EXCEL MANUAL

Course Outline

Subject Title: **BUSCOM 122** (Business Computer Software Operation II - Spreadsheet)

Units: __6__   Lec: 3 Hrs/Week   Lab: 3 Hrs/Week

Course Description: This subject covers data organization and report generation using the so-called "Electronic Spreadsheet". The subject covers how to use the software, keyboard familiarization worksheet commands, computations using predefines functions and user prepared equations, creating, displaying and printing of graphs and database management.

Course Requirements: The student must pass the required classroom recitation, quizzes, periodic examination, and laboratory.

Class Standing   - 20%
Quiz   - 25 %
Periodic Exam   - 25%
Laboratory   - 30%
        Total - 100% (Passing Grade is 75%)

General Objectives: Upon completion of the subject, students can perform fundamental operations such as creating, modifying, enhancing and producing spreadsheets, use spreadsheet applications to solve business problems, create pie, bar, 3-D and line graphs, use analytical functions, automating spreadsheets with macros, analyzing data with data tables, database functions and graphics, exploring in Advanced What-if alternatives and importing/exporting files.

Specific Objectives: At the end of the course, students will be able to:
1. define Microsoft Excel;
2. search for help by typing a question in the help window;
3. explain the excel environment;
4. use shortcut keys;
5. define workbook and worksheets;
6. create a new workbook;
7. set the default working folder in the Open and Save As dialog boxes;
8. open a workbook;
9. open several workbook at once;
10. open a workbook as read-only;
11. open a workbook automatically when you start Excel;
12. open a back up copy of a workbook;
13. show or hide the list of recently used workbooks on the File menu;
14. use the file properties to locate files;
15. set properties to make a workbook read-only;
16. find and preview files;
17. create and use workbook templates;
18. save workbook;
19. close workbook;
20. hide a workbook;
21. insert a new worksheet;
22. move and scroll through a worksheet;
23. select sheets in a workbook;
24. display more or fewer tabs;
25. move or copy sheets;
26. hide a sheet;
27. display a hidden sheet;

28. delete sheets from a workbook;
29. rename a sheet;
30. hide a row or column;
31. create links to connect data and files;
32. change the defaults for new workbook and worksheets;
33. change what you see in the screen;
34. arrange workbook windows;
35. enter data in worksheet cells;
36. cancel or undo entry;
37. select and move around in a workbook;
38. edit cell contents;
39. clear or delete cells, rows, or columns;
40. find and replace data;
41. insert cells and data;
42. move or copy cell data;
43. copy only values, formulas, comments or cell formats;
44. switch rows of cells to columns or columns to rows;
45. collect and past multiple items
46. check spelling and correcting typing errors;
47. copy formats from one cell or range to another;
48. change the font size, font, color, or other text format;
49. shrink the font size to show all data in a cell;
50. change the text color;
51. make selected text or numbers bold, italic or underlined;
52. apply and remove borders to cells;
53. shade and remove cells with solid colors;
54. add and remove background patterns to an entire sheet;
55. change, add or remove conditional format;
56. change column width and row height;
57. merge cells to span several columns or rows;
58. split a merged cell into separate cells;
59. center, align, indent or rotate data in a cell;
60. format numbers, dates and time;
61. increase or decrease the number of decimal places shown;
62. show numbers as a postal code, social security number or phone number;
63. show numbers as fractions or percentages;
64. show or hide the thousands separator in a number;
65. add or remove a currency symbol
66. display zeroes and hide values;
67. set print options;
68. change the print area, layout and page breaks;
69. change the headers and footers;
70. print the active sheets, a selected range or an entire workbook;
71. create an on-screen or printed form;
72. create forms for data entry;
73. add buttons, check boxes and other controls;
74. create a form template that copies worksheet data to a database;
75. create formulas and auditing workbooks;
76. create a chart;
77. change and add text and data in a chart;
78. change the display, view or placement of a chart;
79. change the type of a chart;
80. format data markers, labels and other chart items; and create drawings and importing pictures.

INTRODUCTION

➢ **Microsoft Excel** (full name **Microsoft Office Excel**) is a spreadsheet application written and distributed by Microsoft for Microsoft Windows and Mac OS X. It features calculation, graphing tools, and a macro programming language called VBA (Visual Basic for Applications)

➢ Microsoft Excel has the basic features of all spreadsheets, using a grid of *cells* arranged in numbered *rows* and letter-named *columns* to organize data manipulations like arithmetic operations. It has a battery of supplied functions to answer statistical, engineering and financial needs. (Wikipedia)

➢ a software program that allows the easy analysis and manipulation of data using tables and formulas.

➢ a spreadsheet program that can perform numerical calculations and bookkeeping tasks.

➢ Because all sorts of calculations can be made in the Excel spreadsheet, it is much more flexible than a paper spreadsheet.

Excel is a computerized spreadsheet, which is an important business tool that helps you report and analyze information.
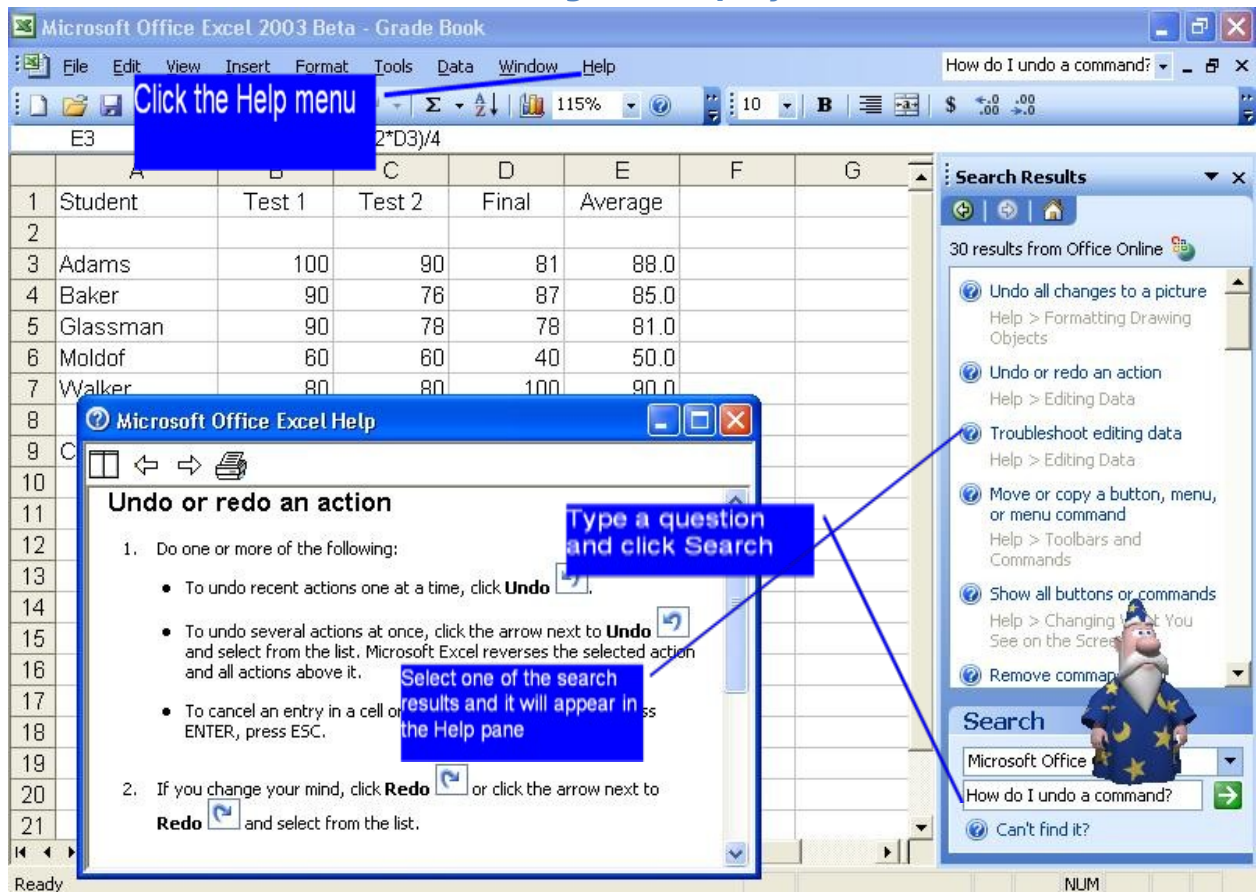
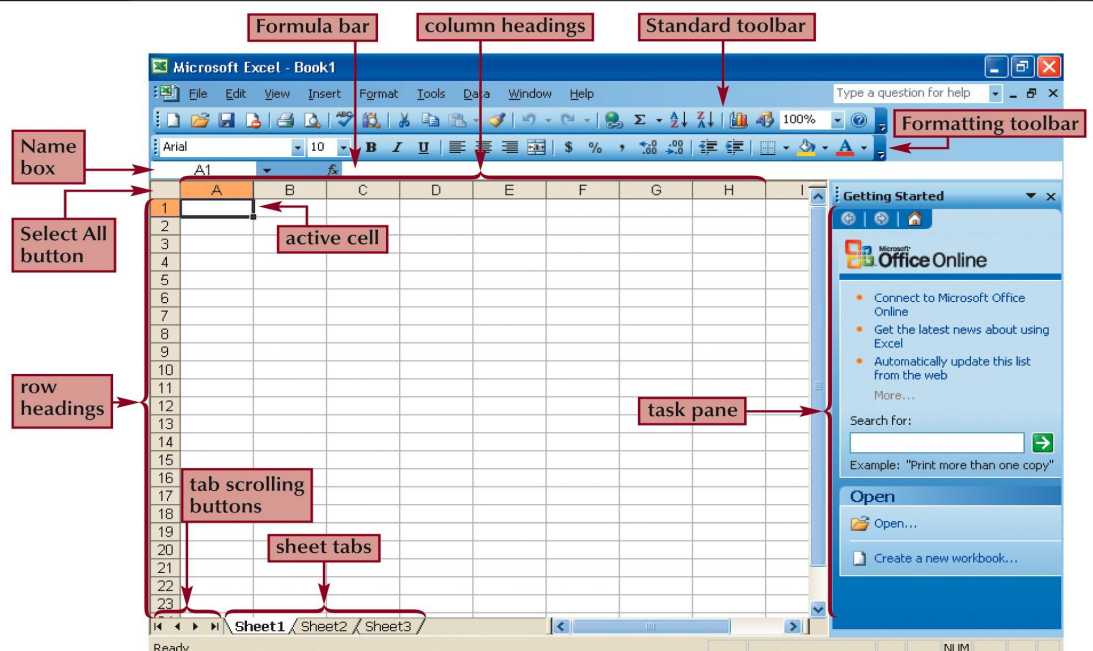**A sample Excel worksheet**

Using the Help System

Excel components

The Excel window has some basic components, such as an Active cell, Column headings, a Formula bar, a Name box, the mouse pointer, Row headings, Sheet tabs, a Task Pane, Tab scrolling buttons and Toolbars.

