User Manual

PlanMaker 2004

Copyright

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Introduction

Welcome!

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

Functional overview

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 worksheets with the **AutoFormat** command; with **cell stylesheets** and **character stylesheets**, 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 tool-bars 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.

Technical support

If you want to contact us for technical support, you have the following options:

World Wide Web: 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**

Support forums at 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**

E-mail

Send your support related e-mails to: **support@softmaker.com**

Fax or snail mail

Mail or fax your questions to:

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

Fax: +49-911-303796

Phone

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 **"Installing and starting PlanMaker"** (page 27): Describes how to install PlanMaker.

■ Chapter **"Screen elements"** (page 33): Describes the individual components of PlanMaker's application window.

■ Chapter **"PlanMaker basics"** (page 41): Describes the basic functions of PlanMaker and explains basic spreadsheet terminology.

■ Chapter **"The PlanMaker Tour"** (page 49): Provides an introduction to the practical use of spreadsheets.

■ Chapters **"Editing worksheets"** (page 61) and following: Reference section – 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 **boldface** type. **File > New**, for example, stands for the **New** command in the **File** menu.

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

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

> *Note:* A text section highlighted like this contains important information or useful hints.

System requirements

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

Windows version

- Windows 95 or higher
- CD or DVD drive
- RAM requirements:
    Windows 95: 8 MB
    Windows 98 and NT: 16 MB
    Windows ME: 32 MB
    Windows 2000 and XP: 64 MB

Pocket PC version

- Pocket PC 2000/2002/2003, Windows Mobile 2003/2003 SE, or Pocket PC Phone Edition
- Required memory:
    6 MB storage memory (can be installed on a memory card)
    3 MB program memory (while PlanMaker is running)

Handheld PC version

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

Linux version

- CD or DVD drive
- Any glibc-based x86-Linux with kernel 2.0 or higher
- X Window system with any window manager

Installing and starting PlanMaker

Overview: Installing and starting PlanMaker

This chapter covers information on installing and starting PlanMaker.

It is divided into the following sections:

■ **Installing PlanMaker for Windows** (page 27)

■ **Installing PlanMaker for Pocket PCs** (page 30)

■ **Installing PlanMaker for Handheld PCs** (page 31)

■ **Installing PlanMaker for Linux** (page 31)

Please go directly to the section that is suitable for your operating system.

Installing PlanMaker for Windows

Note: If you are using Windows NT/2000/XP, Administrator login is required for installation.

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 28).

Download

If you purchased PlanMaker as a *download* from our web site, you will find installation instructions included in the e-mail that you received after purchasing the software.

CD-ROM

If you have received PlanMaker on *CD-ROM*, please insert the installation CD into your CD-ROM drive and follow the installation instructions displayed.

If the installation program is not started automatically on your computer, you can start it manually by double-clicking the program file **Setup** on the installation CD.

For a **first-time install**, you will need to enter your serial number (found on the CD wrapper).

For an **upgrade install**, you will first need to enter the serial number from your previous version of PlanMaker (printed on the *original* CD wrapper) followed by the upgrade product code (printed on the *new* CD wrapper).

Starting 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 28).

Use the Start menu to start the installed programs. For example, click **Start > Programs > SoftMaker Office > PlanMaker** to open PlanMaker.

Note: When opening PlanMaker for the first time, you will be asked to enter your name and contact information. This is *not* for registration purposes, but allows you to insert your name, mailing address, etc., in documents through the USERFIELD function. You can change this information at any time (see section "Preferences, General tab", page 267).

Using PlanMaker on Local Area Networks (Windows-only)

Note: This section is relevant for Windows users only.

If you plan to use PlanMaker for Windows on a computer that is connected to a local area network (LAN), please read the following information carefully.

Installing PlanMaker for Windows on a Local Area Network

To install PlanMaker on a local area network (LAN), you should first perform a normal installation of PlanMaker (as described above in section "Installing PlanMaker for Windows").

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

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:

Basic installation

First perform a normal installation of PlanMaker on one of the network computers; then, in order to give other network computers access to PlanMaker, share the folder where PlanMaker is installed.

Preparing additional workstations

After the regular install on one computer, PlanMaker can easily be set up on additional workstations.

To facilitate installation, PlanMaker has an automatic installation routine. All you have to do is to manually start PlanMaker on the workstation:

1. Open Windows Explorer.

2. Navigate to the shared folder on the file server where PlanMaker is installed.

3. Navigate to the PROGRAM FILES folder in the shared folder.

4. Double-click the program file PMW32 to open the PlanMaker application.

---

5. Follow the Set-up Wizard prompts to configure PlanMaker automatically.

Initial set-up of PlanMaker for Windows on a workstation

If your computer is attached to a local area network (LAN), you will be asked to create a new user profile the first time you start PlanMaker. PlanMaker stores all your personal program settings in this user profile:

■ User preferences (including keyboard layout and toolbar layout)
■ User dictionaries (used by the spell-checker)
■ Personalized SmartText entries

To create a new user profile, simply enter the name under which you want to store the profile. PlanMaker automatically suggests your Windows login name, which you can accept or change.

PlanMaker now creates a user profile and stores all future changes you make to the configuration of PlanMaker in this profile.

Detailed information on creating and managing user profiles can be found in section "User profiles", page 300.

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 confirmation e-mail that you received after purchasing the software.

Note: If you are using Windows NT/2000/XP, Administrator login is required for installation.

Starting PlanMaker for Pocket PCs

Use the Start menu of your Pocket PC to start the installed programs. For example, click **Start > Programs > PlanMaker** to open PlanMaker.

Note: When opening PlanMaker for the first time, you will be asked to enter your name and contact information. This is *not* for registration purposes, but allows you to insert your name, mailing address, etc., in documents through the USERFIELD function. You can change this information at any time (see section "Preferences, General tab", page 267).

Installing PlanMaker for Handheld PCs

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

Note: If you are using Windows NT/2000/XP, Administrator login is required for installation.

Starting PlanMaker for Handheld PCs

Use the Start menu of your Handheld PC to start the installed programs. For example, click **Start > Programs > PlanMaker** to open PlanMaker.

Note: When opening PlanMaker for the first time, you will be asked to enter your name and contact information. This is *not* for registration purposes, but allows you to insert your name, mailing address, etc., in documents through the USERFIELD function. You can change this information at any time (see section "Preferences, General tab", page 267).

Installing PlanMaker for Linux

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

Starting PlanMaker for Linux

To start PlanMaker for Linux, switch to the folder where PlanMaker is installed and start PlanMaker by executing the program file **planmaker**.

Note: When opening PlanMaker for the first time, you will be asked to enter your name and contact information. This is *not* for registration purposes, but allows you to insert your name, mailing address, etc., in documents through the USERFIELD function. You can change this information at any time (see section "Preferences, General tab", page 267).

Screen elements

Overview: Screen elements

This chapter introduces the individual components of PlanMaker's application window.
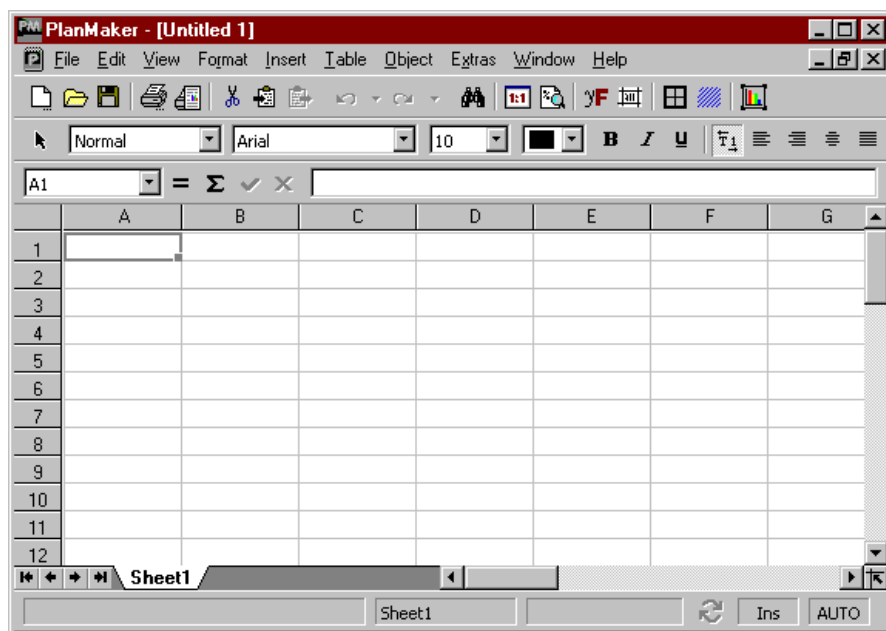
The PlanMaker application window

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 in this section.

Pocket PC users: Please pay attention to the special notes for Pocket PC users at the end of this chapter (page 39).

Application title bar

At the top of PlanMaker's work screen is the *title bar*.

PlanMaker - [Untitled 1]

The title bar indicates the name of the program and the currently opened document; for example, PlanMaker - Worksheet.pmd.

Menu bar

Below the application title bar is the *menu bar.*

File Edit View Format Insert Table Object Extras Window Help

The menu bar contains all commands of PlanMaker in the form of *menus.* To select a menu command, open the menu by clicking it, then click the desired command.

Note for Pocket PC users: To open PlanMaker's menu bar on a Pocket PC, tap on the **Menu** icon (in the lower-left corner of the screen).

Toolbar

Below the menu bar is the *toolbar*, which provides access to PlanMaker's most frequently used commands.

Control strips like the *toolbar* facilitate easy access to application functions. Every icon represents a certain command; if you click an icon, the corresponding command is invoked.

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

There are additional control strips in PlanMaker that you can display or hide as desired. Choose the **View > Control strips** command, or right-click one of

the control strips. A list of all available control strips will be displayed allowing you to select which control strips are visible.

Design your own control strips: You can customize the existing control strips, or create your own. See section "Customizing control strips", page 287.

Format strip

Directly below the toolbar is the *Format strip*. Here you can access the most-frequently used formatting functions: font, font size, font style, color, etc.
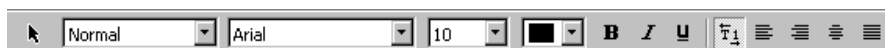
For example, to select another font, click the small arrow to the right of the font name. This opens the font list drop-down menu, and allows you to select a font.

Other icons in the Format strip 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 strip

Below the toolbar and the Format strip is the *Edit strip*.

The Edit strip contains the following control elements (on Pocket PCs, only some 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 63.

The Edit strip icons have the following functions:

Icon	Function
=	Calls up the **Insert > Function** command
Σ	Inserts the SUM function
✔	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 Esc)

For information on entering formulas, see chapter "Entering formulas", page 305.

Document window

With PlanMaker for Windows and Linux, 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.

To learn more about changing the position and size of document windows, see chapter "Document windows", page 261.

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 chapter "Editing worksheets", page 61.

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 82).

`|◄ | ◄ | ► | ►| \ Sheet1 / Sheet2 / Sheet3 /`

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.

`| Create a new document | Sheet1 | Sum=6 | ⟳ | Ins | AUTO |`
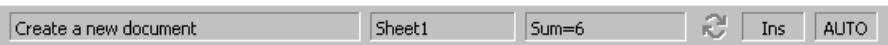
Hint: Move the mouse pointer over any control strip icon or menu command, and a short explanation of its function is displayed in the status bar.

The status bar displays the following information (from left to right):

Example	Explanation
	On the very left, information is displayed about the control strip 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". 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 **Calculation in status bar** setting in **Extras > Preferences**).
🔁	This icon lights up in red 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 (inputs that begin with ⌊=⌋) 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⌋⌊⇧⌋⌊F4⌋, you can switch between the two modes.
	Important: If you switch to TEXT input mode, an apostrophe is automatically prepended to all numbers and formulas you enter. This converts these inputs 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 notes for Pocket PC users

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

This control strip lets you access the menu, the other control strips, and some other important functions.

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

- Open menu bar

- Toggle between Object mode and Edit mode

- Toolbar on/off

- Format strip on/off

- Edit strip on/off

- Status bar on/off

- Set magnification

- Row and column headers on/off

PlanMaker basics

Overview: 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, printing** and **saving** a document

- **Exiting PlanMaker**

The structure of a spreadsheet

First, let's have a look at how spreadsheets are organized.
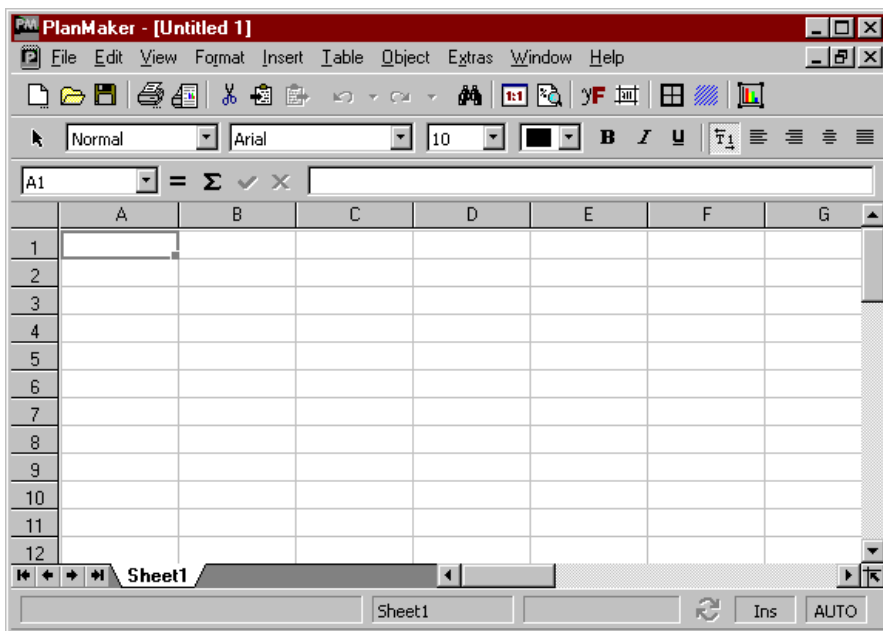
Spreadsheets are divided into lines and columns. Each spreadsheet consists of 16384 rows and 256 columns. These are labeled as follows:

■ 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 in spreadsheets", page 473.

Entering data

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

To complete your input, press the Enter key ⏎.

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

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

For detailed information on this topic, see section "Entering data in cells", page 63.

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 69.

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, if 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 65.

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 (this option is available only under Windows and Linux).

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

Opening a document

To open an existing document, choose **File > Open**, or use the `Ctrl` `O` keystroke.
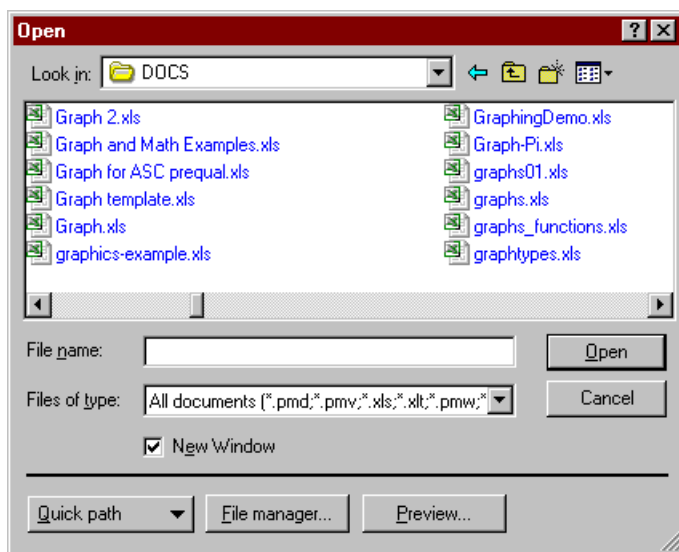
In the resulting dialog box, navigate to the document you want to open and click the **Open** button.

You can select which drive and folder to display through the **Look in** dropdown list. To switch to a different drive or folder, click the small arrow to the right of this list to access the drop-down menu, 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 (this option is available only under Windows and Linux).

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 menu. For information on supported file formats, see chapter "Working with other file formats", page 253.

Using QuickPaths

QuickPaths are a feature that lets you assign a name to often-used file paths. To use QuickPaths, click the **QuickPath** button. See section "Quick Paths", page 225.

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, view, and rename them. See section "File Manager", page 228.

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 PC: 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 $\boxed{\text{Ctrl}}\boxed{\text{P}}$ key-stroke.
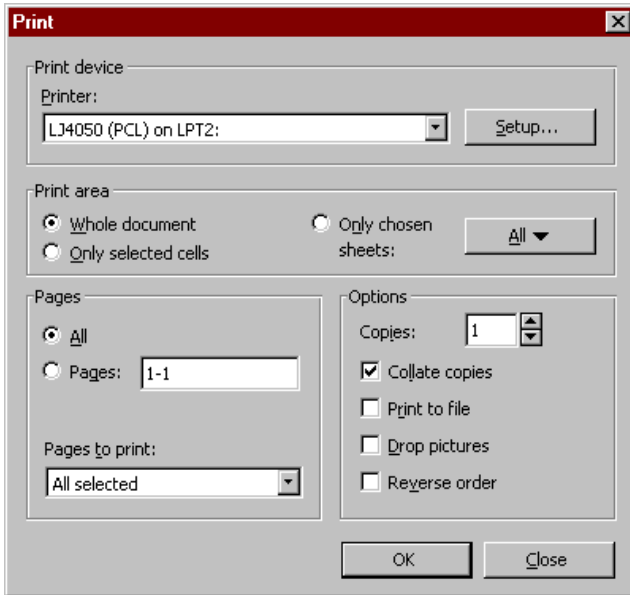
In the resulting dialog box, select the number of copies, and which pages to print. The dialog box defaults to printing one copy of all pages of the document.

For additional print dialog options, see chapter "Printing and e-mailing", page 241.

Saving a document

To save a document, choose **File > Save**, or use the $\boxed{\text{Ctrl}}\boxed{\text{S}}$ 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 menu. See chapter "Working with other file formats", page 253.

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

Overview: 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 in this section.

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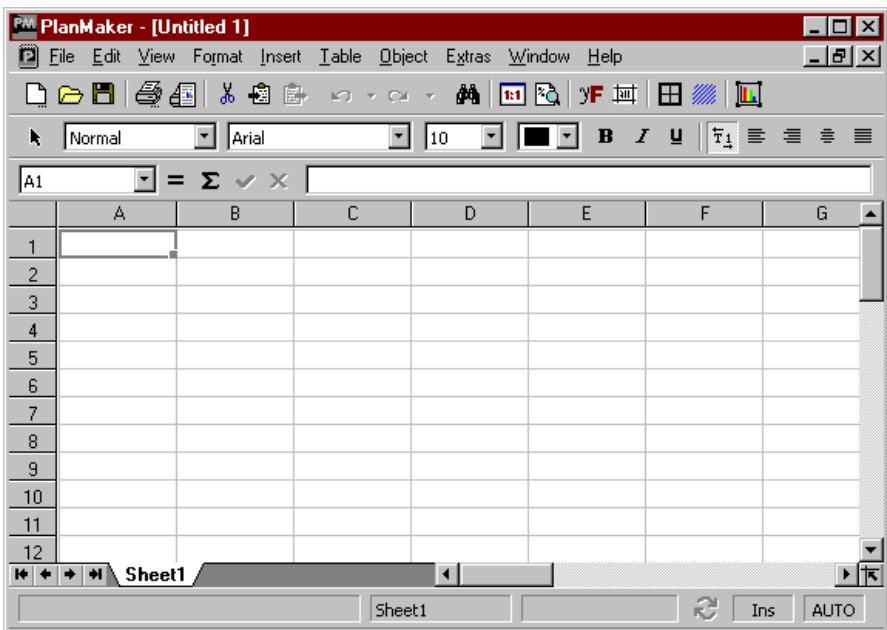
Most of the application window is taken up by your new worksheet. On the top, it is bordered by a row of alphabetic characters, on the left by a column of numbers.

