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**Manual**

# **PlanMaker 2006**

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# Welcome!

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

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 Handheld PCs**
- More than **320 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 (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!

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## Technical support

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

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

Our web site is kept current with 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)**

The easiest way to communicate with our technical support team, as well as other users, is to visit our support forums at: [www.softmaker.com/forum](http://www.softmaker.com/forum)

## **E-mail**

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

## **Fax or snail mail**

You can also send us inquiries by mail or fax:

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

Fax: +49-911-303796

## **Phone**

Of course, you can also call us with your questions. Phone number for technical support: +49-911-936 386 50

Please have your *customer number* ready when calling.

---

# **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 29): Describes the individual components of PlanMaker’s application window.
- Chapter “**PlanMaker basics**” (page 37): Acquaints you with PlanMaker’s basic functions and explains basic spreadsheet terminology.
- Chapter “**The PlanMaker Tour**” (page 45): Introduces you to the operation of PlanMaker with some practical examples
- Chapters “**Editing worksheets**” (page 55) and following: Reference part of the manual – providing comprehensive instructions on working with PlanMaker’s functions, broken down according to subject.

---

## 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  and , 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 95 or higher
- Memory requirements:
  - Windows 95: 8 MB
  - Windows 98, ME and NT: 16 MB
  - Windows 2000 and XP: 64 MB

### **Pocket PC version**

- Any Pocket PC or Pocket PC Phone Edition
- StrongARM or XScale CPU
- Required memory:
  - 10 MB storage memory (can be installed on a memory card)
  - 6 MB program memory (while PlanMaker is running)

### **Handheld PC version**

- Handheld PC with a screen resolution of at least 640 x 240
- StrongARM or XScale CPU
- Windows CE 2.11 or higher, or Windows CE.NET
- Required memory:
  - 10 MB storage memory (can be installed on a memory card)
  - 6 MB program memory (while PlanMaker is running)

### **Linux version**

- PC with CD or DVD drive
- Graphics card with 32000 colors or higher
- 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 PlanMaker for Windows** (page 23)
- **Installing PlanMaker for Pocket PCs** (page 26)
- **Installing PlanMaker for Handheld PCs** (page 26)
- **Installing PlanMaker for Linux** (page 26)

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

---

## Installing PlanMaker for Windows

*Note:* If your computer is attached to a **local area network (LAN)**, in addition to the following information, please read 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*, please run the installation program on the CD now. Do this as follows:

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

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

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

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

---

## Starting PlanMaker for Windows

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 registration purposes, 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 283).

---

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

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

If PlanMaker for Windows is to be installed on PCs that are connected to a local area network (LAN), you should read the following instructions:

---

### 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 PlanMaker for 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 same network

*Note:* Skip this section if you plan to use PlanMaker on a single workstation only.

---

Follow this procedure if PlanMaker is to be used on multiple computers connected to the same local network:

## **Initial installation**

First PlanMaker must be installed in a *shared* folder to which all the computers that will utilize 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 very easily. PlanMaker makes use of an automatic installation routine that saves you from almost all the work.

All you have to do is start PlanMaker manually one time at each workstation. Proceed as follows:

1. Start Windows Explorer.
2. Change 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 configures the workstation automatically (after asking for permission). One of the things it does is place a shortcut in the **Start** menu. The shortcut can be used to start PlanMaker in the future.

## **Please pay attention to your license agreement!**

*Note:* The Software License Agreement allows you to install PlanMaker on multiple computers; however, only one copy of the program may run at any time. If several users will be running PlanMaker simultaneously, you have to purchase a corresponding number of PlanMaker licenses.

---

## Installing PlanMaker for Pocket PCs

Information on installing PlanMaker can be found in the e-mail that you received after purchasing the software.

### Starting PlanMaker for Pocket PCs

To start the installed programs, use the Start menu of your Pocket PC. 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 registration purposes, 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 283).

---

## Installing PlanMaker for Handheld PCs

Information on installing PlanMaker can be found in the e-mail that you received after purchasing the software.

### Starting PlanMaker for Handheld PCs

To start the installed programs, use the Start menu of your Handheld PC. 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 registration purposes, 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 283).

---

## Installing PlanMaker for Linux

Information on installing PlanMaker can be found in the e-mail that you received after purchasing the software.

## Starting PlanMaker for Linux

To start PlanMaker for Linux, change to the folder in which you installed PlanMaker and execute the program file **planmaker** there.

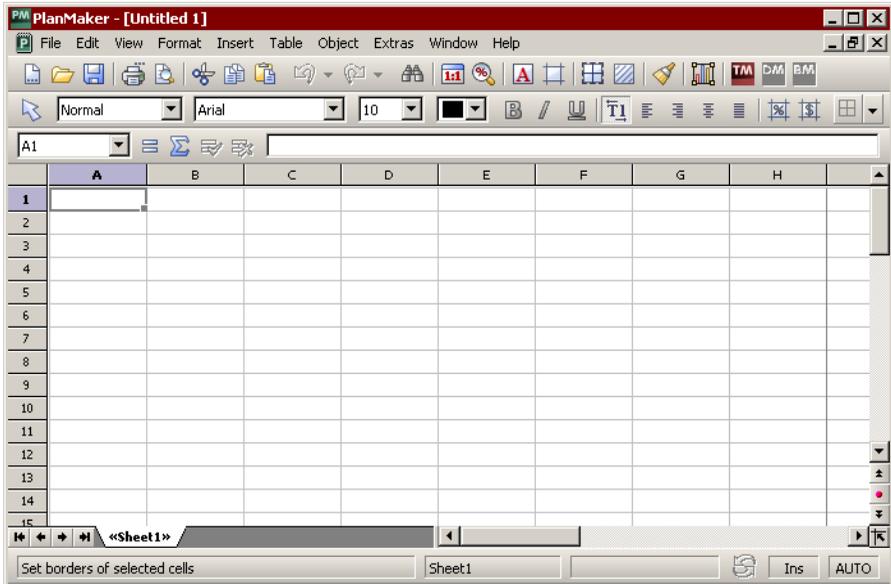
*Note:* When you start PlanMaker for the first time, you will be asked to enter your name and address. This information is *not* for registration purposes, but allows you to insert your name, mailing address, etc., in documents through the USERFIELD function. You can always change this information later (see section “Preferences, General property sheet”, page 283).



---

# Screen elements

On the following pages we present you with the individual components of PlanMaker's user interface.



*The application window of PlanMaker (Windows version)*

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

**Pocket PC users** please read also the section “Special instructions for Pocket PC users” on page 34.

---

## Title bar

At the top of PlanMaker's application window you will find the *title bar*.





---

# Formatting toolbar

Directly below the Standard toolbar is the *Formatting toolbar*. Here you can access the most-frequently used formatting functions: font, font size, font style, color, etc.



For example, to select another font, click the small arrow to the right of the font name. This opens the font drop-down list, and allows you to select a font.

Other icons in the Formatting toolbar are on/off formatting options, such as the **B** icon to apply a bold style to selected text.

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

---

# 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 57.

The Edit toolbar icons have the following functions:

Icon	Function
	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 317.

---

## Document window

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

A document window consists of the following components:

### Title bar

Provided that a document window is not maximized, it has its own *title bar* in which the name of the document 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 55.

### 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 74).



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

---

## Status bar

At the bottom of the PlanMaker window, the *status bar* is displayed.



**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.

The status bar displays the following information (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>Extras &gt; Preferences</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 than one such cells exist).
Ins	Indicates whether Insert Mode (Ins) or Overstrike Mode (Ovr) is active.

In Insert Mode (Ins), what you type is *inserted* before the existing text.

In Overstrike Mode (Ovr), what you type *overwrites* the 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, edit the affected cells and simply remove the leading apostrophe.

---

## Special instructions for Pocket PC users

On Pocket PCs, the application window looks a bit different: the menu bar and most toolbars are replaced by a single toolbar called the **Pocket PC toolbar**.



This toolbar lets you access the menu, the other toolbars, and some other important functions.

Going from left to right, the Pocket PC toolbar functions are:

- Open menu bar
- Toggle between Object mode and Edit mode
- Standard toolbar on/off
- Formatting toolbar on/off

- Edit toolbar on/off
- Status bar on/off
- Set magnification
- Row and column headers on/off



---

# PlanMaker basics

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

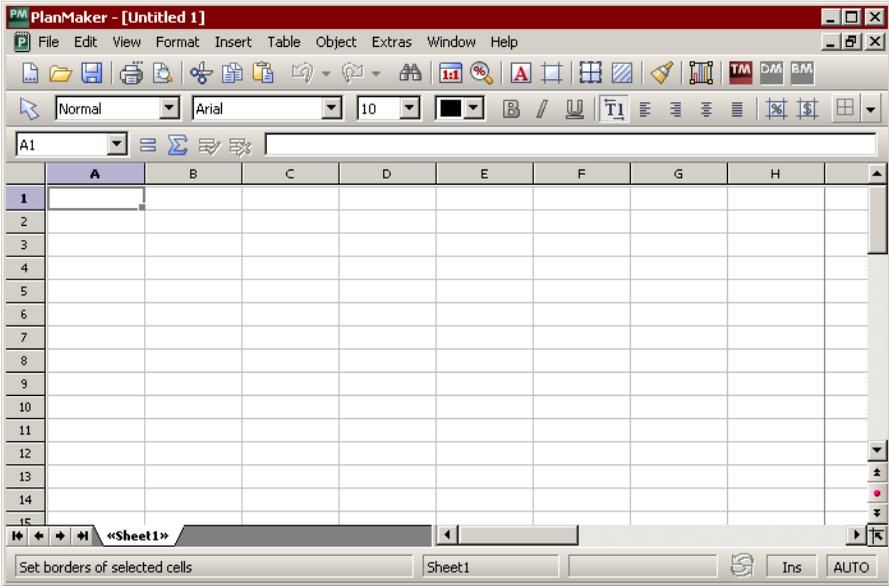
Topics covered in this chapter:

- **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 Handheld PCs) 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 navigating”, page 573.

---

## 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 57.

---

## 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 62.

---

## 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 a counterpart for the Undo command: **Edit > Redo**. This command restores the action last undone and can also be used repeatedly.

For detailed information on this topic, see section “Undoing changes”, page 59.

---

## Starting a new document

To create a new document, choose **File > New**, or use the **[Ctrl] [N]** keystroke.

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.

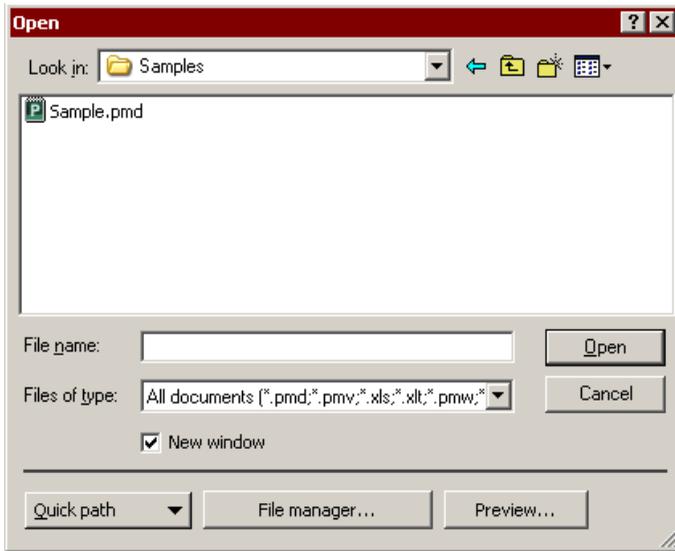
**New window:** If you have checked the **New window** checkbox in this dialog box, the new document will appear in a new document window. Otherwise, the current document is closed and the new document will be created in the same window.

For detailed information on using document templates, see section “Document templates”, page 136.

---

## Opening a document

To open an existing document, choose **File > Open**, or use the **Ctrl O** keystroke.



In the resulting dialog box, navigate to the document you want to open and click the **Open** button.

You can select which drive and folder to display through the **Look in** drop-down list. To switch to a different drive or folder, click the small arrow to the right of this list to open the drop-down list, and select the desired drive and/or folder.

**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

PlanMaker can also open files created in other programs. Just select the appropriate file type in the **Files of type** drop-down list. For information on supported file formats, see chapter “Working with other file formats”, page 269.

## Using Quick Paths

*Quick Paths* are a feature that lets you assign a name to often-used file paths. To use Quick Paths, click the **Quick Path** button. See section “Quick Paths”, page 241.

## File Manager

Click the **File Manager** button to access the built-in File Manager. The File Manager shows a list of your documents, and lets you search, open, print, and view them. See section “File Manager”, page 243.

## Previewing a document

To preview a document from within this dialog, click the **Preview** button.

## List of most recently opened files

*Hint:* At the bottom of the **File** menu is a list of recently opened documents. Click a name on the list to reopen the document.

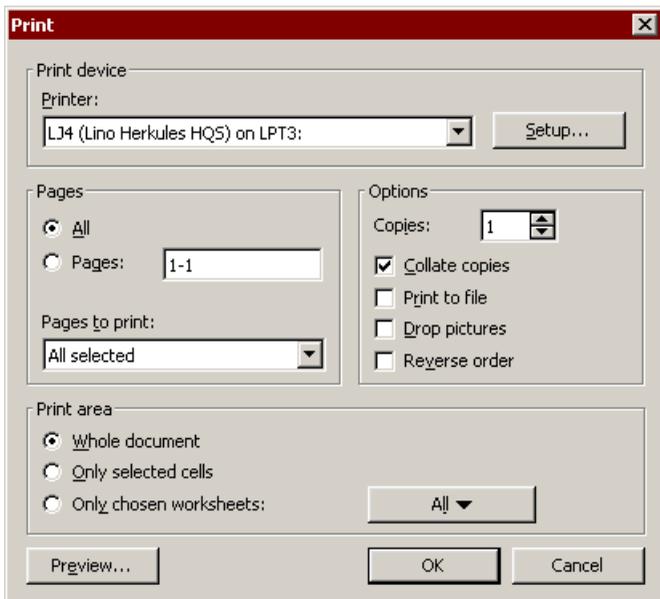
**Pocket PCs:** On Pocket PCs, recently opened documents are accessed from the **Recent** menu.

---

# Printing a document

*Note:* Printing is not supported on Pocket PCs.

To print the current document, choose **File > Print**, or use the **Ctrl P** keystroke.



In the resulting dialog box, select the number of copies, and which pages to print. The dialog box defaults to printing one copy of all pages of the document.

For additional print dialog options, see chapter “Printing and e-mailing”, page 257.

---

## 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 folder

PlanMaker also provides the **File > Save as** command. This command saves your document as well, but gives you the opportunity to assign a different file name or save it to a different folder.

## **Saving in a different file format**

You can store the document in a different file format when using the **File > Save as** command. Select the desired file format from the **Files of type** drop-down list. See chapter “Working with other file formats”, page 269.

## **Saving all open documents**

If you have several documents open, choose **File > Save all** to save all open documents using their current name. PlanMaker checks all open documents and saves only those that have been changed.

---

# **Exiting PlanMaker**

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

If open documents have been modified, PlanMaker will automatically ask you if you want to save them before exiting.

---

# 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:

$a + b + c = d$

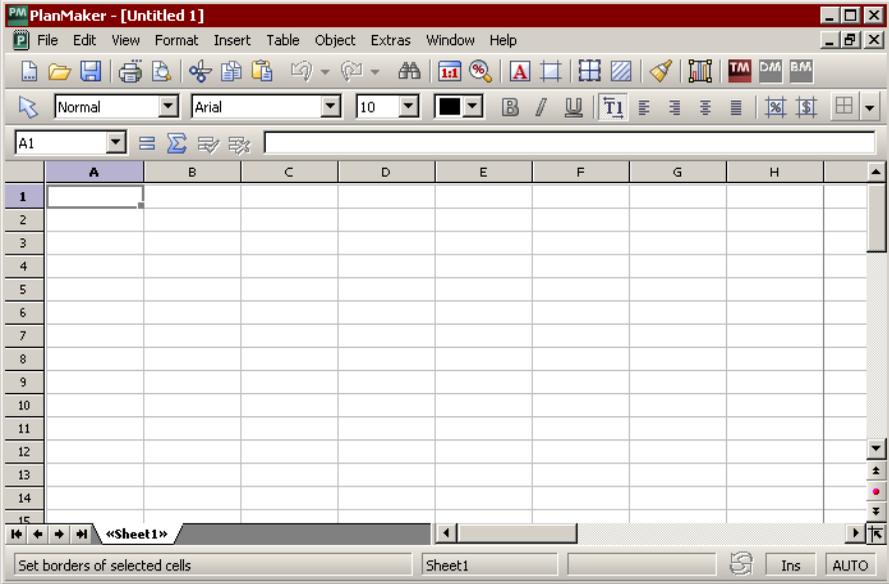
Without spreadsheets, such a formula has only practical benefit if you use a programmable calculator – you can enter the formula once, and then execute it many times. The calculator asks for the values one by one, and then shows the total value. This is not much of an improvement over repeated individual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

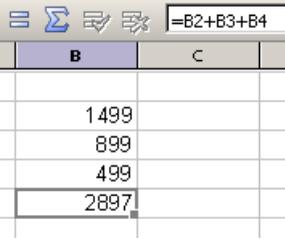
Go to cell B5 and type an = (equal sign). The equal sign shows PlanMaker that you would like to begin entering a formula.

