

---

**Manual**

# **PlanMaker 2008**

© 1987-2008 SoftMaker Software GmbH



# Contents

<b>Welcome!</b>	<b>19</b>
Technical support .....	19
About this manual .....	20
Typographical conventions .....	21
System requirements .....	21
<b>Installation and program startup</b>	<b>23</b>
Installing under Windows .....	23
Using PlanMaker on local area networks (Windows only).....	24
Installing on Pocket PCs or Windows CE.....	26
Installing under Linux.....	26
<b>Screen elements</b>	<b>27</b>
Title bar .....	27
Menu bar .....	28
Standard toolbar .....	28
Formatting toolbar.....	29
Edit toolbar.....	29
Document window .....	30
Status bar .....	31
Special instructions for Pocket PCs .....	32
<b>PlanMaker basics</b>	<b>35</b>
The structure of a spreadsheet.....	35
Moving around in a worksheet.....	37
Entering data .....	37
Deleting data .....	37
Undoing changes.....	38
Starting a new document.....	38
Opening a document .....	39
Printing a document .....	41
Saving a document .....	42
Exiting PlanMaker .....	42

## The PlanMaker Tour

43

Five minutes of theory ...	43
First steps with PlanMaker.....	44
Entering values and formulas.....	45
Going three-dimensional.....	49
Changing the layout of worksheets.....	50
Charts .....	51
Outlook.....	52

## Editing worksheets

53

Entering data in cells.....	55
Undoing changes.....	57
Selecting cells .....	58
Deleting cells and cell contents.....	60
Deleting whole cells .....	61
Deleting the contents of cells .....	62
Moving and copying cells.....	62
Pasting cells selectively .....	64
Inserting new cells .....	66
Filling cells automatically.....	67
Tips and tricks for automatic filling .....	71
Working with multiple worksheets .....	73
Creating new worksheets.....	73
Switching between worksheets .....	73
Changing the order of worksheets.....	73
Managing worksheets.....	74
Calculating in three dimensions .....	74
Naming cell ranges.....	75
Assigning names to cell ranges .....	75
Deleting and renaming names .....	76
Defining names automatically from the selection.....	77
Creating a list of all named ranges .....	78
Putting named ranges to use.....	78
Applying names in existing formulas.....	79
Sorting cells.....	80
Transposing cells.....	82
Filtering cells by their contents.....	82
Special filter .....	83
AutoFilter .....	85
Inserting comments .....	86
Goal-seeking .....	87
Freezing rows and columns.....	89

Inserting special characters .....	91
------------------------------------	----

## **Formatting worksheets 93**

Cell size .....	95
Changing cell sizes using the mouse .....	95
Changing cell sizes using menu commands .....	95
Hiding rows or columns .....	96
Number format .....	97
List of all number formats available .....	99
Working with user-defined number formats .....	103
Structure of a user-defined format .....	103
Borders and lines .....	107
Shading .....	109
Alignment .....	110
Protection .....	113
Character format .....	113
Typeface and font size .....	114
Text styles .....	115
Text color .....	116
Superscript and subscript .....	116
Letter spacing and character pitch .....	117
Removing character formatting .....	117
Paragraph format (text frames only) .....	118
Paragraph indents (text frames only) .....	118
Line spacing (text frames only) .....	119
Paragraph alignment (text frames only) .....	120
Hyphenation (text frames only) .....	120
Spacing above/below paragraphs (text frames only) .....	121
Transfer formatting .....	122
Conditional formatting .....	122
Input validation .....	124
AutoFormat .....	130
Character styles .....	131
Creating character styles .....	131
Applying character styles .....	132
Modifying character styles .....	133
The character style Normal .....	133
Creating linked character styles .....	134
Cell styles .....	135
Creating cell styles .....	135
Applying cell styles .....	136
Modifying cell styles .....	137
The cell style Normal .....	137

Creating linked cell styles .....	137
Document templates.....	138
Creating document templates .....	138
Using document templates .....	139
Modifying document templates.....	139
The document template Normal.pmv .....	140
Page setup.....	140
Page format.....	141
Additional page setup options .....	142
Headers and footers .....	144
Page breaks.....	148
Print preview .....	148

**Search & replace** **151**

Search.....	151
Replace.....	152
Search again & replace again.....	153
Search and replace options.....	153
Jumping to specific cell addresses .....	154
Jumping to specific contents of a table .....	155

**Objects (pictures, drawings, etc.)** **157**

Objects – basic procedures.....	157
Inserting objects .....	158
Selecting objects.....	158
Object mode .....	158
Changing position and size of objects.....	161
Rotating and flipping objects .....	161
Aligning and distributing objects .....	162
Duplicating objects .....	162
Object properties .....	163
Objects – advanced procedures.....	170
Hiding objects.....	170
Changing the order of objects .....	170
Grouping objects .....	171
Charts .....	173
Text frames.....	173
Inserting text frames.....	173
Text frame properties.....	174
Pictures.....	175
Inserting pictures .....	176
Scanning pictures .....	176

Picture frame properties .....	177
OLE objects.....	179
Inserting OLE objects.....	179
Editing OLE objects .....	181
Editing links to OLE objects .....	181
OLE object properties .....	182
Using Equation Editor objects.....	183
Drawings .....	184
Inserting drawings .....	185
Adding text to AutoShapes.....	187
Drawing properties .....	188

## **Charts**

**193**

Inserting charts .....	193
Editing charts .....	194
Chart type .....	195
Arrangement of data series.....	197
Working with chart elements.....	198
Chart area.....	199
Plot area .....	200
Walls (three-dimensional charts only).....	201
Floor (three-dimensional charts only).....	201
Corners (three-dimensional charts only).....	202
Data series and data points .....	203
Trend lines .....	206
Category axis (x axis).....	208
Value axis (y axis) .....	209
Series axis (z axis).....	211
Gridlines .....	212
Legend.....	213
Common chart properties .....	214
Updating charts .....	219

## **Forms**

**221**

Working with forms objects .....	222
Inserting forms objects .....	222
Editing forms objects.....	223
Operating and evaluating forms objects.....	224
Forms objects and Excel macros and scripts.....	224
Forms objects in detail .....	225
Checkboxes .....	225
Radio buttons.....	227

Dropdowns .....	228
Listboxes .....	230
Pushbuttons .....	231
Spinners .....	232
Scrollbars.....	233
Labels and groupboxes.....	235
<b>Spell checking</b>	<b>237</b>
Setting up the language for spell checking .....	237
Manual spell checking .....	238
Spell checking as you type.....	240
Editing user dictionaries.....	240
SmartText .....	241
Creating SmartText entries.....	241
Inserting SmartText entries.....	243
Editing SmartText entries.....	243
<b>Managing documents</b>	<b>245</b>
Quick paths .....	245
Defining quick paths .....	246
Using quick paths .....	246
Editing and deleting quick paths .....	247
Document summary .....	247
The file manager .....	248
The file manager's buttons .....	248
Searching with the file manager.....	249
<b>Outliner</b>	<b>253</b>
Grouping cells .....	255
Showing/hiding grouped cells.....	256
Outliner options.....	257
<b>Internet functions</b>	<b>259</b>
Working with links.....	259
Saving HTML documents.....	261
<b>Printing, e-mailing, etc.</b>	<b>263</b>
Printing.....	263
Exporting to a PDF file .....	266
E-mailing.....	269

<b>Protecting cells and documents</b>	<b>271</b>
Sheet protection.....	271
Step 1: Setting up protection settings for cells.....	272
Step 2: Activating sheet protection.....	272
Deactivating sheet protection.....	273
Workbook protection.....	274
Activating workbook protection.....	274
Deactivating workbook protection.....	274
Document protection.....	275
Enabling document protection.....	276
Disabling document protection.....	277
<b>Working with other file formats</b>	<b>279</b>
Importing and exporting documents.....	279
Supported file formats.....	280
Working with text files.....	281
Working with Excel files.....	282
Opening and saving Excel files.....	282
Differences between PlanMaker and Excel.....	284
Notes for Pocket PC and Windows CE users.....	285
<b>Scripts (BasicMaker)</b>	<b>287</b>
<b>Document windows</b>	<b>289</b>
Creating document windows.....	289
Activating document windows.....	289
Closing document windows.....	289
Maximizing document windows.....	290
Minimizing document windows.....	290
Arranging document windows.....	291
Moving data between document windows.....	291
<b>Customizing PlanMaker</b>	<b>293</b>
Preferences.....	294
Preferences, Edit property sheet.....	294
Preferences, General property sheet.....	295
Preferences, Appearance property sheet.....	298
Preferences, Language property sheet.....	300
Preferences, Files property sheet.....	301
Document properties.....	304

Document properties, Summary property sheet.....	304
Document properties, Colors property sheet.....	304
Document properties, Internet property sheet.....	306
Document properties, Statistics property sheet.....	308
Document properties, Options property sheet.....	308
Document properties, Calculate property sheet.....	311
Document properties, Protection property sheet.....	313
Worksheet properties.....	313
Customizing the document display.....	314
Zoom level.....	315
Full screen view.....	315
Displaying formulas instead of results.....	315
Syntax highlighting.....	316
Watch window for cell contents.....	317
Customizing toolbars.....	319
Displaying and hiding toolbars.....	319
Positioning toolbars on the screen.....	320
Managing toolbars.....	321
Customizing toolbar icons.....	323
Creating user-defined toolbar icons.....	324
Customizing keyboard shortcuts.....	325
Activating a keyboard mapping.....	326
Creating a new keyboard mapping.....	327
Renaming or deleting a keyboard mapping.....	328
Editing the shortcuts in a keyboard mapping.....	328
Resetting the shortcuts in a keyboard mapping.....	331
Customizing AutoFill lists.....	331
Creating a new AutoFill list.....	332
Editing AutoFill lists.....	332
Deleting AutoFill lists.....	332
Importing AutoFill list from cells.....	332

## Formulas and functions

**335**

Formula basics.....	335
Arithmetic operators in formulas.....	336
Entering formulas.....	337
Relative vs. absolute cell addressing.....	339
Error values.....	340
Working with arrays.....	341
Working with database functions.....	344
Functions from A to Z.....	346
ABS (absolute value).....	347
ACOS (arccosine).....	347

ACOSH (inverse hyperbolic cosine).....	348
ACOT (arccotangent).....	348
ACOTH (inverse arccotangent).....	349
ADDRESS (cell address as text).....	350
AND (logical AND function).....	351
AREAS (number of areas).....	351
ASIN (arcsine).....	352
ASINH (inverse hyperbolic sine).....	353
ATAN (arctangent).....	353
ATAN2 (arctangent 2).....	354
ATANH (inverse hyperbolic tangent).....	354
AVEDEV (average deviation).....	355
AVERAGE (arithmetic mean).....	355
AVERAGEA (arithmetic mean).....	356
B (PlanMaker 97 compatibility function).....	357
BESSELI (modified Bessel function $I_n(x)$ ).....	358
BESSELJ (Bessel function $J_n(x)$ ).....	358
BESSELK (modified Bessel function $K_n(x)$ ).....	359
BESSELY (Bessel function $Y_n(x)$ ).....	359
BETADIST (beta distribution).....	360
BETAINV (percentiles of the beta distribution).....	360
BIN2DEC (binary number to decimal number).....	361
BIN2HEX (binary number to hexadecimal number).....	362
BIN2OCT (binary number to octal number).....	363
BINOMDIST (binomial distribution).....	364
CEILING (round up to a multiple of base).....	365
CHAR (character from ANSI code).....	365
CHIDIST (chi-square distribution).....	366
CHIINV (percentiles of the chi-square distribution).....	367
CHITEST (chi-square test for independence).....	367
CHOICE ( $x>0$ , $x=0$ , $x<0$ ?).....	368
CHOOSE (choose value from list).....	369
CLEAN (remove unprintable characters).....	369
CODE (ANSI code of a character).....	370
COLUMN (column number of a reference).....	370
COLUMNS (number of columns in a range).....	371
COMBIN (combinations).....	372
COMPLEX (create complex number).....	372
CONCATENATE (concatenate text strings).....	373
CONFIDENCE (confidence interval).....	374
CONVERT (unit conversion).....	375
CORREL (correlation coefficient).....	378
COS (cosine).....	378
COSH (hyperbolic cosine).....	379

COT (cotangent).....	379
COTH (hyperbolic cotangent).....	380
COUNT (number of cells filled with numbers) .....	381
COUNTA (number of cells filled).....	381
COUNTBLANK (number of empty cells).....	382
COUNTIF (count if condition is true).....	382
COUNTP (PlanMaker 97 compatibility function).....	383
COVAR (Covariance).....	384
CREATEDATE (date the document was created).....	385
CRITBINOM.....	386
CUMIPMT (cumulative interest).....	387
CUMPRINC (cumulative principal) .....	388
CURRENCY (format number as currency) .....	389
DATE (create a date value) .....	390
DATEDIF (date difference).....	390
DATEVALUE (convert text into date value) .....	392
DAVERAGE (database function).....	392
DAY (day of a date).....	393
DAYS (days between two dates).....	394
DAYS360 (days between two dates).....	394
DAYSPERMONTH (days per month) .....	395
DAYSPERYEAR (days per year) .....	396
DB (fixed-declining balance depreciation) .....	396
DCOUNT (database function).....	397
DCOUNTA (database function) .....	398
DDB (double-declining balance depreciation).....	399
DEC2BIN (decimal number to binary number).....	400
DEC2HEX (decimal number to hexadecimal number).....	401
DEC2OCT (decimal number to octal number) .....	402
DECIMALS (fractional part of a number).....	403
DEGREES (convert radians to degrees) .....	403
DELTA (test for equality).....	404
DEVSQ (average square deviation) .....	405
DGET (database function).....	405
DMAX (database function).....	406
DMIN (database function).....	407
DOLLARDE (dollar price, decimal).....	407
DOLLARFR (dollar price, fraction) .....	408
DPRODUCT (database function).....	409
DSTDEV (database function).....	409
DSTDEVP (database function) .....	410
DSUM (database function).....	411
DVAR (database function) .....	412
DVARP (database function).....	412

EDATE (date before/after n months).....	413
EFFECT (effective interest rate) .....	414
EOMONTH (end of month in n months).....	415
ERF (Gaussian error function) .....	415
ERFC (complement of Gaussian error function) .....	416
ERROR.TYPE (error type) .....	416
EUROCONVERT (convert EU currencies).....	418
EVEN (round up to next even number).....	419
EXACT (compare texts).....	420
EXP (power of e).....	420
EXPONDIST (exponential distribution) .....	421
FACT (factorial) .....	422
FACTDOUBLE (double factorial).....	422
FALSE (logical value FALSE).....	423
FDIST (F distribution).....	423
FILENAME (file name of document).....	424
FIND (search for text).....	425
FINV (percentiles of the F distribution).....	426
FISHER (Fisher transformation).....	426
FISHERINV (inverse of the Fisher transformation).....	427
FIXED (format number as text with fixed decimals).....	427
FLOOR (round down to a multiple of base) .....	428
FORECAST (forecast using linear regression).....	429
FREQUENCY (frequency) .....	430
FTEST (F-test).....	431
FV (future value).....	431
FVSCCHEDULE (future value).....	432
GAMMADIST (gamma distribution) .....	433
GAMMAINV (percentiles of the gamma distribution).....	434
GAMMALN (logarithm of the gamma function) .....	434
GAUSS (PlanMaker 97 compatibility function).....	435
GCD (greatest common divisor) .....	435
GEOMEAN (geometric mean).....	436
GESTEP (greater or equal to threshold value?) .....	437
GROWTH (values of an exponential regression) .....	437
HARMEAN (harmonic mean) .....	438
HEX2BIN (hexadecimal number to binary number) .....	439
HEX2DEC (hexadecimal number to decimal number).....	440
HEX2OCT (hexadecimal number to octal number).....	440
HLOOKUP (look up row-wise) .....	441
HOLIDAY (dates of movable Christian holidays).....	442
HOUR (hour).....	443
HYPGEOMDIST (hypergeometric distribution) .....	444
IF (if-then-else condition) .....	445

IMABS (absolute value of a complex number) .....	445
IMAGINARY (imaginary coefficient of a complex number) .....	446
IMARGUMENT (angle of a complex number) .....	446
IMCONJUGATE (conjugate complex number) .....	447
IMCOS (cosine of a complex number) .....	448
IMDIV (division of complex numbers) .....	448
IMEXP (exponential of a complex number) .....	449
IMLN (natural logarithm of a complex number) .....	449
IMLOG10 (base-10 logarithm of a complex number) .....	450
IMLOG2 (base-2 logarithm of a complex number) .....	451
IMNEG (negative value of a complex number) .....	451
IMPOWER (power of a complex number) .....	452
IMPRODUCT (product of complex numbers) .....	453
IMREAL (real coefficient of a complex number) .....	453
IMSIN (sine of a complex number) .....	454
IMSQRT (square root of a complex number) .....	454
IMSUB (difference of complex numbers) .....	455
IMSUM (sum of complex numbers) .....	456
INDEX (cell in a particular row/column of a range) .....	456
INDIRECT (create reference from text) .....	457
INT (round down to nearest integer) .....	458
INTERCEPT (intercept point of a linear trend) .....	458
INTERSECTION (intersection of two ranges) .....	459
IPMT (interest payment) .....	460
IRR (internal rate of return) .....	461
ISBLANK (is empty?) .....	462
ISERR (is an error value except #N/A?) .....	463
ISERROR (is an error value?) .....	463
ISEVEN (is an even number?) .....	464
ISFORMULA (is a formula?) .....	464
ISLOGICAL (is a logical value?) .....	465
ISNA (is not available?) .....	466
ISNONTEXT (is no text?) .....	466
ISNUMBER (is numeric?) .....	467
ISNUMBERP (PlanMaker 97 compatibility function) .....	468
ISODD (is an odd number?) .....	469
ISOWEEK (number of week, ISO standard) .....	469
ISPMT (interest payment) .....	471
ISREF (is a valid reference?) .....	471
ISTEXT (is text?) .....	472
KURT (kurtosis) .....	473
LARGE (k-th largest number) .....	474
LASTPRINTED (date last printed) .....	475
LASTSAVED (date last saved) .....	475

LCM (least common multiple).....	476
LEFT (left part of a text string).....	476
LEN (length).....	477
LINEST (statistics of a linear regression).....	478
LN (natural logarithm).....	480
LOG (logarithm).....	481
LOG10 (base-10 logarithm).....	481
LOGEST (statistics of an exponential regression).....	482
LOGINV (percentiles of the gamma distribution).....	484
LOGNORMDIST (lognormal distribution).....	484
LOOKUP (search cell range).....	485
LOWER (convert text to lower case).....	488
MATCH (relative position in a range).....	489
MAX (maximum).....	490
MAXA (maximum).....	490
MDETERM (matrix determinant).....	491
MEDIAN.....	492
MID (part of a text string).....	493
MILLISECONDS (milliseconds).....	493
MIN (minimum).....	494
MINA (minimum).....	495
MINUTE (minute).....	495
MINVERSE (inverse matrix).....	496
MIRR (modified internal rate of return).....	497
MMULT (product of matrices).....	498
MOD (remainder of a division, Excel method).....	498
MODE (most frequently occurring value).....	500
MODP (remainder of a division, PlanMaker method).....	500
MONTH (month of a date).....	502
MROUND (round to a multiple of base).....	502
MSOLVE (solution of matrix equation $Ax=B$ ).....	503
MULTINOMIAL (multinomial coefficient).....	504
N (convert value into number).....	505
NA (error value #N/A).....	506
NEG (negative value).....	506
NEGBINOMDIST (negative binomial distribution).....	507
NETWORKDAYS (number of workdays).....	508
NOMINAL (nominal interest rate).....	509
NORMDIST (normal distribution).....	509
NORMINV (percentiles of the normal distribution).....	510
NORMSDIST (standard normal distribution).....	511
NORMSINV (percentiles of the standard distribution).....	511
NOT (logical NOT function).....	512
NOW (current date and time).....	513

NPER (number of periods).....	513
NPV (net present value) .....	514
OCT2BIN (octal number to binary number).....	515
OCT2DEC (octal number to decimal number) .....	516
OCT2HEX (octal number to hexadecimal number) .....	516
ODD (round up to next odd number).....	517
OFFSET (shifted reference).....	518
OR (logical OR function).....	519
PCF (interest for fixed-interest investments) .....	519
PEARSON (Pearson correlation coefficient).....	520
PERCENTILE (percentiles of a data set).....	521
PERCENTRANK (percent rank in a data set) .....	522
PERIOD (duration of fixed-interest investments).....	523
PERMUT (permutations) .....	524
PHI (PlanMaker 97 compatibility function).....	524
PI (pi).....	525
PMT (payment) .....	525
POISSON (Poisson distribution).....	526
POWER (power) .....	527
PPMT (payment on the principal) .....	528
PROB (probability) .....	529
PRODUCT (product).....	529
PROPER (convert text to upper/lower case).....	530
PV (present value).....	531
QUARTILE (quartiles of a data set).....	531
QUOTIENT (quotient of a division) .....	532
RADIANS (convert degrees to radians).....	533
RAND (random value) .....	533
RANDBETWEEN (random value).....	534
RANK (rank in a data set).....	535
RATE (rate per period).....	536
REPLACE (replace text in a text string).....	537
REPT (repeat text string).....	537
RIGHT (right part of a text string).....	538
ROMAN (Roman numeral).....	539
ROUND (round).....	539
ROUNDDOWN (round down) .....	540
ROUNDUP (round up).....	541
ROW (row number of a reference).....	542
ROWS (number of rows in a range).....	543
RSQ (square of Pearson).....	543
SEARCH (search for text).....	544
SECOND (second) .....	545
SERIESSUM (sum of a power series) .....	545

SHEETNAME (name of a worksheet).....	546
SHEETNUMBER (index of a worksheet).....	547
SIGN (sign of a number).....	548
SIN (sine).....	548
SINH (hyperbolic sine).....	549
SKEW (skewness of a distribution).....	549
SLN (straight-line depreciation).....	550
SLOPE (slope of a linear trend).....	551
SMALL (k-th smallest number).....	552
SORTM (sort).....	553
SORTV (sort).....	554
SQRT (square root).....	556
SQRTN (n-th root).....	556
SQRTPI (square root of $x \cdot \pi$ ).....	557
STANDARDIZE (standardized value).....	558
STDEV (standard deviation of a sample).....	558
STDEVA (standard deviation of a sample).....	559
STDEVP (standard deviation of entire population).....	560
STDEVPA (standard deviation of entire population).....	561
STEYX (standard error of a linear regression).....	562
SUBSTITUTE (replace text in a text string).....	563
SUBTOTAL (subtotal, ignoring filters).....	563
SUM (Sum).....	564
SUMIF (sum if condition is true).....	566
SUMPRODUCT (sum of products).....	567
SUMSQ (sum of squares).....	568
SUMX2MY2 (sum of $x^2 - y^2$ ).....	568
SUMX2PY2 (sum of $x^2 + y^2$ ).....	569
SUMXMY2 (sum of $(x - y)^2$ ).....	570
SYD (sum-of-years' digits depreciation).....	571
T (convert value into text string).....	571
TAN (tangent).....	572
TANH (hyperbolic tangent).....	573
TDIST (t-distribution).....	573
TEXT (convert number into text string).....	574
TIME (create time).....	575
TIMEDIFF (time difference).....	575
TIMEVALUE (convert text into time).....	576
TINV (percentiles of the t-distribution).....	577
TODAY (current date).....	578
TRANSPOSE (transposed matrix).....	578
TREND (values of a linear regression).....	579
TRIM (remove spaces from text).....	580
TRIMMEAN (mean ignoring marginal values).....	581

TRUE (logical value TRUE).....	582
TRUNC (truncate a number).....	582
TTEST (t-test) .....	583
TYPE (type of a value).....	584
UPPER (convert text to upper case).....	585
USERFIELD (user field).....	585
VALUE (convert text into a number).....	587
VAR (variance of a sample) .....	588
VARA (variance of a sample).....	588
VARP (variance of entire population) .....	589
VARPA (variance of entire population).....	590
VLOOKUP (look up column-wise).....	591
WEEKDAY (weekday) .....	592
WEEKNUM (number of week) .....	592
WEIBULL (Weibull distribution) .....	593
WORKDAY (date after x workdays) .....	594
XIRR (internal rate of return).....	595
XNPV (net present value) .....	596
XOR (logical XOR function) .....	596
YEAR (year of a date).....	597
ZTEST (z-test).....	598

**Keyboard shortcuts** **599**

Keyboard shortcuts for editing spreadsheets .....	599
Keyboard shortcuts for menu commands.....	600

**Index** **603**

---

# Welcome!

Welcome to PlanMaker, the powerful and easy-to-use spreadsheet application for Windows, Linux, Pocket PCs, and Windows CE.

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 **PCs (Windows and Linux), Pocket PCs, and Windows CE**
- 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!

---

## Technical support

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

## **Internet: [www.softmaker.com](http://www.softmaker.com)**

Our website provides up-to-date answers to frequently asked questions, the latest program updates, and much more. Visit us at [www.softmaker.com](http://www.softmaker.com).

## **Support forums: [www.softmaker.com/forum](http://www.softmaker.com/forum)**

Feel free to communicate with our technical support team, as well as other users, by visiting our support forums at [www.softmaker.com/forum](http://www.softmaker.com/forum).

## **E-mail**

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

## **Fax or snail mail**

You can send us questions by mail or fax at the following address:

SoftMaker Software GmbH  
Kronacher Str. 7  
D-90427 Nuremberg  
Germany

Fax: +49-911-303796

## **Phone**

The telephone number for our technical support hotline is +49-911-936 386 50.

Please have your *customer number* ready when calling us.

---

## **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 23): Describes how to install and start PlanMaker.
- Chapter “**Screen elements**” (page 27): Describes the individual components of PlanMaker’s application window.
- Chapter “**PlanMaker basics**” (page 35): Acquaints you with PlanMaker’s basic functions and explains basic spreadsheet terminology.
- Chapter “**The PlanMaker Tour**” (page 43): Introduces you to the operation of PlanMaker with some practical examples.
- Chapters “**Editing worksheets**” (page 53) 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.

---

## Typographical conventions

In this manual, menu commands and dialog box components are printed in **bold-face** type. For example, **File > New** refers to the **New** command in the **File** menu.

File names are represented as follows: C:\IMAGES\BEACH.BMP

The Enter key is represented by , the arrow keys by , , etc. To enter a key combination such as  , press the  key while at the same time holding down the  key.

*Note:* Especially important notes or useful tips are highlighted like this.

---

## System requirements

This section lists the hardware and software requirements needed to run this software:

### Windows version

- PC with CD or DVD drive

- Windows 2000 or higher
- 64 MB RAM (Windows Vista: 512 MB)

### **Pocket PC version**

- Any Pocket PC
- Display resolution of at least 240 x 240
- StrongARM or XScale CPU
- 64 MB memory (installing to a memory card recommended)

### **Windows CE version**

- Windows CE 3.0 or higher, or Windows CE.NET
- Display resolution of at least 240 x 240
- StrongARM or XScale CPU
- 64 MB memory (installing to a memory card recommended)

### **Linux version**

- PC with CD or DVD drive
- Any glibc-based x86-Linux with glibc 2.2.5 or higher
- X Window system with a window manager of your choice

---

# Installation and program startup

This chapter covers information on installing and starting PlanMaker.

It is divided into the following sections:

- **Installing under Windows** (page 23)
- **Installing on Pocket PCs or Windows CE** (page 26)
- **Installing under Linux** (page 26)

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

---

## Installing under Windows

*Note:* If your PC is connected to a **local area network (LAN)**, in addition to the following information, please read the section “Using PlanMaker on local area networks (Windows only)” below (page 24).

### 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*, run the installation program provided on the CD as follows:

1. Insert the installation CD. After a few seconds the CD’s menu program will start automatically.

If your PC’s auto start function is not activated, you can start the menu program manually. To do this, open **My Computer**, double-click on your **CD-ROM drive**, and then double-click on the **Setup** file.

2. The menu program now shows a menu of options. Click on **Install software**.

3. Follow the installation program's instructions to install the software on your computer.

## 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 > 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 property sheet", page 295).

---

## Using PlanMaker on local area networks (Windows only)

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

If PlanMaker for Windows is to be installed on PCs that are connected to a local area network (LAN), and you wish to allow other computers on the network to access this application instead of installing local copies, you should install the software as described on the next pages.

---

## Installing PlanMaker for Windows on a local area network

To install PlanMaker on a local area network (LAN), simply complete a normal installation as described in the section "Installing under Windows" above.

*Hint:* To simplify the installation on additional computers, it is advisable to install PlanMaker to a shared file folder (e.g., on a file server) that is accessible to all users.

Alternatively, if the program is going to be set up only on your own computer, you can install PlanMaker on the local hard drive.

---

## Setting up additional workstations on the network

If PlanMaker for Windows is going to be used only on a *single* computer on a network, you do not need to read this section.

On the other hand, if *several* PCs are going to access PlanMaker, proceed as follows:

## Initial installation

First, PlanMaker must be installed in a *shared* folder to which all the computers that will use PlanMaker have access. This can be done from any convenient workstation.

## Preparation of additional workstations

Once the initial installation has been completed, PlanMaker can be set up on additional workstations simply by using the automated installation routine provided.

To invoke this routine, you will need to start PlanMaker manually one time at each workstation as follows:

1. Start Windows Explorer.
2. Go to the shared folder where PlanMaker was installed.
3. Double-click the program file PLANMAKER to start PlanMaker.

PlanMaker will detect that it is being started for the first time and configure the workstation automatically (after asking for permission). A shortcut will automatically be added to the **Start** menu, which is where you will start PlanMaker from this point on.

## Please pay attention to your license agreement!

**Note:** A single user version of PlanMaker allows you to install PlanMaker on an arbitrary number of computers, but only *one user* may run the program at any given time. If multiple users will be running the software simultaneously, you must purchase the additional corresponding number of single-user licenses.

---

# Installing on Pocket PCs or Windows CE

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

## Starting

To start the installed programs, use the Start menu on your device. For example, to start PlanMaker tap successively on **Start > Programs > 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 property sheet”, page 295).

---

# Installing under Linux

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

## Starting

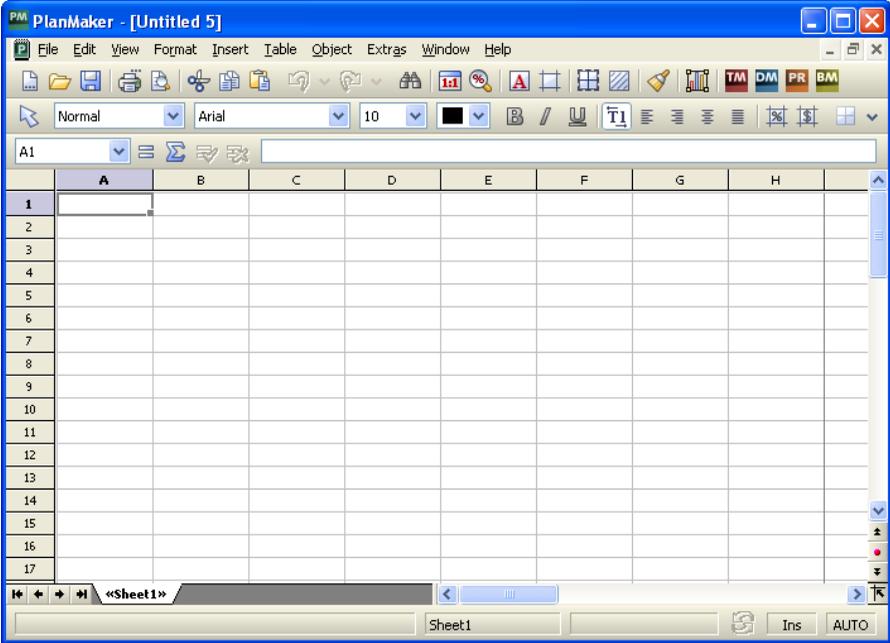
To start PlanMaker for Linux, change to the directory where you installed PlanMaker and execute the program file **planmaker**.

*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 property sheet”, page 295).

---

# Screen elements

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



*PlanMaker's application window*

**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.

**Pocket PC users** please read also the section "Special instructions for Pocket PCs" on page 32.

---

## Title bar

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



**Customizing toolbars:** You can change the default toolbars at will and create your own toolbars. For more information, see the section “Customizing toolbars”, page 319.

---

## 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 (on Pocket PCs, only some of them are shown, due to limited space):

### 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 55.

The Edit toolbar icons have the following functions:

<b>Icon</b>	<b>Function</b>
	Invokes the <b>Insert &gt; Function</b> command
	Inserts the SUM function (icon not available on Pocket PCs)
	Accepts the user input in the input field (identical to pressing the Enter key  )
	Cancels the user input in the input field (identical to pressing  )

For more information on entering formulas, see section “Entering formulas”, page 337.

---

## 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:

### **Title bar (Windows and Linux only)**

As long as a document window has not been maximized, it contains its own *title bar*, in which the name of the document within the window is displayed.

### **Document**

The document itself takes up most of the display’s real estate. 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 53.

## Worksheet tabs

Below the document are the *worksheet tabs*.

A PlanMaker document can consist of several worksheets, which are layered like a stack of paper sheets, one on top of another. With the *worksheet tabs*, you can switch between the individual worksheets in a document, create new sheets, and delete existing ones (see section “Working with multiple worksheets”, page 73).



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

---

## Status bar

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



**Hint:** 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	Displays the result of the “immediate calculation” feature. If a single cell is selected, its content is shown here. If several cells are selected, the sum of the cell contents is indicated (see also the <b>Calculation in status bar</b> setting in <b>Tools &gt; Options</b> ).