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 (active cell) from one cell to another. Take a look at the Edit strip above the worksheet: at the very left, PlanMaker displays the *address* of the currently active cell. The address always consists of one to 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 Plan-Maker, 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 strip above the table.

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

Press the Enter key ↵ now to finish your input. The cell frame moves down one row to cell B3. Type the value 899 here, and in the row below that type the value 499.

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

Entering formulas

Let's enter our first formula.

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

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

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

=B2+B3+B4

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

As soon as you press ↵, you will see the result of your first formula:

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 $\boxed{\Sigma}$ in PlanMaker's Edit strip. 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.
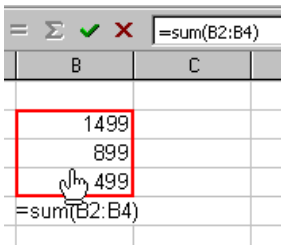
If you look at the Edit strip while you do this, the input area will display your new formula. PlanMaker builds the formula on the fly, while you are dragging the mouse pointer down. As soon as your formula is complete, release the mouse button and accept the formula in the Edit strip by pressing $\boxed{\leftarrow}$.

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 **Insert > Function**, or use the ⌊F7⌋ keystroke. A dialog box will appear that contains all the functions PlanMaker supports.

Insert Function

Formula:

[   ]   [Insert]
                                [Close]

Category:

Last used
All functions
Date and time
Mathematics
Financial mathematics
Strings
Database
Statistics
Information
Logic

Function:

Abs
ACos
ACosH
ACot
ACotH
Address
And
Areas
ASin
ASinH

Operator

+	-	*	/
%	^	&	;
(	)	=	<>
>	>=	<	<=

Abs(Number)

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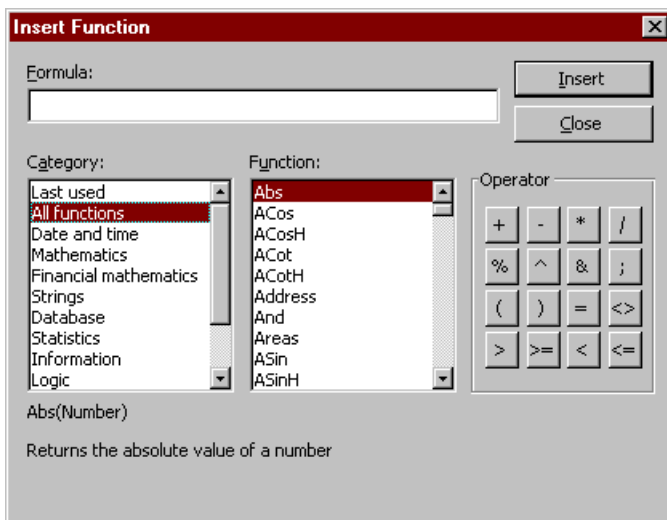
Let's try another function. Suppose we want to calculate the average value of our three numbers in the table.

Press ⌊Esc⌋ to dismiss the dialog box, 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 315.

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 worksheet tab to switch the currently active worksheet.

For detailed information, see chapter "Working with multiple worksheets", page 82.

Changing the layout of worksheets

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

Adding a headline

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

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

My first worksheet⏎

Changing character formatting

Move the cell frame back to cell B1 again. Open the font list in the Format strip 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 Format strip allow you to change the color of text, and to apply various formatting attributes: **B** turns on bold printing, *I* switches to italics, <u>U</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 101.

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.
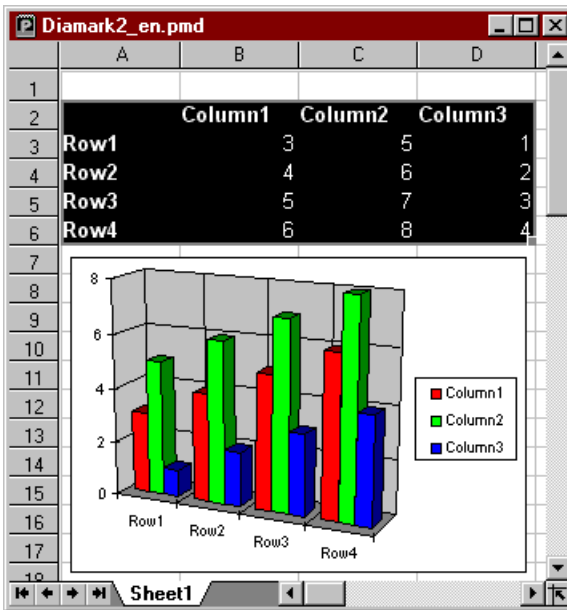
For more information on charts, see chapter "Charts", page 187.

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

Overview: Editing worksheets

This chapter begins the *reference section* of the manual. The reference section 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 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 (Solver)**

  With the **Extras > Solve** command, you can reverse the order of a calculation. The solver finds, using an approximation method, which value one cell must have so that another cell will contain a certain value.

- **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.

Entering data in cells

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

Press the Enter key ⏎ to complete the input.

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

To modify the contents of a cell, select the cell and press the function key F2, 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. Another example: 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 105.

Notes about entering dates

- Dates can be entered in various formats; for example, 09/25/66, 09/25/1966, Sunday, 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/**20**29.

  1/1/30 is treated as 1/1/**19**30.

- 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, Plan-Maker 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 105.

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 303.

■ For descriptions of all arithmetic functions, see section "Functions from A to Z", page 315.

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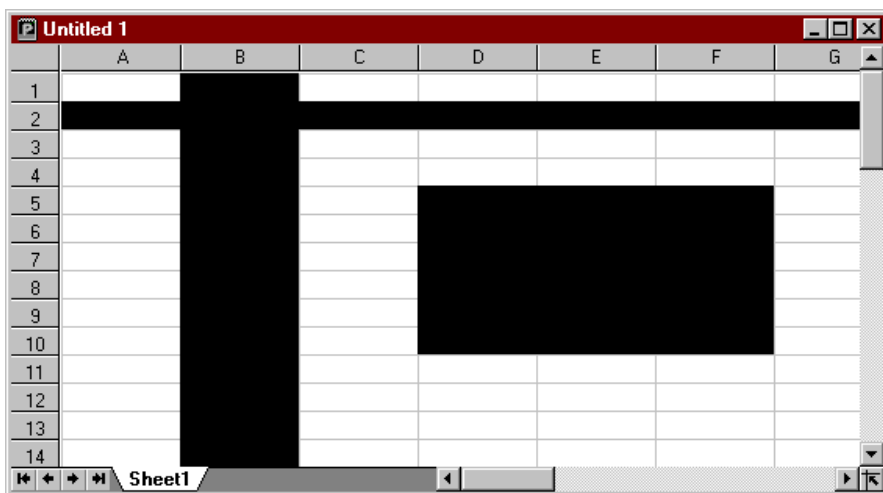
To select cells, use the mouse, the stylus (on handheld computers), or the keyboard:

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 in spreadsheets", page 473.

■ **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 just 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 popup menu with the following options:

- **All**

  Delete the contents, formatting and comments of the selected cells.

- **Formatting**

  Delete 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 96).

■ **Conditional Formatting**

Remove only the conditional formatting (see **Format** > **Conditional formatting** command in section "Conditional formatting", page 129).

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:

Cut   The **Edit** > **Cut** command removes the selection and places it on the clipboard. The keyboard shortcut for this command is: Ctrl X.

Copy   The **Edit** > **Copy** command copies the selection to the clipboard. Keyboard shortcut: Ctrl C.

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, frames, 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, frames, 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 307).

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.

Paste Special dialog

Paste Special

Source:
PlanMaker

[OK]
[Cancel]

Paste as:

- PlanMaker data
- Biff8 (Excel)
- Biff5 (Excel)
- Sylk
- Formatted text (RTF)
- Unformatted text
- Unformatted text (Unicode)

Options
- ☑ Paste cell contents
- ☐ Convert formulas to values
- ☐ Ignore comments

Formatting
- ⦿ Retain formatting
- ○ Don't retain formatting
- ○ Retain number format only
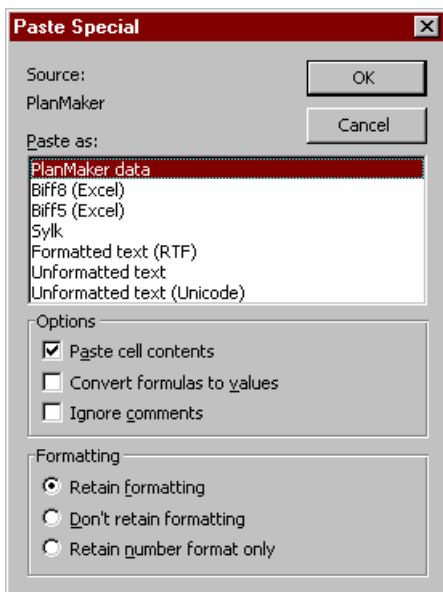
This dialog has some additional options that are only available if you copied *cells* to the clipboard (not objects):

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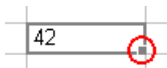
4. Drag this rectangle, while holding the mouse button down, to cover the desired range of cells. Release the mouse button as soon as the target position has been reached.

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 drop-down 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 1/2/2000, 1/3/2000, 1/4/2000, 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", Plan-Maker will continue the series and fill with Green, Blue, Red, Green, Blue, etc.

For additional information on creating such lists, see section "Customizing AutoFill lists", page 298.

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 drop-down 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 register tabs with the *right* mouse button, a context menu with 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 **Table > Worksheet**. A drop-down 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 drop-down menu will list 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.

■ The **Properties** command lets you change the properties of the current worksheet (see section "Worksheet properties", page 283).

Hint: 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 248.

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, append 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".

The value in cell D2 of the "Costs" worksheet will be deducted from the value in cell A8 of the "Sales" worksheet and appear in cell C9 of the "Profit" worksheet. For this purpose, switch to the "Profit" worksheet, click cell C9 and enter the following formula:

=Sales!A8 - Costs!D2

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

Naming cell ranges

Use the **Table > Names** command to assign *names* to selected cell ranges.

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

=SUM(Spring)

If you choose the **Table > Name** command, a drop-down menu with the commands **Edit** and **Apply** opens. These commands contain all functions needed to work with named cell ranges. For more information on these commands, read the following pages.

> *Note:* The **Table > Names > Edit** command will not be available if at least one worksheet in your workbook has *worksheet protection* turned on (see section "Sheet protection", page 245).

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 > Name > Edit**.

3. Input a name for the cell range.

4. Click the **Add** button.

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

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 synonymous with =SUM(A2:A10).

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

> *Note:* Names that "look" like a cell address may 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.
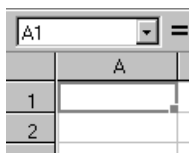
Use this drop-down list to quickly set up a new named range:

---

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 names

To delete the name of a named cell range:

1. Choose **Table** > **Names** > **Edit**.

2. In the list of names, select the name you want to delete.

3. Click the **Delete** button.

The name has now been removed.

All formulas that use this deleted 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 both values and row or column headings, you can let PlanMaker generate named ranges automatically from the 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** > **Edit**.

3. Click the **Import** button.

4. In the displayed dialog box, you can select which row and/or column contain(s) 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 based on 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. Use the **Table > Names > Edit** command and click **Import**. Select which row and/or column headings are used:

- 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 complete list of named ranges:

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

2. Choose **Table** > **Names** > **Edit**.

3. Click the **Insert list** button.

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

Putting named ranges to use

After creating named ranges with the **Table > Names** command, some 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.
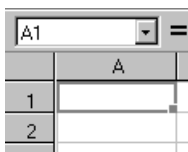
This drop-down list contains a list of all named ranges. Clicking on one of these names will select the corresponding cell range.

Using names in formulas

In any formula, the range name can be used instead of the cell addresses it represents. This will save time and make formulas more coherent.

For example:

You have entered sales figures for the month of 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 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 drop-down menu of the **Table** > **Names** menu command is useful for named ranges: It scans all formulas in the selected cells and replaces all applicable cell ranges with the corresponding names.

Use this command as follows:

1. Select the range of cells whose formulas you want to update. If you do not select anything, this function affects the *entire* table.

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, there is 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). 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 307.

Sorting cells

To sort cells in worksheets, select the desired cells and choose **Table > Sort**.
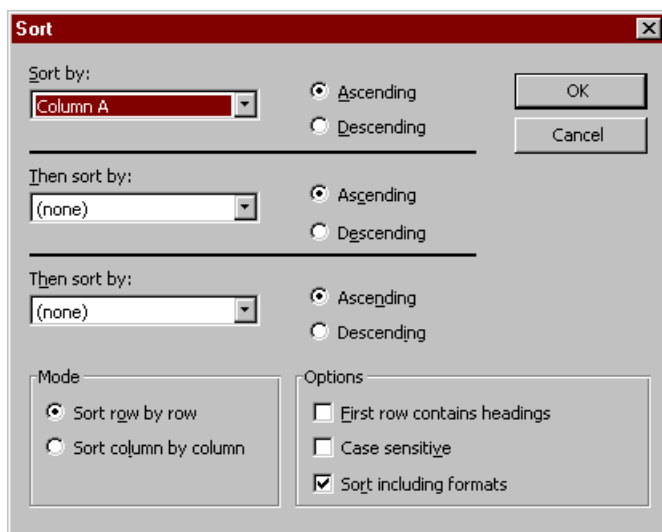
A dialog box with the following options will appear:

■ **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 sorted before terms with uppercase first 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 menu 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 found in the drop-down 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 drop-down 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 section **1st condition**, select the column to apply to the filter condition. In the middle drop-down menu, 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 sections **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 cells 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 that do not satisfy the filter condition will be hidden.

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

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

Making filtered cells visible again

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

AutoFilter

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

To apply an AutoFilter:

1. Select the desired range of cells. *Important:* The first row of the range should contain headings for the data below.

2. Use the **Table > Filter** menu command. In the drop-down 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 these arrows will open a drop-down menu of 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.

In addition to listing the cell contents, the drop-down menu will contain the entries **All** (show all rows), **Nonempty** (show only rows where the cell has some content), and **Only Empty** (show only rows where the cell has no content).

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 attach a comment, select the cell to which the comment will be attached and choose **Insert** > **Comment**. A yellow rectangle will appear allowing you to type in the applicable comment. When done typing, click outside the yellow rectangle 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-left corner. Rolling the mouse over a cell with an attached comment, will cause the comment to be displayed. The comment disappears when the move is moved outside the cell borders.

Editing comments

To make changes to 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 drop-down menu will remove the comments from the selected cells.

Goal-seeking (Solver)

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, select the cell that contains the calculation.
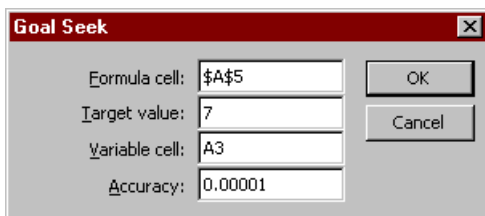
Upon executing the **Extras > Goal Seek** command, a dialog box will open with the following options:

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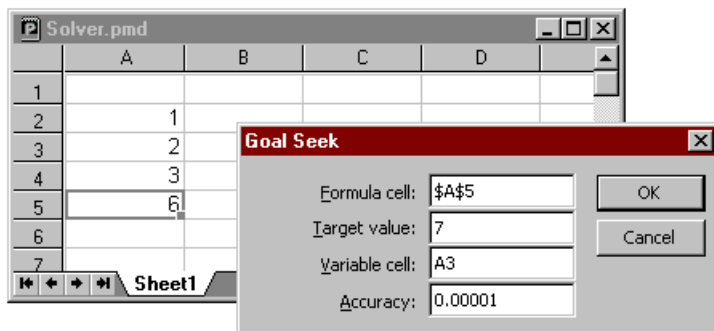
Notice in the screenshot how to fill in the values in the dialog box. When you click **OK**, PlanMaker starts the approximation process and displays the result "3" in a dialog box.

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 will be frozen and remain in their original location as you scroll through the worksheet.

> *Hint:* You can also use the ⬚ symbol in the bottom-right corner of the document window to freeze titles. Click this symbol and simply drag the mouse to the desired location.
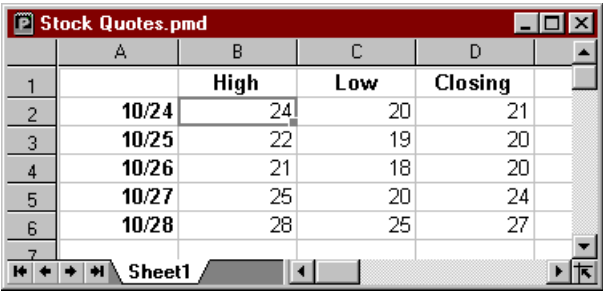
Deactivating freezing

To deactivate freezing, select the **View > Freeze** command once again. This removes the checkmark next to 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 with share prices:

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 trademark symbol) use the **Insert > Symbol** menu command as follows:

1. Choose **Insert > Symbol**.

A dialog box will appear that provides access to all characters available in the current font. If required, switch to a different font by selecting it from the **Font** drop-down menu.

2. Select the symbol to be inserted with the arrow keys or the mouse, then press the Enter key ⏎ or double-click the symbol.

The special character will now be inserted in the selected cell.

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

Overview: 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, as rounded to 2 decimals, 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**

The **Format > Borders** command lets you add a border to cells.

■ **Shades**

The **Format > Shades** 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 245).

- **Character format**

  The **Format > Character** command lets you modify the *character format* of cells (including 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 format* to cells (for example, "Paint this cell in red, if it contains a value greater than 1000").

- **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 245.

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:

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 click the **Number Format** tab.

The *number format* determines how numbers are represented in these cells. For example, if you enter 12.3456 in a cell and then apply one of the **Currency**

number formats to it, it will be displayed with the chosen currency symbol and two decimal places (for example, as $12.34).

> **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. Click the **Number format** tab.
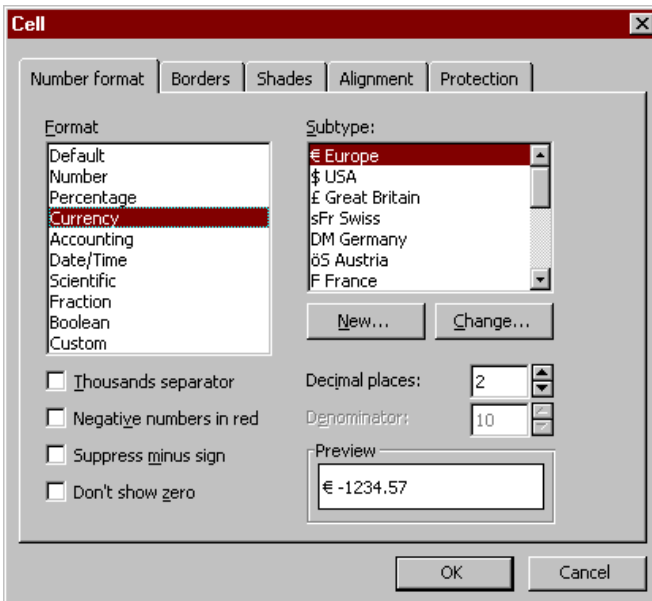
4. Select the desired number format.

5. Click **OK** to confirm.

Options available in the dialog box:

■ **Format**

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 decimals 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 PlanMaker's Format strip.

Currency

Displays the number with a currency symbol.

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

To create your own currency formats, click the **New** button. To change existing formats, click the **Change** button (see section "Working with user-defined number formats", page 111).