Figure 1-3	Parts of the Excel window

Feature	Description
Active cell	The cell in which you are currently working. A dark border outlining the cell identifies the active cell.
Column headings	The letters that appear along the top of the worksheet window. Columns are listed alphabetically from A to IV (a total of 256 possible columns).
Formula bar	The bar located immediately below the toolbars that displays the contents of the active cell. As you type or edit data, the changes appear in the Formula bar.
Name box	The box that displays the cell reference, or column and row location, of the active cell in the workbook window.
Row headings	The numbers that appear along the left side of the worksheet window. Rows are numbered consecutively from 1 to 65,536.
Select All button	Square button located at the intersection of the column and row headings that you click to select the entire contents of the worksheet.
Sheet tabs	Tabs located at the bottom of each worksheet in the workbook that display the names of the sheets. To move between worksheets, click the appropriate sheet tab.
Task pane	The pane that provides access to frequently used tasks. When you start Excel, the Getting Started task pane appears. The task pane disappears once you open a workbook. There are several task-specific panes available in Excel.
Tab scrolling buttons	Series of buttons located to the left of the sheet tabs that you can click to move between worksheets in the workbook.
Toolbars	Toolbars that provide quick access to commonly used commands. The Standard toolbar contains buttons for the most frequently used program commands, such as Save and Print. The Formatting toolbar contains buttons used to format the appearance of the workbook, such as Bold and Italics. Additional toolbars are available.

MS EXCEL Shortcut Keys

The following lists contain CTRL combination shortcut keys, function keys, and some other common shortcut keys, along with descriptions of their functionality.

- CTRL+A   Selects the entire worksheet.
- CTRL+B   Applies or removes bold formatting.
- CTRL+C   Copies the selected cells.
- CTRL+D   Uses the **Fill Down** command to copy the contents and format of the topmost cell of a selected range into the cells below.
- CTRL+F   Displays the **Find** dialog box.
- CTRL+G and F5 Displays the **Go To** dialog box.
- CTRL+H   Displays the **Find and Replace** dialog box.
- CTRL+I   Applies or removes italic formatting.
- CTRL+N   Creates a new, blank file.
- CTRL+O   Displays the **Open** dialog box to open or find a file.
- CTRL+P   Displays the **Print** dialog box.
- CTRL+R   Uses the **Fill Right** command to copy the contents and format of the leftmost cell of a selected range into the cells to the right.
- CTRL+S   Saves the active file with its current file name, location, and file format.
- CTRL+U   Applies or removes underlining.
- CTRL+V   Inserts the contents of the Clipboard at the insertion point and replaces any selection. Available only after you cut or copied an object, text, or cell contents.
- CTRL+W   Closes the selected workbook window.
- CTRL+X   Cuts the selected cells.
- CTRL+Y   Repeats the last command or action, if possible.
- CTRL+Z   Uses the **Undo** command to reverse the last command or to delete the last entry you typed.
- F1   Displays the **Help** task pane.
- F4   Repeats the last command or action, if possible.
- F6   Switches to the next pane in a worksheet that has been split (**Window** menu, **Split** command).
- F7   Displays the **Spelling** dialog box to check spelling in the active worksheet or selected range.
- F12   Displays the **Save As** dialog box.

- ARROW KEYS   Move one cell up, down, left, or right in a worksheet.
- BACKSPACE   Deletes one character to the left in the Formula Bar. Also clears the content of the active cell.
- DELETE   Removes the cell contents (data and formulas) from selected cells without affecting cell formats or comments.
- ENTER   Completes a cell entry from the cell or the Formula Bar, and selects the cell below (by default).
- ESC   Cancels an entry in the cell or Formula Bar.
- HOME   Moves to the beginning of a row in a worksheet.
- PAGE DOWN   Moves one screen down in a worksheet.
- PAGE UP   Moves one screen up in a worksheet.
- SPACEBAR   In a dialog box, performs the action for the selected button, or selects or clears a check box.
- TAB   Moves one cell to the right in a worksheet.

Workbooks and worksheets

When you start Excel, you open a file called a **workbook**. Each new workbook comes with three worksheets, like pages in a document. You enter data into the worksheets.
Each worksheet has a name on its **sheet tab** at the bottom left of the workbook window: Sheet1, Sheet2, and Sheet3. You view a worksheet by clicking its sheet tab.

1. The first workbook you open is called Book1 in the title bar at the top of the window until you save it with your own title.
2. Sheet tabs are at the bottom of the workbook window.
   - It's a good idea to rename the sheet tabs to make the information on each sheet easier to identify.
   - You can add additional worksheets if you need more than three. Or if you don't need as many as three, you can delete one or two (but you don't have to).
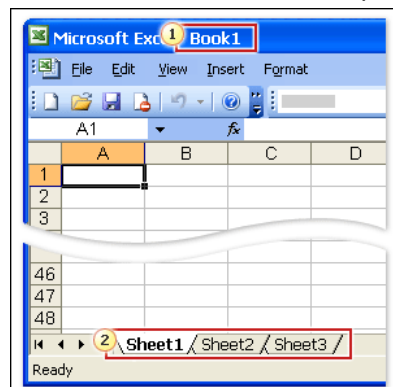
You may be wondering how to create a new workbook if you've already started Excel. Here's how: On the **File** menu, click **New**. In the **New Workbook** task pane, click **Blank workbook**.

Renaming Worksheets

Step 1 - Launch Excel - Automatically a workbook opens. An Excel workbook is made of several sheets. Unless you have changed the default setting you will have three sheets.


Step 2 - Changing the name of the worksheets - Each sheet is a full spreadsheet. Having a workbook with multiple sheets allows you to easily establish relationships from one sheet to another.
The name of the sheet may be changed. Double-click the name of the sheet in the tab at the bottom, and type the new name.

Step 3 - Inserting additional worksheets - If you need additional worksheets, go to the Insert menu and select Worksheet . It will be placed before the selected sheet.
You may also insert a worksheet by right-clicking on the name of the sheet in the tab and selecting Insert.
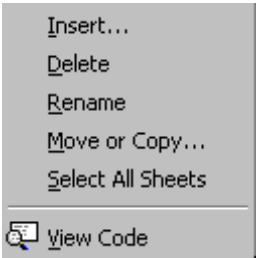
As you can see from the graphic above, renaming the worksheet can also be accomplished by right-clicking the tab containing sheet names.

Columns, rows, and cells

Columns, rows, and cells: That's what worksheets are made of, and that's the grid you see when you open up a workbook.
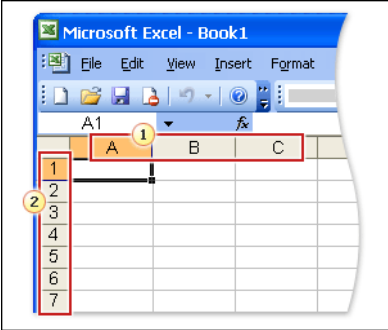
Columns go from top to bottom on the worksheet, vertically. Rows go from left to right on the worksheet, horizontally. A cell is the place where one column and one row meet. Columns and rows have headings:

1. Each column has an alphabetical heading at the top.
2. Each row has a numeric heading.

The first 26 columns have the letters from A through Z. Each worksheet contains 256 columns in all, so after Z the letters begin again in pairs, AA through AZ, as the picture shows.

Row headings go from 1 through 65,536.

Cells are where the data goes

Cells are where you get down to business and enter data in a worksheet.
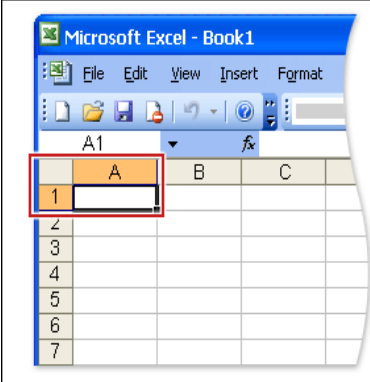

The **active cell** is outlined in black.
For example, if you select a cell in column C on row 5:
1. Column C is highlighted.
2. Row 5 is highlighted.
3. The active cell is shown in the **Name Box** in the upper-left corner of the worksheet.

The selected cell has a black outline and is known as C5, which is the **cell reference**.

You can see the cell reference of the active cell by looking in the Name Box in the upper-left corner.

Figure 1-6	Making cell C5 the active cell
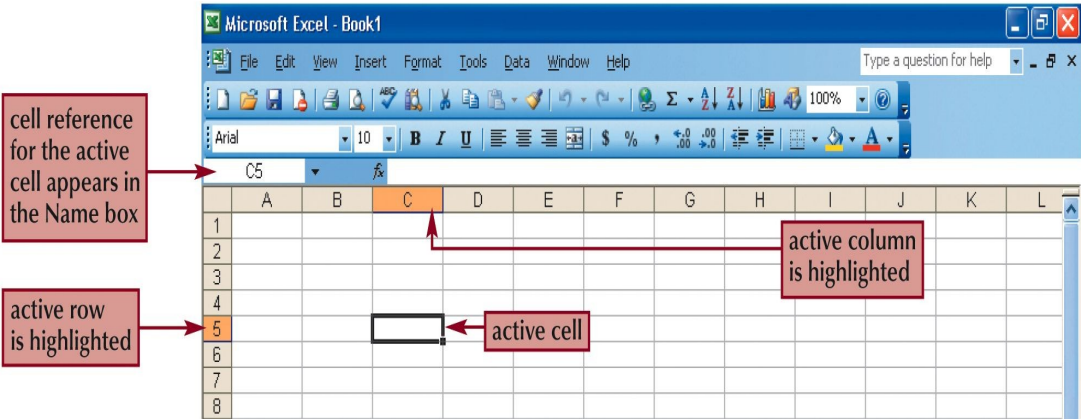
Cells - Rectangles in a spreadsheet are called a cell. Cells are designated by the column and row in which it is located. By default, the top left cell, A1, is highlighted.
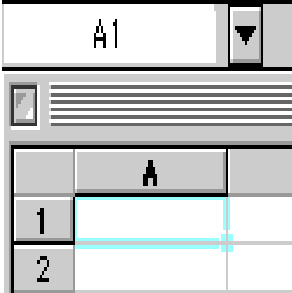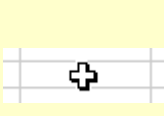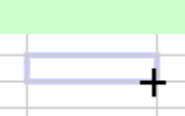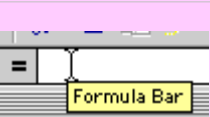

Types of Cell Entries
- Constant – an entry that does not change
  - ➢ *Can be a numeric value or descriptive text*
- Function – a predefined computational task

- Formula – a combination of numeric constants, cell references, arithmetic operators, and functions
  - ➢ *Always begins with an equal sign*

Try the following ways to move from cell to cell:
- Hit the Return/Enter key to move down to the row below
- Hold down the Shift key, then hit the Return/Enter key to move up to the row above
- Hit the Tab key to move over to the column to the right
- Hold down the Shift key, hit the Tab key to move back to the column to the left
- Move the cursor to any cell and click there
- Use the arrow keys to move up, down, left, or right.

Recognizing cursor styles - There are four common cursor styles used in Excel.