This icon lights up if the worksheet contains circular references. This usually indicates an erroneously written formula – for example, a formula in cell A1 that refers to cell A1 itself.

If you click this icon, PlanMaker selects the cell with the circular reference. If you click again, it jumps to the next such cell (if more of them exist).

Ins

Shows whether Insert Mode (Ins) or Overstrike Mode (Ovr) is active.

**Ins:** Insert mode is active – newly entered text will be inserted into existing text.

**Ovr:** Overwrite mode is active – newly entered text will be written over existing text.

The default setting is Insert Mode. You switch between these modes by pressing the **Ins** key.

AUTO

Indicates the current input mode:

**AUTO:** Normal input mode – numbers are automatically recognized as numbers, and formulas as formulas.

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

The default setting is AUTO. With the key combination **Ctrl** **Shift** **F4**, you can switch between the two modes.

**Note:** If you switch to TEXT input mode, an apostrophe (') is automatically prepended to all numbers and formulas you enter, converting them into text which can no longer be used for calculations. In order to turn text into numbers or formulas again, switch back to AUTO mode and simply remove the leading apostrophe.

---

## Special instructions for Pocket PCs

On Pocket PCs, PlanMaker's application window looks slightly different. To allow as much of the document as possible to be seen, the menu bar and most of the toolbars are hidden. Everything is shown instead on the **Pocket PC toolbar**, as follows:



This toolbar enables fast access to the menu, the hidden toolbars and other important commands.

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

- Open menu bar
- Object mode on/off
- Standard toolbar on/off
- Formatting toolbar on/off
- Edit toolbar on/off
- Status bar on/off
- Set zoom level
- Row and column headers on/off
- Keyboard on/off



---

# PlanMaker basics

This chapter gives you a brief description of basic PlanMaker spreadsheet functions and terminology. Users who have little or no experience in the use of spreadsheets should read this chapter thoroughly.

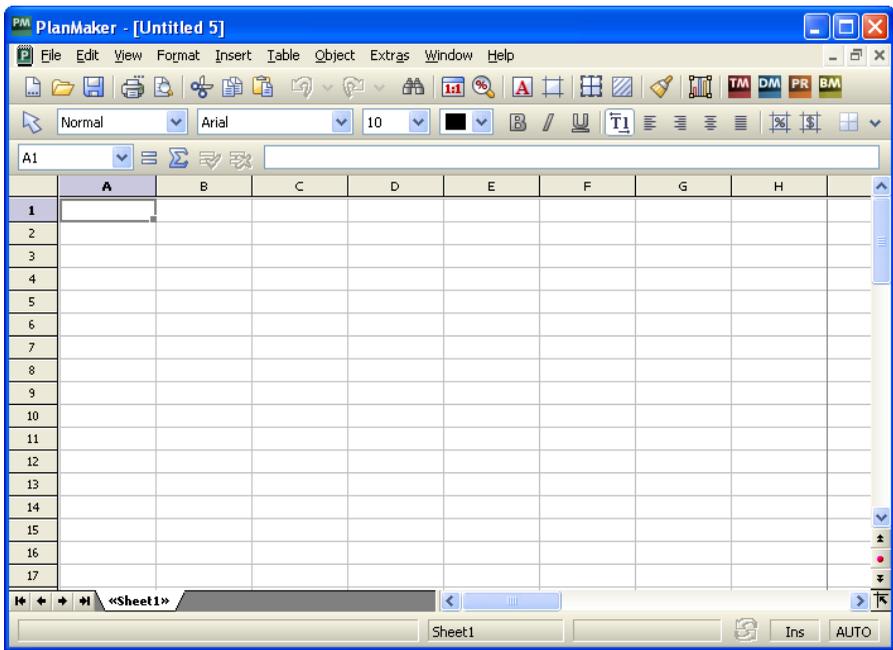
Topics covered in this chapter:

- **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 consists of 16384 rows and 256 columns. These are labeled as follows:

- The rows are numbered from 1 to 16384.
- The columns are labeled with alphabetic characters: A to Z, then AA to AZ, BA to BZ, etc.

The matrix of rows and columns results in a cell grid.

Every cell has exact 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 *address* of a cell.

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 gray frame, known as the *cell frame*, indicates the active cell.



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

**Mouse/Stylus:** Click on the desired cell, or (on Pocket PCs or Windows CE devices) tap on it with the stylus.

**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 599.

---

## 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 55.

---

## Deleting data

There are several ways to delete data from a document:

### ■ Deleting only parts of the cell content

In order to delete only a part of the contents of a cell, double-click it. Alternatively, move to the cell and press the **F2** key to edit it.

### ■ Deleting the entire cell content

In order to delete the entire cell content, move to the cell and press the **Del** key, or choose **Edit > Delete**.

### ■ Deleting the contents of multiple cells

Select the cells and press the **Del** key, or choose **Edit > Delete**.

For detailed information on this topic, see section “Deleting cells and cell contents”, page 60.

---

## 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 57.

---

## 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.PMV**. 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.

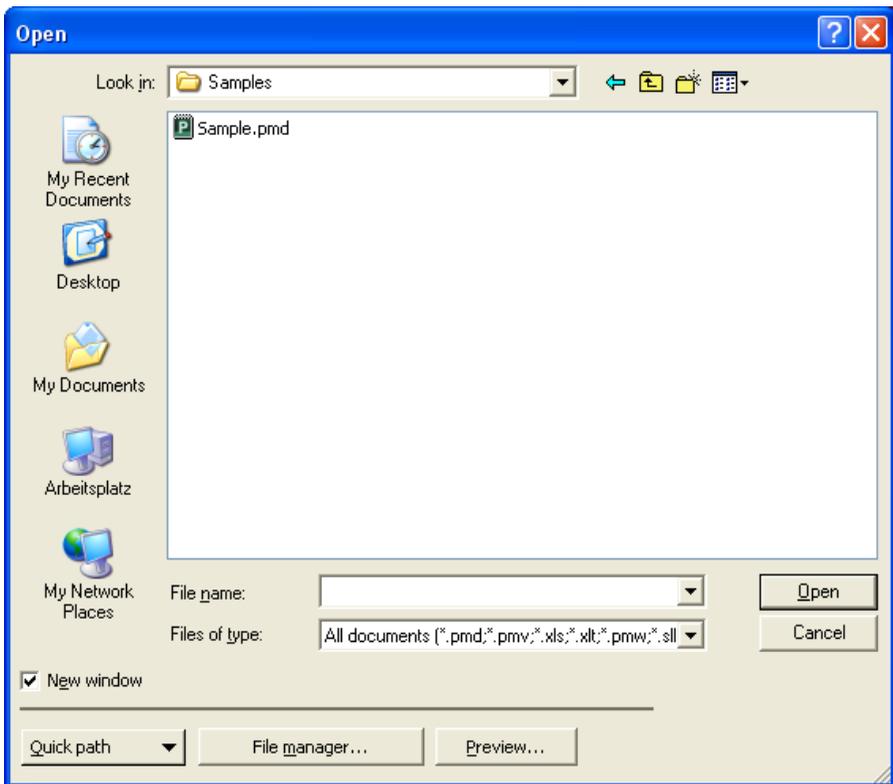
For detailed information on using document templates, see section “Document templates”, page 138.

---

## Opening a document

To open an existing document, use the **File > Open** command, or press the keyboard shortcut for this command: **Ctrl O**.

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.

For information about the supported file formats, see chapter "Working with other file formats", page 279.

## 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 245.

## 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. See section "The file manager", page 248.

## Previewing a document

If you select a document in the **Open** dialog and are not certain if it is the document you want to open, click **Preview**. A window opens, and the file is displayed in that window.

## Using the list of recently opened files

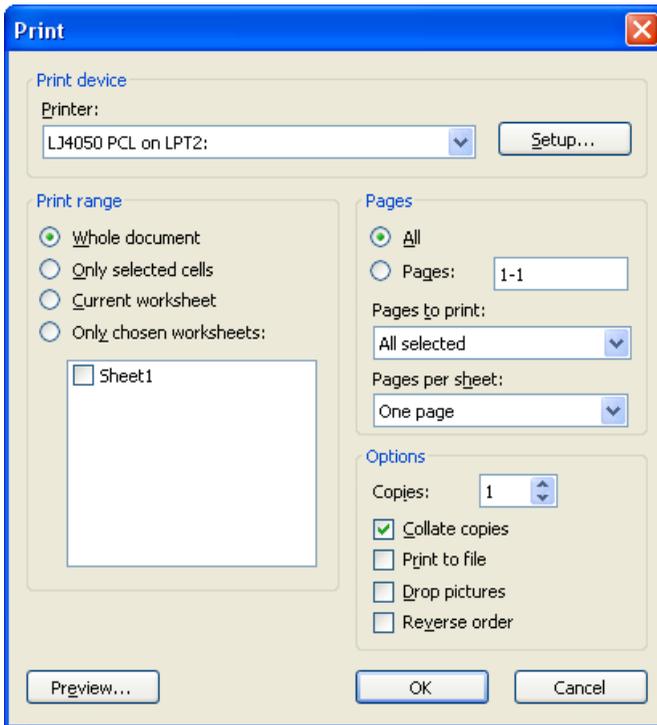
*Tip:* At the bottom of the **File** menu you will find a list of recently opened files. Simply click on one of these files to open it again.

**Pocket PCs:** On Pocket PCs, you will find this list under the menu item **Recent** in the main menu.

---

## 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 enter the pages and the number of copies to be printed. By default, one copy of the entire document is printed.

You can learn more about the other options in the chapter “Printing, e-mailing, etc.”, page 263.

---

# 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 279.

## 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

Users unfamiliar with spreadsheets should read the following section thoroughly. More advanced users are encouraged to browse through this section as needed.

*Note:* The illustrations in this manual were drawn from PlanMaker for **Windows**. Under other operating systems, some control elements may look slightly different; however, their functions are identical to those described.

---

## 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:

$a + b + c = d$

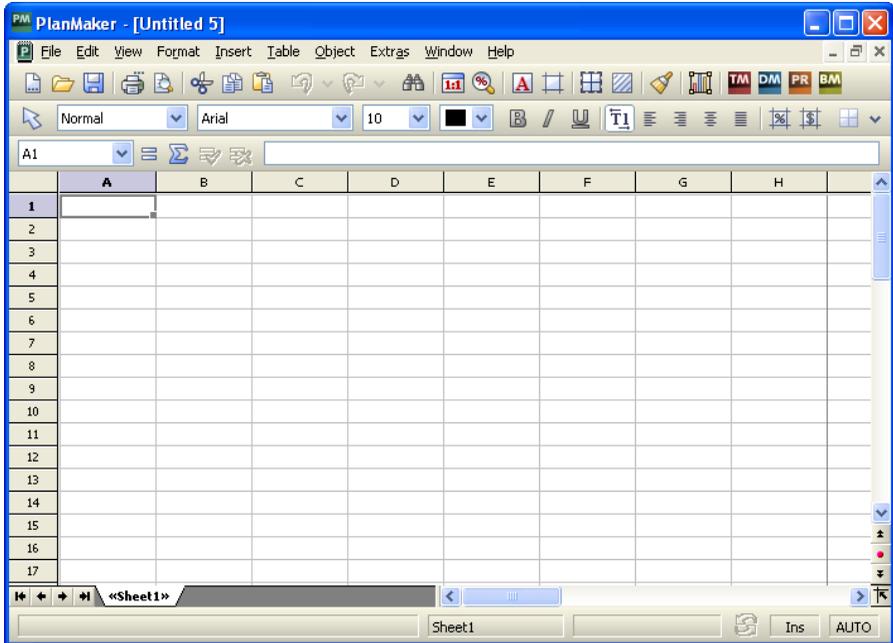
Without spreadsheets, such a formula has only practical benefit if you use a programmable calculator – you can enter the formula once, and then execute it many times. The calculator asks for the values one by one, and then shows the total value. This is not much of an improvement over repeated individual 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 gray 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 \$1499, \$899, and \$499, respectively.

Use the arrow keys to go to cell B2, and enter the value 1499. 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 899 here, and in the row below that type the value 499.

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:

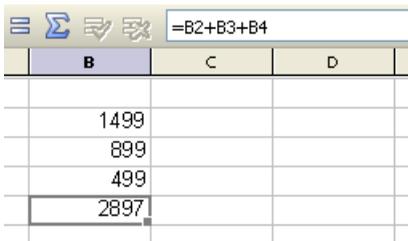
Go to cell B5 and type an = (equal sign). The equal sign shows PlanMaker that you would like to begin entering a formula.

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:



The screenshot shows a spreadsheet with columns B, C, and D. Cell B2 contains 1499, B3 contains 899, and B4 contains 499. Cell B5 contains the result of the formula =B2+B3+B4, which is 2897. The formula bar at the top shows the formula =B2+B3+B4.

	B	C	D
	1499		
	899		
	499		
	2897		

Let's see what happens if you change the numbers in the cells. Replace 899 by 799, 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.

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.

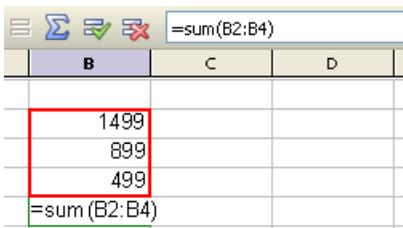
The notation *StartingCell:EndingCell* can also be used when both row and column changes. If, for example, you enter B2 as the starting cell and C4 as the ending cell, these two coordinates form the corners of a rectangle. The formula `=SUM(B2:C4)` would sum all numbers contained within this rectangle.

## Working with the sum icon

Actually, there is an even easier way to insert the SUM function:

Delete the contents of cell B5 again.

Now click the sum icon  in PlanMaker's Edit toolbar (not available on Pocket PCs). Move the mouse pointer to cell B2, and select cells B2, B3, and B4 by pressing and holding the left mouse button while you move the mouse pointer down to cell B4.



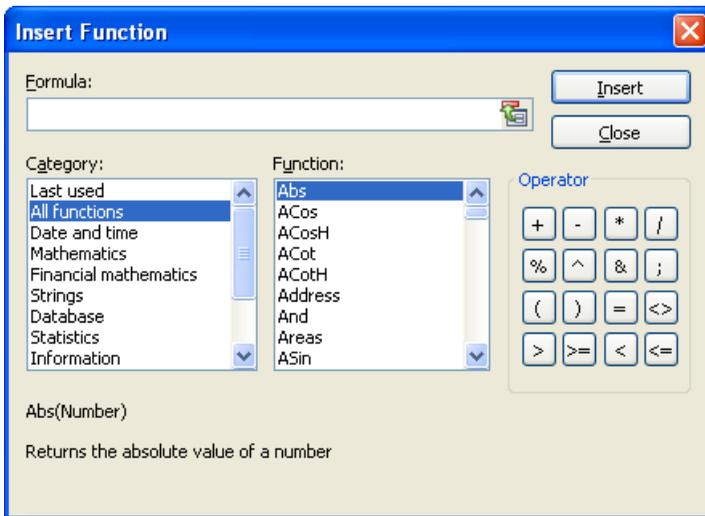
If you look at the Edit toolbar while you do this, the input area will display your new formula. PlanMaker builds the formula on the fly, while you are dragging the mouse pointer down. As soon as your formula is complete, release the mouse button and accept the formula in the Edit toolbar by pressing .

As you have seen, there are several ways to enter formulas in PlanMaker. All these methods have their advantages and disadvantages. As you become better acquainted with PlanMaker, you will automatically pick the best method for each specific situation.

## Working with the Insert > Function dialog

You now know the basics of working with a spreadsheet.

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



Let's try another function. Suppose we want to calculate the average value of our three numbers in the table.

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.



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 73.

---

## 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

Move the cell frame back to 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.

There are many more possibilities to improve the visual display of worksheets. For detailed information, see chapter “Formatting worksheets”, page 93.

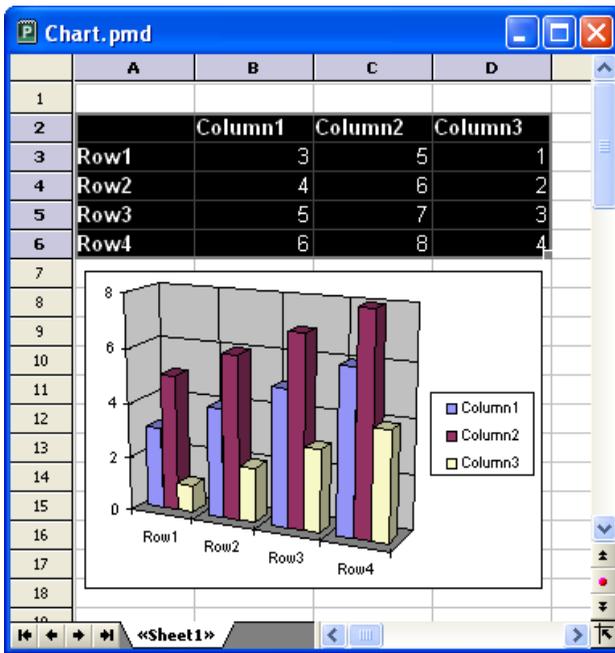
---

## 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**. Use the mouse to draw a rectangle on your screen. This rectangle determines the position and size of the chart. After drawing the rectangle, a dialog box will open that lets you define the type (pie chart, column chart, etc.) and the graphical options (colors, headline, legend, etc.) of the chart.



For more information on charts, see chapter “Charts”, page 193.

---

## 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

The first section of this chapter describes everything you need to know about entering text, numbers, dates, and calculations 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.

## ■ Selecting cells

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

## ■ Deleting cells and cell contents

Use **Edit > Delete** to delete the contents of cells, or **Table > Delete cells** to remove cells completely.

## ■ Moving and copying cells

Cells can be moved or copied by selecting them and either using the **Edit** menu commands 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 what is to be pasted; for example, just the values or just the formatting.

## ■ Inserting new cells

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

## ■ **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**

Using 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.

## ■ **Filtering cells by their contents**

The **Table > Filter** command filters ranges of cells so that only cells that fulfill certain criteria are displayed.

## ■ **Inserting comments**

Using the **Insert > Comment** command, you can attach comments and annotations 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.

## ■ **Freezing rows and columns**

With the **View > Freeze** command, you can freeze the top rows and columns of a worksheet on the screen. This will cause them to stay in place if 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 about entering numbers

- Always enter numbers using the decimal separator of the regional settings of your computer. In English-speaking countries, this is usually the decimal point.
- Numbers can also be entered in scientific (exponential) notation. 2E03, for example, corresponds to  $2 * 10^3$ , which equals 2000. 2E-03 corresponds to  $2 * 10^{-3}$ , which equals 0.002.
- 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 97.

## Notes about entering dates

- Dates can be entered in various formats; for example, 9/25/08, 09/25/2008, etc.
- Dates between January 1st, 1900 and December 31st, 2500 can be entered.
- 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

For example:

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 9/25/08 6:00, PlanMaker knows that you mean the 25th of September 2008 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 converts your input to a number but will automatically format it in date/time format.

To learn more about changing the format of dates and times, see section "Number format", page 97.

## Notes about entering logical values (Boolean values)

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

## Notes about 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. However, you can also input formulas manually.
- Detailed information on creating formulas is available in chapter “Formulas and functions”, page 335.
- For descriptions of all arithmetic functions, see section “Functions from A to Z”, page 346.

## Notes about entering text

- To enter text in a cell, simply type it in.
- In some rare cases, you may want to “force” PlanMaker to consider a number, a date, or a formula as text. In that case, put a single quotation mark in front of your input. This prompts PlanMaker to treat the content as text. If, for example, you enter '42 (including the single quotation mark), PlanMaker treats this as text, not a number.
- When you have entered several text entries in a column (one on top of each other), you can open a selection list of these entries by pressing the key combination **Alt** **⇧** **↓** in a cell directly above or below these 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.

---

## 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.

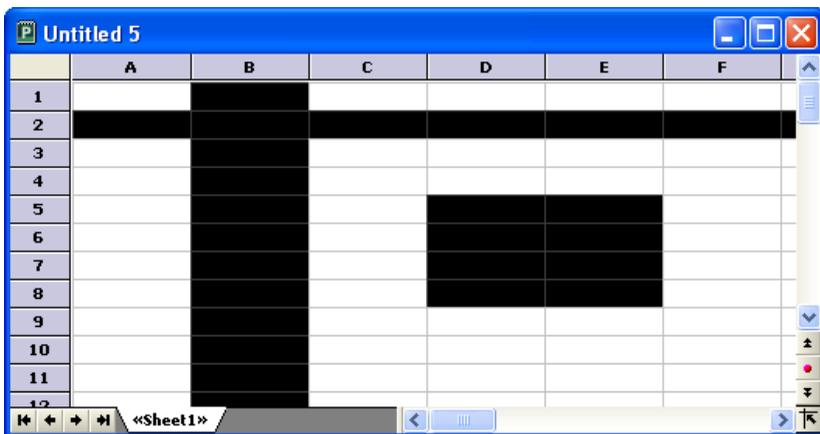
This command can also be invoked repeatedly. For example, if you invoke the **Undo** command five times, the last five changes are canceled. If you then invoke the command **Redo** five times, you get back the original text.

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

---

## Selecting cells

Some PlanMaker commands expect you to first select the cells on which you want to carry out these commands.



To select cells, use the mouse, the stylus (on handheld computers), or the keyboard:

## Using the mouse to select cells

With the mouse, cell ranges can be selected as follows:

### ■ Selecting arbitrary cell ranges

Cell ranges can be selected by left-clicking, then dragging the mouse over contiguous cells.

### ■ Selecting complete rows and columns

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

There is also a *row header* for each row. It is located at the left of the table and is labeled 1, 2, 3, etc. If you click on a row header, the complete 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

Sometimes, it is necessary to select a single cell. There are two ways to do this: Either click on the cell, and drag the mouse to a neighboring cell and back again, while keeping the left mouse button pressed. Or just click on the cell and keep the mouse button down for a second. In either case, the cell will be selected.

### ■ 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.

### ■ Canceling a selection

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

## Using a stylus to select cells

Some devices (Pocket PCs, for example) use a stylus with a touch screen instead of the mouse. To select cells with the stylus, use the same methods as described above.

## Using the keyboard to select cells

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

### ■ Selecting arbitrary ranges

To select multiple connected cells, 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, then cells B5 to B10 are selected. You can find a list of all key combinations suitable for navigating in a table in section “Keyboard shortcuts for editing spreadsheets”, page 599.

### ■ Selecting an individual cell

To select an individual cell, navigate to that cell, hold down the Shift key, use the arrow keys to select a neighboring cell, and then go back (for example, press   and  .

### ■ Selecting non-contiguous cell ranges

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

### ■ Canceling a selection

Press any navigation key (without holding Shift or Ctrl down) to cancel an existing selection.

---

## Deleting cells and cell contents

There are two methods for deleting data in a worksheet:

### ■ 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.

## ■ Deleting the contents of cells

If you use the **Edit > Delete** command, only the contents of the selected cells are removed. All cells remain where they are.

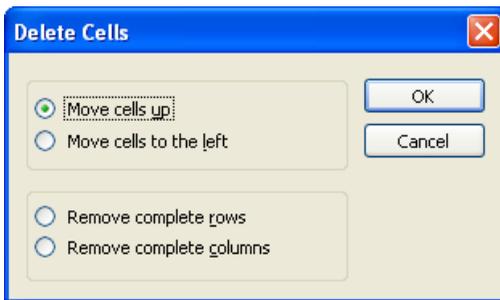
See the following pages for detailed information.

---

## 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 the contents of cells

The **Edit > Delete** command deletes the contents of the selected cells.

Note: Only the *contents* of the cells are removed, not the cells themselves.

### Selective deletion of cell contents

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 – i.e. 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 (values, text, formulas), with keeping the formatting.

- **Comments**

Remove only comments that have been added to the selected cells, leaving both content and formatting intact (see section “Inserting comments”, page 86).

- **Conditional Formatting**

Remove only the conditional formatting (see section “Conditional formatting”, page 122).

- **Input Validation**

Remove only the input validation (see section “Input validation”, page 124).

---

## 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. Then, 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:

<b>Command</b>	<b>Explanation</b>
<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**

If you select a range of cells before pasting with **Edit > Paste**, the pasted cells are fit into the selection:

- If the selected cell range is *smaller* than the cell range to be pasted, all pasted cells which do not fit are *ignored*.
- If the selection is *larger* than the cell range to be pasted, the cells are *repeated* until the selected area is completely filled.

### **Moving and copying using the mouse (“Drag and Drop”)**

To move/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.
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. If you now release the mouse button, the content of the selected cells will be *moved* to the target location. If you hold the `Ctrl` key down while releasing the mouse button, the cells contents will be *copied* to the new location.

This method can also be used with objects (pictures, charts, etc.).

## 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 addressing”, page 339).

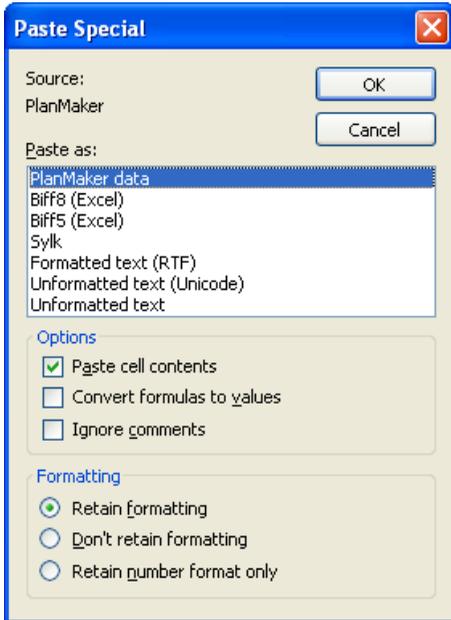
---

## Pasting cells selectively

If you put information on the clipboard with **Edit > Cut** or **Edit > Copy**, this information is kept there in multiple formats. For example, if you put text on the clipboard, it is stored there both in formatted and unformatted form.

PlanMaker automatically determines the most suitable format when you paste with **Edit > Paste**. However, you can specify the exact pasting format manually with the **Edit > Paste special** command.

Using **Edit > Paste special** will open a dialog box listing all available clipboard formats. Select a format from the list and hit **OK**. The content of the clipboard will be pasted in the chosen format.



This dialog has some additional options that are only available if you copied *cells* to the clipboard (not objects):

### **Paste cell contents**

If this option is checked, the *content* of the clipboard is pasted. If it is not checked, just the *formatting* is pasted.

### **Convert formulas to values**

If this option is checked, PlanMaker will paste the *results* of formulas in the clipboard, not 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.

## Ignore comments

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

## Formatting

These options determine what happens to the formatting of cells you are pasting.

PlanMaker offers the following options:

### ■ Retain formatting

The cells retain their complete formatting when they are pasted (character and cell format).

### ■ Don't retain formatting

The format of the pasted cells is ignored. Instead, the cells you are pasting into keep their previous format.

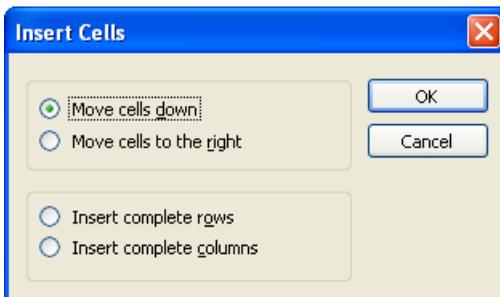
### ■ Retain number format only

Only the number format of the pasted cells is applied to the cells you are pasting into. Any additional formatting options applied to the destination cells remain.

---

# 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.

---

## Filling cells automatically

You can use PlanMaker's **Fill** function to quickly copy the content of a cell to other cells or 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 the mouse, point at the small rectangle in the bottom-right corner of the cell frame (it is marked in the following illustration):



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.).

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).

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



Options available:

## Source

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

Activate the **Format** option if you want the cells to be filled with formatting.

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 is determined by setting the remaining options in this dialog:

## Series type

Lets you specify how the series is incremented:

### ■ Auto

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

If two cells contain the values 10 and 20, the new cells will be filled with 30, 40, 50, etc. (also see tips and tricks in the next section).

### ■ Arithmetic

Arithmetic series. Here, every 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 choose an increment of 2, the cells will be filled with 3, 5, 7, 9, 11, etc.

### ■ Geometric

Geometrical series. Here, every 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 choose an increment of 2, the new cells will be filled with 2, 4, 8, 16, 32, etc.

### ■ Date

Date series. Here, every value will be increased by the value in the chosen date unit (see below). This can only be used if the initial cell contains a date.

For example, if the initial cell contains the date 1/1/2008, the increment is 1, and the **Date unit** is “Months”, the cells will be filled with 2/1/2008, 3/1/2008, 4/1/2008, etc.

## Increment

Lets you specify the amount by which every value will increase from cell to cell.

Positive or negative increment values can be used.

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

## Date unit

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

Lets you determine the unit of the increment:

### ■ Days

Increment by days

## ■ Workdays

Increment by days, excluding Saturdays and Sundays.

For example, if the initial value is Friday, with the increment set to 1, the next value will be the following Monday.

## ■ Months

Increment by months

## ■ Years

Increment by years

---

## 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.

## Create your own lists for automatic filling

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 Auto-Fill lists”, page 331.

---

# Working with multiple worksheets

In PlanMaker, it is possible to group several *worksheets* together in a single document, or *workbook*.

This feature allows calculations in one worksheet to refer to cells in other worksheets within the same workbook, resulting in a “three-dimensional” spreadsheet.

---

## 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.

---

## Switching between worksheets

The *worksheet register* at the bottom of the document window shows all worksheets in the current document:



*The active worksheet is highlighted.*

Click on the desired worksheet tab to activate a worksheet.

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

**Hint:** If you click on one of the tabs with the *right* mouse button, a context menu will appear, showing useful commands for creating and managing worksheets.

---

## Changing the order of worksheets

The worksheet register can also be used to move worksheets, allowing you to change their order.

Click the desired worksheet tab and drag it to the desired location within the other worksheet tabs.

---

## Managing worksheets

To manage worksheets, choose the **Table > Worksheet** command. A sub-menu with the following commands will appear:

- The **Insert** command creates a new worksheet.
- The **Copy** command creates a copy of the current worksheet.
- The **Delete** command removes the current worksheet along with its contents.
- The **Rename** command lets you change the name of the current 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 makes the current worksheet invisible. Hidden worksheets cannot be activated or edited, but they are still used as a source for calculations.

In addition to the commands listed above, you can use the **Table > Properties** command to change the properties of the current worksheet (see section “Worksheet properties”, page 313).

*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 274.

---

## Calculating in three dimensions

A multi-worksheet workbook allows calculations in one worksheet to refer to cells in other worksheets within the same workbook, resulting in a “three-dimensional” spreadsheet.

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, you create 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, click 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. For more information on these commands, read the following pages.

**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 271).

---

## 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).

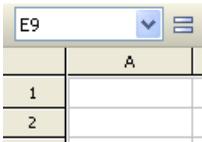
**Note:** Names may only consist of alphanumeric characters, underscores and periods. The first character must be a letter or an underscore.

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 window 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:

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.

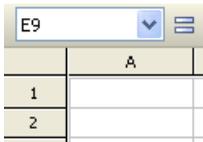
---

## 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:

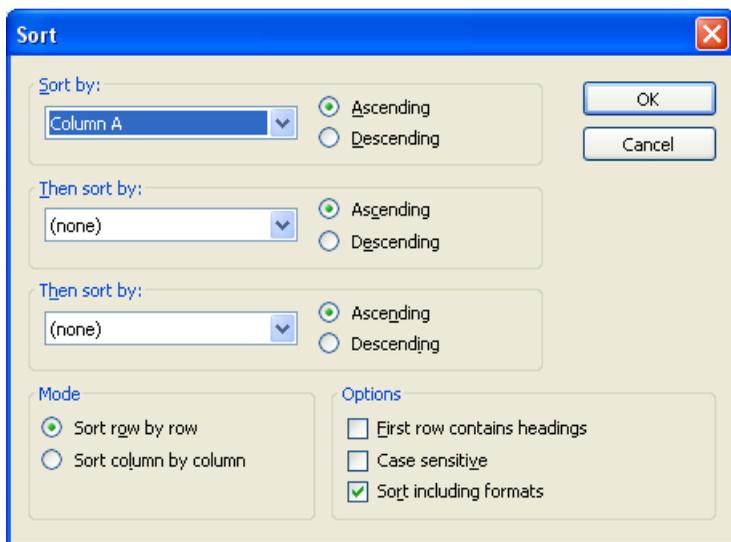
Assume the range from A1 to A10 (more precisely:  $\$A\$1:\$A\$10$ ) was named “January”. If you apply the **Apply** function to the formula  $=\text{SUM}(\$A\$1:\$A\$10)$ , this formula will always be converted to  $=\text{SUM}(\text{January})$ . But if you apply it to the formula  $=\text{SUM}(A1:A10)$ , 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 addressing”, page 339.

---

## Sorting cells

To sort cells in worksheets, select the desired cells and choose **Table > Sort**.



A dialog box with the following options will appear:

- **Sort by, Then sort by, Then sort by**

Select the desired columns to determine the sorting sequence.

If you select more than one column, the selection is first sorted by the column selected in **Sort by** and then within this sequence by the column chosen in **Then sort by**. For example, if the first column contains family names and the second column has the first names, you can sort first by the family name and then, in groups of identical family names, by the first name.

- **Ascending/Descending**

With this option, you can determine the sorting direction. **Ascending** goes from A to Z and **Descending** goes from Z to A.

- **Sort row by row/Sort column by column**

This option 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 turn on this option, terms with the first letter in lowercase will be placed above terms beginning with uppercase letters.

- **Sort including formats**

If this option is checked, cells moved by the sorting operation retain the assigned formatting.