Example: $42.00

Hint: This number format can also be applied by clicking the 🔳 icon in PlanMaker's Format strip.

Accounting

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

To create your own accounting formats, click the **New** button. To change existing formats, click the **Change** button (see section "Working with user-defined number formats", page 111).

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:

Subtype	Display (and example)
M/D/YY	month, day, year (2 digits) (e.g., 7/2/04)
MM/DD/YYYY	month (2 digits), day (2 digits), year (4 digits) (e.g., 07/02/2004)
MMMM DD, YYYY	month (name), day (2 digits), year (4 digits) (e.g., February 07, 2004)
h:mm	hour, minute (2 digits) in 24 hours format (e.g., 9:30)
h:mm AM	hour, minute (2 digits), in AM/PM format (e.g., 09:30 AM)
hh:mm:ss AM	hour (2 digits), minute (2 digits), second (2 digits) in AM/PM format (e.g., 9:30:00 AM)
[h]:mm:ss	hour (in "endless" time format*), minute (2 digits), second (2 digits) (e.g., 52:00:00)

MM/DD/YY h:mm AM   month (2 digits), day (2 digits), year (2 digits) as well as hour, minute (2 digits) (e.g., 07/02/04 9:30 AM)

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* The "endless" time format distinguishes itself from other time formats by its feature of not setting the time back to 0:00 after 24 hours. This is useful for calculations with times. For example, when you add 20:00 and 5:00, all other time formats would return 1:00. With the "endless" time format, the result is 25:00.

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

To create your own date/time formats, click the **New** button (see section "Working with user-defined number formats", page 111).

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.

Changing an existing number format

Currency or **Accounting** number formats can be modified, as desired.

To modify a number format:

1. Select the number format to be edited in the **Subtype** list box.

2. Click the **Change** button.

3. Enter a text string that specifies the number format (see next section) and click **OK**.

The number format will be changed accordingly.

Deleting a number format

To delete a user-defined number format:

1. Select the number format to be deleted in the **Subtype** list box.

2. Click the **Delete** button.

The number format will be deleted.

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).
	Note: If *any* of the above codes are placed to the *left* of the decimal point, *all* 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.

	Note: 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).
	Example1: -#.# applied to the number 1.2 returns 1.2.
	Example2: -#.# applied to the number -1.2 returns -1.2.
	Note: 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 scientific notation.
	Example: #E+00 applied to the number 5000 returns 5E+03.
E- or **e-**	Same as E+, except that the exponent's sign is only displayed if it is negative.
	Example1: #E-00 applied to the number 5000 returns 5E03.
	Example2: #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*"	Display text without interpreting.
	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 decimals as defined in the **Format** > **Cell** dialog.
	Example: If you have set the number of decimals to 2, $#.~ applied to 1.2 returns $1.20.

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

Format codes for the number format "Date/Time"

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

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

Character	Result
D	Day (1-31)
DD	Day, 2 digits (01-31)
DDD	Name of day, abbreviated (So-Mo)
DDDD	Name of day (Sunday-Monday)
M	Month (1-12)
MM	Month, 2 digits (01-12)
MMM	Name of month, abbreviated (Jan-Dec)
MMMM	Name of month (January-December)
MMMMM	Name of month, first letter only (J for January to D for December)
YY	Year, 2 digits (e.g., 04)
YYYY	Year, 4 digits (e.g., 2004)
Q	Quarter (1-4)
QQ	The word "quarter" in the language set in the system's regional settings
h	Hour (0-23)
hh	Hour, 2 digits (00-23)
m	Minute (0-59)
mm	Minute, 2 digits (00-59)
s	Second (0-59)
ss	Second, 2 digits (00-59)
0	Tenths of a second (e.g., hh:mm:ss,0)

00	Hundredths of a second (e.g., hh:mm:ss,00)
000	Thousandths of a second (e.g., hh:mm:ss,000)
AM/PM	Display times in 12-hour format (with *AM* or *PM*). Has to be placed at the *end* of the format codes!
am/pm	Same as AM/PM, but with *am* or *pm*.
a/p	Same as AM/PM, but with *a* or *p*.
[h]	Number of hours in "endless" time format*
[m]	Number of minutes in "endless" time format*
[mm]	Same as [m], but with 2 digits.*
[s]	Number of seconds in "endless" time format*
[ss]	Same as [s], but with 2 digits.*

* 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, if 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

To create cell borders, choose **Format > Cell** and click the **Borders** tab.

Alternatively, use the **Format > Borders** command, which does exactly the same.
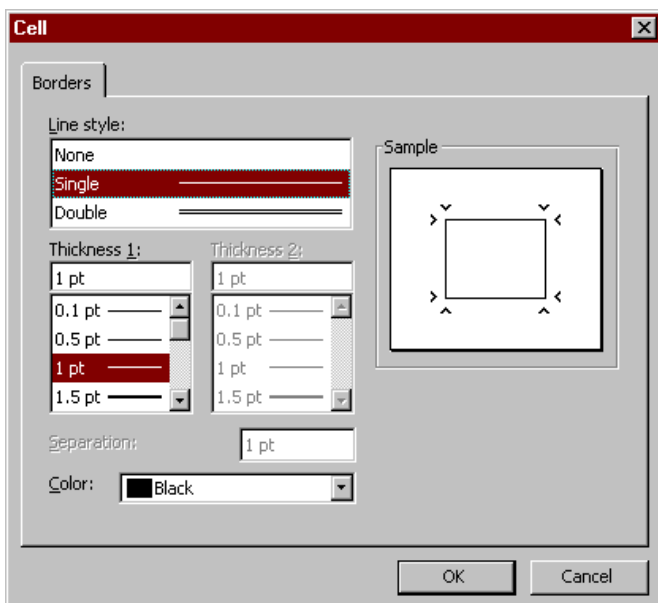
To apply a border surrounding *all* selected cells:

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 will now be surrounded by a border.

Changing single borders

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

The **Example** 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 it with the mouse. To deselect it, click 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**.

Shades

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

Alternatively, use the **Format > Shades** 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.
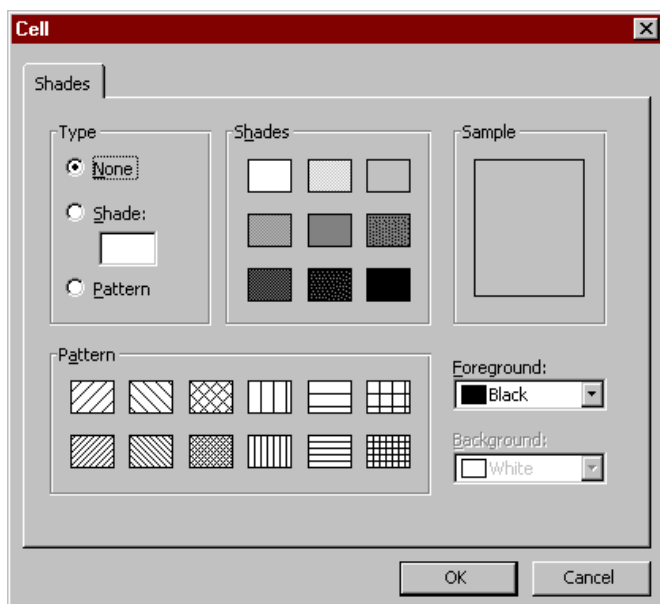
- **Applying a shade**

  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 **Fore-ground** drop-down list. (For information on adding new colors to color lists, see section "Document properties, Colors tab", page 274).

- **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 **Fore-ground** and **Background** drop-down list. (For information on adding new colors to color lists, see section "Document properties, Colors tab", page 274).

- **Removing shades or pattern**

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

Alignment

To change the alignment of the cells, choose **Format > Cell** and click the **Alignment** tab.

To change a single cell, navigate to it without selecting. To change multiple cells, select them before executing this command.
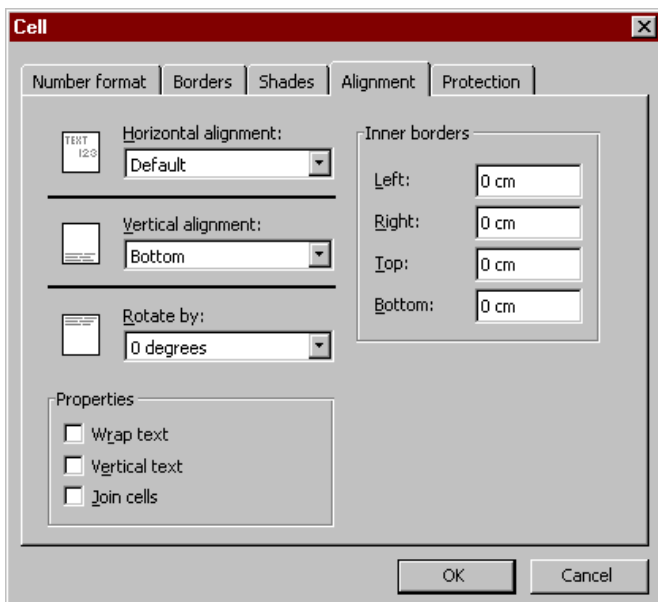
Options available:

Horizontal alignment

Determines the horizontal alignment of the cell content within the cell boundaries:

Default: Text left-aligned, numbers right-aligned, and logical values and error values centered

Left: Left-aligned

Centered: Centered

Right: Right-aligned

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 (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.

Wrap text

If this option is checked, the cell content will automatically be wrapped to multiple lines, if it does not fit into a single line.

Hint: To wrap parts of the cell content to the next line manually, press `Ctrl` `↵`.

By default, this option is switched off, so that text that does not fit is continued right of the cell.

Vertical text

If this option is checked, the cell content will be displayed vertically (top to bottom instead of left to right).

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.

Inner borders

Lets you edit the inner margins of cells.

Protection

The **Protection** tab in the **Format > Cell** dialog can be used to prevent cells from being changed, to hide the cell content or formula, or to disable printing.

For more information, see section "Sheet protection", page 245.

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 a cell content, only the selected characters are changed.
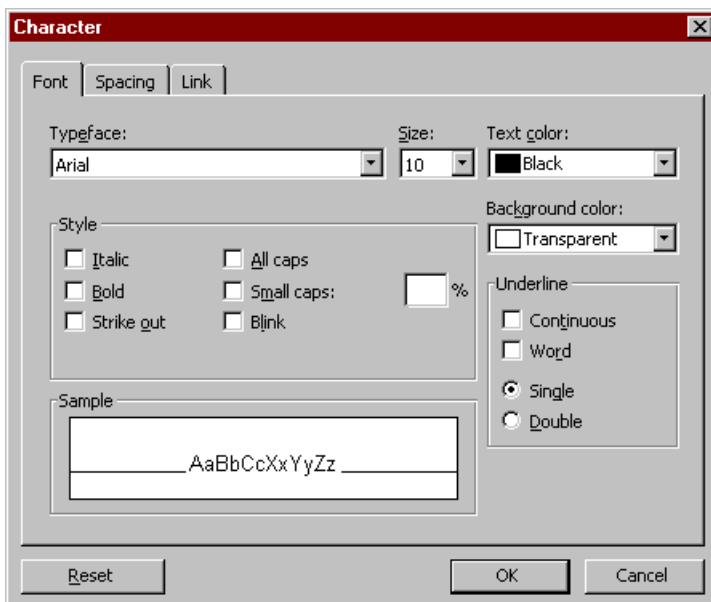
The character format settings in the **Format > Character** dialog are distributed over multiple tabs:

- **Font** tab

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

- **Spacing** tab

  Superscript and subscript, letter spacing and character width

- **Link** tab

  Lets you create links (e.g., to web pages). See section "Working with links", page 238.

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. Click the **Font** tab.

4. To change the font, select a new font from the **Font** drop-down list.

   To change the point 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 Format strip (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. Click the **Font** tab.

4. Check an option, or any combination of options, from the **Style** section of the dialog.

Hint: The Format strip (located above the worksheet) has buttons for the most common font styles: **B** for bold, *I* for italic, and <u>U</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. Click the **Font** tab.

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 tab", page 274.

Hint: You can also change the foreground color using the color drop-down list in the Format strip (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 > Shade** 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 $\boxed{\text{F2}}$ and select just parts of the cell content, only the selected characters are changed.)

2. Choose **Format > Character**.

3. Click the **Spacing** tab.

4. Choose **Superscript** to move text above the baseline (an imaginary line where characters rest); choose **Subscript** to move text below the baseline.

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: $\boxed{\text{Ctrl}}\boxed{\text{⇧}}\boxed{\text{Num+}}$ for superscript, $\boxed{\text{Ctrl}}\boxed{\text{⇧}}\boxed{\text{Num-}}$ for subscript, $\boxed{\text{Ctrl}}\boxed{\text{⇧}}\boxed{\text{Num*}}$ to turn superscript/subscript off. (Note: $\boxed{\text{Num+}}$ is the $\boxed{+}$ key on the numeric keypad.)

Letter spacing and character width

To change the letter spacing or character width of cell contents:

1. Select the desired cells.

2. Choose **Format > Character**.

3. Click the **Spacing** tab.

4. To modify the *letter spacing*, change the value in the **Amount** option. Values less than 100% will decrease the amount of space between letters and words; values greater than 100% will increase it.

   To modify the *character width*, change the value in the **Pitch** option. Values greater than 100% stretch the characters horizontally; values less than 100% compress them.

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

Resetting the character format

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).

All character formattings 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 169.

The paragraph format includes the following settings:

- **Paragraph indents**

- **Line spacing**

- **Paragraph alignment**

- **Hyphenation**

- **Paragraph spacing**

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

To indent text in a text frame, choose **Format > Paragraph**. There are independent settings for **Left**, **Right**, and **First**. The first line indent can be either positive or negative, and is used as an offset from the left side 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** section, 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** tab).

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

Available alignment types:

■ Left
■ Right
■ 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** tab).

PlanMaker will automatically hyphenate text entered in a text frame. All you have to do is to set the correct language in PlanMaker's preferences (see section "Setting up the language for spell-checking", page 218).

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 a text frame, choose **Format > Paragraph**, and select one of the options in the **Hyphenation** drop-down list.

Options available:

Option	Result
None	Do not hyphenate at all
Always	Try to hyphenate in every line
Every 2 lines	Try to hyphenate in every 2nd line only
Every 3 lines	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).

Paragraph spacing (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 amount of space in the **Before** and **After** boxes.

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.

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 cross-hair with a brush: $^+\!\!\!\!\!\mathscr{B}$

3. Drag the mouse pointer over the desired cells while pressing and holding the left mouse button.

4. To deselect, 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 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.

Note: If desired, you can define additional conditional formats in the **2nd condition** and **3rd condition** section.

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.

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.

AutoFormat

The **Format > AutoFormat** command lets you apply a predefined scheme of formats to an entire cell range.
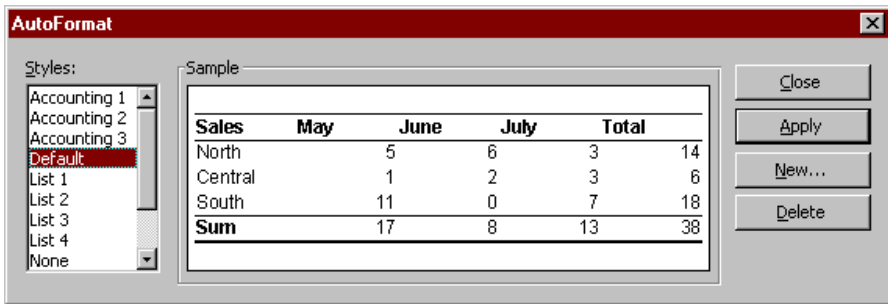
Select the desired cell range and choose **Format > AutoFormat**. A dialog displaying a list of predefined AutoFormats pops up. Select the desired format and click **Apply**. The cell range will be reformatted accordingly.

Creating user-defined AutoFormats

To create a user-defined AutoFormat:

1. Create a new table and format it as desired.

2. Select the section of the table containing the desired formats.

    The selection has to contain at least 3 by 3 cells. The first row and column should contain row/column headings.

3. Choose **Format > AutoFormat** and click the **New** button.

4. Give the new AutoFormat a name and click **OK**.

The new AutoFormat has been created and added to the list of available AutoFormats.

Note: AutoFormats are stored in the current document, allowing you to create a different set of AutoFormats for each document. To reuse Auto-Formats in other documents, create a *document template* (see section "Document templates", page 138) and include the new AutoFormat within the template.

Deleting user-defined AutoFormats

To delete a user-defined AutoFormat from a document, choose **Format > AutoFormat**, select the AutoFormat, and click the **Delete** button.

Character styles

Use **Format > Character Style** to select from a list of defined character styles, or to create and modify character styles.

Character styles are a collection of character attributes (font, size, type style, etc.) that you can name, save, and later apply to cells. For example, you can create one character style for cells containing values (using 10 point Times New Roman), and another style for headings (using 14-point Arial bold).

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

Annotation: PlanMaker also supports *cell styles* (see section "Cell styles", page 135). The difference between these two features is that character styles store the character format only, whereas cell styles store *both* cell format (number format, alignment, etc.) *and* character format.

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

Creating character styles

To create a new character style:

1. 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 121) pops up. Specify the character formats 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 click the **Style** tab. Place the cursor in the **Shortcut key** input box and press the desired key combination.

> *Note:* If you enter a key combination that is already in use, its current assignment will be displayed below the **Shortcut key** box. To prevent overwriting the keyboard shortcut for another style or menu command, press the Backspace key ⬅ and assign a different key combination.

Applying keyboard shortcuts utilizing Ctrl *and* ⇧ 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 Format strip.

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 121) 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.

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 132). 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 121) 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 105) 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 click the **Style** tab. Place the cursor in the **Shortcut key** input box and press the desired key combination.

Note: If you enter a key combination that is already in use, its current assignment will be displayed below the **Shortcut key** box. To prevent overwriting the keyboard shortcut for another style or menu command, press the Backspace key ⌫ and assign a different key combination.

Applying keyboard shortcuts utilizing ⎈Ctrl *and* ⇧ 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 Format strip.

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.

Document templates

Character styles and cell styles (see previous sections) are stored in the document they were created in. To reuse styles in other documents, store them in a *document template*.

When you use the **File > New** command to create a new document, PlanMaker requires that you choose the document template the new file will be based on. Choosing a document template that contains user-defined character and cell styles will make these styles available in the new document.

Note: Document templates can not only contain your favorite character and cell styles, but also text, values, calculations, etc. This enables you to create a set of templates for invoices, annual reports, balance sheets, or other frequently used documents.

Creating document templates

To create a new document template:

1. Start a new document or open the document to base the document template on.

2. Create the desired character and cell styles (and text, values, calculations, etc.) to be stored within the template.

3. Choose **File > Save as**.

4. In the **Files of type** list, select **PlanMaker template**.

    PlanMaker automatically switches to the document template folder.

5. Enter a filename for the template.

6. Click **OK** to confirm.

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

Using document templates

To use a user-created document template, start a new document. PlanMaker will display a dialog to let you select the document template:

1. Choose **File > New**.

2. Click one of the document templates listed.

3. Click **OK** to confirm.

PlanMaker will create a new document based on the selected template. It will contain all character and cell styles stored in the document template, as well as all the text, values, calculations, etc., stored in the template.

Modifying document templates

To modify a document template, proceed as you would modify a normal document: Open it, make your changes, and save it:

1. Choose **File > Open**.

2. In the **Files of type** list, select **PlanMaker template**.

3. Select the template to modify. Click **OK**.

4. Modify the content and/or the styles of the template as desired.

5. Choose **File > Save** to save the template.

The document template "Normal.pmv"

The document template named NORMAL.PMV is the *default template* for new documents. When using the **File > New** command, this template is selected by default. Please keep this in mind when modifying this template.