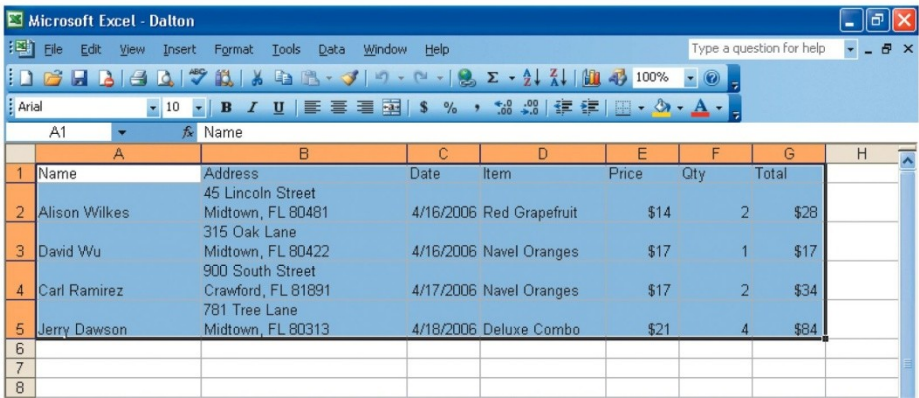|			
✛	Click and drag to highlight multiple cells with this cursor, or click in a cell to select the single cell	╋	Click and drag with this cursor to fill cell contents into cells below or to the right.
➤	Click and drag the contents of the selected cell to any other cell.	Formula Bar	Click to place the cursor into the Formula bar so that you can edit an equation or function.

Identify cell ranges
- A group of worksheet cells is known as a cell range, or range.
- Working with ranges in a worksheet makes working with the data easier.
- Ranges can be adjacent or nonadjacent.
  - ➢ *An adjacent range is a single, rectangular block of cells*
  - ➢ *Select an adjacent range by clicking on a cell and dragging to an opposite corner of a rectangle of cells*
  - ➢ *A nonadjacent range is comprised of two or more adjacent ranges that are not contiguous to each other*

To select a nonadjacent range, begin by selecting an adjacent range, then press and hold down the Ctrl key as you select other adjacent ranges

Using Cell Ranges
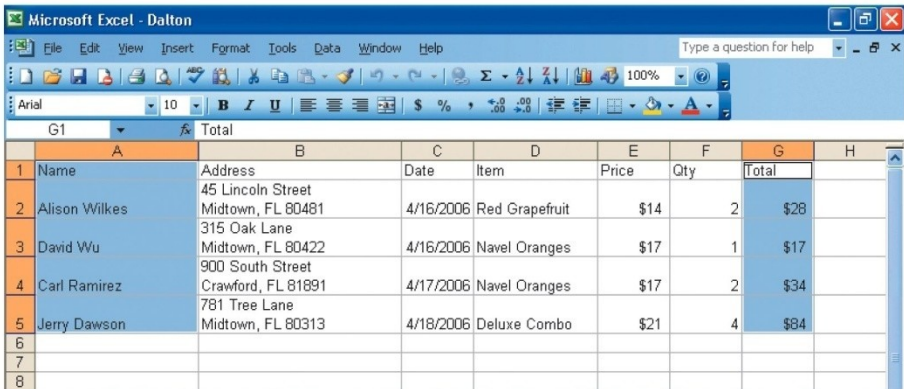- Range – a rectangular group of cells
  - ➢ *May be a single cell or the entire worksheet*
  - ➢ *May consist of a row (or part of a row), a column (or part of a column) or multiple rows and/or columns*
- To select a range:
  - ➢ *Click left mouse button at the beginning of the range*
  - ➢ *Hold left mouse button as you drag the mouse*
  - ➢ *Release left mouse button at the end of the range*

Entering data - Move to the cell where you want to enter data and enter words or numbers. If data is already in the cell it will be replaced without having to cut or delete the previous data.

Entering and Editing Data

Use these steps to easily enter and edit data in cells. Learn to identify the various cursors in MS Excel with this cursor identification Chart.

Step 1 - Cell data - Things that can be entered into a cell:
- numbers
- words
- equations, formulas or functions
- fill color
- images (although they are actually on top of a cell, not in it)

Step 2 - Entering data - Move to the cell where you want to enter data and enter words or numbers. If data is already in the cell it will be replaced without you having to cut or delete the previous data.

Navigation keystrokes

Shortcut keys for navigating a worksheet   Figure 1-5

Keystroke	Action
↑ , ↓ , ←, →	Moves the active cell up, down, left, or right one cell
Ctrl + Home	Moves the active cell to cell A1
Ctrl + End	Moves to the last cell in the worksheet that contains data
Enter	Moves the active cell down one cell, or moves to the start of the next row in the selected range of cells
F5	Opens the Go To dialog box, in which you specify the cell you want to move to
Home	Moves the active cell to column A of the current row
Page Up, Page Down	Moves the active cell up or down one full screen
Tab, Shift + Tab	Moves the active cell to the right or left one cell

*Use the **Alt+Enter** key combination to enter text on multiple lines within the same cell.

Using the Standard Toolbar with an Excel Worksheet
The Standard toolbar

This entire toolbar could become a floating window by double-clicking on the control bar at the far left end of this toolbar. That gives the following window, which can be placed anywhere on the screen:

This toolbar can be restored to its original position by clicking in the gray bar at the top and dragging it back to the top of the screen. Push the top of the window up to the bottom of the menu bar.

Function of commonly used buttons			
	Creates a new blank document based on the default template		Opens or finds a file
	Saves the active file with its current file name, location and file format		Prints the active file - for more print options go to the File menu and select Print
	Print preview - Shows how the document will look when you print it.		Spelling, grammar and writing style checker
	Cut - Removes the selection from the document and places it on the clipboard		Copy - Copies the selected item(s) to the clipboard
	Paste - Places the content of the clipboard at the insertion point		Format painter - Copies the format from a selected object or text and applies to other objects or text
	Undo - Reverses the last command, use pull-down menu to undo several steps		Redo - Reverses the action of the Undo button, use the pull-down menu to redo several steps
	Auto Sum - Adds numbers automatically, and suggests the range of numbers to be added		Sort Ascending - Sorts selected items from the beginning of the alphabet, the lowest number or the earliest date
	Sort Descending - Sorts selected items from the end of the alphabet, the highest number or the latest date		Chart Wizard - Guides you through the steps for creating an embedded chart (graph)
	Displays or hides the Drawing toolbar		Zoom - Enlarge or reduce the display of the active document

Excel - Using the Formatting Toolbar

The Formatting toolbar

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| Function of commonly used buttons			
Geneva	Changes the font of the selected text	9	Changes the size of selected text and numbers
B	Makes selected text and numbers bold	*I*	Makes selected text and numbers italic
U	Underlines selected text and numbers		Aligns to the left with a ragged right margin
	Centers the selected text		Aligns to the right with a ragged left margin
	Merge and Center - Merges two or more selected cells and centers the entry	$	Currency Style - Formats selected text to display currency style
%	Percent Style - Formats selected cells to display percent	,	Comma Style - Formats selected cells to display commas in large numbers
	Increase Decimal - Increases the number of decimals displayed after the decimal point		Decrease Decimal - Decreases the number of decimals displayed after the decimal point
	Decreases the indent to the previous tab stop		Indents the selected paragraph to the next tab stop
	Adds or removes a border around selected text or objects		Marks text so that it is highlighted and stands out
A	Formats the selected text with the color you click		

The Drawing toolbar

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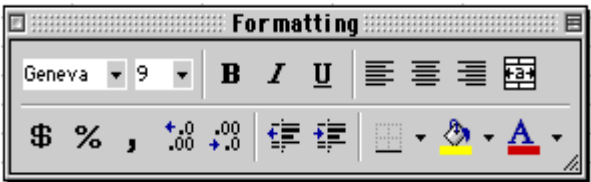
Function of commonly used buttons			
Draw ▾	A pull down menu with several drawing options		Changes the pointer to a selection arrow

⟳	Rotates the selected object to any degree	AutoShapes ▾	A pull down menu with several libraries of shapes
╲	Draws a line where you click and drag. Hold the Shift key down to make the line straight	↘	Inserts a line with an arrowhead where you click and drag
▢	Draws a rectangle where you click and drag. Hold down Shift to draw a square	⬭	Draws an oval where you click and drag. Hold down Shift to draw a circle
▤	Draws a text box where you click and drag	𝓐		Create text effects with Word Art
🪣▾	Add, modify, or remove fill color from a selected object	🖌▾	Add, modify, or remove line color
A▾	Formats the selected text with the color you click	≡	Changes the thickness of lines
▦	Selects dash style for dashed lines	⇄	Select arrow style; placement and shape of arrowhead
▣	A pull down menu offers shadow choices	◈	Add 3-d effects to rectangles or ovals

The most commonly used items from the File, Edit and View menus will be explained.

File menu
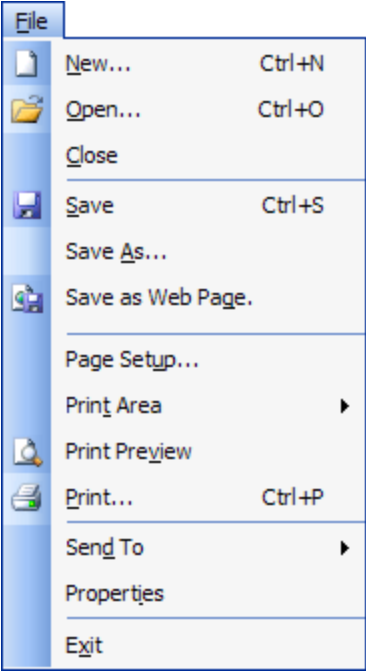
New - Opens a new document. If you use the keyboard combination indicated on the right a blank document opens immediately. Selecting the New menu item with your cursor gives the opportunity to open a large number of types of documents.

Open - Opens a previously saved document.

Close - Closes the active document but does not quit the application.

Save - Saves the active document with its current file name, location and format.

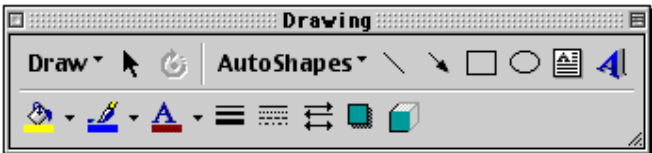**Save As -** Saves by opening a window which gives the opportunity to change the file name, location or format.

Page Setup - Sets margins, paper size, orientation and other layout options. Grid lines don't show up when you print? Go to the sheet tab in this window

Print Preview - Shows how the file will look when you print it.

Print - Prints the active file, also gives the opportunity to change print options

Exit - Closes Microsoft Excel

Edit menu

Undo - The actual entry of this item will depend on what you did last. In my example I had typed, so that was displayed. This selection can be repeated several times.

Redo - After an action has been undone, it can be reinstated in the document.

Cut - Removes the selection from the active

document and places it on the clipboard.

Copy - Copies the selection to the clipboard, the cell from which information is copied remains highlighted

Paste - Inserts the contents of the clipboard at the insertion point (cursor) or whatever is selected.

