If you don't correct the formula, it will be replaced by the text string #NULL! when the document is saved!</i></p>
Light gray	<p><b>Function not exportable.</b> The calculation in this cell uses an arithmetic function that cannot be saved in the currently chosen file format.</p>

**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

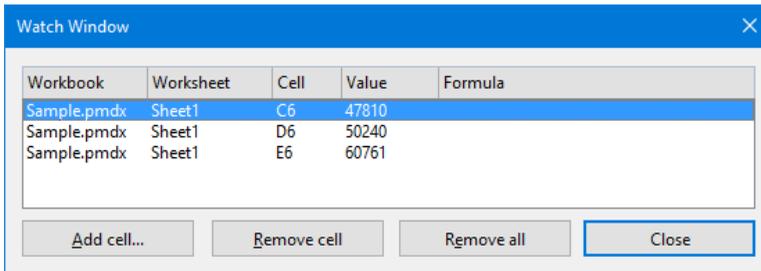
**Function unknown.** The calculation in this cell uses an arithmetic function unknown to PlanMaker. This error might occur when importing documents created with other applications (e.g. Microsoft Excel).

**Hint:** Replace the function with a corresponding PlanMaker function. For a list of all PlanMaker functions, see section “Functions from A to Z”, page 441, 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 **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** 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** 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 command **Tools > Formula Auditing > Show Formula Audition Toolbar**.

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

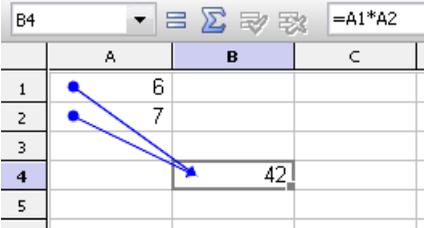
- Trace predecessors
- Remove traces to predecessors
- Trace successors
- Remove traces to successors
- Remove all traces
- Trace to error
  
- Mark invalid data
- Remove invalid data marks
  
- Go to previous error
- Go to next error
- Go to previous invalid cell
- Go to next invalid cell

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** 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** 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** 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”, page 435.)

To find and analyze such errors, use the following commands in the submenu of the **Tools > Formula Auditing** 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** 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** 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** 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” (page 398) 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 every time a workbook is updated.

(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.)

By default, such cell references are updated automatically only when you open the document that contains them. Apart from that, you can update them manually anytime.

For detailed information on working with external references, see the section “External cell references”, beginning on page 431.

---

## 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 **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 **Insert > Comment**, and apply your changes.

*Hint:* Alternatively, double-click the yellow triangle in the cell or press the keyboard shortcut   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.

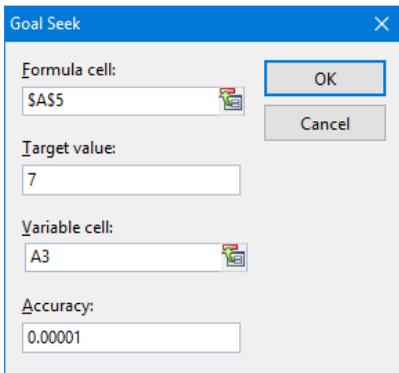
---

# 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 pre-defined 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** command, a dialog box will open with the following options:

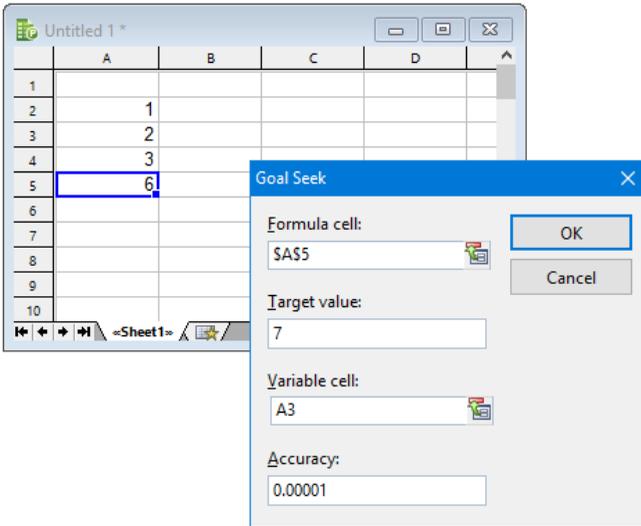
- In **Formula cell**, enter the address of the cell that contains the formula. (Generally this is pre-filled by PlanMaker.)
- In **Target value**, enter the desired result of the calculation.
- In **Variable cell**, enter the cell address of the cell in which PlanMaker will test different values until 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 **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** 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” analyses.

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 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” (page 345).

---

## Viewing scenarios

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

1. Invoke the 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** 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” (page 115).

■ **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” (page 117).

■ **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” (page 118).

---

## Merging scenarios

The **Tools > Scenarios** 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 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** 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 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 **Table > Data Consolidation** 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 **Table > Data Consolidation** 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” (page 119), the **Table > Data Consolidation** 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 **Table > Data Consolidation** 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”, page 122.)
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”, page 124.

## Notes on specifying the source ranges

In the **Table > Data Consolidation** dialog, 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”, page 431).

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” (page 119), the **Table > Data Consolidation** 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 **Table > Data Consolidation** 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", page 124.

---

## Modifying and updating consolidations

Whenever you perform a consolidation with the **Table > Data Consolidation** 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 **Table > Data Consolidation** 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 **Table > Data Consolidation** 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.

---

## Freezing rows and columns

Use the **View > Freeze** 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** 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** 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** command.

- To freeze *both* rows and columns, click cell B2 and select the **View > Freeze** command.

To deactivate the freezing function, select the **View > Freeze** command again.

---

## 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 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 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  and , 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” (starting on page 412). 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’s yet another method for entering a special character: by typing in its hexadecimal character code (Unicode) and then pressing the key combination

.

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.



---

# 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 **Table > Row** (or **Table > 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** command to select the appropriate number format.

## ■ Borders and lines

The **Format > Borders** command lets you add borders and lines to cells.

## ■ Shading

The **Format > Shading** command lets you apply a variety of colors, shades, and patterns to the background of cells.

## ■ Alignment

The **Format > Cell** command lets you change the cell format, including the alignment (left-aligned, centered, right-aligned, etc.) of the cell contents.

## ■ Protection

**Format > Cell** can also be used to protect cells against changes (see also section “Sheet protection”, page 345).

## ■ Character format

The **Format > Character** 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** 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** command allows you to format a range of cells by applying pre-defined 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** 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 **File > Page Setup** 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 **Table > Column** and **Table > 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 **Table > Column > Optimum Width** 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 command **Table > 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”, page 345.

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			
>			
15			
16			

To make row 14 visible again, click this triangle.

## Using the **Table > Row** command to hide rows

Alternatively, rows can be hidden with the **Table > Row** command:

1. Select the row(s) you want to hide.
2. Choose **Table > Row > Hide**.

The selected rows will be hidden.

To make them reappear:

1. Select any cell range that includes the hidden rows.
2. Choose **Table > Row > Show**.

## Hiding columns

Hiding and unhiding columns works just the same way, except that you use the *column* headers or the commands **Table > Column > Hide** and **Table > Column > Show**, accordingly.

---

# Number format

To change the *number format* of cells, choose **Format > Cell** (keyboard shortcut: **Ctrl** **1**), 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).

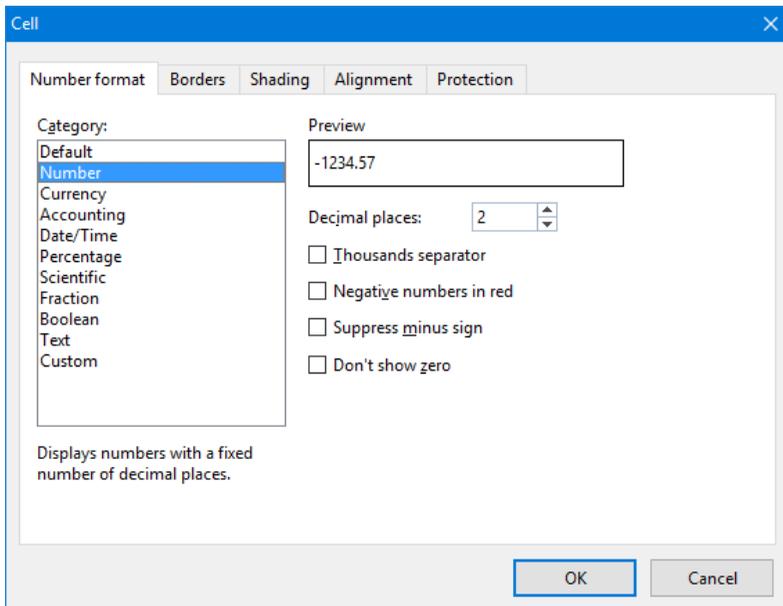
**Note:** When you apply a number format that has a fixed number of decimal places, the number will only be *displayed* as a rounded value, but still keeps *all* of its decimal places. To actually round numbers, use arithmetic functions like the ROUND function.

To change the number format of cells:

1. Select the cells whose number format you want to change.

To format just a *single cell*, navigate to it (without selecting).

2. Choose **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” below.

## ■ **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** 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** 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** 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” below.

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** 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** 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:

<b>Code</b>	<b>Result</b>
#	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).

**Important:** If *any* of the above codes is placed to the *left* of the decimal point, *all* 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!**

<b>Code</b>	<b>Result</b>
<b>D</b>	Day (1-31)
<b>DD</b>	Day, with 2 digits (01-31)
<b>DDD</b>	Name of day, abbreviated ("Su" to "Mo")
<b>DDDD</b>	Name of day ("Sunday" to "Monday")
<b>M</b>	Month (1-12)
<b>MM</b>	Month, with 2 digits (01-12)
<b>MMM</b>	Name of month, abbreviated ("Jan" to "Dec")
<b>MMMM</b>	Name of month ("January" to "December")
<b>MMMMM</b>	Name of month, first letter only ("J" for January to "D" for December)
<b>YY</b>	Year, with 2 digits (e.g., 16)
<b>YYYY</b>	Year, with 4 digits (e.g., 2016)
<b>Q</b>	Quarter (1-4)

<b>QQ</b>	The word “quarter” in the language set in the system’s regional settings
<b>h</b>	Hour (0-23)
<b>hh</b>	Hour, with 2 digits (00-23)
<b>m</b>	Minute (0-59)
<b>mm</b>	Minute, with 2 digits (00-59)
<b>s</b>	Second (0-59)
<b>ss</b>	Second, with 2 digits (00-59)
<b>0</b>	Tenths of a second (e.g., hh:mm:ss.0)
<b>00</b>	Hundredths of a second (e.g., hh:mm:ss.00)
<b>000</b>	Thousandths of a second (e.g., hh:mm:ss.000)
<b>AM/PM</b>	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
<b>am/pm</b>	Same as AM/PM, but with <i>am</i> or <i>pm</i> (lower case)
<b>a/p</b>	Same as AM/PM, but with <i>a</i> or <i>p</i>
<b>[h]</b>	Number of hours in “endless” time format*
<b>[m]</b>	Number of minutes in “endless” time format*
<b>[mm]</b>	Same as [m], but with 2 digits*
<b>[s]</b>	Number of seconds in “endless” time format*
<b>[ss]</b>	Same as [s], but with 2 digits*
<b>[\$-n]</b>	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 colorized; they are displayed in black.

**Hint:** “Conditional formatting” provides a much more convenient and powerful way to perform such tasks. See section “Conditional formatting” (page 174).

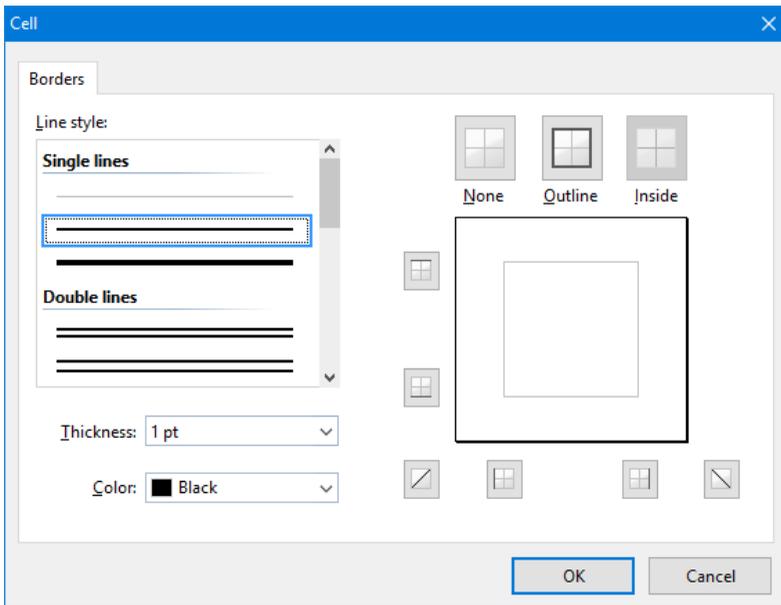
---

## Borders and lines

To add border lines to cells, choose **Format > Cell** and switch to the **Borders** tab.

Alternatively, use the **Format > Borders** 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).

**Note for upgraders:** Please note that in SoftMaker Office 2012 and earlier, this procedure had to be performed exactly *the other way round*.

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 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** dialog 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 pre-defined border styles will open. Click on the desired style.

The border lines are now applied.

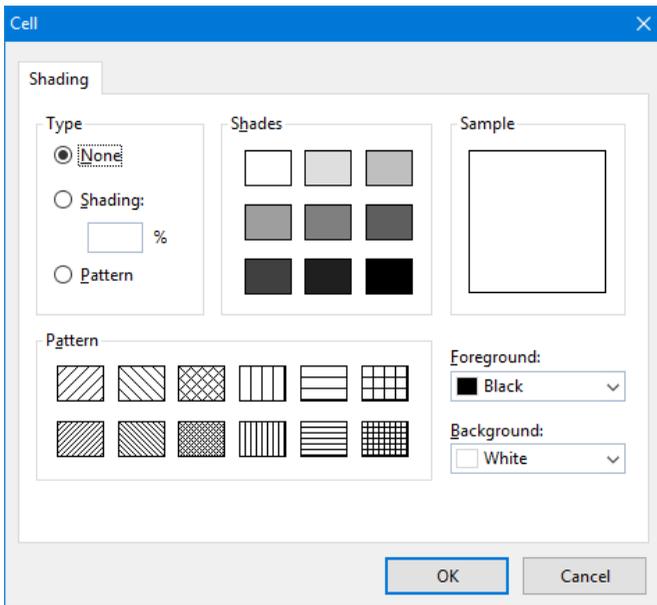
**Tip:** If you want to apply the same border style to other cell ranges thereafter, simply select them and click the icon itself (not the arrow). PlanMaker will apply the last chosen border style once more.

---

## Shading

To apply a shade or fill pattern to cells, choose **Format > Cell** and switch to the **Shading** tab.

Alternatively, use the **Format > Shading** 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 pre-defined colors will open. Click on the desired color.

The shade is now applied.

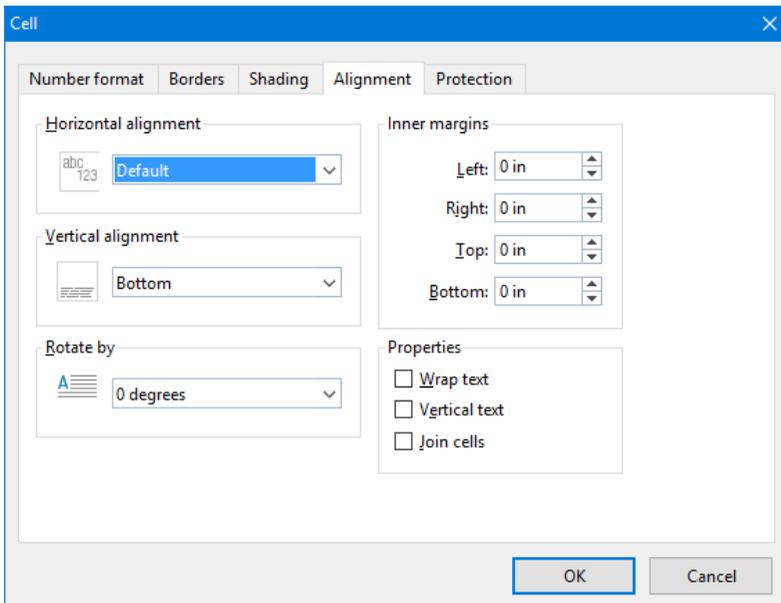
**Tip:** If you want to apply the same shading color to other cell ranges thereafter, simply select them and click the icon itself (not the arrow). PlanMaker will apply the last chosen color once more.

---

## Alignment

To change the alignment of cells, choose **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

**Right:** Right-aligned

**Centered:** Centered

**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.

Tipp: If you choose the default setting **Context sensitive**, PlanMaker determines the correct writing direction automatically.

See also chapter “Working with Arabic text” (page 361).

## 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  .

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).

## Join cells

Lets you join a cell with neighboring cells. Joined cells are treated as if they were a single cell. To join cells, select them and activate this option.

**Note:** When cells are joined, except for the upper left corner cell of the selected range, cell content is automatically deleted.

To disconnect joined cells, select them and turn this option off.

---

# Protection

The **Protection** tab in the **Format > Cell** dialog 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”, page 345.

---

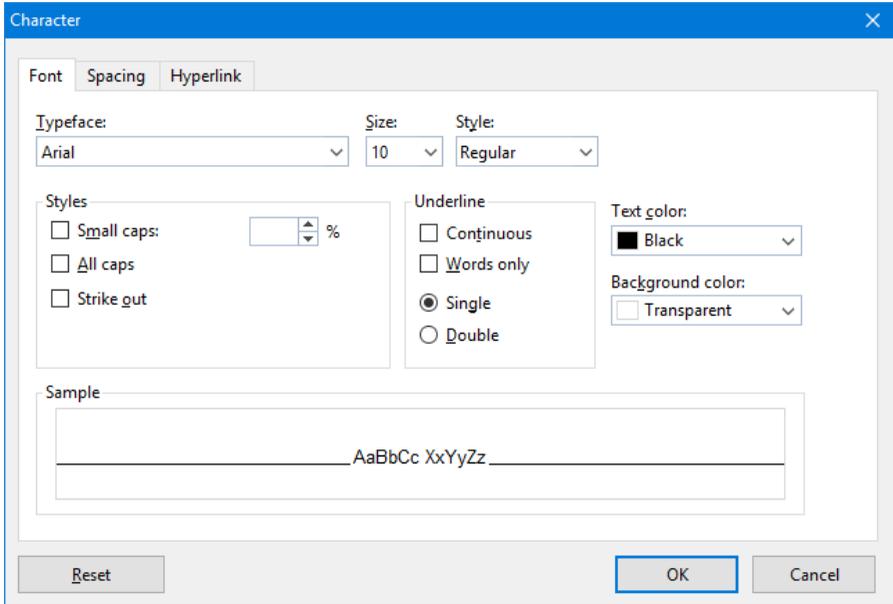
# Character format

Use **Format > Character** (keyboard shortcut: **Ctrl** **2**) 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 **Format > Character** dialog 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”, page 329.

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 command **Format > Character**.
3. Switch to the **Font** tab.

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.

To apply text styles:

1. Select the cells or the text segment to be modified.
2. Invoke the command **Format > Character**.
3. Switch to the **Font** tab.
4. Check a text style, or any combination of text styles, from the dialog.

## 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.

**Tip:** There are also keyboard shortcuts for the application of these text styles: **Ctrl** **B** for bold, **Ctrl** **I** for italic, and **Ctrl** **U** for underline.

---

## 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 command **Format > Character**.
3. Switch to the **Font** tab.

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** 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”, page 393).
- 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 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.

**Tip:** Keyboard shortcuts are available for super- and subscripts as follows:

**[Ctrl]** **[Shift]** **[Num+]** (the plus key located on the numeric pad) for superscript, **[Ctrl]** **[Shift]** **[Num-]** for subscript and **[Ctrl]** **[Shift]** **[Num\*]** to remove a super- or subscript.

---

## 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 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** 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 command **Format > Standard**.

PlanMaker now removes any character formatting that you have applied using either the **Format > Character** command or the Formatting toolbar.

---

## Paragraph format (text frames only)

When you have placed text in a *text frame*, you can modify its paragraph format using the **Format > Paragraph** command.

*Note:* This command is available *only* in text frames. To learn more about text frames, see the section “Text frames”, page 228.

**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 using the **Format > Cell** dialog (**Alignment** tab).

To indent text in a text frame, choose **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 **Format > Paragraph** 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** command (**Alignment** tab).

To change the alignment of text in a text frame, choose **Format > Paragraph** and select an alignment in the **Alignment** drop-down list.

Available alignment types:

- Left
- Right
- Centered

- 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" (page 361).

---

## 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 **Format > Paragraph**, and enter the desired values for the following options:

Option	Function
<b>Before</b>	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.
<b>After</b>	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" above).

---

## Character styles

Use **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, type 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 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 at once.

**Annotation:** PlanMaker also supports *cell styles* (see section “Cell styles”, page 168). The difference between these two features is that character styles store the character format only, whereas cell styles store *both* cell format (number format, alignment, etc.) *and* character format.

Note: Character styles can be applied to single characters within a cell; 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 **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 **Format > Character** dialog (see section “Character format”, page 155) 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 **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  and  is suggested, as these shortcuts are usually available.

---

## Applying character styles

To apply a character style:

1. Select the desired cells. (Or, press  and select partial cell content, if applying to selected characters.)
2. Choose **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 **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 **Format > Character Style**.

2. Select the style you want to modify.
3. Click **Edit**.
4. A dialog box similar to the **Format > Character** dialog (see section “Character format”, page 155) 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 **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 **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 **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 **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, alignment, borders, shades, etc. as well as character format) that you can name, save, and later apply to cells. If you frequently format cells in a certain font and a specific currency number format, simply store these formats in a cell style, and apply it to as many cells as desired.

When you choose a cell style, all the attributes stored in that style are applied to the selected cells at once.

**Annotation:** PlanMaker also supports *character styles* (see section “Character styles”, page 164). The difference between these two features is that character styles store the character format only, whereas cell styles store *both* cell format *and* character format.

Note: Character styles can be applied to single characters within a cell; cell styles can only be applied to entire cells.

See the next pages for detailed information.

---

## Creating cell styles

To create a new cell style:

1. Choose **Format > Cell Style**.
2. Click the **New** button.
3. Enter a name for the new cell style and click **OK**.
4. The cell style has now been created. To modify:

Click the **Character** button to change the character format. A dialog box similar to the **Format > Character** dialog pops up (see section “Character format”, page 155). Make the desired modifications and click **OK**.

Click the **Cell** button to change the cell format. A dialog box similar to the **Format > Cell** dialog pops up (see section “Number format”, page 135). Make the desired modifications and click **OK**.

5. Click **Close**.

The new cell style is now defined and ready to use. To learn how to apply cell styles, see the next section.

## 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, open the **Format > Cell Style** dialog 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  and  is suggested, as these shortcuts are usually available.

---

## Applying cell styles

To apply a cell style:

1. Select the desired cells.
2. Choose **Format > Cell Style**.
3. Click one of the styles listed.
4. Click the **Apply** button.

The cell format and character format of the selected cells/characters will be changed to the format defined in the cell style.

**Hint:** Cell styles can also be applied by selecting them from the drop-down list displayed at the left of the Formatting toolbar.

**And:** If you have assigned a keyboard shortcut to a character style, the style can be applied by pressing the corresponding key combination.

---

## Modifying cell styles

**Note:** When you change the formatings stored in a cell style, *all* cells using the style are changed accordingly.

To modify a cell style:

1. Choose **Format > Cell Style**.
2. Select the style to be modified.

3. Click **Edit**.
4. To modify the cell format, click the **Cell** button. To modify the character format, click the **Character** button.
5. Click **Close**.

## Deleting or renaming cell styles

To delete a cell style, choose **Format > Cell Style**, select a style, and click the **Delete** button. To rename it, click the **Rename** button.