By default, NORMAL.PMV is completely empty. All it contains is the standard character style "Normal" and standard cell style "Normal". Therefore, this template is an ideal basis for creating new documents or document templates from the scratch.

Hint: To use a different document template as your default template, choose **File > New**, select a template, and click the **Set default** button. From now on, this template will be selected by default when creating a new document using the **File > New** command.

Page setup

The *page setup* dialog allows you to set print options for the worksheet. This includes settings for paper size and orientation, margins, headers and footers, etc.

Covered in this section:

■ **Page format**

   Use **File > Page Setup** to change paper size, orientation, and margins.

■ **Additional page setup options**

   The **Options** tab in the **File > Page Setup** dialog provides extended page setup options for controlling page numbers, print order, etc.

■ **Headers and footers**

The **Headers and footers** tab in the **File** > **Page Setup** dialog lets you add headers and footers to your worksheet. Headers are printed above the worksheet; footers are printed below.

■ **Page breaks**

PlanMaker automatically inserts page breaks as needed. If desired, you can insert "hard" page breaks to override them, using the **Insert** > **Page break** command.

See the following pages for detailed information.

Page format

Choose **File** > **Page Setup** and click the **Page format** tab to modify the page format (paper size, orientation, margins) of the current worksheet.

Note: You can set up a different page format for each worksheet in a document. For example, within one document, the page orientation can be set to portrait in one worksheet, and landscape in another.

Options available:

Orientation

Click **Portrait** for a top-to-bottom page orientation (long edge vertical); click **Landscape** for a side-to-side page orientation (long edge horizontal).

Paper size

Lets you select a paper size. Letter size (8.5 by 11 inches) is the default. To use a custom paper size, enter the appropriate values in the **Width** and **Height** boxes.

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: Lets you choose from the list of printer supported paper bins.

Additional page setup options

Choose **File > Page Setup** and click the **Options** tab 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 components in the print-out:

- **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** (print gridlines between the cells)

- **Comments** (print comments applied to cells)

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 to be printed.

By default, the print range 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.

> *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]**.

Center horizontal/Center vertical

If **Center horizontal** is checked, the worksheet's content will be horizontally centered on the page when printed.

If **Center vertical** 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

Choose **File > Page Setup** and click the **Headers and Footers** tab to add/modify headers and footers in the current worksheet.

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

To add or modify headers and footers:

1. Choose **File > Page Setup**.

2. Click the **Headers and Footers** tab.

    Or, use the **Insert > Header and Footer** command.

3. In the **Header** or **Footer** box, enter text to be displayed in the header or footer.

4. Click **OK** to confirm.

The headers/footers are now set.

Note: Headers/footers are not displayed in the worksheet; they appear in the printout only. To preview how the headers/footers will appear when printed, use the **File > Page View** command.

Formatting headers and footers

To change the format of headers/footers, click the **Format** button in the above dialog. A dialog box showing all formats available for headers and footers will appear.

> *Hint:* To change the distance between headers/footers and the top/bottom edge of the page, use the **Format > Page Setup** command (**Page Format** tab).

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:

Field name	Result
Document Name	File name of the document
Sheet Name	Name of the current worksheet
Page Number	Page number
Number of Pages	Total number of pages
Print Date	Current date (date of printing)
Print Time	Current time (time of printing)
Date of Last Change	Date the document was last saved
Creation Date	Date the document was created

To insert one of these fields, click the **Fields** button, and then click a field.

Page breaks

Based on the selected paper size and margins, PlanMaker automatically inserts *page breaks* in a document. When printing, a new page will be started at each page break. If you take a closer look at a worksheet, you will notice

that some of the gridlines between cells are darker. These lines indicate where PlanMaker has inserted automatic page breaks.

To manually control where PlanMaker starts a new page, insert "hard" page breaks. Hard page breaks override PlanMaker's automatic page breaks.

To insert a hard page break, choose the **Insert > Page Break** command. A submenu with the following commands will open:

- **Insert before Row** inserts a horizontal page break above the current row.

- **Delete before Row** deletes such a page break. Navigate to a cell located directly below the page break before selecting this command.

- **Insert before Column** inserts a vertical page break left of the current column.

- **Delete before Column** deletes such a page break. Navigate to a cell located directly to the right of the page break before selecting this command.

Page view

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

The page view window provides a toolbar with the following buttons:
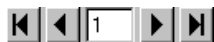
Use these buttons to scroll from page to page.

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 141.

The right button invokes the **File > Print** command to print the document. See section "Printing", page 241.

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

Overview: Search & replace

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

■ **Search** and **Replace**

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

■ **Go to...**

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

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 document will be searched.

2. Choose **Edit > Search** (keyboard shortcut: Ctrl F).

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** button again 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 document will be searched.

2. Choose **Edit > Replace** (keyboard shortcut: Ctrl H).

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** button again 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 previous 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 PCs users: These buttons are not available in the Pocket PC version.

The extended Search/Replace dialog has the following options:

"Options" section

This dialog section lets you 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 "<u>win</u>dows" or "sales, <u>win</u>ter 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" section

This dialog section allows you to 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.

Go to...

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 strip works exactly like the edit box in the **Edit > Go to** dialog.
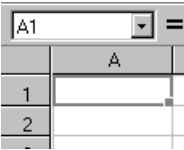
To use this control to jump to a specific cell address, click inside this control, enter the address, and press the Enter key ⏎. Enter either a single cell address, a cell range, or the name of a named range. Hint: Clicking on the small arrow right of the control opens a drop-down list of all named ranges.

Objects (pictures, drawings, etc.)

Overview: 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 169, see also chapter "Charts", page 187)
- **Text frames** (page 169)
- **Pictures** (page 172)
- **OLE objects** (page 175)
- **Drawings** (page 179)

Objects – basic procedures

This section discusses basic procedures for working with objects, e.g., inserting, selecting, and modifying objects.

More advanced procedures will follow later on, in section "Objects – advanced procedures" (page 167).

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 placed into the frame. Choose a 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 169).

Selecting objects

To modify an object, it must first be selected. To select, click the object. A red selection frame will be displayed around the object.

> *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 not editable. Rather, various 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 Format strip 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 strip

When in Object mode, the Format strip is automatically replaced by the *Object strip*.
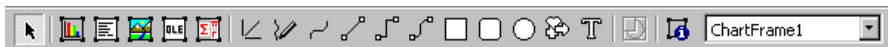
The Object strip

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)

* The equation editor is available only for certain versions of PlanMaker

> *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 strip, 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.

To select *multiple* objects, draw a frame around these objects.

Jumping from object to object

In Object mode, you can jump from object to object by using the following keys:

Key	Result
Tab	Select next object
⇧ Tab	Select previous object

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

Changing position and size of objects

To change the position or size of 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.

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.
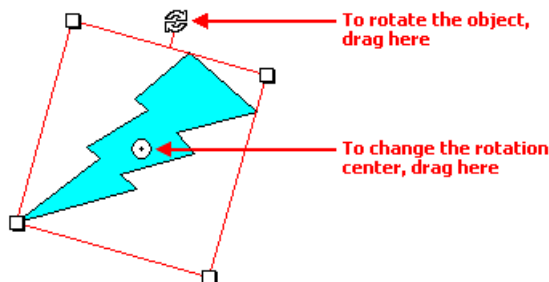
Alternatively, drawings can be rotated or flipped using the **Object** > **Rotate or Flip** command.

Aligning and distributing objects

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

A submenu 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

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

Object properties are settings such as object size, fill style, line style, etc.

To change the properties of an object, select it and choose the **Object > Properties** command.

> *Hint:* With most types of objects, this command can also be invoked by double-clicking the object.

The Object Properties dialog pops up. It contains the following tabs:

Object properties, Format tab

Click the **Format** tab to modify the size/positioning of objects, rotate objects, or flip objects.

Options available:

■ **Size** and **Scaling** section

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** section

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 the object, it 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, but 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** section

  Lets you rotate the object by entering an angle in degrees. Available only for certain types of objects.

- **Flip** section

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

Object properties, Filling tab

Note: This tab 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.

Click the **Filling** tab 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 tab", page 274.

  If you check the **Semi-transparent** option, the color will be displayed with 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 crosshair 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 tab

Note: This tab is available only for certain types of objects.

Click the **Lines** tab to modify the lines used to paint the object or its border:

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 tab

Note: This tab is available only for certain types of objects.

Click the **Shadow** tab 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**

  If you check this option, the shadow will be displayed with 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 tab

Note: This tab is available only for text frames and drawings.

Click the **Shadow** tab to add a 3D effect to the object.

For this purpose, activate the **Use 3D effect** option and select one of the predefined 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** section

By default, the side faces of the object are painted in dark gray. To change the 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 tab

Click the **Properties** tab to modify common object settings.

Options available:

■ **Name**

PlanMaker automatically assigns a name to every object you insert. You can change that name here, though this has no further effect.

■ **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 167.

■ **Printable**

This option is checked by default. If you deactivate it, the object will not print. See also section "Hiding objects", page 167.

- **Locked**

  This option is checked by default. If you deactivate it, the object will not be locked when worksheet protection is activated. See also section "Sheet protection", page 245.

- **Tab stop**

  This option is checked by default. If you deactivate it, users will no longer be able to jump to the object by pressing the ⎵Tab⎵ key in Object mode. See also section "Object mode", page 156.

- **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 238.

Additional tabs

With some object types, additional tabs are displayed. To learn more about these tabs, 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**, click the **Properties** tab, and use the following options:

- If you deactivate the **Visible** option, the object will not be displayed on screen.

■ If you deactivate the **Printable** option, the object will not print.

Hint: If you have made an object invisible accidentally, choose **File > Proper-ties**, click the **Options** tab, and activate the **Show hidden objects** option. This will make all invisible objects reappear, allowing you to select them and reactivate their **Visible** option (as described above).

Changing the order of objects

To change the order of overlapping objects:

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 strip 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**.

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 187.

Text frames

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

Inserting text frames

To insert a text frame:

1. Choose **Object > New Text Frame** or click the ▤ icon in the Object strip (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 tab

These tabs are identical for most types of objects. They contain the following options:

■ **Format tab:** Lets you change size and positioning. See section "Object properties, Format tab", page 161.

■ **Filling tab:** Lets you change the filling. See section "Object properties, Filling tab", page 162.

■ **Lines tab:** Lets you add border lines. See section "Object properties, Lines tab", page 163.

■ **Shadow tab:** Lets you add a shadow. See section "Object properties, Shadow tab", page 164.

■ **3D tab:** Lets you add a 3D effect. See section "Object properties, 3D tab", page 165.

■ **Properties tab:** Lets you modify common settings. See section "Object properties, Properties tab", page 166.

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

Inner text tab

Click this tab to change settings affecting the text inside the frame.

■ **Inner margins** section

Lets you modify the margins between text frame and inner text. If you check the **Automatic** option, PlanMaker will calculate automatically.

■ **Rotate by...** section

Lets you rotate the inner text in 90 degrees increments.

■ **Overlapping objects** section

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** section

Lets you change the vertical alignment of the inner text:

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

AutoShapes tab

A text frame is actually an *AutoShape* that has been filled with text. *AutoShapes* are drawings with a pre-defined shape (for example, rectangles, ellipses, arrows, banners, callouts, etc.).

By default, the AutoShape used for text frames is a simple rectangle. To use a different shape, select it in the **AutoShapes** tab. Click on a category in the list on the left, then click the desired AutoShape.

To learn more about AutoShapes, see section "Drawings", page 179.

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] icon in the Object strip (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 placed into the frame. Choose a 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 tab

These tabs are identical for most types of objects. They contain the following options:

- **Format tab:** Lets you change size and positioning. See section "Object properties, Format tab", page 161.

- **Filling tab:** Lets you change the filling. Only visible in pictures containing transparent areas. See section "Object properties, Filling tab", page 162.

- **Lines tab:** Lets you add border lines. See section "Object properties, Lines tab", page 163.

- **Shadow tab:** Lets you add a shadow. See section "Object properties, Shadow tab", page 164.

- **Properties tab:** Lets you modify common settings. See section "Object properties, Properties tab", page 166.

For pictures, the following additional tab is available in the dialog:

Picture tab

Click this tab to change the following settings:

- **Colors** section

  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** section

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

- **Settings** section

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

- **Transparent color** section

  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** section

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. Not available if the picture is stored in the document.

■ **Export** button

To store a copy of the picture file on your hard disk, click this button and choose the desired folder and file name.

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, see 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 submenu. Choose the **Edit** command from the submenu.

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:

Button	Function
Update now	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.
Open source	Launches the application associated with the OLE object so you can edit it. *Hint:* Alternatively, simply double-click the object to open it for editing.
Change source	Lets you select a different file as the source of the OLE object.
Cancel link	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 tab

These tabs are identical for most types of objects. They contain the following options:

- **Format tab:** Lets you change size and positioning. See section "Object properties, Format tab", page 161.

- **Filling tab:** Lets you change the filling. Only visible in objects containing transparent areas. See section "Object properties, Filling tab", page 162.

- **Lines tab:** Lets you add border lines. See section "Object properties, Lines tab", page 163.

- **Shadow tab:** Lets you add a shadow. See section "Object properties, Shadow tab", page 164.

- **Properties tab:** Lets you modify common settings. See section "Object properties, Properties tab", page 166.

For OLE objects, the following tab is also available:

Picture tab

Click this tab to change the following settings:

- **Colors** section

  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** section

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

- **Settings** section

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

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 submenu – in this case, choose **Rectangle**.

   Alternatively, click one of the drawing tools displayed in the Object strip (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.

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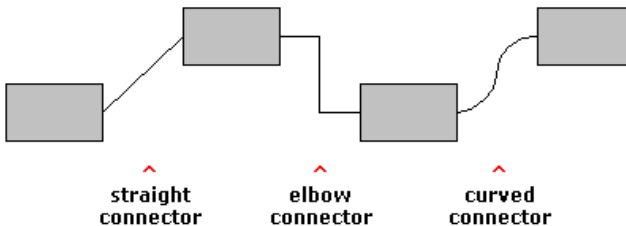
For this purpose, select one of these tools and move the mouse from one object to the next, with the left mouse button held down.

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 182.

TextArt objects

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

Use the **TextArt** tool 𝕋 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

If desired, text can be added to AutoShapes. It will be displayed inside the shape – as in a text frame.

To add text to a text frame:

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, Plan-Maker 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 169).

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 tab

These tabs are identical for most types of objects. They contain the following options:

- **Format tab:** Lets you change size and positioning. See section "Object properties, Format tab", page 161.

- **Filling tab:** Lets you change the filling. See section "Object properties, Filling tab", page 162.

- **Lines tab:** Lets you modify the lines used to draw the object. See section "Object properties, Lines tab", page 163.

- **Shadow tab:** Lets you add a shadow. See section "Object properties, Shadow tab", page 164.

- **3D tab:** Lets you add a 3D effect. See section "Object properties, 3D tab", page 165.

■ **Properties tab:** Lets you modify common settings. See section "Object properties, Properties tab", page 166.

For certain types of drawings, additional tabs are displayed:

AutoShapes tab (available only for AutoShapes)

Click this tab 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 tab (available only for AutoShapes with text added)

Click this tab 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 182).

■ **Inner margins** section

Lets you modify the margins between AutoShape and inner text. If you check the **Automatic** option, PlanMaker will calculate suitable settings automatically.

■ **Rotate by...** section

Lets you rotate the inner text in 90 degrees increments.

■ **Overlapping objects** section

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** section

Lets you change the vertical alignment of the inner text:

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

Text tab (available only for TextArt objects)

Click this tab to edit or format the text displayed in a TextArt object:

■ **Text** input field

Lets you edit the text to be displayed.

■ **Font** section

Lets you modify font and font size.

■ **Style** section

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

■ **Spacing** section

To modify the **Character spacing**, entered 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 tab (available only for TextArt objects)

Click this tab to change the type of deformation used for a TextArt object.

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

Charts

Overview: 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] icon in the Object strip (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 189.)

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 strip

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

The Chart strip

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. Click the **Chart Type** tab.

4. Choose the desired chart type and chart subtype.

Hint: Alternatively, use the first two icons in the Chart strip to change the type of a chart: The first icon represents the chart type; the second icon represents the subtype (if available).

Chart types available:

Column chart

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

Bar chart

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

Line chart

Line charts display values as points and/or connecting lines.

Area chart

Area charts are identical to Line charts, except that the area below the lines is filled with color.

XY Scatter chart

XY Scatter charts display values as points and/or lines. Unlike Line charts, the data area must contain both 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 strip 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:
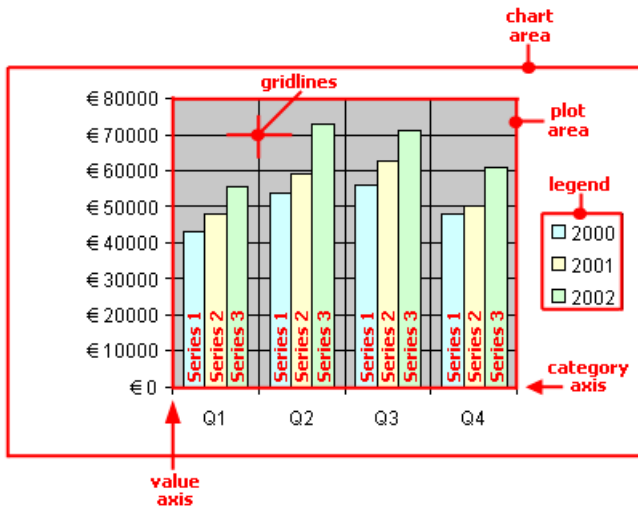
Series 1, Series 2, etc. represent the chart's *data series*.

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 strip 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] icon in the Chart strip 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 strip, or double-click the chart area.

Options available:

Format tab

■ **Border** section

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** section

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 tab", page 162.

Font tab

Use this tab to change the default character format (font, font size, font styles, etc.) of the chart.

> *Important:* Changing the font settings for the chart area will also change the font settings for *all* other chart elements.

Plot area

The *plot area* of a chart is the area where data series, axes, and gridlines are painted.

Modifying properties: To change the properties of the plot area, select it, right-click it, and choose the **Plot area: Properties** command from the context menu.

> *Hint:* Alternatively, select the plot area and either click the 🔳 icon in the Chart strip, or double-click the plot area to access its properties dialog.

Options available:

Format tab

■ **Border** section

   Lets you add border lines in the selected line style to the plot area.

■ **Filling** section

   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 tab", 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 strip, or double-click a wall to access its properties dialog.

Options available:

Format tab

■ **Border** section

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

■ **Filling** section

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 tab", page 162.

3D View tab

Use this tab to modify the 3D settings for the entire chart. For more information, see section "Chart properties, 3D View tab", page 213.

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 strip, or double-click the floor to access its properties dialog.

Options available:

Format tab

■ **Border** section

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

■ **Filling** section

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 tab", page 162.

3D View tab

Use this tab to modify the 3D settings for the entire chart. For more information, see section "Chart properties, 3D View tab", page 213.

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 strip, or double-click a corner to access its properties dialog.

Options available:

3D View tab

Use this tab to modify the 3D settings for the entire chart. For more information, see section "Chart properties, 3D View tab", page 213.

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 tab

■ **Border** section (or **Line** section)

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

■ **Filling** section

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 tab", page 162.

■ **Marker** section (available only for certain chart types)

Some chart types (e.g. certain types of line charts) draw *markers* for each data point. This section lets you modify the appearance of such markers. For this purpose, choose the **Custom** option and select the desired style, size, color, etc.

Data labels tab

Use this tab to add *labels* to the selected data points. This is useful, for example, if you want to have the exact values displayed for each data point.