Paste Special - Ten choices are available when making this selection; examples include pasting formulas, vqalues, and comments.

Fill - Fill contents of a selected cell Up, Down, Left or Right

Clear - Deletes the selected object or text, but does **not** place it on the clipboard. Four choices are available; All, Format, Contents or Comments

Delete - This menu entry can be used to delete antire rows or columns.

Find - Searches for specified text in the active document

Replace - Searches for and replaces specified text and formatting.

Edit		
↶	Undo Typing '3' in A3	Ctrl+Z
↷	Redo Typing '4' in A4	Ctrl+Y
✂	Cut	Ctrl+X
📋	Copy	Ctrl+C
🗐	Office Clipboard...	
📋	Paste	Ctrl+V
	Paste Special...	
	Paste as Hyperlink	
	Fill	▶
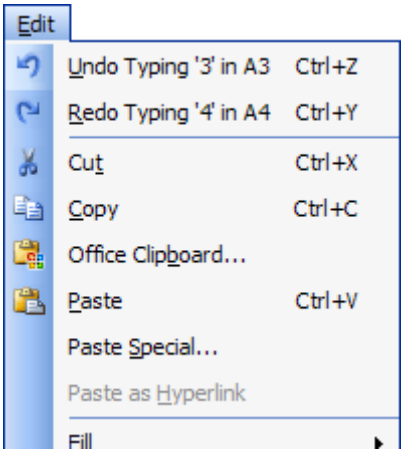
View menu

Normal - The default document view for most word processing tasks.

Page Break Preview - Before printing, make sure the page breaks appear where you want them

Toolbars - Displays or hides toolbars. The right pointing arrow indicates a list of toolbars. To add one slide down to the name of the toolbar and click to select.

View		
⊞	Normal	
⊟	Page Break Preview	
	Task Pane	Ctrl+F1
	Toolbars	▶
✓	Formula Bar	
✓	Status Bar	
	Header and Footer...	
⊡	Comments	
	Custom Views...	
⊡	Full Screen	
	Zoom...	

Formula Bar - Remove or display the bar which displays cell address and data entered into the active cell

Header and Footer - Adds or changes the text that is displayed at the top or bottom of every page of the document

Comments - Hidden comment give further information about cell contents. Comments are displayed when you move the cursor into the cell, however this command causes all comments on a page to be displayed.

Full Screen - Hides most screen elements so you can see more of your document

Zoom - Controls how large, or small, the current document appears on the screen.
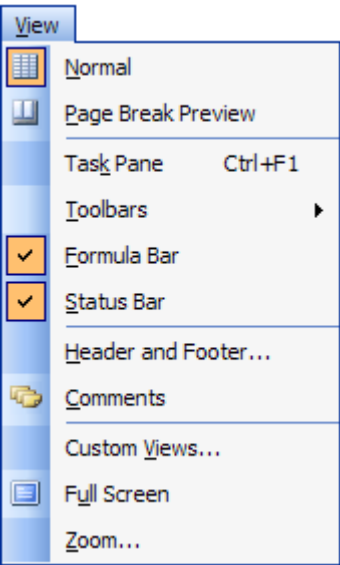
Using Insert, Format and Font Menu items in Microsoft Excel

Insert menu

Cells - Use this command to insert a cell. A pop-up window allows you to move existing data down or to the right. You can also insert rows or columns with this window.

Rows - Inserts a new row in the spreadsheet, above the row that contains the active cell.

Columns - Inserts a new column in the spreadsheet, to the left of the column that contains the active cell.

Worksheet - By default, an Excel workbook is made up of three worksheets. You may insert as many additional sheets as you require. Sheets are inserted in front of the current worksheet.

Chart - This adds a chart of the selected data, or of the entire worksheet if you have no data selected.

Page Break - Inserts page breaks above and to the left of the active cell. To avoid adding a page break to the left, make sure a cell in Column A is selected before inserting the break.

Function - Opens the Paste Function window allowing the selection of a specific equation to go in the active cell.

Comment- Have something to say about the contents of a cell? Add a small note with the appearance of a Post-It note.

Picture - Insert pictures from clip art or a file. You can also insert auto shapes, word art, or a chart.

Object - Insert an object such as clip art, word art, an equation or much more.

Hyperlink - An interesting use of hyperlinks is to place a link to any document stored on your computer. You can later open that document by clicking on the link. If you want to see an [example of an Excel worksheet using hyperlinks to Internet sites](), download a copy and open it with Excel.
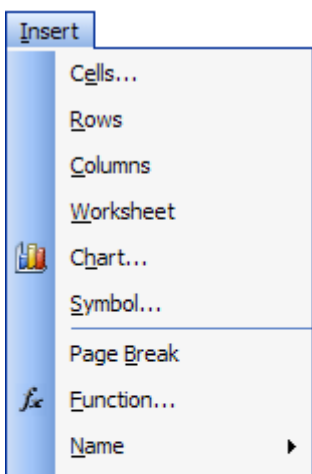
Format menu

Cells - Format the way a number is displayed, alignment of data in the cell(s), font (size, color, style, etc.), borders and colors for the selected cells, and you may also lock the contents of a cell here.

Row - Specify a row height, choose auto-fit, and hide or un‑hide the selected row.

Column - Specify a column width, choose auto-fit, hide or un‑hide the selected column, or choose the standard width for a column.

Sheet - Here you can rename the sheet if sheet 1 is not descriptive enough (and it's not), you can hide or un‑hide a sheet, or you can tile an image in the background of the entire sheet.

Auto Format- There are sixteen pre-designed formats to change the look of your spreadsheet. You may apply the format to the entire sheet or only to selected cells.

Style - Opens a **Style** window which will lead to the **Format Cells** window if you wish to **Modify** the format.
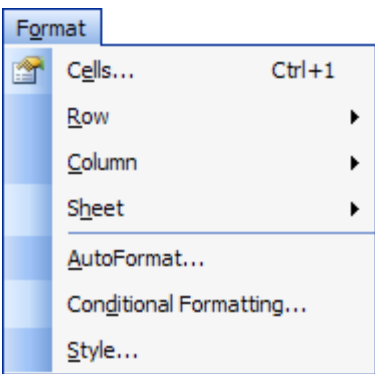
Tools menu

Spelling... - Check spelling in your document

AutoCorrect... - Define, or turn off automatic corrections. If you tend to make a particular keystroke error often, and it is not in the dictionary, you can add it here.

Share Workbook... - Choose this option if you want several users to work on the data in the same workbook simultaneously. Make it available on your network and anyone with access can make changes.

Protection - You can password protect a

single sheet of a workbook, or the entire workbook. One obvious application would be to protect a worksheet which you are using as your grade book.

Customize... - Select/Deselect toolbars to be displayed with your workbook, or add buttons to existing toolbars.
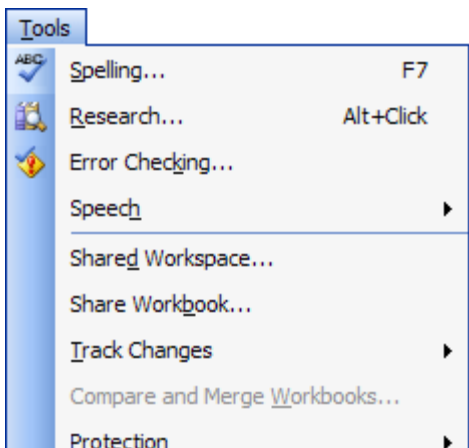
Options... - If you do not like something Excel does automatically, or if you know it should be doing something automatically and it is not, this is where you turn those features on or off. One thing I use a lot here is removing gridlines from a worksheet so I can draw a graphic organizer.

Format data - Once information has been entered into a cell, you might want to change something about the way the information is displayed. To do that, make sure the cell you want to format is selected and go to the Format menu. Select Cells... The number I entered repeats infinitely, but I only need 2 decimal places.
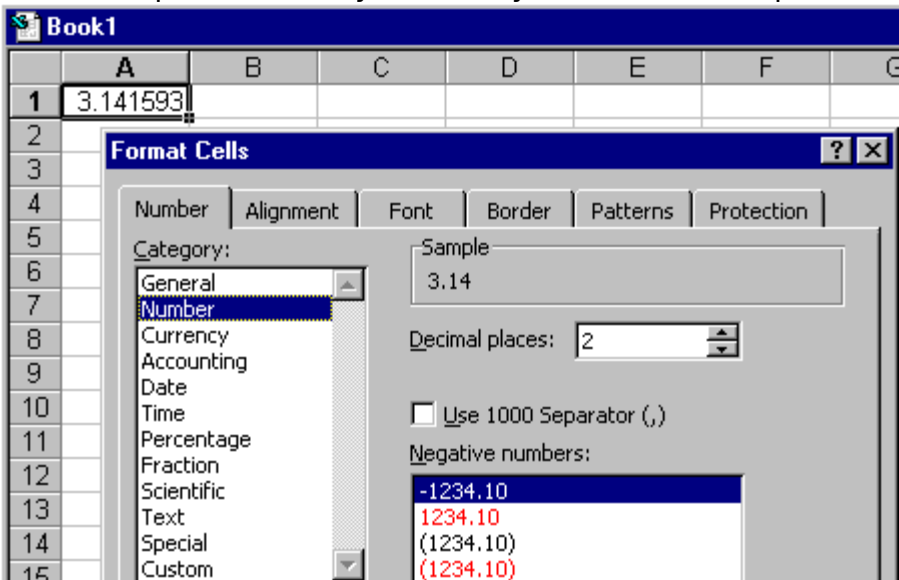
You can bring up the Format Cells dialog box by right-clicking on the cell you want to format. From the following pop-up box select Format Cells...
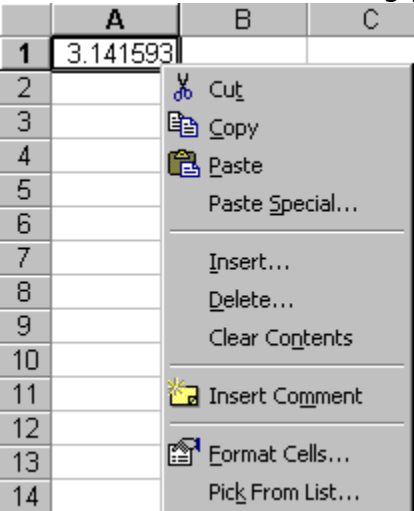
Using formatting buttons - There are several toolbar buttons which allow one-click formatting. To illustrate I entered the same number in four cells, with the formatting I plan to use for each cell.

	A	B	C	D
1	3.141593	3.141593	3.141593	3.141593
2	$ Currency	% Percent	Increase Decimal	Decrease Decimal

With cell A1 selected I clicked once on the Currency button

In cell B1 I selected the Percent button

I selected the Increase Decimal button for cell C1

The Decrease Decimal button was used to format cell D1
These four actions produced the following result:

Book1

	A	B	C	D
1	$ 3.14	314%	3.1415927	3.14159
2	$ Currency	% Percent	Increase Decimal	Decrease Decimal

As you can see, the Percent button simply multiples by 100 and attaches the % sign. Care must be exercised in using this button properly.