---

## 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!

---

## 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:

- If you select the **Special filter** command, the resulting dialog box lets you formulate one or more filter conditions. After clicking **OK**, the filter activates and hides all rows 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 does not offer as many options as the Special Filter, but can be used more quickly: Select this command, and a special drop-down menu will appear above every column in the selected cell range. These drop-down lists let you easily choose between different pre-created 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. Select 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.

**“Wildcard characters”:** The characters \* and ? can be used as “wildcards”: \* represents an *arbitrary* 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.

## Choosing 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. Additionally, 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 filtered cells visible again

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

---

## AutoFilter

A simplified alternative to the Special Filter command is the AutoFilter feature, available via the **Table > Filter > AutoFilter** command.

To apply an AutoFilter:

1. Select the desired range of cells. **Important:** The first row of the range should contain headings for the data below.
2. Select the **Table > Filter** menu command. In the resulting sub-menu, select the **AutoFilter** command.

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

Clicking on one of these arrows will open a drop-down menu listing the contents of the current column. If you choose one of the list entries, PlanMaker activates the selected filtering. For example, if the content “Smith” is selected from the list, only rows that have the text “Smith” in the current column will stay visible; the rest of the rows will be hidden. Effectively a filter condition “Name equals Smith” has been created using the AutoFilter function.

Additionally, the drop-down menu contains entries for the following conditions:

- **All:** Display all lines (do not filter anymore).
- **Custom:** Open a dialog where the user can define more specific filter conditions (similar to the **Special Filter** command).
- **Top 10:** Display only the rows with the 10 highest or lowest values.
- **Only empty:** Display only rows where this column is empty.

- **Non-empty:** Display only rows where this column is not empty.

## Making filtered cells visible again

To deactivate the AutoFilter function, choose **Table > Filter > AutoFilter** once again.

*Note:* When you deactivate the AutoFilter function, all rows hidden by the filter will *still* remain invisible. To make them reappear, use the **Table > Filter > Show All** command.

---

## 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!”

### Attaching 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.

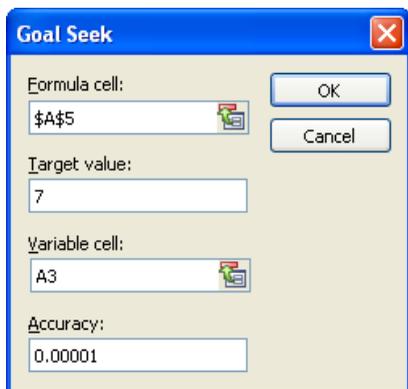
---

# 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.

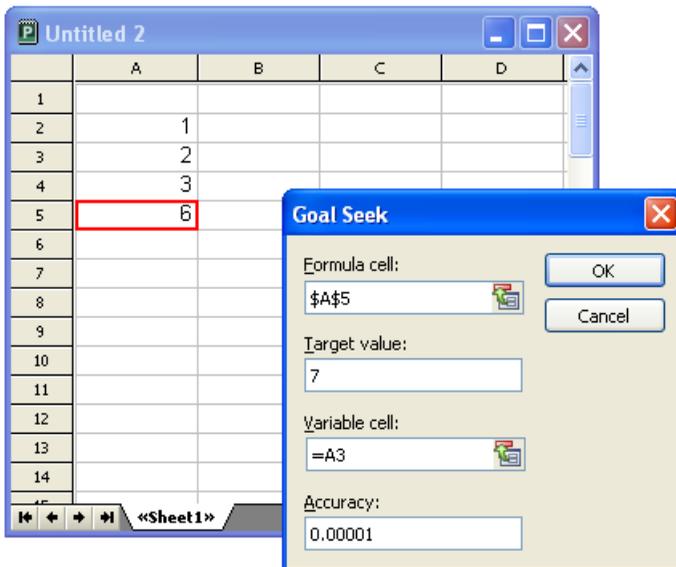
- In **Variable cell**, enter the cell address of the cell in which PlanMaker will test different values until the formula cell returns the desired result.
- In **Accuracy**, you can specify how close the result must match the desired target value. PlanMaker will attempt to approximate values until the 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.

---

## 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.

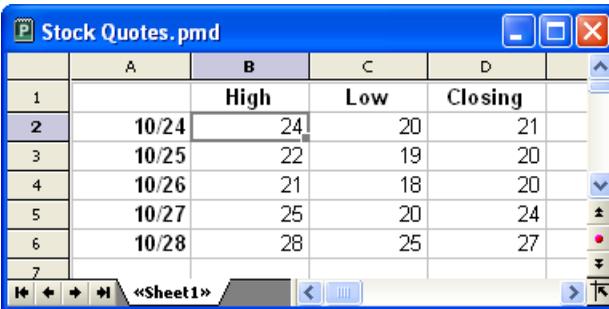
## Deactivating freezing

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.



---

# Formatting worksheets

Fortunately, the times when spreadsheets consisted of nothing but endless columns of plain numbers are over. With modern spreadsheet packages, you can apply a variety of fonts, colors, shades, borders, and other format options to enhance the appearance of worksheets and improve readability.

This chapter covers the format options available in PlanMaker:

## ■ 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 border 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 271).

## ■ 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.

## ■ Transfer formatting

Using the **Format > Transfer formatting** command, you can transfer the formatting of one cell to other cells.

## ■ Conditional formatting

The **Format > Conditional formatting** command allows you to apply conditional formattings to cells (for example, “Paint this cell in red, if it contains a value greater than 1000”).

## ■ Input validation

When you apply 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.

## ■ AutoFormat

The **Format > AutoFormat** command allows you to format a range of cells by applying pre-defined format schemes.

## ■ Character styles

PlanMaker also lets you store your favorite character formats in a character style. Character styles can be applied to cells at the push of a button.

## ■ Cell styles

You can create cell styles that store your favorite character formats *and* cell formats.

## ■ 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.

## ■ 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.

## ■ Print preview

The **File > Print Preview** command displays a preview of the printed document on the screen.

See the following pages for detailed information.

---

## Cell size

In this section 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 *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/column 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)

This command automatically sets the column width (or row height) to the optimum value (corresponding to the largest required value).

If you select some cells before using this command, only the cells within the selection are affected.

**Hint:** Alternatively, this command can be invoked by simply double-clicking on a row header or column header.

---

## 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 271.

To hide rows/columns:

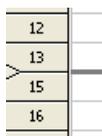
### Using the row header to hide rows

The quickest way to hide rows is using *row headers*. (Row headers are the buttons labeled with the row number, located left of the worksheet.)

For example, to hide row 14:

1. With the mouse, point to the lower border of the row header labeled “14”.
2. Press and hold the mouse button, and drag the border upwards until the row disappears.

Row 14 is now hidden. Instead of a row header, a small triangle is displayed:



12
13
14
15

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** property sheet.

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).

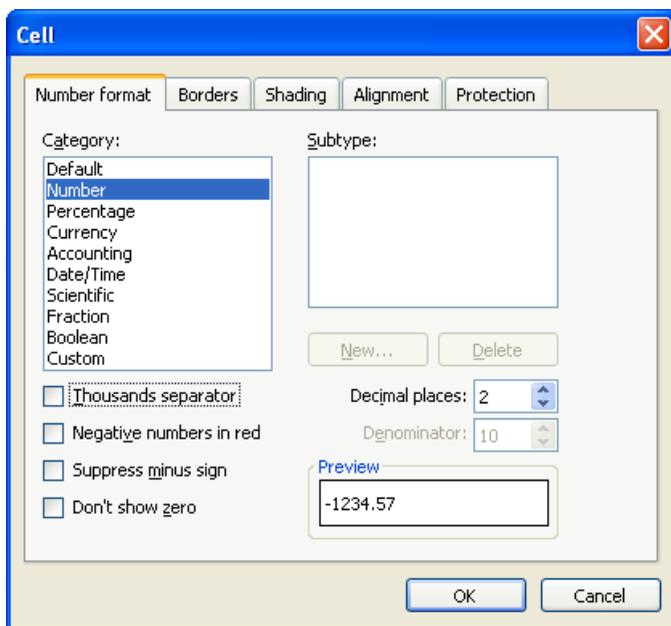
**Note:** When you apply a number format that has a fixed number of decimal places, the number will only be *displayed* as a rounded value, but still keeps *all* of its decimal places. To actually round numbers, use arithmetic functions like the ROUND function.

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** property sheet.



4. Select the desired number format.

5. Click **OK** to confirm.

Options available in the dialog box:

- **Category**

Lets you select the desired number format (see section “List of all number formats available” below).

## ■ Subtype

Some number formats let you select a subtype (see section “List of all number formats available” below).

## ■ Thousands separator

Some number formats let you specify if numbers will be displayed with thousands separators (e.g., 5,000,000) or without thousands separators (e.g., 5000000).

## ■ Negative numbers in red

If this option is checked, negative numbers will be displayed in red.

## ■ Suppress minus sign

If this option is checked, the minus sign of negative numbers will not be displayed.

## ■ Don't show zero

If this option is checked, the content of cells containing the number 0 (zero) will not be displayed.

## ■ Decimal places

Some number formats let you specify the number of decimal places to be displayed. For this purpose, enter the desired value.

*Note:* Numbers will only be *displayed* rounded, but they actually keep *all* of their decimal places.

## ■ Denominator

If the number format **Fraction** was chosen, this option lets you specify the denominator for the fractions.

---

## List of all number formats available

The following number formats are available in the **Format > Cell** dialog:

### Default

Does not make any changes to the number's format.

Numbers will be displayed with all of their decimal places (with a maximum of five decimal places).

Example: 42

## Number

Same as **Default**, except that you can specify the number of decimal places to be displayed.

Example: 42.00

## 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%

***Hint:*** This number format can also be applied by clicking the  icon in PlanMaker's Formatting toolbar.

## Currency

Displays the number with a currency symbol.

To specify the desired currency symbol, select it in the **Currency** list box.

Below, in the **Format** list box, several sub formats of the chosen currency are available – e.g. with the currency symbol before or after the number.

You can even create your own currency formats, as desired. To do this, click the **New** button (see section “Working with user-defined number formats”, page 103).

Example: \$42.00

***Hint:*** This number format can also be applied by clicking the  icon in PlanMaker's Formatting toolbar.

## Accounting

Same as **Currency** (see above), except that numbers are displayed in accounting format.

If you want to create your own accounting formats, click the **New** button (see section “Working with user-defined number formats”, page 103).

Example:     \$42.00

## Date/Time

Displays the number as date and/or time.

To specify the desired format, select the corresponding subtype in the **Subtype** list box.

The formats displayed depend on the system’s region settings; for example:

<b>Subtype</b>	<b>Display (and example)</b>
<b>M/D/YY</b>	month, day, year (2 digits) – e.g., 4/2/08
<b>MM/DD/YYYY</b>	month (2 digits), day (2 digits), year (4 digits) – e.g., 04/02/2008
<b>MMMM DD, YYYY</b>	month (name), day (2 digits), year (4 digits) – e.g., April 07, 2008
<b>h:mm</b>	hour, minute (2 digits) in 24 hours format – e.g., 9:30
<b>h:mm AM</b>	hour, minute (2 digits), in AM/PM format – e.g., 9:30 AM
<b>hh:mm:ss AM</b>	hour (2 digits), minute (2 digits), second (2 digits) in AM/PM format – e.g., 09:30:00 AM
<b>[h]:mm:ss</b>	hour (in “endless” time format*), minute (2 digits), second (2 digits) – e.g., 52:00:00
<b>MM/DD/YY h:mm AM</b>	month (2 digits), day (2 digits), year (2 digits) as well as hour, minute (2 digits) – e.g., 04/02/08 9:30 AM

\* 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, all other time formats would return 1:00. With the “endless” time format, the result is 25:00.

Additionally, the “endless” time format supports negative time values: For example, 7:00 - 10:00 does not result in 21:00, but in -3:00.

To create your own date/time formats, click the **New** button (see section “Working with user-defined number formats”, page 103).

## Scientific

Displays the number in scientific notation.

Example:     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, with a user-defined denominator.

*Note:* The numerator will be rounded, if necessary. For example, if you set the denominator to 3, the number 2.5 will be displayed as 2 2/3.

Example:     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.

Example:     TRUE

              FALSE

## Custom

Displays the number in a user-defined format.

For details, see the next section.

---

## Working with user-defined number formats

If desired, the **Format > Cell** dialog allows you to define your own number formats.

**Note:** This feature is only available when you have selected one of the following number formats: **Currency**, **Accounting**, **Date/Time**, or **Custom**.

### Defining a new number format

To create a new number format:

1. Click the **New** button.
2. Enter a text string that specifies the desired number format. For a list of available format codes and examples, see the next section.
3. Click on **OK**.

The number format is now created and applied to the currently selected cells.

### Deleting a number format

To delete a user-defined number format:

1. Select the number format to be deleted in the list.
2. Click the **Delete** button.

The number format is now removed.

Note: This button is only available for user-defined number formats. You cannot delete any of the built-in number formats.

---

## Structure of a user-defined format

To create a new number format, proceed as described in the previous section. A dialog box will appear, prompting you to enter a text string to specify the structure of the new number format.

This text string can consist of the following characters (called *format codes*):

## Format codes for the number format “Custom”

The **Custom** number format supports the following format codes:

Character	Result
#	Display a digit of the number or nothing (if no digit exists). Example: #.## applied to the number 1.2 returns 1.2.
0	Display a digit of the number or zero (if no digit exists). Example: #.00 applied to the number 1.2 returns 1.20.
?	Display a digit of the number or a blank (if no digit exists). Example: #.?? applied to the number 1.2 returns 1.2 (with a blank behind the 2).  <i>Note:</i> If <i>any</i> of the above codes are placed to the <i>left</i> of the decimal point, <i>all</i> digits left of the decimal point will be displayed. Example: #.## applied to the number 123.456 will not return 3.456, but 123.456.
.(period)	Display the number with a decimal point.
,(comma)	Display the number with thousands separators.  <i>Note:</i> The above two codes can be used at arbitrary position. Example: #,## applied to the number 5000000 returns 5,000,000.
%	Display a percent sign at this position and multiply the number by 100. Example: #% applied to the number 0.5 returns 50%.
+	Display the number’s sign at this position (even if it is positive). Example: +#.## applied to the number 1.2 returns +1.2.
-	Display the number’s sign at this position (only if it is negative). Example 1: -#.## applied to the number 1.2 returns 1.2. Example 2: -#.## applied to the number -1.2 returns -1.2.  <i>Note:</i> If you do not use a + or - format code, signs are displayed regardless (in front of the number and only if it is negative).
E+ or e+	Display the number in <i>scientific notation</i> . Example: #E+00 applied to the number 5000 returns 5E+03.

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: #E-00 applied to the number 5000 returns 5E03.

Example 2: #E-00 applied to the number 0.005 returns 5E-03.

\

Do not interpret the following character, just display it.

Example: To output a # character, use the format code \# (since the # would otherwise be interpreted as a format code).

"Text"

Do not interpret the text between the quotation marks, just display it.

Example: "MyText" returns MyText.

## Format codes for the number formats “Currency” and “Accounting”

**Currency** and **Accounting** number formats support the format codes listed above as well as the following codes:

**Character**

**Result**

---

~

Display as many decimal places as defined in the **Format > Cell** dialog.

Example: If you have set the number of decimal places to 2, \$#,~ applied to 1.2 returns \$1.20.

*Note:* This format code is applicable to **Currency** and **Accounting** number formats *only*.

## Format codes for the number format “Date/Time”

With **Date/Time** number formats, *only* the following format codes are valid:

*Note:* The format codes listed below are **case-sensitive!**

**Character**

**Result**

---

D

Day (1-31)

DD

Day, 2 digits (01-31)

<b>DDD</b>	Name of day, abbreviated (Su-Mo)
<b>DDDD</b>	Name of day (Sunday-Monday)
<b>M</b>	Month (1-12)
<b>MM</b>	Month, 2 digits (01-12)
<b>MMM</b>	Name of month, abbreviated (Jan-Dec)
<b>MMMM</b>	Name of month (January-December)
<b>MMMMM</b>	Name of month, first letter only (J for January to D for December)
<b>YY</b>	Year, 2 digits (e.g., 08)
<b>YYYY</b>	Year, 4 digits (e.g., 2008)
<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, 2 digits (00-23)
<b>m</b>	Minute (0-59)
<b>mm</b>	Minute, 2 digits (00-59)
<b>s</b>	Second (0-59)
<b>ss</b>	Second, 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!
<b>am/pm</b>	Same as AM/PM, but with <i>am</i> or <i>pm</i> .
<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.*

[s]                      Number of seconds in “endless” time format\*

[ss]                     Same as [s], but with 2 digits.\*

\* 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.

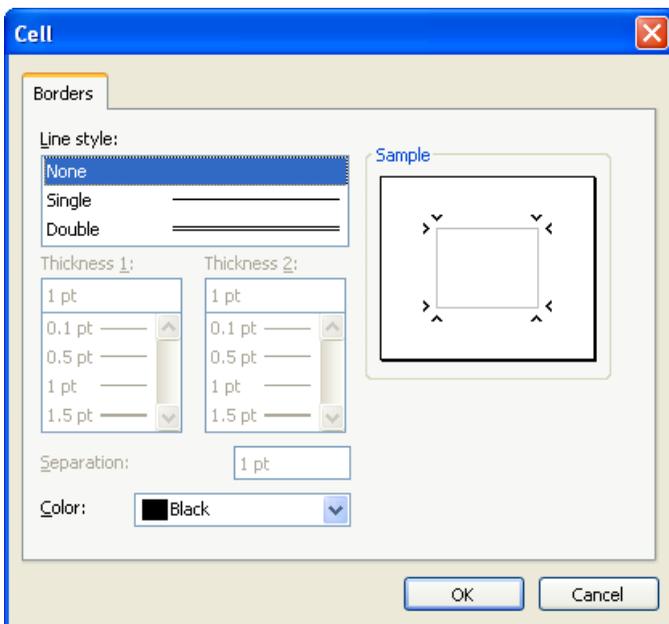
Additionally, you can use the “endless” time format to convert times to minutes or seconds. For example, when you format 02:00:00 as [mm]:ss, 120:00 will be displayed. If you format it as [s], 7200 (the number of seconds) will be displayed.

---

## Borders and lines

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

Alternatively, use the **Format > Borders** command, which is doing exactly the same.



To apply a border surrounding *all* selected cells:

1. Select the desired cells.
2. Choose **Format > Borders**.
3. Select a **Line Style** (single or double lines).

If desired, change the color and width of the lines.

Note: If you set the **Line Style** to **Double**, **Thickness 1** affects the width of the inner lines, **Thickness 2** affects the outer lines. The **Separation** option allows you to specify the distance between the lines.

4. Click **OK** to confirm.

The selected cells are now surrounded by border lines.

### Adding individual border lines

To create or modify *single* borders lines (above, below, left, or right of the cells), select the desired lines in the **Sample** field of the dialog *before* applying line style, thickness, etc.

The **Sample** field serves two purposes: it displays an example of the currently chosen border, and it is used to specify which edges will be affected when the line style is changed. The inward-pointing arrows are used to mark the edges that will be affected.

To select an edge, click on it in the **Sample** field. To deselect it, click on it again. After selecting the edges you want to change, set the line style and the other options as desired.

**Note:** To remove border lines, set their line style to **None**.

### 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 again.

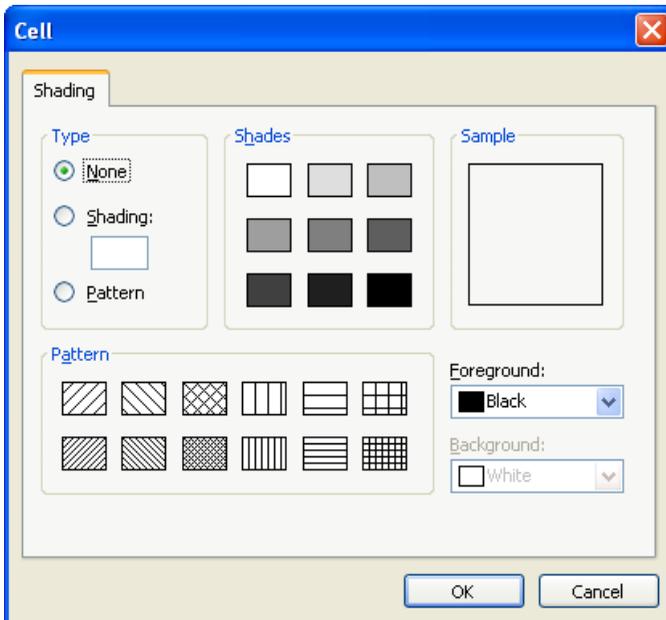
---

## Shading

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

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.



### ■ Applying a shade

To apply a color shade, click one of the pre-defined shades in the **Shades** list, or enter a custom shade value from 0 (no shade) to 100 (solid color).

To change the color of the shade, select the desired color in the **Foreground** drop-down list. (For information on adding new colors to color lists, see section “Document properties, Colors property sheet”, page 304).

### ■ Applying a fill pattern

To apply a fill pattern, click one of the pre-defined patterns in the **Pattern** list.

To change the colors of the pattern, select the desired colors in the **Foreground** and **Background** drop-down list. (For information on adding new colors to color lists, see section “Document properties, Colors property sheet”, page 304).

### ■ Removing shades or pattern

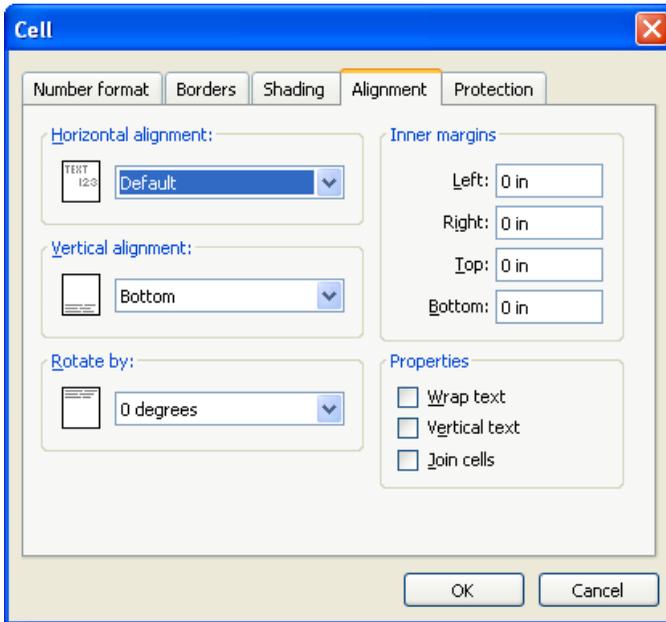
To remove any shade or pattern applied, select **None** in the **Type** list.

---

## Alignment

To change the alignment of cells, choose **Format > Cell** and switch to the **Alignment** property sheet.

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

**Center:** Centered

**Justify:** 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

**Center:** Aligned to the center

**Top:** Aligned to the top

**Justify vertically:** 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.

## 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** property sheet 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 271.

---

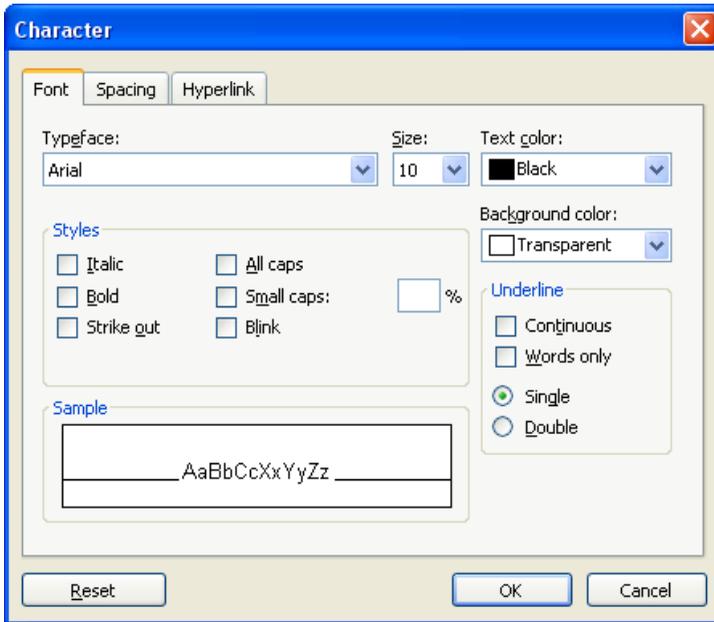
## Character format

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 a cell content, only the selected characters will be changed.

The **Format > Character** dialog box provides several property sheets. You can switch between them by clicking on one of the property sheet tabs along the top of the dialog.



The individual property sheets contain the following format options:

- **Font** property sheet

Typeface and font size, text style (bold, italic, etc.), text color

- **Spacing** property sheet

Superscript and subscript, letter spacing and character pitch

- **Hyperlink** property sheet

For inserting and editing hyperlinks (e.g., to web pages). You will find information about this topic in section “Working with links”, page 259.

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** property sheet.

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 font styles:

1. Select the cells or the text segment to be modified.
2. Invoke the command **Format > Character**.
3. Switch to the **Font** property sheet.
4. Check an option, or any combination of options, from the **Style** section.

## 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** property sheet.

You can now select the desired color for the text from the **Text color** list box.

**Tip:** The text color can also be changed using the color list  in the Formatting toolbar. Click on this list, which is situated to the right of the size list, and select the desired color.

You can also specify the background color of text using the **Background color** list box. By default, text has a **transparent** background. If you select a color for the background, the text will appear against this color – similar to being marked with a highlighter.

**Note:** Changing the background color of cell contents does *not* shade the complete cell but only the content. To shade *whole* cells, use the **Format > Shading** command.

If none of the existing colors suits you, you can always compose your own colors. To do so, click on “Define color...”, the last item in the color list (see section “Document properties, Colors property sheet”, page 304).

---

## 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** property sheet.
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** property sheet.
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 belonging to the printer's *internal* fonts has no effect on the printout.

---

## 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 **Format > Standard** or press the corresponding shortcut keys:  
 .

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

---

## Paragraph format (text frames only)

Use the **Format > Paragraph** command to change the paragraph format of text placed in a *text frame*.

*Note:* This command is available *only* in text frames. To learn more about text frames, see section “Text frames”, page 173.

The paragraph format includes the following settings:

- **Paragraph indents**
- **Line spacing**
- **Paragraph alignment**
- **Hyphenation**
- **Spacing above/below paragraphs**

For detailed information, see the pages that follow.

---

## Paragraph indents (text frames only)

*Note:* Paragraph indents can only be applied to text placed in a *text frame*. To indent *cell contents*, modify the cell’s inner margins using the **Format > Cell** dialog (**Alignment** property sheet).

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 only be applied 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. If multiple paragraphs are to be modified, select them.
2. Invoke the **Format > Paragraph** command.
3. You will find the options for line spacing in the **Line spacing** group box:

First, select the method you want to use to specify the line spacing (see below) from the dropdown list box.

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 three different ways. The dropdown list in the **Line spacing** group box allows you to choose from the following methods:

■ **Auto** (automatic line spacing)

With automatic line spacing, PlanMaker determines the optimum line spacing automatically. If you increase the font size in the paragraph, it increases the line spacing accordingly. If you decrease the font size, it reduces the line spacing accordingly.

To the right of the list box you can enter a percentage. The default value of 100 percent corresponds to normal automatic line spacing. As a reference point, if you enter “150”, the automatically determined spacing is multiplied by 1.5.

■ **Exactly** (fixed line spacing)

Here, you can enter the exact line spacing manually in points.

■ **At least** (automatic line spacing with a given minimum)

The **At least** setting provides an automatic line spacing of 100%, but prevents any reduction below the specified minimum value. So, if you enter 12 points as a minimum value, PlanMaker uses normal automatic line spacing as long as

you use font sizes of 10 points or more – but it keeps the line spacing at 12 points when you use smaller font sizes.

By default, line spacing is set to **Auto** and 100 percent.

---

## Paragraph alignment (text frames only)

**Note:** Paragraph alignment can only be applied to text placed in a *text frame*. To change the alignment of *cell contents*, use the **Format > Cell** command (**Alignment** property sheet).

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
- Center
- Justify (distribute evenly between left and right margin)

---

## Hyphenation (text frames only)

**Note:** Hyphenation settings can only be modified for text placed in a *text frame*. To activate hyphenation for *cell contents* (that consist of multiple lines), check the **Hyphenation** option in the **File > Properties** dialog, **Options** property sheet.

PlanMaker will automatically hyphenate any text entered in a *text frame*. All you have to do is to set the correct language in PlanMaker's preferences (see section "Setting up the language for spell checking", page 237).

### 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 paragraph as follows:

First select the paragraphs of interest, then invoke **Format > Paragraph** and select the desired setting 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.

---

## Spacing above/below paragraphs (text frames only)

*Note:* Paragraph spacing can only be modified for text placed in a *text frame*. To change the spacing between *cells*, 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:

<b>Option</b>	<b>Function</b>
<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).

---

# 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.

---

# Conditional formatting

To apply a *conditional* format to cells, use the **Format > Conditional Formatting** command.

*Conditional* formats are displayed only if the cell matches the specified *condition*.

For example, to display the cell content in red, if it is greater than 1000:

1. Click the desired cell (or select a range of cells).
2. Choose **Format > Conditional Formatting**.

3. Enter the condition in the **1st condition** group box. In this case, select **Cell value** in the left list, select **Greater than** in the list to the right of it, and type in 1000.

If desired, you can define additional conditional formats in the group boxes **2nd condition** and **3rd condition**.

4. Click the **Format** button and choose the formats to be applied if the condition is matched. In this case, set the **Text color** to red and click **OK**.
5. Click **OK** to confirm.

This will lead to the following result:

- 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, i.e., in red color.

If desired, you can delete conditions by clicking on the **Delete** button.

## Defining complex conditions

Conditions for conditional formats are not limited to comparing the cell content with a fixed value. If desired, you can define more complex conditions:

### ■ Using formulas instead of fixed values

The input box in the above dialog not only accepts fixed values, but formulas as well.

For example, instead of a condition like “Cell value greater 1000”, you can also define a condition such as “Cell value greater SIN(\$A\$1)”. In this case, the conditional format will be applied if the current cell content is greater than the sine of the value in cell A1.

### ■ Using arbitrary formulas

If you select the option **Formula** instead of **Cell value**, *any* kind of formula can be used. Please note that only formulas returning a logical value (TRUE or FALSE) are suitable.

For example:

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 in formulas

Please note that formulas used for conditional format can contain *absolute* cell addresses as well as *relative* cell addresses:

*Absolute* cell addresses like \$A\$1 always refer to cell A1 – no matter which cells were selected before you called the **Conditional Formatting** command.

*Relative* cell addresses like A1 refer to the upper left corner of the selected cell range:

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 refers to the cell below, etc.

---

## Input validation

When you apply *input validation* to a cell, you can do 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** property sheet 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** property sheet 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** property sheet 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 property sheet

■ **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 the range of cells which contains a list of permissible values under the <b>Source</b> option. For example, if the cells C1 through C3 hold the values “dog”, “cat” and “mouse” and you enter C1:C3 in <b>Source</b> , only those three values will be allowed.  Additional settings are displayed when the <b>Options</b> 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 property sheet**

On this property sheet 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 property sheet 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 property sheet

On this property sheet 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 entered (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** property sheet 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 *Boolean* 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 underneath, etc.

---

## 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.

---

# 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 135). 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.

---

## 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 113) 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** property sheet. 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 113) pops up. Modify the character format as desired.
5. Click **OK**.
6. Click **Close**.

**Resetting character styles:** To reset a character style to default values, click the **Reset** button in the dialog box described above.

### 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** property sheet, 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 property sheet **Style**.
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 131). 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.

---

## 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 (see section “Character format”, page 113) pops up. 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 (see section “Number format”, page 97) pops up. 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.

For this purpose, choose **Format > Cell Style**, select a style, click **Edit**, and switch to the **Style** property sheet. 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 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.

**Plus:** 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 formattings 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.

PlanMaker will store the new template in the document template folder.

---

## 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.pmv

The document template named NORMAL.PMV 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.PMV 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 template will be selected by default when creating a new document using the **File > New** command.

---

## 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** property sheet 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** property sheet 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** property sheet 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** property sheet to modify extended page setup options for the current worksheet.

Options available:

### Page number

Lets you control 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 in a header or footer (see next section).

### Print range

Lets you specify the cell range in the current worksheet to be printed.

By default, this option is set to **[All]**, indicating that the entire worksheet will be printed. If you enter a cell range (for example, A1:D20) or the name of a named cell range, only this range will be printed.

Print ranges can be defined individually for each worksheet of a file.

**Important:** When you save a document, this setting will be stored in the document *permanently*. If you open and print this document in the future, only the specified print range will be printed. To have the entire worksheet printed again, set this option back to **[All]**.

**Hint:** Alternatively, you can define a print range by selecting the desired cell range in the worksheet and invoking the **File > Print Range > Define Print Range** command. To remove the print range, use the **File > Print Range > Remove Print Range** command.

## 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.

## 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.

## Scaling options

Allows you to scale the printout up or down.

Choose the **Scaling option** if you want to enter the desired scaling factor 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.

If you choose the **Fit to pages** option on the other hand, you can specify how many pages the printout should have altogether. PlanMaker will then determine the suitable scaling factor automatically.

---

## Headers and footers

If desired, you can add *headers* and/or *footers* to a worksheet.