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 and C. The formula bar at the top displays '=B2+B3+B4'. The cells in column B contain the values 1499, 899, 499, and 2897. The cell containing 2897 is highlighted, indicating it is the active cell.

B	C
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 320 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.

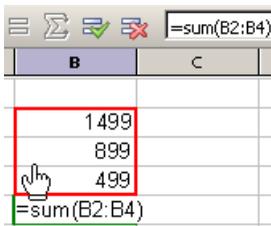
The notation *StartingCell:EndingCell* can also be used when both row and column changes. If, for example, you enter B2 as the starting cell and C4 as the ending cell, these two coordinates form the corners of a rectangle. The formula `=SUM(B2:C4)` would sum all numbers contained within this rectangle.

## 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.



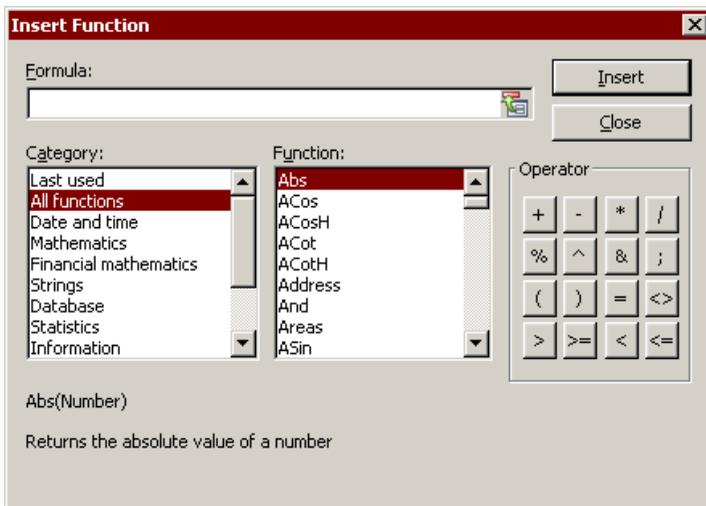
If you look at the Edit toolbar while you do this, the input area will display your new formula. PlanMaker builds the formula on the fly, while you are dragging the mouse pointer down. As soon as your formula is complete, release the mouse button and accept the formula in the Edit toolbar by pressing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

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.

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

Average ()

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

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

The completed formula should look like this:

```
=Average (B2 : B4)
```

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

You have now learned about two of the more than 320 arithmetic functions of PlanMaker. A comprehensive list of all functions can be found in section “Functions from A to Z”, page 326.

---

## Going three-dimensional

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

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

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

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



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

For detailed information on this topic, see section “Working with multiple worksheets”, page 74.

---

## 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

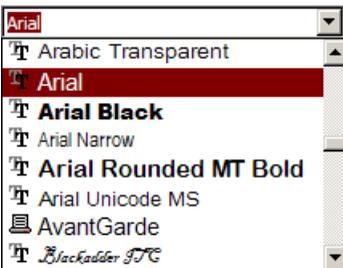
What is missing from our worksheet is a headline. Let’s enter one and increase the font size to make it stand out.

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.

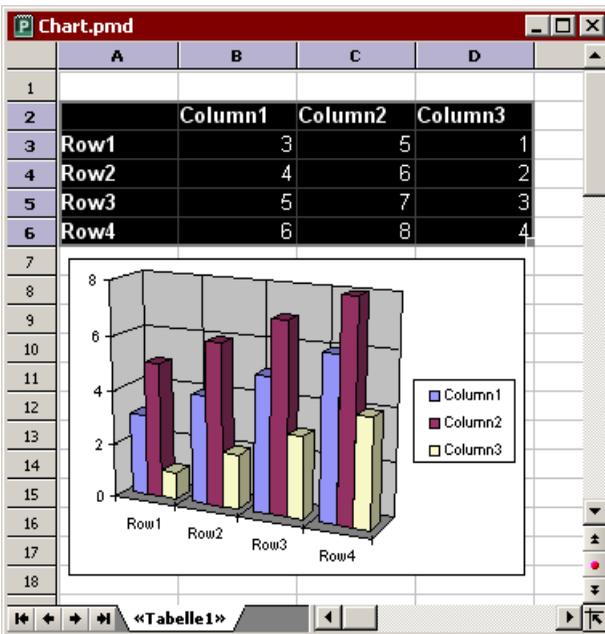
---

## 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 189.

---

## **Outlook**

The introductory part of the manual ends here. You now know everything about the basic functions of PlanMaker. Next comes the reference part 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 part* of the manual. The reference part 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 **Extras > 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, 09/25/66, 09/25/1966, 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 9/25/66 6:00, PlanMaker knows that you mean the 25th of September 1966 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 315.
- For descriptions of all arithmetic functions, see section "Functions from A to Z", page 326.

## 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.

---

## Undoing changes

The **Edit > Undo** command lets you revoke the last changes you made to a document. If, for example, you have changed the font in a cell, choose **Edit > Undo**, and the old font will reappear.

This works not only for formatting changes, but for virtually all changes. For example, you can undo text you typed in as well as deletions you have made.

The Undo command can be used repeatedly. If you call it five times, the last five changes will be revoked.

This useful command is also available by pressing the key combination ⌘ Z.

## Recovering from undo

There is a counterpart for the Undo command: The **Edit > Redo** command restores the last action you have undone. Using the **Edit > Redo** command, you can undo your undoes, and your document will revert to its previous state.

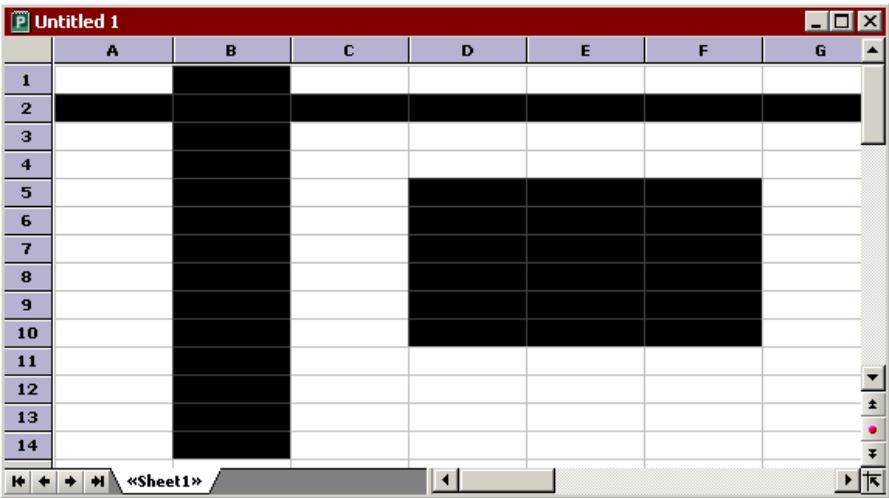
This command can also be used repeatedly. If you call the Undo command five times, the last five changes will be revoked. If you call Redo five times, the document reverts to its original state.

The key combination for the Redo command is **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 navigating”, page 573.

### ■ 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 87).

## ■ Conditional Formatting

Remove only the conditional formatting (see section “Conditional formatting”, page 121).

## ■ Input Validation

Remove only the input validation (see section “Input validation”, page 123).

---

# 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:

Command	Explanation
Cut	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</b> <b>X</b> .
Copy	The <b>Edit &gt; Copy</b> command copies the selection to the clipboard. Keyboard shortcut: <b>Ctrl</b> <b>C</b> .

**Paste**                      The **Edit > Paste** command inserts the contents of the clipboard to the active cell. You can paste the content of the clipboard repeatedly. Keyboard shortcut: Ctrl V.

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 319).

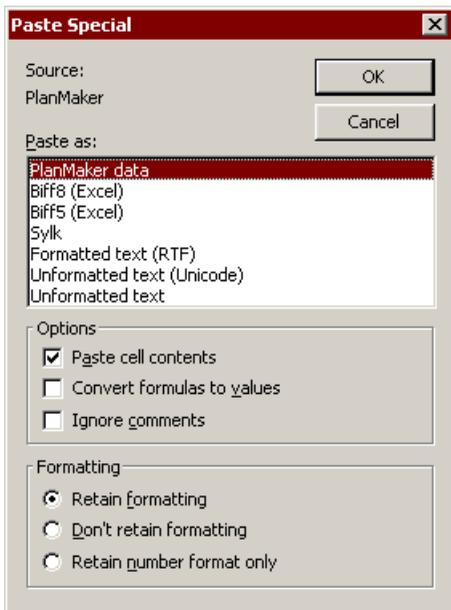
---

## 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.

The dialog box of this command has the following options:

- **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.

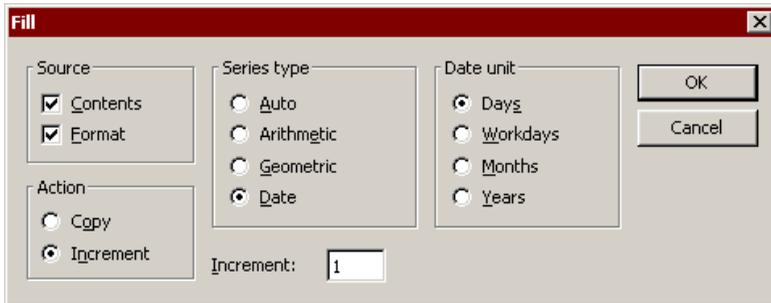
To control the fill function precisely, press and hold the **Alt** key while dragging. A dialog box (described below) will appear, providing full control over how the cells are filled.

### 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 1/1/2000, the increment is 1, and the **Date unit** is “Months”, the cells will be filled with 2/1/2000, 3/1/2000, 4/1/2000, 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 **Extras > 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 312.

---

# 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 298).

*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 264.

---

## 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 desired result.

---

## 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 261).

---

## 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).

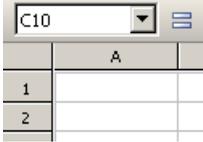
**Note:** Names may only consist of alphanumeric characters, underscores and periods. The first character must be a letter or an underscore.

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/removed.

**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”, “March” to the cells below them.
- If you select **Left Column**, PlanMaker names the cells to the right of “London”, “Paris”, “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.

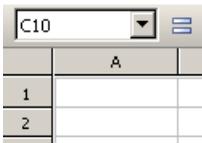
---

## 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.

---

## Retroactively applying names in calculations

The **Apply** command in the sub-menu of the **Table > Names** command is a useful helper for applying named ranges: It scans the 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 updated.
2. Choose **Table > Names > Apply**.
3. In the **Names** list, select all names you want to apply to the selected cells. Alternatively, click **Select all** to select all names.

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

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

### An example:

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

### The “Also apply to relative references” option

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

Some background information:

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

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

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

**For example:**

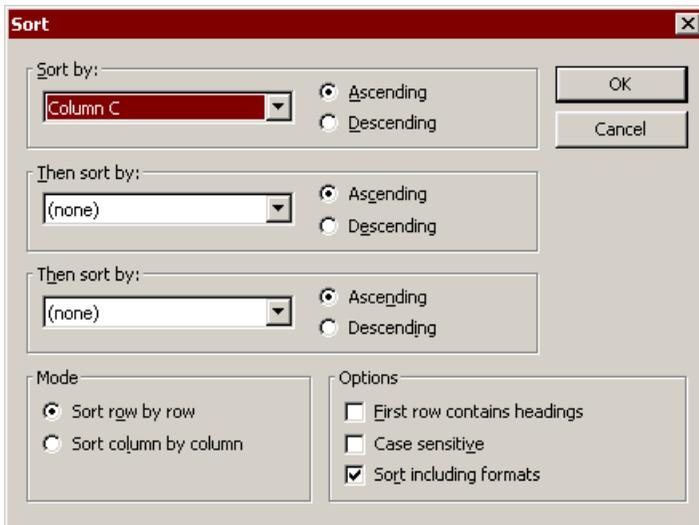
Assume the range from A1 to A10 (more precisely: \$A\$1:\$A\$10) was named “January”. If you apply the **Apply** function to the formula =SUM(\$A\$1:\$A\$10), this formula will always be converted to =SUM(January). But if you apply it to the formula =SUM(A1:A10), the formula will be converted only if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

For more information on absolute and relative cell addresses, see section “Relative vs. absolute cell addressing”, page 319.

---

## 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 far 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 command, available via **Table > Filter > AutoFilter**.

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 **⇧ F2** to edit a comment.

## Deleting comments

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

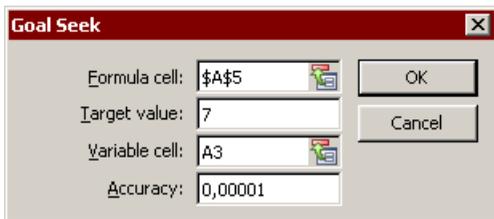
---

# Goal-seeking

The **Extras > 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 **Extras > Goal Seek** command, a dialog box will open with the following options:

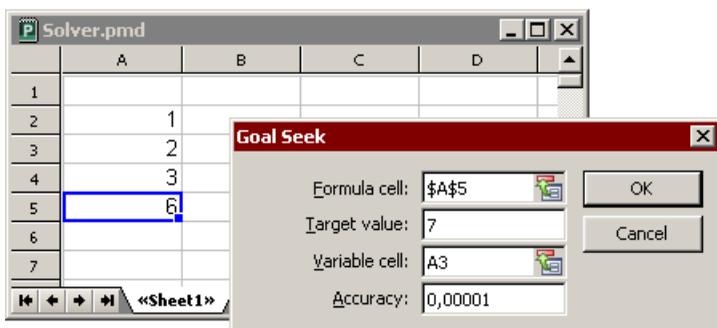
- In **Formula cell**, enter the address of the cell that contains the formula. (Generally this is pre-filled by PlanMaker.)
- In **Target value**, enter the desired result of the calculation.
- In **Variable cell**, enter the cell address of the cell in which PlanMaker will test different values until 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 **Extras > 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  symbol in the bottom-right corner of the document window to freeze rows or columns. Simply click this symbol and drag it to the desired location.

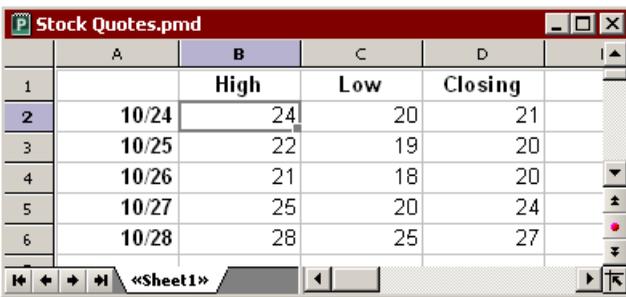
## Deactivating freezing

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  symbol 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	

Note that both the columns and the rows are labeled. To freeze the labels:

- The column labels (High, Low, Closing) 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 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

To insert "special characters" in PlanMaker (e.g., the copyright or the trademark symbol) use the **Insert > Symbol** menu command as follows:

1. Invoke the command **Insert > Symbol**.
2. The dialog box that appears gives you access to every character that is available from the current font. If you need a character from a different font, select it from the **Font** list in the window.
3. The 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 individual fonts contain only a few of the character sets that are available. However, the fonts that are supplied with your operating system 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 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 261).

## ■ 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.

## ■ Page view

The **File > Page View** command displays a preview of the printed document on 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 261.

To hide rows/columns:

### Using the row header to hide rows

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

For example, to hide row 14:

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

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

12
13
15
16

To make row 14 visible again, click this triangle.

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

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

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

The selected rows will be hidden.

To make them reappear:

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

### Hiding columns

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

---

## Number format

To change the *number format* of cells, choose **Format > Cell**, 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).