Other formatting options - The Format toolbar includes several formatting options which can be applied to information entered into a cell.

Editing entered data - If incorrect information has been entered into a cell, one easy way to edit that is to click on the cell and enter the correct information. You do not need to highlight or delete. Typing replaces whatever is in the cell.
If you do not want to replace the data, but simply need to correct some part of it, move your cursor into the Formula bar.

| A1 | ▼ | = | now is the tiame for all good |
| Formula Bar |

Book1

	A	B	C	D	E
1	now is the tiame for all good				

When your cursor turns into an I-Beam, click and edit within the formula bar.

Page setup and printing

Excel allows you to print your document as well as to add additional page layout options to your presentation. You can add a header or footer to a page, change the margins as well as several other options.

Page setup
        The options of the page layout exist to improve the presentation of your document on paper. You can change the margins of sheets, add the headers, the footers and several other option.

Page Setup dialog — Page tab. Labels: "Page tab controls print orientation and scaling" and "Margins tab is used to set top, bottom, left and right margins".

Page Setup dialog — Sheet tab. Labels: "Header/Footer tab allows user to create headers and footers for each printed sheet" and "Sheet tab is used to control repeating rows or columns or print gridlines".
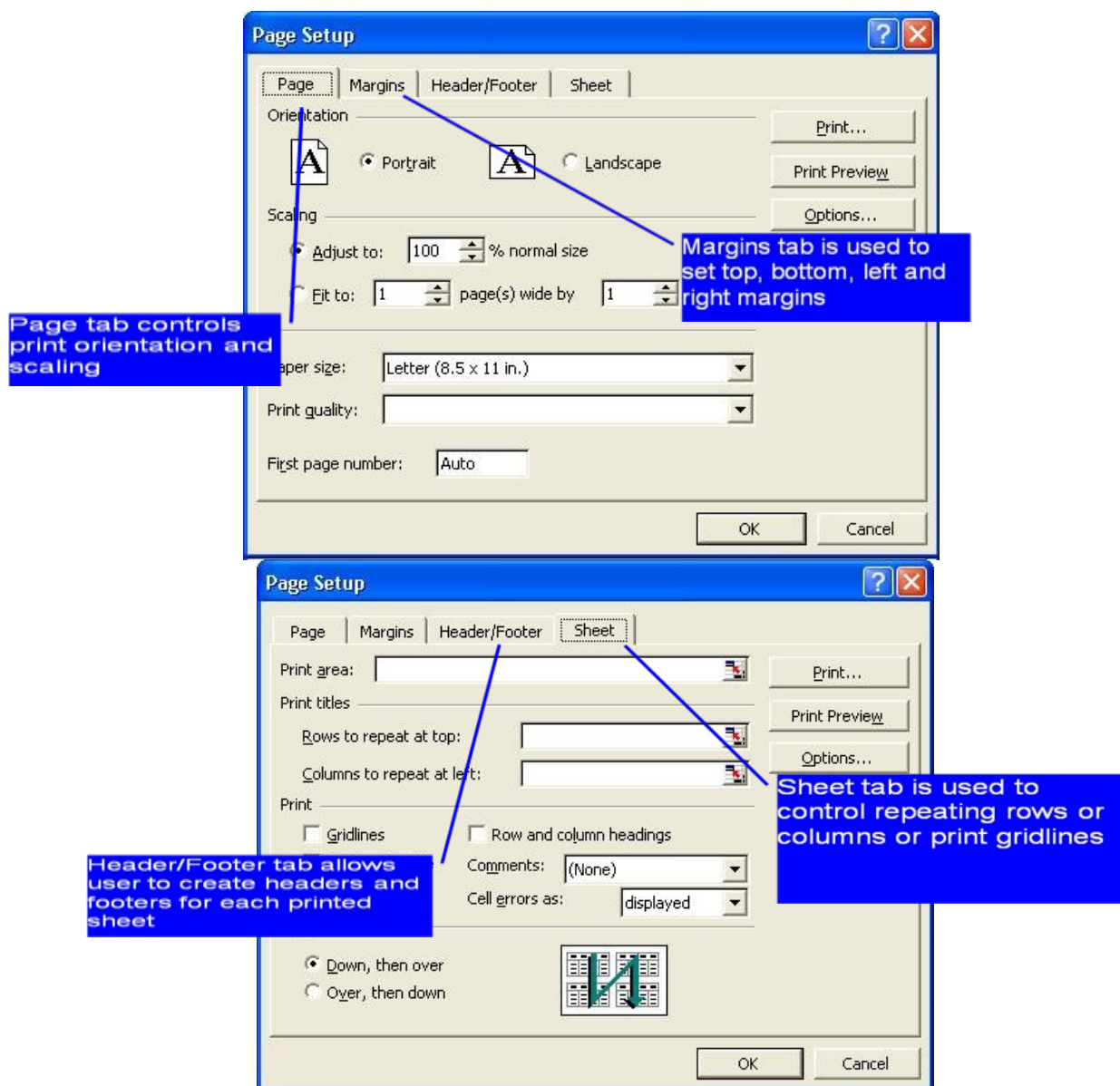
- From the **File** menu, select the **Page setup** option.
- Under the **Page** tab, in the section Orientation, Excel asks you for the orientation of the pages to print.
- In the scaling sections, you can manually change the size of your spreadsheet by reducing or increasing it. This is very practical when all the columns of you're worksheet should be on one page only. You can also ask Excel to find automatically the best size to enter your document on to X pages in widths and Y pages in height. At any time, you can look at the printout before printing by pressing the review button. You can also change the type of paper (letter size, legal, newspaper ...) as well as the quality of the printing.

Margin

Under the **Margins** tab, you can determine the margins, the width between the border of the page and your text, for the file as well as those for the header and the footer of the page. You can also choose to center horizontally and vertically your worksheet on the page. You can also determine the place for the header and the footer for the worksheet your about to print. The outline in the middle of the window gives you an idea of the effect of these choices on the paper.

Header and Footer

Under the **Header/Footer** tab, you can determine what will be in the header and the footer of each of the pages of the printout. If you don't want a header or a footer, select the first option, "none", from the list of the predetermined options.

- **Personalize the header and footer.**
  It's sometimes useful to add a header or a footer to a document. It helps to identify the document and what it's supposed to represent. For example, a header with the title "*Monthly revenues and expenses for May 2006*" says it all.
  The next exercise consists in writing the name of the document, your name, as well as the date and
  the hour of the printout.

  Printing Headers and Footers
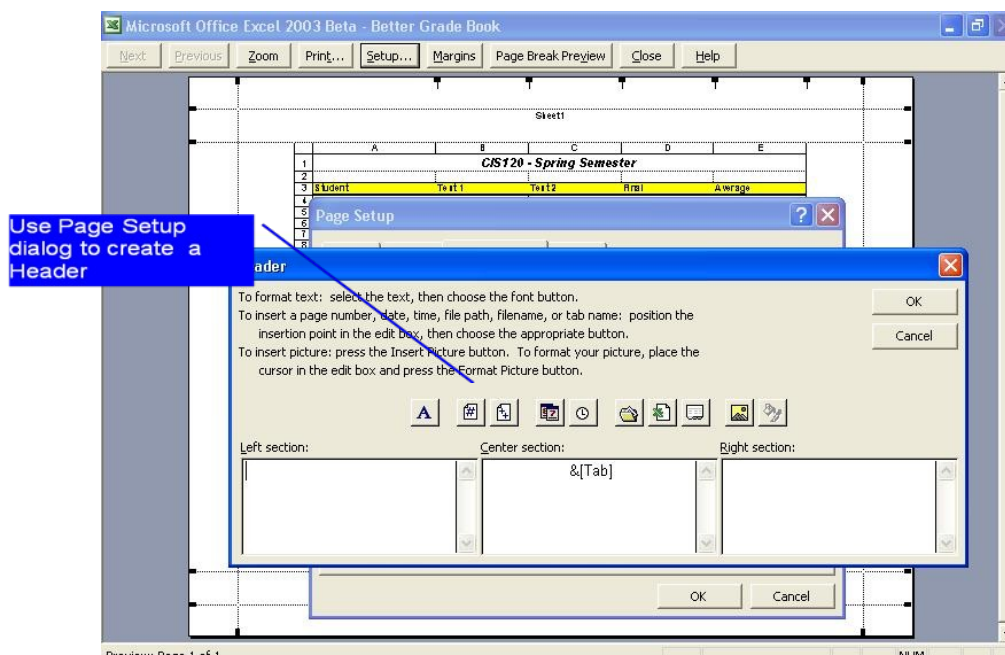
- Under the **Header/Footer** tab, press the **Custom Header** button.
- The options to personalize the header will appear as above. They are the same options as for the page footer. In the middle of the window, there is a series of buttons. They are the options most often used. The section at the bottom is separated into three boxes. The left box will contain the text that will be written on the left side of the page. The box in the middle will contain the text that will be in the middle of the header and so on.

Print a workbook

- To Print a worksheet, you can use:
  - ➢ *A menu*
  - ➢ *The Print button on the standard toolbar*
  - ➢ *The Ctrl-P keystroke to initiate a printout of the worksheet*
- Excel uses the same basic methods for printing as other Windows and Microsoft Office applications.

The Print dialog box

Print dialog box ◄ **Figure 1-33**
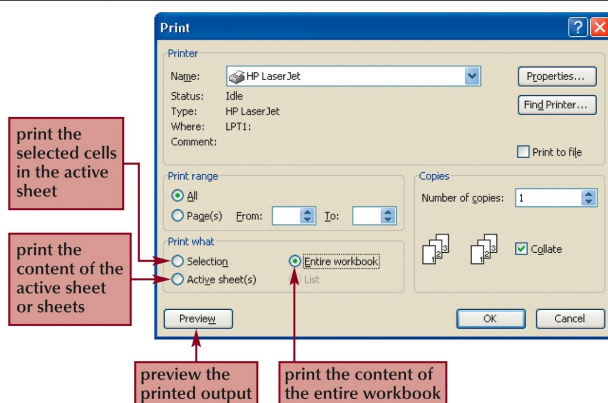
The Printing Zone

- Besides allowing you to print your entire spreadsheet, Excel allows you to print a part of your worksheets. It is however necessary to determine in advance the printing zone that you need. There are several ways to carry out this task.

- From the **File** menu, select the **Printing zone** and **Define** options.
  Make a range of cells with the area that you need to print.
  OR
  From the **File** menu, select the **Page Setup** option.
  Select the **Sheet** tab.
  Click in the **Print area** box.
  Select the range of cells that you need to print.

While pressing on the **Ctrl** key, you can select several zones to print at the same time. However, every zone will be printed on a different page.

- The window offers you several options. In the *Printer* section, you can choose the type of printer on which your document will be printed.

- In the *Print range* section, you have the options to print your entire document or only some pages of you're file. This is very practical when you need to reprint a few pages after a correction.

- In the *Print what* section, Excel offers you to print the block that you selected first, to print the worksheet where the cursor is located or to print all the worksheets of your file that contains a number, text or a formula.