■ **Display** section

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** section

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

Note: Labels can be modified like any other kind of chart element. For example, to change their properties, select one of them, right-click it, and choose the **Data label: Properties** command from the context menu.

Error bar Y tab

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

Use this tab to add *error bars* to the data points of the selected data series. Error bars display the possible/tolerable error in the form of lines ending with short dashes at their ends.
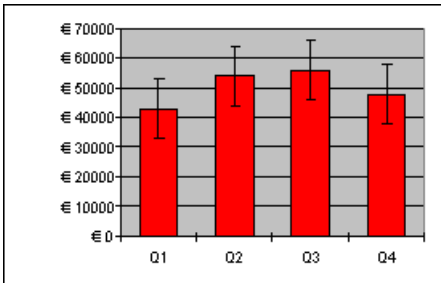
A chart using both "Plus" and "Minus" error bars

To add error bars, select the desired type of error bar in the **Display** section: **Plus only** displays a positive error bar, **Minus only** displays a negative error bar, **Plus and minus** displays both error bars.

The **Show as** section lets you modify the appearance of the error bars: with or without end dashes.

The **Value** section lets you determine the length of error bars: If you choose **Fixed**, the error bars will have a fixed length; if you choose **Percent**, the length will be determined by the specified percentage of each value, and so on.

Error bar X tab

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

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

Guidelines tab

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

Use this tab 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 tab

This tab contains several additional options for the selected chart type.

Trend lines

> *Note:* Trend lines are available only for certain chart types (including two-dimensional column, bar, and line charts).

If desired, you can add *trend lines* to the data series of a chart.

Trend lines can be used to graphically display the *trend* of a data series (i.e., to what extent the data series rises/falls on average). Trend lines can also be

extended beyond the given data points, so that they display a forecast for future values.

A statistical technique called *regression analysis* is used to calculate trend lines.

Adding trend lines: To add a trend line to a data series, select the data series, right-click it, and choose the **Add trend line** command from the context menu.

> *Hint:* Alternatively, select the data series and either click the icon in the Chart strip or choose the **Object > Chart > Add trend line** command.

Removing trend lines: To remove a trend line, select it and press the `Del` key.

Modifying properties: To change the properties of a trend line, select it, right-click it, and choose the **Trend: Properties** command from the context menu.

> *Hint:* Alternatively, select the trend line and either click the icon in the Chart strip, or double-click the trend line to access its properties dialog.

Options available:

Format tab

■ **Line** section

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

Trend tab

■ **Type** section

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:	$y = b + c_1x + c_2x^2 + c_3x^3 + ... + c_nx^n$
Exponential:	$y = ce^{bx}$ (e = Euler's number)
Logarithmic:	$y = c \ln(x) + b$
Potential:	$y = cx^b$
Moving average:	$f(x_i) = (x_i + x_{i-1} + x_{i-2} + ... + x_{i-n+1}) / n$

■ **Based on series**

Lets you choose the data series for which the trend line is displayed.

■ **Forecast** section

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 quarter) 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 quarter.

■ **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** section

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 click the **Content** tab. Check the axes to be displayed. For example, if you check the **X axis** option, the x axis (category axis) will be displayed.

Modifying properties: To change the properties of the category axis, select it, right-click it, and choose the **Category Axis: Properties** command from the context menu.

Hint: Alternatively, select the axis and either click the 🖍 icon in the Chart strip, or double-click the axis to access its properties dialog.

Options available:

Format tab

■ **Line** section

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

■ Sections **Major ticks** and **Minor ticks**

Lets you modify the placement of the tick marks displayed on the axis.

■ **Tick labels** section

Lets you modify the placement of the tick labels displayed at the tick marks.

Scale tab

Use this tab to change the scaling of the axis.

Annotation: The first, second, third, etc., data point of *all* data series is called a *category*.

- **Axis ends** section

  Lets you determine where to end the visible part of the axis: **In categories** or **Between categories**.

- **Number of categories between** section

  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** section

  Use this option to determine where the x axis (category axis) will cross the y axis (value axis): **At low end** (where the axis begins), **At high end** (where the axis ends), or at the specified category number.

- **Invert axis direction**

  If this option is checked, the direction of the axis is reversed.

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the axis labels.

Note: If desired, the axis labels can be rotated by choosing the **Custom** option and selecting the desired angle in the **Rotation** section.

Value axis (x 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 click the **Content** tab. Check the axes to be displayed. For

example, if you check the **Y axis** option, the y axis (value axis) will be displayed.

Modifying properties: To change the properties of the value axis, select it, right-click it, and choose the **Value Axis: Properties** command from the context menu.

Hint: Alternatively, select the axis and either click the icon in the Chart strip, or double-click the axis to access its properties dialog.

Options available:

Format tab

■ **Line** section

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

■ Sections **Major ticks** and **Minor ticks**

Lets you modify the placement of the tick marks displayed on the axis.

■ **Tick labels** section

Lets you modify the placement of the tick labels displayed at the tick marks.

Scale tab

Use this tab to change the scaling of the axis.

■ Sections **Lowest value** and **Highest value**

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** section

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** section

  Lets you modify the interval between major tick marks on the axis.

- **Minor step value** section

  Lets you modify the interval between minor tick marks on the axis.

- **Invert axis direction**

  If this option is checked, the direction of the axis is reversed.

- **Logarithmic scale**

  If this option is checked, the axis will use a logarithmic scale (e.g., 10, 100, 1000, etc.) rather than a linear scale.

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the axis labels.

Note: If desired, the axis labels can be rotated by choosing the **Custom** option and selecting the desired angle in the **Rotation** section.

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 click the **Content** tab. Check the axes to be displayed. For example, if you check the **Z axis** option, the z axis (series axis) will be displayed.

Modifying properties: To change the properties of the series axis, select it, right-click it, and choose the **Series Axis: Properties** command from the context menu.

Hint: Alternatively, select the axis and either click the icon in the Chart strip, or double-click the axis to access its properties dialog.

Options available:

Format tab

■ **Line** section

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

■ Sections **Major ticks** and **Minor ticks**

Lets you modify the placement of the tick marks displayed on the axis.

■ **Tick labels** section

Lets you modify the placement of the tick labels displayed at the tick marks.

Scale tab

Use this tab to change the scaling of the axis.

■ **Number of series between** section

By default, PlanMaker draws a tick mark on the axis at *every* data series and adds a tick label to *every* tick mark. To alter these settings:

The **Tick marks** option determines the frequency at which tick marks are set. Enter 1, and a tick mark is set for every data series. Enter 2, and a tick mark is set for every second data series, etc.

The **Tick labels** option determines the frequency at which tick marks are labeled. Enter 1, and every tick mark is labeled. Enter 2, and every second tick mark is labeled, etc.

■ **Invert axis direction**

If this option is checked, the direction of the axis is reversed.

Font tab

Use this tab to change the character format (font, font size, font styles, etc.) of the axis labels.

Note: If desired, the axis labels can be rotated by choosing the **Custom** option and selecting the desired angle in the **Rotation** section.

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**, click the **Content** tab, and check all major or minor grids you want to be plotted.

Hint: Alternatively, use the two ▥ ▤ icons in the Chart strip, 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 strip, or double-click one of the lines to access the properties dialog.

Options available:

Format tab

- **Line** section

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

Changing the scaling of gridlines

To change the scaling of gridlines, modify the properties of the corresponding *axis* (**Scaling** tab).

Legend

If desired, you can add a legend to a chart. A *legend* is a small box indicating which colors/patterns are assigned to the data series displayed in the chart.

Showing/hiding the legend: To show/hide the legend, select the chart, choose **Object > Properties**, and click the **Content** tab. Open the **Legend** drop-down list, and choose the desired location.

If you choose **Custom**, the legend can be moved to an arbitrary position (using the mouse). If you choose **None**, the legend will not be displayed.

> *Hint:* Alternatively, use the 🔳 icon in the Chart strip 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 strip, or double-click the legend to access its properties dialog.

Options available:

Format tab

■ **Border** section

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** section

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 tab", page 162.

Font tab

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

Legend tab

Use this tab to change the placement of the legend.

If you choose **Custom**, the legend can be moved to an arbitrary 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 strip will also access the Object Properties dialog.

Options available:

Chart properties, Format tab

Click the **Format** tab to change size and positioning of the chart. For details, see section "Object properties, Format tab", page 161.

Chart properties, Properties tab

Click the **Properties** tab to modify common object settings. For details, see section "Object properties, Properties tab", page 166.

Chart properties, Chart Type tab

Click the **Chart Type** tab to modify the chart type. For details on chart types, see section "Chart type", page 189.

Chart properties, Data Source tab

Click the **Data Source** tab 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** section

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 191.

■ **Data source area contains** section

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 tab

Click the **Series** tab 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 **Move Up** and **Move down** buttons to change the order of the data series. The **Add** and **Delete** buttons add/delete a data series.

■ **Data sources** section

Use this section 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** section

Use this section 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 tab

Click the **Content** tab 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** section

Use this section 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** section

Use this section to configure the secondary axes (only available for charts that contain secondary axes).

■ **Legend**

Use this section 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 tab

Note: This tab is only available for three-dimensional chart types.

Click the **3D View** tab 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 tab

Note: This tab is only available for Radar charts.

Click the **Radar** tab 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**, click the **Calculate** tab, and uncheck the **Recalc automatically** option in the **Charts** section.

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

Spell-checker

Overview: Spell-checker

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:

A) Choose the **Extras > Check spelling** command to check spelling for the entire document.

B) Activate the **Check spelling as you type** option to check spelling as you type. When an unknown word is typed, a dialog box with spelling suggestions will appear.

■ **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 feature**

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, click the **Language** tab, and select the desired language in the **Language** drop-down list.

Spell-checking documents

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

Use **Extras > Check Spelling** to check spelling in the current document.

If this command is invoked from within a *cell*, the spelling in all cells of the current worksheet will be checked. If invoked from a *text frame*, only the corresponding text frame will be checked.

When an unknown word is found, PlanMaker highlights it and opens the Spell Check dialog box.
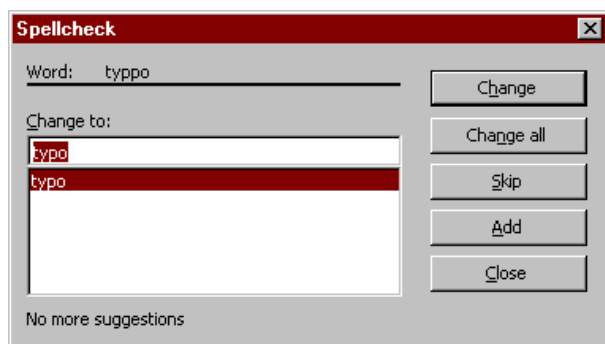
Click the appropriate button to change, skip or add the word to your user dictionary:

Button	Explanation
Change	Use this button to correct the spelling of the word. Before clicking this button, either select one of the suggested spellings in the **Change To** list, or manually type in the correct spelling.

Change all	Similar to the **Change** button, except that *all* occurrences of the misspelled word will be changed in the entire document.
Skip	Click this button to ignore the current occurrence of the word.
Add	Click this button to add the word to your user dictionary. If this word is found by the spell-checker again, it will not be considered as an unknown word.

To stop spell-checking, click the **Close** button.

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**, click the **Language** tab, 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.

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 S*martText* 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".

The following section details 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** 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** tab) is activated.

2. Type "lax" (without the quotation marks).

3. The automatic 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 219.

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**, click the **Language** tab, and activate this option to have SmartText entries expanded automatically.

Alternatively, SmartText entries can be inserted by choosing the **Insert > SmartText** 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 220).

■ **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 modify the content of a SmartText entry, select it, click **Edit**, and enter the new content.

■ **Inserting**

To insert the content of a SmartText entry into the document, select it, and click **Insert** (see section "Inserting SmartText entries", page 222).

Managing documents

Overview: 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\Soft-Maker").

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\a*.*, it will change to the folder c:\MY DOCU-MENTS\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 R 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 QuickPath:

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 click the **Summary** tab. 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**, click the **Files** tab, 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 moved and resized.

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 submenu with the following options appears:

E-mail: Send document via e-mail

Print: Print document

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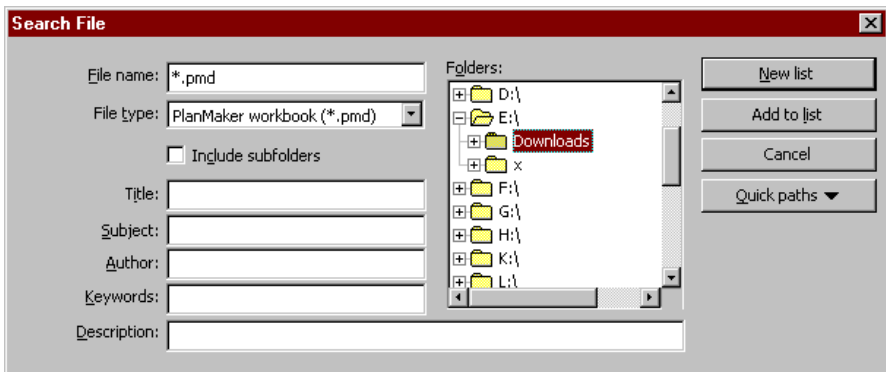
You can search files by file name, folder, file type, and document summary (title, subject, author, keywords).

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 MᴙRᴇ-ᴘᴏʀᴛ.ᴘᴍᴅ 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

Overview: 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.
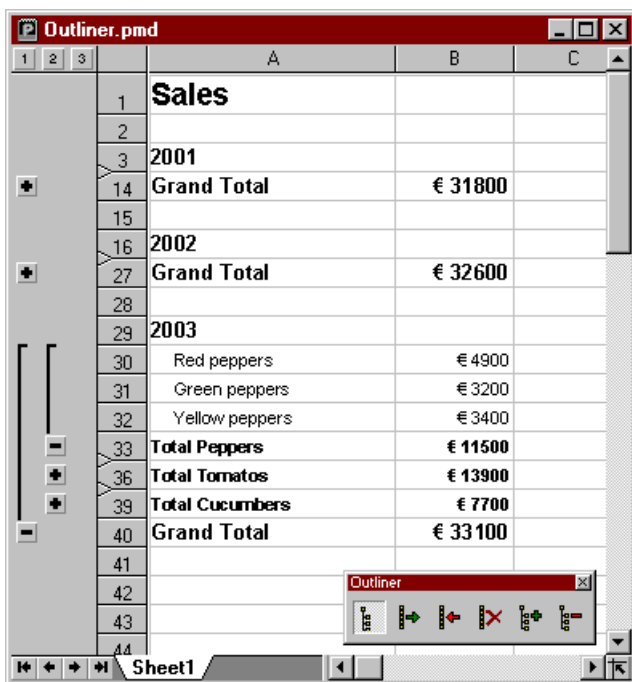
Use the Outline pane to hide/unhide grouped cells:

- 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 strip

In addition to the Outline pane, a toolbar called the *Outline strip* 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 strip.

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 strip.

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 strip.

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 selected.

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 ［1］［2］［3］ 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 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 changed using the **Table > Outliner > Automatically Show Outline Pane** command.

■ **Protect outline**

If this option is checked, the outline will be protected if sheet protection is activated for the worksheet (see also section "Sheet protection", page 245).

The current state of the outline will be frozen. Users will not be able to group/ungroup cells or hide/unhide grouped cells.

Internet functions

Overview: Internet functions

PlanMaker provides the following functions for creating and editing Internet documents (HTML documents):

- **Opening HTML documents** (Windows only)

  In the first section you will learn how to open HTML documents using the **File > Open** command (Windows version only). *Note:* Only HTML documents that begin with a *table* provide useable results.

- **Editing HTML documents**

  This section provides information about editing HTML documents and available formatting options.

- **Working with links**

  In this section, you will learn how to create and edit hyperlinks (e.g., to an Internet address or to another PlanMaker document).

- **Saving HTML documents**

  The last section provides information about saving documents in HTML format using the **File > Save as** command.

See the following pages for detailed information.

Opening HTML documents

Note: Opening HTML files is supported by the **Windows** version of PlanMaker only.

Internet pages are usually stored in HTML format *(Hypertext Markup Language)*. To open an HTML document in PlanMaker:

1. Choose **File > Open**.

2. In the **Files of type** list, select the **HTML** format.

3. Navigate to the desired document and click the **Open** button.

> *Note:* Only HTML documents that begin with a *table* provide useable results.

Editing HTML documents

Note that the HTML format recognizes only a small subset of the formatting options available in spreadsheet applications. When you store a document as a HTML document, all formatting not supported in HTML format will be automatically removed.

The HTML format supports the following formatting options:

■ **Character format**

   Character styles bold, italic, underline, strike through, subscript, super-script, blinking and text color are supported.

■ **Cell format**

   Number format, borders, and shades are supported.

■ **Page format**

   HTML documents do not have a specific page size. To change the page's background, use the **File > Properties** command (see section "Document properties, Internet tab", page 277).

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".

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

Overview: Printing and e-mailing

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

■ **Printing documents**

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

■ **E-mailing documents**

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.
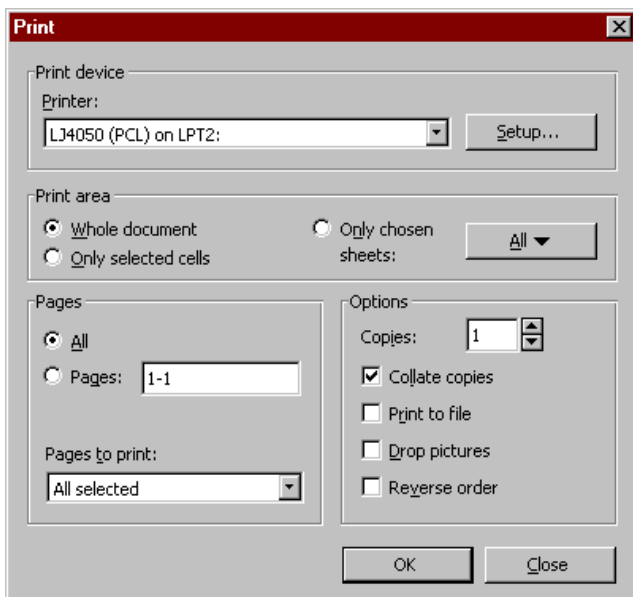
Dialog box options:

Printer

Lets you choose the desired printer.

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

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 sheets**

  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.

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.

Options

This section 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 Plan-Maker 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

Overview: Protecting cells and documents

PlanMaker provides options for protecting documents or specified 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 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. Click the **Protection** tab.

4. Choose the desired protection settings (see below).

5. Click **OK** to confirm.

Protection settings available:

■ **Protect cell**

Protect cell against changes, if sheet protection is activated.

Use this option to prevent users from changing the content or the format of the cell.

Important: By default, this option is enabled for *all* cells in the worksheet. To allow users to change 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, use the Tab key to jump from one editable cell to the next.

In addition, if sheet protection is activated, the following restrictions apply:

■ The **Table > Names** command is no longer available; named ranges can no longer be modified.

■ Some options of the **File > Page Setup** command are no longer available.

■ Objects can no longer be inserted into the worksheet.

■ Most menu commands for editing the worksheet are unavailable.

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 sheet 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 sheet protection.

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**, click the **Protection** tab, 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. Click the **Protection** tab.

3. Select the desired protection type (see below).

4. Enter read and/or write password (4 to 15 characters, case-sensitive).

> *Important:* If the password is lost, the document cannot 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 reenter the password.

To *permanently* deactivate document protection:

1. Open the document. Enter the correct password.

2. Choose **File > Properties**.

3. Click the **Protection** tab.

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

Overview: Working with other file formats

Apart from documents stored in PlanMaker's proprietary file format, Plan-Maker 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 various 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 138)

- **Microsoft Excel file**

  Microsoft Excel file format. For detailed information on this format, see section "Working with Excel files", page 257.