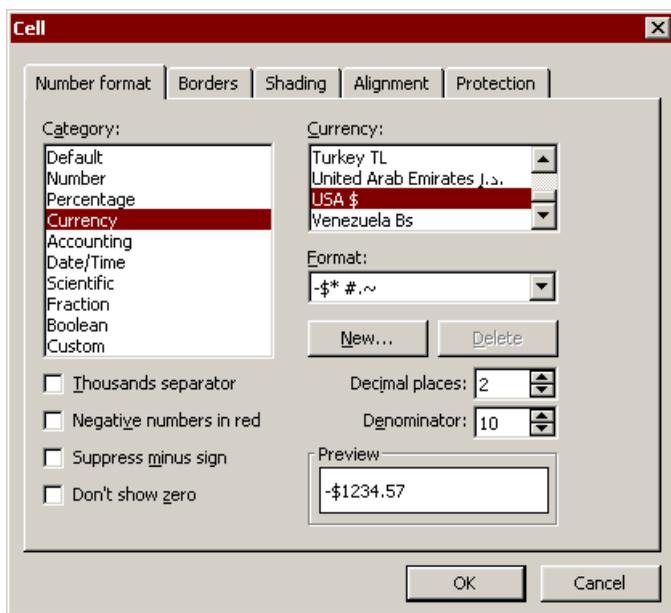
**Note:** When you apply a number format that has a fixed number of decimal places, the number will only be *displayed* as a rounded value, but still keeps *all* of its decimal places. To actually round numbers, use arithmetic functions like the ROUND function.

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, 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%.

**Note:** Values have to be entered accordingly: For example, to enter 20%, either type 0.2 or 20%. Do not enter 20, as 20 equals 2000%.

Example: 42%

**Hint:** This number format can also be applied by clicking the  icon in Plan-Maker'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 subformats 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 Plan-Maker'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., 7/2/06
<b>MM/DD/YYYY</b>	month (2 digits), day (2 digits), year (4 digits) – e.g., 07/02/2006
<b>MMMM DD, YYYY</b>	month (name), day (2 digits), year (4 digits) – e.g., February 07, 2006
<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., 07/02/06 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.

If you want 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 number format (see next section) and click **OK**.

The number format is now created.

### 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 <b>Format &gt; Cell</b> dialog.  Example: If you have set the number of decimal places to 2, \$#,~ applied to 1.2 returns \$1.20.  <i>Note:</i> This format code is applicable to <b>Currency</b> and <b>Accounting</b> number formats <i>only</i> .

## 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
<b>YYYY</b>	Year, 4 digits
<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.

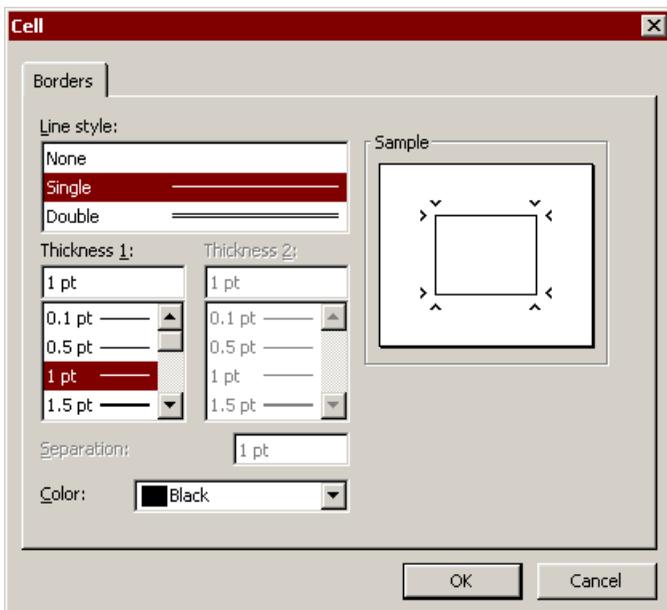
Additionally, you can use the “endless” time format to convert times to minutes or seconds. For example, when you format 02:00:00 as [mm]:ss, 120:00 will be displayed. If you format it as [s], 7200 (the number of seconds) will be displayed.

---

## Borders and lines

To put border lines around 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.

### Changing single 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.

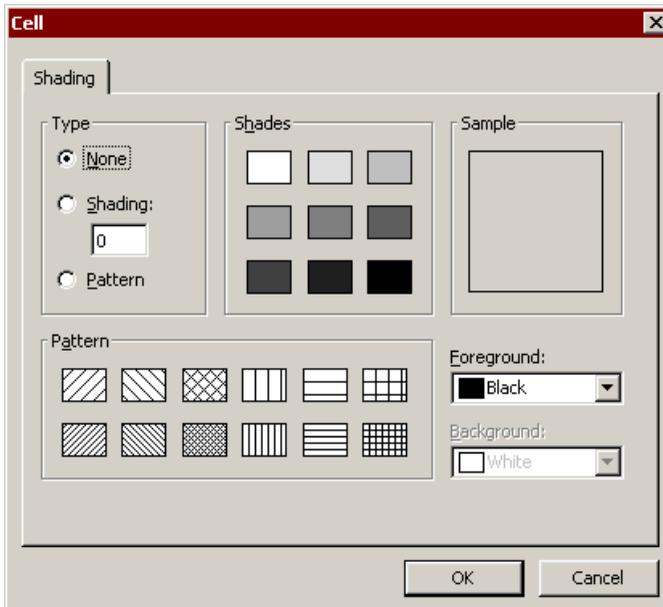
---

## 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 290).

### ■ **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 290).

### ■ **Removing shades or pattern**

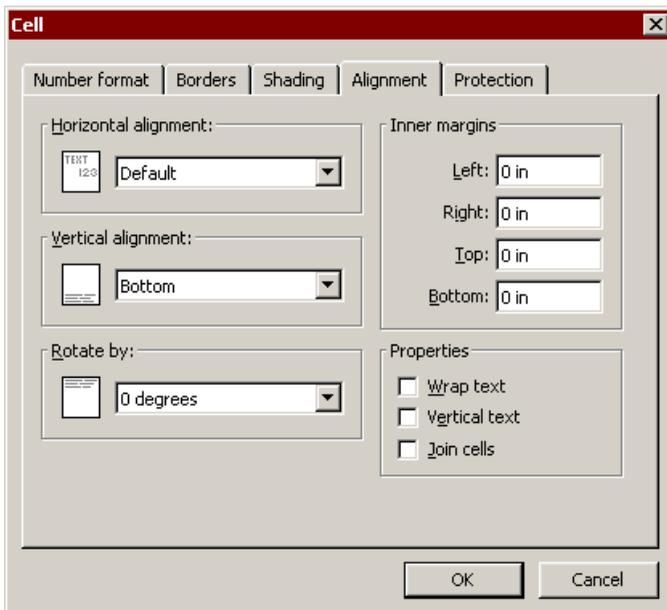
To remove any shade or pattern applied, select **None** in the **Type** list.

---

## **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

**Centered:** Centered

**Right:** Right-aligned

**Flush:** 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 in the cells 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 261.

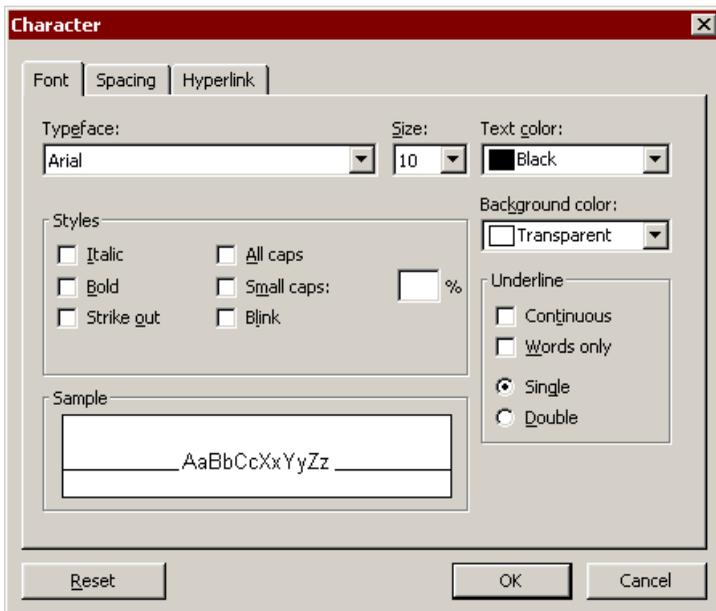
---

## Character format

Use **Format > Character** to change the character format of cell contents.

The *character format* includes settings like font, font size, font style (bold, italic, etc.), font color, etc.

To change the character format of a single cell, navigate to it without selecting. To change multiple cells, select them before executing this command. If you press **F2** and select just parts of the cell content, only the selected characters will be changed.



The character format settings in the **Format > Character** dialog are distributed over multiple property sheets as follows:

- **Font** property sheet

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

- **Spacing** property sheet

Superscript and subscript, letter spacing and character pitch

- **Hyperlink** property sheet

Lets you create links (e.g., to web pages). See section “Working with links”, page 253.

See the following pages for detailed information.

---

## Font and font size

To change the font and font size of cell contents:

1. Select the desired cells.
2. Choose **Format > Character**.

3. Switch to the **Font** property sheet.

Then, set the desired font and font size as follows:

- To change the *font*, select a new font from the **Font** drop-down list.
- To change the *font size*, select a point size from the **Size** drop-down list, or type in a size manually. You can enter point sizes even in one-tenths increments; e.g., 9.5 or 10.1.

*Hint:* You can also change the font and font size using the Formatting toolbar (located above the worksheet) rather than the menu command.

---

## Font style

*Font styles* are formattings like bold, italic, underline, etc.

To apply font styles to cell contents:

1. Select the desired cells.
2. Choose **Format > Character**.
3. Switch to the **Font** property sheet.
4. Check an option, or any combination of options, from the **Style** group box.

*Hint:* The Formatting toolbar (located above the worksheet) has buttons for the most common font styles: **B** for bold, **I** for italic, and **U** for underline.

The following keyboard shortcuts are also available: Ctrl B for bold, Ctrl I for italic, and Ctrl U for underline.

---

## Font color

To change the foreground or background color of cell contents:

1. Select the desired cells.
2. Choose **Format > Character**.
3. Switch to the **Font** property sheet.
4. To change the foreground color, select a color from the **Text color** list.

To change the background color, select a color from the **Background color** list.

For information about adding new colors to color lists, see section “Document properties, Colors property sheet”, page 290.

**Hint:** You can also change the foreground color using the color drop-down list in the Formatting toolbar (located above the worksheet) rather than the menu command.

**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.

---

## Superscript and subscript

To activate superscript (e.g.,  $r^2$ ) or subscript (e.g.,  $H_2O$ ) for cell contents:

1. Select the desired cells. (If you press **F2** and select just parts of the cell content, only the selected characters are changed.)
2. Choose **Format > Character**.
3. Switch to the **Spacing** property sheet.
4. Check the **Superscript** or the **Subscript** checkbox.
5. If desired, you can also change the **Position** (how much the text will be moved up/down) and **Size** (relative size in %) of the text.

**Hint:** The following keyboard shortcuts are available: **Ctrl** **⇧** **Num+** for superscript, **Ctrl** **⇧** **Num-** for subscript, **Ctrl** **⇧** **Num\*** to turn superscript/subscript off. (Note: **Num+** is the **+** key on the numeric keypad.)

---

## Letter spacing and character pitch

To change the spacing or pitch of cell contents:

1. Select the desired cells.
2. Choose **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. Giving a value smaller than 100% causes the characters to appear closer together than normal; giving a value larger than 100% causes the characters to appear farther apart.

If you change the **pitch**, the width of the characters themselves, rather than the spacing between them, is changed – thus, the shapes of the characters are changed.

*Note:* Not all printers support altering the character pitch, especially when internal printer fonts are used.

---

## Removing character formatting

If you have accidentally changed the character format of cells, select these cells and apply the **Format > Standard** command (or click the **Reset** button in the **Format > Character** dialog).

Any character formatting you have applied will be removed, and the cell's character format will be reset to the default.

---

## 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 170.

The paragraph format includes the following settings:

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

See the following pages for detailed information.

---

## 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 vertical distance between lines of text in a paragraph.

To change the line spacing of text in a text frame:

1. Select the paragraphs to change.
2. Choose **Format > Paragraph**.
3. In the **Line spacing** group box, select a line spacing system in the drop-down list, and enter an amount (see explanations below).

### Line spacing systems

PlanMaker supports three methods to specify the line spacing for text in a text frame:

■ **Auto** (automatic line spacing)

PlanMaker automatically adapts the line spacing to the largest font size in the paragraph.

If you enter a value of 100 (percent), no additional spacing is added. Entering a larger value increases the space between lines.

■ **Exactly** (fixed line spacing)

Lets you enter exact values for the line spacing. For example, if you enter 12, the line spacing will be set to 12 point.

- **At least** (automatic line spacing with a minimum value)

Same as **Auto**, but lets you specify a minimum value for the line spacing; if some text in the paragraph is larger than this, PlanMaker ignores this minimum value and uses automatic line spacing.

By default, line spacing is set to **Auto** with 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
- Flush (evenly distributed between left and right margins)

---

## Hyphenation (text frames only)

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

Text in a text frame is hyphenated automatically. 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 233).

### Hyphenation settings

If desired, you can change the hyphenation settings or disable hyphenation (setting can be made for individual paragraphs.)

To change hyphenation settings, select the desired paragraphs in the text frame, choose **Format > Paragraph**, and choose one of the options in the **Hyphenation** drop-down list.

Options available:

<b>Option</b>	<b>Result</b>
<b>None</b>	Do not hyphenate at all
<b>Always</b>	Try to hyphenate in every line
<b>Every 2 lines</b>	Try to hyphenate in every 2nd line only
<b>Every 3 lines</b>	Try to hyphenate in every 3rd line only

By default, the option **Always** is selected, which means that PlanMaker tries to hyphenate at the end of each line (if necessary).

---

## **Spacing above/below the paragraph (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>Result</b>
<b>Before</b>	Enter here the distance that should be kept to the end of the preceding paragraph.
<b>After</b>	Enter here the distance PlanMaker should keep to the begin 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. Choose **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 you are finished, choose the **Format > Transfer Formatting** command again or hit 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 cell ranges

To transfer the format of a whole 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 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 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

If 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 inputs values that do not pass validation.

This is useful if 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.  For this option, specify the range of cells under <b>Source</b> , which contains the list of permissible values. So if the cells C1 through C3 hold “dog”, “cat” and “mouse” and you input C1:C3 in <b>Source</b> , only those three values will be allowed.
<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:

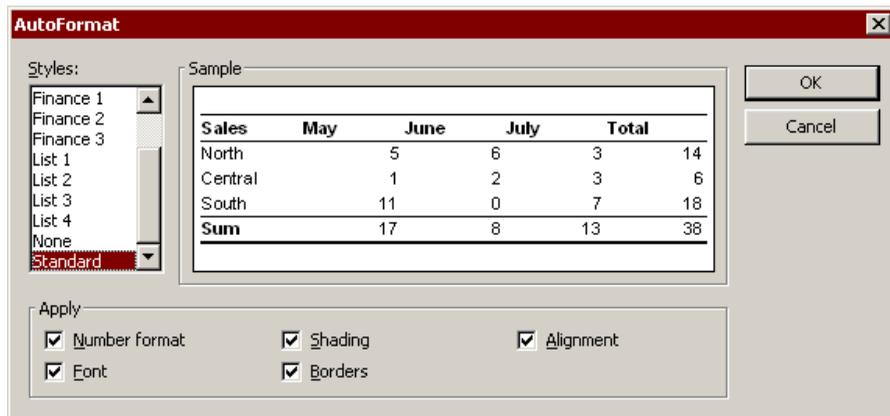
*Absolute* cell references, like \$A\$1, always refer to the cell A1.

*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 133). 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. Choose **Format > Character Style**.
2. Click 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 character 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 **Ctrl** and **⌘** is suggested, as these shortcuts are usually available.

---

## Applying character styles

To apply a character style:

1. Select the desired cells. (Or, press **F2** and select partial cell content, if applying to selected characters.)
2. Choose **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 be changed to the character format defined in the character style.

**Hint:** Character styles can also be applied by selecting them from the font list in 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 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 129). 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 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 **Files of 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.

---

## 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 page dimensions in the **Width** and **Height** boxes.

## 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.

## Margins

Lets you enter values for left, right, top, and bottom margins. Margins are the white space around the borders of a page.

## 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 insert page numbers in a worksheet, create a header or footer, and insert a **Page Number** field (see next section).

## 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). Below you can choose the **Colors** to print these comments in.