In the *Copies* section you can choose the number of copies that Excel will print.

The Print Preview Command
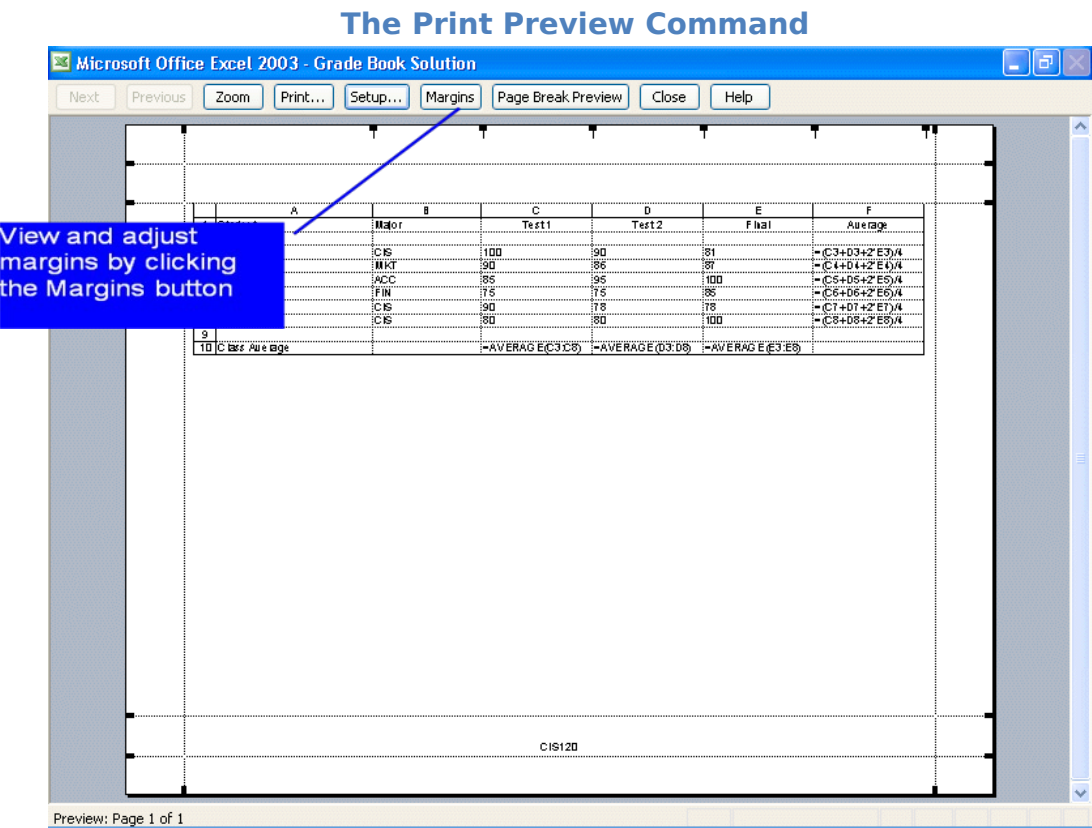
Using an Excel worksheet -Automatic features

Learn to use these automatic features of Microsoft Excel such as the common cursor styles, auto sum, and auto fill.

Step 1 - Review cursor styles - There are four common cursor styles used in Excel. If you wish to use the automatic features of Excel, you should become familiar with each style.

Click and drag to highlight multiple cells with this cursor, or click in a cell to select the single cell

Click and drag with this cursor to fill cell contents into cells below or to the right.

Click and drag the contents of the selected cell to any other cell.

Click to place the cursor into the Formula bar so that you can edit an equation or function.

Step 2 - Using Auto fill - If there is a pattern in the data you are going to enter, Excel can detect the pattern and fill it in for you. In Cell B1 I typed Group 1.

Place the cursor on the bottom right of cell B1 and a black plus sign appears. Click and drag to the right to cell E1. Excel detects the pattern and fills in the other groups.

	A	B	C	D	E
1		Group 1	Group 2	Group 3	Group 4

The image below illustrates some other patterns, and a problem with this procedure:

	A	B	C	D	E
1		Group 1	Group 2	Group 3	Group 4
2		10/4/99	10/5/99	10/6/99	10/7/99
3		January	February	March	April
4		1	1	1	1
5		1	2	3	4

In row 3 the procedure did not work because there are too many possibilities. In cell B6 I typed the 2, highlighted both cells B4 and C4, clicked and dragged to the right. Now that Excel knew the pattern it could fill in the cells.

Note : If you are using some of the early versions of Excel, this procedure works in two directions only. You may fill to the right or down . Auto Fill will not fill to the left or up when using earlier versions of Excel. However, Excel XP and 2003 will fill in any direction; right , left , up , or down .

Step 3. Using Auto Sum - Excel allows you to quickly find the total of a column or row of numbers.

	A
1	
2	34
3	45
4	56
5	

	A
1	
2	34
3	45
4	56
5	=SUM(A2:A4)

Σ

	A
1	
2	34
3	45
4	56
5	135

Step 1 - Select the cell below your column of numbers (or to the right of your row of numbers).

Step 2 - Select the Auto Sum button from your Standard toolbar

Step 3 - When you verify that the range of numbers is proper, depress return/enter and the sum is displayed.

Step 4. **Problems Using Auto Sum** - Excel will automatically do what it is set to do. In this case, the program finds all adjacent numbers in a column, or row, and includes them in the range.

	A
1	
2	34
3	
4	45
5	56
6	=SUM(A4:A5)

	A
1	
2	34
3	
4	45
5	56
6	=SUM(A4:A5)

▼ ✗ ✓ = | =SUM(A4:A5)

Step 1 - If there is a gap in the data, Excel will highlight only numbers not separated by an empty cell.

Step 2 - Place your cursor in the highlighted equation and click to edit. In the example above I would change A4:A5 to A2:A5

You may also click into the equation in the formula bar above the worksheet, and make changes there.

Step 5. **Using Merge and Center** - For giving a clean design look to your worksheet, consider using Excel's Merge and Center feature. This is a two step process:

1. Highlight a range of cells

2	Center	

2. Select the Merge and Center button

3. If you have data in only one cell, that data will be in the center of one long cell.

2	Center

If you attempt to Merge and Center with data in more than one cell, you will wipe out data in all but the upper-leftmost cell. Don't worry, Excel will warn you!

⚠️ The selection contains multiple data values. Merging into one cell will keep the upper-left most data only.

[Cancel] [OK]
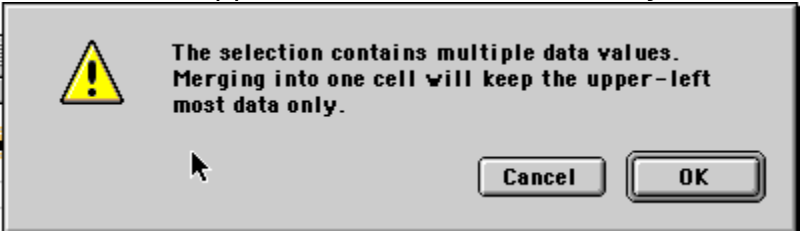
FORMULAS

- **Formulas** are entries that have an equation that calculates the value to display. We DO NOT type in the numbers we are looking for; we type in the equation. This equation will be updated upon the change or entry of any data that is referenced in the equation.

Order of Precedence Rules

Figure 1-13 — Examples illustrating order of precedence rules

Formula (A1=50, B1=10, C1=5)	Order of precedence rule	Result
=A1+B1*C1	Multiplication before addition	100
=(A1+B1)*C1	Expression inside parentheses executed before expression outside	300
=A1/B1–C1	Division before subtraction	0
=A1/(B1–C1)	Expression inside parentheses executed before expression outside	10
=A1/B1*C1	Two operators at same precedence level, leftmost operator evaluated first	25
=A1/(B1*C1)	Expression inside parentheses executed before expression outside	1

Arithmetic Operators

Sample Excel formulas using arithmetic operators — **Figure 1-12**

Operation	Operator	Example	Description
Addition	+	=10+A5	Adds 10 to the value in cell A5
		=B1+B2+B3	Adds the values of cells B1, B2, and B3
Subtraction	–	=C9–B2	Subtracts the value in cell B2 from the value in cell C9
		=1–D2	Subtracts the value in cell D2 from 1
Multiplication	*	=C9*B9	Multiplies the value in cell C9 by the value in cell B9
		=E5*0.06	Multiplies the value in cell E5 by 0.06
Division	/	=C9/B9	Divides the value in cell C9 by the value in cell B9
		=D15/12	Divides the value in cell D15 by 12
Exponentiation	^	=B5^3	Raises the value in cell B5 to the third power
		=3^B5	Raises 3 to the power specified in cell B5

BASIC FORMULAS IN EXCEL

When we are entering formulas into a spreadsheet we want to make as many references as possible to existing data. If we **can reference that information** we **don't have to type it in again**. AND more importantly if that OTHER information changes, we **DO-NOT have to change the equations**.

If you work for 23 hours and make $5.36 an hour, how much do you make? We can set up this situation using

- three labels
- two constants
- one equation

Let's look at this equation in **B4**:

- = B1 * B2
- = 23 * 5.36

Both of these equations will produce the same answers, but one is much more useful than the other.

DO YOU KNOW which is BEST and WHY? It is BEST if we can **Reference** as much data as possible as opposed to typing data into equations.

CHANGE IN FORMULA

If we referenced the actual cells (instead of typing the data into the equation) we could update the entire spreadsheet by just typing in the NEW Hours worked. And -- you're done!

Let's look at the new spreadsheet: hours have been changed to 34

- wage is the same
- total pay would now be = 34 * 5.36
- but would still be = B1 * B2

If we had typed in (= 23 * 5.36) the first time and just changed the hours worked, our equation in B4 would still be (= 23 * 5.36) INSTEAD we typed in references to the data that we wanted to use in the equation.

We typed in (= B1 * B2). These are the locations of the data that we want to use in our equation.

It is BEST if we can **Reference** as much data as possible as opposed to typing data into equations.

BASIC MATH FUNCTIONS

- Spreadsheets have many Math functions built into them. Of the most basic operations are the standard multiply, divide, add and subtract. These operations follow the order of operations (just like algebra). Let's look at some examples.
- For these following examples let's consider the following data: A1 (column A, row 1) = 5
- A2 (column A, row 2) = 7
- A3 (column A, row 3) = 8
- B1 (column B, row 1) = 3
- B2 (column B, row 2) = 4
- B3 (column B, row 3) = 6

	A	B
1	5	3
2	7	4
3	8	6

Operation	Symbol	Constant Data	Referenced Data	Answer
Multiplication	*	= 5 * 6	= A1 * B3	30
Division	/	= 8 / 4	= A3 / B2	2
Addition	+	= 4 + 7	= B2 + A2	11
Subtraction	-	= 8 - 3	= A3 - B1	5

Adding Up

You've seen how to add up in Excel. You either used individual cells to add up, like this:

= A1 + A2 + A3 + A4

Or you have used a range of cells with the Sum function. Like this:

= Sum(A1:A4)

Either way you get the same answer. But you can combine the two to add up. For example, if you wanted to add up cells A1 to A4 and cell A10, you'd do it like this:

= Sum(A1:A4) + A10

You can also use the Sum function alone. Like this:

= Sum(A1:A4, A10)

Here we have entered a range of cells in the brackets - A1:A4. But after that, we added a comma then the final cell we wanted to add up. If we also wanted to add cells A12 and A14 to our sum, we just add a comma then the cell reference. Like this:

= Sum(A1:A4, A10, A12, A14)

Multiplying

You saw how to multiply two numbers together. Just use the asterisk symbol with the cell references. Like this:

= A1 * A2

But what if you wanted to multiply a long range of values together? You might want to multiply all the numbers in the cells A1 to A10. Surely you don't have do this = A1 * A2 * A3 * A4 * A5, etc?