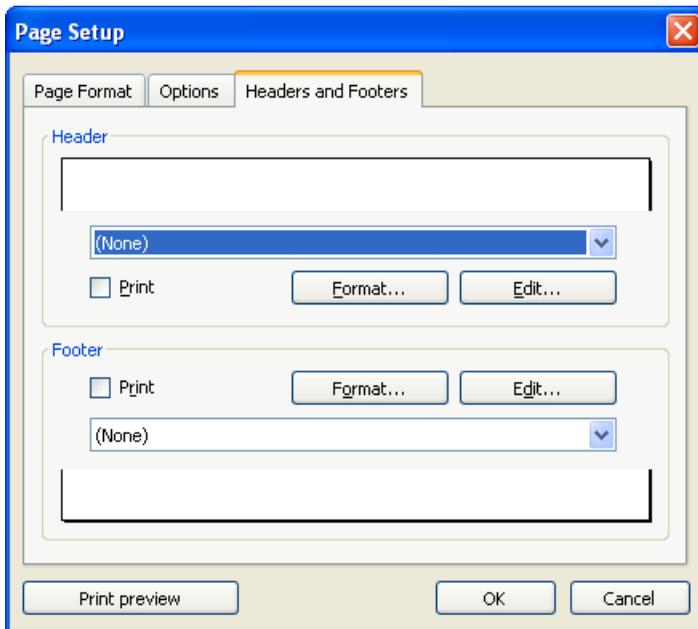
Headers/footers are repeated on the top/bottom of *each* printed page of a worksheet. They are useful for containing fields such as page number, file name, print date, etc.

**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** property sheet.

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 above 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.pmd")
<b>Document Name and Path</b>	File name of the document (e.g. "C:\Tables\My Table.pmd")
<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 property sheets will appear:

### ■ Shading property sheet

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 109).

### ■ Borders property sheet

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 107).

### ■ Alignment property sheet

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** property sheet.

## Disabling headers/footers temporarily

In case you want to print a document without the specified 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 sub-menu with the following commands will open:

- **Insert before Row** inserts a horizontal page break above the current row.
- **Delete before Row** deletes such a page break. Navigate to a cell located directly below the page break before selecting this command.
- **Insert before Column** inserts a vertical page break left of the current column.
- **Delete before Column** deletes such a page break. Navigate to a cell located directly to the right of the page break before selecting this command.

---

## Print preview

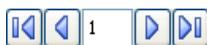
The *print preview* displays a preview of the printed document on the screen. Using this feature can help you avoid wasting paper on test prints.

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 141.
- The middle button invokes the **File > Print** command which prints the document. See also section “Printing”, page 263.
- 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 266.



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.



---

# Search & replace

This chapter covers information on searching (and/or replacing) cell contents:

## ■ Search and Replace

Use PlanMaker's search commands to search cell contents for a text string and/or replace it with another text string.

## ■ Jumping to specific cell addresses

Use the **Edit > 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 specific contents 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 cells for a text string.

**Note:** The search command searches the *cell contents* of the *current worksheet* only. It will *not* search a) the other worksheets, and, b) text located in objects (like text frames).

To search for a text string:

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. Choose **Edit > Search**.
3. In the **Search for** box, enter the text to find.
4. If desired, adjust the other search options (see section "Search and replace options", page 153).

5. Click the **Search** button to begin the search.

PlanMaker scans the document for the search text and then 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 to find and replace text.

To search for a text string and replace it with another text string:

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. Choose **Edit > Replace** (keyboard shortcut:  ).
3. In the **Search for** box, enter the text to find.
4. In the **Replace with** box, enter the replacement text.
5. If desired, adjust the other search options (see section “Search and replace options”, page 153).
6. Click the **Search** button to start the search.

PlanMaker scans the document for the search text, highlighting the first cell that contains it.

To continue, choose one of the following options:

- A) Click the **Replace** button to replace the text and continue the search.
- B) Click the **Search again** button to leave the text unchanged and continue the search.
- C) Click the **Replace All** button to replace *all* occurrences of the text.
- 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

The **Search** and **Replace** commands described on the previous pages have additional options. To display these options, click the **Enlarge** button in the dialog. To hide them, click the **Reduce** button.

*Note for Pocket PC users:* These buttons are not available in the Pocket PC version.

The extended Search/Replace dialog has the following options:

## “Options” group box

Here, you can modify 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 1995”.

If you check the **Whole cell match** option, only cells that contain the term “win” – and nothing else – will be found.

## ■ Search by column

By default, this option is checked, so that the worksheet is searched column by column. If disabled, the worksheet will be searched row by row.

## “Search in” group box

Here, you can specify which worksheet elements to scan:

### ■ Values

Scan all fixed values (e.g., numbers and text strings typed in manually)

### ■ Comments

Scan all comments applied to cells (**Insert > Comment** command)

### ■ Formulas

Scan formulas as if they were just text strings. For example, when you search for “sum”, all formulas using the SUM function will be found.

### ■ Results

Scan the results of formulas. Only available for the search command, not for the replace command.

Note: These options can be combined as desired.

---

## Jumping to specific cell addresses

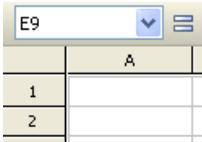
Use the **Edit > Go to** command to jump to a specific cell, cell range, or named cell range.

Choose this command and type in the desired cell address. You can either 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:

<b>Target Type</b>	<b>Explanation</b>
<b>Formula</b>	Jump to cells that contain a formula
<b>Array Formula</b>	Jump to cells that contain an array formula
<b>Constant</b>	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 340)
<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** (page 173, see also chapter “Charts”, page 193)
- **Text frames** (page 173)
- **Pictures** (page 175)
- **OLE objects** (page 179)
- **Drawings** (page 184)

---

## 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
- Object properties

More advanced procedures will follow later on, in section “Objects – advanced procedures” (page 170).

---

## Inserting objects

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

1. Choose **Object > New Picture Frame**.
2. With the mouse, drag a frame with the desired position and size in the document.

Alternatively, click where you want the upper left corner of the picture to be placed. The picture will be inserted as its original size.

3. A dialog box pops up, letting you select the picture file to be inserted. Choose the desired picture file and click **OK**.

The picture is inserted.

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 173).

---

## 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 red 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 easier when working in *Object mode*.

By default, PlanMaker runs in *Edit mode*. In this mode, table cells can be edited, formatted, etc.

When you switch to *Object mode*, table cells are no longer editable. Rather, various useful functions for object editing become available. For instance, in Object mode, you can select all types of objects by clicking them.

**Important:** While in Object mode, only commands related to inserting and modifying objects are available. Cells can no longer be modified and menu commands not related to objects are grayed out.

## toggling between Edit mode and Object mode

To toggle between Edit mode and Object mode, use one of the following procedures:

- Choose the **View > Object Mode** menu command to switch to Object mode. Choose again to return to Edit mode.
- Click the  icon in the Formatting toolbar to switch to Object mode. Click again to return to Edit mode.
- Right-click on any cell to open the context menu. Choose the **Object mode** command to switch to Object mode. Choose the **Exit Object mode** command to return to Edit mode.
- For the fastest method: Point to any cell and double-click using the *right* mouse button to switch between Object and Edit mode.

## The Object toolbar

When in Object mode, the Formatting toolbar is automatically replaced by the *Object toolbar*.



*The Object toolbar*

This toolbar provides icons for working with objects. From left to right:

- Toggle between Object and Edit mode
- Insert a chart frame
- Insert a text frame
- Insert a picture frame
- Insert an OLE object frame
- Insert an OLE object frame containing an equation editor object\*
- Insert a line

- Scribble
- Insert a curve
- Insert a straight connector
- Insert an elbow connector
- Insert a curved connector
- Insert a rectangle
- Insert a rounded rectangle
- Insert an ellipse
- Insert an AutoShape
- Insert a TextArt object (not available on Pocket PCs and Windows CE devices)
  
- Group selected objects
  
- Modify object properties
- Drop-down list of all objects in the document (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: 2px;">Tab</span>	Select next object
<span style="border: 1px solid black; padding: 2px;">⇧</span> <span style="border: 1px solid black; padding: 2px;">Tab</span>	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 objects:

### 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 in 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** property sheet 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 property sheet”, page 163.

### Changing the size of objects

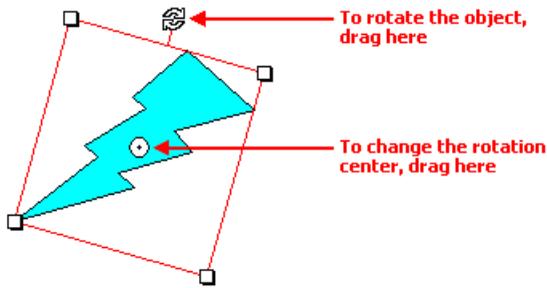
To change the size of an object, select it and a) drag the red lines surrounding it, or b) drag the corner handles.

---

## Rotating and flipping objects

*Note:* Only *drawings* and *pictures* can be rotated and flipped.

When you select an object that can be rotated, a handle with double arrows  will appear next to the selection frame surrounding it. Drag this handle to rotate the object.



Alternatively, you can set the angle of rotation manually. For this purpose, select the object, invoke the **Object > Properties** command, switch to the **Format** property sheet and enter the desired angle under the **Rotation** option.

You can also rotate and flip objects using the **Object > Rotate or Flip** command.

---

## Aligning and distributing objects

To align or distribute objects, select the desired objects and choose the **Object > Align or Distribute** command.

A sub-menu containing the following commands will appear:

- Align left
- Align center
- Align right
- Align top
- Align middle
- Align bottom
  
- Distribute horizontally
- Distribute vertically

The last two commands are available only if *three or more* objects are selected. Use these commands to evenly distribute the selected objects.

---

## 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:** Objects can be duplicated using the mouse: Press and hold the **[Ctrl]** key, and drag a new object out of the object you want to duplicate.

---

## Object properties

An object's *properties* include its size, fill style, line style, etc. The **Object > Properties** command makes all such properties accessible for editing in one place.

To change an object's properties, first select the object with a mouse click. Then invoke the **Object > Properties** command to gain access to the associated dialog.

**Hint:** For most types of objects, double clicking on the object provides a quick alternative way to invoke this dialog.

The dialog contains several property sheets. You can switch among them by clicking on the index tabs at their upper edges.

---

## Object properties, Format property sheet

Use the **Format** property sheet to modify the size/positioning of objects, rotate objects, or flip objects.

Options available:

■ **Size and Scaling** group boxes

Lets you change the size of the object. Either enter its **Width** and **Height** or use the **Horz. scaling** and **Vert. scaling** boxes to enter the scaling factor as a percentage.

If the **Keep aspect ratio** option is checked, modifying the object's height changes its width accordingly (and vice versa).

■ **Position** group box

Lets you determine to what extent the object's position and size is dependant on the cells it covers:

**Depends on cell position and size:** The object behaves like its upper left corner was anchored to the cell beneath. For example, if 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

Lets you rotate the object by entering an angle in degrees. Available only for drawings and pictures.

■ **Flip** group box

Lets you flip the object by checking one or more of the options provided. Available only for drawings and pictures.

---

## Object properties, Filling property sheet

**Note:** This property sheet is available only for certain types of objects.

**Note:** When applied to pictures, the filling will be visible only in pictures that contain *transparent* areas.

Use the **Filling** property sheet to modify the filling of objects.

First, select the desired type of filling in the **Fill type** list. Then, change the settings for the chosen fill type.

Fill types and settings available:

■ **No filling**

If you select this fill type, the object will be transparent.

■ **Color**

Fills the object using a uniform color shade. To change the color, select it a) in the **Gallery** displayed at the bottom of the dialog, or b) in the **Foreground** color list.

If none of the existing colors suits you, you can always compose your own colors. To do so, click on “Define color...”, the last item in the color list (see section “Document properties, Colors property sheet”, page 304).

If desired, you can also change the **Transparency** of the fill:

Under Windows, values between 0 (no transparency) and 100 (full transparency) are permitted. If you set the value to 50, for example, the filling will have 50% transparency.

Under other operating systems, only the option **Semi-transparent** is available. It sets the filling to 50% transparency.

### ■ **Pattern**

Fills the object using a pattern. To specify the pattern, select the type of pattern in the **Gallery**. Then, select the desired colors for foreground and background.

### ■ **Picture**

Fills the object using a picture file. To choose the picture file to be used, click the **Open** button.

The **Position** group box allows you to specify how the picture is to be displayed: with the **Tile** option, multiple copies of the picture are arranged like tiles to fill the area of the object; with the **Stretch** option, the picture is automatically resized to match the size of the object.

### ■ **Linear gradient, Square gradient, etc.**

The lowermost five fill types in the list fill the object using a gradient. First, select the desired fill type. Then, select one of the subtypes in the **Gallery**.

By default, a black to white gradient is used. To choose other colors, click one of the triangles below the gradient bar (see image below). 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.

You can add additional colors to the gradient by double-clicking the desired position in the gradient bar and selecting a color. To remove an additional color, double-click the triangle filled with that color.

The other options in the dialog let you fine-tune the gradient: **X offset** and **Y offset** determines where to start 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.

---

## Object properties, Lines property sheet

*Note:* This property sheet is available only for certain types of objects.

Use the **Lines** property sheet to modify the lines used to paint 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:

- **Style**

Offers some pre-defined line styles to choose from.

- **Dashed**

Lets you determine if solid or dashed lines will be used.

- **Color**

Lets you change the color of the lines.

- **Thickness**

Lets you change the width of the lines (in points).

- **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** changes the width/height of the symbol.

---

## Object properties, Shadow property sheet

*Note:* This property sheet is available only for certain types of objects.

Use the **Shadow** property sheet to add a shadow to the object.

For this purpose, activate the **Use shadow** option and select one of the pre-defined shadow types from the **Gallery**. Then, modify shadow settings, as necessary.

Options available:

■ **Use shadow**

If this option is checked, a shadow will be applied to the object.

■ **Color**

Lets you change the color of the shadow.

■ **Semi-transparent**

Here you can change the **Transparency** of the shadow:

Under Windows, values between 0 (no transparency) and 100 (full transparency) are permitted. If you set the value to 50, for example, the shadow will have 50% transparency.

Under other operating systems, only the option **Semi-transparent** is available. It sets the shadow to 50% transparency.

■ **Scaling**

Lets you change the size of the shadow.

■ **Offset**

Lets you move the shadow (relative to the object).

■ **Perspective**

Lets you modify the perspective of the shadow.

*Note:* If **Horizon** is a positive value, the shadow will be painted in front of the object; if it is negative, the shadow will be painted behind the object.

■ **Gallery**

Offers some pre-defined shadow styles to choose from.

---

## Object properties, 3D property sheet

*Note:* This property sheet is available only for text frames and drawings.

Use the **3D** property sheet to add a 3D effect to the object.

For this purpose, activate the **Use 3D effect** option and select one of the pre-defined 3D effects from the **Gallery**. Then, modify settings for the selected 3D effect.

Options available:

■ **Use 3D effect**

If this option is checked, a 3D effect will be applied to the object.

■ **Perspective**

If this option is checked, a perspective will be added to the object.

■ **Wire frame**

If this option is checked, the object will be painted as a wire frame model.

■ **X angle, Y angle and Depth**

Lets you modify angles and depth of the 3D effect.

■ **Colors** group box

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.

If the **Affect front side** option is checked, the front side of the object will be lightened/darkened according to the lighting of the 3D effect. Note: To change the lighting, click the **More** button.

■ **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.

■ **Gallery**

Offers some pre-defined 3D effect settings to choose from.

---

## Object properties, Properties property sheet

Use the **Properties** property sheet to modify common object settings.

Options available:

### ■ Name

PlanMaker automatically assigns a unique name to every object you insert. If desired, you can change that name here.

**Hint:** The name of the current object is displayed in the Object toolbar. If you click the name, a list of all objects in the document is displayed. If you click one of these names, the corresponding object will be selected.

### ■ Visible

This option is checked by default. If you deactivate it, the object will no longer be visible on screen. See also section “Hiding objects”, page 170.

### ■ Printable

This option is checked by default. If you deactivate it, the object will not print. See also section “Hiding objects”, page 170.

### ■ 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 271).

### ■ Text locked

Only available in text frames and drawings that contain text.

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 271).

### ■ 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 about links, see section “Working with links”, page 259.

---

## Additional property sheets

With some object types, additional property sheets are displayed. To learn more about these property sheets, see the section referring to the corresponding type of object.

---

## Objects – advanced procedures

This section present some less commonly needed functions for working with objects. The following topics are covered:

- Hiding objects
- Changing the order of objects
- Grouping objects

---

### Hiding objects

PlanMaker provides an option to *hide* objects. Hidden objects will not appear on screen and/or print.

To hide an object, select it, then choose **Object > Properties**, switch to the **Properties** property sheet, 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** property sheet, 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 (page 173)
- Text frames (page 173)
- Pictures (page 175)
- OLE objects (page 179)
- Drawings (page 184)

---

# 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 193.

---

# Text frames

Use *text frames* to insert text boxes into a document. Within text frames, you can enter, edit, and format text as desired.

For more information on working with text frames, read the following pages.

---

## 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. With the mouse, drag a frame with the desired position and size in the document.

Alternatively, click where you want the upper left corner of the text frame to be placed. A frame with a default size will then be inserted.

The text frame will now be created.

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.

---

## Text frame properties

Use the **Object > Properties** command to modify the properties of a text frame.

*Hint:* In Object mode, this command can also be invoked by simply double-clicking the frame.

Options available:

### Format, Filling, Lines, Shadow, 3D and Properties property sheets

These property sheets are present for almost all kinds of objects. They contain the following options:

- **Format:** On this property sheet you can change the size and positioning of the object. See section “Object properties, Format property sheet”, page 163.
- **Filling:** Here you can change the filling of the object. See section “Object properties, Filling property sheet”, page 164.
- **Lines:** Here you can add border lines. See section “Object properties, Lines property sheet”, page 166.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 167.
- **3D:** Here you can add a 3D effect. See section “Object properties, 3D property sheet”, page 168.
- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 169.

For text frames, two additional property sheets are available in the dialog:

### Inner text property sheet

Use this property sheet to change settings affecting the text inside the frame.

- **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.

■ **Rotate by...** group box

Lets you rotate the inner text in 90 degrees increments.

■ **Overlapping objects** group box

Lets you specify how the frame will behave if it is overlapped with other frames:

If the default option **Ignore object** is selected, nothing happens.

If the option **Wrap text** is selected, the text inside the text frame is automatically wrapped around the overlapping object.

■ **Vertical alignment** group box

Lets you change the vertical alignment of the inner text:

<b>Option</b>	<b>Result</b>
<b>Top</b>	Align inner text at the top of the frame
<b>Center</b>	Vertically center text between top and bottom of the frame
<b>Bottom</b>	Align inner text at the bottom of the frame
<b>Flush</b>	Vertically justify text (so that it is evenly distributed between top and bottom of the frame)

## **AutoShapes property sheet**

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** property sheet. Click on a category in the list on the left, then click the desired AutoShape.

To learn more about AutoShapes, see section “Drawings”, page 184.

---

# **Pictures**

The next pages provide all information needed to work with pictures.

---

## 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. With the mouse, drag a frame with the desired position and size in the document.

Alternatively, click where you want the upper left corner of the picture to be placed. The picture will be inserted as its original size.

3. A dialog box pops up, letting you select the picture file to be inserted. Choose the desired picture file and click **OK**.

The picture will now be inserted.

### 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 in the **Windows** version of PlanMaker only.

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

To scan a picture:

1. Power up the scanner and insert the image 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

---

## Picture frame properties

Use the **Object > Properties** command to modify the properties of a picture frame.

*Hint:* In Object mode, this command can also be invoked by simply double-clicking the frame.

Options available:

## Format, Filling, Lines, Shadow, and Properties property sheets

These property sheets are present for almost all kinds of objects. They contain the following options:

- **Format:** On this property sheet you can change the size and positioning of the object. See section “Object properties, Format property sheet”, page 163.
- **Filling:** Here you can change the filling of the object. Only visible in pictures containing transparent areas. See section “Object properties, Filling property sheet”, page 164.
- **Lines:** Here you can add border lines. See section “Object properties, Lines property sheet”, page 166.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 167.

- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 169.

For pictures, the following additional property sheet is available in the dialog:

## Picture property sheet

Use this property sheet to change the following settings:

- **Colors** group box

**Original colors:** The picture will be displayed in its original colors.

**Grayscale:** Colors are reduced to grayscales.

**B/W:** Colors are reduced to black and white. To use different colors, change **Foreground color** and **Background color** as desired.

- **Cropping** group box

To crop the picture, enter percentage values in the appropriate input fields.

- **Settings** group box

To change brightness, contrast or gamma value of the picture, enter percentage values in the appropriate input fields.

- **Transparent color** group box

Lets you modify the transparency settings of the image:

**Detect automatically:** Uses the transparency settings stored in the picture file.  
Note: Only the GIF and the PNG picture format are able to store 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 a picture, that is, to save a copy of it on your hard disk under any file name you like.

If you check the **Create link to file** option, 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.

---

# OLE objects

**Note:** OLE objects are available in the **Windows** version of PlanMaker only.

To insert objects (drawings, images, etc.) created with other applications, use the **Object > New OLE Object Frame** command.

For example, choose this command and select “Paintbrush Image” in the **Object type** list. Windows’ drawing program *Paintbrush* will be started automatically. Create a new drawing and close *Paintbrush*. The picture will now appear in the PlanMaker document.

Note that this picture is now *embedded* in the document. To modify it, just double-click it. Again, *Paintbrush* will be started. Make your changes, close *Paintbrush*, and the picture will be updated in the PlanMaker document.

**Note:** OLE objects can only be created using applications that support OLE (“Object Linking and Embedding”).

For more information on working with OLE objects, read the following pages.

---

## Inserting OLE objects

**Note:** OLE objects are available in the **Windows** version of PlanMaker only.

To insert an OLE object into the current worksheet:

1. Choose **Object > New OLE Object Frame**.

2. With the mouse, drag a frame with the desired position and size in the document.

Alternatively, click where you want the upper left corner of the object to be placed. The object will be inserted at its original size.

3. A dialog box pops up, letting you select the type of OLE object to be inserted. Only objects provided by OLE compatible applications are listed.
4. Click **OK**, and the corresponding application will be started.
5. In the application, create the object.
6. Exit the application.
7. If the application displays a dialog box asking if you want to update the object in the PlanMaker document, click **Yes**.

The object will now be inserted.

### **Creating OLE objects from a file**

If you do not want to create a *new* OLE object but embed an *existing file* created with an OLE compatible application, choose **Object > New OLE Object Frame** and check the **Create from file** option. Then, enter the file name or click the **Browse** button to locate the file.

Click **OK**, and the file will be inserted as an OLE object. **Note:** If the file is not associated with an OLE compatible application, only an icon will be displayed instead of the contents of the file.

### **Linking to the original file**

Use the **Link** option in the dialog described above to create a link to the embedded file:

- If the **Link** option is not checked, PlanMaker will use a *copy* of the original file. Changing the original file with any other application will have no effect on the PlanMaker document.
- If the **Link** option is checked, PlanMaker will create a *link* to the file. If the file is modified with any other application, the OLE object in PlanMaker will be updated accordingly.

---

## Editing OLE objects

**Hint:** The quickest way to edit an OLE object is to double-click it. The appropriate application will open, and the object can be edited.

Alternatively, OLE objects can be opened for editing as follows:

1. Select the OLE object.
2. Open the **Edit** menu. At the bottom of the menu, a menu entry with the name of the object is displayed. Click this entry to open its sub-menu. Choose the **Edit** command from the sub-menu.
3. The application associated with the OLE object will open, and the object can be edited.
4. Exit the application.
5. If the application displays a dialog box asking if you want to update the object in the PlanMaker document, click **Yes**.

The OLE object will now be updated in the PlanMaker document.

---

## Editing links to OLE objects

Use the **Edit > Link** command to edit links to OLE objects created from a file (with the **Link** option checked).

A dialog box displaying all links existing in the document will appear. Select one of the links and use the buttons available in the dialog to edit it:

<b>Button</b>	<b>Function</b>
<b>Update now</b>	Updates the OLE object. Use this button if the file has been changed by another application and PlanMaker has not yet updated the OLE object automatically.

<b>Open source</b>	Launches the application associated with the OLE object so you can edit it. <i>Hint:</i> Alternatively, simply double-click the object to open it for editing.
<b>Change source</b>	Lets you select a different file as the source of the OLE object.
<b>Cancel link</b>	Terminates the link to the source file. If the file is changed by another application afterwards, the OLE object in the PlanMaker document will no longer be updated.

---

## OLE object properties

Use the **Object > Properties** command to modify the properties of an OLE object frame.

Options available:

### Format, Filling, Lines, Shadow, and Properties property sheets

These property sheets are present for almost all kinds of objects. They contain the following options:

- **Format:** On this property sheet you can change the size and positioning of the object. See section “Object properties, Format property sheet”, page 163.
- **Filling:** Here you can change the filling of the object. Only visible in objects containing transparent areas. See section “Object properties, Filling property sheet”, page 164.
- **Lines:** Here you can add border lines. See section “Object properties, Lines property sheet”, page 166.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 167.
- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 169.

For OLE objects, the following property sheet is also available:

### Picture property sheet

Use this property sheet to change the following settings:

■ **Colors** group box

**Original colors:** The object will be displayed in its original colors.

**Grayscale:** Colors are reduced to grayscales.

**B/W:** Colors are reduced to black and white. To use different colors, change **Foreground color** and **Background color** as desired.

■ **Cropping** group box

To crop the object, enter percentage values in the appropriate input fields.

■ **Settings** group box

To change brightness, contrast or gamma value of the object, enter percentage values in the appropriate input fields.

---

## Using Equation Editor objects

*Note:* The SoftMaker Equation Editor is available only for Windows and is not included in all versions of PlanMaker.

This chapter on OLE objects concludes with some information about the **SoftMaker Equation Editor**, which can represent 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 for which the Equation Editor is the source application.

Proceed as follows to create a formula with the Equation Editor and insert it as an OLE object frame into a PlanMaker for Windows document:

1. Invoke the **Object > New OLE Object Frame** command.
2. Click on the position where you want to place the object.
3. Select the **SoftMaker Equation Editor** entry from the **Object Type** list.
4. Confirm with **OK** to start the Equation Editor.
5. Create the desired formula.
6. 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, German, French and Japanese. You can obtain information about the purchase of MathType from your software distributor or directly from Design Science.

Design Science, Inc.  
4028 Broadway  
Long Beach, CA 90803  
USA

Telephone (USA):	(800) 827-0685 (for customers within the USA and Canada) (562) 433-0685 (for international customers)
Fax (USA):	(562) 433-6969
E-Mail (English):	<a href="mailto:sales@mathtype.com">sales@mathtype.com</a>
Internet:	<a href="http://www.mathtype.com">www.mathtype.com</a>

---

## Drawings

PlanMaker provides tools to create drawings in your documents. The following types of drawings are available:

- Lines
- Scribbles (freehand curves)
- Curves
- Connectors (to connect objects, e.g., in flowcharts)
- Rectangles and ellipses

- AutoShapes (pre-defined shapes)
- TextArt objects (text effects – not available on Pocket PCs and Windows CE devices)

To learn more about working with drawings, read the following pages.

---

## Inserting drawings

To insert a drawing, choose the appropriate drawing tool and create the drawing.

For example, to insert a rectangle:

1. Choose **Object > New Drawing** and select one of the drawing tools displayed in the sub-menu – in this case, choose **Rectangle**.

Alternatively, click one of the drawing tools displayed in the Object toolbar (available in Object mode only):



2. With the mouse, drag a frame with the desired position and size in the document.

The rectangle will now be inserted.

The following types of drawings are available:

### Lines

Use the **Line** tool  to draw straight lines.

For this purpose, press and hold the left mouse button and draw the line.

**Hint:** If you hold down Shift key  while you draw, the line will be restricted to angles of 45 degrees.

### Scribbles

Use the **Scribble** tool  to draw freehand curves.

For this purpose, 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 the desired end position.

## Curves

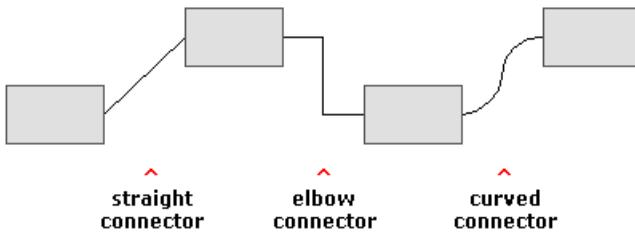
Use the **Curve** tool  to draw Bezier curves.

For this purpose, first, click the starting point, then click as many other positions 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.

## Connectors

Use one of the **Connectors** tools  to draw straight connectors, elbow connectors, or curved connectors.



For this purpose, select one of these tools and move the mouse from one object to the next, with the left mouse button held down.

*Hint:* When you select a connector tool and point to an object, blue handles will appear, indicating where connectors can be attached.

## Rectangles, rounded rectangles, and ellipses

Use one of the tools  to draw rectangles, rounded rectangles, or ellipses.

For this purpose, select one of these tools and draw a frame with the desired position and size.

*Hint:* To draw squares/circles, keep the Shift key  held down while you draw.

## AutoShapes

Use the **AutoShape** tool  to draw AutoShapes. *AutoShapes* are drawings with a pre-defined shape (e.g., rectangles, ellipses, arrows, banners, callouts, etc.).

When you select this tool, a dialog box is displayed. Choose the desired AutoShape, click **OK**, and draw a frame with the desired position and size.

**Note:** Some AutoShapes have special features, indicated by yellow triangles that are displayed when the AutoShape is selected. Drag one of these triangles to change the shape. For example, stars have triangles 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 187.

## TextArt objects

**Note:** This feature is not available on Pocket PCs and Windows CE devices.

Use the **TextArt** tool  to insert TextArt objects. *TextArt objects* are used to create text effects.

When you select this tool, a dialog box is displayed. Enter the desired text and click **Variants** to choose one of the pre-defined text effects. Then, click **OK**, and draw a frame with the desired position and size.

---

## 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 it to open the 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 173).

---

## Drawing properties

Use the **Object > Properties** command to modify the properties of a drawing.

**Hint:** In Object mode, this command can also be invoked by double-clicking the drawing.

Options available:

### Format, Filling, Lines, Shadow, 3D, and Properties property sheets

These property sheets are present for almost all kinds of objects. They contain the following options:

- **Format:** On this property sheet you can change the size and positioning of the object. See section "Object properties, Format property sheet", page 163.
- **Filling:** Here you can change the filling of the object. See section "Object properties, Filling property sheet", page 164.
- **Lines:** Here you can modify the lines used to draw the object. See section "Object properties, Lines property sheet", page 166.
- **Shadow:** Here you can add a shadow. See section "Object properties, Shadow property sheet", page 167.

- **3D:** Here you can add a 3D effect. See section “Object properties, 3D property sheet”, page 168.
- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 169.

For certain types of drawings additional property sheets will appear on the dialog, giving you access to more options (as described on the following pages).

---

## **AutoShapes property sheet (available only for AutoShapes)**

Use this property sheet to change the shape of an AutoShape.

For this purpose, click on a category in the list on the left, then click the desired AutoShape.

---

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

Use this property sheet to change settings affecting the text inside an AutoShape. Only available if text has been added to the AutoShape (see section “Adding text to AutoShapes”, page 187).

- **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.

- **Rotate by...** group box

Lets you rotate the inner text in 90 degrees increments.

- **Overlapping objects** group box

Lets you specify how the frame will behave if it is overlapped with other frames:

If the default option **Ignore object** is selected, nothing happens.

If the option **Wrap text** is selected, the text inside the AutoShape is automatically wrapped around the overlapping object.

- **Vertical alignment** group box

Lets you change the vertical alignment of the inner text:

<b>Option</b>	<b>Result</b>
<b>Top</b>	Align inner text at the top of the frame
<b>Center</b>	Vertically center text between top and bottom of the frame
<b>Bottom</b>	Align inner text at the bottom of the frame
<b>Flush</b>	Vertically justify text (so that it is evenly distributed between top and bottom of the frame)

---

## **Text property sheet (available only for TextArt objects)**

Use this property sheet to edit or format the text displayed in a TextArt object:

- **Text** input field

Lets you edit the text to be displayed.

- **Font** group box

Lets you modify font and font size.

- **Style** group box

Lets you apply the text styles **Bold** and **Italic**.

- **Spacing** group box

To modify the **Character spacing**, enter a value in the corresponding input field. Values less than 100% will decrease the amount of space between letters and words; values greater than 100% will increase it.

To modify the **Line spacing**, entered a value in the corresponding input field.

If you check the **Vertical text** option, the letters will be rotated by 90 degrees.

If you check the **Same height** option, the letters will be stretched to a uniform height.

- **Variants** button

Displays a variety of pre-defined text effects to choose from.

---

## **Deformation property sheet (available only for TextArt objects)**

Use this property sheet to change the type of deformation used for a TextArt object.

For this purpose, click one of the deformation types displayed.



---

# 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.

This chapter covers information on working with charts in PlanMaker:

## ■ 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**, draw a frame with the desired position and size, and 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 one of the cells they are based on. If desired, this feature can be turned off, requiring that charts be updated manually.

---

## 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. With the mouse, drag a frame with the desired position and size in the document.

Alternatively, click where you want the upper left corner of the chart frame to be placed. A frame with a default size will then be inserted.

4. 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 “Chart type”, page 195.)
5. Click **OK** to confirm.

The chart will now be inserted.

---

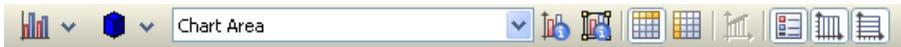
## Editing charts

This section provides information on editing charts.

**Note:** Basic procedures for editing objects are discussed in chapter “Objects (pictures, drawings, etc.)”, page 157. This section covers chart-specific procedures only.