## 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 order

Lets you specify in which order worksheets larger than a page will be printed:

### ■ Left to right

Print from left to right, then from top to bottom.

### ■ Top to bottom

Print from top to bottom, then from left to right.

## Print range

Lets you specify the cell range of 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 table.

**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.

## Center horizontally/Center vertically

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

Lets you scale the printout up or down. Only values between 50 and 200 (percent) are valid. If you set **Scaling** to 50, the printout will be scaled down to half of its original size. If you set it to 200, the printout will be doubled in size.

---

## 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).

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 > Page View** 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 in the **Formatting** group box.

**Important:** Please note that you have to *select* the text to be formatted 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.

---

## Page view

The **File > Page View** command displays a preview of the printed document on screen. Using this command can help you avoid wasting money on test prints.

The page view window provides a toolbar with the following buttons:



Use these buttons to scroll 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 box in the middle lets you move to a specific page. Type in the desired page number and press the Enter key .



The left button invokes the **File > Page Setup** command to modify the page format (paper size, orientation, margins, headers and footers, etc.). See section “Page format”, page 139.

The right button invokes the **File > Print** command to print the document. See section “Printing”, page 257.



Use these controls 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 page view window, click the **Close** button.



---

# Search & replace

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

## ■ 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 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** (keyboard shortcut:  .
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 151).
5. Click the **Search** button to begin 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 **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 151).
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

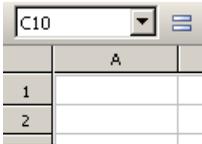
Use the **Edit > Go to** command to jump to a specific cell, cell range, or named cell range.

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 either 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 320)
<b>Faulty Cell</b>	Jump to cells that have been imported incorrectly – for example, cells using a Microsoft 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 170, see also chapter “Charts”, page 189)
- **Text frames** (page 170)
- **Pictures** (page 172)
- **OLE objects** (page 176)
- **Drawings** (page 181)

---

## 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 168).

---

## Inserting objects

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

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

Alternatively, click where you want the upper left corner of the picture to be placed. The picture will be inserted with 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 170).

---

## 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 Handheld PCs)
  
- 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:

<b>Key</b>	<b>Result</b>
<span style="border: 1px solid black; padding: 0 2px;">Tab</span>	Select next object
<span style="border: 1px solid black; padding: 0 2px;">⇧</span> <span style="border: 1px solid black; padding: 0 2px;">Tab</span>	Select previous object

For example, use of the Tab key will select the next object.

---

## Changing position and size of objects

To change the position or size of 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 161.

### Changing the size of objects

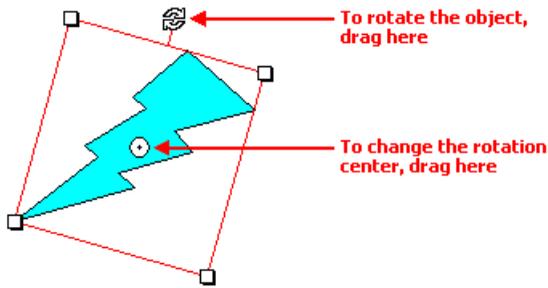
To change the size of an object, select it and a) drag the red lines surrounding it, or b) drag the corner handles.

---

## Rotating and flipping objects

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

When you select a drawing, a handle with double arrows  will appear next to the red frame surrounding it. Drag this handle to rotate the drawing.



Alternatively, drawings can be rotated or flipped 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 certain types of objects.

■ **Flip** group box

Lets you flip the object by checking one or more of the options provided. Available only for certain types of objects.

---

## 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.

For information on adding new colors to color lists, see section “Document properties, Colors property sheet”, page 290.

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.

If the picture is larger than the object, the picture will be cropped. If it is smaller, use the **Position** option to specify if it will be tiled or stretched.

### ■ **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 168.

## ■ Printable

This option is checked by default. If you deactivate it, the object will not print. See also section “Hiding objects”, page 168.

## ■ 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 261).

## ■ 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 261).

## ■ 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 253.

---

## 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 discusses advanced procedures for working with objects, such as hiding and 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 Z order of objects

When two objects overlap, you can specify which of these objects should be in the foreground and which in the background. To do this, proceed as follows:

1. Select one of the objects.
2. Choose **Object > Send to Back** to send it to the back, or choose **Object > Bring to Front** to bring it to the front.

---

## 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 170)
- Text frames (page 170)
- Pictures (page 172)
- OLE objects (page 176)
- Drawings (page 181)

---

# 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 189.

---

# 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, draw a frame with the desired position and size.

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 161.
- **Filling:** Here you can the filling of the object. See section “Object properties, Filling property sheet”, page 162.
- **Lines:** Here you can add border lines. See section “Object properties, Lines property sheet”, page 164.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 164.
- **3D:** Here you can add a 3D effect. See section “Object properties, 3D property sheet”, page 165.
- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 166.

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 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 181.

---

# **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, draw a frame with the desired position and size.  
  
Alternatively, click where you want the upper left corner of the picture to be placed. The picture will be inserted at 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 with 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 161.
- **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 162.
- **Lines:** Here you can add border lines. See section “Object properties, Lines property sheet”, page 164.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 164.

- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 166.

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

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.

- **Rotate by** group box

Lets you rotate the picture in 90 degrees increments.

- **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.

**Hint:** Some of the above settings can also be modified by selecting the picture and a) choosing the **Object > Picture** command, or b) right-clicking the picture and choosing a command from the context menu.

---

## 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, draw a frame with the desired position and size.

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 161.
- **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 162.
- **Lines:** Here you can add border lines. See section “Object properties, Lines property sheet”, page 164.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 164.
- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 166.

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.

You communicate 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.

*Tip:* You can get information about the operation of the Equation Editor by pressing the **F1** key to activate the program's help function.

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): sales@mathtype.com  
Internet: www.mathtype.com

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## 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 and Handheld PCs)

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, draw a frame with the desired position and size.

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

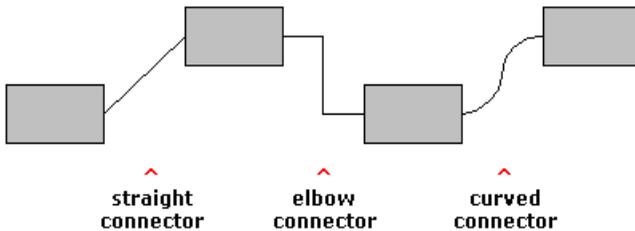
Use the **Curve** tool  to draw Bezier curves.

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 184.

## TextArt objects

**Note:** This feature is not available on Pocket PCs and Handheld PCs.

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:

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. To change its formatting, use the commands **Format > Character** and **Format > Paragraph**.

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 170).

---

## 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 161.
- **Filling:** Here you can change the filling of the object. See section “Object properties, Filling property sheet”, page 162.
- **Lines:** Here you can modify the lines used to draw the object. See section “Object properties, Lines property sheet”, page 164.
- **Shadow:** Here you can add a shadow. See section “Object properties, Shadow property sheet”, page 164.
- **3D:** Here you can add a 3D effect. See section “Object properties, 3D property sheet”, page 165.
- **Properties:** Here you can modify common settings. See section “Object properties, Properties property sheet”, page 166.

For certain types of drawings, additional property sheets are displayed:

---

## 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 184).

### ■ 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:

Option	Result
Top	Align inner text at the top of the frame
Center	Vertically center text between top and bottom of the frame
Bottom	Align inner text at the bottom of the frame
Flush	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, draw a frame with the desired position and size.
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 191.)

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 155. 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 charts** display values as columns. The higher the value, the taller the corresponding column. Column charts are often used to compare values.



**Bar charts** are horizontally oriented versions of Column charts. The data is displayed as horizontal bars instead of vertical columns.



**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



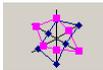
**XY Scatter charts** display values as points and/or lines. Unlike Line charts, the data area must contain both x and y coordinate of the data points.

## 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



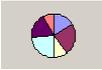
**Surface charts** display values as a three-dimensional shape. Areas plotted in the same color indicate similar values.

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.

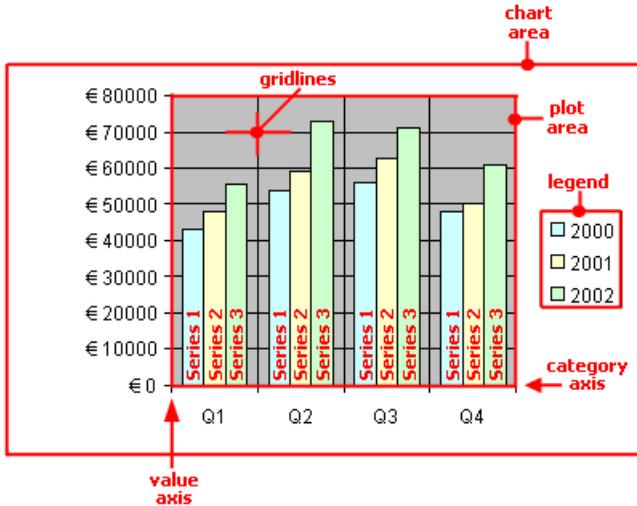
Alternatively, this setting can be switched by choosing **Object > Chart > Data in Columns** or **Data in Rows**, respectively.

---

## 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 210). 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 162.

## 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 162.

---

## 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 162.

### 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 214.

---

## 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 162.

## 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 214.

---

## 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 214.

---

## 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 162.

- **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

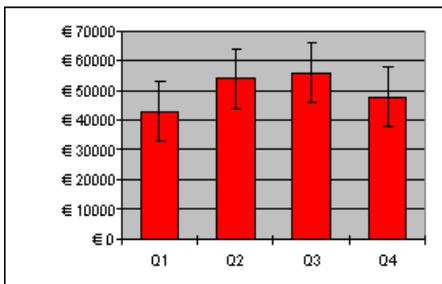
Lets you modify the placement of the labels (relative to the corresponding data points).

**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** or **Show Horizontal Grid** 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 162.

### **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.

Options available:

---

## 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 161.

---

## 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 166.

---

## 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 191.

---

## 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 193.

- **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 208.

■ **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 209.

---

## 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**

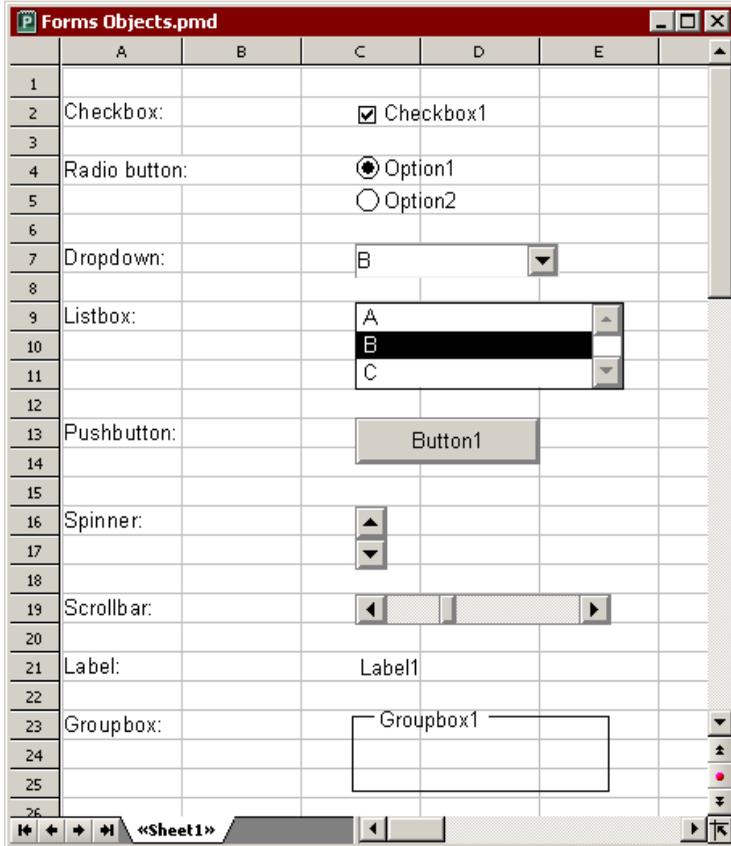
To deactivate the automatic update of charts, choose **File > Properties**, switch to the **Calculate** property sheet, and uncheck the **Recalc automatically** option in the **Charts** group box.

As a result, charts will only be updated when the **Extras > 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 155).

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. Drag the mouse cursor in the document to create a rectangle with the desired dimensions.

*Or:* Click on the spot at which the upper left corner of the object should appear. The object will then be inserted in a standard size.

The object is then inserted.

You will find detailed information about each individual type of forms object in the section “Forms objects in detail”, page 221.

## 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 261)
- Toggle sheet protection (see the section “Sheet protection”, page 261)

**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 155).

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 221.

---

## 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 will cover the individual types of forms objects in detail.

---

### 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 161.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

## 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

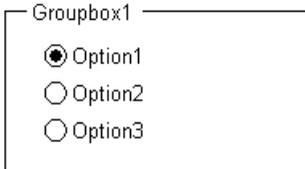
To insert a *radio button*, use the **Object > New Forms Object > Radio button** command.

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 161.

### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

## 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 161.

### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

### 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 161.

### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

### 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 161.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

## 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 161.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

## 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 161.

### Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

### 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 161.

## Properties property sheet

On this property sheet you can alter general object settings. See the section “Object properties, Properties property sheet”, page 166.

## 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 covers information on working with the spell checker:

## ■ Setting up the language for spell checking

The **Extras > Preferences** command enables you to change the language for spell checking (if you have installed multiple languages).

## ■ Using the spell checker

There are two different ways to use the spell checker:

**Retroactive spell checking:** lets you check and correct whole documents.

**Spell checking as you type:** checks each word you type immediately. When the spell checker detects a typing mistake it presents a dialog box that lets you correct the word.

## ■ Editing user dictionaries

You can add words PlanMaker did not yet know to your user dictionary. If you added a word inadvertently, use the **Extras > Edit User Dictionaries** command to delete it.

## ■ SmartText

Use the *SmartText* feature to set up shorthand codes for common phrases, for example, “lax” for “Los Angeles”.

See the following pages for detailed information.

---

## Setting up the language for spell checking

The **Extras > Preferences** command allows you to change the language for spell checking as necessary.

Choose the **Extras > Preferences** command, switch to the **Language** property sheet, and select the desired language in the **Language** drop-down list.

---

# Retroactive spell checking

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

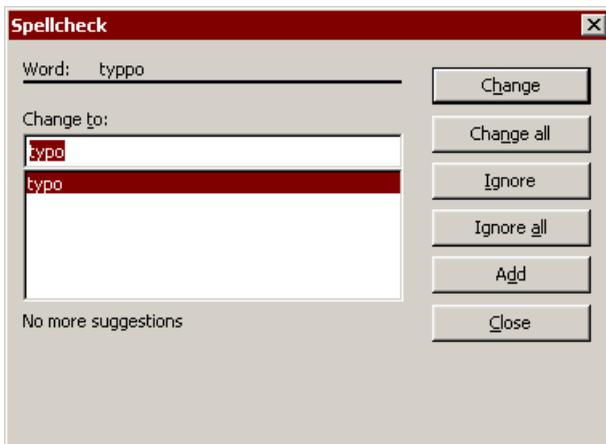
Use **Extras > Check Spelling** to check the current worksheet word for word for spelling errors.

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**.

When an unknown word is found, PlanMaker displays it in a dialog box.



In the list under **Change to**, PlanMaker presents suggestions for the correct spelling of the word (when it has found some).

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 its 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 worksheet, 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 **Extras > Preferences**, switch to the **Language** property sheet, and check the **Check spelling as you type** option.

From that point on, every time you type a word and hit the space or Enter key, PlanMaker checks the spelling and immediately displays a dialog box if the word is unknown. For information on this dialog box, see the previous section.

You will notice that there is also a **SmartText** button in the dialog box. This is for creating SmartText entries. You will learn more about this feature in section “SmartText”, page 253.

---

## Editing user dictionaries

Use the **Extras > Edit User Dictionaries** command to examine and edit the words you have added to your user dictionary.

To remove an entry from a user dictionary, click the **Delete** button.

*Note:* PlanMaker creates a separate user dictionary for each language. To switch to a different language, use the **Language** list.

---

## SmartText

Use the **Insert > SmartText** command to create, insert, and edit SmartText entries.

PlanMaker’s *SmartText* feature allows you to create “shorthand codes” for words or phrases you are using frequently. For example, if you create a SmartText entry named “lax” for the text “Los Angeles”, whenever you type “lax”, it will automatically be replaced by “Los Angeles”.