You'd be right - you don't have to enter all the cell references. You can do the same as in the Sum Function, just use A1:A5. But instead of using the word Sum you use the word Product. Like this:

=Product(A1:A5)

If you look back at Exercise 2, the number 3 was in the cells A1 to E1. We then added them up. If you wanted to multiply them all instead, use Product. To further illustrate what Product does, this is what we wanted to multiply:

= 3 * 3 * 3 * 3 * 3

So 3 times 3 = 9. Multiply the 9 by the third 3 to give 27. Multiply the 27 by the fourth 3 to give 81. Multiply the 81 by the fifth 3 to give 243. And that's what Product does: Multiplies a range of cells together. Just like the Sum function, you can add other cells after a comma. Like this:

= Product(A1:E1, A3)

In the above function, our answer of 243 will be multiplied by whatever is in cell A3. Try using Product yourself with these exercises:

Subtraction

To subtract one value from another, you just use the minus sign in between your cell references. Like this:

= A1 - A2

Below is an image from a spreadsheet showing a subtraction formula:

Cell A3 is where the answer is displayed, and where we entered the formula.

A3	▼	=	=A1 - B1	
	A	B	C	D
1	25	14		
2				
3	11			
4				
6				

If you want to subtract more than two cells you can do it like this:

= A1 - B1 - C1

Subtraction is fairly straightforward in spreadsheets, and shouldn't cause you too many problems.

Division

If you want to divide one number by another the symbol to use is this one: **/**

That's the forward slash, and can be found just to the right of the full stop on your keyboard. You use it like this:

= A1 / C1

SPECIFIC FORMULAS OR FUNCTIONS
SUM FUNCTION
- Probably the most popular function in any spreadsheet is the SUM function. The Sum function takes all of the values in each of the specified cells and totals their values. The syntax is:
=SUM(first value, second value, etc)
- In the first and second spots you can enter any of the following (constant, cell, range of cells). Blank cells will return a value of zero to be added to the total. Text cells can not be added to a number and will produce an error.

We will look at several different specific examples that show how the typical function can be used! Notice that in A4 there is a TEXT entry. This has NO numeric value and can not be included in a total.

	A
1	25
2	50
3	75
4	test
5	

Example	Cells to ADD	Answer
=sum(A1:A3)	A1, A2, A3	150
=sum(A1:A3, 100)	A1, A2, A3 and 100	250
=sum(A1+A4)	A1, A4	#VALUE!
=sum(A1:A2, A5)	A1, A2, A5	75

AVERAGE FUNCTION
- There are many functions built into many spreadsheets. One of the first ones that we are going to discuss is the **Average** function. The average function finds the average of the specified data. *(Simplifies adding all of the indicated cells together and dividing by the total number of cells.)* The syntax is as follows.
- =Average (first value, second value, etc.)
- Text fields and blank entries are not included in the calculations of the Average Function.

	A		Example	Cells to average	Answer
1	25		=average (A1:A4)	A1, A2, A3, A4	62.5
2	50		=average (A1:A4, 300)	A1, A2, A3, A4 and 300	110
3	75		=average (A1:A5)	A1, A2, A3, A4, A5	62.5
4	100		=average (A1:A2, A4)	A1, A2, A4	58.33
5					

Max Function

- **Max** (which stand for Maximum). This will return the largest (max) value in the selected range of cells.
- Blank entries are not included in the calculations of the Max Function.
- Text entries are not included in the calculations of the Max Function.

	A		Example of Max	Cells to look at	Ans. Max
1	10		=max (A1:A4)	A1, A2, A3, A4	30
2	20		=max (A1:A4, 100)	A1, A2, A3, A4 and 100	100
3	30		=max (A1, A3)	A1, A3	30
4	test		=max (A1, A5)	A1, A5	10
5					

Minimum Function

- **Min** (which stands for minimum). This will return the smallest (Min) value in the selected range of cells.
- Blank entries are not included in the calculations of the Min Function.
- Text entries are not included in the calculations of the Min Function.

	A		Example of min	Cells to look at	Ans. min
1	10		=min (A1:A4)	A1, A2, A3, A4	10
2	20		=min (A2:A3, 100)	A2, A3 and 100	20
3	30		=min (A1, A3)	A1, A3	10
4	test		=min (A1, A5)	A1, A5 (displays the smallest **number**)	10
5					

Count Function

- This will return the number of entries (actually counts each cell that contains number data) in the selected range of cells.
- Blank entries are not counted.
- Text entries are NOT counted.

	A		Example of Count	Cells to look at	Answer
1	10		=Count (A1:A3)	A1, A2, A3	3
2	20		=Count (A1:A3, 100)	A1, A2, A3 and 100	4
3	30		=Count (A1, A3)	A1, A3	2
4	test		=Count (A1, A4)	A1, A4	1
5			=Count (A1, A5)	A1, A5	1

CountA Function

- This will return the number of entries (actually counts each cell that contains number data **OR** text data) in the selected range of cells.
- Blank entries are not Counted.
- Text entries **ARE** Counted.

	A	Example of **CountA**	Cells to look at	Answer
1	10	=CountA (A1:A3)	A1, A2, A3	3
2	20	=CountA (A1:A3, 100)	A1, A2, A3 and 100	4
3	30	=CountA (A1, A3)	A1, A3	2
4	test	=CountA (A1, A4)	A1, A4	2
5		=CountA (A1, A5)	A1, A5	1

IF Function

- The IF function will check the logical condition of a statement and return one value if true and a different value if false. The syntax is
- =IF (condition, value-if-true, value-if-false)
- value returned may be either a number or text
- if value returned is text, it must be in quotes

	A	B	Example of **IF** typed into column B	Compares	Answer
1	Price	Over a dollar?	=IF (A2>1,"Yes","No")	is (.95 > 1)	No
2	$.95	No	=IF (A3>1, "Yes", "No")	is (1.37 > 1)	Yes
3	$1.37	Yes	=IF (A5>10000, .08, .05)	is (14000 > 10000)	.08
4	comparing #	returning #	=IF (A6>10000, .08, .05)	is (8453 > 10000)	.05
5	14000	0.08			
6	8453	0.05			

AND
Checks whether all arguments are TRUE, and returns TRUE if all arguments are true
Syntax: =AND(logical1, logical2…)
Example: =AND(A4=5, A5=5). If A4 and A5 has a value of 5, it will return TRUE

OR
Checks whether any of the arguments are TRUE, and returns TRUE or FALSE. It will only return FALSE if all arguments are false
Syntax: =OR(logical1, logical2…)
Example: =OR(A4=5, A5=5). Will return TRUE if either A4 or A5 has a value of 5

IF
Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE
Syntax: =IF(argument, value if True, value if False)
Example: =IF(A4=5, "Yes", "No"). Will return the word Yes if A4 has a value of 5. Otherwise, it will return No.

Function Wizard

- In Excel there is a help tool for functions called the Function Wizard.
- There are two ways to get the function wizard. If you look at the **Standard Toolbar**, the function wizard icon looks like the icon on the right.
- The other way to get to the function wizard is to go to the Menu **INSERT** -- down to **FUNCTION**.
- Either way you get there, at this point Excel will list all of the functions available. Upon choosing the function, Excel will prompt you for the information it needs to complete the function. Mini descriptions are available for each of the cells. It is often necessary for you to understand the functions in order to be able to figure out these descriptions.
- It is faster to type the basic function in from the keyboard as opposed to going through the steps of this tool.

Using Functions in Excel

Step 1 - Enter data - One of the principal reasons for using a spreadsheet is to perform calculations. To illustrate, we will begin by adding a column of numbers. This is from a class survey about the favorite ice cream flavor of a class. Caution : *If you plan to ask*

Excel to add a column of numbers, make sure that they are numbers. If cell B2 contained "6 students" rather than just the number 6, Excel would read the entry as a word, not a number.

Step 2 - Placing a function - In the example above the total of the column of numbers would naturally go in cell B10. Before placing a function (a built in equation) make sure the selected cell is where you want the function to go.

From the Insert menu select function

In the Paste Function pop-up window, select the Math & Trig category and scroll to the Sum function
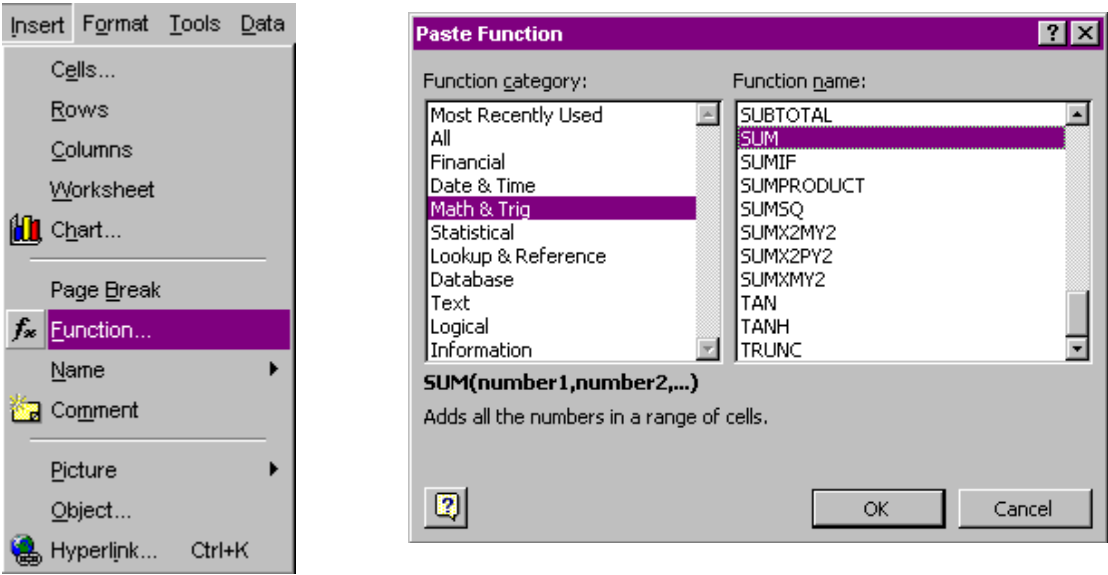
When you choose OK, the dialog box below appears. There appears to be a lot of information to deal with, but it is basically just a summary of what you asked Excel to do.
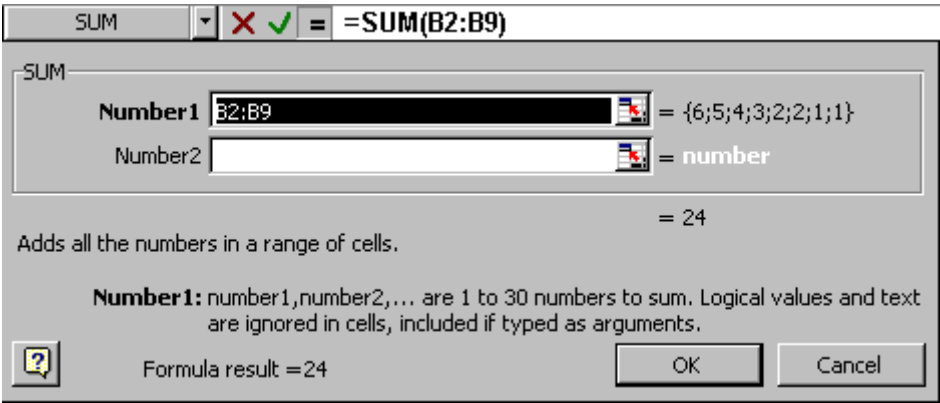
The edit bar at the top names the function (Sum) then lists the mathematical function to be performed (=SUM(B2:B9)). Excel selects the range numbers immediately above or to the left of the function. If there is a gap in the intended range you must enter the proper range in the edit bar. Example: In the data listed with Step 1, if cell B4 was empty, Excel's suggested equation would have been incorrect (=SUM(B5:B9)).