---

## 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.

---

## Creating linked cell styles

If you create new cell styles as described at the beginning of this chapter, they will always be based on the cell style “Normal”. If you later change, for example, the number format of the “Normal” style, the number format of all derived styles changes as well – unless you explicitly chose a different number format there.

**Note:** By default, all cell styles are based on the cell style “Normal”. You can however base them on any other cell style by selecting the base style in **Based on**.

To create a style and base it on another style, proceed as follows:

1. Choose **Format > Cell style**.
2. Click **New**.

3. Enter a name for the new cell style.
4. Under **Based on**, choose the cell style on which the new style should be based.
5. You can now apply the desired formatting to the cell style.

---

## 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** 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 **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 **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 **File > Open**.
2. In the **Files of type** list, 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 **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** 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.

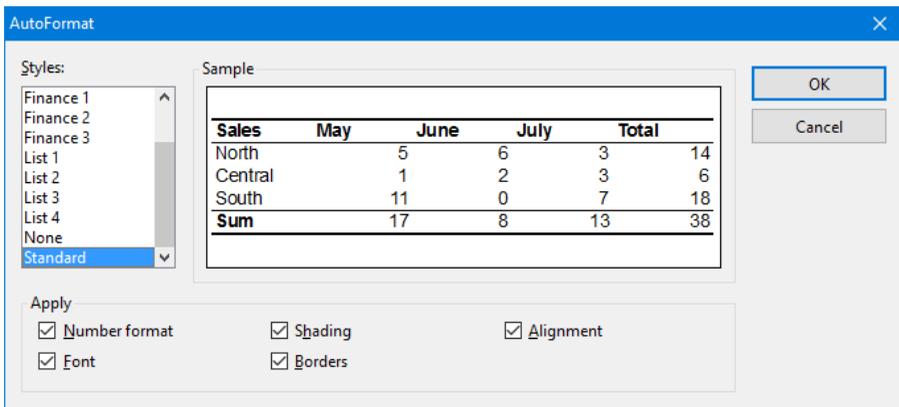
**Hint:** To use a different document template as your default template, choose **File > New**, select a template, and click the **Set default** button. From now on, this tem-

plate will be selected by default when creating a new document using the **File > New** command.

---

## AutoFormat

The **Format > AutoFormat** command lets you apply a predefined scheme of formattings to an entire cell range.



For this purpose, select the desired cell range and choose **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 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 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” below).

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

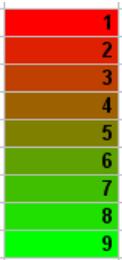
In the dialog for creating new conditional formatting rules (see previous section), you can choose between the following types of rules:

### 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**

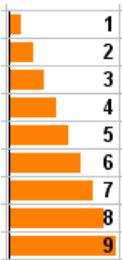
As described in the example above.

■ **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 one 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** 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 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** 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 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 command **Format > Conditional Formatting > Delete Rules in Selected Cells**.

(Alternatively you can achieve exactly the same by invoking the 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** 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 **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** command contains the following options:

## Settings tab

### ■ Allow:

With these options you can specify which types of values are allowed:

<b>Option</b>	<b>Explanation</b>
<b>All values</b>	Allow all types of values (effectively deactivate the input validation)
<b>Integer Numbers</b>	Allow only integer numbers
<b>Decimal Numbers</b>	Allow only decimal numbers
<b>List entries</b>	Allow only values from a predefined list of permissible values.  When you use this option, enter a comma-separated list of the allowed values in the <b>Source</b> field – for example, dog,cat,mouse or 1,2,3,4,5,6.

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.

Additional settings are displayed when the **Options** button is clicked.

<b>Date</b>	Allow only date values
<b>Time</b>	Allow only time values
<b>Text length</b>	Allow only entries whose length falls within the bounds specified here.
<b>User defined</b>	Allow only entries which satisfy the formula given in the <b>Formula</b> 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  $\text{SUM}(\$A\$1:\$C\$3) > 42$ , 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** command as follows:

1. Click the cell whose format you want to transfer to other cells.
2. Invoke the 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 **Format > Transfer Formatting** again 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 **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** command.

See the following pages for detailed information.

---

## Page format

Choose **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.

---

## Additional page setup options

Choose **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** 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** command. To remove the print range from a worksheet, use the **File > Print Range > Remove Print Range** 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.

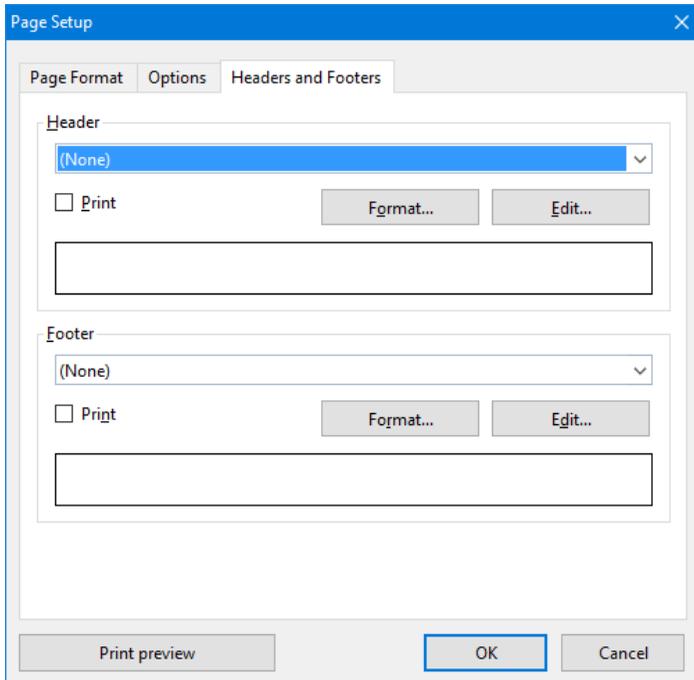
Headers/footers are repeated on the top/bottom of *each* printed page of a worksheet. They are useful for containing fields such as page number, file name, print date, etc.

**Note:** Each worksheet of a document can have its own headers/footers.

To modify, for example, the header of the current worksheet:

1. Choose **File > Page Setup** and switch to the **Headers and Footers** tab.

Or, use the **Insert > Header and Footer** command, which is doing exactly the same.



2. To apply one of the pre-defined headers, choose it from the drop-down 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.

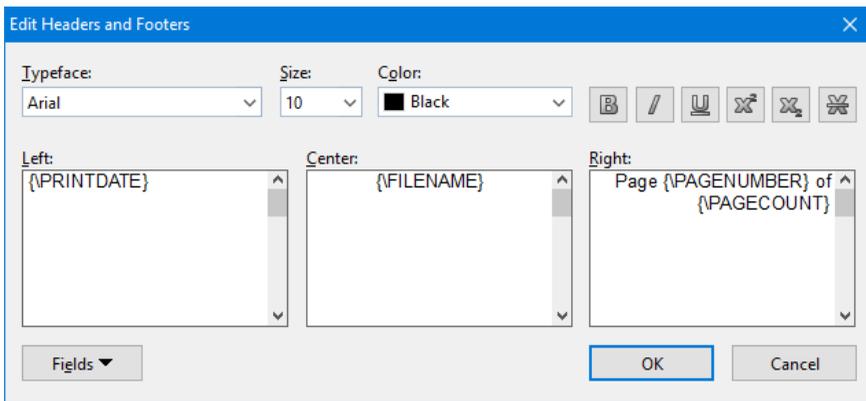
The header is changed accordingly.

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** 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:

<b>Field name</b>	<b>Result</b>
<b>Document Name</b>	File name of the document (e.g. “My Table.pmdx”)
<b>Document Name and Path</b>	File name of the document (e.g. “C:\Tables\My Table.pmdx”)
<b>Worksheet Name</b>	Name of the current worksheet
<b>Page Number</b>	Page number
<b>Number of Pages</b>	Total number of pages
<b>Print Date</b>	Current date (date of printing)
<b>Print Time</b>	Current time (time of printing)
<b>Date of Last Change</b>	Date the document was last changed (and saved)
<b>Creation Date</b>	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** 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” (page 150).

■ **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” (page 147).

■ **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** 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** 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** command. A submenu 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.



---

# 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** command (keyboard shortcut:  ) 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** command.
3. Under **Search for**, enter the search term.
4. As necessary, check the options for the search (see section “Search and replace options”, page 203).
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** command (keyboard shortcut:  ) 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** 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”, page 203).
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 **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 **Edit > Search** or **Edit > Replace** dialog, 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 2016”.

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).

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**

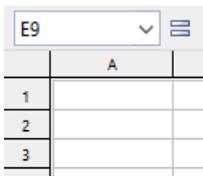
Use the **Edit > Go to** command to jump to a specific cell, cell range, or named cell range.

To do this, invoke the **Edit > Go to** 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 **Table > Names** 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 **Edit > Go to** dialog.



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 drop-down 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

<b>Error Value</b>	Jump to cells that contain an error value (see section “Error values” on page 435)
<b>Faulty Cell</b>	Jump to cells that have been imported incorrectly – for example, cells using an Excel arithmetic function that PlanMaker doesn’t support.
<b>Comment</b>	Jump to cells that contain a comment
<b>Conditional Format</b>	Jump to cells that use conditional formatting
<b>Input Validation</b>	Jump to cells that use input validation
<b>Search all worksheets</b>	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** (see chapter “Charts”, page 251)
- **Text frames** (page 228)
- **Pictures** (page 231)
- **OLE objects** (page 236)
- **Drawings** (page 243)

---

## 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” (page 225).

---

## Inserting objects

For example, to insert a picture into the current worksheet:

1. Choose **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. (starting at page 228).

---

## 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.



- 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 drop-down 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
<span style="border: 1px solid black; padding: 0 2px;">Tab</span>	Select next object



Select previous object

For example, use of the  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 **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”, page 215.

### Changing the size of objects

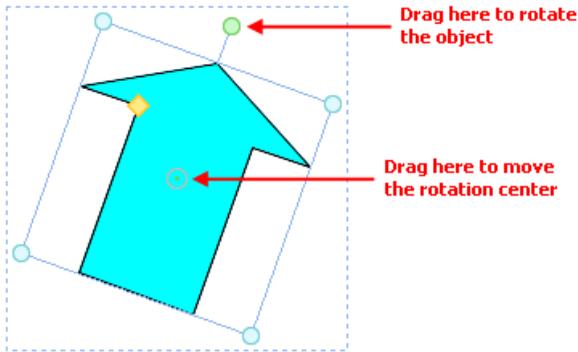
To change the size of an object, select it and drag on one of the round handles appearing around the object.

---

## 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** 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 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** command to create a copy of an object.

**Hint:** You can also duplicate objects with your mouse: Press and hold the  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** 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** 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 dependant 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”, page 393.

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 pre-defined 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 pre-defined 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 exam-

ple, 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 pre-defined 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”, page 225.

■ **Printable**

This option is checked by default. If you deactivate it, the object will no longer print. See also section “Hiding objects”, page 225.

■ **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”, page 345.

■ **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”, page 345.

■ **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”, page 329.

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 **Object > Properties** dialog 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 **Object > Properties** dialog.

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** 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 presents 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 **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 **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. Open the **Object > Order** menu option to choose one of the following commands:

**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 **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 **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”, page 251)
- **Text frames** (page 228)

- **Pictures** (page 231)
- **OLE objects** (page 236)
- **Drawings** (page 243)

---

# 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”, starting at page 251.

---

# 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 **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** 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”, page 215.
- **Filling:** For changing the filling of the object. See section “Object properties, Filling tab”, page 216.
- **Lines:** For adding border lines. See section “Object properties, Lines tab”, page 219.
- **Shadow:** For adding a shadow. See section “Object properties, Shadow tab”, page 220.
- **3D:** For adding a 3D effect. See section “Object properties, 3D tab”, page 221.
- **Effects:** For adding various types of effects. See section “Object properties, Effects tab”, page 222.
- **Properties:** For modifying common object settings. See section “Object properties, Properties tab”, page 222.

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 pre-defined 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”, page 243.

---

# 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 (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 **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 **Object > New Picture Frame** dialog:

### ■ 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:* This feature is available only in the **Windows** version.

If you have a TWAIN-compatible scanner connected to your computer, pictures can be scanned directly into PlanMaker.

To scan a picture, complete the following steps:

1. Power up the scanner and insert the document to scan.
2. Choose **File > Acquire**.

PlanMaker will now start the image acquisition. When it is finished, the scanned image will appear as a new picture frame in your document.

## Selecting another source

If multiple TWAIN-compatible devices are connected to your computer, **File > Select Source** lets you select from which of these you want to acquire images when using the **File > Acquire** command.

---

## Inserting pictures from the gallery (Android)

*Note:* This feature is available only in the **Android** version.

With the Android version you can also insert pictures using the *Gallery* application on your device.

Proceed as follows:

1. Invoke the **Object > New Picture Frame from Gallery** command.
2. Your Android device opens its *Gallery* app. Choose the image to insert by tapping on it.

The picture is now inserted.

---

## 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** 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”, page 215.
- **Filling:** For changing the filling of the object. Only visible in pictures that have transparent areas. See section “Object properties, Filling tab”, page 216.
- **Lines:** For adding border lines. See section “Object properties, Lines tab”, page 219.
- **Shadow:** For adding a shadow. See section “Object properties, Shadow tab”, page 220.
- **Effects:** For adding various types of effects. See section “Object properties, Effects tab”, page 222.

- **Properties:** For modifying common object settings. Also displays some information on the picture. See section “Object properties, Properties tab”, page 222.

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 setting can also be modified using the *Picture toolbar* that appears automatically when you select a picture. See section “Using the Picture toolbar” (section 235).

Options available on this tab:

- **Variants**

In this list, a number of pre-defined variations of the picture are presented – for example different color modes (grayscale, black & white, etc.) as well as colored 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 forth of the picture, enter “25” (percent) at **Top**.

- **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** 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** command. See section “Changing the properties of picture frames” (page 233).

---

## 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 **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** 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 **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 **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** 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:

<b>Button</b>	<b>Function</b>
<b>Update now</b>	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.
<b>Open source</b>	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.
<b>Change source</b>	Lets you select a different file as the source of the OLE object.
<b>Cancel link</b>	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** 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”, page 215.
- **Filling:** For changing the filling of the object. Not supported by all OLE applications. See section “Object properties, Filling tab”, page 216.
- **Lines:** For adding border lines. See section “Object properties, Lines tab”, page 219.
- **Shadow:** For adding a shadow. See section “Object properties, Shadow tab”, page 220.
- **Effects:** For adding various types of effects. See section “Object properties, Effects tab”, page 222.

- **Properties:** For modifying common object settings. See section “Object properties, Properties tab”, page 222.

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 pre-defined variations of the object are presented – for example different color modes (grayscale, black & white, etc.) as well as colored 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, enter “25” (percent) at **Top**.

- **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** 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** 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.

Design Science, Inc.  
140 Pine Avenue, 4th Floor  
Long Beach, CA 90802  
USA

Phone (USA): +1 (562) 432-2920 (for international customers)  
+1 (800) 827-0685 (for customers within the USA and Canada)  
Fax (USA): +1 (562) 432-2857  
E-mail (English): sales@dessci.com  
Internet: www.dessci.com

---

## 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 (pre-defined 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.

---

## Inserting drawings

To insert a drawing, for example, a rectangle, proceed as follows:

1. Invoke the **Object > New Drawing** command. A sub-menu opens. From the sub-menu, select a drawing tool – in this case the **Rectangle** tool.

If you have activated Object mode, you have the alternative of clicking on the corresponding icon in the Object toolbar.



2. With some of the drawing tools, additional action is required (see below). However, this is not the case with rectangles.
3. The drawing is inserted.

In case you want to modify its position or size, do the following:

To change the position, click on the drawing 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 drawing.

The method of producing a drawing object varies according to the drawing tool used. Accordingly, all the available types of drawing objects are listed below together with tips for manipulating them:

## Lines and curves

Use the **Line** tool  in the Object toolbar to draw lines and curves.

When you click on this icon, a list of available line and curve tools opens. Select a tool by clicking on it, then proceed as follows:

### ■ Lines

The first category in the list offers tools for drawing straight lines and arrows.

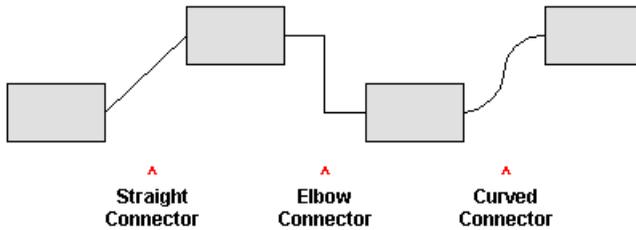
To use one of these tools, select it, then press and hold the left mouse button and simply draw a line in the document.

Tip: When you hold down the Shift key  while drawing, the direction of the line is variable only in increments of 45 degrees.

Note: Arrows are simply lines with an arrowhead chosen for the **Start** and/or **End** option in the object properties, **Lines** tab.

### ■ Connectors (straight, elbow and curved)

The tools in the next three categories allow you to draw connecting lines between two objects. You can see the differences among these three kinds of connectors in the following illustration:



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 create a curve, first click the starting point, and then click on as many other points as desired. The curve will automatically follow your clicks.

If you end your drawing at its starting point, it will automatically become a *closed* curve. To obtain an *open* curve, double-click the desired end position.

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 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.

If you end your drawing at its starting point, it will automatically become a *closed* curve. To obtain an *open* curve, double-click on the desired end position.

## 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 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 pre-defined 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 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”, page 246.

## 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 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”, page 228).

---

## Changing the properties of drawings

To modify the properties of a drawing, first select it with a mouse click. Then invoke the **Object > Properties** 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”, page 215.

- **Filling:** For changing the filling of the object. See section “Object properties, Filling tab”, page 216.
- **Lines:** For modifying the lines used to draw the object. See section “Object properties, Lines tab”, page 219.
- **Shadow:** For adding a shadow. See section “Object properties, Shadow tab”, page 220.
- **3D:** For adding a 3D effect. See section “Object properties, 3D tab”, page 221.
- **Effects:** For adding various types of effects. See section “Object properties, Effects tab”, page 222.
- **Properties:** For modifying common object settings. See section “Object properties, Properties tab”, page 222.

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.

---

### **Inner text tab (available only for AutoShapes with text added)**

*Note:* This tab appears only for text frames and AutoShapes containing text (see the section “Adding text to AutoShapes”, page 246).

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:

<b>Option</b>	<b>Result</b>
<b>Top</b>	Align inner text at the top of the object
<b>Centered</b>	Vertically center text between top and bottom of the object
<b>Bottom</b>	Align inner text at the bottom of the object
<b>Justified</b>	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.

---

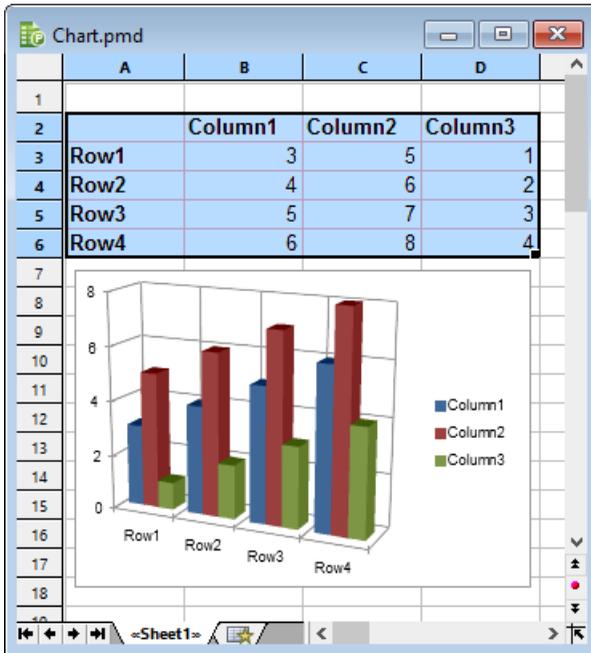
## **Deformation tab (available only for TextArt objects)**

*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 **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 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 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 **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”, page 254.)
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** (page 254)
- **Changing the arrangement of data series** (page 259)
- **Working with chart elements** (page 259)
- **Changing common chart properties** (page 278)

**Note:** Basic procedures for editing objects are discussed in the chapter “Objects (pictures, drawings, etc.)” (beginning on page 209).

## 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
- Drop-down 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 **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		<b>High</b>	<b>Low</b>	<b>Closing</b>
2	<b>10/24</b>	24.94	20.55	21.04
3	<b>10/25</b>	22.76	19.73	20.44
4	<b>10/26</b>	21.09	18.18	20.71
5	<b>10/27</b>	25.83	20.46	24.59
6	<b>10/28</b>	28.04	25.09	27.76

■ **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.

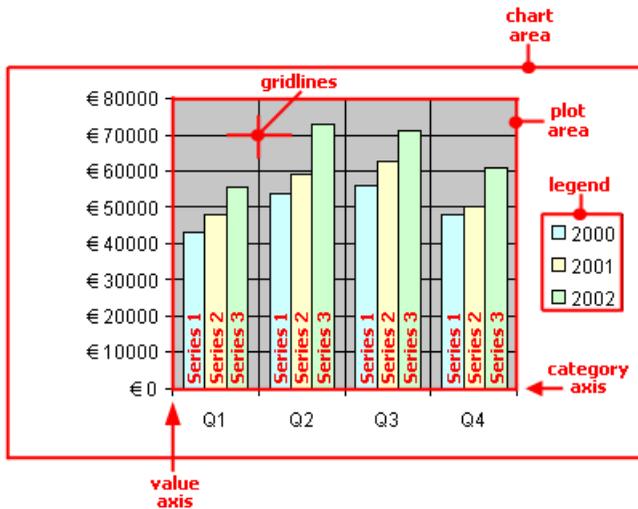
Alternatively, this setting can be switched by choosing **Object > Chart > Data in Columns** or **Data in Rows**, respectively.

---

## 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.

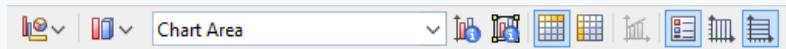
Each of these chart elements can be selected and modified.

## 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 drop-down 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 (page 262)
- Plot area (page 263)
- Walls (three-dimensional charts only) (page 263)
- Floor (three-dimensional charts only) (page 264)
- Corners (three-dimensional charts only) (page 265)
- Data series and data points (page 265)
- Trend lines (page 269)
- Category axis (x axis) (page 271)
- Value axis (y axis) (page 273)
- Series axis (z axis) (page 274)
- Gridlines (page 276)

- Legend (page 277)

---

## 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”, page 216.

### 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”, page 216.

---

## 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”, page 216.

## 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”, page 282.

---

## 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”, page 216.

### 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”, page 282.

---

## 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”, page 282.

---

## 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”, page 216.

- **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

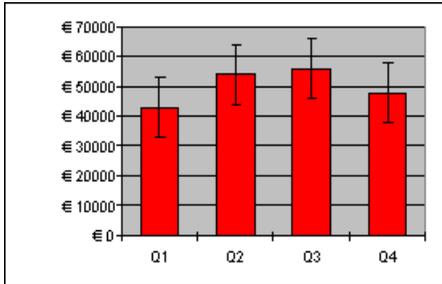
Lets you modify the placement of the labels (relative to the corresponding data points).

**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** command. See section “Trend lines” below.

## 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** command.

**Removing trend lines:** To remove a trend line, select it and press the  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:  $y = b + c_1x + c_2x^2 + c_3x^3 + \dots + c_nx^n$

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 **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 **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 **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 **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 **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 **Object > Properties**, and switch to the **Elements** tab. Open the **Legend** drop-down 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** 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”, page 216.

## 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** 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”, page 215.

---

## Chart properties, Properties tab

Use the **Properties** tab to modify common object settings. For details, see section “Object properties, Properties tab”, page 222.

---

## 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”, page 254.

---

## 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”, page 259.

- **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”, page 276.

### ■ **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”, page 277.

---

## 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 **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** command (keyboard shortcut: **[F8]**) 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 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 command **Object > Chart > Save as Image**.
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.