### Hint: Using the Chart toolbar

A toolbar named *Chart toolbar* will automatically appear when you select a chart.



*The Chart toolbar*

This toolbar provides icons for working with charts. From left to right:

- Choose chart type
- Choose 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.

---

## Chart type

The *chart type* determines how data will be displayed in charts; 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** property sheet.
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



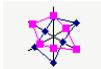
**XY Scatter charts** display values as points and/or lines. Unlike Line charts, the data area must contain both the x and the y coordinate of the data points.

## 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.

---

## 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.

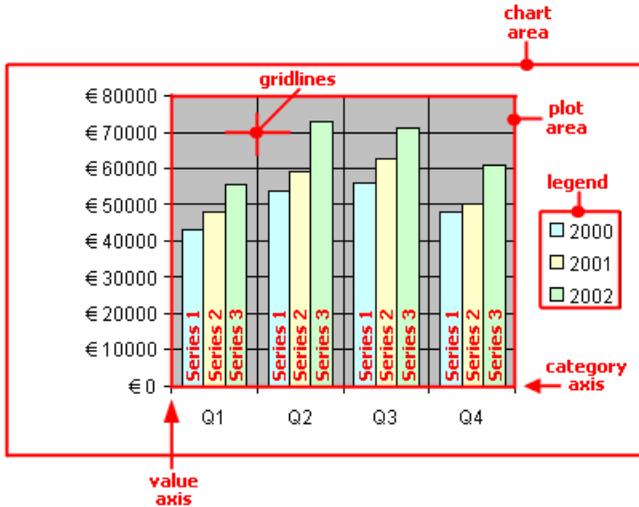
Alternatively, this setting can be switched by choosing **Object > Chart > Data in Columns** or **Data in Rows**, respectively.

---

## Working with chart elements

Each chart consists of various elements (data series, axes, legend, 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, select the chart itself (if it isn't already selected) and click the desired chart element.

**Hint:** Alternatively, open the chart elements drop-down list in the Chart toolbar and select the desired element.

**Note:** To select a *single* value within a data series, first click the data series to select the entire series, then click the desired value.

## Changing position and size of chart elements

Some chart elements can be moved or resized. To move an element, select it and drag it to the desired position. To change its size, drag one of the corner handles.

## Modifying chart elements properties

Like all objects, charts have properties that can be modified (see section “Common chart properties”, page 214). As well as changing *common* chart properties, you can also change the properties of *single* chart elements.

For example, to change the properties of the legend displayed in a chart, right-click the legend to open its context menu. Then, do *not* choose the **Chart: Properties** command; rather select the **Legend: 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 pages provide detailed information on all chart elements, including their properties.

---

## 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 property sheet

#### ■ 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 added to the border.

### ■ Filling group box

Lets you change the filling of the chart area.

To use complex fill types (gradients, bitmaps, etc.), select the **Complex** option and click the **Customize** button. For more information on fill types, see section “Object properties, Filling property sheet”, page 164.

## Font property sheet

Use this property sheet 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 property sheet

### ■ 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 **Complex** option and click the **Customize** button. For more information on fill types, see section “Object properties, Filling property sheet”, page 164.

---

## 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 property sheet

■ **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 **Complex** option and click the **Customize** button. For more information on fill types, see section “Object properties, Filling property sheet”, page 164.

### 3D View property sheet

Use this property sheet to modify the 3D settings for the entire chart. For more information, see section “Chart properties, 3D View property sheet”, page 218.

---

## 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 property sheet

### ■ 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 **Complex** option and click the **Customize** button. For more information on fill types, see section “Object properties, Filling property sheet”, page 164.

## 3D View property sheet

Use this property sheet to modify the 3D settings for the entire chart. For more information, see section “Chart properties, 3D View property sheet”, page 218.

---

## 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 property sheet

Use this property sheet to modify the 3D settings for the entire chart. For more information, see section “Chart properties, 3D View property sheet”, page 218.

---

## Data series and data points

*Data series* are the most important chart elements. They represent the selected data. For example, in a column chart, the height of each column stands for the height 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 property sheet

- **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 **Complex** option and click the **Customize** button. For more information on fill types, see section “Object properties, Filling property sheet”, page 164.

- **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.

## Data labels property sheet

Use this property sheet 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

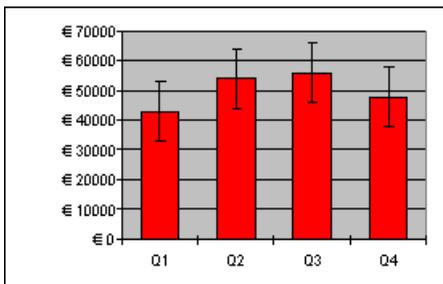
Lets you modify the placement of the labels (relative to the corresponding data points).

**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 property sheet

**Note:** This property sheet is available only for certain chart types (including column, bar, and line charts).

Use this property sheet 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 property sheet

*Note:* This property sheet is available only for certain chart types (including column, bar, and line charts).

This property sheet is identical to the **Error bar Y** property sheet (see above), except that it displays error bars for the x values instead of the y values.

## Guidelines property sheet

*Note:* This property sheet is available only for certain chart types (including two-dimensional column, bar, and line charts).

Use this property sheet to add guidelines to the selected data series. For example, if you add an **Average** guideline, a dashed line indicating the average of the selected data series will be displayed in the chart.

Types of guidelines 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 trend line command. See section “Trend lines” below.

## Options property sheet

This property sheet 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 trend line** 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 trend line** 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 **Trend: 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 property sheet

- **Line group box**

Lets you modify the line style used to draw the trend line.

### Trend property sheet

- **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 **Content** property sheet. 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 property sheet

- **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 property sheet

Use this property sheet 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 property sheet

Use this property sheet 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 **Content** property sheet. 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 property sheet

- **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 property sheet

Use this property sheet 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 property sheet

Use this property sheet 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 **Content** property sheet. 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 property sheet

### ■ 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 property sheet

Use this property sheet 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 property sheet

Use this property sheet 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 **Content** property sheet, 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 property sheet

### ■ 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** property sheet).

---

## 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 **Content** property sheet. 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 property sheet**

#### ■ **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 added to the border.

#### ■ **Filling** group box

Lets you change the filling of the legend.

To use complex fill types (gradients, bitmaps, etc.), select the **Complex** option and click the **Customize** button. For more information on fill types, see section “Object properties, Filling property sheet”, page 164.

### **Font property sheet**

Use this property sheet to change the character format (font, font size, font styles, etc.) of the legend entries.

### **Legend property sheet**

Use this property sheet 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.

---

## **Common chart properties**

The previous sections discussed how to change the properties of specific chart *elements*. The following section details the *common* chart properties.

To modify the common properties of a chart, select the chart and choose the **Object > Properties** command.

**Hint:** Click the  icon in the Chart toolbar will also access the Object Properties dialog.

The options available are covered on the pages that follow.

---

## Chart properties, Format property sheet

Use the **Format** property sheet to change size and positioning of the chart. For details, see section “Object properties, Format property sheet”, page 163.

---

## Chart properties, Properties property sheet

Use the **Properties** property sheet to modify common object settings. For details, see section “Object properties, Properties property sheet”, page 169.

---

## Chart properties, Chart Type property sheet

Use the **Chart Type** property sheet to modify the chart type. For details on chart types, see section “Chart type”, page 195.

---

## Chart properties, Data Source property sheet

Use the **Data Source** property sheet to modify settings related to the chart data source (i.e., the cells containing the data the chart is based on):

- **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 “Arrangement of data series”, page 197.

- **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.

---

## Chart properties, Series property sheet

Use the **Series** property sheet to modify settings related to the data series of the chart.

Options available:

### ■ Series

The **Series** list contains a list of all data series displayed in the charts. Click one of the series to change its settings.

Use the arrow buttons to change the order of the data series. The **Add** and **Delete** buttons add/delete a data series.

### ■ Data sources group box

Allows you to specify which cells' contents are used to build up the selected data series.

By default, the cells selected when the chart was created are used. To enter different values:

**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* are the data to be displayed in the chart. For example, in a Column chart, the y values determine the height of the columns. Exception: In XY Scatter charts and Bubble charts, the y values determine the y coordinate of the data points.

**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 used to label the category axis (x axis). Exception: In XY Scatter charts and Bubble charts, the x values determine the x coordinate 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. 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, Content property sheet**

Use the **Content** property sheet to add/remove chart elements or add a caption to them:

■ **Caption**

Lets you enter a caption for the chart. The caption 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 212.

■ **Secondary Axes** group box

Allows you to configure the secondary axes (only available for charts that contain secondary axes).

## ■ 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 213.

---

## Chart properties, 3D View property sheet

*Note:* This property sheet is only available for three-dimensional chart types.

Use the **3D View** property sheet to modify the 3D effect settings for the chart.

### ■ 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 property sheet

*Note:* This property sheet is only available for Radar charts.

Use the **Radar** property sheet to modify settings specific to Radar charts.

### ■ 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

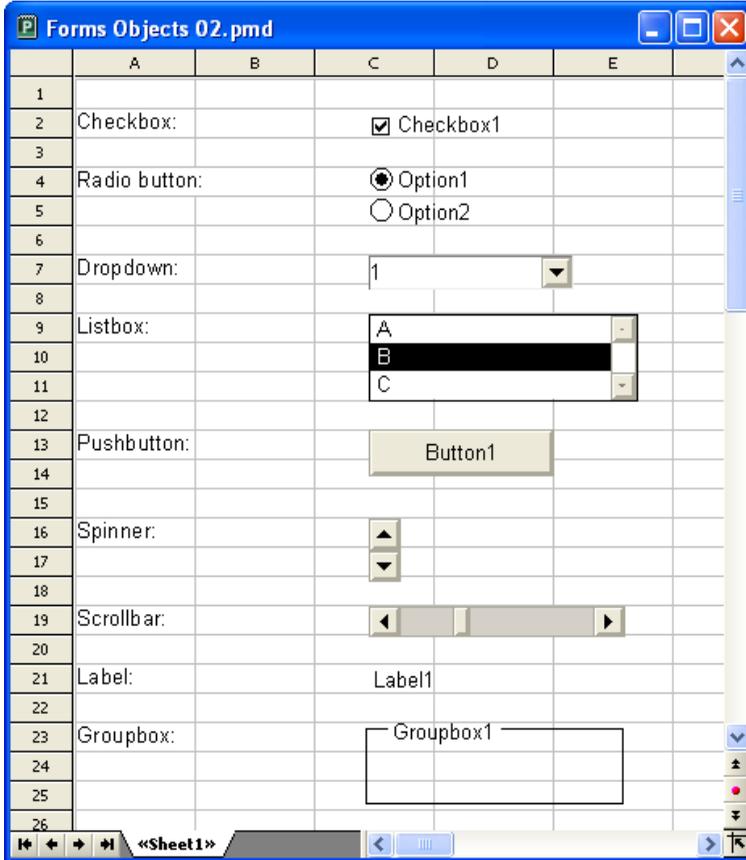
To deactivate the automatic update of charts, choose **File > Properties**, switch to the **Calculate** property sheet, and uncheck the **Recalc automatically** option in the **Charts** group box.

As a result, charts will only be updated when the **Tools > Update Charts** command is invoked.



# Forms

You can paste *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.

---

## 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 157).

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. With the mouse, drag a frame with the desired position and size in the document.

Alternatively, click where you want the upper left corner of the object to be placed. The object will be inserted in a standard size.

You will find detailed information about each individual type of forms object in the section “Forms objects in detail”, page 225.

## Using the Forms toolbar

You can also use the *Forms toolbar* to insert forms objects. To open/close this toolbar invoke the **View > Toolbars** command and click on the checkbox for **Forms Editing**.



The Forms toolbar contains the following icons (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 271)
- Toggle sheet protection (see the section “Sheet protection”, page 271)

**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 157).

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 225.

---

## 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: right click on the object and select **Properties** from the sub-menu that appears. Click on the **Forms object** tab and enter the desired cell address in **Result cell**.

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 property sheet**

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

## **Properties property sheet**

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

## **Forms object property sheet**

On this property sheet you can make settings that are specific to checkboxes:

### ■ **Text**

Here you can specify the text that is shown at the right of the checkbox.

### ■ **Value**

Here you can specify state of the checkbox, whether it should initially 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 object will be displayed with a 3D effect.

---

## Radio buttons

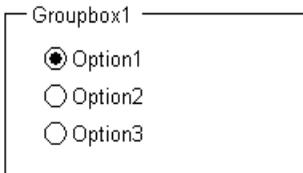
To insert a *radio button*, use the **Object > New Forms Object > Radio button** command.

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.



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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

## Forms object property sheet

On this property sheet you can make settings that are specific to radio buttons:

- **Text**

Here you can specify the text that is shown at the right of the radio button.

- **Value**

Here you can specify state of the radio button; whether it should initially 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 object will be displayed with a 3D effect.

---

## Dropdowns

To insert an expandable *dropdown* list, use the **Object > New Forms Object > Dropdown** command.

*Dropdowns* 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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

### Forms object property sheet

On this property sheet you can make settings that are specific to dropdowns:

- **Lines (max.)**

Here you can specify the maximum number of lines to be displayed when the list is opened.

- **List area**

Here you specify which cell range contains the items to be contained 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 object will be displayed 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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

#### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

#### Forms object property sheet

On this property sheet 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 which cell range contains the items to be contained in the listbox 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 object will be displayed 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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

## Forms object property sheet

On this property sheet 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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

## Forms object property sheet

On this property sheet you can make settings that are specific to spinners:

### ■ Parameters group box

Here you can specify the following parameters:

**Current value:** The current value (reflects manual changes made to the result cell).

**Minimum value:** The minimum value, which the current value cannot fall below.

**Maximum value:** The maximum value, which the current value cannot exceed.

**Incremental change:** The absolute value of the change when incrementing or decrementing.

### ■ 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 object will be displayed 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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

### Forms object property sheet

On this property sheet you can make settings that are specific to scrollbars:

■ **Parameters** group box

Here you can specify the following parameters:

**Current value:** The current value (reflects manual changes made to the result cell).

**Minimum value:** The minimum value, which the current value cannot fall below.

**Maximum value:** The maximum value, which the current value cannot exceed.

**Incremental change:** The absolute value of the change when incrementing or decrementing.

**Page change:** The absolute value of the change when clicking 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 object will be displayed 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 desired text, which should be displayed within a form.

- **Groupboxes**

*Groupboxes* are rectangles, which can be labeled in the upper left corner with a description. They can also be used to visually group form 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**. Then drag a rectangle in the document with the mouse that has the desired dimensions.

---

## 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 property sheet

On this property sheet you can modify the size and positioning of the object. See the section “Object properties, Format property sheet”, page 163.

## **Properties property sheet**

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 169.

## **Forms object property sheet**

On this property sheet 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 will be displayed with a 3D effect.

---

# Spell checking

PlanMaker comes with an integrated spell checker, allowing you to check the spelling of text entered in table cells and text frames.

This chapter provides information on working with this tool, as follows:

## ■ Setting up the language for spell checking

The language for spell checker and hyphenator can be set with the command **Tools > Options (Language property sheet)**.

## ■ Spell checking

The *spell checker* examines text for spelling mistakes. When it finds mistakes, it suggests corrections.

You have the choice of two working methods:

**Manual spell checking:** Lets you check and correct the spelling of the entire text in a document, word by word.

**Spell checking as you type:** 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.

## ■ 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 "lax" for "Los Angeles."

See the following pages for detailed information.

---

## Setting up the language for spell checking

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 **Tools > Options**.
2. Switch to the **Language** property sheet.
3. Choose the desired language from the list and confirm with **OK**.

---

## Manual spell checking

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

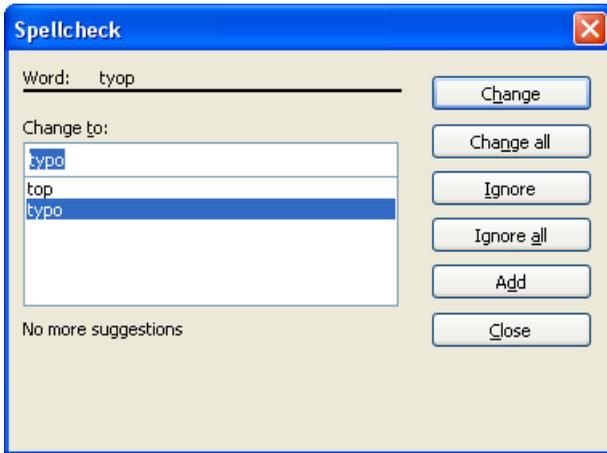
You activate the manual spell checker with the **Tools > Check Spelling** command. This checks text word for word for spelling errors and displays every unrecognized word in a dialog box. You can then choose to correct the word, add it to the dictionary, or simply ignore the supposed error.

When you invoke the spell checker, a dialog is displayed to let you choose which parts of the worksheet to check:

- If the **Check worksheet** option is activated, all table cells on the current worksheets will be checked.
- If the **Check all frames** option is activated, additionally all text frames and drawings containing text will be checked.

To start the spell checker, click **OK**.

PlanMaker now goes through the text word for word. If an unrecognized word is found, the spell checker stops and displays the word in a dialog box.



In the list under **Change to**, PlanMaker presents suggestions for the correct spelling of the word (if any are found).

By means of the buttons, you can specify what is to be done with the unknown word:

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:* If text is entered into a cell containing a *formula*, it will not be checked.

To activate the on-the-fly spell checker, choose **Tools > Options**, switch to the **Language** property sheet, and check 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 259.

---

## 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.

---

# 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 "lax" containing "Los Angeles". Now you can call out this SmartText entry at any time. Simply type "lax" and then press the space bar, the Enter key , or a punctuation character key. Immediately, "lax" is replaced with "Los Angeles".

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., "lax") and then enter the desired content (e.g., "Los Angeles").

## ■ Inserting SmartText entries

To call up a SmartText, 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, as long as the **Expand SmartText entries** option has been activated in the preferences.

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 “lax” containing “Los Angeles”, 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 (“lax” 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 (“Los Angeles” 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 the **Check spelling as you type** option is turned on *permanently*. Otherwise, the previous procedure is more efficient.

To create a SmartText entry named “lax” containing the text “Los Angeles”:

1. Make sure the **Check spelling as you type** option in the **Tools > Options** dialog (**Language** property sheet) is activated.
2. Type “lax” and press the space bar.
3. The on-the-fly spell checker displays a dialog indicating that the word “lax” is unknown.
4. Click the **SmartText** button.
5. Type “Los Angeles”.
6. Confirm with **OK**.

The result is the same: the SmartText entry “lax” has now been created.

To learn more about the on-the-fly spell checker, see section “Spell checking as you type”, page 240.

---

## 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., “lax” in our example) in the text, and then press either the space bar, the Enter key , or a punctuation character. PlanMaker immediately replaces “lax” with the content of the SmartText entry, in our example, “Los Angeles”.

*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** property sheet, 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 241).

### ■ 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 243).

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** property sheet 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.

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.

---

## 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.
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\08\*.\*, which tells PlanMaker to change to the folder C:\ACCOUNTING\TAXES and display only those files whose names begin with “08”.

**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** property sheet. 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** property sheet, and enable the **Ask 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]**.

Under Windows and Linux, the File Manager window can be resized and moved to any position on the screen. 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 select a file with the cursor keys or with a mouse click 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.

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.

---

## The file manager's buttons

The buttons in the file manager have the following functions:

- **“Open” button**

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” button**

Use this button to exit the file manager.

- **“Search” button**

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” button

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” button

Click on this button if you want to change the name of the selected file.

## ■ “Delete” button

If you click on this button, the selected file will be deleted (after confirmation).

## ■ “Preview” button

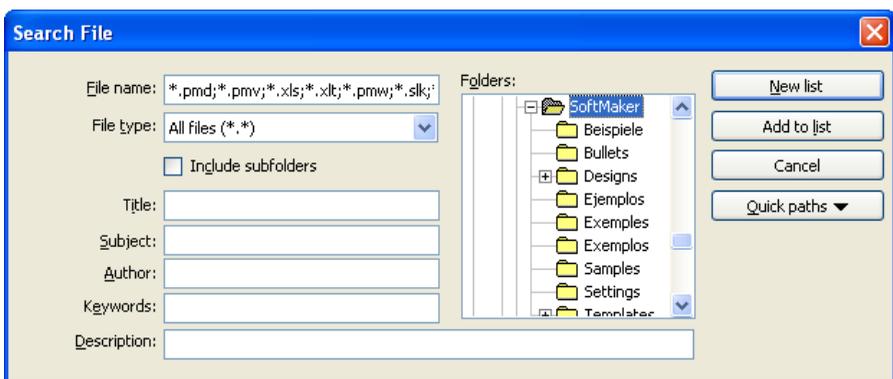
Click on this button to preview the selected file.

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 specify a unique filename or a filename pattern as the search target. With the default setting \*.PMD, the search function will find all PlanMaker documents.

If you specify a unique filename like MYREPORT.PMD, only files with exactly this name will be found.

If you specify a filename pattern like MY\*.PMD, all PlanMaker 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.



---

# Outliner

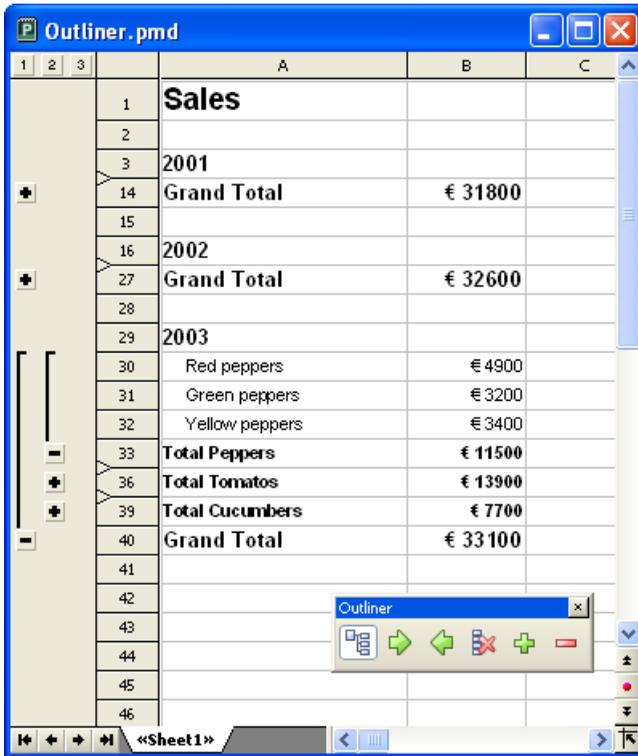
The *Outliner* allows you to create an *outline* for a worksheet. In outlined worksheets, you can easily decide whether just the *summarized* data should be displayed, or the *detail* data should appear as well.

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 271).

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

PlanMaker provides the following 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 PlanMaker documents and then follow them by clicking with the mouse.

For example, you can place a link to a website 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.softmaker.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.

## 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.pmd” and under **Jump target** enter “D42”, the link will open the file SALES.PMD 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, say, `www.softmaker.com` in that cell, the link will point to the internet address `http://www.softmaker.com`.

## 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.



---

# Printing, e-mailing, etc.

This chapter provides information on printing, exporting as a PDF file, and e-mailing documents:

- **Printing**

The first section provides instructions on how to print documents using the **File > Print** command.

- **Exporting to a PDF file**

You can also export a document to a PDF file. Such files can be viewed on virtually any computer, provided that it has a PDF viewer installed.

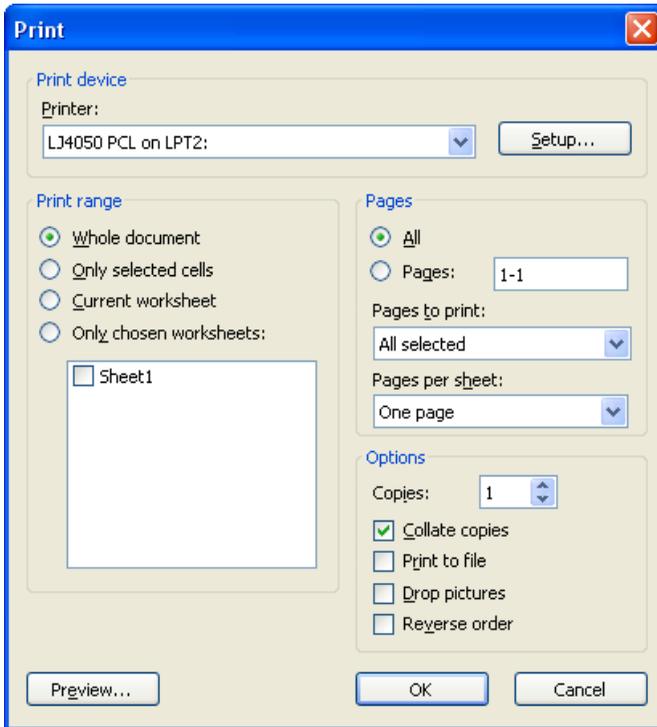
- **E-mailing**

This section covers e-mailing documents using the **File > Send** command.

---

## Printing

To print a 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 area

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 chosen worksheets**

Print only the selected worksheets. To select which sheets to print, check the desired worksheets in the list displayed below this option.

## Pages

Lets you determine 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              |

To enter multiple page ranges, separate by commas. Example:

2-5, 12      Prints pages 2 through 5 and page 12

etc.

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.

**Windows version only:** 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**

Prints multiple copies either separately or together. If you check this option and specify that you want three copies, you will get all three documents printing in a row from start to end. If this option is not checked and you print three copies, you will get three copies of the first page, three copies of the second page, and so on.

- **Draft mode** (Windows CE only)

Reduces the resolution of pictures to shorten printing time – naturally, at the expense of a reduction in print quality.

- **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 computer does not have a PDF viewer installed, you can find numerous suitable programs in the Internet – for example, the free “Adobe Reader”.

The dialog mentioned above provides the following options:

## **General property sheet**

On this property sheet, you can specify which parts of the document to export, and change several other settings. The options available are almost identical to the ones provided in the **File > Print** dialog, which is described in the previous section.

## **Preferences property sheet**

This property sheet contains options for modifying the output quality, including the following:

### ■ **AutoShape options**

Sets the quality (resolution) in which AutoForms 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.

### ■ **Open file in PDF viewer after exporting**

Launches your PDF viewer and displays the file after it has been exported (provided that you have a PDF viewer installed on your computer).

### ■ **Font embedding**

Lets you choose if the fonts used in the document should be included in the PDF file.

If font embedding is enabled, the 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 displayed using different fonts selected automatically by the system.

## **Security property sheet**

This property sheet 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 property sheet 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 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 file format in which the e-mail is to be sent.

If you send the e-mail in **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 then invoked and a blank e-mail message, with the document as an attachment, is generated. You can then specify the recipients and type in a subject and message, if desired, and 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:

1. Selecting the cells and specifying protection settings using the **Format > Cell** command.
2. Activating cell 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** property sheet.
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 Tab key to jump from one editable cell to the next.

In addition, if sheet protection is activated, the following restrictions apply:

- Most menu commands for editing the worksheet are unavailable.
- Size, position and all other properties of objects cannot be changed anymore (except for objects where you have deactivated the **Locked** property)
- Text in text frames cannot be changed anymore (except for objects where you have deactivated the **Text locked** property)
- New objects can no longer be inserted into the worksheet.

---

## Deactivating sheet protection

To deactivate sheet protection, choose **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 tabs.

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** property sheet 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**

The document is not protected. This is the default setting.

■ **Write protection**

The document can be saved only when the correct write password has been entered at the time the document was opened.

■ **Read protection**

The document can be opened only when the correct read password is entered at the time an attempt is made to open it. Furthermore, the document will be automatically encrypted.

■ **Protection depending on password**

Here the protection depends on whether the read or the write password is entered at the time the document is opened:

If the user enters the read password, he is permitted to open the document but not to save it. If he enters the write password, he has complete access. If he enters a false password, or nothing at all, access is completely denied.

***Important:*** Remember or jot down your passwords, paying attention to the cases of letters. If you lose the password for a read protected document, you will have *absolutely no way* of opening it!

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** property sheet.
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 anyone tries to open the document, he is given the opportunity of entering 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 the protection depends on whether the read or the write password is entered at the time the document is opened:

If the user enters the *read password*, he is permitted to open the document but not to save it.

If he enters the *write password*, he has full access. Thus, he can both read and also save the document.

If he enters a *false password*, or nothing at all, access to the document is denied.

---

## 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** property sheet.

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 .PMD (PlanMaker document). 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.PMD.

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:

- **Importing and exporting documents**

The first section provides information on importing and exporting document in other file formats.

- **Supported file formats**

This section contains a list of file formats supported by PlanMaker.

- **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.

---

## Importing and exporting documents

This section provides information on importing and exporting documents in other file formats.

## 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**.

For a list of supported file formats, see section “Supported file formats” below.

## 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**.

For a list of supported file formats, see section “Supported file formats” below.

---

# Supported file formats

The list of available file types in the **File > Open** and **File > Save as** dialog offers (among others) the following file formats:

- **All files** (available in the **File > Open** dialog only)

If selected, *all* types of files are displayed. When you select a file and open it, PlanMaker tries to determine the file format automatically. If this fails, the file is opened as a plain text file.

- **All documents** (available in the **File > Open** dialog only)

If selected, all file types supported by PlanMaker are displayed (PlanMaker files, Excel files, etc.).

- **PlanMaker file**

The native format and default for PlanMaker documents (file name extension: .PMD). This is the format in which you will typically save your documents.

- **PlanMaker template**

Template for PlanMaker documents (see also section “Document templates”, page 138)

- **Microsoft Excel file**

Microsoft Excel file format. For detailed information on this format, see section “Working with Excel files”, page 282.

- **Microsoft Excel template**

Template for Microsoft Excel documents.

- **TextMaker file** (export only)

For exporting PlanMaker files to SoftMaker’s word processor TextMaker.

- **PlanMaker 2006 file** (export only)

For storing files in the file format of PlanMaker **2006**, an older version of PlanMaker.

- **PlanMaker 2004 file** (export only)

For storing files in the file format of PlanMaker **2004**, an older version of PlanMaker.

- **dBase**

dBase file format, either with DOS, Windows or Unicode character set.

*Note:* Most databases are stored in **dBase/DOS** file format rather than **dBase/Windows** file format – even if they were created with a Windows application.

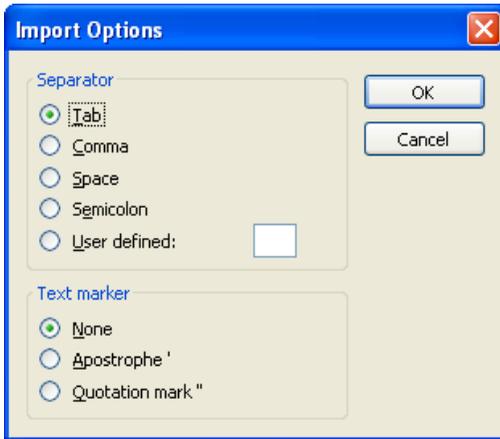
- **Text file**

Plain text file format (DOS, Windows or Unicode character set). For detailed information on this format, see the next section.

---

## Working with text files

When you open a text file or save a document in text file format, a dialog providing additional options for setting up the text file format appears.



Options available:

■ **Separator**

Lets you choose the character used to separate cell contents (e.g., commas).

■ **Text marker**

Lets you choose the character used to surround the content of each cell that contains *text* (e.g., quotation marks).

---

## 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 “Importing and exporting documents”, PlanMaker is able to open and save documents saved 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.

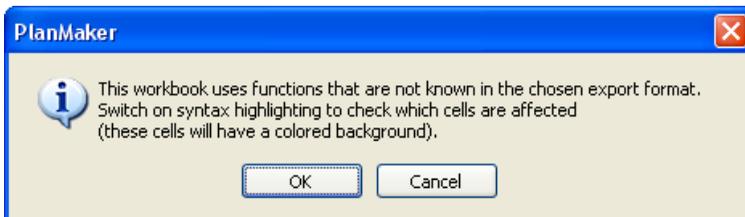
These cells must be revised individually. Compare their content with the content of the corresponding cells in the Excel document, and replace incompatible arithmetic functions with PlanMaker functions. For detailed descriptions of all arithmetic functions supported by PlanMaker, see section “Functions from A to Z”, page 346.

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

- In PlanMaker, worksheets are limited to **16384 rows**, whereas Excel supports **65536 rows** or more. When an Excel file is opened that contains more than 16384 rows, a warning message is displayed and all rows below row 16384 are omitted.
- PlanMaker is not able to execute **macros** and **VBA scripts** stored in Excel documents. When an Excel file is opened that contains macros or scripts, they will be ignored. However, PlanMaker will not remove them – if the file is saved in Excel format, the macros and scripts will remain functional.

### Arithmetic functions

- Some of PlanMaker's **arithmetic functions** are not supported by Excel (and vice versa). If you open or save a document in Excel format, a warning message will be displayed if the file contains incompatible arithmetic functions. For more information, see section "Opening and saving Excel files", page 282.

## Arithmetic operators

- In Excel, the **intersection operator** is the space bar. In PlanMaker, a backslash (\) has to be used. However, PlanMaker automatically converts this operator when you open/save an Excel file.
- In Excel, **extended cell references** like A1:B3:D5 can be entered. In PlanMaker, the notation A1:B3~D5 is used. However, PlanMaker automatically converts such cell references when you open/save an Excel file.
- 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).

---

## Notes for Pocket PC and Windows CE users

*Note:* This section is relevant to users of the **Pocket PC** and **Windows CE** version of PlanMaker only.

### Working with Pocket Excel files

PlanMaker is not able to open **Pocket Excel** files directly. As a workaround, open the file in Pocket Excel and save it as an **Excel** file.