In this section you will learn all about PlanMaker’s SmartText feature:

### ■ Creating SmartText entries

SmartText entries can be created using a) the **Insert > SmartText** command, or b) the **Check spelling as you type** option of the spell checker.

### ■ Inserting SmartText entries

If the **Expand SmartText entries** option is activated, SmartText entries can be inserted by typing their name and pressing the space bar or Enter key .

Alternatively, the **Insert > SmartText** command can be used to insert SmartText entries.

## ■ Editing SmartText entries

The **Insert > SmartText** command also allows you to edit, rename, or delete SmartText entries.

See the following pages for detailed information.

---

## Creating SmartText entries

SmartText entries can be created using a) the **Insert > SmartText** command or b) the **Check spelling as you type** option of the spell checker:

### A) Using the **Insert > SmartText** command

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

1. Choose **Insert > SmartText**.
2. Click the **New** button.
3. Enter a name for the new SmartText entry.

In this case, type “lax” (without the quotation marks).

4. Click **OK** to confirm.
5. Enter the desired text.

In this case, type “Los Angeles” (without the quotation marks).

6. Click **OK** to confirm.
7. Click **Close** to close the dialog.

The SmartText entry has now been created. For information on how to use it, see section “Inserting SmartText entries” below.

### 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 **Extras > Preferences** dialog (**Language** property sheet) is activated.
2. Type “lax” (without the quotation marks).
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” (without the quotation marks).
6. Click **OK** to confirm.

The SmartText entry has now been created. For information on how to utilize, see section “Inserting SmartText entries” below.

To learn more about the on-the-fly spell checker, see section “Spell checking as you type”, page 235.

---

## Inserting SmartText entries

To insert a SmartText entry you have created (as described in the last section):

1. Type in the name of the SmartText entry. In this case, type “lax”.
2. Press space bar or Enter key , or type in any kind of punctuation mark.

PlanMaker automatically replaces the text “lax” with “Los Angeles”.

**Note:** If this doesn’t work, the **Expand SmartText entries** option is deactivated. Choose **Extras > Preferences**, switch to the **Language** property sheet, and activate this option to have SmartText entries expanded automatically.

Alternatively, SmartText entries can be inserted by choosing the **Insert > Smart-Text** command, selecting the desired entry, and clicking the **Insert** button.

---

## Editing SmartText entries

The **Insert > SmartText** command can also be used to edit SmartText entries:

### ■ **Creating a new entry**

To create a new SmartText entry, click the **New** button (see section “Creating SmartText entries”, page 237).

### ■ **Deleting**

To delete a SmartText entry, select it and click **Delete**.

### ■ **Renaming**

To change the name (i.e., “shorthand code”) of a SmartText entry, select it, click **Rename**, and enter the new name.

### ■ **Editing**

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**

To insert the content of a SmartText entry into the document, select it, and click **Insert** (see section “Inserting SmartText entries”, page 238).



---

# Managing documents

PlanMaker provides the following functions for efficiently managing and accessing documents:

## ■ Quick Paths

*Quick Paths* allow you to easily switch to frequently used folders when opening or saving files.

## ■ Document summary

The *document summary* can be used to store additional information along with the document. You can specify title, subject, author, keywords, and a short description of the document.

## ■ File Manager

Use the *File Manager* to locate, preview, open, delete, or print PlanMaker documents. You can also search documents by file name, title, subject, author, keywords, etc.

See the following pages for detailed information.

---

## Quick Paths

*Quick Paths* allow you to switch easily to frequently used folders when opening or saving files.

Quick Paths are named pointers to actual paths on your hard disk. For example, you could create a Quick Path “Documents” pointing to c:\My Documents\SoftMaker. After that, you can switch to this folder, e.g., in the **File > Open** dialog, by clicking the **Quick path** button and selecting “Documents” from the Quick Paths list.

Quick Paths are not only available in the **File > Open** dialog, but in most kinds of file dialogs.

---

## Creating Quick Paths

To create a new Quick Path:

1. Open any type of file dialog, for example, the **File > Open** dialog.
2. Click the **Quick Path** button.
3. In the resulting menu, choose the **Create new Quick Path** command.
4. Enter a name for the new Quick Path (e.g., “Documents”).
5. Enter the path for the new Quick Path (e.g., “c:\My Documents\SoftMaker”).
6. Click **OK** to confirm.

You have now created a new Quick Path “Documents” pointing to the folder C:\MY DOCUMENTS\SOFTMAKER.

**Quick Paths including search patterns:** Quick Paths can also include search patterns for file names. For example, if you create a Quick Path pointing to c:\My Documents\SoftMaker\\*.\*, it will change to the folder C:\MY DOCUMENTS\SOFTMAKER and display all file names starting with the letter “a”.

**Keyboard accelerators:** You can assign a key to a Quick Path by using the “&” sign. For example, if a Quick Path named “My &Reports” is created, it can be activated by opening the list of Quick Paths and pressing the  key.

---

## Accessing Quick Paths

Quick Paths are available in all file dialogs, e.g., the **File > Open** dialog or the **Object > New Picture** dialog.

To access a Quick Path:

1. In any type of file dialog, click the **Quick Path** button.
2. A menu listing all available Quick Paths appears. Click the desired Quick Path.

PlanMaker will then switch to the folder defined in the selected Quick Path.

---

## Editing Quick Paths

To edit a Quick Path:

1. In any type of file dialog, click the **Quick Path** button.
2. In the resulting menu, choose the **Edit Quick Path** command.
3. A dialog box appears. Click the Quick Path to edit.
4. Click the **Edit** button to modify name or target folder, or click the **Delete** button to delete the Quick Path.

---

## Document summary

The *document summary* can be used to store additional information along with the document. You can specify a title, subject, author, keywords and a short description of the document.

To access the document summary, choose **File > Properties**, and switch to the **Summary** property sheet. Fill the input boxes as desired and click **OK** to confirm.

*Hint:* The search function of the *File Manager* (see next section) is able to search for information entered in the document summary. For example, you can search for documents with a specific title, author, keyword, etc.

**Request summary information when saving?** If desired, PlanMaker will automatically ask the user to fill out the document summary when a new document is saved for the first time. Choose **Extras > Preferences**, switch to the **Files** property sheet, and activate the **Request summary information when saving** option.

---

## File Manager

Use the *File Manager* to locate, preview, open, delete, or print PlanMaker documents. You can also use the File Manager to search documents by file name, title, subject, author, keywords, etc.

To launch the File Manager, choose **File > File Manager**.

*Hint:* Under Windows and Linux, the File Manager window can be resized and moved to any position on the screen.

In the File Manager dialog box, columns can be resized by dragging the column headers. To change the sort order, click the corresponding column head.

---

## File Manager buttons

The File Manager buttons have the following functions:

- **Open** button

Click this button to open the selected file.

*Hint:* Alternatively, double-click the desired file to open it.

- **Close** button

Click this button to close the File Manager.

- **Search** button

Click this button to a) search for files, or b) switch to another folder. See section “Searching with the File Manager” below for details.

- **Output** button

Click this button to output the selected file. A sub-menu with the following options appears:

**E-mail:** Send document via e-mail

**Print:** Print document

- **Rename** button

Click this button to rename the selected file.

- **Delete** button

Click this button to delete the selected file.

- **Preview** button

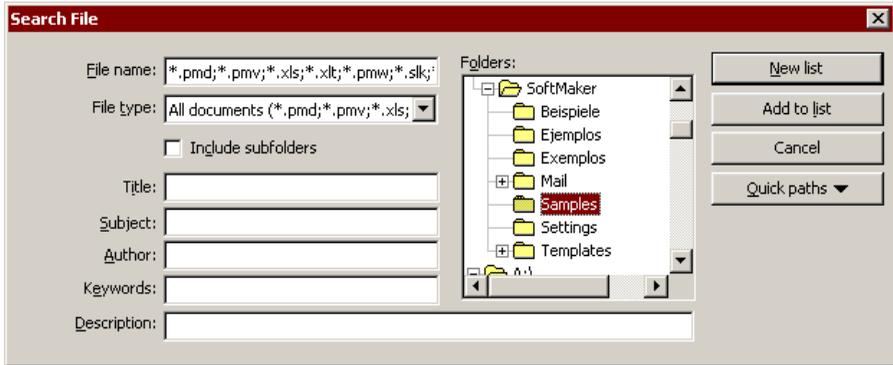
Click this button to preview the selected file.

A preview window appears. To open the document displayed in the preview window, click **Open**. To close the preview window, click **Cancel**.

---

## Searching with the File Manager

Use the **Search** button in the File Manager to a) search for files, or b) switch to another folder.



You can search files by file name, folder, file type, and document summary (title, subject, author, keywords).

Multiple criteria can be combined: For example, if you select a specific folder, *all* documents located in the folder are displayed. If you also enter text in the **Title** input box, only documents that are in the specified folder *and* have the specified title are displayed.

Options available in the Search dialog box:

- **New list** button

Starts a search with the specified criteria, and displays the resulting file list in the File Manager.

- **Add to list** button

Starts a search with the specified criteria, and *appends* the resulting file list to the existing file list in the File Manager.

- **File name**

Lets you specify the file name or file name search pattern to search for.

For example, if you search for MyReport.pmd, only files named MYREPORT.PMD are found. If you use a search pattern such as My\*.pmd, all files starting with “My” are found.

### ■ **File type**

Lets you specify the type of files to search for.

For example, if you want to search for Excel files, choose the Excel format in the **File type** list.

### ■ **Title, Subject, Author, Keywords**

Lets you search the document summaries (see also section “Document summary”).

If you fill out multiple fields, PlanMaker will only find files where *all* selected criteria are matched.

The search function is not case sensitive (i.e., it does not differentiate between lowercase and uppercase letters).

### ■ **Folder**

Use this control to specify the folder to search in.

### ■ **Include subfolders**

If this option is checked, PlanMaker will not only search the specified folder but also all of its subfolders.

---

# Outliner

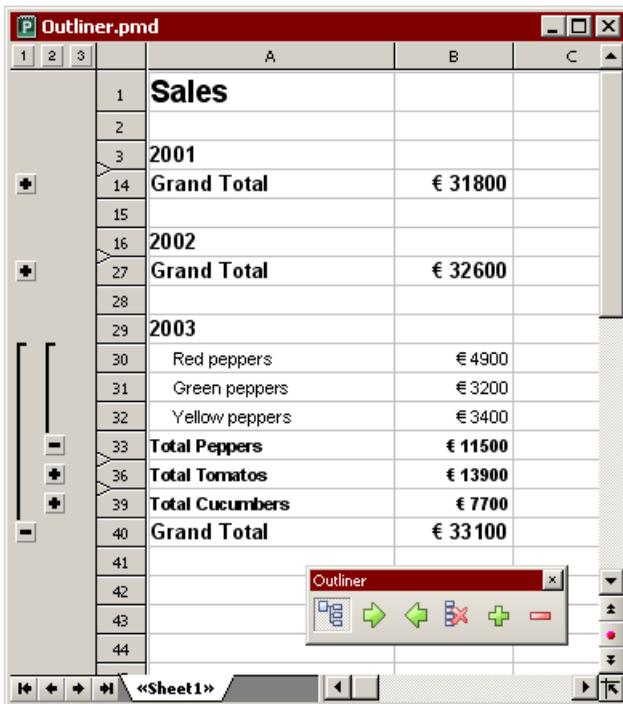
The *Outliner* allows you to create an *outline* for a worksheet. In outlined worksheets, you can easily decide whether just the *summarized* data should be displayed, or the *detail* data should appear as well.

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 261).

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

Use the **Format > Link** command to create and edit hyperlinks.

*Hyperlinks* are what the user sees in a web browser: Text that is underlined, indicating that you can click on it to follow the link to a different PlanMaker file, or to an Internet address (e.g., <http://www.softmaker.com>).

### Creating links

To create a link:

1. Select the text or cell you want to apply a link to.
2. Choose **Format > Link**.
3. Enter the link target in the **URL or file name** input box.

To link to Web pages, enter “<http://>” followed by the address of the desired page, e.g., “[http://www.softmaker.com/index\\_en.htm](http://www.softmaker.com/index_en.htm)”.

4. If desired, you can also enter the target (bookmark or cell reference) of the link (see below).
5. Click **OK** to confirm.

The link is now created.

## Using bookmarks and cell references in links

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 example: If you set the **URL or file name** to “Sales.pmd” and, below, enter “D42” as the target, the link will open the file SALES.PMD and jump to cell D42.

## Using place holders 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 in PlanMaker, set the cursor into the link text and choose **Edit > Go to Link**. PlanMaker will open the target document.

*Hint:* Alternatively, click on the link text with the mouse.

## Editing and removing links

To edit a link, select the link text and choose **Format > Link**.

To remove a link, select the link text and choose **Format > Remove Link**.

---

# Saving HTML documents

To save the current document in HTML format:

1. Choose **File > Save as**.
2. In the **Files of type** list, select the **HTML** format.
3. Enter a file name and click **OK**.

PlanMaker saves the document as a HTML document. All formatting not supported in HTML format is automatically removed.



---

# Printing and e-mailing

This chapter provides information on printing and e-mailing documents:

## ■ Printing

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

## ■ E-mailing

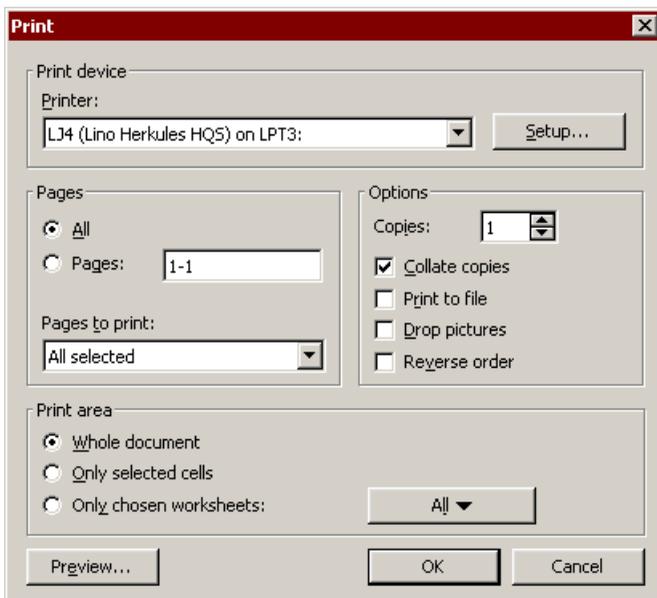
The second section covers e-mailing documents using the **File > Send** command.

---

## Printing

*Note:* Printing is not supported on Pocket PCs.

To print a document, choose **File > Print** or use the  Ctrl  P keystroke.



Dialog box options:

## Printer

Lets you choose the desired printer.

The **Setup** button opens a window with options to setup and configure the connected printer(s).

## 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-          Prints all pages from page 12 to the end of document

-12          Prints all pages from the beginning of document to page 12

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

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

In addition, the **Pages to print** option lets you select whether all pages, just even pages, or just odd pages will print.

## 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 on the current worksheet that are currently selected.

### ■ Only chosen worksheets

Print only the selected worksheets. To select which sheets to print, click the button to the right of this option and check the desired worksheets.

## Options

This part of the dialog contains additional printing options:

### ■ Copies

Lets you enter the number of copies to print.

### ■ Collate copies

If this option is checked, a complete copy of the document is printed before printing the next copy.

If it is not checked, first the first page is printed  $x$  times, then the second page is printed  $x$  times, etc.

### ■ Draft mode (Handheld PCs only)

If this option is checked, pictures are printed in low resolution.

### ■ Print to file

If this option is checked, the printout is output to a file rather than to a printer.

### ■ Drop pictures

If this option is checked, pictures are omitted in the printout. This is useful for printing drafts.

### ■ Reverse order

If this option is checked, the print order is reversed, and the document is printed from the last page to the first.

To start printing, click **OK**.

*Hint:* Before actually printing a document, it might be useful to preview the printout via the **File > Page View** command.

---

# E-mailing

To send the current document via e-mail:

1. Choose **File > Send**.
2. Select the desired file format. (The resulting e-mail will contain the PlanMaker document as an attachment in this format.)

PlanMaker will generate an e-mail containing the document as an attachment and pass it to your default e-mail application.

---

# 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 **Extras > 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 **Extras > 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 **Extras > 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 **Extras > 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

Use *document protection* to password-protect the current document against reading and/or writing.

To activate document protection, choose **File > Properties**, switch to the **Protection** property sheet, and select the desired protection type:

- **No protection**
- **Read protection** (password required to open the document)
- **Write protection** (document can be opened, but password is required for saving)
- **Protection depending on password** (combination of the two protection types mentioned above)

See the following pages for detailed information.