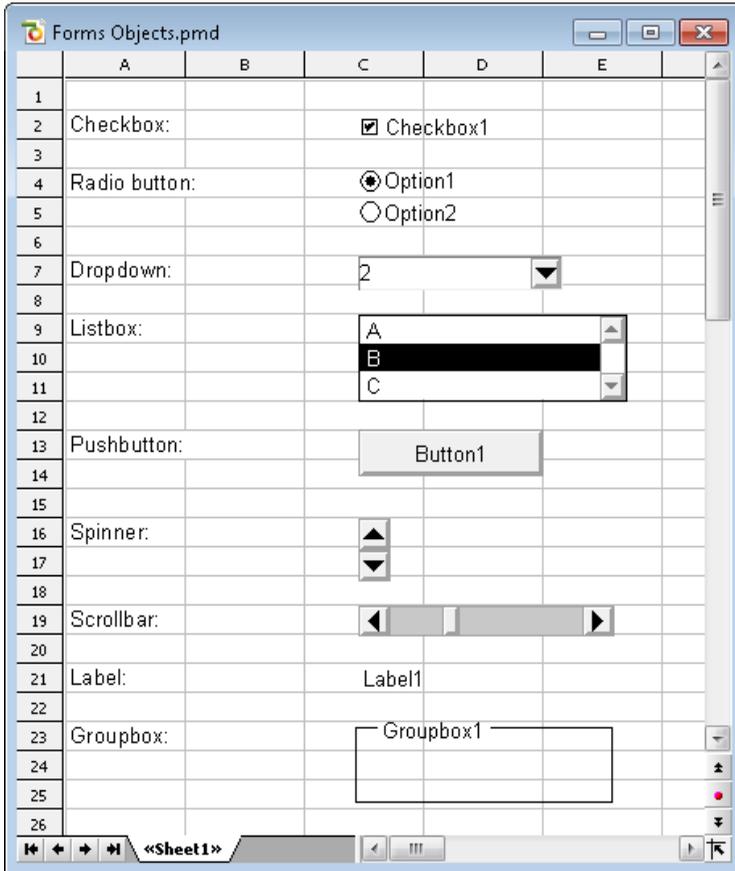
4. Enter a filename for the image file and confirm with **OK**.
5. Another dialog appears where you can select an image resolution or enter your own values for width and height. Confirm with **OK**.

PlanMaker creates the specified picture file and stores an image of the chart in it.



# Forms

You can insert *Forms objects* into your tables and, in this way, create forms.



The following types of forms 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

Forms objects always have a **Result cell**. This is the cell, which holds the value that the forms object returns. Each forms 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 forms objects**

The first section covers general information on working with forms objects. You will learn how to insert, edit, operate, and evaluate forms objects.

- **Forms objects in detail**

The second section contains detailed information on each individual type of forms object.

---

## Working with forms objects

In the following sections, you will find general information regarding the use and application of forms objects:

- **Inserting forms objects**
- **Editing forms objects**
- **Operating and evaluating forms objects**
- **Forms objects and Excel macros and scripts**

Then, in the section “Forms objects in detail”, we will cover the individual types of forms objects in detail.

---

## Inserting forms objects

Inserting forms objects is not much different from inserting other kinds of objects (for more information about that, see the chapter “Objects (pictures, drawings, etc.)”, page 209).

To insert a forms object, proceed as follows:

1. Select the **Object > New Forms Object** menu command.
2. A sub-menu opens; choose the desired type of forms object from it.
3. The forms object is inserted.

In case you want to modify its position or size, do the following:

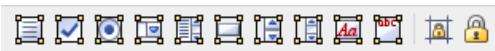
To change the position, click on the object and (while still holding the mouse button down) drag it to the desired position.

To adjust its size, drag on one of the round handles surrounding the object.

You will find detailed information about each individual type of forms object in the section “Forms objects in detail”, page 291.

## Using the Forms toolbar

You can also use the *Forms toolbar* to insert forms objects. To activate or deactivate this toolbar, invoke the **View > Toolbars** 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”, page 345)

- Toggle sheet protection (see the section “Sheet protection”, page 345)

**Hint:** Move the mouse pointer over any of these icons, and a short explanation of its function is displayed.

---

## Editing forms objects

Editing forms objects is not very different from editing other types of objects. (See the chapter “Objects (pictures, drawings, etc.)”, page 209).

There is, however, one important difference:

**Important:** Forms objects *cannot* be selected with a left-click by the mouse. To select a forms object, click on it with the *right* mouse button.

Alternatively, you can switch to Object mode through **View > Object Mode**, where you can select forms objects with a left click.

When you have selected a forms 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 **Object > Properties**, etc.

Information about the properties of the individual types of forms objects can be found in the section “Forms objects in detail”, page 291.

---

## Operating and evaluating forms objects

Using forms 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 forms objects

Forms objects are evaluated through the *result cell* of the object. This is the cell to which the result of the forms object is returned.

The location of the result cell can be determined individually for each forms object. To do this, select the forms object and invoke the **Object > Properties** command. In the dialog, switch to the **Forms 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 forms 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.

---

## Forms objects and Excel macros and scripts

Microsoft Excel files can contain macros and VBA scripts that can be used by forms 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.

---

## Forms objects in detail

In this section we describe in detail the individual types of forms 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 Forms Object > Checkbox** 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** 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”, page 215.

### Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### Forms 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 forms 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

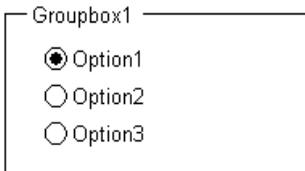
To insert a *radio button*, use the **Object > New Forms Object > Radio button** command.

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.



Groupbox1

Option1

Option2

Option3

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 **Object > New Forms 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** 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”, page 215.

### Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### Forms 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 forms 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 Forms Object > Dropdown** 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** 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”, page 215.

### Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### Forms 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 forms 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 Forms Object > Listbox** 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** 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”, page 215.

## Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

## Forms 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 forms 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 Forms Object > Pushbutton** 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** 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”, page 215.

### Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### Forms 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 Forms Object > Spinner** 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** 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”, page 215.

### Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### Forms 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 forms 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 Forms Object > Scrollbar** 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** 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”, page 215.

### Properties tab

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### Forms 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 forms 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 forms objects there are two more types of forms 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 forms elements together.

To insert a label or a groupbox, use the command **Object > New Forms Object > Label** or, respectively, the command **Object > New Forms Object > Groupbox**.

The corresponding forms 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** 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”, page 215.

### **Properties tab**

On this tab, you can modify common object settings. See the section “Object properties, Properties tab”, page 222.

### **Forms Object tab**

On this tab, you can make settings that are specific to labels/groupboxes:

- **Text** group box

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, multi-line 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 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 multi-line 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."

See the following pages for detailed information.

---

## 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** 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 delete incorrect entries.

See the following pages for detailed information.

**Hint:** In case you want to check the spelling of text written in a language that is currently not installed, read the section “Installing additional dictionaries” (page 420).

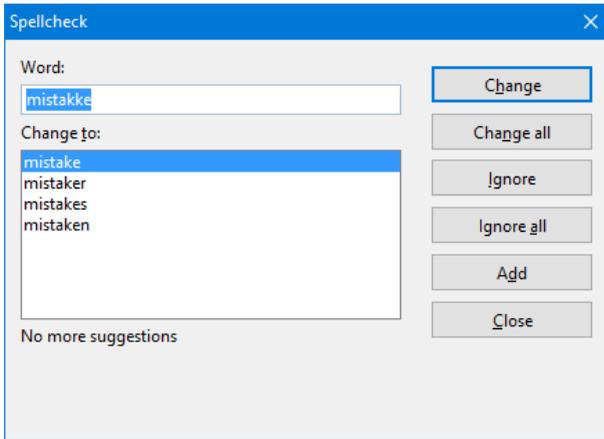
---

## Manual spell checking

**Note:** Cells containing calculations are skipped by the spell checker.

You activate the manual spell checker with the **Tools > Check Spelling** 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
<b>Change</b>	Lets you correct the word. Before you use this button, type the correct spelling in the <b>Change to</b> input field or select one of the suggested words from the list.
<b>Change all</b>	Works like the <b>Change</b> button, but changes <i>all</i> further instances of the word (from here to the end of the document).
<b>Ignore</b>	Ignores the supposed spelling error and continues with the spelling check.
<b>Ignore All</b>	Ignores <i>all</i> further instances of this word.  Note: Use <b>Ignore</b> or <b>Ignore All</b> 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.
<b>Add</b>	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 **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”, page 329.

---

## Editing user dictionaries

Occasionally, a mistake is made and the spell checker is taught a word that is not spelled correctly. The command **Tools > Edit User Dictionaries** was devised for such a situation. With it, you can remove from PlanMaker’s vocabulary words that you have previously taught it.

To do this, invoke **Tools > Edit User Dictionaries**, select the word to be deleted and click on **Delete**. The word is now removed from the user dictionary; thus, the spell checker will now view this word as incorrectly spelled, as it did before the word was added.

With this function you can delete only those words that you yourself have supplied to PlanMaker. Words in the dictionaries that come with the program cannot be removed.

*Note:* Every language has its own user dictionary. You can select the user dictionary to be edited from the **Language** dropdown list.

---

# 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 **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", page 303).

### 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 command **Format > Paragraph**, and select an option in the **Hyphenation** dropdown list.

The following options are available:

<b>Option</b>	<b>Result</b>
<b>None</b>	No hyphenation is performed.
<b>Always</b>	Hyphenation is attempted in successive lines without limit. This is the default setting.
<b>Every 2 lines</b>	Hyphenation is attempted only in every second line.
<b>Every 3 lines</b>	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** 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** 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** 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 command **Insert > SmartText**.

## ■ Editing SmartText entries

You can create new SmartText entries with the 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 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 Smart-Text 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 **Tools > Options** dialog (**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”, page 306.

---

## 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 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 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 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”, page 310).

### ■ 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”, page 311).

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 **File > Properties** dialog. 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 **File > Open** dialog 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, the **File > Open** dialog.
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\2016\*.\*, which tells PlanMaker to change to the folder C:\ACCOUNTING\TAXES and display only those files whose names begin with “2016”.

**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  key whenever the list of quick paths is opened.

---

## Using quick paths

Quick paths are available in all file dialogs – for example the dialogs for the **File > Open** and the **Object > New Picture** commands.

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 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 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

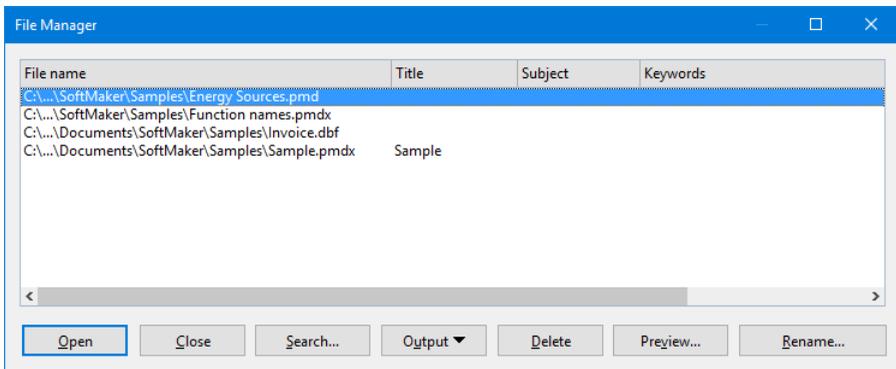
newly created document. To enable this function, invoke the command **Tools > Options**, switch to the **Files** tab, and enable the **Prompt for summary information when saving** option. Now, each time you save a new document for the first time, the dialog box for the entry of summary information will 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 command **File > File Manager**, or you can use the keyboard shortcut **F12**.



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

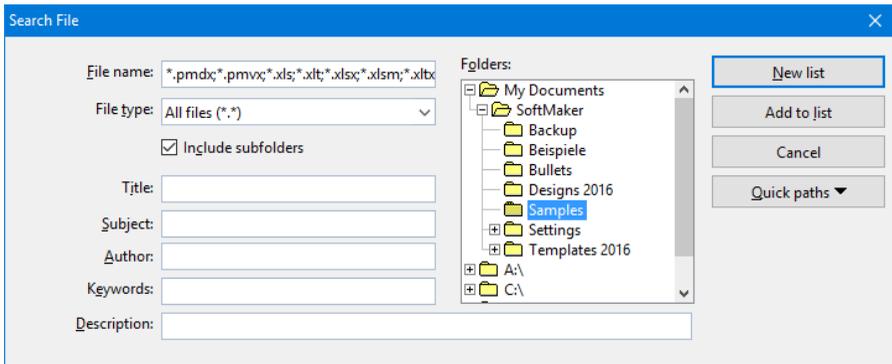
Click on this button to preview the selected file.

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 supported only under Windows and Linux. 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** 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** 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.

## 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 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 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 **Tools > Options** dialog. 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 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

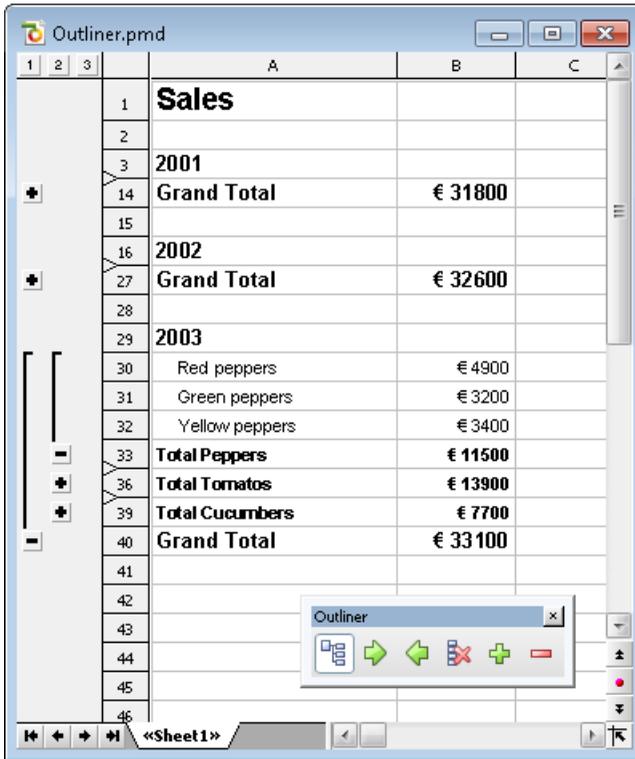
The *Outliner* allows you to create an *outline* for a worksheet. In outlined worksheets, you can easily decide whether just the *summarized* data should be displayed, or the *detail* data should appear as well.

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 **1** **2** **3** 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 **Table > 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 **Table > 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 **Table > 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 **Table > Outliner > Automatically Show Outline Pane** 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 **Table > Outliner > Options** 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 **Table > Outliner > Automatically Show Outline Pane** 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”, page 345).

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** 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 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 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 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 **Format > Remove Link**.

---

## **Saving HTML documents**

To save the current document in HTML format, proceed as follows:

1. Invoke the 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** command which displays a preview of the printed document on the screen.

- **Printing**

The next section introduces the **File > Print** command which actually prints a document.

- **Exporting to a PDF file**

Using the **File > Export as PDF** 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.

- **E-mailing**

When you would like to send a document by e-mail, you can use the command **File > Send**.

Detailed explanations are presented in the following pages.

---

## Print preview

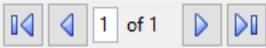
The *print preview* displays a preview of the printed document on the screen. Using this feature can help you avoid wasting paper on test prints.

To open the print preview, choose the **File > Print Preview** 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** command to modify the page format (paper size, orientation, margins, headers and footers, etc.). See also section “Page format”, page 190.
- The middle button invokes the **File > Print** command which prints the document. See also section “Printing”, page 335.
- The right button invokes the **File > Export as PDF file** command which generates a PDF file from the document. See also section “Exporting to a PDF file”, page 338.



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:

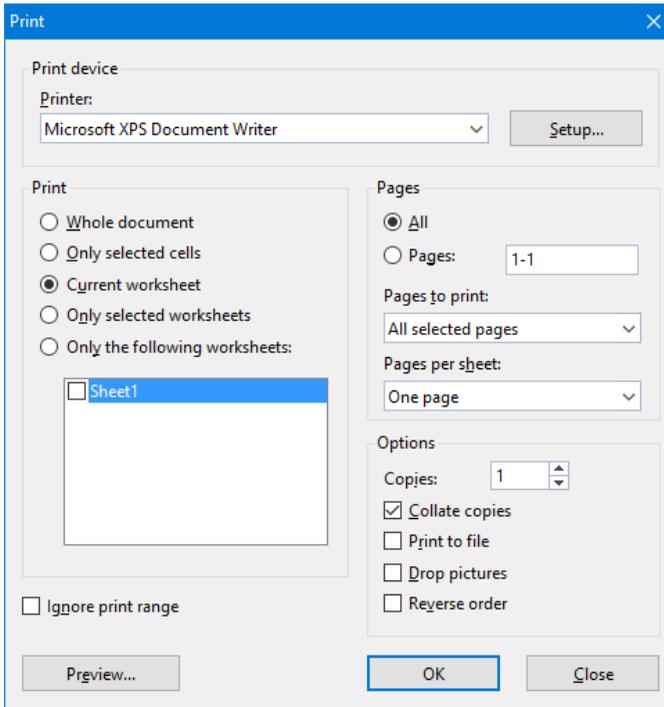
- Actual document size (zoom level 100%)
- Fit page in window
- Fit margins in window

To close the print preview window, click the **Close** button.

---

# Printing

To print the current document, choose **File > Print** or use the keyboard shortcut for this command: **Ctrl P**.



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” (beginning on page 192).

## **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** 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** 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 **File > Print** dialog, which is described in the section “Printing” (page 335).

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 of the **File > Properties** dialog.

**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).

---

## E-mailing

Provided an appropriate e-mail program is installed on your computer, 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 **File > Send** command.
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 **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 (see above), activate sheet protection to enable settings.

**Note:** Activating sheet protection affects the current worksheet only.

To activate sheet protection:

1. Choose **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  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 **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*, PlanMaker disables the **Table > Worksheet** command and the context menu of the worksheet register.

As a result:

- Users can't add worksheets.
- Users can't copy, delete, or rename worksheets.
- Users can't hide/unhide worksheets.

See the following pages for detailed information.

---

## Activating workbook protection

To activate workbook protection:

1. Choose **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.

In addition, most of the options in the **File > Properties** dialog become unavailable.

---

## Deactivating workbook protection

To deactivate workbook protection, choose **Tools > Disable Workbook Protection**.

Users will be allowed to add, delete, rename, and hide/unhide worksheets.

*Hint:* The current state of workbook protection is saved within the document. 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 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 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 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** command (or, the **File > Open** 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 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 command **File > Open**, open the **Files of type** list, 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.

It uses the name extension “.pmdx”. Accordingly, when you save a document under the name “Taxes”, its complete filename will be “Taxes.pmdx”.

*Note for PlanMaker 2012 upgraders:* In PlanMaker 2016, the file format for PlanMaker documents was revised and given a new name extension: **.pmdx** instead of **.pmd**. Only this new file format is able to store all the new features of PlanMaker 2016. However, please note that older versions of PlanMaker can *not* open the new format.

### ■ PlanMaker template

Document template for PlanMaker documents (see also section “Document templates”, page 172)

*Note for PlanMaker 2012 upgraders:* Templates now also utilize a new file format and a different name extension: **.pmvx** instead of **.pmv**. Older versions of PlanMaker can *not* open the new format.

### ■ 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”, page 357.

#### ■ **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” below.

---

## 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 **File > Open**, select the desired text file, and click on **OK**.
- To *save* a document as a text file, invoke **File > Save as**, open the **Files of type** list, and choose the entry **Text file**. Then, enter a file name and confirm with **OK**.

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 **Unix**.

**CR**: This control character was used 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.

---

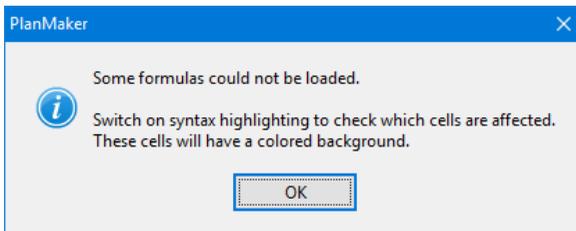
## Opening and saving Excel files

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** command to activate syntax highlighting.
2. All cells containing formulas where the conversion failed will be highlighted with a colored background.

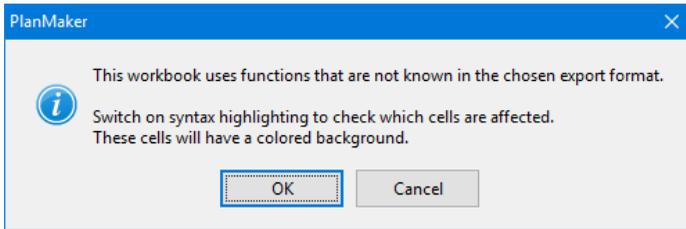
These cells must be revised individually. Compare their content with the content of the corresponding cells in the Excel document, and replace incompatible arithmetic functions with PlanMaker functions. For detailed descriptions of all arithmetic functions supported by PlanMaker, see section “Functions from A to Z”, page 441.

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** 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 mes-

sage will be displayed if the file contains incompatible arithmetic functions. For more information, see section “Opening and saving Excel files”, page 358.

## Arithmetic operators

- In Excel, the order of precedence is incorrect for the **exponentiation operator** (^) and the **negation operator** (-), whereas PlanMaker uses the correct order. For example, in Excel,  $-1^2$  returns 1 (wrong), whereas PlanMaker returns -1 (correct, since ^ has precedence over -).

However, when you open/save an Excel file, PlanMaker automatically resolves this compatibility issue by replacing the ^ operator by the POWER function (which returns the same result in both PlanMaker and Excel).

---

# 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** 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** 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** 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.

Note: On some systems (e.g. Ubuntu Linux), these keyboard shortcuts are reserved for other functions. 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 **Table > Properties** 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” above).



---

# 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 command **Tools > Edit Script**.

### ■ Running a script directly from within TextMaker/PlanMaker

To execute a script, invoke the command **Tools > Run 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).



---

# Document windows

Every document you create or open is displayed in its own *document window*, allowing you to work on multiple documents simultaneously, and copy data between them as needed.

This chapter contains information on working with document windows.

---

## Creating document windows

Use the **File > New** command to create an empty document window. To open a file in a document window, choose the **File > Open** command.

PlanMaker lets you open as many documents as will fit in memory. If you do not want the document that you are opening to replace the current document, you can open the document in its own window. To open a document in a new window, select the **New Window** option in the Open or New dialog box.

---

## Activating document windows

When you enter text or invoke menu commands, only the *active* document window is affected.

To change the active document window:

**Mouse:** Click on any part of the document window to activate.

**Keyboard:** From the **Window** menu, choose the name of the document window to activate.

**Android:** In the Android version, you can switch between document windows by tapping on the document name displayed in the top right corner. This will open a list of all document windows currently open.

---

## Closing document windows

To close a document window, choose **File > Close**.

The active document window, together with its content, is now closed. If the document has changed since it was last saved, a message box appears first, questioning whether you want to save the document.

Hint: To close *all* currently open document windows at once, choose **Window > Close all**.

---

## Maximizing document windows

**Android:** This feature is not available under Android, since the Android version supports maximized document windows only.

Document windows can be maximized so they cover the entire workspace.

To maximize a document window:

**Mouse:** Click the  icon in the title bar of the document window to maximize. To restore the original size of a maximized window, click the  icon.

**Keyboard:** Open the system menu of the document window by pressing   (minus key), and choose the **Maximize** command. To restore the original size of a maximized window, choose the **Restore** command.

---

## Minimizing document windows

**Android:** This feature is not available under Android, since the Android version supports maximized document windows only.

Document windows can be minimized as an icon displayed at the bottom of the program window.

To minimize a document window:

**Mouse:** Click the  icon in the title bar of the document window to minimize. To restore a minimized window, double-click its icon or choose from the **Window** menu.

**Keyboard:** Open the system menu of the document window by pressing   (minus key), and choose the **Minimize** command. To restore a minimized window, choose from the **Window** menu.

---

## Arranging document windows

**Android:** This feature is not available under Android, since the Android version supports maximized document windows only.