- **Microsoft Excel template**

  Template for Microsoft Excel documents.

- **TextMaker file** (export only)

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

- **PlanMaker 97, 1.0, 2.0** (import only)

  For importing documents created in older versions of PlanMaker.

- **dBase**

  dBase III, III+, or IV file format, either with DOS or Windows character set.

  Note: Most databases are stored in **dBase/*DOS*** file format rather than **dBase/*Windows*** file format – even if they are created with a Windows application.

- **Text file**

  Plain text file format (either DOS or Windows 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.
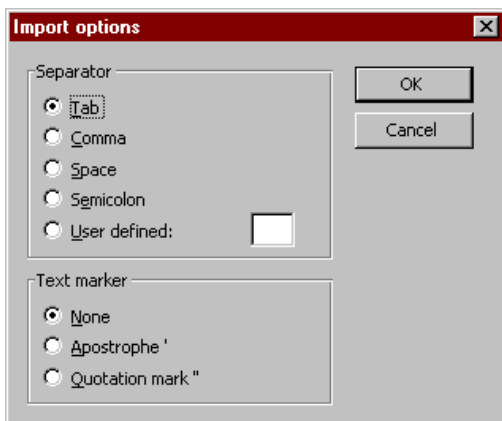
Options available:

- **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:

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 issued when opening an Excel file

When opening an Excel file containing arithmetic functions that are not compatible with PlanMaker, the following warning message is displayed:
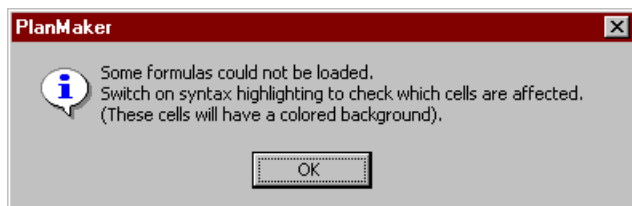
To resolve, proceed as follows:

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 315.

3. When all cells are revised, deactivate syntax highlighting.

Save the document (in PlanMaker format) to finalize changes.

Warning 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:
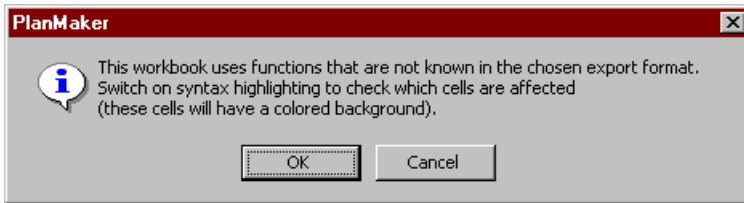
To resolve, proceed as follows:

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 Plan-Maker and Excel:

General

- In PlanMaker, worksheets are limited to **16384 rows**, whereas Excel supports **65536 rows**. 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**. 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 will be displayed if the file contains incompatible arithmetic functions. For more information, see section "Opening and saving Excel files", page 257.

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 installing PlanMaker, the installation routine automatically checks whether this conversion is turned on, providing the option to disable.

To turn the conversion off manually, proceed as follows:

1. Launch **Microsoft ActiveSync** on your desktop PC.

2. Click the **Options** icon.

3. In the **Rules** tab, 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 no longer be converted when copied to a mobile device.

Document windows

Overview: Document windows

Note: Multiple document windows are not supported on Handheld PCs and Pocket PCs.

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

This chapter contains information on working with document windows.

Creating document windows

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

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

Activating document windows

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

To change the active document window:

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

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

Closing document windows

To close a document window:

Mouse: Click the ☒ icon in the title bar of the document window.

Keyboard: Choose **File > Close**.

If the document has been changed, PlanMaker asks to save the document before closing the window.

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

Maximizing document windows

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

To maximize a document window:

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

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

Minimizing document windows

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

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.

Customizing PlanMaker

Overview: Customizing PlanMaker

PlanMaker provides the following commands to customize the application's settings:

■ **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 display**

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

■ **Customizing control strips**

To customize control strips such as toolbar, format strip, etc., use the **View > Control Strips** 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.

■ **User profiles**

The Windows version of PlanMaker allows you to create and manage individual *user profiles* for each user working with the same computer. In user profiles, all personal configuration settings are stored. This section provides information on working with user profiles.

See the following pages for detailed information.

Preferences

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

The Preferences dialog contains the following tabs:

Preferences, Edit tab

The **Edit** tab 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.

■ **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 strip (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 tab", page 281). After that, PlanMaker will only recalculate when the **Extras > Recalculate** command is selected.

Preferences, General tab

The **General** tab in the **Extras > Preferences** dialog box contains common PlanMaker settings:

Use new window by default

Windows and Linux only: 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: Alternatively, you can check/uncheck the option **New window** in the **File > Open** and **File > New** dialog to decide whether to open documents in a new document window.

Beep on errors

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

Use SHM extensions

Linux only: If this option is checked, PlanMaker utilizes *Shared Memory* to speed up the display.

Note: Not all Unix-based operating systems provide a sufficient amount of Shared Memory. If not enough Shared Memory is available, PlanMaker will automatically deactivate this option.

Show warning when loading OLE objects

Pocket PCs and Handheld PCs only: Determines whether PlanMaker should display 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: Determines whether the on-screen keyboard will automatically appear in dialogs whenever needed (e.g., when you tap inside an input box).

Shorter tap and hold delay

Pocket PCs only: If this option is checked, the delay until to when the context menu is displayed after you tap and hold will be shortened.

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.

Individual profile for each user

Windows only: The Windows version of PlanMaker stores all your personal program settings in your personal *user profile:*

■ User preferences (including keyboard layout and toolbar layout)
■ User dictionaries (used by the spell-checker)
■ Personalized SmartText entries

If this option is checked, an individual user profile is created for *each* user working with PlanMaker on the same computer. If it is not checked, *all* users share the same user profile.

For more information on user profiles, see section "User profiles", page 300.

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 is equipped with a mouse wheel, use this option to adjust the number of lines to scroll when the wheel is used.

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, Look&Feel tab

The **Look&Feel** tab in the **Extras > Preferences** dialog box contains settings related to the user interface of PlanMaker:

Dialog style

Use this option to choose the dialog style, or "skin", you want PlanMaker to display. Available options include Windows, OS/2, Pocket PC, etc.

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 icons in menus

Determines whether icons are displayed in front of PlanMaker's menu commands.

Use system file dialogs

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

Language

Lets you choose the user interface language. Available only if multiple user interface languages are installed.

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 *Pocket PCs*, activating ClearType significantly reduces the display speed.

Preferences, Language tab

The **Language** tab 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 "Spell-checking documents", page 218).

- ■ **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 219).

  Beep on typos: If this option is checked, a sound plays when the automatic 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 220.

Preferences, Files tab

The **Files** tab in the **Extras > Preferences** dialog box contains settings related to opening and saving files:

Template folder

This is the folder where your document templates are stored. You can change the folder by editing this field.

Default file format

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

"Saving" section

This section contains the following options:

■ **Create backup copies**

Check this option if you want to have PlanMaker create .BAK files of the last-saved 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 227).

■ **Autosave 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.

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 tabs:

Document properties, Summary tab

The **Summary** tab 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 227.

Document properties, Colors tab

The **Colors** tab 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 format strip), 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 click the **Colors** tab.

   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 click the **Colors** tab.

   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 255.

■ **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 tab** (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** tab. This tab displays a selection of pre-defined colors. Click the desired color to select it.

Document properties, Internet tab

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

Hint: For more information on working with HTML documents, see section "Internet", page 237.

■ **Don't save colors in HTML file**

If this option is checked, the color scheme set up in this dialog tab 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 tab

The **Info** tab in the **File** > **Properties** dialog box displays statistical information about the current document:

■ The **Cells** section displays how many cells are filled with text, numbers, formulas, etc.

■ The **General** section displays the number of worksheets and the number of pages.

■ The **Objects** section displays the number of objects (charts, pictures, etc.) in the current documents.

■ The **Actions** section displays when the document has been created, saved, and printed.

Document properties, Options tab

The **Options** tab in the **File** > **Properties** dialog box contains common settings for the current document:

"Text frames" section

■ **Tab width**

Determines the tab width for text entered in text frames.

"Table" section

■ **Syntax Highlighting**

If this option is checked, cells will be colored according to their content. Equivalent to the **View** > **Syntax Highlighting** command (see section "Syntax Highlighting", page 285).

■ **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 "Show formulas instead of results", page 285).

■ **Protection indicator**

If this option is checked, a green rectangle will be displayed in the bottom left corner of all *un*protected cells when sheet protection is activated (see also section "Sheet protection", page 245).

■ **Hyphenation**

If this option is checked, cells where the option **Wrap text** is activated (using the **Format > Cell** command) will be hyphenated.

"Comments" section

■ **Show indicators**

If this option is checked, a yellow triangle is displayed in the top left corner of cells that contain a comment. See also section "Inserting comments", page 96.

■ **Always show comments**

Normally, comments are displayed only when you point 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" section

■ **Move by … decimals**

If this option is checked, numbers entered in cells will be shifted by the specified number of decimals.

This is helpful if many numbers with, for example, two decimals 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 need to be entered manually.

"Window" section

■ **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, sheet tabs are displayed below the document. These tabs can be used for switching between worksheets and creating/managing worksheets.

"Objects" section

■ **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 167), 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 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 format strip to format a number in currency format, the chosen currency will be used instead of the system's default currency.

2. The same applies when using one of the arithmetic functions that Plan-Maker 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 tab

The **Calculate** tab in the **File > Properties** dialog box contains document-specific settings related to calculations:

"Recalculation" section

Determines if the calculations in the current document should be kept up-to-date automatically:

■ **Recalc automatically**

   If this option is selected, 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 selected, 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" section

Like calculations, charts are updated automatically when the content of any cell changes. To deactivate this function, uncheck the **Recalc automatically** option in the **Charts** section.

Hint: You can instruct PlanMaker to update all charts by choosing the **Extras > Update Charts** command at any time.

"Iterations" section

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 is less than **Maximum change**.

By default, this option is not checked.

Note: Unless you actually use circular references in calculations, this option should *not* be checked, since it significantly increases the time required to recalculate the document.

"Rounding" section

Checking these options increases the accuracy of calculations.

Since computers use a different number 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 decimals.

■ If **Round intermediate results** is checked, PlanMaker also rounds any intermediate result within a calculation to 15 decimals.

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 calculation time increases.

Consider 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 tab

The **Protection** tab in the **File > Properties** dialog box allows you to password-protect the current document.

For more information, see section "Document protection", page 249.

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.

■ **Grid**

Determines whether gray gridlines are displayed between cells on-screen.

Hint: By default, gridlines are not printed. To print gridlines, choose **File > Page Setup**, click the **Options** tab, and check the **Gridlines** option.

■ **Page breaks**

Determines whether dark gray lines indicating the location of page breaks are displayed in the spreadsheet.

Customizing 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.

■ **Show formulas instead of results**

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

■ **Syntax Highlighting**

If the **Syntax Highlighting** command is selected, cells will be colored 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 > Custom** to set any other zoom level:

Zoom level	Explanation
Fit to selection	Zooms in to the current selection as far as possible
Previous zoom	Restores the previous zoom level
200%, **150%**, etc.	Sets the zoom level to the desired level

Alternatively, custom values can be entered into the input box (50 to 400 percent).

Show formulas instead of results

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

Choose again to deactivate.

Syntax Highlighting

If **Syntax Highlighting** is activated, cells will be colored 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 in visualizing which cells contain formulas, fixed values, etc., and where errors occur.

Activating and deactivating syntax highlighting

Choose **View > Syntax Highlighting** to activate.

Choose again to deactivate.

What the foreground color indicates

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

Cell content	Foreground color
Error value or any other kind of error	Red

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

What the background color indicates

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

Background color	Error type
White	**Formula returns an error value.** The calculation in this cell returns an error value (caused, for example, by a division by zero). **Hint:** If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. For more information on error values, see section "Error values", page 308.
Cyan	**Syntax error in formula.** The calculation in this cell has a syntax error (caused, for example, by a missing parenthesis or missing arguments). **Hint:** If you click the cell, an error message is displayed in the status bar. Correct the formula accordingly. *If you don't correct the formula, it will be replaced by the text string #NULL! when the document is saved!*
Light gray	**Function not exportable.** The calculation in this cell uses an arithmetic function that cannot be exported to the chosen file format. **Hint:** Replace the function by a function that is compatible with the chosen file format. For more information, see the corresponding function description in this manual.
Magenta	**Function possibly imported erroneously.** The calculation in this cell uses a PlanMaker 97 arithmetic function whose syntax or function might be incompatible with recent versions of PlanMaker. This error only occurs when importing documents created with PlanMaker 97 (an older version of PlanMaker). **Hint:** See corresponding function description in this manual.

Yellow	**Function unknown.** The calculation in this cell uses an arithmetic function unknown to PlanMaker. This error might occur when importing documents created with other applications.
	Hint: Replace the function with a corresponding PlanMaker function. For a list of all PlanMaker functions, see section "Functions from A to Z", page 315, or this manual's index.

Customizing control strips

Control strips (such as toolbar, format strip, etc.) provide instant access to PlanMaker's most important functions. Each icon displayed in a control strip stands for one menu command. When you click an icon, the corresponding menu command is invoked.

A control strip (here: the toolbar)

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

This section provides information on customizing control strips with the **View > Control Strips** command:

- **Showing/hiding control strips**

- **Positioning control strips**

- **Managing control strips** (creating new control strips, deleting and renaming control strips)

- **Editing control strip icons** (adding, removing, and moving icons)

- **Using custom control strip icons** (for starting other programs)

See the following pages for detailed information.

Showing/hiding control strips

To show/hide control strips:

1. Choose **View > Control Strips**.

2. Check the control strips to be displayed; uncheck the control strips to hide.

3. Click **Close** to close the dialog box.

The control strips will now be displayed accordingly.

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

Visible in mode...

Some control strips are displayed only when a specific mode is activated. For example, the format strip is only visible in Edit mode. After switching to Object mode, the format strip will not be displayed, as its functions are inapplicable in Object Mode.

To determine in which mode a specific control strip is displayed, choose **View > Control Strips**, select the control strip, and choose the desired option in the **Visible in mode...** list.

> *Note:* Normally, you should not change this option for any of the standard control strips (toolbar, format strip, etc.), but only for user-defined control strips.

Options available:

Option	Explanation
All modes	Display control strip in *all* modes.
	Example: Toolbar
Edit mode	Display in *Edit mode*, hide in Object mode (also see section "Object mode", page 156).
	Example: Format strip
Object mode	Display in *Object mode*, hide in Edit mode (also see section "Object mode", page 156).
	Example: Object strip
Chart	Display only when a *chart* is selected.

Example: Chart strip

Outline   Display only if the current worksheet contains an *outline* (also see section "Outliner", page 231).

Example: Outline strip

Positioning control strips

Control strips can be positioned as desired. To move a control strip, either use the **View** > **Control Strips** command or drag it to the desired position using the mouse.

Using the View > Control Strips command to position control strips

1. Choose **View** > **Control Strips**.

2. Click the desired control strip.

3. In the **Position** section, click the desired position.

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

Using the mouse to position control strips

1. With the mouse, point to any *empty* area within the control strip to be moved.

2. Press and hold the left mouse button.

3. Drag the control strip to the desired location.

Hint: If a control strip is dragged near the program window border, it will automatically snap to that border.

Locking control strips: To lock a control strip to its current position, choose **View** > **Control Strips**, select the control strip, and check the **Locked** option. After that, the control strip can no longer be moved with the mouse.

Managing control strips

The **View** > **Control Strips** command can also be used to create, delete, rename, or customize controls strips.

Creating a new control strip

To create a new control strip in the **View** > **Control Strips** dialog box:

1. Click the **New** button.

2. Enter a name for the new control strip and click **OK**.

3. The control strip has now been created. Close the dialog box or click **Customize** to add icons to the new control strip (see section "Editing control strip icons", page 291).

Deleting and renaming control strips

To delete or rename a control strip in the **View** > **Control Strips** dialog box, select it and click **Delete** or **Rename**.

Note: Only user-defined control strips can be renamed or deleted.

Resetting control strips

To reset a control strip in the **View** > **Control Strips** dialog box, select it and click **Reset**.

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

Note: This command can only be applied to standard control strips. It is not available for user-defined control strips.

Editing control strip icons

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

Editing control strip icons

To insert, remove, or move icons on a control strip:

1. Make sure the desired control strip is displayed. If not, check it in the **View > Control Strips** dialog box.

2. Choose **Extras > Customize > Control Strips**. (Alternatively, click **Customize** in the **View > Control Strips** 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 control strip to invoke the **Extras > Customize > Control Strips** command.

A dialog box containing all available icons appears:
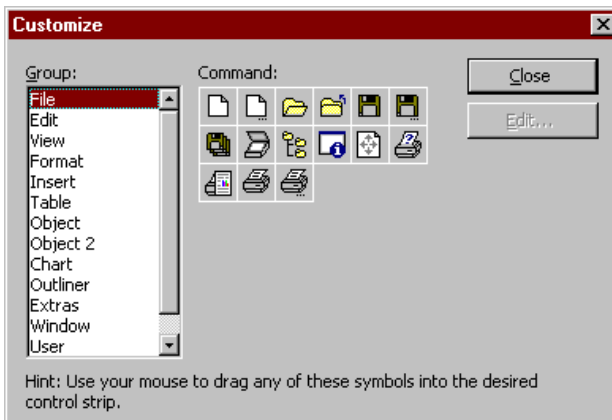
The icons are divided into groups. If you click a group, the corresponding icons will be display in the **Command** list.

To edit the icons of a control strip:

■ **Inserting an icon**

To insert an icon, click the icon in the **Command** list and drag it to the desired position in the control strip.

■ **Removing an icon**

To remove an icon, drag it out of the control strip (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 control strip 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 control strips: To reset one of the standard control strips, select it in the **View > Control Strips** dialog box, and click **Reset**. All control strip settings will revert to the program defaults.

Using custom control strip icons

You can create user-defined control strip icons and add them to control strips. Such icons can be used to launch other programs.

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

1. Choose **Extras > Customize > Control Strips**.

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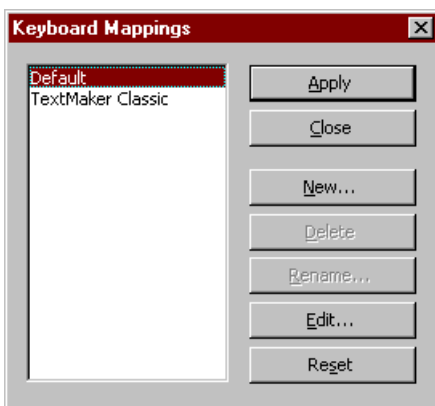
The buttons in the **Extras > Customize > Keyboard Mappings** dialog box provide the following functions:

- ■ **"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.

- ■ **"Delete" button:** Delete keyboard mapping

- ■ **"Rename" button:** Rename keyboard mapping

- ■ **"Edit" button:** Modify keyboard shortcuts

- ■ **"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**.

2. Select the desired keyboard mapping.

3. Click the **Apply** button.

All keyboard shortcuts defined in the selected keyboard mapping will be activated.

PlanMaker is shipped with two pre-defined keyboard mappings:

Default	The default keyboard mapping. This includes all keyboard shortcuts mentioned in this manual (e.g., $\boxed{\text{Ctrl}}\,\boxed{\text{S}}$ for the Save command)
TextMaker Classic	A keyboard mapping inspired by WordStar (a formerly well-known word processor)

Hint: A table of the keyboard shortcuts of the **Standard** keyboard mapping is available in chapter "Keyboard shortcuts", page 473.