---

## Activating document protection

To activate document protection:

1. Choose **File > Properties**.
2. Switch to the **Protection** property sheet.
3. Select the desired protection type (see below).
4. Enter the read and/or write password (4 to 15 characters, case-sensitive).

**Important:** If the password is lost, the document can no longer be opened or saved. Please note that passwords are case-sensitive!

5. Click **OK**.
6. PlanMaker asks you to enter the password once again to confirm.
7. Click **OK**.
8. Click **OK** to exit the dialog box.
9. Save the document to finalize the protection settings.

After that, PlanMaker will ask for the password every time the document is opened. Access will only be granted if the correct password is entered.

The following types of document protection are available in the above dialog:

■ **No protection**

Do not protect the document (this is the default setting.)

■ **Read protection**

Document cannot be opened unless the correct password is entered. In addition, the document is encrypted.

■ **Write protection**

Document can not be saved unless the correct password is entered.

■ **Protection depending on password**

Document protection depends on the password entered when the user tries to open the document:

No/wrong password: Document cannot be opened.

Read password: Document can be opened but *not* saved.

Write password: Document can be opened and saved.

---

## Deactivating document protection

When a user opens a password-protected document and enters the correct password, the document protection will be disabled *temporarily* only. When the document is closed and re-opened, users will be asked to enter the password again.

To *permanently* deactivate document protection:

1. Open the document.
2. Choose **File > Properties**.
3. Switch to the **Protection** property sheet.
4. Select the **No protection** option.
5. Click **OK** to confirm.
6. Save the document to finalize the protection settings.

Document protection is deactivated.

When the document is opened again, no password is required. Every user will be able to open and save it.



---

# Working with other file formats

Apart from documents stored in PlanMaker's proprietary file format, PlanMaker can open documents created by other programs such as Microsoft Excel.

In addition, using the **Save As** command, files can be saved in alternative file formats.

This chapter provides information regarding alternative file formats:

- **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 various file formats.

### **Saving a document in a different file format**

To save the current document in a different file format, choose **File > Save as**, and in the **Files of type** drop-down list, select the desired file format.

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, choose **File > Open**, and in the **Files of type** drop-down list, select the desired file format.

For a list of supported file formats, see section “Supported file formats” below.

---

## Supported file formats

The **Files of type** list 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**

PlanMaker’s default file format (file name extension: .PMD)

- **PlanMaker template**

Template for PlanMaker documents (see also section “Document templates”, page 136)

- **Microsoft Excel file**

Microsoft Excel file format. For detailed information on this format, see section “Working with Excel files”, page 272.

- **Microsoft Excel template**

Template for Microsoft Excel documents.

- **TextMaker file** (export only)

For exporting PlanMaker files to SoftMaker’s word processor TextMaker.

- **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.

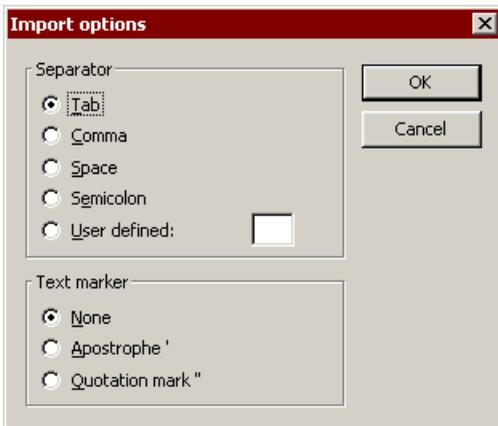
- **Text file**

Plain text file format (DOS, Windows or Unicode character set). For detailed information on this format, see 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 (e.g., quotation marks).

### Example:

You want to store the following table as a text file:



	A	B	C
1	2	3	4
2	9	8	7
3			

If Separator is set to semicolon and Text marker is set to double quotation marks, the resulting text file will be exported as follows:

```
"2";"3";"4"  
"9";"8";"7"
```

---

## Working with Excel files

This section provides 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.

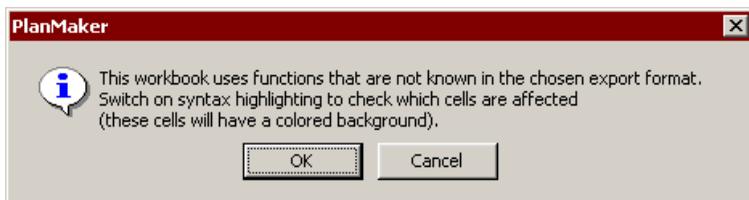
These cells must be revised individually. Compare their content with the content of the corresponding cells in the Excel document, and replace incompatible arithmetic functions with PlanMaker functions. For detailed descriptions of all arithmetic functions supported by PlanMaker, see section “Functions from A to Z”, page 326.

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 272.

### 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 Handheld PC users

*Note:* This section is relevant to users of the **Pocket PC** and **Handheld PC** 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/Handheld PC 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/Handheld PCs 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**.

Excel for Windows documents will then no longer be converted when copied to a mobile device.

---

# 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   (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:

- Choose **Window > Cascade** to display windows cascading from the upper left to the lower right of the screen.
- Choose **Window > Tile vertically** or **Window > Tile horizontally** to display the windows side-by-side.

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 60 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.

## ■ Preferences

To modify PlanMaker's *global* preferences, use the **Extras > Preferences** command. These settings affect 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 display

To change the display of a document, use the **View** menu commands described in this section.

## ■ Customizing toolbars

To customize toolbars such as Standard toolbar, Formatting toolbar, etc., use the **View > Toolbars** command.

## ■ Customizing keyboard shortcuts

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

## ■ Customizing AutoFill lists

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

See the following pages for detailed information.

---

# Preferences

To modify PlanMaker's *global* preferences, use the **Extras > Preferences** 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. 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.

The Preferences dialog contains the following property sheets:

---

## Preferences, Edit property sheet

The **Edit** property sheet in the **Extras > Preferences** 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 here.

### ■ 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* and *Handheld 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 296). After that, PlanMaker will only recalculate when the **Extras > Recalculate** command is selected.

---

## Preferences, General property sheet

The **General** property sheet in the **Extras > Preferences** dialog box contains common PlanMaker 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 for a document.

### Beep on errors

If this option is checked, a sound plays when PlanMaker displays an error or warning message.

## 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.

## Show warning when loading OLE objects

**Pocket PCs and Handheld PCs only:** When this option is enabled, PlanMaker displays a warning that OLE objects cannot be displayed on Pocket PCs and Handheld PCs when you open a document containing such objects.

## 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:** This option affects the navigation keys (the small “joystick” below the display) that most Pocket PCs are equipped with. It also affects the cursor keys of external keyboards.

Use this option to choose the function of navigation keys in documents and dialogs:

- **Always scroll by page:** The navigation keys scroll one page in the desired direction.
- **Move in listboxes, scroll elsewhere:** The navigation keys usually scroll (same as above), except when you tap on a listbox in a dialog box. In that case, the navigation keys can be used to navigate within the listbox.

- **Move cursor:** The navigation keys do not scroll, but move the cursor.

Additionally, if the option **Use horizontal cursor keys to scroll** is checked, the horizontal navigation keys can be used for scrolling. If it is not checked, these keys move the cursor.

## Show tooltips

Determines whether tooltips are displayed.

Tooltips are small messages that show helpful information when the mouse is placed, e.g., on a toolbar icon.

## Maximum number of undo steps

Determines how many of the user's actions can be reversed. Note: The higher the value, the more memory is consumed.

**Hint:** On *Pocket PCs* and *Handheld PCs*, it is *not* recommended to increase this value, since internal program memory is limited on such devices.

## Mouse wheel

**Linux only:** If your mouse has a mouse wheel, you can specify here the scrolling increment for a turn of the wheel: by page (one complete page) or by a certain number of lines.

## 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 **Extras > Preferences** dialog box contains settings related to the user interface of PlanMaker:

## Dialog style

The look of PlanMaker's dialog boxes and toolbars can be changed by selecting a **Dialog style** option. This does not change the way you use the software; just choose the setting that you like the most.

## Language

Here you can 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 (if available).

## Window Manager dialogs

**Linux only:** If this option is checked, PlanMaker's dialogs are drawn by the Window Manager installed on the system.

If unchecked, PlanMaker draws all dialogs by itself. This is faster, but has the disadvantage that dialogs can no longer be dragged out of the PlanMaker program window.

## Window Manager positioning

**Linux only:** If this option is checked, PlanMaker's dialogs are positioned by the Window Manager installed on the system.

If unchecked, PlanMaker positions dialogs (centered within the program window).

## Show fonts in font list

Determines whether font names in font lists are displayed in their actual font.

## Use system file dialogs

**Windows only:** Determines whether PlanMaker shows its own file dialogs or default Windows file dialogs.

## 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.

## Smooth edges of screen fonts

Depending on your operating system, PlanMaker supports smoothing of screen fonts through anti-aliasing or ClearType. With this setting, you can specify your preferred smoothing technology, or turn off smoothing altogether.

*Note:* On slower *Pocket PCs*, activating ClearType has a noticeable effect on the system's responsiveness.

---

## Preferences, Language property sheet

The **Language** property sheet in the **Extras > Preferences** dialog box contains settings related to the spell checker and hyphenation module:

### Language

Select the language for spell checker and hyphenation here.

### Automatic spellcheck

Determines whether PlanMaker automatically checks the spelling:

#### ■ Disabled

Choose this option to disable automatic spell checking.

*Hint:* To manually check the spelling of a document, choose **Extras > Check Spelling** (see section “Retroactive spell checking”, page 234).

#### ■ Check spelling as you type

Choose this option to check spelling as you type. When an unknown word is typed, a dialog box with spelling suggestions will appear (see section “Spell checking as you type”, page 235).

**Beep on errors:** If this option is checked, a sound plays when the on-the-fly spell checker detects an unknown word.

## Expand SmartText entries

The *SmartText* feature lets you create “shorthand codes” for frequently used words or phrases. If this option is checked, SmartText entries can be inserted by typing their name and pressing the space bar or Enter key .

*Hint:* Alternatively, the **Insert > SmartText** command can be used to insert SmartText entries. For more information, see section “SmartText”, page 236.

---

## Preferences, Files property sheet

The **Files** property sheet in the **Extras > Preferences** dialog box 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 when you have actually moved the template folder to another place.

### Default file format

Lets you choose which file format you prefer for saving new documents in: PlanMaker’s own file format or Microsoft Excel file format.

### “Saving” group box

Contains the following options:

- **Create backup copies**

Check this option if you want PlanMaker to create .BAK files of the last saved version of a file when saving documents.

## ■ Request summary information when saving

Check this option to be prompted to enter additional information on new documents (author, title, keywords, etc.) when saving. See also section “Document summary”, page 243.

## ■ Autosave document every ... minutes

Indicates the time between Autosave intervals.

*Autosave* is a feature designed to keep your documents even in the event of system crashes or power failures: PlanMaker saves your document at regular intervals to temporary files. If PlanMaker is restarted after a crash, it finds temporary auto-save files and asks you whether you want to restore the work from these files.

## Recently used files

Determines the number of entries listed under the **File** menu for recently used files.

*Note:* On Pocket PCs, the recently used files list is located in the **Recent** menu.

## Additional font paths

**Linux only:** Here you can specify paths to supplementary fonts for PlanMaker. To do so, enter the folder 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

To modify the *document properties*, use the **File > Properties** command. These settings affect the current *document* only.

The document properties dialog contains the following property sheets:

---

## Document properties, Summary property sheet

The **Summary** property sheet in the **File > Properties** dialog box lets you edit the document summary.

The *document summary* can be used to store additional information along with the document. You can specify title, subject, author, keywords, and a short description of the document.

For more information, see section “Document summary”, page 243.

---

## Document properties, Colors property sheet

The **Colors** property sheet in the **File > Properties** dialog box lets you modify the color palette of the current document.

When you open a color list (for example, the color list in the Formatting toolbar), only a small subset of the up to 16 million colors available is displayed. This subset is called the *color palette* of the document.

The color palette of a document can be modified as desired. You can add new colors and modify existing colors. However, the first 24 colors are default colors that cannot be changed.

**Important:** Changes to the color palette are stored with the document. Therefore, each document can have a different color palette.

### Adding colors

To add a new color:

1. Choose **File > Properties** and switch to the **Colors** property sheet.

**Hint:** Alternatively, click the last entry (**Define color...**) in any color list to define/modify colors.

2. Set the desired color using the color controls available in the dialog (see section “How to use the color controls” below).
3. Click the **New** button.
4. Enter a name for the new color and click **OK**.
5. Click **OK** to close the dialog.

PlanMaker adds the color to the color palette of the document. It will now be available in all dialogs that contain a color list.

## Modifying colors

To modify a color:

1. Choose **File > Properties** and switch to the **Colors** property sheet.

*Hint:* Alternatively, click the last entry (**Define color...**) in any color list to define/modify colors.

2. In the **Color palette** list, select the color to be modified.

*Note:* The first 24 colors in the list are default colors that cannot be changed. Only user-defined colors can be modified.

3. Make the desired modifications using the color controls provided in the dialog (see section “How to use the color controls” below).
4. Click the **Change** button.

## Deleting and renaming colors

To delete or rename a color, select the color and click **Delete** or **Rename**.

*Note:* The first 24 colors in the color palette list are default colors that cannot be renamed or deleted.

## How to use the color controls

The color controls provided in the dialog described above allow you to define a color in many different ways. It does not matter which procedure you choose, just pick the one you prefer.

Procedures available:

### ■ Using color pane and brightness control

The easiest way to pick a color is to use the large color pane and the brightness control to the right. The color pane displays all available color hues and saturations; the brightness control adjusts the brightness.

To pick a color, click the desired color in the color pane. Then click the desired brightness in the brightness control.

- **Using the hue, saturation, and luminescence controls**

Alternatively, colors can be defined using the **Hue**, **Sat** (saturation), and **Lum** (luminescence/brightness) controls displayed below the color pane. You can enter values between 0 and 240.

- **Using the red, green, and blue controls**

Another way to define a color is to specify its RGB (red, green, blue) components using the **Red**, **Green**, and **Blue** controls. You can enter values between 0 and 255.

- **Using the Standard property sheet** (only available when selected from a color list)

If you entered the color dialog box using the **Define Color...** entry in a color list rather than choosing **File > Properties**, the dialog box contains an additional **Standard** property sheet. This property sheet displays a selection of pre-defined colors. Click the desired color to select it.

---

## Document properties, Internet property sheet

The **Internet** property sheet in the **File > Properties** dialog box can be used to modify the colors and the background of HTML documents.

- **Don't save colors in HTML file**

If this option is checked, the color scheme set up in this property sheet will not be stored in the HTML document, but only displayed on the screen.

- **Show blink style as**

Text formatted in blink style will not be displayed blinking but in the selected color.

- **Background color**

Determines the background color of the current document.

- **Background picture**

To display a picture in the background of the current document, enter its path and filename, or click **Browse** to select a picture file.

Note: PlanMaker does not display background pictures on the screen; the picture will be displayed in Internet browsers only.

- **Unvisited link**

Determines the color of links that have not yet been visited.

- **Visited link**

Determines the color of links that have already been visited.

- **Current link**

Determines the color of the currently selected link.

---

## Document properties, Info property sheet

The **Info** 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 300).

### ■ 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 300).

### ■ Protection indicator

If this option is checked, a green triangle will be displayed in all *unprotected* cells when sheet protection is activated (see also section “Sheet protection”, page 261).

### ■ 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 87.

### ■ 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 168), you can *hide* objects to make them invisible.

Check this option to display hidden objects anyway.

## 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

This button can be used to change internal compatibility options related to older versions of PlanMaker and Microsoft Excel. These options are set automatically and 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 **Extras > 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 **Extras > 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 calculation 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 password-protect the current document.

For more information, see section “Document protection”, page 265.

---

## 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.

---

## Customizing the display

This section provides information on how to customize the display of spreadsheets on screen:

### ■ Zoom level

The zoom commands allows you to adjust the zoom level of a worksheet.

### ■ Displaying formulas instead of results

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

### ■ Syntax highlighting

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

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).