Use the following commands to arrange all open document windows:

- With the command **Window > Cascade** you tell PlanMaker to stack the windows one behind another as in a file cabinet. The active window is placed at the top of the stack.
- With **Window > Tile Vertically** the windows are arranged one below another.
- With **Window > Tile Horizontally** they are arranged one beside another.

To change the position or size of a document window:

**Mouse:** Drag the title bar of the window to move. To change its size, drag any of its borders.

**Keyboard:** Open the system menu of the document window by pressing   (minus key), and choose the **Move** or **Size** command. Use the arrow keys to move/size the window.

Note: Changing position/size is not possible with maximized windows.

---

## Using document tabs

When you open two or more documents, a bar with *document tabs* appears below the toolbars. One tab is displayed for each open document window:



*The document tabs bar*

With document tabs, the following actions can be performed:

## Switching between document windows

When you click on a tab with the *left* mouse button, the corresponding document becomes the active document. This allows you to switch between your open document windows quickly.

Alternatively you can use the keyboard: **Ctrl** **F6** switches to the next document window and **Ctrl** **Shift** **F6** to the previous one.

## Closing document windows

When you click on a tab 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 the tab.

When you click on a tab with the *right* mouse button, a small menu containing commands for closing the current document or all other documents appears.

## Showing/hiding the document tabs bar

The **Window > Document Tabs** command lets you choose if the document tabs bar should be displayed. When you invoke this command, a menu with the following choices opens:

- **Off**

Disables the document tabs bar.

- **For two or more documents**

Automatically displays the document tabs bar when you have two or more documents opened.

- **Always visible**

Always displays the document tabs bar (even if just one document is opened).

Further settings related to document tabs can be made in the dialog of the **Tools > Options** command (**General** tab). See the section “Preferences, General tab” (page 375) for details.

---

## Moving data between document windows

You can move text, cells, objects, etc. across window boundaries. Thus, you can move or copy table cells from one window to another. The commands needed to do this were fully explained in section “Selecting cells and cell contents” starting on page 62 and in the sections following it.

You will recall the essentials: If, for example, you select some cells in one window, you can copy them to the clipboard with **Edit > Copy** or **Ctrl** **C**, change to another window and insert the cells there with **Edit > Paste** or **Ctrl** **V**.



---

# 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** 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** command. These settings affect the current document only.

## ■ Worksheet properties

To modify the properties of a *worksheet*, use the **Table > Properties** 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

To customize the program's toolbars (Standard toolbar, Formatting toolbar, etc.), use the **View > Toolbars** command.

## ■ Customizing keyboard shortcuts

To customize keyboard shortcuts for menu commands, use the **Tools > Customize > Keyboard Mappings** command.

## ■ Customizing AutoFill lists

To customize the lists used to automatically fill cells with the **Edit > Fill** command, use the **Tools > Edit Lists** command.

## ■ Installing additional dictionaries

When you install SoftMaker Office, dictionaries for some languages are already installed by default. In case you want to install additional dictionaries, follow the instructions given in this section.

See the following pages for detailed information.

---

## Preferences

To modify PlanMaker's *global* preferences, use the **Tools > Options** 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 **Tools > Options** dialog box contains settings related to the display of tables:

### Markers

Here you change the appearance of the little triangles that are displayed in cells that contain a comment and cells that are protected.

- **Color of comment markers**

Changes the color of the little triangle that is displayed inside cells that contain a comment.

- **Color of protection markers**

Changes the color of the little triangle that is displayed inside cells that are not protected (when sheet protection is enabled).

- **Size**

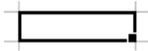
Changes the size of these markers.

## ■ 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).



---

## Preferences, General tab

The **General** tab in the **Tools > Options** dialog box 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** 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.

### Buttons “User (Home)” and “User (Business)”

Click one of these buttons to open another 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** 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 “Sim-Hei” 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” (page 361) for details.

## Document tabs

When you open two or more documents, a bar with *document tabs* will appear below the toolbars. One tab is displayed for each open document window.

You can use document tabs to switch between the currently opened documents with a single mouse-click. (See section “Using document tabs”, page 369 for details.)

The following settings can be made:

- Use the dropdown list below **Document tabs** to choose if the document tabs bar should be displayed. Available options:

**Off:** Disables the document tabs bar.

**For two or more documents:** Automatically displays the document tabs bar when you have two or more documents opened.

**Always visible:** Always displays the document tabs bar (even if just one document is opened).

- **Show document icon:** If enabled, an icon indicating the file type of the corresponding document is displayed on the left of each tab.
- **Show close button on inactive tabs:** If enabled, an **x** button is displayed on the right of each tab. You can click this button to close the corresponding window.

If you deactivate this option, the **x** button is displayed in the tab for the *current* window only.

### Show warning when loading OLE objects

**Android and Linux 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 **Tools > Options** dialog box 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  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* (text frame, picture frame, etc.) or a *drawing* into a document – for example, using the command **Object > New Text Frame**:

- **On:** The corresponding object is inserted immediately. Its position and size are chosen automatically.

(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 rounded handles that appear around the object.)

- **Off:** 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.

## Middle mouse button

**Linux only:** Here you can specify what should happen when the *middle* mouse button is pressed. Options available:

- **No function:** The middle mouse button doesn't have any function.
- **Paste Clipboard:** A click with the middle mouse button pastes the content of the clipboard.

- **Automatic scrolling:** When you press and hold the middle mouse button, you can scroll in the document by moving the mouse.

## 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 **Tools > Options** dialog allows you to customize the appearance of the program's user interface.

### Dialog style

Sets the general style of PlanMaker's dialog boxes and toolbars. This does not change the way you use the software, only the way it appears.

### Dialog language

Lets you select the language to be used in menus and dialog boxes. The selections available here depend on what alternative user interface languages were installed along with the program.

## 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.

## Use large icons

When this option is enabled, larger icons are displayed in toolbars and menus.

*Note:* Changes to this setting become effective only after the program is restarted.

## Use system file dialogs

**Windows only:** This option controls the type of dialogs that appear when commands to open and save files are issued. The options are:

- **Disabled:** PlanMaker uses its own file dialogs.
- **Enabled:** PlanMaker uses the file dialogs provided by the operating system.

The former are easier to use; the latter offer more options.

## 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.

## 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

**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.

## Measurement

**Android and Linux 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:

<b>Unit</b>	<b>Explanation</b>
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).

## **Window Manager dialogs**

**Linux only:** When this option is disabled, PlanMaker for Linux draws its own dialogs. This is somewhat faster than using the window manager to draw them. However, in this case dialogs cannot extend beyond the boundaries of the program window.

When this option is enabled, the window manager draws the dialogs.

## **Window Manager positioning**

**Linux only:** When this option is disabled, PlanMaker for Linux positions dialogs itself – and always centers them in the program window.

When this option is enabled, PlanMaker leaves it to the window manager to position dialogs wherever it will.

---

## **Preferences, Language tab**

The **Language** tab in the **Tools > Options** dialog 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” (page 306).

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** command. See section “Manual spell checking” (page 304).

- **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.

### ■ Hunspell dictionaries

**Windows and Linux only:** As an alternative to its own dictionaries, SoftMaker Office for Windows/Linux 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” (page 420).

## Expand SmartText entries

As described in the section “SmartText” (beginning on page 309), 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** command.

---

## Preferences, Files tab

The **Files** tab in the **Tools > Options** dialog 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 **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 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”, page 315).

### ■ **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

**Windows and Linux only:** 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** 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.

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 **Tools > Options** dialog 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 PC's 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 only:** Here you can specify if (and how often) the software should check for software updates when you launch it. Software updates provide bug fixes and feature improvements.

Whenever an update is available, the application will inform you by displaying a message box when you start it.

Note: Checking for updates is possible only when your device has Internet access.

If 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 the **Check Now** button.)

**For other versions of SoftMaker Office, updates can be obtained as follows:**

- **Linux version:** With the Linux version, use the **Help > Check for Updates** command to check if updates are available.
- **Android version, purchased in Google Play Store:** When you have installed an application via Google Play Store, your device should inform you about software updates automatically (depending on the settings made in Google Play Store).
- **Android version, purchased in Amazon App Shop:** The same goes for apps installed via Amazon's app shop.
- **Android version, purchased at [www.softmaker.com](http://www.softmaker.com):** With this version, use the **Tools > Check for Updates** command to check if updates are available.

*Tip:* Subscribe to our free **newsletter** at [www.softmaker.com](http://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.

## 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 SHM extensions

**Linux only:** When this option is enabled, PlanMaker uses shared memory caching to speed up the responsiveness of the display.

Note: Depending on the particular system, in certain cases the amount of shared memory available might not be sufficient for PlanMaker. In such cases, PlanMaker automatically disables this option.

## 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  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.

## Use XRender

**Linux only:** When this option is enabled, the software utilizes the “XRender” library for rendering text on the screen.

This resolves an issue with text being rendered incorrectly (in the document or in dialogs) that occurred on some systems. Insofar, you should normally leave this option turned on.

**Note:** When you deactivate this option, text might be rendered faster – however, you might experience text rendering issues on certain combinations of Linux distributions and graphics drivers.

## Mouse wheel

**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

**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

**Android and Linux 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 **Tools > Options** dialog allows you to specify which fonts to display in font lists (e.g. in the dialog of the **Format > Character** 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 7 and later)**

Users of Windows 7 and later will additionally find an option named **Use font filtering of the operating system** on this tab. When activated, your system will *automatically* hide all fonts that contain solely glyphs for foreign languages in font lists.

---

## **Document properties**

With the **File > Properties** 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 **File > Properties** dialog 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”, page 315.

---

## Document properties, Colors tab

The **Colors** tab in the **File > Properties** dialog 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 that 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 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 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 **File > Properties** dialog box 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 **File > Properties** dialog box 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** command (see section “Syntax highlighting”, page 102).

#### ■ **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** command (see section “Displaying formulas instead of results”, page 102).

#### ■ **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”, page 345.

#### ■ **Hyphenation**

If this option is checked, cells where the option **Wrap text** is activated (using the **Format > Cell** command) will be hyphenated. See also section “Hyphenation”, page 307.

### “**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”, page 111.

#### ■ **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 con-

verted 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” (page 225), 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 **File > Properties** dialog box 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** 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”, page 431.

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.

### “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** 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 **File > Properties** dialog box 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”, page 349.

---

## Document properties, Fonts tab

The **Fonts** tab in the **File > Properties** dialog box 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 **Table > Properties** 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** 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 **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” (page 361).

---

## 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** command.

See the following pages for detailed information.

---

## Zoom level

The zoom level can be set individually for each worksheet.

Choose **View > Actual Size** to display the worksheet in its original size.

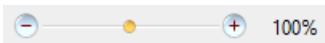
Choose **View > Zoom Level** to set any other zoom level:

<b>Zoom level</b>	<b>Explanation</b>
<b>Fit to selection</b>	Zooms in to the current selection as far as possible
<b>Previous zoom</b>	Restores the previous zoom level
<b>50%, 75%, etc.</b>	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.

---

## 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** command.

To exit it, choose the **View > Full Screen** 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

PlanMaker provides *toolbars* for quick access to the program’s functions. Each icon on a toolbar represents a particular command. When you click on an icon, the corresponding command is executed.



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”, page 210). 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”, page 210). 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”, page 323). 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 **View > Toolbars**, select the toolbar, and then choose the desired option in **Visible in mode**.

*Note:* Normally, it does not make sense to change this setting for the default toolbars (Standard toolbar, Formatting toolbar, etc.). These options are primarily meant for user-defined toolbars.

---

## Positioning toolbars on the screen

You can position toolbars anywhere on the screen, as follows:

### Changing the position with the View > Toolbars command

The position of a toolbar can be modified using the **View > Toolbars** command. Proceed as follows:

1. Invoke the **View > Toolbars** command.
2. Select the toolbar you want to move by clicking on it.
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 the left mouse button and hold it down.
3. While 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 them with the mouse, in order to protect them from being moved accidentally. To remove the lock, invoke **View > Toolbars**, select the toolbar of interest, and disable the **Locked** option.

Hint: A positioning aid is active while you are dragging a toolbar, so that 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 **View > Toolbars** dialog box.

---

## Managing toolbars

You can create new toolbars, delete, and rename existing toolbars, edit toolbar icons, etc. To perform these tasks, use the buttons in the dialog box for the **View > Toolbars** command.

### Creating new toolbars

PlanMaker allows you to create your own toolbars whenever you wish.

For example, if you frequently need to use commands in the **Window** 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** 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”, page 409.

## Customizing the icons in a toolbar

You can edit the icons on toolbars with the **Customize** button. Information about this is provided in the following section.

## Deleting and renaming toolbars

To delete or rename a toolbar in the **View > Toolbars** dialog box, select it and click **Delete** or **Rename**.

Note: You can delete and rename only toolbars that you have created yourself. The default toolbars (Standard toolbar, Formatting toolbar, etc.) cannot be removed.

## Resetting toolbars

You can undo any changes you have made to one of the default toolbars by selecting it in the **View > Toolbars** dialog box and clicking **Reset**.

Now the toolbar contains the standard icons, as it did before you changed it. 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

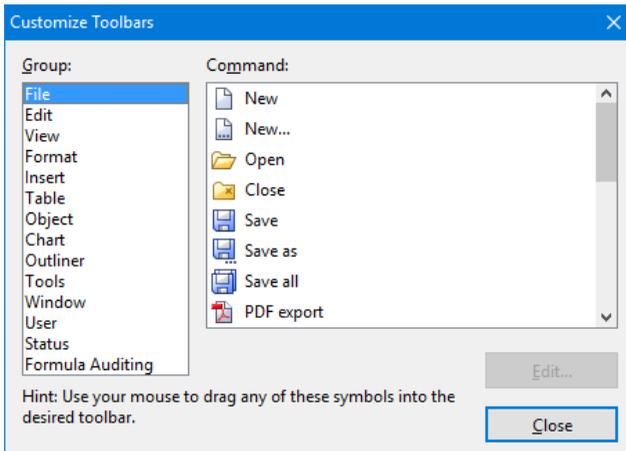
You can edit the icons on a toolbar as you wish. Specifically, you can add, remove, and reposition the icons, and you can also insert and remove separator lines.

This can be accomplished as follows:

1. Make sure that the toolbar to be edited is enabled. If it is not, invoke **View > Toolbars** and enable it.
2. Invoke the command **Tools > Customize > Toolbars**. Alternatively, you can invoke this command by clicking the **Customize** button in the **View > Toolbars** dialog box.
3. Use one of the procedures described below to add, remove, or reposition an icon.
4. Exit the dialog by clicking on **Close**.

**Tip:** The **Tools > Customize > Toolbars** command can also be invoked from the context menu for toolbars or by double clicking on an *empty* area in any of the toolbars.

When you invoke this command, a dialog box appears and presents a list of all the icons that are available for addition to a toolbar.



The icons for the individual commands are organized under several categories to make them easier to find. If you select a category in the **Group** list, all the available icons in that category will be displayed in the **Command** list.

Editing the icons in a toolbar can be accomplished as follows:

### ■ Adding an icon

Simply drag the icon with the mouse from the dialog box directly to the desired position on the toolbar.

### ■ Deleting an icon

Drag the icon off the toolbar (into the document, for example) to delete it.

### ■ Moving an icon

Drag the icon to the desired position in the toolbar with your mouse. You can also drag an icon from one toolbar to another.

**Tip:** You can move toolbar icons even when this dialog is closed. Simply press and hold the **[Alt]** key and drag the icon to its new position with your mouse.

### ■ Inserting a separator line or space

If you drag an icon a small distance to the right, a separator line or space (depending on the operating system) will be inserted to the left of the icon.

### ■ Removing a separator line or space

If you drag the icon that is to the immediate right of the separator line or space a little to the left, the separator or space will be removed.

**Resetting a toolbar:** If you should happen to make a mistake while editing one of the default toolbars, you can always reset the toolbar. To do this, invoke the **View > Toolbars** command, select the toolbar to be reset with a mouse click and click the **Reset** button. All the changes you have made to the toolbar will be undone, and it will again contain the default icons.

---

## Creating user-defined toolbar icons

You can also create *user-defined icons* and add them to a toolbar. 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 the Windows Notepad, proceed as follows:

1. Invoke the command **Tools > Customize > Toolbars**.
2. Select the **User** category from the **Group** list.

3. Select one of the icons from the **Command** 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 the fourth icon for this exercise.
4. Click the **Edit** button. A dialog box appears.
5. Enter a short description of the program to be started in the **Description** field. In this example, you could enter “Windows 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 to represent the program in the toolbar, you can enter the path and name for an icon file that you want to use in the **Icon file** field.

Note, however, that the icons used in toolbars are somewhat smaller than the usual Windows icons.

8. Confirm with **OK**.
9. The user-defined icon is now set up. If you want to add it to one of the toolbars, drag it with the mouse into the desired toolbar.

As soon as you exit the dialog box with **Close**, you can try your newly created icon. In the example above, clicking on the newly defined icon should start Windows Notepad.

If it does not work, this is because the program path or filename is incorrect. In that case, edit the icon as described above to correct the error.

---

## Using the toolbar menu

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 a 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”, page 409.)

## ■ 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** command that allows you to activate or deactivate, configure, and manage toolbars.

See section “Customizing toolbars” (page 404).

## ■ Customize

Invokes the **Tools > Customize > Toolbars** command that allows you to edit the icons on a toolbar (add, remove, move icons).

See section “Customizing toolbar icons” (page 409).

## ■ Reset this toolbar

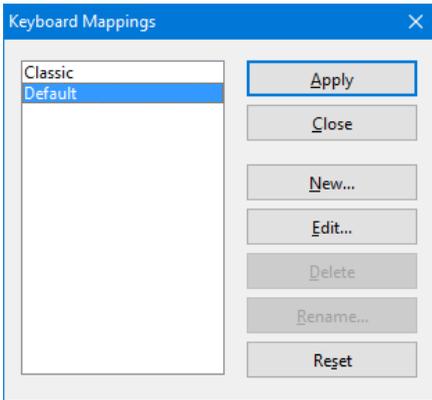
Resets the toolbar. All customizations made to the toolbar’s icons and settings will be reverted.

---

# Customizing keyboard shortcuts

As you know, PlanMaker’s most frequently used commands can be invoked with “keyboard shortcuts”. For example, you can execute the **File > Save** command very quickly by pressing the key combination Ctrl S.

With the **Tools > Customize > Keyboard Mappings** command, these keyboard shortcuts can be customized, as desired. You can assign new shortcuts to commands and change or delete existing shortcuts.



Moreover, you can work with complete *keyboard mappings*. The keyboard shortcuts for all the commands are stored in a keyboard mapping. When you switch between two keyboard mappings, all the shortcuts change accordingly.

To customize PlanMaker's keyboard shortcuts, use the following buttons in the **Tools > Customize > Keyboard mappings** dialog box:

- **Apply button:** Activate the selected keyboard mapping
- **New button:** Create a new keyboard mapping

*Note:* If you simply want to add or change a few keyboard shortcuts, it is not necessary to set up your own keyboard mapping. Simply click on the **Edit** button and modify the standard keyboard mapping itself.

- **Edit button:** Edit the keyboard shortcuts in a keyboard mapping
- **Delete button:** Delete a keyboard mapping
- **Rename button:** Rename a keyboard mapping
- **Reset button:** Reset the shortcuts in a keyboard mapping to the default (possible only for the predefined **Standard** and **Classic** mappings).

Detailed information is provided on the following pages.

---

## Activating a keyboard mapping

You can select which keyboard mapping to activate with the **Tools > Customize > Keyboard mappings** command.

To do this, proceed as follows:

1. Invoke the command **Tools > Customize > Keyboard mappings**.
2. Select the desired keyboard mapping.
3. Click on **Apply** to activate it.

Now the shortcuts defined in this keyboard mapping become available.

As stated in the introduction, all the shortcuts for all the commands are stored in a keyboard mapping. Accordingly, when you switch between two keyboard mappings, all the shortcuts change.

By default, the following two keyboard mappings are pre-defined:

- Standard**                      The standard mapping contains all the keyboard shortcuts described in this manual (e.g. Ctrl S for the Save command)
- Classic**                         A largely WordStar-compatible keyboard mapping (for users who have worked previously with WordStar or other programs with a WordStar compatible keyboard mapping).

*Tip:* You will find a table for the **Standard** keyboard mapping in the chapter entitled “Keyboard shortcuts”, page 713.

If necessary, you can modify either of these two standard mappings and also create your *own* keyboard mappings, a topic which is covered in the following sections.

---

## Creating a new keyboard mapping

The **Tools > Customize > Keyboard mappings** command allows you to build complete *keyboard mappings*. Thus, you can set up different keyboard mappings to be used for different purposes, and switch between them as needed.

*Note:* When all you want to do is add or change a few keyboard shortcuts, it is not necessary to set up your own keyboard mapping. Simply click on the **Edit** button and modify the standard keyboard mapping itself.

To create a new keyboard mapping, complete the following steps:

1. Invoke the command **Tools > Customize > Keyboard mappings**.

2. Choose the existing keyboard mapping that you want to use as a basis for the new one.

**Note:** The new keyboard mapping will automatically be assigned all the keyboard shortcuts contained in the mapping you choose here.

3. Click the **New** button.
4. A dialog box appears and prompts you to enter a name for the new keyboard mapping. Enter, for example “My keyboard mapping” and then confirm with **OK**.

The new keyboard mapping is now set up. Next a dialog appears to allow you to modify the shortcuts contained in it. You will find information about this in the section entitled “Editing the shortcuts in a keyboard mapping”, page 415.

---

## Renaming or deleting a keyboard mapping

User-created keyboard mappings can be renamed or deleted at any time.

These tasks are carried out as follows:

1. Invoke the **Tools > Customize > Keyboard mappings** command.
2. Select the keyboard mapping you want to delete or rename with a mouse click.
3. Click on **Rename** to give it a new name.

*Or:* Click on **Delete** to delete it.

You can rename or delete only keyboard mappings that you have created yourself. The predefined **Standard** and **Classic** mappings cannot be renamed or removed.

---

## Editing the shortcuts in a keyboard mapping

The **Tools > Customize > Keyboard mappings** command is not only for managing keyboard mappings. The most important function of this command is the modification of the shortcuts contained in a mapping. The **Edit** button handles this function.

## Assigning a shortcut for a command

When you find that you are using one of the menu commands frequently, you can assign a shortcut for it, so that in the future you will be able to execute it quickly with a simple keystroke combination.

As an example, we will assign the shortcut   to the **Table > Sort** command. Proceed as follows:

1. Invoke the **Tools > Customize > Keyboard mappings** command.
2. If necessary, select the desired keyboard mapping (if you want to modify a keyboard mapping other than the one that is currently activated).
3. Click on the **Edit** button.
4. Select a command category from the **Group** list. Then, from the **Command** list, select the command whose shortcut you want to modify.

In our example, you would select “Table” in the **Group** list and “Sort” from the **Command** list.

5. Click in the **Please press accelerator** field and then press the desired shortcut. In the example, you would press  .

*Hint:* If you make a typing mistake, you can always press the backspace key  to remove the keyboard shortcut you entered.

6. *Don't forget:* Click on **Add** to assign this shortcut to the command.
7. Confirm with **OK** and exit the main dialog box with **Close**.

From now on, you can execute the **Table > Sort** command with the key combination  .

## Available keyboard shortcuts

Notice that some of the keystroke combinations that are possible on your keyboard are not allowed as shortcuts.

As a rule, you should use **alphabetic keys**, **numeric keys** or **function keys** for shortcuts. You can combine them with ,  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:

- 
- (However, key combinations including the Alt key are not recommended, since they are usually occupied by the main menu entries).
- 
- 
- 
- 
- etc.

**Note:** Alphabetic keys by themselves are *not* allowed. Thus, you cannot use  or   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,   . However, in this case only shortcuts of the form “Ctrl + letter + letter” are allowed.

## Removing a keyboard shortcut

Any time after assigning a shortcut to a command, you can undo your actions and remove the assignment.