Apart from these pre-defined keyboard mappings, you can create customized keyboard mappings as desired. See the following pages for details.

Creating a new keyboard mapping

If desired, you can use the **Extras > Customize > Keyboard Mappings** command to create a completely new keyboard mapping. This enables you to work with multiple keyboard mappings and switch between them with a few mouse-clicks.

> *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.

To create a new keyboard mapping:

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

2. Select the keyboard mapping to use as a basis for the new keyboard mapping.

   The new keyboard mapping will "inherit" all keyboard shortcuts defined in the selected keyboard mapping.

3. Click the **New** button.

4. Enter a name for the new keyboard mapping and click **OK**.

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 296.

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

It often allows a more efficient workflow to assign keyboard shortcuts to frequently used commands.

For example, to assign the shortcut ⌈Ctrl⌉⌈F12⌉ to the **Table > Insert Cells** 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 "Insert Cells".

6. Click inside the **Please press accelerator** input box and press the desired keyboard shortcut. In this case, press ⌈Ctrl⌉⌈F12⌉.

   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 > Insert Cells** command can be invoked by pressing ⌈Ctrl⌉⌈F12⌉.

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 Ctrl, Alt, 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:

■ Ctrl A

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

■ Ctrl Alt A

■ Ctrl ⬆ A

■ Ctrl Alt ⬆ A

■ Ctrl F1

■ etc.

How to avoid overwriting existing shortcuts: If an already existing key combination is input, the command it is assigned to will be displayed below the input box. 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, Ctrl K X. 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 and click **Remove**.

The keyboard shortcut is 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 76) the **Edit > Fill** command can be used to fill a cell range with, among other options, 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.

The dialog box appearing when **Extras > Edit Lists** is selected has the following functions:

■ **"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.

User profiles

Note: User profiles are only supported in the **Windows** version of Plan-Maker.

A *user profile* is a special folder where PlanMaker stores all personal user settings. This includes program settings, user dictionaries, keyboard layout, etc.

If you are the *only* person using with PlanMaker on your computer, Plan-Maker will create just one user profile. In this case, feel free to skip the information provided in the following section.

If *multiple* users use PlanMaker on the *same* computer, it is often useful to activate the **Individual profile for each user** option. This allows every user to create his/her personal user profile and work with these customized settings.

To have PlanMaker activate individual user profiles for each user:

1. Choose **Extras > Preferences**, click the **General** tab, and check **Individual profile for each user**.

2. Next time PlanMaker is opened, a dialog containing a list of all user profiles appears. Choose your personal user profile here – or create a new profile by clicking **New** and entering a name for the user profile (e.g., your Windows login name).

You will then be able to use PlanMaker with your own personal settings – independently from any other user working with PlanMaker.

The dialog mentioned above is also called *Profile manager*, since it provides capabilities to add, delete, rename, and import and export user profiles.

See the following pages for detailed information.

Managing user profiles

Use the *Profile manager* to manage the stored user profiles.

To open the Profile manager:

1. Exit PlanMaker for Windows.

2. In Windows' **Start** menu, click **Programs**, **SoftMaker Office**, **Utilities**, **Manage user profiles**.

The Profile Manager dialog box appears.

Note: This dialog is identical to the dialog appearing when you start Plan-Maker (if the **Individual profile for each user** option has been checked).

The Profile manager provides the following functions:

Creating a new user profile

To create a new user profile, click the **New** button and enter a name for the user profile (e.g., your Windows login name).

> *Note:* Do *not* use one of the following characters in user profile names, since these characters are not allowed: : \ / " | < > * ?

Note: New user profiles are always based on the user profile **Standard**.

Deleting and renaming user profiles

To delete or rename a user profile, select it, and click the **Delete** or **Rename** button.

Note: The user profile **Standard** cannot be deleted or renamed.

Exporting a user profile

User profiles can be *imported* and *exported*. For example, a user can export his/her user profile to a disk, move to another computer, and import the profile from that disk.

To export a user profile, select it, click the **Export** button, and enter the target folder.

Note: The target folder must already exist.

Importing a user profile

To import a user profile:

1. Click **Import**.

2. Enter the source path.

   Note: This folder must have a subfolder called PROFILE containing the profile to be imported.

The Profile manager imports all profiles stored in the specified folder.

Using user profiles in a local area network

If you plan to use PlanMaker on multiple PCs connected to a local area network (LAN), it is advisable to install PlanMaker to a *shared* file folder (e.g., on a file server) that is accessible to all users.

If PlanMaker is installed in a shared folder, the user profiles will also be stored in this folder, and therefore are available on *any* machine connected to the network. Every user will have his personal settings, regardless of which machine is used.

Formulas and functions

Overview: 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 adresses (A1) and absolute cell addresses ($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 49.

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 309)
- 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 a relatively 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 "PlanMaker")
8th	=	Is equal
	<>	Is not equal
	<	Is less
	>	Is greater
	<=	Is less or equal
	>=	Is greater or equal

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

Entering formulas

Hint: A short introduction to entering formulas is also provided in chapter "The PlanMaker Tour", page 49.

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

Entering formulas manually

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

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

To edit a formula later, navigate to the cell containing the formula and press the F2 key. Alternatively, double-click the cell.

Using the mouse to enter formulas

When entering a formula, you can use the mouse to select a single cell or a cell range, and have its address pasted into the formula.

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

1. Enter =SUM(

2. With the mouse, select cells B2 to D4 by dragging a rectangle from B2 to D4.

3. After releasing 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.
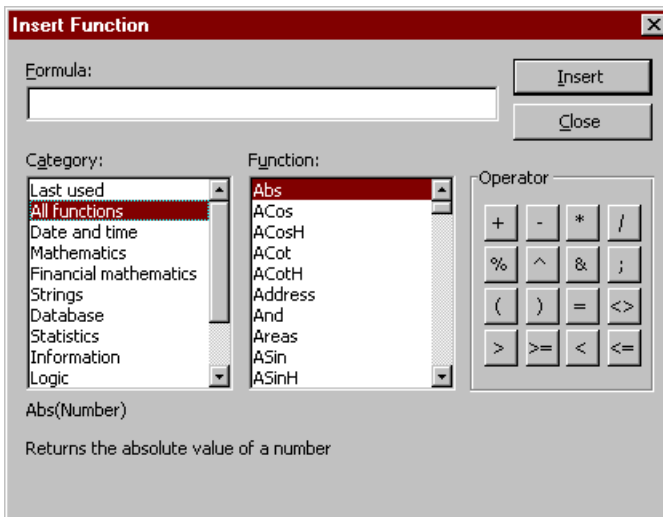
Components of the **Insert > Function** dialog box:

■ **Formula** input box

Lets you edit the formula.

■ **Category**

Determines which type of functions to display in the **Function** list box.

- **Function**

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

- **Operator** section

  This section 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,

=$A4 will be displayed, when you press [F4],

=A$4 will be displayed, when you press [F4] once again,

=$A$4 will be displayed, when you press [F4] once again.

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 413 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:

$$A = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & & & \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{pmatrix}$$

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 x 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:

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 ⌈Ctrl⌉⌈⇧⌉⌈↵⌉.

The cells E10:G12 now contain the resulting array, i.e., the inverse of the array in E6:G8:

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	
	DFunctions.pmd			
1	(Criteria area:)			
2	**Color**			
3	blue			
4				
5	(Another criteria area:)			
6	**Amount**	**Amount**	**Color**	
7	>25	<75		
8			red	
9				
10	(Database area:)			
11	**Amount**	**Item**	**Color**	
12	10	Running shoes	red	
13	100	Running shoes	blue	
14	50	Running shoes	black	
15	30	Training shoes	red	
16	50	Training shoes	blue	
17				

Sheet1

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

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 the sheet name to be used in the resulting cell reference:

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

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

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**.

Number must be in the range -1 to 1.

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, AVERAGE**A** 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 functions 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 In(x))

Syntax:	BESSELI(x, n)
Description:	Returns the modified Bessel function $I_n(x)$.

x is the value to be evaluated.

n is the order of the Bessel function. Must be > 0.

See also: BESSELJ, BESSELK, BESSELY

BESSELJ (Bessel function Jn(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 Kn(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 Yn(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 ≤ 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
	BIN2DEC("00101010") returns 42 as well
	BIN2DEC("11111111111111111111111111010110") returns -42
See also:	DEC2BIN, BIN2HEX, BIN2OCT

BIN2HEX (binary number to hexadecimal number)

Syntax:	BIN2HEX(Number [,Digits])
Description:	Converts the given binary number (base 2) to a hexadecimal number (base 16).
	Number is the number to be converted. It must not contain more than 32 places. Negative numbers have to be transformed to two's complement notation (see last example).
	The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.
	Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.
	Digits will be ignored if **Number** is negative.
Example:	BIN2HEX("101010") returns 2A
	BIN2HEX("00101010") returns 2A as well
	BIN2HEX("11111111111111111111111111010110") returns FFFFFFD6 (negative value)
See also:	HEX2BIN, BIN2DEC, BIN2OCT

BIN2OCT (binary number to octal number)

Syntax: BIN2OCT(Number [,Digits])

Description: Converts the given binary number (base 2) to an octal number (base 8).

Number is the number to be converted. It must not contain more than 32 places. Negative numbers have to be transformed to two's complement notation (see last example).

The optional argument **Digits** lets you specify the number of places to be displayed. If omitted, PlanMaker determines the number of required places automatically.

Digits has to be greater than zero. If **Digits** is smaller than the minimum number of places required to display the number, the function returns a #NUM error value.

Digits will be ignored if **Number** is negative.

Example: BIN2OCT("101010") returns 52

BIN2OCT("00101010") returns 52 as well

BIN2OCT("11111111111111111111111111010110") returns 37777777726 (negative value)

See also: OCT2BIN, BIN2DEC, BIN2HEX

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 ≥ 0.
	DegreesFreedom is the number of degrees of freedom. Must be ≥ 1 and $< 10\char`^10$.
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 ≥ 1 and $< 10\char`^10$.
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 032) 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 309).

If **Reference** is omitted, the column number of the cell where this function was inserted 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. If not, PlanMaker automatically drops their decimals.

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 - CONFIDENCE) to (x + 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:

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

Distance	Code
Meter	m
Statute mile	mi
Nautical mile	Nmi
Inch	in
Foot	ft
Yard	yd
Ångström	ang
Pica	Pica
Light year*	ly
Parsec (parallax second)*	parsec

* These units are not supported by Microsoft Excel.

Time	Code
Second	sec
Minute	mn
Hour	hr
Day	day
Year**	yr
Fortnight*	ftn

* This unit is not supported by Microsoft Excel.
** Based on a year with 365.25 days

Liquid measure	Code
Liter	l (lower case "L")
Teaspoon	tsp
Tablespoon	tbs
Fluid Ounce	oz
Cup	cup
Pint (U.S.)	pt
Pint (U.K.)	uk_pt
Quart	qt
Gallon	gal

Force	Code
Newton	N
Dyne	dyn
Pound force	lbf

Power	Code
Watt	W
HP (Horsepower)	HP

Magnetism	Code
Tesla	T
Gauss	ga

Energy	Code
Joule	J
Erg	e
Thermodynamic calorie	c
IT calorie	cal
Electron volt	eV
Horsepower-hour	HPh
Watt-hour	Wh
Foot-pound	flb
BTU (British Thermal Unit)	BTU

Pressure	Code
Pascal	Pa
Atmosphere	atm
mm of Mercury	mmHg

Temperature	Code
Degree Fahrenheit	F
Degree Celsius	C
Degree Kelvin	K

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

The following prefixes are available:

Prefix (and factor)	Code
Exa (10^18)	E
Peta (10^15)	P
Tera (10^12)	T
Giga (10^9)	G
Mega (10^6)	M
Kilo (1000)	k
Hecto (100)	h
Deka (10)	e

Deci (0.1)	d
Centi (0.01)	c
Milli (0.001)	m
Micro (10^-6)	u
Nano (10^-9)	n
Pico (10^-12)	p
Femto (10^-15)	f
Atto (10^-18)	a

Example: CONVERT(1, "day", "sec") returns 86400 (days -> seconds)

CONVERT(1, "mi", "km") returns 1.60934 (miles -> kilometers)

CONVERT(100, "kW", "HP") returns 134.10201 (100 kW -> HP)

CONVERT(1,"aparsec","cm") returns 3.08568 (Attoparsec -> cm)

CORREL (correlation coefficient)

Syntax: CORREL(Range1, Range2)

Description: Returns the correlation coefficient of two data sets.

The correlation coefficient is a measure of the relationship between two data sets.

Range1 and **Range2** are references to the two cell ranges containing the two data sets. Empty cells and logical values are ignored.

Range1 and **Range2** must have the same number of values, otherwise, the function returns a #N/A error value.

Example: If A1:A3 contains the values 2, 5, 3 and B1:B3 contains 2, 7, 4:

CORREL(A1:A3, B1:B3) returns 0.99718

See also: FISHER, COVAR

COS (cosine)

Syntax: COS(Number)

Description: **COS** 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: **COSH** returns the hyperbolic cosine of **Number**.

Example: COSH(0.1) returns 1.005

See also: ACOSH

COT (cotangent)

Syntax: COT(Number)

Description: **COT** 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: COT(PI()/4) returns 1

COT(RADIANS(45)) returns 1

See also: ACOT

COTH (hyperbolic cotangent)

Syntax: COTH(Number)

Description: **COTH** 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: 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 COUNT**A** function instead.

Example: If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNT(A1:A4) returns 1

See also: COUNTA, ISNUMBER

COUNTA (number of cells filled)

Syntax: COUNTA(Range1 [,Range2 ...])

Description: Counts the number of cells containing any kind of value (i.e., cells that are not empty).

Example: If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNTA(A1:A4) returns 3

See also: COUNT, ISBLANK

COUNTBLANK (number of empty cells)

Syntax: COUNTBLANK(Range1 [,Range2 ...])

Description: Counts the number of cells that are empty.

Example: If the cells A1:A3 contain 42, "Test", and TRUE and cell A4 is empty:

COUNTBLANK(A1:A4) returns 1

See also: ISBLANK, COUNT

COUNTIF (count if condition is true)

Syntax: COUNTIF(Range, Criterion)

Description:	Counts those cells in **Range** that fulfill the specified criterion.
	Range is the cell range to be evaluated.
	Criterion is the criterion that the values in **Range** have to fulfill to be included.
	Use numbers or text (like "42" or "January") to count all cells that contain that value.
	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** decimals.

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 decimals. If **n** is omitted, **Number** is rounded to two decimals.

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 a 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.

You can also have PlanMaker display a number rounded and formatted as a currency by applying one of the currency formats (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 spread-
                   sheet applications. It is no longer commonly used, as current
                   spreadsheet applications (including PlanMaker) automatically con-
                   vert 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 312.

                   DatabaseArea is a cell range containing the database to be evalu-
                   ated. The first row of **DatabaseArea** must contain labels for the da-
                   tabase 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 col-
                   umn 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 of 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("09/25/1966") 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 312.
	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, DCOUNT**A** 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 312.

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) returns 11111111111111111111111111010110

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) returns FFFFFFD6
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) returns 37777777726

See also: OCT2DEC, DEC2BIN, DEC2HEX

DECIMALS (decimals of a number)

Syntax: DECIMALS(Number)

Description: Returns the decimals of the given number (by removing the digits to the left 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

DEG (PlanMaker 97 compatibility function)

Syntax: DEG(Number)

Description: Converts radians to degrees.

Note: This function was retained only for compatibility with PlanMaker 97. Using the Excel-compatible function DEGREES is recommended instead.

Example: DEG(PI()) returns 180

See also: DEGREES

DEGREES (convert radians to degrees)

Syntax: DEGREES(Number)

Description: Converts radians into degrees.

Example: DEGREES(PI()) returns 180

See also: RADIANS

DELTA (equality)

Syntax: DELTA(Number1, Number2)

Description: Tests if two values are identical. 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 312.

            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, this functions 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 312.

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 312.

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 312.

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 312.

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 312.

DatabaseArea is a cell range containing the database to be evaluated. The first row of **DatabaseArea** must contain labels for the database columns (e.g., Amount, Price, etc.).

Column is the desired column of the database area. You can specify **Column** by its relative column number or by its column label in double quotation marks (e.g., "Amount", "Price", etc.).

CriteriaArea is a cell range containing one or more conditions that have to be fulfilled. The first row of **CriteriaArea** has to contain column labels (e.g., Amount, Price, etc.).

See also: STDEVP, DSTDEV

DSUM (database function)

Syntax: DSUM(DatabaseArea, Column, CriteriaArea)

Description: Returns the sum of those values in a column of a database area that match the conditions specified in the criteria area.

Detailed instructions on the use of database related functions are available in section "Working with database functions", page 312.

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 312.

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 312.

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 the Gaussian error function)

Syntax:	ERFC(LowerLimit)
Description:	Return the complement to the Gaussian error function.

LowerLimit is the lower bound of the integral. Must be ≥ 0.

See also:	ERF

ERROR.TYPE (error type)

Syntax:	ERROR.TYPE(Reference)
Description:	Returns a number representing the type of error value in a cell.

Reference is a reference to a single cell.

Possible results of this function:

Error value in cell	Result
No error value	#N/A
#NULL!	1
#DIV/0!	2
#VALUE!	3
#REF!	4
#NAME?	5
#NUM!	6
#N/A	7

For more details about error values, see section "Error values", page 308.

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 308

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 ±0.01.

Number is the number to be converted.

From and **To** are codes representing the source and target currency (see table below). Use either PM codes or ISO codes.

Note: Microsoft Excel only supports ISO codes. If you want to keep your calculations Excel-compatible, use only ISO codes (right column).

Country	PM code	ISO code
All 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 ≥ 0.
	Lambda (λ) is the average number of successes per time interval. Must be > 0.
	The logical value **Cumulative** lets you specify which type of function will be returned:
	FALSE: The probability density function is returned.
	TRUE: The cumulative distribution function is returned.
See also:	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 ≥ 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 ≥ 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: **FALSE** 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 ≥ 0.

DegreesFreedom1 is the numerator degrees of freedom.

DegreesFreedom2 is the denominator degrees of freedom.

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

See also: 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, TABLENAME

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.

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 ≥ 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** decimals.
	Number is the number to be converted.
	n (optional) is the number of decimals. If **n** is omitted, **Number** is rounded to two decimals.
	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 a 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.
	You can also have PlanMaker display a number rounded by applying one of the number formats (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 309).

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

See also: COUNT

FTEST (F-test)

Syntax: FTEST(Array1, Array2)

Description: Returns the result of an F-test, i.e., the one-tailed probability that the variances in the two given data sets are not significantly different.

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

They both have to consist of at least 2 values.

If the variance of **Array1** or **Array2** is zero, the function returns a #DIV/0! error value.

See also: FINV, FDIST

FV (future value)

Syntax: FV(Rate, NPer, Pmt [,PV] [,Type])

Description: Returns the future value of an investment based on periodic constant payments, and a constant interest rate.

Rate is the interest rate (per payment period).

NPer is the total number of payment periods.

Pmt is the payment made for each period.

PV (optional) is the present value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

See also: FVSCHEDULE, IMPT, NPER, PMT, PV, RATE

FVSCHEDULE (future value)

Syntax: FVSCHEDULE(PV, Rates)

Description: Returns the future value of an initial principal after applying a series of variable compound interest rates.

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: FVSCHEDULE(10000, {5%, 5.2%, 5.5%, 5.9%}) returns 12341.09

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 ≥ 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. If not, PlanMaker automatically drops their decimals.

Example: GCD(25, 100, 250) returns 25

GCD(25, 105, 250) returns 5

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 step?)