---

## **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

Formula	Green
Fixed positive number	Dark blue
Fixed negative number	Light blue
Fixed logical value	Brown
Fixed text string	

## What the background color indicates

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

Background color	Error type
White	<p><b>Formula returns an error value.</b> The calculation in this cell returns an error value (caused, for example, by a division by zero).</p> <p><b>Hint:</b> If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. For more information on error values, see section “Error values”, page 320.</p>
Cyan	<p><b>Syntax error in formula.</b> The calculation in this cell has a syntax error (caused, for example, by a missing parenthesis or missing arguments).</p> <p><b>Hint:</b> If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. <i>If you don't correct the formula, it will be replaced by the text string #NULL! when the document is saved!</i></p>
Light gray	<p><b>Function not exportable.</b> The calculation in this cell uses an arithmetic function that cannot be exported to the 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>
Magenta	<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>

**Hint:** See corresponding function description in this manual.

## Yellow

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

**Hint:** Replace the function with a corresponding PlanMaker function. For a list of all PlanMaker functions, see section “Functions from A to Z”, page 326, or this manual’s index.

---

## Customizing toolbars

*Toolbars* (such as Standard toolbar, Formatting toolbar, etc.) provide instant access to PlanMaker’s most important functions. Each icon displayed in a toolbar stands for one menu command. When you click the icon, the corresponding menu command is invoked.



*A toolbar (here: the Standard toolbar)*

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

This section provides information on customizing toolbars with the **View > Toolbars** command:

- Showing/hiding toolbars
- Positioning toolbars
- Managing toolbars (creating new toolbars, deleting and renaming toolbars)
- Editing toolbar icons (adding, removing, and moving icons)
- Using custom toolbar icons (for starting other programs)

See the following pages for detailed information.

---

## Showing/hiding toolbars

To show/hide toolbars:

1. Choose **View > Toolbars**.
2. In the **Toolbars** list, check the toolbars to be displayed; uncheck the toolbars to hide.
3. Click **Close** to close the dialog box.

The toolbars will now be displayed accordingly.

**Hint:** Alternatively, right-click any toolbar to open the context menu, and click one of the toolbars listed in the menu to show/hide it.

### Visible in mode...

Some toolbars are displayed only when a specific mode is activated. For example, the Formatting toolbar is only visible in Edit mode. After switching to Object mode, the Formatting toolbar will no longer be displayed, as its functions are inapplicable in Object mode.

To determine in which mode a specific toolbar is displayed, choose **View > Toolbars**, select the toolbar, and choose the desired option in the **Visible in mode...** list.

**Note:** Normally, you should not change this option for any of the program's built-in toolbars (Standard toolbar, Formatting toolbar, etc.), but only for user-defined toolbars.

Options available:

Option	Explanation
<b>All modes</b>	Display toolbar in <i>all</i> modes. Example: Standard toolbar
<b>Edit mode</b>	Display in <i>Edit mode</i> , hide in Object mode (also see section "Object mode", page 156). Example: Formatting toolbar
<b>Object mode</b>	Display in <i>Object mode</i> , hide in Edit mode (also see section "Object mode", page 156). Example: Object toolbar
<b>Chart</b>	Display only when a <i>chart</i> is selected in the document. Example: Chart toolbar
<b>Outline</b>	Display only if the current worksheet contains an <i>outline</i> (also see section "Outliner", page 247). Example: Outline toolbar
<b>Picture</b>	Display only when a <i>picture</i> is selected in the document. Example: Picture toolbar

---

## Positioning toolbars

Toolbars can be positioned as desired. To move a toolbar, either use the **View > Toolbars** command or drag it to the desired position using the mouse.

### Using the **View > Toolbars** command to position toolbars

1. Choose **View > Toolbars**.
2. Click the desired toolbar.
3. Under **Position**, click on the desired position.

*Hint:* If you set the position to **Free**, the toolbar is displayed in a separate window that can be moved freely.

### Using the mouse to position toolbars

1. With the mouse, point to any *empty* area within the toolbar to be moved.
2. Press and hold the left mouse button.
3. Drag the toolbar to the desired location.

*Hint:* If a toolbar is dragged near one of the edges of the program window, it jumps automatically to that edge.

**Locking toolbars:** To lock a toolbar to its current position, choose **View > Toolbars**, select the toolbar, and check the **Locked** option. After that, the toolbar can no longer be moved with the mouse.

---

## Managing toolbars

The **View > Toolbars** command can also be used to create, delete, rename, or customize toolbars.

### Creating a new toolbar

To create a new toolbar in the **View > Toolbars** dialog box:

1. Click the **New** button.

2. Enter a name for the new toolbar and click **OK**.
3. The toolbar has now been created. Close the dialog box or click **Customize** to add icons to the new toolbar (see section “Editing toolbar icons”, page 305).

## Deleting and renaming toolbars

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

*Note:* Only user-defined toolbars can be renamed or deleted.

## Resetting toolbars

To reset a toolbar in the **View > Toolbars** dialog box, select it and click **Reset**.

All changes made to the icons and settings of the toolbar will be undone.

*Note:* This command can only be applied to the program’s built-in toolbars (Standard toolbar, Formatting toolbar, etc.). It is not available for user-defined toolbars.

## Editing toolbar icons

To edit the icons displayed in a toolbar, use the **Customize** button. Read the next section for details.

---

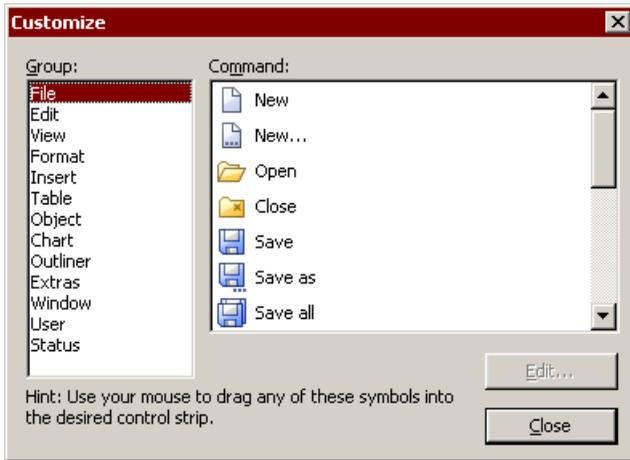
## Editing toolbar icons

To insert, remove, or move icons on a toolbar:

1. Make sure the desired toolbar is displayed. If not, check it in the **View > Toolbars** dialog box.
2. Choose **Extras > Customize > Toolbars**. (Alternatively, click **Customize** in the **View > Toolbars** dialog box.)
3. Use one of the procedures described below to insert, remove, or move icons.
4. Click **Close** to close the dialog.

*Hint:* Alternatively, double click any *empty* space within the toolbar to invoke the **Extras > Customize > Toolbars** command.

When this command is invoked, a dialog box containing all available icons appears:



The icons are divided into groups. If you click a group, the corresponding icons will be displayed in the **Command** list.

To edit the icons of a toolbar:

#### ■ **Inserting an icon**

To insert an icon, click the icon in the **Command** list and drag it to the desired position in the toolbar with your mouse.

#### ■ **Removing an icon**

To remove an icon, drag it out of the toolbar (e.g., drag it to the document window).

#### ■ **Moving an icon**

To move an icon, drag it to the desired position. If the icon is dragged in-between two other icons, it will be inserted between them.

Icons can also be dragged from one toolbar to another.

#### ■ **Inserting a separator**

To insert a separator in front of an icon, drag the icon a few pixels to the right.

#### ■ **Removing a separator**

To remove a separator in front of an icon, drag the icon a few pixels to the left.

**Resetting toolbars:** To reset one of the default toolbars, select it in the **View > Toolbars** dialog box, and click **Reset**. All the toolbar's icons and settings will revert to the program defaults.

---

## Using custom toolbar icons

You can create user-defined toolbar icons and add them to toolbars. Such icons can be used to launch other programs.

To create a user-defined toolbar icon that, for example, starts Windows Notepad:

1. Choose **Extras > Customize > Toolbars**.
2. In the **Group** list, select **User**.
3. In the **Command** list, click any of the icons.

Note: The first three icons are sample icons already configured to demonstrate the use of user-defined icons.

4. Click the **Edit** button.
5. In the **Description** field, enter a short description for the icon – for example, “Notepad”.
6. In the **Command line** field, enter the command to execute when the icon is clicked – for example, `C:\WINDOWS\NOTEPAD.EXE`.
7. Optionally: If you want to use a different icon, enter its path and filename in the **Icon file** field.
8. Click **OK** to confirm.

The user-defined icon has now been created. To add it to a toolbar, drag it to the desired location with the mouse.

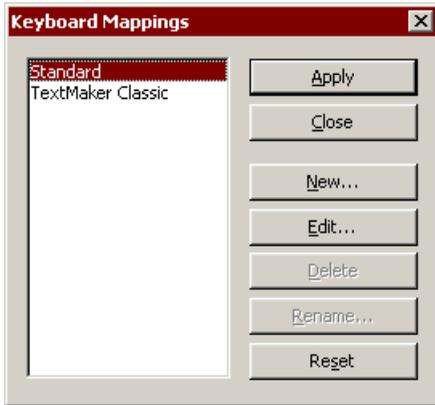
---

## Customizing keyboard shortcuts

Some of PlanMaker's menu commands have an assigned *keyboard shortcut*. For example, pressing `[Ctrl][S]` invokes the **File > Save** command.

The **Extras > Customize > Keyboard Mappings** command allows you to modify PlanMaker's keyboard shortcuts as desired.

You can also create complete *keyboard mappings* containing an entire set of keyboard shortcuts, and switch between two keyboard mappings with a few mouse-clicks.



The buttons in the **Extras > Customize > Keyboard Mappings** dialog box provide the following functions:

- **Apply** button: Activate the selected keyboard mapping
- **New** button: Create a new keyboard mapping
- **Hint:** To only modify a few keyboard shortcuts, you do not have to create a complete keyboard mapping. Just click **Edit**, and modify the standard keyboard mapping.
- **Edit** button: Modify keyboard shortcuts
- **Delete** button: Delete keyboard mapping
- **Rename** button: Rename keyboard mapping
- **Reset** button: Reset keyboard shortcuts (only applicable to the pre-defined keyboard mappings **Default** and **TextMaker Classic**).

See the following pages for detailed information.

---

## Activating a keyboard mapping

To select the active keyboard mapping:

1. Choose **Extras > Customize > Keyboard Mappings**.



The new keyboard mapping will be created. A dialog box where you can modify the keyboard shortcuts for this mapping is then displayed. For more information, see section “Modifying keyboard shortcuts”, page 310.

---

## Deleting and renaming keyboard mappings

To delete or rename a keyboard mapping:

1. Choose **Extras > Customize > Keyboard Mappings**.
2. Select the desired keyboard mapping.
3. Click the **Delete** button to delete, or the **Rename** button to rename.

*Note:* Only user-defined keyboard mappings can be deleted or renamed.

---

## Modifying keyboard shortcuts

The **Extras > Customize > Keyboard Mappings** command can be used not only to manage keyboard mappings, it also allows you to modify keyboard shortcuts.

### Assigning a keyboard shortcut to a command

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

For example, to assign the shortcut Ctrl F12 to the **Table > Sort** command:

1. Choose **Extras > Customize > Keyboard Mappings**.
2. To modify a keyboard mapping different from the one currently active, select the desired keyboard mapping.
3. Click the **Edit** button.
4. In the **Group** list, select the desired group of commands. Then, select the desired command in the **Commands** list.

In the above example, you would select the group “Table” and then the command “Sort”.

6. Click inside the **Please press accelerator** input box and press the desired keyboard shortcut. In this case, press  .

If you accidentally hit the wrong keyboard shortcut, press the Backspace key  to delete the keyboard shortcut and try again.

7. **Do not forget:** Click the **Add** button to assign the keyboard shortcut.
8. Click **OK** to confirm.
9. Close the dialog by clicking **Close**.

From now on, the **Table > Sort** command can be invoked by pressing  .

## Keyboard shortcuts available

Please note that not all key combinations can be used for keyboard shortcuts. You should use only letters, numbers and function keys combined with the , , and/or the Shift key .

To check if PlanMaker accepts a key combination, type it into the **Please press accelerator** input box. If it will not display, the key combination cannot be used.

Some examples for valid key combinations:

- 
- (**Important:** Key combinations utilizing the Alt key are *not* recommended, since they are usually used by the main menu entries).
- 
- 
- 
- 
- etc.

**How to avoid overwriting existing shortcuts:** If you press a shortcut that is already assigned, the current assignment will be shown just below the entry field. If this happens, press Backspace  to delete the keyboard shortcut entered, and try a different key combination (unless you intentionally want to overwrite the existing keyboard shortcut).

**Two-part shortcuts:** If desired, you can use two-part keyboard shortcuts, for example,   . Please note that two-part shortcuts have to follow the scheme “Ctrl+Letter+Letter”.

## Removing a keyboard shortcut

To remove a keyboard shortcut from a command:

1. Invoke the **Edit Keyboard Mapping** dialog (as described above).
2. In the **Group** list, select the desired group of commands. Then, select the desired command in the **Commands** list.
3. The **Current shortcut keys** list will display all keyboard shortcuts assigned to the selected command. To delete a shortcut, select it and click **Remove**.

The keyboard shortcut is now removed.

---

## Resetting keyboard shortcuts

To reset all keyboard shortcuts in a keyboard mapping to the default shortcuts:

1. Choose **Extras > Customize > Keyboard Mappings**.
2. Select the desired keyboard mapping.
3. Click the **Reset** button.

*Note:* Only the standard keyboard mappings **Standard** and **TextMaker Classic** can be reset.

---

## Customizing AutoFill lists

As described in section “Filling cells automatically” (page 69), the **Edit > Fill** command can be used to fill a cell range with a repeating list of values.

The **Extras > 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 **Extras > 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 **Extras > 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 **Extras > 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 **Extras > 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 **Extras > 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 45.

---

## Formula basics

Formulas can be composed of the following components:

- Fixed values (e.g., numbers or text)
- Cell references (e.g., A1 or D2:D3)
- Arrays (see section “Working with arrays”, page 321)
- 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 45.

To enter a formula in a cell, use one of the following procedures:

### Entering formulas manually

**Important:** Formulas have to begin with an *equal sign* (=). For example, to calculate  $2+2$ , enter  $=2+2$ .

To enter formulas manually, type them in starting with an equal sign. Then, press the Enter key  to confirm, or the  key to abort.

Alternatively, use the following buttons of the Edit toolbar:

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

To edit a formula later, navigate to the cell containing the formula and press the  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.

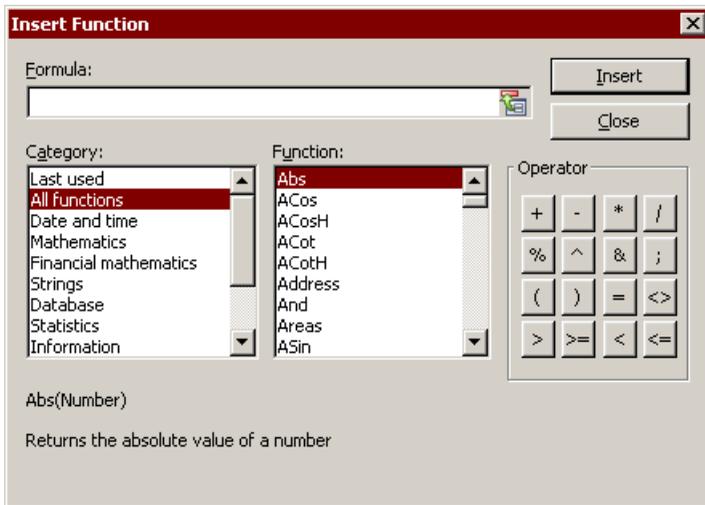
For example, to enter the formula =SUM(B2:D4), proceed as follows:

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) an #N/A error value, or b) a formula referring to a cell containing an #N/A error value. See “NA (error value #N/A)”, page 480 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
9			

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
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			

## 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
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, , "Sheet1") returns Sheet1!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 321).

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

Temperature	Code
Degree Fahrenheit	F
Degree Celsius	C
Degree Kelvin	K

Additionally, prefixes can be added to metric units; "mg", for instance, stands for milligrams.

The following prefixes are available:

Prefix (and factor)	Code
Exa (10 <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:****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, 2004 at 9:03 AM:

CREATEDATE() returns 08/24/04 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(1966, 9, 25) returns the date 09/25/1966

**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 online help 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("09/25/1966") returns 24375.

### **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 324.

**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("09/25/1966") returns 25

**See also:**

YEAR, 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("01/01/2000", "01/14/2000") returns 13

DAYS("01/14/2000", "01/01/2000") 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("01/01/2000", "02/01/2000") returns 30

DAYS360("02/01/2000", "03/01/2000") returns 30

DAYS360("01/01/2000", "01/01/2001") 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("09/25/1966") returns 30

DAYSPERMONTH("10/25/1966") 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("01/01/2004") returns 366 (2004 is a leap year)

DAYSPERYEAR("01/01/2005") returns 365 (2005 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 324.