To do this, proceed as follows:

1. Invoke, as described above, the **Edit Keyboard Mapping** dialog.
2. Select the command category from the **Group** list and then select the desired command from the **Command** list.
3. All the shortcuts currently assigned to this command appear in the **Current shortcut keys** field. Select the shortcut you want to remove and click on the **Remove** button.
4. Confirm with **OK**, and exit the main dialog box with **Close**.

The shortcut is now removed, and the command cannot be invoked with this shortcut anymore.

---

## Resetting the shortcuts in a keyboard mapping

If you click on the **Reset** button in the dialog box of the **Tools > Customize > Keyboard mappings** command, all the shortcuts of the selected keyboard mapping will be reset to their default settings.

*Note:* During this process, *all* modifications that you have made to the shortcuts in this keyboard mapping are lost.

This function is applicable only to the pre-defined keyboard mappings, **Standard** and **Classic**.

---

## Customizing AutoFill lists

As described in section “Filling cells automatically” (page 76), the **Edit > Fill** command can be used to fill a cell range with a repeating values or a sequence of values.

The **Tools > Edit Lists** 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 **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** command:

1. Choose **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** command:

1. Choose **Tools > Edit Lists**.
2. Select the desired list.

Note: The pre-defined 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** command:

1. Choose **Tools > Edit Lists**.
2. Select the desired list.

Note: The pre-defined 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 **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 (Windows)

**Windows only:** In the Windows version of SoftMaker Office, you can install additional SoftMaker dictionaries using the main setup program.

### ■ Installing additional SoftMaker dictionaries (Android)

**Android only:** The Android version allows you to download and install dictionaries directly from our web servers, free of charge.

### ■ Installing additional SoftMaker dictionaries (Linux)

**Linux only:** In the Linux version, *all* available SoftMaker dictionaries are installed already – so there is no need to install additional dictionaries later.

### ■ Installing Hunspell dictionaries

**Windows and Linux only:** Apart from SoftMaker dictionaries, the Windows/Linux version additionally supports the use of *Hunspell* dictionaries, which can be downloaded at [www.softmaker.com](http://www.softmaker.com).

### ■ Choosing a different dictionary for a language

**Windows and Linux only:** 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.

For detailed information, see the pages that follow.

---

## Installing additional SoftMaker dictionaries (Windows)

*Note:* This section applies to the **Windows** version only.

SoftMaker Office is shipped with elaborate dictionaries for numerous languages. To install any of these dictionaries *after* the main installation, proceed as follows:

1. Launch the setup program (that you have used to install SoftMaker Office) once again.

If you obtained SoftMaker Office on *CD-ROM*, you will find the setup program in the root folder of the CD.

If you obtained SoftMaker Office by *download*, simply launch the setup program that you have downloaded. In case you have deleted it meanwhile, download the setup program one more time. For instructions on how to do this, see the e-mail that you received from us after purchasing the software.

2. After several dialog windows that you can simply confirm you will get to a dialog with the following options: **Change**, **Repair**, and **Remove**. Click on **Change**.
3. Another dialog appears, listing all individual components of SoftMaker Office. In this list, open the category **Proofing Tools** by clicking on the plus sign (+) displayed in front of it.
4. You are now presented a list of all languages available.

When you click on the icon displayed in front of a language, options for installing the corresponding language will be displayed. For each language that you want to install, choose the option **Will be installed on local hard drive**.

5. When you have made your selections, click on the **Next** button until the installation procedure begins.

The selected dictionaries will now be installed.

---

## Installing additional SoftMaker dictionaries (Android)

*Note:* This section applies to the **Android** version only.

The **Android** version allows you to download and install dictionaries from our web servers whenever you need them, 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** 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 additional SoftMaker dictionaries (Linux)

When you have installed the **Linux** version, *all* available SoftMaker dictionaries are installed already – so there is no need to install additional dictionaries later.

---

## Installing Hunspell dictionaries

*Note:* This feature is available only in the **Windows** and the **Linux** version.

Apart from SoftMaker's own dictionaries, the Windows and Linux version 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 and store it on your hard disk.
4. Launch any SoftMaker Office application (TextMaker, PlanMaker, or Presentations).
5. Invoke the **Tools > Options** 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 you have stored the downloaded dictionary.
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

*Note:* This feature is available only in the **Windows** and the **Linux** version.

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** 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. (This is the default setting.)

**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", page 45.

---

# 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”, page 436)
- Arithmetic operators (e.g., + or -, see section “Arithmetic operators in formulas” below)
- Arithmetic functions (e.g., SUM)

For example, a formula can look as follows:

```
= 67 + (A3 * Sum(B1:C5))
```

---

## Arithmetic 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	^	Exponentiation*
4th	+	Positive sign (not addition!)
	-	Negative sign (negation)* (not subtraction!)
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:** In Excel, the order of precedence is incorrect for the **exponentiation operator** (^) and the **negation operator** (-), whereas PlanMaker uses the correct order. For example, in Excel,  $-1^2$  returns 1 (wrong), whereas PlanMaker returns -1 (correct, since ^ has precedence over -).

---

## Entering formulas

**Hint:** A short introduction to entering formulas is also provided in the chapter “The PlanMaker Tour”, page 45.

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  key to abort.

Alternatively, use the following buttons of the Edit toolbar:

- To accept the input, click the  button (identical to pressing .
- To cancel the input, click the  button (identical to pressing .

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.

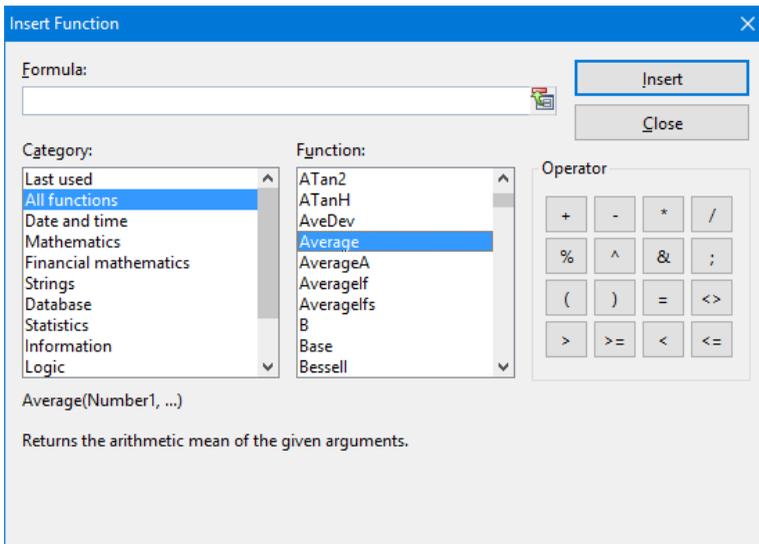
For example, to enter the formula =SUM(B2:D4), proceed as follows:

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 **Insert > Function** dialog box.



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.

- **Function**

Displays all functions of the selected category. To copy a function to the **Formula** input box, double click it.

- **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,

=\$A4 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** 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 **Table > External References** 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 all 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.

### ■ 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 the 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 inside 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 **Table > External References** and use the **Update** or **Update all** buttons as described above.

## Options for updating external cell references

There are some options related to updating external references in the document properties.

To change them, choose **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)”, page 616 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** command to find and analyze cells that contain an error value. See the section “Analyzing tables” (page 101) 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).

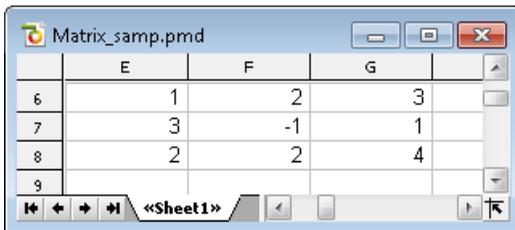
## Entering arrays into cells

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:



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.

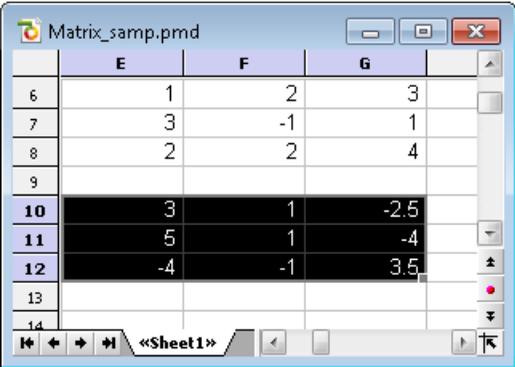
### 2. Enter the array formula

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 ⌘ ⇧ ↵.

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  $\text{Ctrl} \downarrow \leftarrow$ . 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  $\text{Ctrl} 7$ .

## 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.

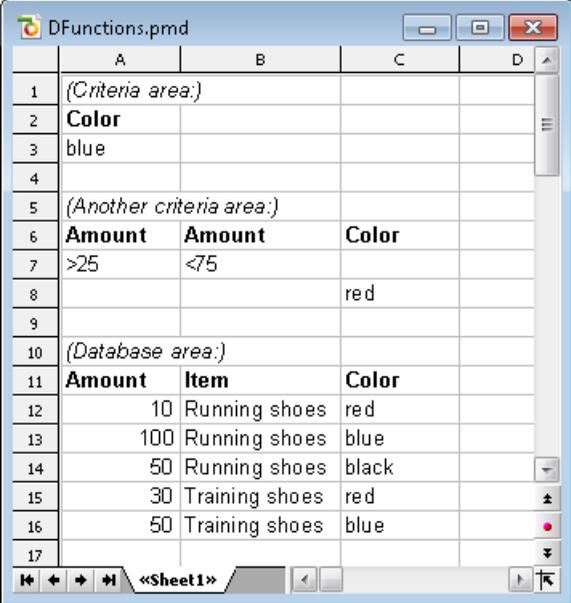
It has to be structured as follows:

- **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:



The screenshot shows a spreadsheet window titled "DFunctions.pmd" with a grid of cells. The grid is organized into three distinct sections:

- Criteria Area 1 (Rows 1-4):** Row 1 is labeled "(Criteria area:)", Row 2 has "Color" in column A, Row 3 has "blue" in column A, and Row 4 is empty.
- Criteria Area 2 (Rows 5-9):** Row 5 is labeled "(Another criteria area:)", Row 6 has "Amount" in columns A and B, and "Color" in column C, Row 7 has ">25" in column A and "<75" in column B, and Row 8 has "red" in column C.
- Database Area (Rows 10-17):** Row 10 is labeled "(Database area:)", Row 11 has "Amount" in column A, "Item" in column B, and "Color" in column C. Rows 12-17 contain data: (10, Running shoes, red), (100, Running shoes, blue), (50, Running shoes, black), (30, Training shoes, red), and (50, Training shoes, blue).

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

**See also:**

COS

---

## 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**.

### Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

### Example:

ACOT(1) returns 0.7854 (45°)

ACOT(COT(0.1234)) returns 0.1234

### 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**.

### Compatibility notes:

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

### Example:

ACOTH(2) returns 0.54931

ACOTH(COTH(0.1234)) returns 0.1234

### 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 prepended to 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 last 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

**See also:**

SIN

---

## 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

### See also:

ATAN2, TAN

---

## 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°)

**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, 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

---

## 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, **Average-Range** 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  $\text{BINOMDIST}(k1, n, p, \text{FALSE})$

$B(n, p, k1, k2)$  equals  $\text{BINOMDIST}(k2, n, p, \text{TRUE}) - \text{BINOMDIST}(k1-1, n, p, \text{TRUE})$

#### 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.

Note: In Excel 2013, a function identical to the B function was introduced:  $\text{BINOM.DIST.RANGE}$ . 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:

$\text{BINOMDIST}$

---

## BASE (convert decimal number to another base)

#### Syntax:

$\text{BASE}(\text{Number}, \text{Base} [, \text{Digits}])$

#### 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 $I_n(x)$ )

#### 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)

**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:**

BETAINV

---

## **BETAINV (percentiles of the beta distribution)**

**Syntax:**

BETAINV(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  $\leq 1$ .

**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:**

BETADIST







TRUE: BINOMDIST uses the cumulative distribution function, which returns the probability that there are *at most* **k** successes.

**Example:**

When you toss a coin 10 times (**n=10**), what is the probability that it lands on its tail (**p=50%**) exactly 4 times (**k=4**)?

BINOMDIST(4, 10, 50%, FALSE) returns 0.20508.

What is the probability that it lands on its tail *at most* 4 times?

BINOMDIST(4, 10, 50%, TRUE) returns 0.37695.

**See also:**

COMBIN, CRITBINOM, NEGBINOMDIST

---

## 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 <b>Negative numbers in red</b> , 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 right-aligned text ^ if the cell contains centered 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)

### Syntax:

CHIDIST(X, DegreesFreedom)

### Description:

Returns the one-tailed probability of the chi-square distribution.

**X** is the value to be evaluated. Must be  $\geq 0$ .

**DegreesFreedom** is the number of degrees of freedom. Must be  $\geq 1$  and  $< 10^{10}$ .

**See also:**

CHIINV, CHITEST

---

## CHIINV (percentiles of the chi-square distribution)

**Syntax:**

CHIINV(Probability, DegreesFreedom)

**Description:**

Returns the inverse of the chi-square distribution function (i.e., percentiles of this distribution).

**Probability** is the one-tailed probability to be evaluated. Must be in the range 0 to 1.

**DegreesFreedom** is the number of degrees of freedom. Must be  $\geq 1$  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:**

CHITEST, CHIDIST

---

## CHITEST (chi-square test for independence)

**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:**

CHIINV, CHIDIST

---

## **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.

---

## 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”, page 436).

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

---

## **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

---

## 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

---

## 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)

**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

---

# 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:

<b>Mass</b>	<b>Code</b>
Gram	g
Slug	sg
Pound (avoirdupois)	lbm
u (atom mass)	u
Ounce (avoirdupois)	ozm

<b>Distance</b>	<b>Code</b>
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.

<b>Time</b>	<b>Code</b>
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

<b>Liquid measure</b>	<b>Code</b>
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

<b>Force</b>	<b>Code</b>
Newton	N
Dyne	dyn
Pound-force	lbf

<b>Power</b>	<b>Code</b>
Watt	W
HP (Horsepower)	HP

<b>Magnetism</b>	<b>Code</b>
Tesla	T
Gauss	ga

<b>Energy</b>	<b>Code</b>
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

<b>Pressure</b>	<b>Code</b>
Pascal	Pa
Atmosphere	atm
mm of Mercury	mmHg

<b>Temperature</b>	<b>Code</b>
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:

<b>Prefix (and factor)</b>	<b>Code</b>
Exa (10 <sup>18</sup> )	E
Peta (10 <sup>15</sup> )	P
Tera (10 <sup>12</sup> )	T
Giga (10 <sup>9</sup> )	G
Mega (10 <sup>6</sup> )	M
Kilo (1000)	k
Hecto (100)	h
Deka (10)	e
Deci (0.1)	d
Centi (0.01)	c
Milli (0.001)	m
Micro (10 <sup>-6</sup> )	u
Nano (10 <sup>-9</sup> )	n
Pico (10 <sup>-12</sup> )	p
Femto (10 <sup>-15</sup> )	f
Atto (10 <sup>-18</sup> )	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, COVAR

---

## COS (cosine)

### Syntax:

COS(Number)

### Description:

Returns the cosine of **Number**.

**Example:**

`COS(PI())` returns -1

`COS(RADIANS(180))` returns -1

**See also:**

ACOS

---

## **COSH (hyperbolic cosine)**

**Syntax:**

`COSH(Number)`

**Description:**

Returns the hyperbolic cosine of **Number**.

**Example:**

`COSH(0.1)` returns 1.005

**See also:**

ACOSH

---

## **COT (cotangent)**

**Syntax:**

`COT(Number)`

**Description:**

Returns the cotangent of **Number**.

**Compatibility notes:**

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

**Example:**

`COT(PI()/4)` returns 1

`COT(RADIANS(45))` returns 1

**See also:**

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

---

## 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, ISNUMBER

---

## 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

**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)

### Syntax:

COVAR(Range1, Range2)

### Description:

Returns the 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:

FISHER, CORREL

---

## CREATEDATE (date the document was created)

### Syntax:

CREATEDATE()

### Description:

Returns the date/time the current document was created.

### 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:

In a document created on the 24th of August, 2016 at 9:03 AM:

CREATEDATE() returns 08/24/16 9:03 AM

Note: To change the format of the resulting date, choose the **Format > Cell** command and select the desired date format (e.g., date only, date and time, or time only).

### See also:

NOW

---

## CRITBINOM

### 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:**

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** 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(2016, 9, 25) returns the date 09/25/2016

#### **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

---

## **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”, page 438.

**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

---

## DAY (day of a date)

**Syntax:**

DAY(Date)

**Description:**

Returns the day of a date.

**Example:**

DAY("09/25/2016") returns 25

**See also:**

YEAR, ISOWEEK, WEEKNUM, MONTH, WEEKDAY

---

## **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("01/14/2016", "01/01/2016") returns 13

#### See also:

DATEDIF, NETWORKDAYS, DAYS360, DAYSP, 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("01/01/2016", "02/01/2016") returns 30

DAYS360("02/01/2016", "03/01/2016") returns 30

DAYS360("01/01/2012", "01/01/2013") returns 360

**See also:**

DATEDIF, DAYS, NETWORKDAYS, 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("01/01/2016", "01/14/2016") returns 13

**See also:**

DAYS

---

## 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("09/25/2016") returns 30

DAYSPERMONTH("10/25/2016") returns 31

---

## **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, DAYS, 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”, page 438.

**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”, page 438.

**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 1111111111111111111111111111111010110

### 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:

$DECIBEL(P2, P1) = 10 * LOG_{10}(P2/P1)$

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

**See also:**

TRUNC

---

## DEGREES (convert radians to degrees)

**Syntax:**

DEGREES(Number)

**Description:**

Converts radians into degrees.

The following conversion formula is used:

$DEGREES(x) = x * 180 / PI()$

**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, SUM, 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”, page 438.

**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”, page 438.

**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”, page 438.

**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  $27 \frac{4}{8}$  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”, page 438.

**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

---

## 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”, page 438.

**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, 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”, page 438.

**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:**

STDEVP, 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”, page 438.

**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

---

## 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”, page 438.

**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, 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”, page 438.

**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:**

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("03/30/2016", 1) returns 04/30/2016

EDATE("03/31/2016", 1) returns 04/30/2016 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("09/25/2016", 0) returns 09/30/2016

EOMONTH("09/25/2016", 1) returns 10/31/2016

EOMONTH("09/25/2016", -1) returns 08/31/2016

**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  $\geq 0$ .

**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:

<b>Error value in cell</b>	<b>Result</b>
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”, page 435.

### 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, section “Error values” on page 435

---

## 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.

<b>Country</b>	<b>PM code</b>	<b>ISO code</b>
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, MROUND, ROUND, ISEVEN

---

## 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

---

## 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

### See also:

LN, POWER

---

## EXPONDIST (exponential distribution)

### 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  $\geq 0$ .

**Lambda** ( $\lambda$ ) 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:**

POISSON

---

## **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.,  $1*2*3*...*\text{Number}$ .

**Number** must be  $\geq 0$ .

**Example:**

FACT(9) equals  $1*2*3*4*5*6*7*8*9$ , which is 362880.

**See also:**

FACTDOUBLE

---

## 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  $2*4*6*...*Number$ .

If **Number** is odd, its double factorial is  $1*3*5*...*Number$ .

**Number** must be  $\geq 0$ .

### 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)**

**Syntax:**

FDIST(X, DegreesFreedom1, DegreesFreedom2)

**Description:**

Returns the F probability distribution function.

**X** is the value to be evaluated. Must be  $\geq 0$ .

**DegreesFreedom1** is the numerator degrees of freedom.

**DegreesFreedom2** is the denominator degrees of freedom.

Both degrees of freedom must be  $\geq 1$  and  $< 10^{10}$ .

**See also:**

FINV, 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, SHEETNAME

---

## 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

---

## FINV (percentiles of the F distribution)

**Syntax:**

FINV(Probability, DegreesFreedom1, DegreesFreedom2)

**Description:**

Returns the inverse of the 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  $\geq 1$  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:**

FTEST, FDIST

---

## FISHER (Fisher transformation)

### Syntax:

FISHER(Number)

### Description:

Returns the Fisher transformation.

**Number** must be  $> -1$  and  $< 1$ .

### See also:

FISHERINV, CORREL, COVAR

---

## FISHERINV (inverse of the Fisher transformation)

### Syntax:

FISHERINV(Number)

### Description:

Returns the inverse of the Fisher transformation.

### See also:

FISHER

---

## 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** 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

---

## 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, MROUND, ROUND, 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

---

**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  $\leq 10$ .
2. The number of values that are  $> 10$  and  $\leq 15$ .

3. The number of values that are  $>15$  and  $\leq 42$ .
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”, page 436).

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)

#### 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:

FINV, 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, 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

---

## **GAMMADIST (gamma distribution)**

**Syntax:**

GAMMADIST(X, Alpha, Beta, Cumulative)

**Description:**

Returns the gamma distribution.

X is the value to be evaluated. Must be  $\geq 0$ .

**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:**

GAMMAINV

---

## **GAMMAINV (percentiles of the gamma distribution)**

**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:**

GAMMADIST

---

## **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

---

## 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, NORMDIST, 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, 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

---

## 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”, page 436).

**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, 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 111111111111111111111111010110 (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, INDEX, MATCH

---

## 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

**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:**

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

**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](http://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](http://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” (page 329). However, the HYPERLINK function is more flexible.

---

## HYPGEOMDIST (hypergeometric distribution)

#### 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:**

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 (return a text string on errors)

**Syntax:**

IFERROR(Value, Error\_Text)

**Description:**

Normally returns **Value**. However, if **Value** contains any type of error value, returns the text string **Error\_Text** 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, ERROR.TYPE, section “Error values” (page 435)

---

## 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 (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, 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.

**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))

**Example:**

IMNEG("2+4i") returns -2-4i

**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

---

## 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)

#### See also:

FORECAST, SLOPE

#### Annotation:

INTERCEPT(y\_values, x\_values) equals FORECAST(0, y\_values, x\_values).

---

## 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, 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, ERROR.TYPE, IFERROR, section “Error values” (page 435)

---

## **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, ERROR.TYPE, IFERROR, section “Error values” (page 435)

---

## 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

---

## 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

---

## 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)”, page 616.

### Example:

If A1 contains a #N/A error value, then:

ISNA(A1) returns TRUE

### See also:

NA(), ERROR.TYPE, IFERROR, ISERR, ISERROR, section “Error values” (page 435)

---

## 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, 09/25/2016, 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

---

## 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, 09/25/2016, 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.

### 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.

### 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.

**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 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.

**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.

**Compatibility notes:**

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

**Example:**

ISOWEEKNUM("01/01/2014") returns 1.

ISOWEEKNUM("01/01/2011") returns 52 (since this day was a Saturday).

**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

---

## 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

---

## 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 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, 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, PERCENTRANK, 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  $\geq 1$ . 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 (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<sub>n</sub>, m<sub>n-1</sub>, ..., m<sub>2</sub>, m<sub>1</sub>, 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:

<b>Abbreviation</b>	<b>Description</b>
$sm_1, sm_2, \text{etc.}$	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”, page 436).

**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

**See also:**

LOG, LOG10, EXP

---

## 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

---

## 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

---

## 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:

$$y = b * (m_1^{x_1}) * (m_2^{x_2}) * ... * (m_n^{x_n})$$

The LOGEST function calculates this exponential line from the given y values and x values, and then returns an array in the form {m<sub>n</sub>, m<sub>n-1</sub>, ..., m<sub>2</sub>, m<sub>1</sub>, 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:

<b>Abbreviation</b>	<b>Description</b>
$sm_1, sm_2, \text{etc.}$	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”, page 436).

**See also:**

LINEST, TREND, GROWTH

---

## LOGINV (percentiles of the gamma distribution)

**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:**

LN, LOGNORMDIST

---

## LOGNORMDIST (lognormal distribution)

**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:**

LN, LOGINV, NORMDIST, 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).

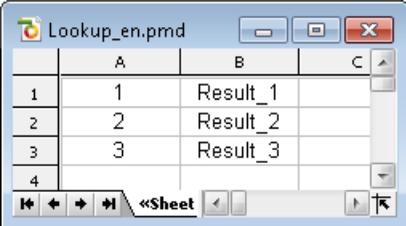
**LookupVector** is the cell range or array to search in. It must be a vector, which is a range of either just *one* row or *one* column.