### Important: Deactivating automatic conversion of Excel files in ActiveSync

When copying Excel documents to a Pocket PC or to a Windows CE device using Microsoft ActiveSync, the documents will be automatically converted to **Pocket Excel** format. As a result, certain functionalities are lost. Therefore, PlanMaker users should turn this conversion **off**, since PlanMaker for Pocket PCs/Windows CE is able to open Excel documents directly.

*Note:* When you install PlanMaker, the installation routine automatically checks whether this conversion is turned on, and asks you if you want it to be deactivated.

To turn the conversion off manually, proceed as follows:

1. Launch **Microsoft ActiveSync** on your desktop PC.
2. Click the **Options** icon.
3. On the **Rules** property sheet, click **Conversion Settings**.
4. Click the **Desktop to Device** tab.
5. Select **Microsoft Excel document** and click **Edit**.
6. Set the conversion type to **No conversion**.

After that, Excel for Windows documents will no longer be converted when copied to a mobile device.

---

# Scripts (BasicMaker)

*Note:* BasicMaker is available only under Windows.

SoftMaker Office for Windows includes *BasicMaker*, a tool that allows you to compose and execute scripts written in the programming language *SoftMaker Basic*. Scripts can be used to automate tasks in the word processor TextMaker and the spreadsheet application PlanMaker.

*SoftMaker Basic* is modeled after the industry standard *Visual Basic for Applications (VBA)* from Microsoft.

## Starting BasicMaker

To start BasicMaker, do any of the following:

### ■ Starting BasicMaker from the Start menu

You can start BasicMaker by clicking successively on **Start > Programs > SoftMaker Office > BasicMaker** in the **Start** menu.

### ■ Starting BasicMaker from TextMaker/PlanMaker

You can also start BasicMaker from within TextMaker or PlanMaker. From the main menu in TextMaker/PlanMaker, choose the command **Tools > Edit Script**.

### ■ Starting BasicMaker from TextMaker/PlanMaker and immediately running a script

When you invoke the command **Tools > Run Script** in TextMaker/PlanMaker, a file dialog appears. As soon as you have chosen a script, BasicMaker will start, run the script, and then close.

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 (only in Windows and Linux versions):** Click on any part of the document window to activate.

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

---

## 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

*Note:* This feature is available only in the **Windows** and **Linux** versions of PlanMaker.

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 [Alt] [C] ] **Alt+** (minus key), and choose the **Maximize** command. To restore the original size of a maximized window, choose the **Restore** command.

---

## Minimizing document windows

*Note:* This feature is available only in the **Windows** and **Linux** versions of PlanMaker.

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 **Alt** **-** (minus key), and choose the **Minimize** command. To restore a minimized window, choose from the **Window** menu.

---

## Arranging document windows

**Note:** This feature is available only in the **Windows** and **Linux** versions of PlanMaker.

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 **Alt** **-** (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.

---

## 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” starting on page 58 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.

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 property sheets, each of which presents options relating to a different topic area. If you click on the **Files** property sheet, for example, you will be able to make settings that control the opening and saving of files.

---

## Preferences, Edit property sheet

The **Edit** property sheet 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.

### ■ Calculation in status bar

When you select multiple cells, their sum is automatically displayed in the status bar. To have another kind of calculation displayed there, select the desired type of calculation.

### ■ 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.

### ■ 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).

## ■ Background calculation

Whenever you change the content of a cell, PlanMaker recalculates the entire worksheet. Normally, PlanMaker does not respond to keyboard input during this process. If you check the **Background calculation** option, PlanMaker suspends recalculating as soon as you type something, and continues afterwards.

*Note:* On *desktop PCs*, is it not necessary to activate **Background calculation**, since recalculating usually takes only a few milliseconds to complete. On slow machines, such as *Pocket PCs*, activating this option may make PlanMaker more responsive when large tables are edited.

*Hint:* In very large tables, you can also *completely* deactivate automatic recalculating by unchecking the **Recalc automatically** option in the document properties (see section “Document properties, Calculate property sheet”, page 311). After that, PlanMaker will only recalculate when the **Tools > Recalculate** command is selected.

## ■ 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.

## ■ Formula tooltips

If this option is enabled, whenever you manually enter a function in a cell, a tooltip containing information about the required function parameters appears below the cell.

---

## Preferences, General property sheet

The **General** property sheet in the **Tools > Options** dialog box contains common program settings:

### Open documents in new windows

If this option is checked, whenever you open a document using **File > Open** or **File > New**, a *new* document window will be created.

If it is unchecked, the current document will be closed and the new document will be opened in the *same* document window.

**Note:** You only set the default state of this option here. The **File > New** and **File > Open** dialogs have their own **New Window** checkboxes, which allow you to specify on a document-by-document basis whether or not a new window should be opened.

## Beep on errors

When this option is enabled, a sound plays when PlanMaker displays an error or warning message.

## 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.

## 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 *Pocket PCs* and *Windows CE devices*, it is *not* recommended to increase this value, since internal program memory is limited on such devices.

## Compress pictures in memory

**Window and Linux only:** If this option is enabled, pictures inserted into documents will be stored *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

**Window and Linux only:** 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.

## Show warning when loading OLE objects

**Pocket PCs, Windows CE, and Linux only:** When this option is enabled, PlanMaker displays a warning that OLE objects cannot be displayed when you open a document containing such objects. (Only the Windows version of PlanMaker is able to display OLE objects.)

## 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.

## 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.

## Show/hide keyboard automatically

**Pocket PCs only:** If this option is enabled, the on-screen keyboard pops up automatically whenever you are given an opportunity to enter something in a dialog box (when you have tapped on an input field, for example).

## Shorter tap and hold delay

**Pocket PCs only:** If this option is enabled, the delay before the appearance of a context menu is shortened, when you press and hold the stylus (on an object, for example).

## Function of hardware cursor keys

**Pocket PCs only:** These options affect the behavior both of the navigation keys (the little cross-shaped rocker-control under the display) with which most Pocket PCs are equipped, and also of the arrow keys on an external keyboard. With these options, you can specify how these keys will behave in documents and dialog boxes:

- **Always scroll by page:** The direction keys always scroll to the next page in the appropriate direction.
- **Move in list boxes, scroll elsewhere:** For the most part, the direction keys behave as described above. However, if you tap on a list (in a dialog box, for example), the keys are enabled for use in navigating the list.
- **Move cursor:** The direction keys move the text cursor instead of paging.

Below these options is an option to **Use horizontal cursor keys to scroll**. If you enable this option, the horizontal direction keys can also be used for paging. If you disable it, these keys move the text cursor.

## 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.

---

## Preferences, Appearance property sheet

The **Appearance** property sheet 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.

## Language

Lets you select the language to be used in the 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.

## 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.

## 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 PlanMaker is restarted.

## 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.

### **Smooth edges of screen fonts**

**Not available on all operating systems:** 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.

*Note:* On slower *Pocket PCs*, activating ClearType has a noticeable effect on the system’s responsiveness.

### **Smooth edges of pictures**

**Windows and Linux only:** 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.

---

## **Preferences, Language property sheet**

The **Language** property sheet in the **Tools > Options** dialog contains settings that are related to the program’s language tools (spell checker, hyphenator, etc.).

### **Language**

Here is where you 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.

## Automatic spell check

Determines whether PlanMaker should automatically check the spelling of text:

### ■ Disabled

Choose this option to disable automatic spell checking.

*Hint:* To manually check the spelling of a document, use the **Tools > Check Spelling** command (see section “Manual spell checking”, page 238).

### ■ Check spelling as you type

If you enable 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 240).

There is an additional option associated with this option:

**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.

## Expand SmartText entries

As described in section “SmartText”, (page 241), you can create SmartText entries (e.g. “lax” for “Los Angeles”) 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., “lax”) 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 property sheet

The **Files** property sheet 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 are PlanMaker's own file format or the Microsoft Excel file format in several versions.

*Important:* The Excel format is not able to accommodate features specific to PlanMaker. For example, 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 that affect the way documents are saved:

### ■ Create backup copies

If this option is enabled, whenever you save a document, PlanMaker will first create a backup copy of the last saved version in a file with the name extension .BAK. So, if you save the document REPORT.PMD, the existing REPORT.PMD file is first renamed REPORT.BAK, and then the edited document is saved under the name REPORT.PMD.

If you don't want this behavior, disable the option.

*Tip:* Normally, you should not disable this option. Otherwise, if you should inadvertently save a document after making changes that you didn't mean to make, you would have no recourse to a backup copy of the original. If the option had not been disabled, you could restore the original simply by copying the .BAK file to the .PMD file.

## ■ Ask 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 247).

## ■ Autosave document every ... minutes

When you enable this option, PlanMaker automatically makes a backup copy of every open document in a temporary folder on a periodic basis. You can enter a period of 1 to 100 minutes.

When you exit PlanMaker in the normal manner, these 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 with **File > Save**.

## Recently used files

PlanMaker displays a list of the files most recently opened in it in the **File** menu (Pocket PCs: the **Recent** 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.

## User-defined font paths

**Linux only:** Here you can specify paths to supplementary fonts for PlanMaker. To do so, 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 PlanMaker is restarted.

---

# 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 property sheets. For example, if you click on the **Summary** property sheet you can enter summary information about the document.

---

## Document properties, Summary property sheet

The **Summary** property sheet 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 247.

---

## Document properties, Colors property sheet

The **Colors** property sheet 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 than cannot be changed.

**Important:** Changes in the color palette are saved *in the document*. Thus, you can compose a different color palette for every document.

### Adding a color

To add a color to the palette of the current document, do the following:

1. Invoke the command **File > Properties** and switch to the **Colors** property sheet.

*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 “Using the controls for setting colors” 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** property sheet.  
*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 “Using the controls for setting colors” 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.

## Using the controls for setting colors

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.

### ■ Using the “Standard” property sheet (accessible only from color lists)

When you access the colors dialog by selecting **Define color...** from the color list in another dialog, rather than by invoking the **File > Properties** command, the colors dialog will contain an additional property sheet labeled **Standard**. This property sheet will present a selection of common colors. To choose a color, simply click on it.

---

## Document properties, Internet property sheet

The **Internet** property sheet in the **File > Properties** dialog allows you to change the colors and background of the current document and set other HTML related options.

### ■ Do not save colors in HTML file

If you enable this option, the color settings you make on this property sheet will apply only within PlanMaker. They will not be preserved when you save the document as an HTML file. So, if you open the HTML file in a web browser,

the document will appear in the browser's default colors – not in the colors set here.

### ■ **Show blink style as**

Text that is formatted with the HTML attribute “blink” is not displayed in PlanMaker as blinking but is indicated with the color selected here. By default this color is yellow.

### ■ **Background color**

Here you can change the document's background color.

With the default setting “Auto” the background color is not changed. Accordingly, when you save the document in HTML format and open it in a browser, the document is displayed with the browser's default background color.

### ■ **Background image**

You can specify a picture to be used for the background of the document by entering the filename of the desired image here. The background is created by tiling the image.

You must specify the full path and filename of the image. You can either enter this information manually or click on the **Browse** button to locate the image file on your hard disk.

Note: Background images are not displayed in PlanMaker; they only appear when the file is saved in HTML format and opened in a web browser.

### ■ **Unvisited link**

Here you can select the color to be used to represent unvisited links. The default color is blue.

### ■ **Visited link**

Here you can select the color for visited links. The default is dark magenta.

### ■ **Current link**

Here you can select the color for the currently selected link. The default is red.

**Additional colors:** If none of the existing colors suits you, you can always compose your own colors. To do so, click on “Define color...”, the last item in the color list (see section “Document properties, Colors property sheet”, page 304).

---

## Document properties, Statistics property sheet

The **Statistics** property sheet 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 property sheet

The **Options** property sheet 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.

### “Worksheet” 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 316).

- **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 315).

#### ■ **Protection indicator**

If this option is checked, a green triangle will be displayed in all *un*protected cells when sheet protection is activated (see also section “Sheet protection”, page 271).

#### ■ **Hyphenation**

If this option is checked, cells where the option **Wrap text** is activated (using the **Format > Cell** command) will be hyphenated.

### **“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 86.

#### ■ **Always show comments**

Normally, comments are displayed only when you point with your mouse to a cell that contains a comment. If you check this option, all comments in the current document will be displayed permanently.

### **“Decimal point after input” group box**

#### ■ **Move by ... decimals**

If this option is checked, numbers entered in cells will be shifted by the specified number of decimal places.

This is helpful if, for example, many numbers with two decimal places have to be entered. If this option is set to 2 and the number 42 is entered, it will be converted to 0.42. If 234 is entered, it will be converted to 2.34. The decimal points do not have to be entered manually.

## “Window” group box

### ■ Vertical scrollbar

If this option is checked, a vertical scrollbar is displayed in the document window.

### ■ Horizontal scrollbar

If this option is checked, a horizontal scrollbar is displayed in the document window.

### ■ Sheet tabs

If this option is checked, worksheet tabs are 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 section “Hiding objects” (page 170), you can make inserted objects invisible on the screen.

If you enable this option, any object whose **Visible** property is disabled becomes visible on the screen.

## Default currency

Use this option to change the default currency of the current document.

*Note:* Normally, this option should be set to **System default**. PlanMaker will then automatically use the system’s default currency.

Setting this option to a different currency has the following consequences:

1. When using the  icon in the Formatting toolbar to format a number in currency format, the currency chosen here will be used instead of the system's default currency.
2. The same applies when using one of the arithmetic functions that PlanMaker automatically formats in currency format.

### “Compatibility” button

Here it is possible to make settings that affect functions internal to the program, in order to make these functions compatible 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 property sheet

The **Calculate** property sheet 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.

## “Charts” group box

Like calculations, charts are updated automatically when the content of any cell changes. To disable this feature, uncheck the **Recalc 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.

## “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.

---

## Document properties, Protection property sheet

The **Protection** property sheet 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 275.

---

## 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.

### ■ Grid

Determines whether gridlines are displayed between cells on-screen. Also, you can change the color of these lines as desired.

**Hint:** By default, gridlines are not printed. To print gridlines, choose **File > Page Setup**, switch to the **Options** property sheet, and check the **Gridlines** option.

### ■ Alternating shade

When you activate this 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.

---

## Customizing the document display

This section provides information on how to adjust the way the document appears on the screen:

### ■ Zoom level

The zoom commands allow you to adjust 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.

### ■ 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 selected, 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.

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).

---

## 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 ⏏ key.

---

## 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:

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

### What the background color indicates

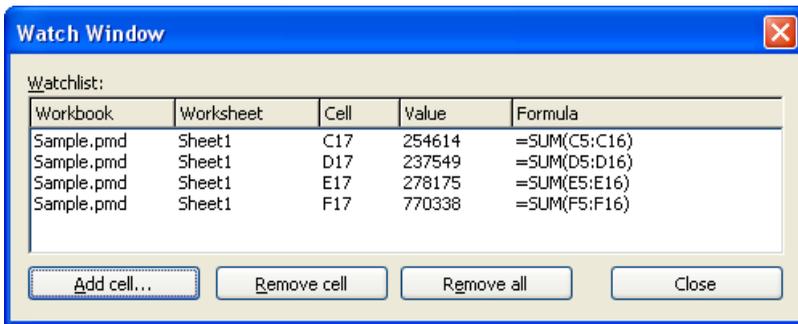
Cells containing an error are displayed in red foreground color and shaded in one of the following background colors:

<b>Background color</b>	<b>Error type</b>
<b>White</b>	<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 340.</p>
<b>Cyan</b>	<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>
<b>Light gray</b>	<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> <p><b>Hint:</b> 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.</p>
<b>Magenta</b>	<p><b>Function possibly imported erroneously.</b> 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).</p> <p><b>Hint:</b> See corresponding function description in this manual.</p>
<b>Yellow</b>	<p><b>Function unknown.</b> 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).</p> <p><b>Hint:</b> Replace the function with a corresponding PlanMaker function. For a list of all PlanMaker functions, see section “Functions from A to Z”, page 346, or this manual's index.</p>

---

## 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.

---

# 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.



*A toolbar (here: the Standard toolbar)*

This section describes how you can adapt these useful aids to your personal working style. Using the **View > Toolbars** command, you can take the following actions to configure the toolbars:

- Displaying and hiding toolbars
- Positioning toolbars on the screen
- Managing toolbars (creating, deleting or renaming your own toolbars)
- Customizing toolbar icons (adding, removing or repositioning icons)
- Creating user-defined toolbar icons (for starting other programs)

These topics are treated in detail on the following pages in the order listed.

---

## Displaying and hiding toolbars

You can enable or disable individual toolbars at any time – for example, when you want to gain more room on the screen for text editing.

To select the toolbars you would like to display, proceed as follows:

1. Invoke the **View > Toolbars** command.
2. Click on the check box in front of a toolbar's name to enable or disable it.
3. Exit the dialog box with **Close**.

The toolbars you have checked or unchecked are now enabled or disabled.

**Tip:** There is a faster way to do this: When you click with the *right* mouse button on any toolbar, you will get the toolbars context menu. Simply click in the menu on the name of the toolbar you want to enable or disable.

## Visible in mode...

Some toolbars are visible only in particular working modes of PlanMaker. The Formatting toolbar, for example, is visible only in normal editing mode. When you switch to Object mode, which is only for editing objects, it disappears, since it has no function in this mode.

The **Visible in mode** option controls this behavior. With it, you can specify when a toolbar will be visible as follows:

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 158). 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 158). 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 253). 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 individual toolbars anywhere you like on the screen. To do this, you can either use the **View > Toolbars** command or simply drag a toolbar to the desired position with the mouse.

## Changing the position with 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

All enabled 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.

A positioning aid is active while you are dragging, 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.

**Locking a toolbar in position:** When you want to avoid accidentally dragging a particular toolbar out of its position with the mouse, invoke **View > Toolbars**, select that toolbar, and enable the **Locked** option.

---

## 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 323.

## 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.

## 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.

---

## Customizing toolbar icons

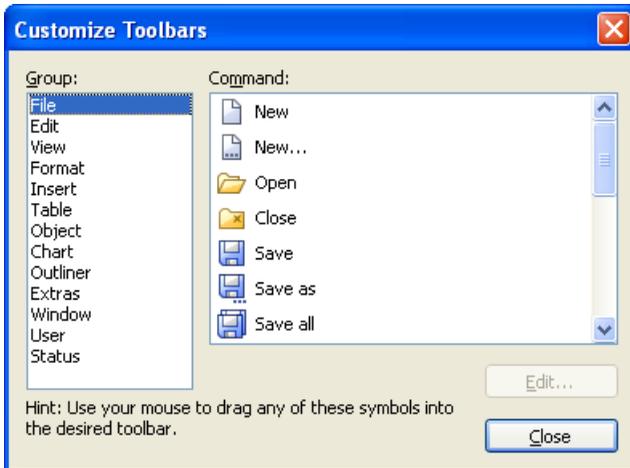
You can edit the icons on a toolbar as you wish. Specifically, you can add, remove, and reposition the icons, and you can also insert and remove separator lines.

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 with **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 text, for example) to delete it.

#### ■ **Moving an icon**

Drag the icon to the desired position in the toolbar with your mouse. When you drag an icon to a position between two other icons, it is inserted there.

You can also drag an icon from one toolbar to another.

#### ■ **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 PlanMaker's toolbars. 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. If you are unsure of the path and filename, you can click on the **Browse** button to search for the program file on your hard disk.
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.

---

## 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 ⌘ 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:

- |                 |  |
|-----------------|--|
| <b>Standard</b> | The standard mapping contains all the keyboard shortcuts described in this manual (e.g. <code>Ctrl S</code> for the Save command)                                  |
| <b>Classic</b>  | 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 599.

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 328.

---

## 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 **Format > Standard** 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 “Format” in the **Group** list and “Standard” 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 **Format > Standard** 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 67), the **Edit > Fill** command can be used to fill a cell range with a repeating list of values.

The **Tools > Edit Lists** command allows you to create customized 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 change 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 list
- **Delete** button: Delete 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.
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.
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.



---

# 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 addressing**

This section explains the difference between relative cell addresses (like A1) and absolute cell addresses (like \$A\$1).

- **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 43.

---

## 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 341)
- Arithmetic operators (e.g., + or -)
- 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:

1st	\	Intersection
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 “Plan-Maker”)
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 43.

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  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.

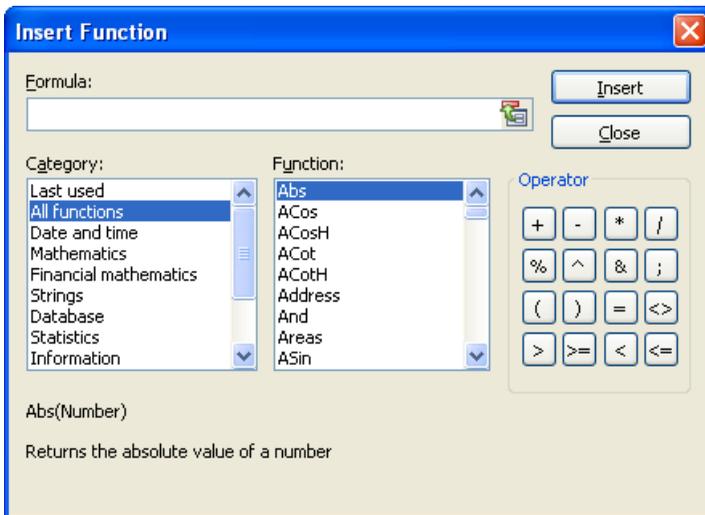
For example, to enter the formula =SUM(B2:D4), proceed as follows:

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 addressing

Cell references in calculations can be entered either as *relative* cell addresses or as *absolute* cell addresses.

Normally, *relative* cell addressing is used. You see that when you enter the formula =B1+B2 in cell B3, and copy B3 to C3 afterwards. The formula will automatically adapt and change to =C1+C2.

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 address 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 copy 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 address absolute by typing a dollar sign only in front of the column number (e.g., \$B1) or the row number (e.g., B\$1).

## Using the F4 key to change cell addressing

**Hint:** When you enter a cell address in a formula, you can use the **F4** key to switch the type of addressing.

For example, after having typed =A4,

=A\$4 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.

---

## 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 506 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.

## Working with arrays

PlanMaker allows you to enter *arrays* (also called *matrices*) in spreadsheets and perform calculations with them.

An array is a rectangular table of numbers, structured as follows:

$$A = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & & & \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{pmatrix}$$

The entries  $a_{11}$  through  $a_{mn}$  are called the *elements* of array **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 ...

$$\begin{pmatrix} 1 & 2 & 3 \\ 3 & -1 & 1 \\ 2 & 2 & 4 \end{pmatrix}$$

... should be entered as follows:

	E	F	G	
6	1	2	3	
7	3	-1	1	
8	2	2	4	

As you can see, for PlanMaker arrays are nothing but rectangular cell ranges.

## Entering array formulas

PlanMaker provides *array functions* allowing 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	H
6	1	2	3	
7	3	-1	1	
8	2	2	4	
9				
10	3	1	-2.5	
11	5	1	-4	
12	-4	-1	3.5	
13				
14				

### Notes:

- If you have selected a cell range larger than the resulting array, the error value #N/A (“not available”) will be displayed in the superfluous cells. **Important:** If the selected cell range is too small, parts of the array will not be displayed.
- There are array functions that return just a single value rather than an entire array – for example, the MDETERM function (that returns the determinant of an array). In that case the procedure described above is not necessary, and the formula can be entered just like any other formula.
- To edit an existing array formula: Select all cells covered by the resulting array, edit the formula, and press **Ctrl** **↵** **←**. If you press just the Enter key instead, PlanMaker issues a warning and asks you if you want to overwrite the array by a single value.
- **Hint:** To select all cells covered by an array formula, click any of the involved cells and press **Ctrl** **7**.

### Entering array constants in formulas

If desired, arrays can be entered as *constants* instead of cell references. For this purpose, surround the array by braces { }, and separate columns by commas and rows by semicolons.

For example, the following array ...

$$\begin{pmatrix} 1 & 2 & 3 \\ 3 & -1 & 1 \\ 2 & 2 & 4 \end{pmatrix}$$

... can be entered as follows:

={1,2,3; 3,-1,1; 2,2,4}

**Notes:**

- The notation described above is suitable for *fixed* values only; formulas and cell references are not allowed.
- You can also enter *vectors* in the notation described above. For a horizontal vector enter, e.g., {1,2,3}; for a vertical vector enter {1;2;3}.

---

## Working with database functions

PlanMaker provides *database functions* that allow you to query and evaluate a cell range that is structured like a database.

Database functions expect the following syntax:

**FUNCTION\_NAME(DatabaseArea, Column, CriteriaArea)**

For example, the DSUM function returns the sum of all cells in the **DatabaseArea** cell range that are in the specified **Column** and match the conditions defined in the **CriteriaArea** cell range.

To utilize database functions, proceed as follows:

### Creating a database area

A *database area* can be any cell range containing data to evaluate.

It has to be structured as follows:

- Its first row must contain labels for the database columns (e.g., Amount, Price, etc.).
- The data has to be arranged row by row (one row for each record).

The rows of the database area represent what is called a *record* in database applications, with the cells being the *fields* of the database.

## Creating a criteria area

The *criteria area* is a cell range containing conditions that the database records have to match.

It has to be structured as follows:

- **Important:** The criteria area has to be located *above* the database area.
- The criteria area must not overlap the database area.
- Like the database area, the first row of the criteria area must also contain labels for the columns below (e.g., Amount, Price, etc.).
- Below the labels, conditions can be entered. You can enter either single values or comparisons like ">42" or "<=10".
- If multiple conditions have been entered in the same row, the database contents have to match the conditions in column 1 *and* column 2 *and* column 3, etc.
- If multiple rows with conditions have been entered, the database contents have to match the conditions in row 1 *or* row 2 *or* row 3, etc.

## Utilizing database functions

After having filled out database area and criteria area, you are ready to apply database functions.

Some examples, assuming that the following spreadsheet has been created:

	A	B	C	D
1	<i>(Criteria area:)</i>			
2	<b>Color</b>			
3	blue			
4				
5	<i>(Another criteria area:)</i>			
6	<b>Amount</b>	<b>Amount</b>	<b>Color</b>	
7	>25	<75		
8			red	
9				
10	<i>(Database area:)</i>			
11	<b>Amount</b>	<b>Item</b>	<b>Color</b>	
12	10	Running shoes	red	
13	100	Running shoes	blue	
14	50	Running shoes	black	
15	30	Training shoes	red	
16	50	Training shoes	blue	
17				

In this spreadsheet, for example, the following calculations can be performed:

DCOUNT(A11:C16, , A2:A3) returns 2. This formula counts the number of records matching the condition Color = blue.

DCOUNT(A11:C16, , A6:B7) returns 3. This formula counts the number of records matching the condition (Amount > 25 and Amount < 75).

DCOUNT(A11:C16, , A6:C8) returns 4. This formula counts the number of records matching the condition (Amount > 25 and Amount < 75) *or* (Color = red).

DSUM(A11:C16, "Amount", A2:A3) returns 150. This formula calculates the sum of the values in the "Amount" column for all records matching the condition Color = blue.

DSUM(A11:C16, 1, A2:A3) returns 150. Same as above, except that the column was specified by its relative number instead of its label.

---

## Functions from A to Z

This section provides an alphabetical list of PlanMaker's arithmetic functions, including comprehensive descriptions of each function.

---

## ABS (absolute value)

### Syntax:

ABS(Number)

### Description:

Returns the absolute value of a number, i.e., removes its sign.

### Example:

ABS(42) returns 42

ABS(0) returns 0

ABS(-42) returns 42

### See also:

SIGN, NEG

---

## ACOS (arccosine)

### Syntax:

ACOS(Number)

### Description:

Returns the arccosine of **Number**, i.e., the angle whose cosine is **Number**.

**Number** must be in the range -1 to 1.

### Example:

ACOS(1) returns 0

ACOS(COS(0.1234)) returns 0.1234

**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**.

**Note:**

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:**

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**.

**Note:**

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:**

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** is just a placeholder (for compatibility reasons with Excel). It will not be evaluated.

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

---

## B (PlanMaker 97 compatibility function)

**Syntax:**

B(n, p, k1 [, k2])

**Description:**

Returns the probability to get a) exactly **k1** successes, or b) between **k1** and **k2** successes in a binomial experiment with **n** independent trials.

**n** is the number of independent trial runs.

**p** is the probability of a success for each trial run. Must be  $> 0$  and  $< 1$ .

**k1** is the lower limit for the number of successes.

**k2** (optional) is the upper limit for the number of successes.

**Note:**

This function was retained only for compatibility with PlanMaker 97. Use of the following Excel-compatible function is recommended instead:

B(n, p, k1) equals BINOMDIST(k1, n, p, FALSE)

B(n, p, k1, k2) equals BINOMDIST(k2, n, p, TRUE) - BINOMDIST(k1-1, n, p, TRUE)

**Note:**

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:**

BINOMDIST

---

## **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

---

## **BIN2DEC (binary number to decimal number)**

**Syntax:**

BIN2DEC(Number)

**Description:**

Converts the given binary number (base 2) to a decimal number (base 10).

**Number** is the number to be converted. It must not contain more than 32 places. Negative numbers have to be transformed to two's complement notation (see last example).

**Example:**

BIN2DEC("101010") returns 42





---

## **BINOMDIST (binomial distribution)**

### **Syntax:**

`BINOMDIST(k, n, p, Cumulative)`

### **Description:**

Returns the binomial distribution function.

The binomial distribution can be used to determine the probability to get **k** successes in an experiment with **n** independent trials with only two possible outcomes (success or failure) with a fixed probability of **p** for each trial.

For example, a coin toss experiment is a binomial experiment (see example below).

**k** is the number of successes. Must be in the range 0 to **n**.

**n** is the number of independent trial runs.

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

The logical value **Cumulative** lets you specify which type of function will be used:

**FALSE:** BINOMDIST uses the probability density function, which returns the probability that there are *exactly* **k** successes.

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

### **Example:**

When you 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

---

## CHAR (character from ANSI code)

### Syntax:

CHAR(Number)

**Description:**

Returns a single character with the specified ANSI code.

**Number** must be at least 8.

**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.

**Note:**

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 341).

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 ("). 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**.

**Note:**

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:**

$\text{COT}(\text{PI}()/4)$  returns 1

$\text{COT}(\text{RADIANS}(45))$  returns 1

**See also:**

ACOT

---

## **COth (hyperbolic cotangent)**

**Syntax:**

$\text{COth}(\text{Number})$

**Description:**

Returns the hyperbolic cotangent of **Number**.

**Note:**

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:**

$\text{COth}(0.45)$  returns 2.37024

**See also:**

ACOTH

---

## COUNT (number of cells filled with numbers)

**Syntax:**

COUNT(Range1 [, Range2 ...])

**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 ...])

**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(Range1 [, Range2 ...])

**Description:**

Counts the number of cells 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 **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 "January") 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:* The criterion has 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:**

COUNT, SUMIF

---

## **COUNTP (PlanMaker 97 compatibility function)**

**Syntax:**

COUNTP(Range1 [, Range2 ...])

**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*.

**Note:**

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.

**Note:**

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, 2008 at 9:03 AM:

CREATEDATE() returns 08/24/08 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).

### Note:

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(2008, 9, 25) returns the date 09/25/2008

**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 by Excel.

**Example:**

To calculate the age of a person, enter his/her date of birth in cell A1 (e.g., 4/3/1970). In A2, enter the current date (e.g., 6/8/2004). Then use one of the following calculations:

Years:

DATEDIF(A1, A2, "y") returns 30 (years)

Months:

DATEDIF(A1, A2, "m") returns 371 (months)

Days:

DATEDIF(A1, A2, "d") returns 11297 (days)

Years, months and days:

DATEDIF(A1, A2, "y") returns 30 (years)

DATEDIF(A1, A2, "ym") returns 11 (months)

DATEDIF(A1, A2, "md") returns 5 (days)

**See also:**

NOW, NETWORKDAYS, DAYS

---

## **DATEVALUE (convert text into date value)**

### **Syntax:**

DATEVALUE(Text)

### **Description:**

Converts text 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("09/25/2008") returns 39716.

### **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 344.

**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("09/25/2008") returns 25

**See also:**

YEAR, ISOWEEK, WEEKNUM, MONTH, WEEKDAY

---

## DAYS (days between two dates)

### Syntax:

DAYS(Date1, Date2)

### Description:

Returns the number of days between two dates.

### Note:

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:

DAYS("01/01/2008", "01/14/2008") returns 13

DAYS("01/14/2008", "01/01/2008") returns -13

### See also:

DATEDIF, NETWORKDAYS, DAYS360, TIMEDIFF

---

## DAYS360 (days between two dates)

### Syntax:

DAYS360(StartDate, EndDate [, Mode])

### Description:

Returns the number of days between two dates, based on a year with 360 days (12 months with 30 days each).

**StartDate** and **EndDate** are the two dates to be evaluated.

**Mode** (optional) is a logical value that lets you specify how dates occurring on the 31st of a month should be evaluated:

FALSE or omitted: The **U.S. (NASD) method** is used: If **StartDate** is the 31st of a month, the 30th of the same month will be used instead. If **EndDate** is the 31st of a month, the 1st of the following month will be used instead. Exception: If **StartDate** and **EndDate** are the 31st of a month, the 30th of the same month will be used instead (for both dates).

TRUE: The **European method** is used: If **StartDate** or **EndDate** is the 31st of a month, the 30th of the same month will be used instead.

**Example:**

DAYS360("01/01/2008", "02/01/2008") returns 30

DAYS360("02/01/2008", "03/01/2008") returns 30

DAYS360("01/01/2008", "01/01/2009") returns 360

**See also:**

DATEDIF, DAYS, NETWORKDAYS, TIMEDIFF

---

## DAYSPERMONTH (days per month)

**Syntax:**

DAYSPERMONTH(Date)

**Description:**

Returns the number of days in the specified month.

