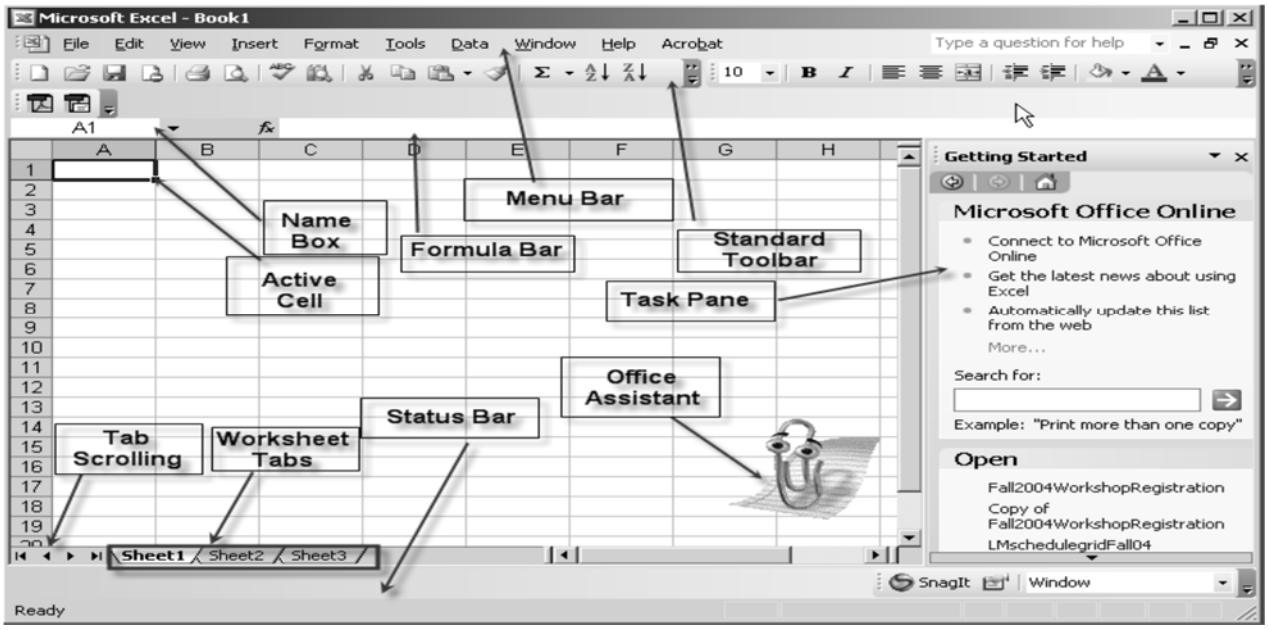
TOPIC F: EXCEL© SPREADSHEET

Microsoft Office Excel© is a powerful tool you can use to create and format spreadsheets, and analyze and share information to make more informed decisions. There are different versions of MSExcel©, but the elements remain the same.

What is a Spreadsheet?

A spreadsheet is a tool for working with and analyzing numerical data. In structure, it consists of a grid of rows and columns, rather like a large sheet of graph paper. Each row is numbered, usually from 1 to about 8,000, and each column is labeled by a letter. The sequence of letters is usually A to Z, then AA, AB, AC...and so on. A typical spreadsheet is shown below.



At the top of the window is a blue bar called the **title bar**. The title bar contains the name of the application (*Excel*) and the name of the workbook you are working in (automatically called "Book 1" until you rename it).

The title bar also includes the minimize, maximize/restore, and close buttons. Below the title bar is the **menu bar**, containing lists of commands you will use with *Excel*. Many of the menus on this bar –such as File, Edit, Format, or Help - will seem familiar if you use other Microsoft products. Beneath the menu bar is the **standard toolbar**, which contains buttons with images that correspond to some frequently used menu commands:

To see what a toolbar button does, pause your mouse pointer over the button and a brief description will appear. If you want to add a function to your toolbar, hover your mouse over the **toolbar options** icon and click. You will see a list of available options. Click on the toolbar option you would like to add.

NOTE: *If a particular button appears "grayed out" on a toolbar, it means that option is not available for your current activity.*

How many cells are in an Excel Workbook? Almost too many to count! Each worksheet has 256 columns (from A to IV) and 65, 536 rows. Multiplied together, that gives you 16, 777, 216 cells per worksheet. Each new workbook you open has three worksheets, giving you 50,331,648 cells initially. You can also add worksheets to workbooks to even further expand the number of cells available.

This simple structure can help you to perform very complex and powerful calculations and data storage. At the intersection of any column with any row you get a **cell**. A cell is like a box that has a label and contains information. The label of the cell is called the *cell reference* or *cell address* and this is derived from the cell's column letter and the row number. So, a cell in column C and row 3 has the cell reference C3. Every cell can contain one of three types of information:

1. Numbers

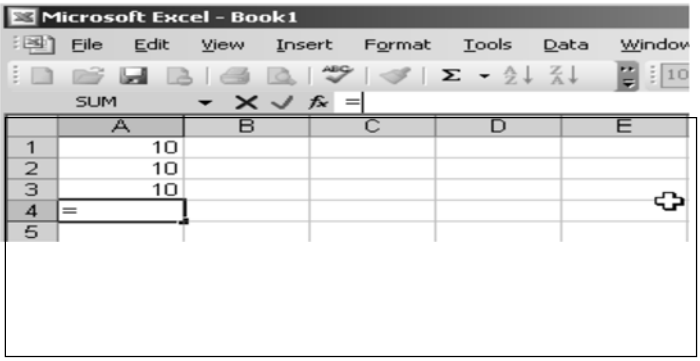
The basic element of every spreadsheet is numbers. As mentioned above, any number you type into a spreadsheet will be stored in the same format, no matter what it refers to. So the result of a scientific calculation will be stored in the same way as a figure relating to a budget proposal. This is fine as far as calculations are concerned, but it does not make the spreadsheet easy to read. Therefore most spreadsheets have the ability to display numbers in different ways. Typically there are fixed formats (normal numbers with a fixed number of decimal places), scientific notation, currency and commas (to designate 1,000's). All these formats are for display purposes only, but they are important in making your spreadsheet clear to yourself and other readers.