**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:

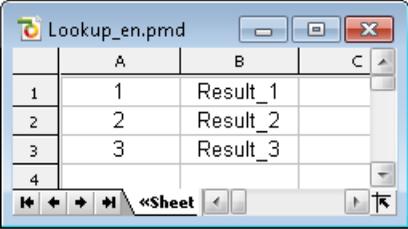
If **Range** has more columns than rows, the first *row* is scanned.

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, VLOOKUP, LOOKUP, HLOOKUP

---

## 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” (page 436), 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, 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

---

## 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("09/25/2016 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”, page 436).

**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” (page 436), 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”, page 436).

**Example:**

MMULT({1,2;3,4}, {5,6;7,8}) returns {19,22;43,50}

**See also:**

Section “Working with arrays” (page 436), 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!)

**See also:**

MODP, QUOTIENT

**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 highlighted results are wrong):

	A	B	C
1	<b>Arguments</b>	<b>Mod</b>	<b>ModP</b>
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.

---

## MODE (most frequently occurring value)

**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:**

MEDIAN, 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)

### See also:

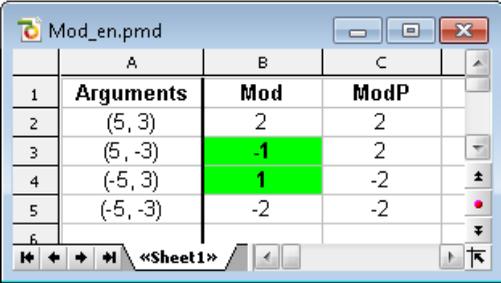
MOD, QUOTIENT

### 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 highlighted results are wrong):



	A	B	C
1	<b>Arguments</b>	<b>Mod</b>	<b>ModP</b>
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.

---

## MONTH (month of a date)

### Syntax:

MONTH(Date)

**Description:**

Returns the month of a date.

**Example:**

MONTH("09/25/2016") 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

---

## 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 either just *one* row or *one* column.

The result of this function is a vector with the solutions.

**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.

**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”, page 436).

**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  $y=-4$ .

**See also:**

Section “Working with arrays” (page 436), MDETERM, MINVERSE, MMULT, TRANSPOSE

---

## MULTINOMIAL (multinomial coefficient)

**Syntax:**

MULTINOMIAL(Number1 [, Number2, Number3 ...])

**Description:**

Returns the multinomial coefficient of a set of numbers.

**Number1**, **Number2**, etc., are the numbers to be evaluated. All of them have to be  $\geq 1$ .

**Example:**

MULTINOMIAL(1, 2, 3, 4, 5) returns 37837800

**See also:**

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:**

T, 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, ERROR.TYPE, section “Error values” (page 435)

---

## NEG (negative value)

### Syntax:

NEG(Number)

### Description:

Return the negative value of **Number**.

### 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  $(-1) * x$ .

### Example:

NEG(42) returns -42

NEG(-42) returns 42

NEG(0) returns 0

### See also:

ABS, SIGN

---

## NEGBINOMDIST (negative binomial distribution)

### 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  $\geq 0$ .

**r** is the number of successes. Must be  $\geq 0$ .

**p** is the probability of a success for each trial run. Must be in the range 0 to 1.

**Example:**

NEGBINOMDIST(10, 2, 1/6) returns 0.04935.

**See also:**

BINOMDIST

---

## 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

---

## 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)

### 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.

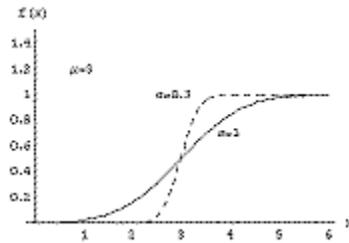
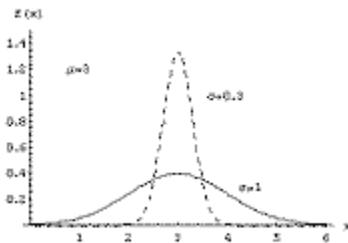
**Mean** is the arithmetic mean of the distribution.

**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:

NORMINV, NORMSDIST

---

## NORMINV (percentiles of the normal distribution)

#### 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:**

NORMDIST

---

## **NORMSDIST (standard normal distribution)**

**Syntax:**

NORMSDIST(x)

**Description:**

Returns the standard normal cumulative distribution function.

The standard normal distribution is a normal distribution (see NORMDIST function) with a mean of zero and a standard deviation of one.

x is the value to be evaluated.

**See also:**

NORMDIST

---

## **NORMSINV (percentiles of the standard distribution)**

**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:**

NORMINV, 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** command.

### See also:

TODAY

---

## 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, 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

---

## 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 1111111111111111111111010110 (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("3777777726") 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, MROUND, ROUND, ISODD

---

## 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

---

## 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.

#### **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.

#### **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%)

#### **See also:**

PERIOD, RATE

---

## **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)

#### 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.

**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:**

QUARTILE, PERCENTRANK, MEDIAN, MODE

---

## PERCENTRANK (percent rank in a data set)

**Syntax:**

PERCENTRANK(Range, Number [, Digits])

**Description:**

Returns the percentile rank 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  $\geq 1$ . 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 (indicating that 5 is the median of the given values)

**See also:**

PERCENTILE, QUARTILE

---

## 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:**

NORMDIST, GAUSS

---

## PI (pi)

**Syntax:**

PI()

**Description:**

Returns the mathematical constant  $\pi$  (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, PV, RATE

---

## **POISSON (Poisson distribution)**

**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  $\geq 0$ .

**Lambda** is the expected (average) value. Must be  $\geq 0$ .

**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:**

BINOMDIST

---

## 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  $\wedge$  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, ROOTN, section “Arithmetic operators in formulas” (page 426)

---

## 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, CUMPRINC, CUMIPMT, PMT

---

## 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 cumulated 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, RATE

---

## QUARTILE (quartiles of a data set)

### Syntax:

QUARTILE(Range, n)

### Description:

Returns one of the quartiles of a data set.

**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:

PERCENTILE, PERCENTRANK, MEDIAN, 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  $\geq 0$  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** command (keyboard shortcut: **F9**).

### 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** command (keyboard shortcut: **F9**).

**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)

**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).

**Note:**

If **Number** occurs in **Range** more than once, the rank of subsequent numbers is affected as follows: If, for example, 42 occurs twice and has a rank of 10, the next smallest number's rank will be 12 – not 11.

**Example:**

If the cells A1:A5 contain 4, 2, 6, 5, 9:

RANK(9, A1:A5) returns 1

RANK(2, A1:A5) returns 5

RANK(2, A1:A5, TRUE) returns 1

#### See also:

SMALL, LARGE, PERCENTILE, 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, PV

---

## 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 ccdcc

REPLACE("cccccc", 3, 4, "ddddddd") returns ccdddd

REPLACE("cccccc", 3, 6, "ddddddd") returns ccdxxxxx

**See also:**

FIND, SEARCH, MID, SUBSTITUTE

---

## 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

---

## 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  $\geq 0$  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  $\geq 0$ .

### 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, TRUNC, MROUND

---

## 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, TRUNC

---

## 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, TRUNC

---

## 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”, page 436).

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

---

## **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

---

## **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, EXACT, SUBSTITUTE

---

## **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) =

$$a1*x^n + a2*x^{(n+m)} + a3*x^{(n+2m)} + a4*x^{(n+3m)} + \dots$$

**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.

#### **Compatibility notes:**

Microsoft Excel supports this function only in version 2013 or later. In older versions, the function is unknown.

#### **Example:**

On the third worksheet in a document, SHEET() returns 3.

SHEET("Expenses") returns the index of the worksheet named “Expenses”.

#### **See also:**

SHEETNUMBER, FILENAME, SHEETNAME

---

## **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.

### 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 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

### 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

---

## **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**.

**Example:**

$\text{SIN}(\text{PI}()/2)$  returns 1

$\text{SIN}(\text{RADIANS}(90))$  returns 1

**See also:**

ASIN

---

## **SINH (hyperbolic sine)**

**Syntax:**

$\text{SINH}(\text{Number})$

**Description:**

Returns the hyperbolic sine of **Number**.

**Example:**

$\text{SINH}(0.45)$  returns 0.4653

**See also:**

ASINH

---

## **SKEW (skewness of a distribution)**

**Syntax:**

$\text{SKEW}(\text{Number1}, \text{Number2}, \text{Number3} [, \text{Number4} \dots])$

*or*

$\text{SKEW}(\text{Range1} [, \text{Range2}, \text{Range3} \dots])$

**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, 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

---

## 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

---

## **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, PERCENTRANK, 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”, page 436).

**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:**

`SORTM({4;2;3}, {1})` returns {2;3;4}

`SORTM({4;2;3}, {1;TRUE})` returns {4;3;2} (descending order)

**See also:**

`SORTV`, section “Sorting cells” (page 92)

---

## **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”, page 436).

#### 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:

`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}

**See also:**

`SORTM`, section “Sorting cells” (page 92)

---

## **SQRT (square root)**

**Syntax:**

`SQRT(Number)`

**Description:**

Returns the square root of a number.

**Number** must be  $\geq 0$ .

**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  $\geq 0$ .

**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, NORMDIST, NORMSDIST

---

## STDEV (standard deviation of a sample)

### 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:

STDEVP, VAR

---

## 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

---

## STDEVP (standard deviation of entire population)

**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 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, VARP

---

## 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

---

## 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

---

## **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 xxbbxxbb

SUBSTITUTE("aabbaabb", "aa", "xx", 2) returns aabbxxbb

SUBSTITUTE("aabbaabb", "AA", "xx") returns aabbaabb

**See also:**

FIND, SEARCH, REPLACE

---

## 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 **Table > Filter** 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 **Table > Filter** 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 **Table > Row > Hide** command or the **Table > Outliner > Group** command). 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 **Table > Filter** command. *Additionally*, it ignores all cells that have been hidden manually (using **Table > Row > Hide** or **Table > 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 **Table > Filter** command.

#### See also:

For information on filters, see section “Filtering cells by their contents” (page 96)

---

## 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 (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 (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

---

## 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, 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**.

**Example:**

TAN(PI()/4) returns 1

TAN(RADIANS(45)) returns 1

**See also:**

ATAN

---

## TANH (hyperbolic tangent)

**Syntax:**

TANH(Number)

**Description:**

Returns the hyperbolic tangent of **Number**.

**Example:**

TANH(0.45) returns 0.4219

**See also:**

ATANH

---

## TDIST (t-distribution)

**Syntax:**

TDIST(X, DegreesFreedom, Tails)

**Description:**

Returns the probability of the Student's t-distribution.

**X** is the value to be evaluated. Must be  $\geq 0$ .

**DegreesFreedom** is the number of degrees of freedom. Must be  $\geq 1$ .

**Tails** is the number of distribution tails:

1: One-tailed distribution

2: Two-tailed distribution

**See also:**

TINV, 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", page 142).

**Annotation:**

To change the format of numbers *without* having to convert them to a text string, choose the **Format > Cell** 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

---

## 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.

### 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:

TIMEDIFF("8:00 AM", "4:00 PM") returns 8:00

TIMEDIFF("10:00 PM", "6:00 AM") returns 8:00

TIMEDIFF("10/01/2016 10:00 PM", "10/02/2016 6:00 AM") returns 8:00

### See also:

TIME, TIMEVALUE

---

## 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)

### Syntax:

TINV(Probability, DegreesFreedom)

### Description:

Returns the inverse of the 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  $\geq 1$ .

**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:**

TTEST, 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** command.

**See also:**

NOW

---

## 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”, page 436).

**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” (page 436), 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”, page 436).

#### 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

---

## 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

### See also:

ROUNDDOWN, ROUNDUP, DECIMALS, ROUND

---

## TTEST (t-test)

### 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:**

TINV, 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:**

ERROR.TYPE

---

## 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 user data (name, address, etc.) entered in PlanMaker's preferences dialog.

Note: To change the content of these fields, choose **Tools > Options**, switch to the **General** tab, and then click on **User (Home)** or **User (Business)** (see also section "Preferences, General tab", page 375).

**FieldName** is the name of the field to be returned (see table below).

Uppercase and lowercase letters can be mixed. Please note that, if entered directly, **FieldName** has to be surrounded by double quotation marks ("").

**FieldName** can be one of the following text strings:

<b>User (Home)</b>	<b>Field name</b>
First name	Home.First name
Last name	Home.Last name
Initials	Home.Initials
Address	Home.Street
State, ZIP	Home.ZIP
City	Home.City
Phone 1	Home.Phone1
Phone 2	Home.Phone2
Fax	Home.Fax
E-mail	Home.E-mail
Web site	Home.Website

<b>User (Business)</b>	<b>Field name</b>
First name	Business.First name
Last Name	Business.Last name
Initials	Business.Initials
Company	Business.Company
Department	Business.Department
Address	Business.Street
State, ZIP	Business.ZIP
City	Business.City
Phone 1	Business.Phone1
Phone 2	Business.Phone2
Fax	Business.Fax
E-mail	Business.E-mail
Web site	Business.Website

### 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:

USERFIELD("Business.Website") returns www.softmaker.com

### See also:

FILENAME, SHEETNAME

---

## 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)**

**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:**

VARA, VARP, STDEV, 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

---

## **VARP (variance of entire population)**

**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 function instead.

Empty cells, text strings, and logical values are ignored.

**Example:**

VARP(2, 2, 3, 4, 1) returns 1.04

**See also:**

VAR, STDEV, 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:**

VARP

---

## 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, 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:

YEAR, ISOWEEK, WEEKNUM, 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:

ISOWEEK, YEAR, MONTH, DAY, WEEKDAY

---

## WEIBULL (Weibull distribution)

#### Syntax:

WEIBULL(x, Alpha, Beta, Cumulative)

#### Description:

Returns the Weibull distribution function.

**x** is the value to be evaluated. Must be  $\geq 0$ .

**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:**

EXPONDIST, 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("09/25/2016") returns 2016

**See also:**

ISOWEEK, WEEKNUM, MONTH, DAY, WEEKDAY

---

## ZTEST (z-test)

### 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:

STANDARDIZE, NORMDIST, NORMSDIST



# Keyboard shortcuts

The following pages provide tables for the most frequently used keyboard shortcuts in PlanMaker:

- **Keyboard shortcuts for editing spreadsheets**
- **Keyboard shortcuts for menu commands**

**Hint:** If you want to customize PlanMaker’s keyboard shortcuts, use the **Tools > Customize > Keyboard Mappings** command (see section “Customizing keyboard shortcuts”, page 412).

## Keyboard shortcuts for editing spreadsheets

Command	Keyboard shortcut
Move to the next cell	← / → / ↑ / ↓
Move to the next <i>filled</i> cell	Ctrl + ← / → / ↑ / ↓
Move to the previous page	Page ↑
Move to the next page	Page ↓
Move to the first cell in the current column	Ctrl Page ↑
Move to the last cell in the current column	Ctrl Page ↓
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 previous worksheet	Ctrl ⇧ Tab
Move to the next worksheet	Ctrl Tab
Move to the next circular reference	⇧ F5
Move to the next error	Ctrl F3

<b>Command</b>	<b>Keyboard shortcut</b>
Copy cell above	(comma)
Copy value from cell above	(comma)
Enter an array formula	
Select current array formula	
Select current conditional formatting	
Open a selection list with the cell contents directly above or below a cell	
Switch between AUTO and TEXT input mode (see section “Status bar”, page 33)	
Convert a hexadecimal character code into the respective Unicode character*	

\* 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

<b>Command</b>	<b>Keyboard shortcut</b>
File > New	
File > Open	
File > Close	or
File > Save	
File > File Manager	
File > Print	
File > Exit	or
Edit > Undo	
Edit > Redo	

<b>Command</b>	<b>Keyboard shortcut</b>
<b>Edit &gt; Repeat</b>	Ctrl Shift Y
<b>Edit &gt; Cut</b>	Ctrl X
<b>Edit &gt; Copy</b>	Ctrl C
<b>Edit &gt; Paste</b>	Ctrl V
<b>Edit &gt; Paste Special</b>	Ctrl ⇧ V
<b>Edit &gt; Select All</b>	Ctrl A
<b>Edit &gt; Search</b>	Ctrl F
<b>Edit &gt; Replace</b>	Ctrl H
<b>Edit &gt; Search again</b>	F3
<b>Edit &gt; Go to</b>	Ctrl G or F5
<b>View &gt; Full Screen</b>	F6
<b>Format &gt; Cell</b>	Ctrl 1
Number format: Number	Ctrl ⇧ 1
Number format: Scientific	Ctrl ⇧ 2
Number format: Currency	Ctrl ⇧ 4
Number format: Percentage	Ctrl ⇧ 5
<b>Format &gt; Character</b>	Ctrl 2
Select font (in the Formatting toolbar)	Ctrl D
Boldface on/off	Ctrl B or Ctrl ⇧ F
Italics on/off	Ctrl I or Ctrl ⇧ K
Underlining on/off	Ctrl ⇧ U
Superscript	Ctrl ⇧ Num+
Subscript	Ctrl ⇧ Num-
Remove super- or subscript	Ctrl ⇧ Num*

<b>Command</b>	<b>Keyboard shortcut</b>
Alignment: default	Ctrl T
Alignment: left	Ctrl L
Alignment: right	Ctrl R
Alignment: centered	Ctrl E
Alignment: justified	Ctrl J
<b>Insert &gt; Function</b>	F7
<b>Insert &gt; Comment</b>	⇧ F2
Insert current date	Ctrl .
Insert current time	Ctrl :
Hide current row	Ctrl 9
Show current row	Ctrl ⇧ 9
Hide current column	Ctrl 0
Show current column	Ctrl ⇧ 0
<b>Table &gt; Insert Cells</b>	Ctrl +
<b>Table &gt; Delete Cells</b>	Ctrl -
<b>Tools &gt; Recalculate</b>	F9
Recalculate the current worksheet only	Shift⇧ F9
<b>Tools &gt; Update Charts</b>	F8

# Index

## #

#DIV/0! 435  
#N/A 435, 521, 571, 572, 575, 616  
#NAME? 435  
#NULL! 435  
#NUM! 435  
#REF! 435  
#VALUE! 435

## \$

\$ sign 430

## %

% sign 426

## 3

3D effect  
for chart frames 282  
for objects 221

## A

ABS (absolute value) 441  
Absolute cell references 430  
Absolute value (ABS) 441  
Accounting (number format) 137, 138  
ACOS (arccosine) 441  
ACOSH (inverse hyperbolic cosine) 442  
ACOT (arccotangent) 443  
ACOTH (inverse arccotangent) 443  
Acquire (File menu) 232  
Actual Size (View menu) 403  
Addition 426  
ADDRESS (cell address as text) 444  
Align or Distribute (Object menu) 214  
Alignment  
of cells 152, 153, 154  
of text in AutoShapes 248, 249  
of text in text frames 229, 230  
Always show comments 395, 396  
Analyzing tables 101  
AND (logical AND function) 445

ANSI code of a character (CODE) 470  
Anti-aliasing 380, 382  
Apply character formatting to entire words  
377, 379  
Arabic script 361, 375, 376  
Arccosine (ACOS) 441  
Arccotangent (ACOT) 443  
Arcsine (ASIN) 446  
Arctangent  
ATAN 448  
ATAN2 448  
Area chart 254, 255  
AREAS (number of areas) 446  
Array functions 436, 437  
Arrays 436  
MDETERM (Matrix Determinant) 601  
MINVERSE (Inverse Matrix) 606  
MMULT (product of matrices) 607  
MSOLVE (solution) 613  
TRANSPOSE (transposed matrix) 691  
working with array formulas 436  
Asian scripts 375  
ASIN (arcsine) 446  
ASINH (inverse hyperbolic sine) 447  
Associate files types 387, 389  
ATAN (arctangent) 448  
ATAN2 (arctangent) 448  
ATANH (inverse hyperbolic tangent) 449  
Auto input mode 33, 34  
Auto recovery 385, 386  
Autocomplete cells 377, 378  
AutoFilter 99  
AutoFormat (Format menu) 174  
Automatic percent input 377  
AutoShapes  
adding text 246  
drawing 243, 246  
properties 247  
AVEDEV (average deviation) 449  
Average  
arithmetic mean (AVERAGE) 450  
arithmetic mean (AVERAGEA) 451  
AVERAGEIF 452  
AVERAGEIFS 453  
geometric mean (GEOMEAN) 542  
harmonic mean (HARMEAN) 544  
trimmed mean (TRIMMEAN) 694  
AVERAGE (arithmetic mean) 450  
Average deviation (AVEDEV) 449

Average square deviation (DEVSQ) 509  
AVERAGEA (arithmetic mean) 451  
AVERAGEIF (average if condition is true)  
452  
AVERAGEIFS (average if conditions are  
true) 453  
Axes (in charts) 271, 273, 274

## B

B (Compatibility function) 454  
Background color  
of text 158  
of the workspace 380, 382  
Backup copy 320, 385, 387  
BAK files 320  
Bar chart 254  
BASE (convert decimal number to another  
base) 455  
BasicMaker 365  
Basics 37  
Beep on errors 380, 381, 383, 384  
Bessel 456, 457, 458  
BESSELI (modified Bessel function  $In(x)$ )  
456  
BESSELJ (Bessel function  $Jn(x)$ ) 457  
BESSELK (modified Bessel function  $Kn(x)$ )  
457  
BESSELY (Bessel function  $Yn(x)$ ) 458  
Beta distribution  
BETADIST 458  
BETAINV 459  
BETADIST (beta distribution) 458  
BETAINV (percentiles of the beta  
distribution) 459  
BIN2DEC (binary to decimal) 460  
BIN2HEX (binary to hexadecimal) 460  
BIN2OCT (binary to octal) 461  
Binary to decimal (BIN2DEC) 460  
Binary to hexadecimal (BIN2HEX) 460  
Binary to octal (BIN2OCT) 461  
BINOMDIST (binomial distribution) 462  
Binomial distribution  
BINOMDIST 462  
CRITBINOM 487  
NEGBINOMDIST 617  
Bold 157  
Boolean (number format) 137, 139

Borders (Format menu) 147  
Box plot chart 254, 257  
Bring Forward One Level 225, 226  
Bring to Front 225, 226  
Bubble chart 254, 255

## C

Calculation in status bar 377, 380  
Cascade (Window menu) 369  
Category axis (in charts) 271  
CEILING (round up to a multiple of base)  
463  
Cell (Format menu) 170  
Alignment tab 152  
Borders tab 147  
Number format tab 135, 137, 140  
Protection tab 346  
Shading tab 150  
CELL (information about a cell) 464  
Cell address as text (ADDRESS) 444  
Cell frame 39, 374, 375  
Cell marker 374, *See* Cell frame  
Cell Style (Format menu) 168, 169, 170, 171  
Cell styles 168  
Cells  
deleting 67  
entering data 58  
filling automatically 76  
grouping (Outliner) 325  
inserting 69  
joining 152, 155  
rotating 152, 154  
selecting 62, 63, 64  
size 133  
sorting 92  
CHAR (character from ANSI code) 466  
Character (Format menu) 155, 156, 157, 158,  
159, 160  
Character from ANSI code (CHAR ) 466  
Character pitch 159  
Character Style (Format menu) 164, 165, 166,  
167, 168  
Character styles 164  
Chart (Object menu)  
Add Trendline 269  
Change Chart Location 283, 284  
Data in Columns 259  
Data in Rows 259  
Save as Image 284