**Note:**

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("09/25/2008") returns 30

DAYSPERMONTH("10/25/2008") returns 31

---

## **DAYSPERYEAR (days per year)**

**Syntax:**

DAYSPERYEAR(Date)

**Description:**

Returns the number of days in the specified year.

**Note:**

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("01/01/2008") returns 366 (2008 is a leap year)

DAYSPERYEAR("01/01/2009") returns 365 (2009 is 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 344.

**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 344.

**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).

**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 11111111111111111111111111111111010110

**See also:**

BIN2DEC, DEC2HEX, DEC2OCT

---

## DEC2HEX (decimal number to hexadecimal number)

**Syntax:**

DEC2HEX(Number [, Digits])

**Description:**

Converts the given decimal number (base 10) to a hexadecimal number (base 16).

**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

---

## DEC2OCT (decimal number to octal number)

### Syntax:

DEC2OCT(Number [, Digits])

### Description:

Converts the given decimal number (base 10) to an octal number (base 8).

**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

---

## 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).

### Note:

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 344.

**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 344.

**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 344.

**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  $27 \frac{4}{8}$ )

**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 344.

**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 344.

**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 344.

**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 344.

**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 344.

**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 344.

**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("03/30/2008", 1) returns 04/30/2008

EDATE("03/31/2008", 1) returns 04/30/2008 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("09/25/2008", 0) returns 09/30/2008

EOMONTH("09/25/2008", 1) returns 10/31/2008

EOMONTH("09/25/2008", -1) returns 08/31/2008

### 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 340.

**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:**

ISERR, ISERROR, ISNA, section “Error values” on page 340

---

## 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  $\pm 0.01$ .

**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, use only ISO codes (right column).

Country	PM code	ISO code
All Euro countries (Euro)	€	EUR
Austria (Schilling)	öS	ATS
Belgium (Franc)	BF	BEF
Finland (Markka)	mk	FIM
France (Franc)	F	FRF
Germany (Mark)	DM	DEM
Greece (Drachma)	Dr	GRD
Ireland (Pound)	IR£	IEP
Italy (Lira)	L	ITL
Luxembourg (Franc)	LF	LUF
Malta (Lira)	Lm	MTL

Netherlands (Guilder)	fl	NLG
Portugal (Escudo)	esc	PTE
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 51.13 (Euro) as well.

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.,  $1*2*3*...*Number$ .

**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 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

**Note:**

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.pmd* in folder *c:\Documents*:

FILENAME() returns *Balance.pmd*

FILENAME(TRUE) returns c:\Documents\Balance.pmd

**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

---

## 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 determines how many values are in the intervals 0 to 10, 11 to 15, 16 to 42, and how many are greater than 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 341).

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:**

FVSCCHEDULE, IPMT, NPER, PMT, PV, RATE

---

## **FVSCCHEDULE (future value)**

**Syntax:**

FVSCCHEDULE(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

---

## **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(x)

### **Description:**

Returns the natural logarithm of the gamma function.

x is the value to be evaluated. Must be > 0.

**See also:**

FACT

---

**GAUSS (PlanMaker 97 compatibility function)****Syntax:**

GAUSS(x)

**Description:**

Returns the integral of the PHI function (standard normal cumulative distribution function) minus 0.5.

**Note:**

This function was retained only for compatibility with PlanMaker 97. Use of the following Excel-compatible function is recommended instead:

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 341).

**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. It 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 111111111111111111111111111111010110 (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. It 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

---

## 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. It 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

**Note:**

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(2008; 1) returns 03/23/2008 (Easter Sunday in 2008)

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

---

## **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

---

## 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.

**Note:**

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.

#### Note:

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** is just a placeholder (for compatibility with Microsoft Excel). It will not be evaluated.

**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**.

**Annotation:**

Alternatively, use the \ operator to obtain the intersection of two ranges. For example, SUM(INTERSECTION(A1:D4, C3:E6)) equals SUM(A1:D4\C3:E6).

**Note:**

When working with intersections, please note that there are the following differences between PlanMaker and Microsoft Excel:

1. The INTERSECTION function is *not* supported by Excel.

However, if you save a document making use of this function in Excel format, all of its occurrences will automatically be replaced by corresponding operators.

2. In Excel, the intersection operator is a blank, not a backslash (\).

However, this will not affect any Excel files you open or save with PlanMaker, as PlanMaker automatically “translates” \ operators to Excel-compatible blank operators, and vice versa.

**Example:**

INTERSECTION(A1:D4, C3:E6) returns a reference to the range C3:D4

---

## IPMT (interest payment)

**Syntax:**

IPMT(Rate, Per, NPer, CV [, 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, section “Error values” (page 340)

---

## 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, section “Error values” (page 340)

---

## **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.

**Note:**

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 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 506.

**Example:**

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

ISNA(A1) returns TRUE

**See also:**

NA(), ERROR.TYPE, ISERR, ISERROR, section “Error values” (page 340)

---

## 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, 09/25/2008, 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.

### Note:

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, 09/25/2008, 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 (number of week, ISO standard)

**Syntax:**

ISOWEEK(Date [, ReturnYear])

### Description:

Returns the week number of a date (following ISO 8601 standard).

Unlike the Excel compatible WEEKNUM function, ISOWEEK follows the rules defined in the ISO 8601 standard, including:

1. Weeks always begin 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).

For this reason, ISOWEEK can be invoked with an additional parameter called **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 returns the *year* to which this week belongs to (according to ISO 8601 standard). See examples below.

### Note:

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:

ISOWEEK("01/01/2004") returns 1

ISOWEEK("01/01/2005") returns 53

ISOWEEK("01/01/2005"; 1) returns 2004

### See also:

WEEKNUM, YEAR, MONTH, DAY, WEEKDAY

---

## ISPMT (interest payment)

### Syntax:

ISPMT(Rate, Per, NPer, CV)

### 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.

### Note:

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.

### Note:

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 341).

**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:

{ $m_n$ ,  $m_{n-1}$ , ...,  $m_2$ ,  $m_1$ , b;  $sm_n$ ,  $sm_{n-1}$ , ...,  $sm_2$ ,  $sm_1$ , sb;  $R^2$ , sey; F, df; ssreg, ssresid}

A graphical representation of this array would look like this:

$m_n$	$m_{n-1}$	...	$m_2$	$m_1$	b
$sm_n$	$sm_{n-1}$	...	$sm_2$	$sm_1$	sb
$R^2$	sey				
F	df				
ssreg	ssresid				

The abbreviations used in this illustration represent the following values:

Abbreviation	Description
$sm_1$ , $sm_2$ , etc.	Standard error for the coefficients $m_1$ , $m_2$ , 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 341).

**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).

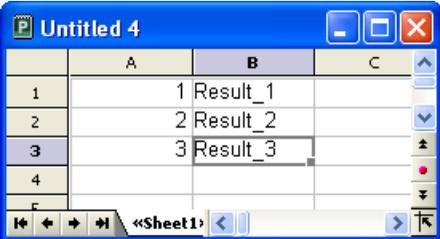
**LookupVector** is the cell range or array to search in. It must be a vector, which is a range of either just *one* row or *one* column.

**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 341), 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.

**Note:**

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("09/25/2008 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 341).

**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 341), 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 341).

### Example:

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

### See also:

Section “Working with arrays” (page 341), 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:

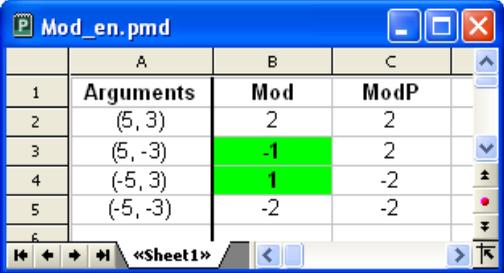
MODP, QUOTIENT

### 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	Arguments	Mod	ModP
2	(5, 3)	2	2
3	(5, -3)	-1	2
4	(-5, 3)	1	-2
5	(-5, -3)	-2	-2

**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:

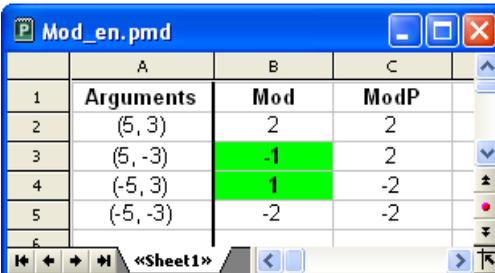
MOD, QUOTIENT

### 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	Arguments	Mod	ModP
2	(5, 3)	2	2
3	(5, -3)	-1	2
4	(-5, 3)	1	-2
5	(-5, -3)	-2	-2

**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("09/25/2008") 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.

**Note:**

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 341).

**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 341), 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 09/25/2008:

N(A1) returns 39716 (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 340)

---

## NEG (negative value)

**Syntax:**

NEG(Number)

**Description:**

Return the negative value of **Number**.

**Note:**

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("01/01/2004", "01/31/2004") 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 a 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.

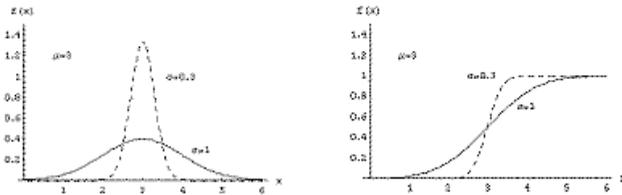
**Mean** is the arithmetic mean of the distribution.

**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.



*Density function ("bell curve") and 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 11111111111111111111111010110 (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

---

## 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 reference shifted by the specified number of rows and columns. Additionally, the size of the reference can be modified.

**Reference** is the 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

---

## PCF (interest for fixed-interest investments)

### Syntax:

PCF(Per, CV, 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.

**Note:**

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 after 10 years, the yearly interest rate has to be:

PCF(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, CV, 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.

### Note:

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:

PCF

---

## 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 (PlanMaker 97 compatibility function)

### Syntax:

PHI(*x*)

**Description:**

Returns the standard normal cumulative distribution function.

**Note:**

This function was retained only for compatibility with PlanMaker 97. Use of the following Excel-compatible function is recommended instead:

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, SQRTN, section “Arithmetic operators in formulas” (page 336)

---

## PPMT (payment on the principal)

**Syntax:**

PPMT(Rate, Per, NPer, CV [, 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  $n < 0$  or  $> 4$ , a #NUM! 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 or press **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 or press **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 ccdccc

REPLACE("cccccc", 3, 4, "ddddddd") returns ccdddd

REPLACE("cccccc", 3, 6, "ddddddd") returns ccdddddd

### 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

---

## 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 341).

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

---

## **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.

**Note:**

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, SHEETNUMBER

---

## **SHEETNUMBER (index of a worksheet)**

**Syntax:**

SHEETNUMBER([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:**

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:**

SHEETNUMBER() returns 3 for the third worksheet in a document.

**See also:**

FILENAME, SHEETNAME

---

## **SIGN (sign of a number)**

### **Syntax:**

SIGN(Number)

### **Description:**

Returns a value representing the sign of a number:

1, if **Number** is positive,

-1, if **Number** is negative,

0, if **Number** is zero.

### **Example:**

SIGN(-5) returns -1

### **See also:**

ABS, NEG

---

## **SIN (sine)**

### **Syntax:**

SIN(Number)

### **Description:**

Returns the sine of **Number**.

### **Example:**

SIN(PI()/2) returns 1

SIN(RADIANS(90)) returns 1

**See also:**

ASIN

---

## **SINH (hyperbolic sine)**

**Syntax:**

SINH(Number)

**Description:**

Returns the hyperbolic sine of **Number**.

**Example:**

SINH(0.45) returns 0.4653

**See also:**

ASINH

---

## **SKEW (skewness of a distribution)**

**Syntax:**

SKEW(Number1, Number2, Number3 [, Number4 ...])

*or*

SKEW(Range1, Range2 [, Range3 ...])

**Description:**

Returns the skewness of a probability distribution.

The skewness is a measure of the asymmetry of a distribution.

If the skewness is zero, the distribution is symmetric. If it is positive, the positive tail is larger; if negative, the negative tail is larger.

**Number1**, **Number2**, etc., are the values to be evaluated. Empty cells, text strings, and logical values are ignored.

At least three values have to be given, otherwise the function returns a #DIV/0! error value.

#### **Example:**

Measuring the height of several test persons led to the following results: 1 x 1.60m, 2 x 1.65m, 4 x 1.70m, 2 x 1.75m, and 1x1.80m.

To calculate the skewness of this distribution, use the following formula:

`SKEW(1.60, 1.65, 1.65, 1.70, 1.70, 1.70, 1.70, 1.75, 1.75, 1.80)` returns 4.66562E-15.

#### **See also:**

INTERCEPT, FORECAST, KURT, 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 341).

**Note:**

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 80)

---

## **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 341).

#### Note:

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 80)

---

## 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:**

`SQRTN`, `POWER`

---

## SQRTN (n-th root)

**Syntax:**

`SQRTN(Number [, n])`

**Description:**

Returns the **n**-th root of **Number**. If **n** is omitted, the square root is returned.

If **n** is even, **Number** must be  $\geq 0$ .

**n** should be an integer; digits right of the decimal point are ignored. If **n** is omitted, the square root is returned.

**Note:**

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:**

SQRTN(25) returns 5

SQRTN(-25) returns a #NUM! error value

SQRTN(125, 3) returns 5

SQRTN(-125, 3) returns -5

**See also:**

SQRT, POWER

---

## SQRTPI (square root of $x \cdot \pi$ )

**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, SQRT, SQRTN

---

## 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:**

STDEVP

---

## **STEYX (standard error of a linear regression)**

**Syntax:**

STEYX(y\_values, x\_values)

**Description:**

Returns the standard error of a linear regression.

**y\_values** are the known y values.

**x\_values** are the known x values.

**Example:**

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns the standard error of the resistances predicted by linear regression:

STEYX(B1:B4, A1:A4) returns 4.97351

**See also:**

INTERCEPT, SLOPE, FORECAST

---

## 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 (subtotal, ignoring filters)

### Syntax:

SUBTOTAL(Function, Range1 [, Range2 ...])

### Description:

Applies one of the arithmetic functions listed below to the specified cell range(s), *ignoring* all cells that are *filtered*.

Annotation: When you apply arithmetic functions to cells that are filtered by the **Table > Filter** command, filtered cells are included in the calculation as well, unless the SUBTOTAL function is used, in which case filtered cells are ignored.

**Range1**, **Range2**, etc., are the cell ranges you want to evaluate.

**Function** is a number that specifies which arithmetic function will be applied:

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)

If **Function** is, for example, set to 9, SUBTOTAL returns the sum of the specified cells.

### Example:

SUBTOTAL(9, A1:E6) returns the sum of A1:E6, ignoring all cells filtered by the **Table > Filter** command.

### See also:

Section “Filtering cells by their contents” (page 82)

---

## 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 1:

The SUM function can also be inserted using the Sum symbol in the Edit toolbar.

### Hint 2:

Another practical helper is the **AutoSum** icon  in the standard toolbar:

If you click it in a cell directly below a group of cells containing numbers, it will insert the SUM function for this cell range there.

If you first select a range of cells containing numbers, it will insert sum of this cell range directly below the selected cells.

You can use this icon with several other 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 **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 "January") 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:** The criterion has 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:**

COUNTIF, SUM

---

## 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 103).

**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/her shift, for example, at 10:00 pm and leaves at 6:00 am. If calculating his/her 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) will be returned.

**Note:**

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("10/01/2008 10:00 PM", "10/02/2008 6:00 AM") returns 8:00

**See also:**

TIME, TIMEVALUE

---

## TIMEVALUE (convert text into time)

**Syntax:**

TIMEVALUE(Text)

**Description:**

Converts text 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 341).

**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 341), 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 341).

**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:

<b>Value is a ...</b>	<b>Result</b>
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** property sheet, then click on **User (Home)** or **User (Business)** (see also section "Preferences, General property sheet", page 295).

**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

**Note:**

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 (number of week)

### 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 4th of January, 2004:

WEEKNUM("01/04/2004", 1) returns 2

WEEKNUM("01/04/2004", 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("6/7/2004", 10) returns 6/21/2004.

**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.

**Note:**

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:**

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("09/25/2008") returns 2008

**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 a list of the most frequently used keyboard shortcuts available in PlanMaker's standard keyboard mapping.

**Hint:** If you want to customize PlanMaker's keyboard shortcuts, use the **Tools > Customize > Keyboard Mappings** command (see section "Customizing keyboard shortcuts", page 325).

---

## 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
Copy cell above	Ctrl . (comma)
Copy value from cell above	Ctrl ⇧ . (comma)

<b>Command</b>	<b>Keyboard shortcut</b>
Enter an array formula	Ctrl ⬆ ⬅
Select current array formula	Ctrl 7
Select current conditional formatting	Ctrl 6
Open a selection list with the cell contents directly above or below a cell	Alt ⬆ ⬇

---

## Keyboard shortcuts for menu commands

<b>Command</b>	<b>Keyboard shortcut</b>
<b>File &gt; New</b>	Ctrl N
<b>File &gt; Open</b>	Ctrl O
<b>File &gt; Close</b>	Ctrl W or Ctrl F4
<b>File &gt; Save</b>	Ctrl S
<b>File &gt; File Manager</b>	F12
<b>File &gt; Print</b>	Ctrl P
<b>File &gt; Exit</b>	Ctrl Q or Alt F4
<b>Edit &gt; Undo</b>	Ctrl Z
<b>Edit &gt; Redo</b>	Ctrl 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>Command</b>	<b>Keyboard shortcut</b>
<b>Edit &gt; Search again</b>	F3
<b>Edit &gt; Go to</b>	Ctrl G or F5
<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
<b>Format &gt; Standard</b>	Ctrl Space
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*
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 .

<b>Command</b>	<b>Keyboard shortcut</b>
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 Num*
<b>Table &gt; Delete Cells</b>	Alt Num*
<b>Tools &gt; Recalculate</b>	F9
<b>Tools &gt; Update Charts</b>	F8

# Index

## #

#DIV/0! 340  
#N/A 341, 416, 417, 463, 466, 506  
#NAME? 340  
#NULL! 340  
#NUM! 341  
#REF! 340  
#VALUE! 341

## \$

\$ sign 339

## %

% sign 336

## 3

3D effect  
for chart frames 218  
for objects 168

## A

ABS (absolute value) 347  
Absolute cell addresses 339  
Absolute value (ABS) 347  
Accounting (number format) 101  
ACOS (arccosine) 347  
ACOSH (inverse hyperbolic cosine) 348  
ACOT (arccotangent) 348  
ACOTH (inverse arccotangent) 349  
**Acquire (File menu)** 177  
**Actual Size (View menu)** 315  
Addition 336  
ADDRESS (cell address as text) 350  
**Align or Distribute (Object menu)** 162  
Alignment  
of cells 110, 111, 112  
of text in AutoShapes 189  
of text in text frames 175  
Always show comments 309  
AND (logical AND function) 351  
ANSI code of a character (CODE) 370

Anti-aliasing 300  
Arccosine (ACOS) 347  
Arccotangent (ACOT) 348  
Arcsine (ASIN) 352  
Arctangent  
ATAN 353  
ATAN2 354  
Area chart 196  
AREAS (number of areas) 351  
Array functions 342  
Arrays 341  
MDETERM (Matrix Determinant) 491  
MINVERSE (Inverse Matrix) 496  
MMULT (product of matrices) 498  
MSOLVE (solution) 503  
TRANSPOSE (transposed matrix) 578  
working with array formulas 341  
ASIN (arcsine) 352  
ASINH (inverse hyperbolic sine) 353  
Ask for summary information when saving 303  
ATAN (arctangent) 353  
ATAN2 (arctangent) 354  
ATANH (inverse hyperbolic tangent) 354  
AutoFilter 85  
**AutoFormat (Format menu)** 130  
Automatic percent input 295  
Autosave 303  
AutoShapes  
adding text 187  
drawing 187  
properties 188  
AVEDEV (average deviation) 355  
Average  
arithmetic mean (AVERAGE) 355  
arithmetic mean (AVERAGEA) 356  
geometric mean (GEOMEAN) 436  
harmonic mean (HARMEAN) 438  
trimmed mean (TRIMMEAN) 581  
AVERAGE (arithmetic mean) 355  
Average deviation (AVEDEV) 355  
Average square deviation (DEVSQ) 405  
AVERAGEA (arithmetic mean) 356  
Axes (in charts) 208, 209, 211

## B

B (PlanMaker 97 compatibility function) 357  
B/W 178

Background calculation 295

Background color  
of pictures 178  
of text 116  
of the document 307

Background image 307

Backup copies 302

Backup copy 303

Bar chart 195

BasicMaker 287

Basics 35

Beep on errors 296, 301

Bessel 358, 359

BESSELI (modified Bessel function  $In(x)$ )  
358

BESSELJ (Bessel function  $Jn(x)$ ) 358

BESSELK (modified Bessel function  $Kn(x)$ )  
359

BESSELY (Bessel function  $Yn(x)$ ) 359

Beta distribution  
BETADIST 360  
BETAINV 360

BETADIST (beta distribution) 360

BETAINV (percentiles of the beta  
distribution) 360

BIN2DEC (binary to decimal) 361

BIN2HEX (binary to hexadecimal) 362

BIN2OCT (binary to octal) 363

Binary to decimal (BIN2DEC) 361

Binary to hexadecimal (BIN2HEX) 362

Binary to octal (BIN2OCT) 363

BINOMDIST (binomial distribution) 364

Binomial distribution  
BINOMDIST 364  
CRITBINOM 386  
NEGBINOMDIST 507

Bold 115

Boolean (number format) 102

**Borders (Format menu)** 107

Bring Forward One Level 171

Bring to Front 171

Bubble chart 196

## C

Calculation in status bar 294

Caption (of charts) 217

**Cascade (Window menu)** 291

Category axis (in charts) 208

CEILING (round up to a multiple of base)  
365

**Cell (Format menu)** 137

**Alignment** property sheet 110

**Borders** property sheet 107

**Number format** property sheet 97, 99, 103

**Protection** property sheet 272

**Shading** property sheet 109

Cell address as text (ADDRESS) 350

Cell frame 37

**Cell Style (Format menu)** 135, 136, 137, 138

Cell styles 135

Cells

deleting 61  
entering data 55  
filling automatically 67  
grouping (Outliner) 255  
inserting 66  
joining 112  
rotating 112  
selecting 58, 59, 60  
size 95  
sorting 80

CHAR (character from ANSI code) 365

**Character (Format menu)** 113, 114, 115,  
116, 117

Character from ANSI code (CHAR ) 365

Character pitch 117

**Character Style (Format menu)** 131, 132,  
133, 134

Character styles 131

**Chart (Object menu)**

**Add trend line** 206

**Data in Columns** 197

**Data in Rows** 197

**Show Horizontal Grid Lines** 213

**Show Vertical Grid Lines** 213

Chart area (in charts) 199

Chart toolbar 194

Charts 193

arrangement of data series 197, 215  
chart elements 198  
chart type 195  
common properties 214  
editing 194  
inserting 193  
updating 219

**Check Spelling (Tools Menu)** 238

Check spelling as you type 240, 301

Checkbox (forms object) 225

CHIDIST (chi-square distribution) 366  
 CHIINV (percentiles of the chi-square distribution) 367  
 Chi-square distribution  
     CHIDIST 366  
     CHIINV 367  
 Chi-square test (CHITEST) 367  
 CHITEST (chi-square test) 367  
 CHOICE ( $x > 0$ ,  $x = 0$ ,  $x < 0$ ?) 368  
 CHOOSE (choose value from list) 369  
 Circles  
     drawing 186  
     properties 188  
 Circular reference 32, 312  
 CLEAN (remove unprintable characters) 369  
**Close** (File menu) 289  
**Close all** (Window menu) 290  
 CODE (ANSI code of a character) 370  
 Color  
     of cells 109  
     of objects 164  
     of pictures 178  
     of text 116  
 Color palette, modifying 304  
 COLUMN (column number of a reference) 370  
**Column** (Table menu)  
     **Hide** 97  
     **Optimum Width** 96  
     **Show** 97  
     **Width** 95  
 Column chart 195  
 Column headers 59  
     changing the width of columns 95  
     printing 143  
     showing/hiding 313  
 Column number of a reference (COLUMN) 370  
 Columns  
     deleting 61  
     hiding 96  
     inserting 66  
     selecting 59  
     width 95  
 COLUMNS (number of columns in a range) 371  
 COMBIN (combinations) 372  
 Combinations (COMBIN) 372  
**Comment** (Insert menu) 86  
 Compare texts (EXACT) 420  
 Compatibility (document properties) 311  
 COMPLEX (create complex number) 372  
 Complex numbers 372  
     absolute value (IMABS) 445  
     angle (IMARGUMENT) 446  
     COMPLEX (build complex number) 372  
     conjugate (IMCONJUGATE) 447  
     cosine (IMCOS) 448  
     difference (IMSUB) 455  
     division (IMDIV) 448  
     exponential (IMEXP) 449  
     imaginary coefficient (IMAGINARY) 446  
     logarithm, base 10 (IMLOG10) 450  
     logarithm, base 2 (IMLOG2) 451  
     logarithm, natural (IMLN) 449  
     negative value (IMNEG) 451  
     power (IMPOWER) 452  
     product (IMPRODUCT) 453  
     real coefficient (IMREAL) 453  
     sine (IMSIN) 454  
     square root (IMSQRT) 454  
     sum (IMSUM) 456  
 Compress pictures in memory 296  
 CONCATENATE (concatenate text strings) 373  
 Concatenation 336  
 Condition  
     CHOICE 368  
     IF 445  
**Conditional Formatting** (Format menu) 122  
 Cone chart 197  
 CONFIDENCE (confidence interval) 374  
 Confidence interval (CONFIDENCE) 374  
 Connectors  
     drawing 186  
     properties 188  
 CONVERT (unit conversion) 375  
 Convert EU currencies (EUROCONVERT) 418  
**Copy** (Edit menu) 63  
 Copy to document's folder (pictures) 176  
 Corners (in charts) 202  
 CORREL (correlation coefficient) 378  
 Correlation coefficient  
     CORREL 378  
     PEARSON 520  
     RSQ 543  
 COS (cosine) 378  
 COSH (hyperbolic cosine) 379  
 Cosine (COS) 378

COT (cotangent) 379  
 Cotangent (COT) 379  
 COTH (hyperbolic cotangent) 380  
 Count  
   COUNT 381  
   COUNTA 381  
   COUNTBLANK 382  
   COUNTIF 382  
 COUNT (number of cells filled with numbers) 381  
 COUNTA (number of cells filled) 381  
 COUNTBLANK (number of empty cells) 382  
 COUNTIF (count if condition is true) 382  
 COUNTP (PlanMaker 97 compatibility function) 383  
 COVAR (Covariance) 384  
 Covariance (COVAR) 384  
 Create backup copies 302  
 CREATEDATE (date the document was created) 385  
 Creation date 146  
 CRITBINOM 386  
 Cropping (pictures) 178  
 CUMIPMT (cumulative interest) 387  
 CUMPRINC (cumulative principal) 388  
 CURRENCY (format number as currency) 389  
 Currency (number format) 100  
 Curves  
   drawing 186  
   properties 188  
 Custom (number format) 102  
**Customize (Tools menu)**  
   **Keyboard Mappings** 325  
   **Toolbars** 323  
**Cut (Edit menu)** 63  
 Cylinder chart 197

**D**  
 Data points (in charts) 203  
 Data series (in charts) 203, 215, 216  
 Data source (of charts) 215, 216  
 Database functions 344, 392, 397, 398, 405, 406, 407, 409, 410, 411, 412  
 Date  
   create a date value (DATE) 390  
   current (NOW) 513  
   current (TODAY) 578  
   entering 56  
   DATE (create date a value) 390  
   Date before/after n months (EDATE) 413  
   Date difference (DATEDIF) 390  
   Date of last change 146  
   Date the document was created (CREATEDATE) 385  
   Date/Time (number format) 101  
   DATEDIF (date difference) 390  
   DATEVALUE (convert text into date value) 392  
   DAVERAGE (database function) 392  
   DAY (day of a date) 393  
   DAYS (days between two dates) 394  
   DAYS360 (days between two dates) 394  
   DAYSPERMONTH (days per month) 395  
   DAYSPERYEAR (days per year) 396  
   DB (fixed-declining balance depreciation) 396  
   dBase file format 281  
   DCOUNT (database function) 397  
   DCOUNTA (database function) 398  
   DDB (double-declining balance depreciation) 399  
   DEC2BIN (decimal to binary) 400  
   DEC2HEX (decimal to hexadecimal) 401  
   DEC2OCT (decimal to octal) 402  
   Decimal point after input 309  
   Decimal to binary (DEC2BIN) 400  
   Decimal to hexadecimal (DEC2HEX) 401  
   Decimal to octal (DEC2OCT) 402  
   DECIMALS (fractional part of a number) 403  
   Default (number format) 99  
   Default currency 310  
   Default file format 302  
   DEGREES (convert radians to degrees) 403  
   Degrees to radians (RADIANS) 533  
   **Delete (Edit menu)** 38, 62  
   **Delete cells (Table menu)** 61  
   **Delete Special (Edit menu)** 62  
   Deleting  
     cell contents 62  
     cells 61  
   DELTA (test for equality) 404  
   Depreciation  
     double-declining balance (DDB) 399  
     fixed-declining balance (DB) 396

- straight-line (SLN) 550
- sum-of-years' digits (SYD) 571
- Design Science 184
- DEVSQ (average square deviation) 405
- DGET (database function) 405
- Dialog style 299
- Disable Sheet Protection (Tools menu)** 273
- Disable Workbook Protection (Tools menu)** 274
- Distance to edge 141
- Division 336
- DMAX (database function) 406
- DMIN (database function) 407
- Document properties 304
  - Calculate** property sheet 311
  - Colors** property sheet 304
  - Internet** property sheet 306
  - Options** property sheet 308
  - Protection** property sheet 313
  - Statistics** property sheet 308
  - Summary** property sheet 304
- Document protection 275
- Document statistics 308
- Document summary 247
  - entering 247
- Document templates 138, 139
- Document window 30, 289
- DOLLARDE (dollar price, decimal) 407
- DOLLARFR (dollar price, fraction) 408
- Double factorial (FACTDOUBLE) 422
- Double-declining balance depreciation (DDB) 399
- Doughnut chart 197
- DPRODUCT (database function) 409
- Drag and Drop 63
- Drawings 184
  - inserting 185
  - properties 188
- Dropdown (forms object) 228
- DSTDEV (database function) 409
- DSTDEVP (database function) 410
- DSUM (database function) 411
- Duplicate (Edit menu)** 162
- DVAR (database function) 412
- DVARP (database function) 412

## E

- EDATE (date before/after n months) 413
- Edit > Copy** 63
- Edit > Cut** 63
- Edit > Delete** 38, 62
- Edit > Delete Special** 62
- Edit > Duplicate** 162
- Edit > Fill** 68
- Edit > Go to** 154
- Edit > Go to link** 260
- Edit > Link** 181
- Edit > Paste** 63
- Edit > Paste special** 64
- Edit > Redo** 38, 58
- Edit > Replace** 152, 153
- Edit > Replace again** 153
- Edit > Search** 151, 153
- Edit > Search again** 153
- Edit > Select All** 59
- Edit > Undo** 38, 57
- Edit Lists (Tools menu)** 331
- Edit mode 158
- Edit Script (Tools menu)** 287
- Edit toolbar 29
- Edit User Dictionaries (Tools menu)** 240
- EFFECT (effective interest rate) 414
- Effective interest rate (EFFECT) 414
- Ellipses
  - drawing 186
  - properties 188
- E-mail 269
- Encryption *See* Document protection
- Entering data in cells 55
- EOMONTH (end of month in n months) 415
- Equality (DELTA) 404
- Equation Editor 183
- ERF (Gaussian error function) 415
- ERFC (complement of Gaussian error function) 416
- Error bars (in charts) 204
- Error function
  - ERF 415
  - ERFC (complement) 416
- Error type (ERROR.TYPE) 416
- Error values 340, 463
- ERROR.TYPE (error type) 416