**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 324.

**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 11111111111111111111111111111010110

**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 a 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 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 324.

**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 324.

**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 324.

**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

---

## **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 324.

**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 324.

**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 324.

**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, 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 324.

**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 324.

**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 324.

**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("03/30/00", 1) returns 04/30/00

EDATE("03/31/00", 1) returns 04/30/00 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 for 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("09/25/1966", 0) returns 09/30/1966

EOMONTH("09/25/1966", 1) returns 10/31/1966

EOMONTH("09/25/1966", -1) returns 08/31/1966

**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 320.

#### 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 320

---

## 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).

<b>Country</b>	<b>PM code</b>	<b>ISO code</b>
All 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
Netherlands (Guilder)	fl	NLG
Portugal (Escudo)	esc	PTE
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 321).

Please note that the array returned by this function contains *one element more* than the number of values in **Bounds**.

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:

FVSCCHEDULE(10000, A1:A4) returns 12341.09

The different interest rates can also be entered directly using the following form:

FVSCCHEDULE(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 321).

**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 1111111111111111111111111111010110 (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

---

## 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 for 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, 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 the 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

---

## **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 320)

---

## **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 320)

---

## 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 480.

### 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 320)

---

## 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, 09/25/1966, 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, 09/25/1966, 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

---

**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

---

## 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 above represent the following values:

Abbreviation	Description
$sm_1, sm_2, \text{etc.}$	Standard error for the coefficients $m_1, m_2, \text{etc.}$
sb	Standard error for constant b
$R^2$	Square of the Pearson product moment correlation coefficient
sey	Standard error for y
F	F statistic
df	Degrees of freedom
ssreg	Regression sum of squares
ssresid	Residual sum of squares

**Note:**

Formulas using this function have to be entered as an *array formula* (see section “Working with arrays”, page 321).

**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:

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

The LOGEST function calculates this exponential line from the given y values and x values, and then returns an array in the form {m<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<sub>n</sub>, m<sub>n-1</sub>, ..., m<sub>2</sub>, m<sub>1</sub>, b; sm<sub>n</sub>, sm<sub>n-1</sub>, ..., sm<sub>2</sub>, sm<sub>1</sub>, sb; R<sup>2</sup>, 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 above 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 321).

**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).

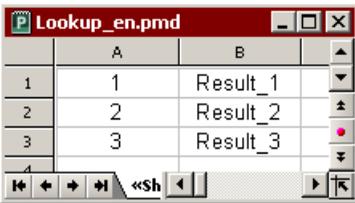
**LookupVector** is the cell range or array to search in. It must be a vector, which is a range of either just *one* row or *one* column.

**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	
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:

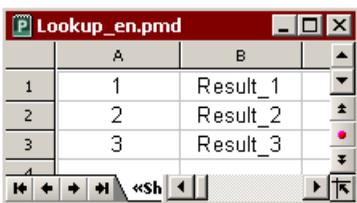
If **Range** has more columns than rows, the first *row* is scanned.

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
1	1	Result_1
2	2	Result_2
3	3	Result_3

... 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 321), 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("09/25/1966 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  $I$ .

**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 321).

**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 321), 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

---

## 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 321).

**Example:**

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

**See also:**

Section “Working with arrays” (page 321), MDETERM, MINVERSE, MSOLVE, TRANSPOSE

---

## MOD (remainder of a division, Excel method)

**Syntax:**

MOD(x, y)

**Description:**

Returns the remainder of the division of **x** by **y**, using the erroneous “Excel method”.

**Important:** This function returns wrong results in some cases (see annotation below)!

**Example:**

MOD(5, 3) returns 2

MOD(5, 0) returns a #DIV/0! error value

MOD(5, -3) returns -1 (which is wrong – see below!)

**See also:**

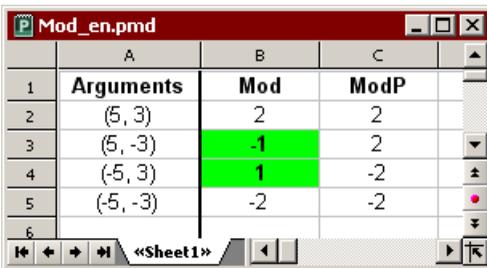
MODP, QUOTIENT

**Annotation:**

Microsoft Excel returns **wrong results** when you use the MOD function with a negative numerator or denominator.

PlanMaker also returns wrong results in this case (for compatibility reasons), but additionally offers a function named MODP that returns correct results.

The following table shows the differences between MOD and MODP (the highlighted results are wrong):



	A	B	C
1	<b>Arguments</b>	<b>Mod</b>	<b>ModP</b>
2	(5, 3)	2	2
3	(5, -3)	-1	2
4	(-5, 3)	1	-2
5	(-5, -3)	-2	-2
6			

**Note:** The MODP function is *not* supported by Microsoft Excel. If you save a document in Excel format, all calculations using this function will be replaced by their last result as a *fixed* value.

---

## MODE (most frequently occurring value)

**Syntax:**

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

**Description:**

Returns the mode of a data set.

The *mode* is the value occurring most frequently in a set of numbers.

**Number1**, **Number2**, etc., are the numbers to be evaluated.

If the given numbers contain more than one mode, their smallest mode will be returned.

If the given numbers do not contain any value occurring more than once, a #N/A error value will be returned.

**Example:**

MODE(1, 2, 4, 4, 4, 2, 1) returns 4

MODE(1, 2, 4, 4, 2, 1) returns 1 (if there are multiple modes, the smallest one is returned)

MODE(1, 4, 2) returns #N/A because no value occurs more than once.

**See also:**

MEDIAN, NORMDIST

---

## **MODP (remainder of a division, PlanMaker method)**

**Syntax:**

MODP(x, y)

**Description:**

Returns the remainder of the division of **x** by **y**, using the “PlanMaker method” (see annotation below).

**Example:**

MODP(5, 3) returns 2

MODP(5, 0) returns a #DIV/0! error value

MODP(5, -3) returns 2 (see below)

## See also:

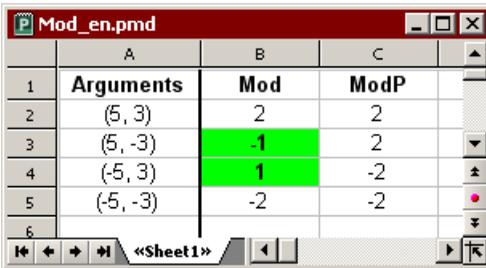
MOD, QUOTIENT

## Annotation:

Microsoft Excel returns **wrong results** when you use the MOD function with a negative numerator or denominator.

PlanMaker also returns wrong results in this case (for compatibility reasons), but additionally offers the MODP function described here that returns correct results.

The following table shows the differences between MOD and MODP (the highlighted results are wrong):



	A	B	C
1	<b>Arguments</b>	<b>Mod</b>	<b>ModP</b>
2	(5, 3)	2	2
3	(5, -3)	-1	2
4	(-5, 3)	1	-2
5	(-5, -3)	-2	-2
6			

**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("09/25/1966") returns 9

**See also:**

YEAR, 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 321).

**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 321), 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 09/25/1966:

N(A1) returns 24373 (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 320)

---

## 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 for 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.

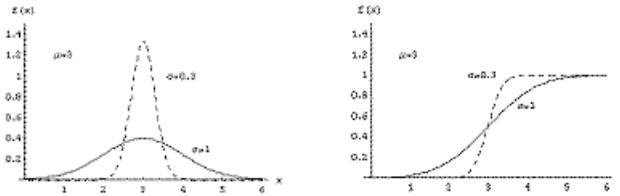
**Mean** is the arithmetic mean of the distribution.

**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 for 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

---

## 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 11111111111111111111111111111111010110  
(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, 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 316)

---

## PPMT (payment on the principal)

**Syntax:**

PPMT(Rate, Per, NPer, CV [, FV] [, Type])

**Description:**

Returns the principal due in the given period for 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, 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 **Extras > 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 **Extras > 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 321).

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:**

USERFIELD, FILENAME

---

## **SIGN (sign of a number)**

**Syntax:**

SIGN(Number)

**Description:**

Returns a value representing the sign of a number:

1, if **Number** is positive,

-1, if **Number** is negative,

0, if **Number** is zero.

**Example:**

SIGN(-5) returns -1

**See also:**

ABS, NEG

---

## **SIN (sine)**

**Syntax:**

SIN(Number)

**Description:**

Returns the sine of **Number**.

**Example:**

$\text{SIN}(\text{PI}()/2)$  returns 1

$\text{SIN}(\text{RADIANS}(90))$  returns 1

**See also:**

ASIN

---

## **SINH (hyperbolic sine)**

**Syntax:**

$\text{SINH}(\text{Number})$

**Description:**

Returns the hyperbolic sine of **Number**.

**Example:**

$\text{SINH}(0.45)$  returns 0.4653

**See also:**

ASINH

---

## **SKEW (skewness of a distribution)**

**Syntax:**

$\text{SKEW}(\text{Number1}, \text{Number2}, \text{Number3} [, \text{Number4} \dots])$

*or*

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 321).

#### 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 82)

---

## **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 321).

**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 82)

---

## 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\*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 84)

---

## 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:**

The SUM function can also be inserted using the Sum symbol in the Edit toolbar.

**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 $x^2$ minus $y^2$ )

**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<sup>2</sup> plus y<sup>2</sup>)

#### 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 minus 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("10/01/2004 10:00 PM", "10/02/2004 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 321).

**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 321), 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 321).

#### Example:

The resistance of a temperature-sensitive resistor has been measured at several temperatures.

Cells A1:A4 contain the temperatures measured: 8, 20, 25, 28

Cells B1:B4 contain the resistances measured: 261, 508, 608, 680

The following calculation returns an array with the y coordinates of a best-fit line calculated from these values:

TREND(B1:B4, A1:A4)

#### See also:

LINEST, LOGEST, GROWTH

---

## TRIM (remove spaces from text)

### Syntax:

TRIM(Text)

### Description:

Removes all spaces from the beginning and the end of the specified text string.

### Example:

TRIM(" Text ") returns Text

### See also:

CLEAN

---

## TRIMMEAN (mean ignoring marginal values)

### Syntax:

TRIMMEAN(Area, Percentage)

### Description:

Returns the mean of the values in the *middle* of a data set (by excluding the specified percentage of top and bottom values).

For example, TRIMMEAN(A1:A42, 10%) averages the middle 90% of the data points in A1:A42.

**Area** is the cell range or array to evaluate.

**Percentage** is the percentage of values to be excluded.

If, for example, 100 values are given and **Percentage** is set to 10%, 10 values will be excluded: 5 from the bottom and 5 from the top.

Note: For symmetry, the number of excluded values will automatically be rounded down to a multiple of 2. For example, if 30 values are given and **Percentage** is set to 10%, only 2 values will be excluded instead of 3.

**Example:**

Cells A1:A10 contain the following values:

43, 45, 42, **0**, 44, 45, 42, **1234**, 40, 41

As you can see, two values are exceptionally low/high (e.g., because of a measuring error): 0 and 1234. Thus, using the AVERAGE function would return an unusable result:

AVERAGE(A1:A10) returns 159.2

If using TRIMMEAN instead, the top and bottom values are ignored:

TRIMMEAN(A1:A10, 20%) returns 42.75

In this case, 20% of the values (i.e., 2 values) were excluded: 0 at the bottom and 1234 at the top.

**See also:**

AVERAGE, GEOMEAN, HARMEAN

---

## TRUE (logical value TRUE)

**Syntax:**

TRUE()

**Description:**

Returns the logical value TRUE.

**See also:**

FALSE

---

## TRUNC (truncate a number)

### Syntax:

TRUNC(Number [, n])

### Description:

Returns the given number truncated to **n** digits after the decimal point.

**n** (optional) is the number of decimal places.

If **n** is omitted, **Number** is truncated to an integer.

If **n** is a negative value, **Number** is truncated to the left of the decimal point. For example, if **n** is -2, **Number** is truncated to the nearest multiple of hundred (see last example).

### Example:

TRUNC(5.779) returns 5

TRUNC(5.779, 2) returns 5.77

TRUNC(1234, -2) returns 1200

### See also:

ROUNDDOWN, ROUNDUP, DECIMALS, ROUND

---

## TTEST (t-test)

### Syntax:

TTEST(Array1, Array2, Tails, Type)

### Description:

Returns the result of a Student's t-test.

The t-Test is typically used to test the difference of the means of two samples.

**Array1** and **Array2** are the two arrays to be evaluated.

**Tails** is the number of distribution tails:

1: One-tailed distribution

2: Two-tailed distribution

**Type** is the type of t-test:

1: dependent samples (“paired”)

2: independent samples, equal variances (“homoscedastic”)

3: independent samples, different variances (“heteroscedastic”)

**See also:**

TINV, TDIST

---

## TYPE (type of a value)

**Syntax:**

TYPE(Value)

**Description:**

Returns the type of the specified value.

The result is one the following numbers:

Value is a ...	Result
Number or empty cell	1
Text string	2
Logical value	4
Error value	16
Array	64

**Example:**

TYPE(42) returns 1

If A1 contains the text string "Text":

TYPE(A1) returns 2

**See also:**

ERROR.TYPE

---

## UPPER (convert text to upper case)

**Syntax:**

UPPER(Text)

**Description:**

Converts all characters in a text string to upper case letters.

**Example:**

UPPER("PlanMaker") returns PLANMAKER

**See also:**

PROPER, LOWER

---

## USERFIELD (user field)

**Syntax:**

USERFIELD(FieldName)

**Description:**

Returns the content of one of the fields with user data (name, address, etc.) entered in PlanMaker's preferences dialog.

Note: To change the content of these fields, choose **Extras > Preferences**, switch to the **General** property sheet, then click on **User (Home)** or **User (Business)** (see also section "Preferences, General property sheet", page 283).

**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("09/25/1966") returns 24737, the serial date value for the date 09/25/1966.

**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, 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:

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  $\text{Alpha} = 1$ , the Weibull distribution equals an exponential distribution with  $\text{Lambda} = 1/\text{Beta}$ .

**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:**

NETWORKDAYS

---

## 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("09/25/1966") returns 1966

### See also:

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.

**Hint:** If you want to edit PlanMaker’s keyboard mapping, choose **Extras > Customize > Keyboard Mappings**. See section “Customizing keyboard shortcuts”, page 307.

---

## Keyboard shortcuts for navigating

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 cell containing an error	⇧ F3
Move to the next error	Ctrl F3
Select current array formula	Ctrl 7

---

# Keyboard shortcuts for commands

Command	Keyboard shortcut
File > New	Ctrl N
File > Open	Ctrl O
File > Close	Ctrl W or Ctrl F4
File > Save	Ctrl S
File > File Manager	F12
File > Print	Ctrl P
File > Exit	Ctrl Q or Alt F4
Edit > Undo	Ctrl Z
Edit > Redo	Ctrl Y
Edit > Cut	Ctrl X
Edit > Copy	Ctrl C
Edit > Paste	Ctrl V
Edit > Paste Special	Ctrl ⇧ V
Copy cell above the current cell into the current cell	Ctrl .
Edit > Select All	Ctrl A
Edit > Search	Ctrl F
Edit > Replace	Ctrl H
Edit > Search again	F3
Edit > Go to	Ctrl G or F5
Format > Cell	Ctrl I
Format > Standard	Ctrl Space
Select font (in the Formatting toolbar)	Ctrl D
Boldface on/off	Ctrl B or Ctrl ⇧ F

<b>Command</b>	<b>Keyboard shortcut</b>
Italics on/off	Ctrl I or Ctrl ⇧ K
Underlining on/off	Ctrl ⇧ U
Superscript	Ctrl ⇧ Num+
Subscript	Ctrl ⇧ Num-
Deactivate superscript/subscript	Ctrl ⇧ Num*
Alignment: default	Ctrl T
Alignment: left	Ctrl L
Alignment: right	Ctrl R
Alignment: centered	Ctrl E
Alignment: flush	Ctrl J
<b>Insert &gt; Function</b>	F7
<b>Insert &gt; Comment</b>	⇧ F2
Insert current date	Ctrl .
Insert current time	Ctrl ⇧ .
Hide current row	Ctrl 9
Show current row	Ctrl ⇧ 9
Hide current column	Ctrl 0
Show current column	Ctrl ⇧ 0
<b>Extras &gt; Recalculate</b>	F9
<b>Extras &gt; Update Charts</b>	F8



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