- Show Horizontal Grid Lines 276
- Show Vertical Grid Lines 276
- Chart area (in charts) 262
- Chart elements 259
- Chart sheet 283, 284
- Chart toolbar 253
- Chart type 254
- Charts 251
  - arrangement of data series 259, 279
  - chart elements 259
  - chart type 254
  - editing 253
  - inserting 252
  - moving 283
  - properties 278
  - saving as an image file 284
  - updating 283
- Check for updates 387, 388
- Check Spelling (Tools Menu) 304
- Check spelling as you type 306, 383, 384
- Checkbox (forms object) 291
- CHIDIST (chi-square distribution) 466
- CHIINV (percentiles of the chi-square distribution) 467
- Chi-square distribution
  - CHIDIST 466
  - CHIINV 467
- Chi-square test (CHITEST) 467
- CHITEST (chi-square test) 467
- CHOICE ( $x > 0$ ,  $x = 0$ ,  $x < 0$ ?) 468
- CHOOSE (choose value from list) 469
- Circles
  - drawing 243, 245
  - properties 247
- Circular reference 33, 34, 398, 400
- CLEAN (remove unprintable characters) 469
- Close (File menu) 368
- Close all (Window menu) 368
- CODE (ANSI code of a character) 470
- Color
  - of cells 150
  - of objects 216
  - of text 158
  - of the workspace 380, 382
- Color gradient (for objects) 216, 218
- Color palette, modifying 393
- COLUMN (column number of a reference) 470
- Column (Table menu)
  - Hide 134, 135
  - Optimum Width 133, 134
  - Show 134, 135
  - Width 133
- Column chart 254
- Column headers 62, 63
  - changing the width of columns 133
  - printing 192
  - showing/hiding 401
- Column number of a reference (COLUMN) 470
- Columns
  - deleting 67
  - hiding 134
  - inserting 69
  - selecting 62, 63
  - width 133
- COLUMNS (number of columns in a range) 471
- COMBIN (combinations) 472
- Combinations (COMBIN) 472
- Comment (Insert menu) 111
- Compare texts (EXACT) 524
- Compatibility (document properties) 395, 398
- COMPLEX (create complex number) 472
- Complex numbers 472
  - absolute value (IMABS) 554
  - angle (IMARGUMENT) 555
  - COMPLEX (build complex number) 472
  - conjugate (IMCONJUGATE) 556
  - cosine (IMCOS) 556
  - difference (IMSUB) 564
  - division (IMDIV) 557
  - exponential (IMEXP) 557
  - imaginary coefficient (IMAGINARY) 554
  - logarithm, base 10 (IMLOG10) 559
  - logarithm, base 2 (IMLOG2) 559
  - logarithm, natural (IMLN) 558
  - negative value (IMNEG) 560
  - power (IMPOWER) 561
  - product (IMPRODUCT) 561
  - real coefficient (IMREAL) 562
  - sine (IMSIN) 562
  - square root (IMSQRT) 563
  - sum (IMSUM) 564
- Complex scripts 375
- Compress pictures in memory 387, 388
- CONCATENATE (concatenate text strings) 473
- Concatenation 426, 427
- Condition

CHOICE 468  
 IF 552  
 Conditional Formatting (Format menu) 174  
   Delete Rules in Selected Cells 182, 183  
   Manage Rules 180  
   New Rule 175  
 Cone chart 254, 256  
 CONFIDENCE (confidence interval) 474  
 Confidence interval (CONFIDENCE) 474  
 Connectors  
   drawing 243, 244  
   properties 247  
 Consolidating data 119  
 Context menu 30  
 CONVERT (unit conversion) 475  
 Convert decimal number to another base  
   (BASE) 455  
 Convert EU currencies (EUROCONVERT)  
   522  
 Copy (Edit menu) 70  
 Copy to document's folder (pictures) 231, 232  
 Corners (in charts) 265  
 CORREL (correlation coefficient) 478  
 Correlation coefficient  
   CORREL 478  
   PEARSON 630  
   RSQ 654  
 COS (cosine) 478  
 COSH (hyperbolic cosine) 479  
 Cosine (COS) 478  
 COT (cotangent) 479  
 Cotangent (COT) 479  
 COTH (hyperbolic cotangent) 480  
 Count  
   COUNT 481  
   COUNTA 481  
   COUNTBLANK 482  
   COUNTIF 482  
   COUNTIFS 483  
 COUNT (number of cells filled with numbers)  
   481  
 COUNTA (number of cells filled) 481  
 COUNTBLANK (number of empty cells) 482  
 COUNTIF (count if condition is true) 482  
 COUNTIFS (count if conditions are true) 483  
 COUNTP (PlanMaker 97 compatibility  
   function) 485  
 COVAR (Covariance) 486

Covariance (COVAR) 486  
 CREATEDATE (date the document was  
   created) 486  
 Creation date 195, 197  
 CRITBINOM 487  
 Cropping (of pictures) 233, 234, 235, 236  
 CSV file format 355  
 CUMIPMT (cumulative interest) 488  
 CUMPRINC (cumulative principal) 489  
 CURRENCY (format number as currency)  
   490  
 Currency (number format) 137, 138  
 Curves  
   drawing 243, 245  
   properties 247  
 Custom (number format) 137, 140  
 Customize (Tools menu)  
   Keyboard Mappings 412  
   Toolbars 409  
 Cut (Edit menu) 70  
 Cylinder chart 254, 256

## D

Data Consolidation (Table menu) 119, 120,  
   122, 124  
 Data points (in charts) 265  
 Data series (in charts) 265, 279  
 Data source (of charts) 279  
 Database functions 438, 494, 500, 501, 510,  
   511, 513, 514, 515, 516, 517  
 Date  
   create a date value (DATE) 491  
   current (NOW) 623  
   current (TODAY) 691  
   entering 58  
 DATE (create a date value) 491  
 Date before/after n months (EDATE) 518  
 Date difference (DATEDIF) 492  
 Date of last change 195, 197  
 Date the document was created  
   (CREATEDATE) 486  
 Date/Time (number format) 137, 138  
 DATEDIF (date difference) 492  
 DATEVALUE (convert text into date value)  
   493  
 DAVERAGE (database function) 494  
 DAY (day of a date) 494  
 DAYS (days between two dates) 495

DAYS360 (days between two dates) 496  
 DAYSP (compatibility function) 497  
 DAYSPERMOUTH (days per month) 498  
 DAYSPERYEAR (days per year) 499  
 DB (fixed-declining balance depreciation) 499  
 dBase file format 353, 355  
 DCOUNT (database function) 500  
 DCOUNTA (database function) 501  
 DDB (double-declining balance depreciation) 502  
 DEC2BIN (decimal to binary) 503  
 DEC2HEX (decimal to hexadecimal) 504  
 DEC2OCT (decimal to octal) 505  
 DECIBEL (decibel value of two quantities) 506  
 DECIMAL (convert number from any base into decimal) 506  
 Decimal point after input 395, 396  
 Decimal to binary (DEC2BIN) 503  
 Decimal to hexadecimal (DEC2HEX) 504  
 Decimal to octal (DEC2OCT) 505  
 DECIMALS (fractional part of a number) 507  
 Default (number format) 137, 138  
 Default currency 395, 397  
 Default file format 385  
 Default font 167  
 DEGREES (convert radians to degrees) 508  
 Degrees to radians (RADIANS) 643  
 Delete (Edit menu) 39, 40, 66  
 Delete cells (Table menu) 67  
 Delete Special (Edit menu) 66  
 Deleting  
   cell contents 66  
   cells 67  
   duplicate rows 68  
   empty rows 68  
 DELTA (test for equality) 508  
 Depreciation  
   double-declining balance (DDB) 502  
   fixed-declining balance (DB) 499  
   straight-line (SLN) 662  
   sum-of-years' digits (SYD) 684  
 Design Science 242  
 DEVSQ (average square deviation) 509  
 DGET (database function) 510  
 Dialog language 380  
 Dialog style 380  
 Dictionaries, installing (for spell checking) 420  
 Disable Sheet Protection (Tools menu) 347  
 Disable Workbook Protection (Tools menu) 348  
 Display the formula a cell contains (FORMULATEXT) 534  
 Distance to edge 190, 191  
 Division 426  
 DMAX (database function) 510  
 DMIN (database function) 511  
 Document properties 392  
   Calculate tab 398  
   Colors tab 393  
   Fonts tab 401  
   Options tab 395  
   Protection tab 400  
   Statistics tab 395  
   Summary tab 392  
 Document protection 349  
 Document statistics 395  
 Document summary 315  
   entering 315  
 Document tabs 369, 375, 376  
 Document Tabs (Window menu) 369, 370  
 Document templates 172, 173  
 Document window 32, 367  
 DOLLARDE (dollar price, decimal) 512  
 DOLLARFR (dollar price, fraction) 513  
 Double factorial (FACTDOUBLE) 527  
 Double-declining balance depreciation (DDB) 502  
 Doughnut chart 254, 256  
 DPRODUCT (database function) 513  
 Drag and Drop 70, 71  
 Drawings 243  
   inserting 243  
   properties 247  
   rotating 213  
 Dropdown (forms object) 295  
 DSTDEV (database function) 514  
 DSTDEVP (database function) 515  
 DSUM (database function) 515  
 Duplicate (Edit menu) 215  
 DVAR (database function) 516  
 DVARP (database function) 517

## E

EDATE (date before/after n months) 518  
Edit > Copy 70  
Edit > Cut 70  
Edit > Delete 39, 40, 66  
Edit > Delete Special 66  
Edit > Duplicate 215  
Edit > Fill 76, 77  
Edit > Go to 205  
Edit > Go to link 329, 330  
Edit > Link 239  
Edit > Paste 70  
Edit > Paste Special 72  
Edit > Redo 40, 61  
Edit > Repeat 61  
Edit > Replace 202, 203  
Edit > Replace again 203  
Edit > Search 201, 203  
Edit > Search again 203  
Edit > Select All 62, 63  
Edit > Undo 40, 61  
Edit Lists (Tools menu) 418  
Edit mode 210  
Edit Script (Tools menu) 365  
Edit toolbar 32  
Edit User Dictionaries (Tools menu) 306  
EFFECT (effective interest rate) 518  
Effective interest rate (EFFECT) 518  
Effects (for objects) 222  
Ellipses  
    drawing 243, 245  
    properties 247  
E-mail 343  
E-mailing a document 343  
Encryption 349, *See* Document protection  
Entering data in cells 58  
EOMONTH (end of month in n months) 519  
Equality (DELTA) 508  
Equation Editor 242  
ERF (Gaussian error function) 520  
ERFC (complement of Gaussian error function) 520  
Error bars (in charts) 265, 267  
Error function  
    ERF 520  
    ERFC (complement) 520

Error type (ERROR.TYPE) 521  
Error values 109, 435, 571, 572  
ERROR.TYPE (error type) 521  
EUROCONVERT (convert EU currencies) 522  
EVEN (round up to next even number) 523  
EXACT (compare texts) 524  
Excel file format 291, 353, 354, 357, 358, 359  
Exclusive or 709  
Exit (File menu) 44  
EXP (power of e) 525  
Expand SmartText entries 383, 384  
EXPONDIST (exponential distribution) 525  
Exponential distribution (EXPONDIST) 525  
Exponential regression statistics (LOGEST) 592  
    values (GROWTH) 543  
Exponentiation  
    operator 426  
    POWER function 637  
Export as PDF (File menu) 338  
Exporting documents 353  
Extended support for Arabic text 361, 375, 376  
Extended support for Asian fonts 375  
External cell references 431  
External References (Table menu) 433

## F

F distribution  
    FDIST 528  
    FINV 530  
FACT (factorial) 526  
FACTDOUBLE (double factorial) 527  
Factorial  
    FACT 526  
    FACTDOUBLE 527  
FALSE (logical value FALSE) 527  
FDIST (F distribution) 528  
Fields (in headers/footers) 195, 197  
File > Acquire 232  
File > Close 368  
File > Exit 44  
File > Export as PDF 338  
File > File Manager 316  
File > New 40, 172, 173  
File > Open 41, 173, 353, 354

File > Page Setup 190, 192, 195  
 File > Print 43, 335  
 File > Print Preview 333  
 File > Print Range  
     Define Print Range 192, 194  
     Remove Print Range 192, 194  
 File > Properties 392  
     Calculate tab 398  
     Colors tab 393  
     Fonts tab 401  
     Options tab 395  
     Protection tab 349, 400  
     Statistics tab 395  
     Summary tab 315, 392  
 File > Revert to Previous Version 320, 321  
 File > Save 43  
 File > Save all 43  
 File > Save as 43, 353, 354  
 File > Select Source 232  
 File > Send 343  
 File format 353, 354  
 File Manager (File menu) 316  
 FILENAME (file name of the document) 528  
 Fill (Edit menu) 76, 77  
 Filling  
     cells 150  
     objects 216  
 Filter (Table menu)  
     AutoFilter 99  
     Show All 96, 98, 99, 101  
     Special Filter 96  
 Filters 96, 675  
 FIND (search for text) 529  
 FINV (percentiles of the F distribution) 530  
 FISHER (Fisher transformation) 531  
 Fisher transformation  
     FISHER 531  
     FISHERINV 531  
 FISHERINV (Inverse of the Fisher transformation) 531  
 FIXED (format number as text with fixed decimals) 531  
 Fixed-declining balance depreciation (DB) 499  
 Flipping objects 213  
 Floor (in charts) 264  
 FLOOR (round down to a multiple of base) 533  
 Font 155, 156  
 Font size 155, 156  
 Footers 195  
 FORECAST (forecast using linear regression) 533  
 Format > AutoFormat 174  
 Format > Borders 147  
 Format > Cell  
     Alignment tab 152  
     Borders tab 147  
     Number format tab 135, 137, 140  
     Protection tab 346  
     Shading tab 150  
 Format > Cell Style 168, 169, 170, 171  
 Format > Character 155, 156, 157, 158, 159, 160  
 Format > Character Style 164, 165, 166, 167, 168  
 Format > Conditional Formatting 174  
     Delete Rules in Selected Cells 182, 183  
     Manage Rules 180  
     New Rule 175  
 Format > Input Validation 109, 183, 184  
 Format > Link 329  
 Format > Paragraph 161, 162, 163, 164, 307  
 Format > Remove Link 329, 331  
 Format > Shading 150  
 Format > Standard 160, 161  
 Format > Transfer Formatting 189  
 Formatting toolbar 31, 156, 157  
 Forms 287  
 Forms toolbar 289  
 Formula Auditing (Tools menu) 105, 107, 108, 109  
 Formula Auditing toolbar 105, 106  
 Formula tooltips 377, 379  
 FORMULATEXT (display the formula a cell contains) 534  
 Fraction (number format) 137, 139  
 Freehand forms  
     drawing 243, 245  
     properties 247  
 Freeze (View menu) 125  
 FREQUENCY (frequency) 535  
 F-test (FTEST) 536  
 FTEST (F-test) 536  
 Full Screen (View menu) 404  
 Full screen view 404  
 Function (Insert menu) 427, 428

## Functions

functions from A to Z 441

inserting 427, 428

## Future value

FV 537

FVSCHEDULE 537

FV (future value) 537

FVSCHEDULE (future value) 537

## G

GAMMA (gamma function) 538

### Gamma distribution

GAMMADIST 539

GAMMAINV 539

### Gamma function

GAMMA 538

GAMMALN 540

GAMMADIST (gamma distribution) 539

GAMMAINV (percentiles of the gamma distribution) 539

GAMMALN (logarithm of the gamma function) 540

GAUSS (standard normal distribution) 541

Gaussian distribution (NORMDIST) 619

### Gaussian error function

ERF 520

ERFC (complement) 520

GCD (greatest common divisor) 541

GEOMEAN (geometric mean) 542

Geometric mean (GEOMEAN) 542

GESTEP (greater or equal to threshold value?) 543

Glow effect (for objects) 222

Go to (Edit menu) 205

Go to link (Edit menu) 329, 330

Goal Seek (Tools menu) 112

Gradient (color gradient) 216, 218

Greatest common divisor (GCD) 541

Gridlines (between table cells) 401, 402

Gridlines (in charts) 276

Group (Object menu) 226

Groupbox (forms object) 301

### Grouping

cells (Outliner) 325

objects 226

GROWTH (values of an exponential regression) 543

Guidelines for text frames 395, 397

## H

HARMEAN (harmonic mean) 544

Harmonic mean (HARMEAN) 544

Header and Footer (Insert menu) 195

Headers 195

Height of a row 133

HEX2BIN (hexadecimal to binary) 545

HEX2DEC (hexadecimal to decimal) 546

HEX2OCT (hexadecimal to octal) 546

Hexadecimal to binary (HEX2BIN) 545

Hexadecimal to decimal (HEX2DEC) 546

Hexadecimal to octal (HEX2OCT) 546

### Hiding

cells 134

cells, using sheet protection 346

cells, using the outliner 323

objects 225

High-Low chart 254, 256

HLOOKUP (look up row-wise) 547

HOLIDAY (dates of movable Christian holidays) 548

### Horizontal alignment

of cells 152, 153

Horizontal grid (in charts) 276

HOUR (hour) 549

HTML documents 331

Hunspell dictionaries 383, 384, 420

Hyperbolic cosine (COSH) 479

Hyperbolic cotangent (COTH) 480

Hyperbolic sine (SINH) 661

Hyperbolic tangent (TANH) 686

Hypergeometric distribution

(HYPGEOMDIST) 551

HYPERLINK (hyperlink) 550

### Hyperlinks

applied to cells 329

applied to objects 222, 223

HYPERLINK function 550

HYPGEOMDIST (hypergeometric distribution) 551

Hyphenation 307

in table cells 308

in text frames 307

language selection 303

## I

IF (if-then-else condition) 552

IFERROR (return a text string on errors) 553  
 IMABS (absolute value of a complex number) 554  
 IMAGINARY (imaginary coefficient of a complex number) 554  
 IMARGUMENT (angle of a complex number) 555  
 IMCONJUGATE (conjugate complex number) 556  
 IMCOS (cosine of a complex number) 556  
 IMDIV (division of complex numbers) 557  
 IMEXP (exponential of a complex number) 557  
 IMLN (natural logarithm of a complex number) 558  
 IMLOG10 (base-10 logarithm of a complex number) 559  
 IMLOG2 (base-2 logarithm of a complex number) 559  
 IMNEG (negative value of a complex number) 560  
 Importing documents 353  
 IMPOWER (power of a complex number) 561  
 IMPRODUCT (product of complex numbers) 561  
 IMREAL (real coefficient of a complex number) 562  
 IMSIN (sine of a complex number) 562  
 IMSQRT (square root of a complex number) 563  
 IMSUB (difference of complex numbers) 564  
 IMSUM (sum of complex numbers) 564  
 In-cell editing 377  
 Indents 161  
 INDEX (cell in a particular row/column) 565  
 INDIRECT (create reference from text) 566  
 Information about a cell (CELL) 464  
 Inner margins  
     of AutoShapes 248  
     of cells 152, 154  
     of text frames 229, 230  
 Input validation 183  
 Input Validation (Format menu) 109, 183, 184  
 Insert > Comment 111  
 Insert > Function 427, 428  
 Insert > Header and Footer 195  
 Insert > Page Break 198, 199  
 Insert > SmartText 310, 311, 312  
 Insert > Symbol 127  
 Insert Cells (Table menu) 69  
 Insert frames and drawings immediately 377, 379  
 Inserting  
     cells 69  
 Installation 25  
     Android 26  
     Linux 26  
     Windows 25  
 INT (round down to nearest integer) 567  
 INTERCEPT (intercept point of a linear trend) 567  
 Interest for fixed-interest investments (PCF) 629, 630  
 Interest for fixed-interest investments (RRI) 629  
 Interest payment  
     IPMT 569  
     ISPMT 581  
 Interest, cumulative (CUMIPMT) 488  
 Internal rate of return  
     IRR 570  
     MIRR 607  
     XIRR 708  
 Internet  
     HTML documents 331  
     links 329  
 Intersection  
     INTERSECTION function 568  
     intersection operator 426  
 INTERSECTION (intersection of two ranges) 568  
 Inverse arccotangent (ACOTH) 443  
 Inverse hyperbolic cosine (ACOSH) 442  
 Inverse hyperbolic sine (ASINH) 447  
 Inverse hyperbolic tangent (ATANH) 449  
 Inverse matrix (MINVERSE) 606  
 IPMT (interest payment) 569  
 IRR (internal rate of return) 570  
 ISBLANK (is empty?) 571  
 ISERR (is an error value except #N/A?) 435, 571  
 ISERROR (is an error value?) 435, 572  
 ISEVEN (is an even number?) 573  
 ISFORMULA (is a formula?) 573  
 ISLOGICAL (is a logical value?) 574  
 ISNA (is not available?) 575

ISNONTEXT (is no text?) 575  
ISNUMBER (is numeric?) 576  
ISNUMBERP (PlanMaker 97 compatibility function) 577  
ISODD (is an odd number?) 578  
ISOWEEK (ISO week number) 578  
ISOWEEKNUM (ISO week number) 580  
ISPMT (interest payment) 581  
ISREF (is a valid reference?) 581  
ISTEXT (is text?) 582  
Italic 157  
Iterations 398, 400

## J

Join cells 152, 155

## K

Keep aspect ratio 215  
Keep scaling 215, 216  
Kerning 160  
Keyboard shortcuts  
  customizing 412  
  default keyboard shortcuts 713, 714  
  for cell styles 169, 170  
  for character styles 165, 166  
  for special characters 127, 128  
Keyboard, show/hide automatically 387, 389  
KURT (kurtosis) 583  
Kurtosis (KURT) 583

## L

Label (forms object) 301  
Language  
  for spell checking and hyphenation 303, 383, 384  
  user interface 380  
LARGE (k-th largest number) 584  
LASTPRINTED (date last printed) 585  
LASTSAVED (date last saved) 585  
LCM (least common multiple) 586  
Least common multiple (LCM) 586  
LEFT (left part of a text string) 586  
Left arrow key never exists cell editing 377, 378  
Legend (in charts) 277  
LEN (length) 587

Length (LEN) 587  
Letter spacing 159  
Limit internal picture cache 387, 388  
Line chart 254  
Line spacing 162  
Linear regression  
  FORECAST 533  
  intercept point (INTERCEPT) 567  
  statistics (LINEST) 588  
  trend lines in charts 269  
  values (TREND) 692  
Lines  
  drawing 243, 244  
  of objects 219  
  properties 247  
LINEST (statistics of a linear regression) 588  
Link (Edit menu) 239  
Link (Format menu) 329  
Links  
  applied to cells 329  
  applied to objects 222, 223  
  HYPERLINK function 550  
Listbox (forms object) 296  
Live preview 380, 381  
LN (natural logarithm) 590  
LOG (logarithm) 591  
LOG10 (base-10 logarithm) 591  
Logarithm  
  any base (LOG) 591  
  base 10 (LOG10) 591  
  natural (LN) 590  
LOGEST (statistics of an exponential regression) 592  
LOGINV (percentiles of the gamma distribution) 594  
Lognormal distribution  
  LOGINV 594  
  LOGNORMDIST 594  
LOGNORMDIST (lognormal distribution) 594  
LOOKUP (search cell range) 595  
LOWER (convert text to lower case) 598  
Lower case  
  LOWER 598  
  PROPER 640

## M

Macros 291, 359  
Manual 23

Margins  
 inner margins of AutoShapes 248  
 inner margins of cells 152, 154  
 inner margins of text frames 229, 230  
 page margins 190, 191

MATCH (relative position in a range) 598

MathType 242

Matrix  
 MDETERM (Determinant) 601  
 MINVERSE (Inverse) 606  
 MMULT (product of matrices) 607  
 MSOLVE (solution) 613  
 TRANSPOSE (transposed matrix) 691  
 working with array formulas 436

MAX (maximum) 599

MAXA (maximum) 600

Maximum  
 MAX 599  
 MAXA 600

Maximum number of undo steps 375

MDETERM (matrix determinant) 601

Mean  
 arithmetic (AVERAGE) 450  
 arithmetic (AVERAGEA) 451  
 geometric (GEOMEAN) 542  
 harmonic (HARMEAN) 544  
 ignoring marginal values (TRIMMEAN) 694