EUROCONVERT (convert EU currencies)  
418

EVEN (round up to next even number) 419

EXACT (compare texts) 420

Excel file format 224, 281, 282, 284

Exclusive or 596

**Exit (File menu)** 42

EXP (power of e) 420

Expand SmartText entries 301

EXPONDIST (exponential distribution) 421

Exponential distribution (EXPONDIST) 421

Exponential regression

statistics (LOGEST) 482

values (GROWTH) 437

Exponentiation

operator 336

POWER function 527

**Export as PDF (File menu)** 267

Exporting documents 279

## F

F distribution

FDIST 423

FINV 426

FACT (factorial) 422

FACTDOUBLE (double factorial) 422

Factorial

FACT 422

FACTDOUBLE 422

FALSE (logical value FALSE) 423

FDIST (F distribution) 423

Fields (in headers/footers) 146

**File > Acquire** 177

**File > Close** 289

**File > Exit** 42

**File > Export as PDF** 267

**File > File Manager** 248

**File > New** 38, 138, 139

**File > Open** 39, 139, 280

**File > Page Setup** 140, 141, 142, 144

**File > Print** 41, 263

**File > Print Preview** 148

**File > Print Range**

Define Print Range 142

Remove Print Range 142

**File > Properties** 304

Calculate property sheet 311

**Colors** property sheet 304

**Internet** property sheet 306

**Options** property sheet 308

**Protection** property sheet 276, 313

**Statistics** property sheet 308

**Summary** property sheet 247, 304

**File > Save** 42

**File > Save all** 42

**File > Save as** 42, 280

**File > Select Source** 177

**File > Send**

E-Mail 269

File formats 279

**File Manager (File menu)** 248

File type 280

FILENAME (file name of document) 424

**Fill (Edit menu)** 68

Filling

cells 109

objects 164

Filter 82, 563

**Filter (Table menu)** 563, 564

AutoFilter 85

Show All 85, 86

Special Filter 83

FIND (search for text) 425

FINV (percentiles of the F distribution) 426

FISHER (Fisher transformation) 426

Fisher transformation

FISHER 426

FISHERINV 427

FISHERINV (Inverse of the Fisher transformation) 427

FIXED (format number as text with fixed decimals) 427

Fixed-declining balance depreciation (DB)  
396

Flipping

objects 161

Floor (in charts) 201

FLOOR (round down to a multiple of base)  
428

Font 113, 114

Font size 113, 114

Footers 144

FORECAST (forecast using linear regression)  
429

Foreground color  
of objects 164

- of pictures 178
- Format > AutoFormat** 130
- Format > Borders** 107
- Format > Cell**
  - Alignment** property sheet 110
  - Borders** property sheet 107
  - Number format** property sheet 97, 99, 103
  - Protection** property sheet 272
  - Shading** property sheet 109
- Format > Cell Style** 135, 136, 137, 138
- Format > Character** 113, 114, 115, 116, 117
- Format > Character Style** 131, 132, 133, 134
- Format > Conditional Formatting** 122
- Format > Input Validation** 124
- Format > Link** 259
- Format > Paragraph** 118, 119, 120, 121
- Format > Remove Link** 261
- Format > Shading** 109
- Format > Standard** 118
- Format > Transfer Formatting** 122
- Formatting toolbar 29, 115
- Forms 221
- Forms toolbar 223
- Formula tooltips 295
- Fraction (number format) 102
- Freeze (View menu)** 89
- FREQUENCY (frequency) 430
- F-test (FTEST) 431
- FTEST (F-test) 431
- Full Screen (View menu)** 315
- Full screen view 315
- Function (Insert menu)** 338
- Function of hardware cursor keys 298
- Functions
  - functions from A to Z 346
  - inserting 338
- Future value
  - FV 431
  - FVSCHEDULE 432
- FV (future value) 431
- FVSCHEDULE (future value) 432

## G

- Gamma distribution
  - GAMMADIST 433
  - GAMMAINV 434

- Gamma function (GAMMALN) 434
- GAMMADIST (gamma distribution) 433
- GAMMAINV (percentiles of the gamma distribution) 434
- GAMMALN (logarithm of the gamma function) 434
- GAUSS (PlanMaker 97 compatibility function) 435
- Gaussian distribution (NORMDIST) 509
- Gaussian error function
  - ERF 415
  - ERFC (complement) 416
- GCD (greatest common divisor) 435
- GEOMEAN (geometric mean) 436
- Geometric mean (GEOMEAN) 436
- GESTEP (greater or equal to threshold value?) 437
- Go to (Edit menu)** 154
- Go to link (Edit menu)** 260
- Gradients (for objects) 165
- Grayscale 178
- Greatest common divisor (GCD) 435
- Grid (between table cells) 314
- Gridlines (in charts) 212
- Group (Object menu)** 171
- Groupbox (forms object) 235
- Grouping
  - cells (Outliner) 255
  - objects 171
- GROWTH (values of an exponential regression) 437
- Guidelines for text frames 310

## H

- HARMEAN (harmonic mean) 438
- Harmonic mean (HARMEAN) 438
- Header and Footer (Insert menu)** 144
- Headers 144
- Height of a row 95
- HEX2BIN (hexadecimal to binary) 439
- HEX2DEC (hexadecimal to decimal) 440
- HEX2OCT (hexadecimal to octal) 440
- Hexadecimal to binary (HEX2BIN) 439
- Hexadecimal to decimal (HEX2DEC) 440
- Hexadecimal to octal (HEX2OCT) 440
- Hiding
  - cells 96

- cells, using sheet protection 272
- cells, using the outliner 253
- objects 170
- HLOOKUP (look up row-wise) 441
- HOLIDAY (dates of movable Christian holidays) 442
- Horizontal alignment
  - of cells 111
- Horizontal grid (in charts) 213
- HOUR (hour) 443
- HTML documents 261
- Hyperbolic cosine (COSH) 379
- Hyperbolic cotangent (COTH) 380
- Hyperbolic sine (SINH) 549
- Hyperbolic tangent (TANH) 573
- Hypergeometric distribution (HYPGEOMDIST) 444
- Hyperlinks
  - in the text 259
- HYPGEOMDIST (hypergeometric distribution) 444
- Hyphenation
  - in cells 309
  - in text frames 120
  - language selection 237

**I**

- IF (if-then-else condition) 445
- IMABS (absolute value of a complex number) 445
- IMAGINARY (imaginary coefficient of a complex number) 446
- IMARGUMENT (angle of a complex number) 446
- IMCONJUGATE (conjugate complex number) 447
- IMCOS (cosine of a complex number) 448
- IMDIV (division of complex numbers) 448
- IMEXP (exponential of a complex number) 449
- IMLN (natural logarithm of a complex number) 449
- IMLOG10 (base-10 logarithm of a complex number) 450
- IMLOG2 (base-2 logarithm of a complex number) 451
- IMNEG (negative value of a complex number) 451
- Importing documents 279
- IMPOWER (power of a complex number) 452
- IMPRODUCT (product of complex numbers) 453
- IMREAL (real coefficient of a complex number) 453
- IMSIN (sine of a complex number) 454
- IMSQRT (square root of a complex number) 454
- IMSUB (difference of complex numbers) 455
- IMSUM (sum of complex numbers) 456
- In-cell editing 294
- Indents 118
- INDEX (cell in a particular row/column) 456
- INDIRECT (create reference from text) 457
- Inner margins
  - of AutoShapes 189
  - of cells 112
  - of text frames 174
- Input validation 124
- Input Validation (Format menu) 124**
- Insert > Comment 86**
- Insert > Function 338**
- Insert > Header and Footer 144**
- Insert > Page Break 148**
- Insert > SmartText 242, 243**
- Insert > Symbol 91**
- Insert Cells (Table menu) 66**
- Inserting
  - cells 66
- Installation 23
  - Linux 26
  - Pocket PCs 26
  - Windows 23
  - Windows CE 26
- INT (round down to nearest integer) 458
- INTERCEPT (intercept point of a linear trend) 458
- Interest for fixed-interest investments (PCF) 519
- Interest payment
  - IPMT 460
  - ISPMT 471
- Interest, cumulative (CUMIPMT) 387
- Internal rate of return
  - IRR 461
  - MIRR 497
  - XIRR 595

Internet  
HTML documents 261  
links 259  
setting document colors 306

Intersection  
INTERSECTION function 459  
intersection operator 285, 336

INTERSECTION (intersection of two ranges)  
459

Inverse arccotangent (ACOTH) 349

Inverse hyperbolic cosine (ACOSH) 348

Inverse hyperbolic sine (ASINH) 353

Inverse hyperbolic tangent (ATANH) 354

Inverse matrix (MINVERSE) 496

IPMT (interest payment) 460

IRR (internal rate of return) 461

ISBLANK (is empty?) 462

ISERR (is an error value except #N/A?) 341,  
463

ISERROR (is an error value?) 341, 463

ISEVEN (is an even number?) 464

ISFORMULA (is a formula?) 464

ISLOGICAL (is a logical value?) 465

ISNA (is not available?) 466

ISNONTEXT (is no text?) 466

ISNUMBER (is numeric?) 467

ISNUMBERP (PlanMaker 97 compatibility  
function) 468

ISODD (is an odd number?) 469

ISOWEEK (number of week) 469

ISPMT (interest payment) 471

ISREF (is a valid reference?) 471

ISTEXT (is text?) 472

Italic 115

Iterations 312

**J**

Join cells 112

**K**

Keep aspect ratio 163

Keyboard shortcuts  
customizing 325  
default keyboard shortcuts 599, 600  
for cell styles 136  
for character styles 132

KURT (kurtosis) 473

Kurtosis (KURT) 473

## **L**

Label (forms object) 235

LAN 24

Language  
for spell checking and hyphenation 237,  
300  
user interface 299

LARGE (k-th largest number) 474

LASTPRINTED (date last printed) 475

LASTSAVED (date last saved) 475

LCM (least common multiple) 476

Least common multiple (LCM) 476

LEFT (left part of a text string) 476

Legend (in charts) 213

LEN (length) 477

Length (LEN) 477

Letter spacing 117

Limit internal picture cache 297

Line chart 195

Line spacing 119

Linear regression  
FORECAST 429  
intercept point (INTERCEPT) 458  
statistics (LINEST) 478  
trend lines in charts 206  
values (TREND) 579

Lines  
drawing 185  
of objects 166  
properties 188

LINEST (statistics of a linear regression) 478

**Link (Edit menu)** 181

**Link (Format menu)** 259

Links  
applied to cells 259  
applied to objects 169  
in the text 259

Listbox (forms object) 230

LN (natural logarithm) 480

LOG (logarithm) 481

LOG10 (base-10 logarithm) 481

Logarithm  
any base (LOG) 481  
base 10 (LOG10) 481  
natural (LN) 480

LOGEST (statistics of an exponential regression) 482

LOGINV (percentiles of the gamma distribution) 484

Lognormal distribution  
 LOGINV 484  
 LOGNORMDIST 484

LOGNORMDIST (lognormal distribution) 484

LOOKUP (search cell range) 485

LOWER (convert text to lower case) 488

Lower case  
 LOWER 488  
 PROPER 530

**M**

Macros 224, 284

Manual 20

Margins  
 inner margins of AutoShapes 189  
 inner margins of cells 112  
 inner margins of text frames 174  
 page margins 141

MATCH (relative position in a range) 489

MathType 184

Matrix  
 MDETERM (Determinant) 491  
 MINVERSE (Inverse) 496  
 MMULT (product of matrices) 498  
 MSOLVE (solution) 503  
 TRANSPOSE (transposed matrix) 578  
 working with array formulas 341

MAX (maximum) 490

MAXA (maximum) 490

Maximum  
 MAX 490  
 MAXA 490

Maximum number of undo steps 296

MDETERM (matrix determinant) 491

Mean  
 arithmetic (AVERAGE) 355  
 arithmetic (AVERAGEA) 356  
 geometric (GEOMEAN) 436  
 harmonic (HARMEAN) 438  
 ignoring marginal values (TRIMMEAN) 581

MEDIAN 492

Menu bar 28

MID (part of a text string) 493

MILLISECONDS (milliseconds) 493

MIN (minimum) 494

MINA (minimum) 495

Minimum  
 MIN 494  
 MINA 495

MINUTE (minute) 495

MINVERSE (inverse matrix) 496

MIRR (modified internal rate of return) 497

MMULT (product of matrices) 498

MOD (remainder of a division, Excel method) 498

MODE (most frequently occurring value) 500

MODP (remainder of a division, PlanMaker method) 500

MONTH (month of a date) 502

Move by ... decimals 309

Move selection after input 294

MROUND (round to a multiple of base) 502

MSOLVE (solution of matrix equation  $Ax=B$ ) 503

MULTINOMIAL (multinomial coefficient) 504

Multinomial coefficient (MULTINOMIAL) 504

Multiplication 336

**N**

N (convert value into number) 505

NA (error value #N/A) 506

Name of a worksheet (SHEETNAME) 546

**Names (Table menu) 75, 78**  
**Apply** 79  
**Edit** 75, 76  
**Import** 77  
**Insert List** 78

Naming cell ranges 75

NEG (negative value) 506

Negation  
 NEG function 506  
 operator 336

Negative binomial distribution (NEGBINOMDIST) 507

NEGBINOMDIST (negative binomial distribution) 507

Net present value  
 NPV 514, 596

Network 24

NETWORKDAYS (number of workdays)  
     508  
 Neumann function (BESSELY) 359  
**New** (**File** menu) 38, 138, 139  
**New Chart Frame** (**Object** menu) 193  
**New Drawing** (**Object** menu) 185  
**New Forms Object** (**Object** menu) 222  
     **Checkbox** 225  
     **Dropdown** 228  
     **Groupbox** 235  
     **Label** 235  
     **Listbox** 230  
     **Pushbutton** 231  
     **Radio button** 227  
     **Scrollbar** 233  
     **Spinner** 232  
**New OLE Object Frame** (**Object** menu)  
     179, 180  
**New Text Frame** (**Object** menu) 173  
 NOMINAL (nominal interest rate) 509  
 Nominal interest rate (NOMINAL) 509  
 Normal distribution  
     NORMDIST 509  
     NORMINV 510  
 Normal distribution, logarithmic  
     LOGINV 484  
     LOGNORMDIST 484  
 Normal.pmv 140  
 NORMDIST (normal distribution) 509  
 NORMINV (percentiles of the normal  
     distribution) 510  
 NORMSDIST (standard normal distribution)  
     511  
 NORMSINV (percentiles of the standard  
     distribution) 511  
 NOT (logical NOT function) 512  
 NOW (current date and time) 513  
 NPER (number of periods) 513  
 NPV (net present value) 514, 596  
 Number (number format) 100  
 Number format 97, 103  
 Number of pages 146  
 Number of periods (NPER) 513  
 Number of week  
     ISOWEEK 469  
     WEEKNUM 592  
 Numbers  
     entering 55  
     formatting 97

## 0

**Object > Align or Distribute** 162  
**Object > Chart**  
     **Add trend line** 206  
     **Data in Columns** 197  
     **Data in Rows** 197  
     **Show Horizontal Grid Lines** 213  
     **Show Vertical Grid Lines** 213  
**Object > Group** 171  
**Object > New Chart Frame** 193  
**Object > New Drawing** 185  
**Object > New Forms Object** 222  
     **Checkbox** 225  
     **Dropdown** 228  
     **Groupbox** 235  
     **Label** 235  
     **Listbox** 230  
     **Pushbutton** 231  
     **Radio button** 227  
     **Scrollbar** 233  
     **Spinner** 232  
**Object > New OLE Object Frame** 179, 180  
**Object > New Text Frame** 173  
**Object > Order** 171  
**Object > Properties**  
     for chart frames 214  
     for checkboxes 225  
     for drawings 188  
     for dropdowns 229  
     for groupboxes 235  
     for labels 235  
     for listboxes 230  
     for OLE object frames 182  
     for picture frames 177  
     for pushbuttons 231  
     for radio buttons 227  
     for scrollbars 234  
     for spinners 232  
     for text frames 174  
     general properties 163  
**Object > Rotate or Flip** 162  
**Object > Ungroup** 171  
 Object mode 158  
**Object Mode** (**View** menu) 159  
 Object toolbar 159  
 Objects 157  
     aligning and distributing 162  
     duplicating 162  
     flipping 161  
     grouping 171  
     hiding 170

- inserting 158
- order 170
- position 161
- properties 163
- rotating 161, 164
- selecting 158
- size 161
- OCT2BIN (octal to binary) 515
- OCT2DEC (octal to decimal) 516
- OCT2HEX (octal to hexadecimal) 516
- Octal to binary (OCT2BIN) 515
- Octal to decimal (OCT2DEC) 516
- Octal to hexadecimal (OCT2HEX) 516
- ODD (round up to next odd number) 517
- OFFSET (shifted reference) 518
- OLE objects 179
  - editing 181
  - inserting 179
  - properties 182
- Open (File menu)** 39, 139, 280
- Open documents in new windows 295
- Operators 336
- Optimum Height 96
- Optimum Width 96
- Options (Tools menu)** 294
  - Appearance** property sheet 298
  - Edit** property sheet 294
  - Files** property sheet 301
  - General** property sheet 295
  - Language** property sheet 300
- OR (logical OR function) 519
- Order (Object menu)** 171
- Order (of objects) 170
- Orientation 141
- Original colors 178
- Outline pane 253, 257
- Outline toolbar 254
- Outliner 253
  - grouping cells 255
  - options 257
  - protecting outline 257
  - showing/hiding grouped cells 256
- Outliner (Table menu)**
  - Automatically Show Outline Pane** 256, 257
  - Clear Outline** 256
  - Group** 255
  - Options** 257
  - Ungroup** 256
- Overlapping objects 175, 189

## P

- Page Break (Insert menu)** 148
- Page breaks
  - inserting and deleting 148
  - showing/hiding 314
- Page margins 141
- Page number 142, 146
- Page setup 140
- Page Setup (File menu)** 140, 141, 142, 144
- Paper bins 142
- Paper size 141
- Paragraph (Format menu)** 118, 119, 120, 121
- Pascal distribution (NEGBINOMDIST) 507
- Paste (Edit menu)** 63
- Paste special (Edit menu)** 64
- Payment (PMT) 525
- Payment on the principal (PPMT) 528
- PCF (interest for fixed-interest investments) 519
- PDF file format 267
- PEARSON (Pearson correlation coefficient) 520
- Percent 336
- Percentage (number format) 100
- PERCENTILE (percentiles of a data set) 521
- PERCENTRANK (percent rank in a data set) 522
- PERIOD (duration of fixed-interest investments) 523
- PERMUT (permutations) 524
- Permutations (PERMUT) 524
- PHI (PlanMaker 97 compatibility function) 524
- PI (pi) 525
- Pictures 175
  - inserting 176
  - properties 177
  - scanning 176
- Pie chart 197
- PlanMaker 2004 281
- PlanMaker 2006 281
- PlanMaker Tour 43
- Plot area (in charts) 200
- PMT (payment) 525
- Pocket Excel file format 285
- Pocket PC toolbar 32

POISSON (Poisson distribution) 526  
 Poisson distribution (POISSON) 526  
 Position  
   of objects 161  
 Position in a range (MATCH) 489  
 POWER (power) 527  
 PPMT (payment on the principal) 528  
 Present value (PV) 531  
 Primary axes (in charts) 217  
 Principal, cumulative (CUMPRINC) 388  
**Print (File menu)** 41, 263  
 Print date 146  
 Print order 143  
**Print Preview (File menu)** 148  
 Print range 142  
**Print Range (File menu)**  
   **Define Print Range** 142  
   **Remove Print Range** 142  
 Print time 146  
 PROB (probability) 529  
 Probability (PROB) 529  
 PRODUCT (product) 529  
 Product of matrices (MMULT) 498  
 PROPER (convert text to upper/lower case)  
   530  
**Properties (File menu)** 304  
   **Calculate** property sheet 311  
   **Colors** property sheet 304  
   **Internet** property sheet 306  
   **Options** property sheet 308  
   **Protection** property sheet 276, 313  
   **Statistics** property sheet 308  
   **Summary** property sheet 247, 304  
**Properties (Object menu)**  
   for chart frames 214  
   for checkboxes 225  
   for drawings 188  
   for dropdowns 229  
   for groupboxes 235  
   for labels 235  
   for listboxes 230  
   for OLE object frames 182  
   for picture frames 177  
   for pushbuttons 231  
   for radio buttons 227  
   for scrollbars 234  
   for spinners 232  
   for text frames 174  
   general properties 163  
**Properties (Table menu)** 74, 313

Protecting  
   documents 275  
   outline 257  
   workbooks 274  
   worksheets 271  
 Protection indicator 309  
 Pushbutton (forms object) 231  
 PV (present value) 531  
 Pyramid chart 197

## Q

QUARTILE (quartiles of a data set) 531  
 Quick paths 245  
 QUOTIENT (quotient of a division) 532

## R

Radar chart 196, 218  
 RADIANS (convert degrees to radians) 533  
 Radians to degrees (DEGREES) 403  
 Radio button (forms object) 227  
 RAND (random value) 533  
 RANDBETWEEN (random value) 534  
 Random value  
   RAND 533  
   RANDBETWEEN 534  
 Rank  
   PERCENTRANK 522  
   RANK 535  
 RANK (rank in a data set) 535  
 RATE (rate per period) 536  
 Rate per period (RATE) 536  
 Recalc automatically 311  
 Recalc only before ... 311  
**Recent** menu 303  
 Rectangles  
   drawing 186  
   properties 188  
 Redo 58  
**Redo (Edit menu)** 38, 58  
 Regression, exponential  
   statistics (LOGEST) 482  
   values (GROWTH) 437  
 Regression, linear  
   statistics (LINEST) 478  
   values (TREND) 579  
 Relative cell addresses 339  
 Remainder of a division

MOD (Excel method) 498  
 MODP (PlanMaker method) 500  
**Remove Link (Format menu)** 261  
 Repeat text string (REPT) 537  
 Repeated columns 143  
 Repeated rows 143  
**Replace (Edit menu)** 152, 153  
 REPLACE (replace text in a text string) 537  
**Replace again (Edit menu)** 153  
 Replace text in a text string  
   REPLACE 537  
   SUBSTITUTE 563  
 REPT (repeat text string) 537  
 RIGHT (right part of a text string) 538  
 ROMAN (Roman numeral) 539  
 Root  
   n-th root (SQRTN) 556  
   square root (SQRT) 556  
   square root of  $x \cdot \pi$  (SQRTPI) 557  
**Rotate or Flip (Object menu)** 162  
 Rotating  
   axis labels 209, 211, 212  
   cells 112  
   objects 161, 164  
   text in AutoShapes 189  
   text in text frames 175  
 ROUND (round) 539  
 Round final result 312  
 Round intermediate results 312  
 ROUNDDOWN (round down) 540  
 Rounding  
   CEILING 365  
   displaying numbers rounded 99  
   EVEN 419  
   FIXED 427  
   FLOOR 428  
   INT 458  
   MROUND 502  
   ODD 517  
   ROUND 539  
   ROUNDDOWN 540  
   ROUNDUP 541  
   TRUNC 582  
 ROUNDUP (round up) 541  
**Row & Column Headers (View menu)** 314  
 ROW (row number of a reference) 542  
**Row (Table menu)**  
   **Height** 95  
   **Hide** 97  
   **Optimum Height** 96  
   **Show** 97  
 Row headers 59  
   changing the height of rows 95  
   printing 143  
   showing/hiding 313  
 Row number of a reference (ROW) 542  
 Rows  
   deleting 61  
   height 95  
   hiding 96  
   inserting 66  
   selecting 59  
 ROWS (number of rows in a range) 543  
 RSQ (square of Pearson) 543  
**Run Script (Tools menu)** 287

## S

**Save (File menu)** 42  
**Save all (File menu)** 42  
**Save as (File menu)** 42, 280  
 Save within document (pictures) 176  
 Scaling 144  
 Scanning pictures 176  
 Scientific (number format) 102  
 Scribbles  
   drawing 185  
   scripts 287  
 Scripts 224, 284  
 Scrollbar (forms object) 233  
 Scrollbars 310  
**Search (Edit menu)** 151, 153  
 SEARCH (search for text) 544  
**Search again (Edit menu)** 153  
 Searching  
   files 249  
   FIND function 425  
   HLOOKUP function 441  
   in cells 151  
   LOOKUP function 485  
   SEARCH function 544  
   VLOOKUP function 591  
 SECOND (second) 545  
 Secondary axes (in charts) 217  
**Select All (Edit menu)** 59  
**Select Source (File menu)** 177  
 Selecting  
   cells 58  
   objects 158

**Send (File menu)**  
**E-Mail** 269  
 Send Backward One Level 171  
 Send to Back 171  
 Series axis (in charts) 211  
 SERIESSUM (sum of a power series) 545  
 Settings 293  
 Shades 109  
**Shading (Format menu)** 109  
 Shadow (of objects) 167  
 Sheet protection 271  
**Sheet Protection (Tools menu)** 273  
 Sheet tabs 310  
 SHEETNAME (index of a worksheet) 547  
 SHEETNAME (name of a worksheet) 546  
 SHM extensions 297  
 Shorter tap and hold delay 298  
 Show fonts in font list 299  
**Show Formulas (View menu)** 315  
 Show hidden objects 310  
 Show indicators (for comments) 309  
 Show tooltips 296  
 Show warning when loading OLE objects 297  
 Show/hide keyboard automatically 297  
 Sign 336  
 SIGN (sign of a number) 548  
 SIN (sine) 548  
 Sine (SIN) 548  
 SINH (hyperbolic sine) 549  
 Size  
     of cells 95  
     of objects 161  
 SKEW (skewness of a distribution) 549  
 Skewness of a distribution (SKEW) 549  
 SLN (straight-line depreciation) 550  
 SLOPE (slope of a linear trend) 551  
 SMALL (k-th smallest number) 552  
 SmartText 241  
**SmartText (Insert menu)** 242, 243  
 Smooth edges of pictures 300  
 Smooth edges of screen fonts 300  
 SoftMaker 19  
 SoftMaker Basic 287  
 SoftMaker Equation Editor 183  
 Solution of matrix equation (MSOLVE) 503  
 Sort  
     cells 80  
     SORTM function 553  
     SORTV function 554  
**Sort (Table menu)** 80  
 SORTM (sort) 553  
 SORTV (sort) 554  
 Special characters 91  
 Spell checking 237  
     as you type 240, 301  
     editing user dictionaries 240  
     language selection 237, 300  
     manually 238  
 Spinner (forms object) 232  
 SQRT (square root) 556  
 SQRTN (n-th root) 556  
 SQRTPI (square root of  $x \cdot \pi$ ) 557  
 Square root (SQRT) 556  
**Standard (Format menu)** 118  
 Standard deviation  
     entire population (STDEVP) 560  
     entire population (STDEVPA) 561  
     sample (STDEV) 558  
     sample (STDEVA) 559  
 Standard error of a linear regression (STEYX)  
     562  
 Standard normal distribution  
     NORMSDIST 511  
     NORMSINV 511  
 Standard toolbar 28  
 STANDARDIZE (standardized value) 558  
 Statistics 308  
 Statistics of a regression  
     LINEST (linear) 478  
     LOGEST (exponential) 482  
 Status bar 31  
 STDEV (standard deviation of a sample) 558  
 STDEVA (standard deviation of a sample)  
     559  
 STDEVP (standard deviation of entire  
     population) 560  
 STDEVPA (standard deviation of entire  
     population) 561  
 STEYX (standard error of a linear regression)  
     562  
 Straight-line depreciation (SLN) 550  
 Student's t-distribution  
     TDIST 573  
     TINV 577  
 Student's t-test (TTEST) 583

Subscript 116  
 SUBSTITUTE (replace text in a text string) 563  
 SUBTOTAL (subtotal, ignoring filters) 563  
 Subtraction 336  
 SUM (Sum) 564  
 Sum if condition is true (SUMIF) 566  
 Sum of a power series (SERIESSUM) 545  
 Sum of products (SUMPRODUCT) 567  
 Sum of squares (SUMSQ) 568  
 SUMIF (sum if condition is true) 566  
 Summary 247  
 Sum-of-years' digits depreciation (SYD) 571  
 SUMPRODUCT (sum of products) 567  
 SUMSQ (sum of squares) 568  
 SUMX2MY2 (sum of  $x^2 - y^2$ ) 568  
 SUMX2PY2 (sum of  $x^2 + y^2$ ) 569  
 SUMXMY2 (sum of  $(x - y)^2$ ) 570  
 Superscript 116  
 Support 19  
 Surface chart 196  
 SYD (sum-of-years' digits depreciation) 571  
**Symbol (Insert menu)** 91  
**Syntax Highlighting (View menu)** 316  
 System requirements 21

## T

T (convert value into text string) 571  
 Tab width (in text frames) 308  
**Table > Column**  
 Hide 97  
 Optimum Width 96  
 Show 97  
 Width 95  
**Table > Delete cells** 61  
**Table > Filter** 563, 564  
 AutoFilter 85  
 Show All 85, 86  
 Special Filter 83  
**Table > Insert Cells** 66  
**Table > Names** 75, 78  
 Apply 79  
 Edit 75, 76  
 Import 77  
 Insert List 78  
**Table > Outliner**  
 Automatically Show Outline Pane 256, 257

Clear Outline 256  
 Group 255  
 Options 257  
 Ungroup 256  
**Table > Properties** 74, 313  
**Table > Row**  
 Height 95  
 Hide 97  
 Optimum Height 96  
 Show 97  
**Table > Sort** 80  
**Table > Transpose** 82  
**Table > Worksheet** 73  
 Copy 74  
 Delete 74  
 Hide 74  
 Rename 74  
 Show 74  
 TAN (tangent) 572  
 Tangent (TAN) 572  
 TANH (hyperbolic tangent) 573  
 TDIST (t-distribution) 573  
 t-distribution  
 TDIST 573  
 TINV 577  
 Technical support 19  
 Template folder 302  
 Text  
 entering 57  
 TEXT (convert number into text string) 574  
 Text color 116  
 Text file format 281  
 Text frames 173  
 inserting 173  
 properties 174  
 Text styles 115  
 TextArt objects  
 drawing 187  
 properties 188  
 TextMaker file format 281  
 Three-dimensional tables 73  
 Threshold value (GESTEP) 437  
**Tile Horizontally (Window menu)** 291  
**Tile Vertically (Window menu)** 291  
 TIME (create time) 575  
 Time difference (TIMEDIFF) 575  
 TIMEDIFF (time difference) 575  
 TIMEVALUE (convert text into time) 576  
 TINV (percentiles of the t-distribution) 577

Title bar 27  
 TODAY (current date) 578  
 Toolbars 28  
**Toolbars (View menu)** 319  
**Tools > Check Spelling** 238  
**Tools > Customize**  
   **Keyboard Mappings** 325  
   **Toolbars** 323  
**Tools > Disable Sheet Protection** 273  
**Tools > Disable Workbook Protection** 274  
**Tools > Edit Lists** 331  
**Tools > Edit Script** 287  
**Tools > Edit User Dictionaries** 240  
**Tools > Options** 294  
   **Appearance** property sheet 298  
   **Edit** property sheet 294  
   **Files** property sheet 301  
   **General** property sheet 295  
   **Language** property sheet 300  
**Tools > Run Script** 287  
**Tools > Sheet Protection** 273  
**Tools > Update Charts** 219, 312  
**Tools > Workbook Protection** 274  
**Transfer Formatting (Format menu)** 122  
 Transparency (of pictures) 178  
**Transpose (Table menu)** 82  
 TRANSPOSE (transposed matrix) 578  
 Transposed matrix (TRANSPOSE) 578  
 Transposing cells 82  
 TREND (values of a linear regression) 579  
 Trend lines (in charts) 206  
 TRIM (remove spaces from text) 580  
 TRIMMEAN (mean ignoring marginal values) 581  
 TRUE (logical value TRUE) 582  
 TRUNC (Truncate a number) 582  
 t-test (TTEST) 583  
 TTEST (t-test) 583  
 TYPE (type of a value) 584

## U

Underline 115  
**Undo (Edit menu)** 38, 57  
**Ungroup (Object menu)** 171  
 Unit conversion (CONVERT) 375  
**Update Charts (Tools menu)** 219, 312

UPPER (convert text to upper case) 585  
 Upper case  
   PROPER 530  
   UPPER 585  
 Use large icons 299  
 Use SHM extensions 297  
 Use system file dialogs 299  
 User (Business) 298  
 User (Home) 298  
 User field (USERFIELD) 585  
 User-defined number formats 103  
 USERFIELD (user field) 585

## V

VALUE (convert text into a number) 587  
 Value axis (in charts) 209  
 VAR (variance of a sample) 588  
 VARA (variance of a sample) 588  
 Variance  
   of a sample (VAR) 588  
   of a sample (VARA) 588  
   of entire population (VARP) 589  
   of entire population (VARPA) 590  
 VARP (variance of entire population) 589  
 VARPA (variance of entire population) 590  
 VBA 287  
 VBA scripts 224, 284  
 Vertical alignment  
   of cells 112  
   of text in AutoShapes 189  
   of text in text frames 175  
 Vertical grid (in charts) 213  
 Vertical text 112  
**View > Actual Size** 315  
**View > Freeze** 89  
**View > Full Screen** 315  
**View > Object Mode** 159  
**View > Row & Column Headers** 314  
**View > Show Formulas** 315  
**View > Syntax Highlighting** 316  
**View > Toolbars** 319  
**View > Watch Window** 318  
**View > Zoom Level** 315  
 Visual Basic 287  
 VLOOKUP (look up column-wise) 591

## W

Walls (in charts) 201  
Warning if a formula contains errors 294  
**Watch Window (View menu)** 318  
Weber function (BESSELY) 359  
Week number  
    ISOWEEK 469  
    WEEKNUM 592  
WEEKDAY (weekday) 592  
WEEKNUM (number of week) 592  
WEIBULL (Weibull distribution) 593  
Width of a column 95  
**Window > Cascade** 291  
**Window > Close all** 290  
**Window > Tile Horizontally** 291  
**Window > Tile Vertically** 291  
Window Manager dialogs 299  
Window Manager positioning 300  
Workbook protection 274  
**Workbook Protection (Tools menu)** 274  
Workbooks 73  
WORKDAY (date after x workdays) 594  
Workdays  
    count (NETWORKDAYS) 508  
    date after x workdays (WORKDAY) 594  
**Worksheet (Table menu)** 73  
    **Copy** 74  
    **Delete** 74  
    **Hide** 74  
    **Rename** 74  
    **Show** 74  
Worksheet register 73  
Worksheets 73  
    copying 74  
    deleting 74  
    editing 53  
    formatting 93  
    hiding 74  
    properties 74  
    renaming 74  
    selecting 59  
    unhiding 74  
Wrap text 112

## X

X axis (in charts) 208  
XIRR (internal rate of return) 595  
XOR (logical XOR function) 596

XY Scatter chart 196

## Y

Y axis (in charts) 209  
YEAR (year of a date) 597

## Z

Z axis (in charts) 211  
**Zoom Level (View menu)** 315  
Z-test (ZTEST) 598  
ZTEST (z-test) 598