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 zero:

TRUE or omitted: b will be calculated from the given data.

FALSE: b will be forced to equal 1 (one); the m values will be adjusted accordingly.

Note: Formulas using this function have to be entered as an *array formula* (see section "Working with arrays", page 309).

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("FFFFFFD6") returns 11111111111111111111111111010110 (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("FFFFFFD6") returns 37777777726 (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, it 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. If not, PlanMaker automatically drops their decimals.

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: In PlanMaker, working with intersections is a bit different from Microsoft Excel:

1. The INTERSECTION function is *not* supported by 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.

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" the \ operator to the Excel-compatible blank operator, 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, income 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 308

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 308

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. If not, PlanMaker automatically drops its decimals.
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 413.
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 308

ISNONTEXT (is no text?)

Syntax: ISNONTEXT(Value)

Description: Returns TRUE if the specified value is <u>not</u> 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 ISNUMBER**P** 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. If not, PlanMaker automatically drops its decimals.
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
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.

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 ≥ 1. Additionally, all of them should be integers. If not, PlanMaker automatically drops their decimals.
Example:	LCM(5, 10, 15) returns 30
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:

$y = (m_1 * x_1) + (m_2 * x_2) + ... + (m_n * x_n) + b$

In this case, LINEST returns an array in the form {m_n, m_{n-1}, ..., m_2, m_1, 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 will be forced to equal 0 (zero); the m coefficient(s) will be adjusted accordingly.

Statistics (optional) is a logical value that lets you specify if additional regression statistics should be returned:

FALSE or omitted: Do not return additional statistics.

TRUE: Return additional regression statistics. In this case, a matrix in the following form will be returned:

$\{m_n, m_{n-1}, ..., m_2, m_1, b; sm_n, sm_{n-1}, ..., sm_2, sm_1, sb; R^2, sey; F, df; ssreg, ssresid\}$

A graphical representation of this array would look like this:

m_n	m_{n-1}	...	m_2	m_1	b
sm_n	sm_{n-1}	...	sm_2	sm_1	sb
R^2	sey				
F	df				
ssreg	ssresid				

The abbreviations used in this illustration represent the following values:

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

Note: Formulas using this function have to be entered as an *array formula* (see section "Working with arrays", page 309).

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 (Basis *e*) of **Number**.

Number must be > 0.

Example:	LN(0.7) returns -0.3567
	LN(EXP(1.234)) returns 1.234
See also:	LOG, LOG10, EXP

LOG (logarithm)

Syntax:	LOG(Number [,Base])
Description:	Returns the logarithm of **Number** to the specified base.
	Number must be > 0.
	If **Base** is omitted, base 10 is used.
Example:	LOG(100) equals $\log_{10}(100)$, and returns 2
	LOG(10 ^ 0.1234) returns 0.1234
	LOG(8, 2) equals $\log_2(8)$, and returns 3
See also:	LOG10, LN

LOG10 (base-10 logarithm)

Syntax:	LOG10(Number)
Description:	Returns the base-10 logarithm of **Number**.
	Number must be > 0.
Example:	LOG10(100) returns 2
	LOG10(10 ^ 0.1234) returns 0.1234
See also:	LOG, LN

LOGEST (statistics of an exponential regression)

Syntax:	LOGEST(y_values [,x_values] [,Constant] [,Stats])
Description:	Returns statistics of an exponential regression.

Exponential regression is a statistical technique that adapts an exponential curve to a set of data points (for example, the results of a series of measurements).

The equation for this exponential curve is:

y = b*m^x

If more than one range of x-values is given, the equation is:

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

The LOGEST function calculates this exponential line from the given y values and x values, and then returns an array in the form $\{m_n, m_{n-1}, ..., m_2, m_1, b\}$.

y_values are the known y values.

x_values (optional) are the known x values. If omitted, the values 1, 2, 3, ... will be used.

Constant (optional) is a logical value that lets you specify if the constant b should be calculated automatically or forced to equal zero:

TRUE or omitted: b will be calculated from the given data.

FALSE: b will be forced to equal 1 (one); the m values will be adjusted accordingly.

Statistics (optional) is a logical value that lets you specify if additional regression statistics should be returned:

FALSE or omitted: Do not return additional statistics.

TRUE: Return additional regression statistics. In this case, a matrix in the following form will be returned:

$\{m_n, m_{n-1}, ..., m_2, m_1, b; sm_n, sm_{n-1}, ..., sm_2, sm_1, sb; R^2, sey; F, df; ssreg, ssresid\}$

A graphical representation of this array would look like this:

m_n	m_{n-1}	...	m_2	m_1	b
sm_n	sm_{n-1}	...	sm_2	sm_1	sb
R^2	sey				
F	df				
ssreg	ssresid				

The abbreviations used in this illustration represent the following values:

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

Note: Formulas using this function have to be entered as an *array formula* (see section "Working with arrays", page 309).

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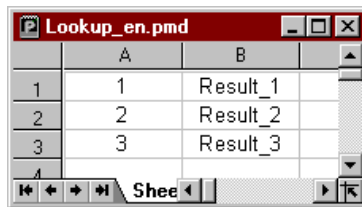
LookupVector is the cell range or array to search in. It must be a vector, which is a range of either just *one* row or *one* column.

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.

LookupVector is the cell range or array with the results. It also has to be a vector. **ResultVector** must be of the same size as **LookupVector**.

Example: In the following table ...

... 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, it returns the content of the cell lo-

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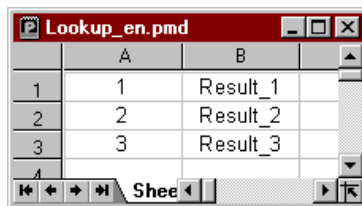
If **Range** has more columns than rows, the first *row* is scanned.

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 ... |

... 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**, this 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, MAX**A** 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 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 309, 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 a 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, MIN**A** 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 1.

Array is a cell range or array containing the matrix to be evaluated. It must contain numeric values only. Its number of rows has to equal its number of columns.

Matrices whose determinant is zero can't 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 309).

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 309, 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, income 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 309).

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

See also: Section "Working with arrays", page 309, 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
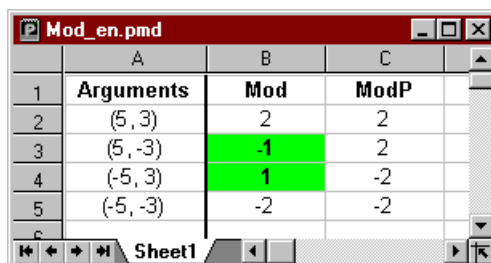
MOD(5, -3) returns -1 (which is wrong – see below!)

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):

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

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 "Plan-Maker 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 above that returns correct results.

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

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 309).

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 309, 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 ≥ 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 308

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 ex-

periment with independent trials and only two possible outcomes (success or failure) with a fixed probability of **p** for each trial.

k is the number of failures. Must be ≥ 0.

r is the number of successes. Must be ≥ 0.

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

Example: 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**.

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 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.
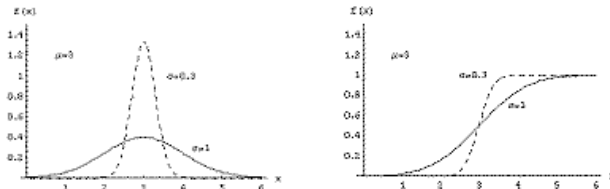
Density function ("bell curve") and distribution function

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, IMPT, 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, income 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("37777777726") returns 11111111111111111111111111010110 (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("37777777726") 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("37777777726") returns FFFFFFD6 (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 manipulated.

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.
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 (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

Example: 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 ≥ 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. If not, PlanMaker automatically drops their decimals.

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 π (pi), which expresses the ratio of a circle's circumference ($2r\pi$) to its diameter ($2r$).
Example:	PI() returns 3.14159265...

PMT (payment)

Syntax:	PMT(Rate, NPer, PV [,FV] [,Type])
Description:	Returns the payment (principal plus interest) in the given period. This function is applicable to loans with periodic constant payments, and a constant interest rate.
	Rate is the interest rate (per payment period).
	NPer is the total number of payment periods.
	PV is the present value.

FV (optional) is the future value. If omitted, it will be set to zero.

Type (optional) is the timing of the payments:

0 or omitted: Payment at the end of each period.

1: Payment at the beginning of each period.

Example: PMT(6.5%, 10, 1000) returns -139.10

See also: FV, IMPT, 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 ≥ 0.

Lambda is the expected (average) value. Must be ≥ 0.

Example: In a multi-story building, an average of 4 light bulbs become defective per week.

To determine the probability that just 3 light bulbs become defective in one week:

POISSON(3, 4, FALSE) returns 0.195366815 (i.e., about 19.5%)

To determine the probability that *at most* 3 light bulbs become defective in one week:

POISSON(3, 4, TRUE) returns 0.43347 (i.e., about 43.3%)

See also: 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 ^ 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 304

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 #NV 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, IMPT, NPER, NPV, PMT, RATE

QUARTILE (quartiles of a data set)

Syntax:	QUARTILE(Range, n)
Description:	Returns one of the quartiles of a data set.
	Range is the cell range or array to be evaluated.

	n determines which quartile to return:
	0: The minimum
	1: The 1st quartile (25th percentile)
	2: The 2nd quartile (50th percentile or median)
	3: The 3rd quartile (75th percentile)
	4: The maximum
	If n is < 0 or > 4, a #NUM! 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

RAD (PlanMaker 97 compatibility function)

Syntax:	RAD(Number)
Description:	Converts degrees into radians.
Note:	This function was retained only for compatibility with PlanMaker 97. Using the Excel-compatible function RADIANS is recommended instead.
Example:	RAD(180) returns 3.14159...
See also:	RADIANS

RADIANS (convert degrees to radians)

Syntax:	RADIANS(Number)
Description:	Converts degrees to radians.
Example:	RADIANS(180) returns 3.14159...
See also:	DEGREES

RAND (random value)

Syntax:	RAND()
Description:	Returns a random number ≥ 0 and < 1.
	A new random number will be generated every time the document is recalculated. Hint: To manually recalculate a document, use the **Extras > Recalculate** command or press F9.
Example:	RAND() returns a random number.
See also:	RANDBETWEEN

RANDBETWEEN (random value)

Syntax:	RANDBETWEEN(LowerLimit, UpperLimit)
Description:	Returns a random number ≥ **LowerLimit** and ≤ **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 number in the range 1 through 6.
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 subsequent numbers are 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, IMPT, NPER, PMT, PV

REPLACE (replace text in a text string)

Syntax: REPLACE(Text, Start, Count, NewText)

Description: Replaces part of a text string with new 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, "dddddddd") returns ccddcc

REPLACE("cccccc", 3, 4, "dddddddd") returns ccddddd

REPLACE("cccccc", 3, 6, "dddddddd") 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. If not, PlanMaker automatically drops its decimals.

Example:	REPT("MyText", 3) returns MyTextMyTextMyText
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 [,Form])
Description:	Converts an Arabic numeral into a Roman numeral (as a text string).
	Number is the number to be converted. Must be ≥ 0 and < 4000. **Number** should be an integer. If not, PlanMaker automatically drops its decimals.
	If **Number** equals zero, an empty text string will be returned.
	If the optional argument **Form** is used, PlanMaker tries to create a shorter form of the Roman numeral. **Form** 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** decimals.

                 n is the number of decimals.

                 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 a 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** decimals.

                 n is the number of decimals.

                 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 a 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** decimals.

n is the number of decimals.

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 a 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 309).

If **Reference** is omitted, the row number of the cell where this function was inserted 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.

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:

$SERIESSUM(x,n,m,a) =$

$a1*x^n + a2*x^{(n+m)} + a3*x^{(n+2m)} + a4*x^{(x+3m)} + ...$

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

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: **SIN** returns the sine of **Number**.

Example: SIN(PI()/2) returns 1

SIN(RADIANS(90)) returns 1

See also: ASIN

SINH (hyperbolic sine)

Syntax: SINH(Number)

Description: **SINH** returns the hyperbolic sine of **Number**.

Example: SINH(0.45) returns 0.4653

See also: ASINH

SKEW (skewness of a distribution)

Syntax: SKEW(Number1, Number2, Number3 [,Number4 ...])

or

SKEW(Range1, Range2 [,Range3 ...])

Description: Returns the skewness of a probability distribution.

The skewness is a measure of the asymmetry of a distribution.

If the skewness is zero, the distribution is symmetric. If it is positive, the positive tail is larger; if negative, the negative tail is larger.

Number1, **Number2**, etc., are the values to be evaluated. Empty cells, text strings, and logical values are ignored.

At least three values have to be given, otherwise, the function returns a #DIV/0! error value.

Example: Measuring the height of several test persons led to the following results: 1 x 1.60m, 2 x 1.65m, 4 x 1.70m, 2 x 1.75m, and 1x1.80m.

To calculate the skewness of this distribution, use the following formula:

SKEW(1.60, 1.65, 1.65, 1.70, 1.70, 1.70, 1.70, 1.75, 1.75, 1.80) returns 4.66562E-15.

See also: INTERCEPT, FORECAST, KURT, NORMDIST

SLN (straight-line depreciation)

Syntax: SLN(Cost, Salvage, Life)

Description: Returns the depreciation per period of an asset, using the straight-line depreciation method.

Cost = Initial cost of asset

Salvage = Salvage value (value at the end of the depreciation)

Life = Life of asset (in number of periods)

Example: Asset parameters: initial cost = 6000, salvage value = 3000, life = 5 years

SLN(6000, 3000, 5) returns 600 (per year)

See also: SYD, DDB

SLOPE (slope of a linear trend)

Syntax: SLOPE(y_values, x_values)

Description: Returns the slope of a best-fit line for the given values. The slope of a line is the value the y coordinate grows when the x coordinate 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 309).
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 90

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 309).
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 90

SQRT (square root)

Syntax:	SQRT(Number)
Description:	Returns the square root of a number.
	Number must be ≥ 0.
Example:	SQRT(25) returns 5
	SQRT(-25) returns a #NUM! error value

See also: 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 ≥ 0.

n should be an integer. If not, PlanMaker automatically drops its decimals. 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 ≥ 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, STDEV**A** 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, STDEVP**A** 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, it *will* distinguish 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 cell range(s).

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 92.

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 7

Hint:	The SUM function can also be inserted using the Sum symbol in the Edit strip.

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) equal 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:

$$SUMX2MY2 = \sum(x^2 - y^2)$$

Range1 and **Range2** are cell ranges or arrays containing the values to be evaluated.

Both ranges must have the same dimensions (height and width). If not, the function returns a #N/A error value.

Pairs of values where at least one value is an empty cell or a non-numerical value (text string or logical value) are ignored.

Example: If A1:A3 contains the values 9, 4, 7, and B1:B3 contains 1, 0, 5:

SUMX2MY2(A1:A3, B1:B3) equals $(9^2) - (1^2) + (4^2) - (0^2) + (7^2) - (5^2)$, which is 120.

See also: SUM, SUMPRODUCT, SUMX2PY2, SUMXMY2, SUMSQ

SUMX2PY2 (sum of x^2 plus y^2)

Syntax: SUMX2PY2(Range1, Range2)

Description: Returns the sum of the sum of squares of corresponding values in two arrays.

The equation for this function is:

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:

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

TABLENAME (name of a worksheet)

Syntax: TABLENAME([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:

TABLENAME(1) returns Spring

TABLENAME() returns Autumn

See also: USERFIELD, FILENAME

TAN (tangent)

Syntax: TAN(Number)

Description: **TAN** 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: **TANH** 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 ≥ 0.

DegreesFreedom is the number of degrees of freedom. Must be ≥ 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 112).

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 ≥ 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 309).
	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 309, 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 will be forced to equal 0 (zero); the m values will be adjusted accordingly.

Note:	Formulas using this function have to be entered as an *array formula* (see section "Working with arrays", page 309).
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: **TRUE** returns the logical value TRUE.

See also: FALSE

TRUNC (truncate a number)

Syntax: TRUNC(Number [,n])

Description: Truncates the decimals of the given number (i.e., removes the digits right of the decimal point).

n (optional) is the number of decimals.

If **n** is omitted, **Number** is truncated to an 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 a 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	1
Text string	2
Logical value	4
Formula	8
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**, click on the **General** tab, then click on **User (Home)** or **User (Business)** (see also section "Preferences, General tab", page 267).

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:

User (Home)	Field name
First name	Home.First name
Last name	Home.Last name
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

User (Business)	Field name
First name	Business.First name
Last Name	Business.Last name
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, TABLENAME

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, VAR**A** 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

VARN (PlanMaker 97 compatibility function)

Syntax:	VARN(Number1, Number2 [,Number3 ...])
	This function was retained only for compatibility with PlanMaker 97. Using the Excel-compatible function VAR**P** is recommended instead.
	If you save a document in Excel format, all occurrences of the VARN function will automatically be replaced by the VARP function.
See also:	VARP

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, VARP**A** 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, it 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 ≥ 0.
	Alpha is a shape parameter of the function. It has to be greater than zero. Note: If Alpha = 1, the Weibull distribution equals an exponential distribution with Lambda = 1/**Beta**.
	Beta is the scale parameter of the function. It has to be greater than zero.
	The logical value **Cumulative** lets you specify which type of function will be returned:
	FALSE: The probability density function is returned.
	TRUE: The cumulative distribution function is returned.
Example:	WEIBULL(42, 2, 100, TRUE) returns 0.16172
	WEIBULL(42, 2, 100, FALSE) returns 0.00704
See also:	EXPONDIST, POISSON

WORKDAY (date after x workdays)

Syntax: WORKDAY(StartDate, Days [,Holidays])

Description: Returns the date that is the specified number of workdays before/after **StartDate**.

This function counts workdays only, Saturdays and Sundays are skipped. Optionally, you can specify a list of holidays to be skipped as well (see **Holidays** parameter).

StartDate is the start date.

Days is the number of workdays. A positive value will return a date in the future, a negative value will return a date in the past.

Holidays (optional) is a cell range or an array containing a list of dates to be skipped (e.g., holidays).

Example: WORKDAY("6/7/2004", 10) returns 6/21/2004.

See also: 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

Overview: 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 293).

Keyboard shortcuts for navigating in spreadsheets

Move to the next cell	`←`/`→`/`↑`/`↓`
Move to the next *filled* 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	`Pos1`
Move to the last *filled* cell in the current row	`End`
Move to the first cell in the worksheet (A1)	`Ctrl` `Pos1`
Move to the last *filled* 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 menu commands

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 > Select All	`Ctrl` `A`
Edit > Search	`Ctrl` `F`
Edit > Replace	`Ctrl` `H`
Edit > Search again	`Ctrl` `G` or `F3`
Edit > Go to	`F5`
Format > Cell	`Ctrl` `1`
Format > Standard	`Ctrl` `Space`
Select font (in format strip)	`Ctrl` `D`
Boldface on/off	`Ctrl` `⇧` `F` or `Ctrl` `B`
Italics on/off	`Ctrl` `⇧` `K` or `Ctrl` `I`
Underlining on/off	`Ctrl` `⇧` `U`
Superscript	`Ctrl` `⇧` `+`
Subscript	`Ctrl` `⇧` `-`
Deactivate superscript/subscript	`Ctrl` `⇧` `*`
Alignment: default	`Ctrl` `T`
Alignment: left	`Ctrl` `L`
Alignment: right	`Ctrl` `R`
Alignment: centered	`Ctrl` `E`

Alignment: flush   `Ctrl` `J`

Insert > Function   `F7`
Insert > Comment   `⇧` `F2`
Insert current date   `Ctrl` `.`
Insert current time   `Ctrl` `⇧` `.`

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Entries in **Boldface** represent menu commands.

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