Measurement 380, 382

MEDIAN 602

Menu bar 30

MID (part of a text string) 602

Middle mouse button 377, 379

MILLISECONDS (milliseconds) 603

MIN (minimum) 604

MINA (minimum) 604

Minimum  
 MIN 604  
 MINA 604

MINUTE (minute) 605

MINVERSE (inverse matrix) 606

MIRR (modified internal rate of return) 607

Mirror effect (for objects) 222

MMULT (product of matrices) 607

MOD (remainder of a division, Excel method) 608

MODE (most frequently occurring value) 609

MODP (remainder of a division, PlanMaker method) 610

MONTH (month of a date) 611

Move by ... decimals 395, 396

Move selection after input 377

MROUND (round to a multiple of base) 612

MSOLVE (solution of matrix equation  $Ax=B$ ) 613

MULTINOMIAL (multinomial coefficient) 614

Multinomial coefficient (MULTINOMIAL) 614

Multiplication 426

**N**

N (convert value into number) 615

NA (error value #N/A) 616

Name of a worksheet (SHEETNAME) 658

Names (Table menu) 86, 90  
 Apply 91  
 Edit 87, 88  
 Import 89  
 Insert List 90

Naming cell ranges 86

NEG (negative value) 616

Negation  
 NEG function 616  
 operator 426

Negative binomial distribution  
 (NEGBINOMDIST) 617

NEGBINOMDIST (negative binomial distribution) 617

Net present value  
 NPV 624, 709

NETWORKDAYS (number of workdays) 618

Neumann function (BESSELY) 458

New (File menu) 40, 172, 173

New Chart Frame (Object menu) 252

New Drawing (Object menu) 243

New Forms Object (Object menu) 289  
 Checkbox 291  
 Dropdown 295  
 Groupbox 301  
 Label 301  
 Listbox 296  
 Pushbutton 298  
 Radio button 293  
 Scrollbar 300  
 Spinner 298

New OLE Object Frame (Object menu) 236, 237, 238

- New Picture Frame from Gallery (Object menu) 233
- New Text Frame (Object menu) 228
- NOMINAL (nominal interest rate) 619
- Nominal interest rate (NOMINAL) 619
- Normal distribution
  - NORMDIST 619
  - NORMINV 620
- Normal distribution, logarithmic
  - LOGINV 594
  - LOGNORMDIST 594
- Normal.pmvx 173
- NORMDIST (normal distribution) 619
- NORMINV (percentiles of the normal distribution) 620
- NORMSDIST (standard normal distribution) 621
- NORMSINV (percentiles of the standard distribution) 621
- NOT (logical NOT function) 622
- NOW (current date and time) 623
- NPV (number of periods) 623
- NPV (net present value) 624, 709
- Number (number format) 137, 138
- Number format 135, 140, 142
- Number of pages 195, 197
- Number of periods (NPV) 623
- Number separators 377, 380
- Numbers
  - entering 58
  - formatting 135

## O

- Object > Align or Distribute 214
- Object > Chart
  - Add Trendline 269
  - Change Chart Location 283, 284
  - Data in Columns 259
  - Data in Rows 259
  - Save as Image 284
  - Show Horizontal Grid Lines 276
  - Show Vertical Grid Lines 276
- Object > Group 226
- Object > New Chart Frame 252
- Object > New Drawing 243
- Object > New Forms Object 289
  - Checkbox 291
  - Dropdown 295
  - Groupbox 301

- Label 301
- Listbox 296
- Pushbutton 298
- Radio button 293
- Scrollbar 300
- Spinner 298
- Object > New OLE Object Frame 236, 237, 238
- Object > New Picture Frame from Gallery 233
- Object > New Text Frame 228
- Object > Order 225, 226
- Object > Properties
  - changing default settings 224
  - for chart frames 278
  - for checkboxes 292
  - for drawings 247
  - for dropdowns 295
  - for groupboxes 301
  - for labels 301
  - for listboxes 296
  - for OLE object frames 240
  - for picture frames 233
  - for pushbuttons 298
  - for radio buttons 294
  - for scrollbars 300
  - for spinners 299
  - for text frames 229
  - general properties 215
- Object > Rotate or Flip 213, 214
- Object > Ungroup 226
- Object mode 210
- Object Mode (View menu) 210, 211
- Object toolbar 210, 211
- Objects 209
  - aligning and distributing 214
  - changing default settings 224
  - duplicating 215
  - flipping 213
  - grouping 226
  - hiding 225
  - inserting 210
  - order 225
  - position 213
  - properties 215
  - rotating 213, 215, 216
  - selecting 210
  - size 213
- OCT2BIN (octal to binary) 625
- OCT2DEC (octal to decimal ) 626
- OCT2HEX (octal to hexadecimal) 626
- Octal to binary (OCT2BIN) 625

- Octal to decimal (OCT2DEC) 626
- Octal to hexadecimal (OCT2HEX) 626
- ODD (round up to next odd number) 627
- OFFSET (shifted reference) 628
- OLE objects 236
  - editing 239
  - inserting 237
  - properties 240
- Open (File menu) 41, 173, 353, 354
- Operators 426
- Optimum Height 133, 134
- Optimum Width 133, 134
- Options (Tools menu) 374
  - Appearance tab 380
  - Edit tab 377
  - Files tab 385
  - Fonts tab 391
  - General tab 375
  - Language tab 383
  - System tab 387
  - View tab 374
- OR (logical OR function) 629
- Order (Object menu) 225, 226
- Order (of objects) 225
- Orientation 190, 191
- Outline pane 323, 327
- Outline toolbar 323, 324
- Outliner 323
  - grouping cells 325
  - options 327
  - protecting outline 327
  - showing/hiding grouped cells 326
- Outliner (Table menu)
  - Automatically Show Outline Pane 326, 327
  - Clear Outline 325, 326
  - Group 325
  - Options 327
  - Ungroup 325
- Overlapping objects 229, 230, 248, 249

## **P**

- Page Break (Insert menu) 198, 199
- Page breaks
  - inserting and deleting 198
  - showing/hiding 401
- Page margins 190, 191
- Page number 192, 193, 195, 197
- Page setup 190
- Page Setup (File menu) 190, 192, 195

- Paper bins 190, 191
- Paper size 190, 191
- Paragraph (Format menu) 161, 162, 163, 164, 307
- Pascal distribution (NEGBINOMDIST) 617
- Paste (Edit menu) 70
- Paste Special (Edit menu) 72
- Payment (PMT) 635
- Payment on the principal (PPMT) 638
- PCF (interest for fixed-interest investments) 629, 630
- PDF export 338
- PEARSON (Pearson correlation coefficient) 630
- Percent 426
- Percentage (number format) 137, 139
- PERCENTILE (percentiles of a data set) 631
- PERCENTRANK (percent rank in a data set) 632
- PERIOD (duration of fixed-interest investments) 633
- PERMUT (permutations) 634
- Permutations (PERMUT) 634
- PHI (standard normal distribution) 634
- PI (pi) 635
- Pictures 231
  - inserting 231
  - properties 233
  - rotating 213
  - scanning 232
- Pie chart 254, 256
- PlanMaker file format 353, 354, 355
- PlanMaker Tour 45
- Plot area (in charts) 263
- PMBAK files 320, 322
- PMD file format 353, 355
- PMDX file format 353, 354
- PMT (payment) 635
- POISSON (Poisson distribution) 636
- Poisson distribution (POISSON) 636
- Position
  - of objects 213
- Position in a range (MATCH) 598
- POWER (power) 637
- PPMT (payment on the principal) 638
- Present value (PV) 641
- Preview (of files) 41, 42

- Primary axes (in charts) 281
- Principal, cumulative (CUMPRINC) 489
- Print (File menu) 43, 335
- Print date 195, 197
- Print order 192, 193
- Print Preview (File menu) 333
- Print range 192, 193
- Print Range (File menu)
  - Define Print Range 192, 194
  - Remove Print Range 192, 194
- Print time 195, 197
- PROB (probability) 639
- Probability (PROB) 639
- PRODUCT (product) 604
- Product of matrices (MMULT) 607
- Prompt for summary information when saving 385, 386
- PROPER (convert text to upper/lower case) 640
- Properties (File menu) 392
  - Calculate tab 398
  - Colors tab 393
  - Fonts tab 401
  - Options tab 395
  - Protection tab 349, 400
  - Statistics tab 395
  - Summary tab 315, 392
- Properties (Object menu)
  - changing default settings 224
  - for chart frames 278
  - for checkboxes 292
  - for drawings 247
  - for dropdowns 295
  - for groupboxes 301
  - for labels 301
  - for listboxes 296
  - for OLE object frames 240
  - for picture frames 233
  - for pushbuttons 298
  - for radio buttons 294
  - for scrollbars 300
  - for spinners 299
  - for text frames 229
  - general properties 215
- Properties (Table menu) 84, 85, 401
- Protecting
  - documents 349
  - outline 327
  - workbooks 348
  - worksheets 345
- Protection indicator 395, 396

- Pushbutton (forms object) 298
- PV (present value) 641
- Pyramid chart 254, 256

## Q

- QUARTILE (quartiles of a data set) 642
- Quick paths 313
- QUOTIENT (quotient of a division) 643

## R

- Radar chart 254, 255, 282
- RADIANS (convert degrees to radians) 643
- Radians to degrees (DEGREES) 508
- Radio button (forms object) 293
- RAND (random value) 644
- RANDBETWEEN (random value) 644
- Random value
  - RAND 644
  - RANDBETWEEN 644
- Rank
  - PERCENTRANK 632
  - RANK 645
- RANK (rank in a data set) 645
- RATE (rate per period) 646
- Rate per period (RATE) 646
- Recalc automatically 398
- Recalc only before ... 398
- Recalculate (Tools menu) 110, 398
- Rectangles
  - drawing 243, 245
  - properties 247
- Redo 61
- Redo (Edit menu) 40, 61
- Reflection effect (for objects) 222
- Regression, exponential statistics (LOGEST) 592
  - values (GROWTH) 543
- Regression, linear statistics (LINEST) 588
  - values (TREND) 692
- Relative cell references 430
- Remainder of a division
  - MOD (Excel method) 608
  - MODP (PlanMaker method) 610
- Remove (Table menu)
  - Duplicate Rows 68
  - Empty Rows 68

- Remove Link (Format menu) 329, 331
- Repeat (Edit menu) 61
- Repeat text string (REPT) 648
- Repeated columns 192
- Repeated rows 192
- Replace (Edit menu) 202, 203
- REPLACE (replace text in a text string) 647
- Replace again (Edit menu) 203
- Replace text in a text string
  - REPLACE 647
  - SUBSTITUTE 674
- REPT (repeat text string) 648
- Revert to Previous Version (File menu) 320, 321
- RIGHT (right part of a text string) 648
- ROMAN (Roman numeral) 649
- Root
  - n-th root (ROOTN) 650
  - square root (SQRT) 668
  - square root of  $x*\text{Pi}$  (SQRTPI) 668
- ROOTN (n-th root) 650
- Rotate or Flip (Object menu) 213, 214
- Rotating
  - axis labels 271, 272, 273, 274, 276
  - cells 152, 154
  - objects 213, 215, 216
  - text in AutoShapes 248, 249
  - text in text frames 229, 230
- ROUND (round) 651
- Round final result 398, 399
- Round intermediate results 398, 399
- ROUNDDOWN (round down) 651
- Rounding
  - CEILING 463
  - displaying numbers rounded 135, 137
  - EVEN 523
  - FIXED 531
  - FLOOR 533
  - INT 567
  - MROUND 612
  - ODD 627
  - ROUND 651
  - ROUNDDOWN 651
  - ROUNDUP 652
  - TRUNC 696
- ROUNDUP (round up) 652
- Row & Column Headers (View menu) 401
- ROW (row number of a reference) 653
- Row (Table menu)
  - Height 133
  - Hide 134, 135
  - Optimum Height 133, 134
  - Show 134, 135
- Row headers 62, 63
  - changing the height of rows 133
  - printing 192
  - showing/hiding 401
- Row number of a reference (ROW) 653
- Rows
  - deleting 67, 68
  - height 133
  - hiding 134
  - inserting 69
  - selecting 62, 63
- ROWS (number of rows in a range) 654
- RRI (interest for fixed-interest investments) 629
- RSQ (square of Pearson) 654
- Run Script (Tools menu) 365

## S

- Save (File menu) 43
- Save all (File menu) 43
- Save as (File menu) 43, 353, 354
- Save within document (pictures) 231, 232
- Scaling 192, 194
- Scanning pictures 232
- Scenarios (Tools menu) 114
- Scientific (number format) 137, 139
- scripts 365
- Scripts 291, 359, 365
- Scrollbar (forms object) 300
- Scrollbars 395, 397
- Search (Edit menu) 201, 203
- SEARCH (search for text) 655
- Search again (Edit menu) 203
- Searching
  - files 318
  - FIND function 529
  - HLOOKUP function 547
  - in cells 201
  - LOOKUP function 595
  - SEARCH function 655
  - VLOOKUP function 704
- SECOND (second) 656
- Secondary axes (in charts) 279, 281
- Select All (Edit menu) 62, 63
- Select Source (File menu) 232

- Selecting
  - cells 62
  - objects 210
- Send (File menu) 343
- Send Backward One Level 225, 226
- Send to Back 225, 226
- Series axis (in charts) 274
- SERIESSUM (sum of a power series) 656
- Settings 373
- Shades 150
- Shading (Format menu) 150
- Shadow (of objects) 220
- SHEET (index of a worksheet) 657
- Sheet protection 345
- Sheet Protection (Tools menu) 345, 346, 347
- Sheet tabs 395. *See* Worksheet register
- SHEETNAME (compatibility function) 659
- SHEETNAME (name of a worksheet) 658
- SHM extensions 387, 390
- Show fonts in font list 380, 381
- Show Formulas (View menu) 102
- Show hidden objects 395, 397
- Show indicators (for comments) 395, 396
- Show tooltips 380, 381
- Show warning when loading OLE objects
  - 375, 377
- Sign 426
- SIGN (sign of a number) 660
- SIN (sine) 660
- Sine (SIN) 660
- SINH (hyperbolic sine) 661
- Size
  - of cells 133
  - of objects 213
- SKEW (skewness of a distribution) 661
- Skewness of a distribution (SKEW) 661
- SLN (straight-line depreciation) 662
- SLOPE (slope of a linear trend) 663
- SMALL (k-th smallest number) 664
- SmartText 309
- SmartText (Insert menu) 310, 311, 312
- Smooth edges of pictures 387, 388
- Smooth edges of screen fonts 380, 382
- Soft edges effect (for objects) 222
- SoftMaker 22
- SoftMaker Basic 365
- SoftMaker Equation Editor 242
- Solution of matrix equation (MSOLVE) 613
- Sort
  - cells 92
  - SORTM function 665
  - SORTV function 666
- Sort (Table menu) 92
- SORTM (sort) 665
- SORTV (sort) 666
- Special characters 127
- Spell checking 303
  - as you type 306, 383, 384
  - editing user dictionaries 306
  - installing additional dictionaries 420
  - language selection 303, 383, 384
  - manually 304
- Spinner (forms object) 298
- SQRT (square root) 668
- SQRTPI (square root of  $x \cdot \pi$ ) 668
- Square root (SQRT) 668
- Standard (Format menu) 160, 161
- Standard deviation
  - entire population (STDEVP) 671
  - entire population (STDEVPA) 672
  - sample (STDEV) 670
  - sample (STDEVA) 670
- Standard error of a linear regression (STEYX)
  - 673
- Standard normal distribution
  - NORMSDIST 621
  - NORMSINV 621
- Standard toolbar 31
- STANDARDIZE (standardized value) 669
- Statistics 395
- Statistics of a regression
  - LINEST (linear) 588
  - LOGEST (exponential) 592
- Status bar 33
- STDEV (standard deviation of a sample) 670
- STDEVA (standard deviation of a sample) 670
- STDEVP (standard deviation of entire population) 671
- STDEVPA (standard deviation of entire population) 672
- STEYX (standard error of a linear regression)
  - 673
- Stock chart 254, 256
- Straight-line depreciation (SLN) 662
- Student's t-distribution

TDIST 686  
 TINV 690  
 Student's t-test (TTEST) 696  
 Subscript 159  
 SUBSTITUTE (replace text in a text string) 674  
 SUBTOTAL (calculations ignoring hidden cells) 675  
 Subtraction 426, 427  
 SUM (Sum) 676  
 Sum if condition is true (SUMIF) 678  
 Sum if conditions are true (SUMIF) 679  
 Sum of a power series (SERIESSUM) 656  
 Sum of products (SUMPRODUCT) 680  
 Sum of squares (SUMSQ) 681  
 SUMIF (sum if condition is true) 678  
 SUMIFS (sum if conditions are true) 679  
 Summary 315  
 Sum-of-years' digits depreciation (SYD) 684  
 SUMPRODUCT (sum of products) 680  
 SUMSQ (sum of squares) 681  
 SUMX2MY2 (sum of  $x^2 - y^2$ ) 681  
 SUMX2PY2 (sum of  $x^2 + y^2$ ) 682  
 SUMXMY2 (sum of  $(x - y)^2$ ) 683  
 Superscript 159  
 Support 22  
 Surface chart 254, 255  
 SYD (sum-of-years' digits depreciation) 684  
 Symbol (Insert menu) 127  
 Syntax Highlighting (View menu) 102  
 System requirements 23

## T

T (convert value into text string) 685  
 Tab width (in text frames) 395  
 Table > Column  
   Hide 134, 135  
   Optimum Width 133, 134  
   Show 134, 135  
   Width 133  
 Table > Data Consolidation 119, 120, 122, 124  
 Table > Delete cells 67  
 Table > External References 433  
 Table > Filter  
   AutoFilter 99  
   Show All 96, 98, 99, 101

Special Filter 96  
 Table > Insert Cells 69  
 Table > Names 86, 90  
   Apply 91  
   Edit 87, 88  
   Import 89  
   Insert List 90  
 Table > Outliner  
   Automatically Show Outline Pane 326, 327  
   Clear Outline 325, 326  
   Group 325  
   Options 327  
   Ungroup 325  
 Table > Properties 84, 85, 401  
 Table > Remove  
   Duplicate Rows 68  
   Empty Rows 68  
 Table > Row  
   Height 133  
   Hide 134, 135  
   Optimum Height 133, 134  
   Show 134, 135  
 Table > Sort 92  
 Table > Text to Columns 95  
 Table > Transpose 94  
 Table > Worksheet 83, 84  
 TAN (tangent) 685  
 Tangent (TAN) 685  
 TANH (hyperbolic tangent) 686  
 TDIST (t-distribution) 686  
 t-distribution  
   TDIST 686  
   TINV 690  
 Technical support 22  
 Template folder 385  
 Text  
   entering 58, 60  
 TEXT (convert number into text string) 687  
 Text (number format) 137, 140  
 Text color 158  
 Text direction 362, 363  
 Text file format 353, 355  
 Text frames 228  
   inserting 228  
   properties 229  
 Text input mode 33, 34  
 Text styles 157  
 Text to Columns (Table menu) 95  
 TextArt objects

- drawing 243, 246
- properties 247
- TextMaker file format 353, 355
- Three-dimensional calculations 86
- Threshold value (GESTEP) 543
- Tile Horizontally (Window menu) 369
- Tile Vertically (Window menu) 369
- TIME (create time) 688
- Time difference (TIMEDIFF) 688
- TIMEDIFF (time difference) 688
- TIMEVALUE (convert text into time) 690
- TINV (percentiles of the t-distribution) 690
- Title bar 29
- TODAY (current date) 691
- Toolbars 31
- Toolbars (View menu) 404, 405
- Tools > Check Spelling 304
- Tools > Customize
  - Keyboard Mappings 412
  - Toolbars 409
- Tools > Disable Sheet Protection 347
- Tools > Disable Workbook Protection 348
- Tools > Edit Lists 418
- Tools > Edit Script 365
- Tools > Edit User Dictionaries 306
- Tools > Formula Auditing 105, 107, 108, 109
- Tools > Goal Seek 112
- Tools > Options 374
  - Appearance tab 380
  - Edit tab 377
  - Files tab 385
  - Fonts tab 391
  - General tab 375
  - Language tab 383
  - System tab 387
  - View tab 374
- Tools > Recalculate 110, 398
- Tools > Run Script 365
- Tools > Scenarios 114
- Tools > Sheet Protection 345, 346, 347
- Tools > Update Charts 283, 398, 400
- Tools > Workbook Protection 348
- Transfer Formatting (Format menu) 189
- Transparency (of pictures) 233, 234
- Transpose (Table menu) 94
- TRANSPOSE (transposed matrix) 691
- Transposed matrix (TRANSPOSE) 691

- Transposing cells 94
- TREND (values of a linear regression) 692
- Trend lines (in charts) 269
- TRIM (remove spaces from text) 694
- TRIMMEAN (mean ignoring marginal values) 694
- TRUE (logical value TRUE) 695
- TRUNC (Truncate a number) 696
- t-test (TTEST) 696
- TTEST (t-test) 696
- TYPE (type of a value) 697

## U

- Underline 157
- Undo (Edit menu) 40, 61
- Ungroup (Object menu) 226
- Unit conversion (CONVERT) 475
- Units of measure 380, 382
- Update Charts (Tools menu) 283, 398, 400
- Updates 387, 388
- Updating tables 55, 57, 110
- UPPER (convert text to upper case) 698
- Upper case
  - PROPER 640
  - UPPER 698
- Use large icons 380, 381
- Use SHM extensions 387, 390
- Use system file dialogs 380, 381
- Use XIM 387, 390
- Use XRender 387, 390
- User (Business) 375
- User (Home) 375
- User field (USERFIELD) 698
- User interface size 380, 382
- User-defined number formats 140, 142
- USERFIELD (user field) 698

## V

- VALUE (convert text into a number) 700
- Value axis (in charts) 273
- VAR (variance of a sample) 701
- VARA (variance of a sample) 701
- Variance
  - of a sample (VAR) 701
  - of a sample (VARA) 701
  - of entire population (VARP) 702

- of entire population (VARPA) 703
- VARP (variance of entire population) 702
- VARPA (variance of entire population) 703
- VBA 365
- VBA scripts 291, 359
- Vertical alignment
  - of cells 152, 154
  - of text in AutoShapes 248, 249
  - of text in text frames 229, 230
- Vertical grid (in charts) 276
- Vertical text 152, 155
- View > Actual Size 403
- View > Freeze 125
- View > Full Screen 404
- View > Object Mode 210, 211
- View > Row & Column Headers 401
- View > Show Formulas 102
- View > Syntax Highlighting 102
- View > Toolbars 404, 405
- View > Watch Window 104
- View > Zoom Level 403
- Visual Basic 365
- VLOOKUP (look up column-wise) 704

## W

- Walls (in charts) 263
- Warning if a formula contains errors 377, 378
- Watch Window (View menu) 104
- Weber function (BESSELY) 458
- Week number
  - ISOWEEK 578
  - ISOWEEKNUM 580
  - WEEKNUM 705
- WEEKDAY (weekday) 705
- WEEKNUM (week number) 705
- WEIBULL (Weibull distribution) 706
- Width of a column 133
- Window > Cascade 369
- Window > Close all 368
- Window > Document Tabs 369, 370
- Window > Tile Horizontally 369
- Window > Tile Vertically 369
- Window Manager dialogs 380, 383
- Window Manager positioning 380, 383
- Workbook protection 348
- Workbook Protection (Tools menu) 348

- Workbooks 82
- WORKDAY (date after x workdays) 707
- Workdays
  - count (NETWORKDAYS) 618
  - date after x workdays (WORKDAY) 707
- Worksheet (Table menu) 83, 84
- Worksheet register 83, 395, 397
- Worksheets 82
  - copying 84
  - deleting 84
  - editing 55
  - formatting 131
  - hiding 84, 85
  - inserting 83
  - moving 84
  - properties 84, 85, 401
  - renaming 84, 85
  - selecting 62, 63
  - unhiding 84, 85
- Workspace color 380, 382
- Wrap text 152, 154

## X

- X axis (in charts) 271
- XIM 387, 390
- XIRR (internal rate of return) 708
- XLS file format 353, 354
- XLSX file format 353, 354
- XOR (logical XOR function) 709
- XRender 387, 390
- XY Scatter chart 254, 255

## Y

- Y axis (in charts) 273
- YEAR (year of a date) 710

## Z

- Z axis (in charts) 274
- Zeros (showing/hiding) 135, 137, 401, 402
- Zoom Level (View menu) 403
- Z-test (ZTEST) 711
- ZTEST (z-test) 711