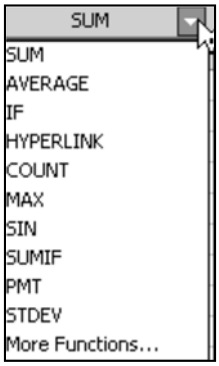
2. Text

You could have your spreadsheet just filled with numbers and calculations, and it would still do the job for you perfectly well. However, if you have a mistake in your calculations or you need to edit the spreadsheet, or someone else needs to look at your spreadsheet, multiple screens full of numbers is not very informative. Text in a spreadsheet is used mainly for labeling and explaining the numbers so that you know what the numbers are referencing. Most spreadsheets have some simple database capabilities including searching and sorting, therefore, the text becomes quite important. The text is always important when it comes to presenting your numbers and calculations to other people. Most spreadsheets therefore allow you to present your text in a variety of typefaces, sizes and styles to add visual impact to a presentation.

3. Formulas

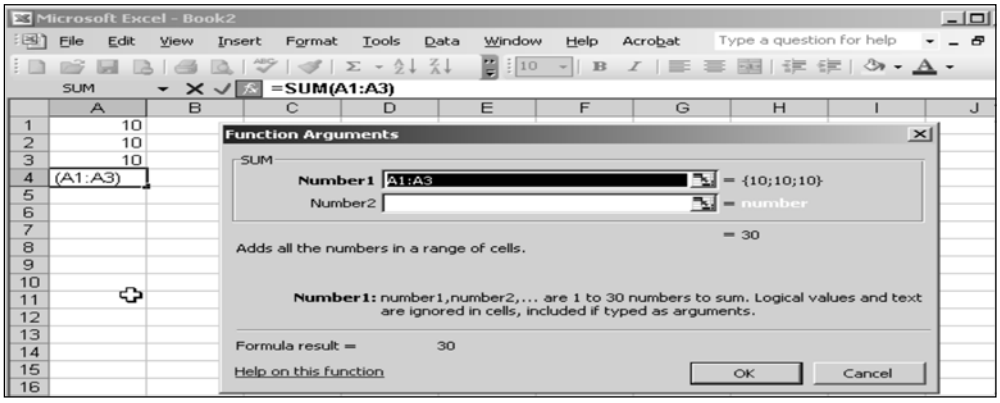
Spreadsheet cells can contain formulas instead of text or numbers. When a formula is entered into a cell then the result of the formula is displayed rather than the content. The true utility of *Excel* is its ability to use formulas. A **formula** is used to calculate the value of the contents of a specific cell or range of cells. All formulas must start with the equal sign (=). The formula for a particular cell or range of cells will appear in the formula bar, while the results are displayed in the cell itself. Formulas can refer to other cells.





Once you have entered the equal sign, you will notice the name box turns into a grey box with the word **SUM** and a down arrow.

Click on the **down arrow** next to the word SUM to list functions available. If you do not see the one you want, you can choose "More Functions..." from the list. Select the title of the function/formula you would like to use (in this case, **SUM**). Note the formula has been entered in the formula bar for you. Click **OK** when you are satisfied with the formula.



Excel functions are predefined formulas. The **SUM** function used above could be used to return the same value as the formula =A3+A4+A5+A6. When entering this function, you could choose to enter it as:

=SUM(A3, A4, A5, A6) or =SUM(A3:A6)

and expect to get the same results. Functions must begin with the equal sign (=) and must be followed by parentheses–even if no reference is required between the parentheses.

Some common functions are:

Function	Result Displayed Is…	Example
AVERAGE	The mean of the cells referred to in parentheses	=AVERAGE(A3:A6)
COUNT	The number of *numerical* values in the cells referred to in parentheses	=COUNT(A3:A6)
MAX	The highest value among the cells referred to in parentheses	=MAX(A3:A6)
MIN	The lowest value among the cells listed in parentheses	=MIN(A3:A6)
TODAY	Today's date	=TODAY( )

The following are several common **operators** used in formulas:

* Multiplication	=2*2 = 4
/ Division	=4/2 = 2
+ Addition	=2 + 2=4
- Subtraction	=4 – 2 =4
: Colon – used to specify a range of cells	=A5:A9
, Comma– used to combine multiple cell references into one reference	=SUM (D3:D7, F15, G9)
( ) Combination – you can combine operators as needed.	=(A1+A2+A3)/3 [The average of the contents of cells A1-A3]

Just like in mathematics, Excel formulas follow a certain "order of operations". When creating formulas, keep in mind the following:

- Operations are performed from left to right.
- Parentheses may be used (as in the "combination" example above) to group operations to be performed first.