Choose OK. The function is placed in the cell and the sum is displayed.

	A	B	C	D
	Ice Cream Survey	Students		
1				
2	Chocolate	6		
3	Strawberry	5		
4	Vanilla	4		
5	Peach	3		
6	Chocolate Ripple	2		
7	Butter Pecan	2		
8	Neapolitan	1		
9	Black Cherry	1		
10	Total	24		

(B10 = =SUM(B2:B9))

What is in cell B10? The number 24 is displayed there. If the worksheet is printed the number 24 will be on the printed copy. However, if cell B10 is copied and pasted into another cell something altogether different appears. If you said that the information in cell B10 was "the sum of the range of numbers from B2 to B9." you are almost correct. To explain that almost we will paste the equation into cell C10.

	A	B	C	D
	Ice Cream Survey	Students		
1				
2	Chocolate	6		
3	Strawberry	5		
4	Vanilla	4		
5	Peach	3		
6	Chocolate Ripple	2		
7	Butter Pecan	2		
8	Neapolitan	1		
9	Black Cherry	1		
10	Total	24	0	

(C10 = =SUM(C2:C9))

The actual information contained in cell B10 is "find the sum of the range of numbers that are in the eight cells above this cell." Since there are no numbers in those cells, the displayed sum is zero.

Step 3. Using AutoSum - Remember that Excel allows you to quickly find the total of a column or row of numbers. If you forgot that from the previous page, <u>go there to review</u>.

Step 4. Using another function - Excel has many built-in equations (functions). One more will be used as an illustration, and to whet your appetite to discover more on your own.

Once you know how to write your own functions (next topic), Excel can be used as a substitute for a calculator. I am going to prepare a worksheet which will automatically remind me what the date is as I use my "calculator."

	A	B	C	D
1		Using Excel as a calculator		
2	today is			

(C2 =)

Cell C2 is where a Date & Time function will be placed. From the Insert menu select Function . Choose Date & Time then select the Today function.

Paste Function

Function category:
- Most Recently Used
- All
- Financial
- **Date & Time**
- Math & Trig
- Statistical
- Lookup & Reference
- Database
- Text
- Logical
- Information

Function name:
- DAYS360
- HOUR
- MINUTE
- MONTH
- NOW
- SECOND
- TIME
- TIMEVALUE
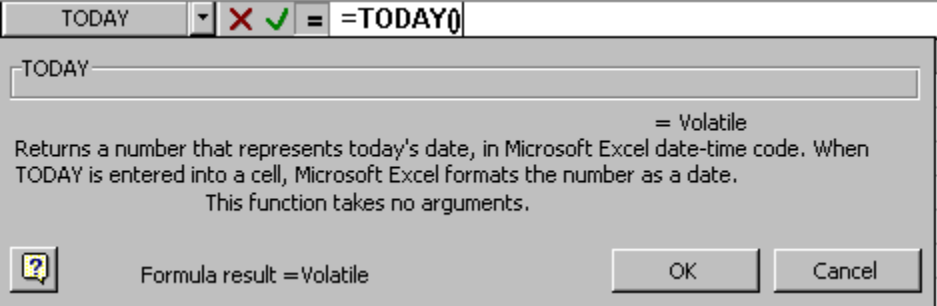- **TODAY**
- WEEKDAY
- YEAR

TODAY()

Returns a number that represents today's date, in Microsoft Excel date-time code. When TODAY is entered into a cell, Microsoft Excel formats the number as a date.

OK   Cancel

Whenever you insert a function, a dialog box pops up to explain the chosen function.

No further action is required, select OK and today's date is displayed. Tomorrow when I open this workbook, a new date will be in cell C3.

Step 5. Explore - Look through the Paste Function pop up window later to discover what equations are built into Excel.

Using an Excel worksheet - Calculating Percent and Using Absolute Cell Reference

Step 1 - Review percent - Before showing how to calculate percent with Excel, let's review how to calculate percent.
A number divided by a second number and multiplied by 100 expresses what percent the first number is of the second number. If you do not multiply by 100 you have the decimal equivalent of percent.

Step 2 - Writing a percent equation for only two numbers- Solve the following: 2 is what percent of 8?
Now that you are sure you remember the process for calculating percent, use an Excel worksheet to perform the calculations.

Step 3. Writing a percent equation for a column of numbers accompanied by a sum. - Data from the ice cream survey will be used to illustrate how to calculate percentage.

	A	B	C
1	Ice Cream Survey	Students	percent of total
2	Chocolate	6	
3	Strawberry	5	
4	Vanilla	4	
5	Peach	3	
6	Chocolate Ripple	2	
7	Butter Pecan	2	
8	Neapolitan	1	
9	Black Cherry	1	
10	Total	24	

Task: Determine what percent 6 is of 24 by putting the equation into cell C2 of a worksheet similar to the one above.

Step 4. Auto Fill and problems associated with it - You probably remember a discussion of Auto Fill on a previous module . That is a convenient way to place information in several cells at the same time. That might sound like a very good way to fill the equation into cells C3 through C9. For instructive purposes we will do that now to see the problem it causes.

C2		=	=(B2/B10)*100	
	A	B	C	D
1	Ice Cream Survey	Students	percent of total	
2	Chocolate	6	25	
3	Strawberry	5	#DIV/0!	
4	Vanilla	4	#DIV/0!	
5	Peach	3	#DIV/0!	
6	Chocolate Ripple	2	#DIV/0!	
7	Butter Pecan	2	#DIV/0!	
8	Neapolitan	1	#DIV/0!	
9	Black Cherry	1	#DIV/0!	
10	Total	24	#DIV/0!	

Oops! Something wrong there. The problem was caused by the way the equation was written. The equation B2/B10 says, "take the first cell in this equation and divide it by the cell 8 spaces below." The reason that none of the other equations work is that there is nothing in the cell 8 spaces below any of the cells from B3 to B10. We must find a way of telling Excel to use call B10 to divide by for each of the other 8 equations.

Step 5. Absolute Cell Reference - You tell Excel to use one specific cell, and never move to another relative location in the calculations by using "absolute cell reference." To specify the cell, place a dollar sign before the column letter and before the row number. Thus, $B$10 says always use cell B10. Lets go back to the worksheet and re-write the equation in C2.
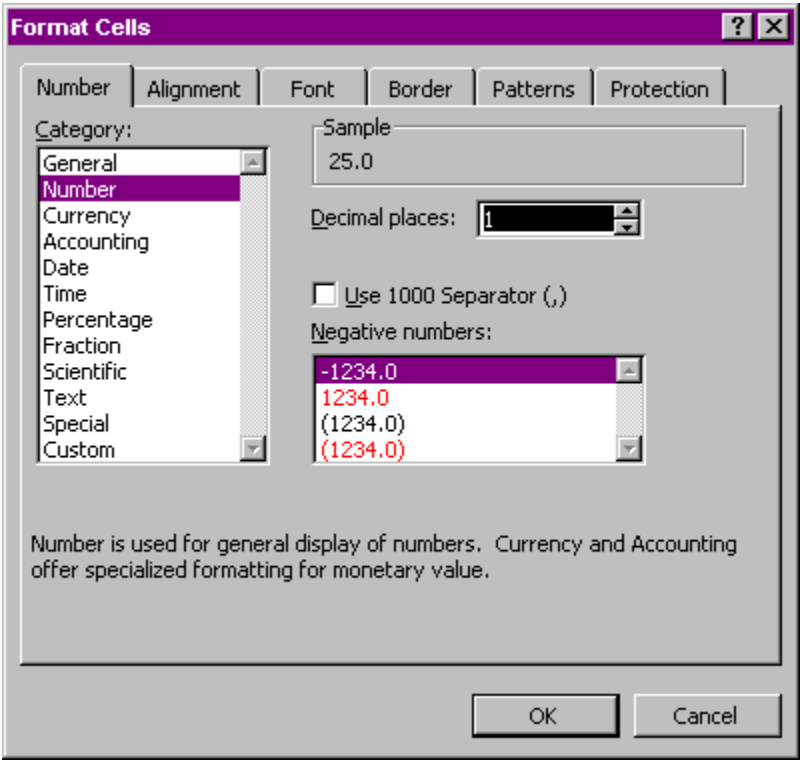
C2		=	=(B2/$B$10)*100	
	A	B	C	D
1	Ice Cream Survey	Students	percent of total	
2	Chocolate	6	25	
3	Strawberry	5		
4	Vanilla	4		
5	Peach	3		
6	Chocolate Ripple	2		
7	Butter Pecan	2		
8	Neapolitan	1		
9	Black Cherry	1		
10	Total	24		

Notice the answer has not changed. If we were writing only this one equation, we wasted time using absolute cell reference. The real benefit of this equation will be seen when you fill down into cells C3 through C10.

Step 6. Fill the equation down into the cells. As soon as you fill this equation with an absolute cell reference down into cells C3 through C10, the percentages are instantly calculated. Only one more task remains.

C2		=	=(B2/$B$10)*100	
	A	B	C	D
1	Ice Cream Survey	Students	percent of total	
2	Chocolate	6	25	
3	Strawberry	5	20.83333	
4	Vanilla	4	16.66667	
5	Peach	3	12.5	
6	Chocolate Ripple	2	8.333333	
7	Butter Pecan	2	8.333333	
8	Neapolitan	1	4.166667	
9	Black Cherry	1	4.166667	
10	Total	24	100	
11				

Step 7. Format the cells - Unless you need five decimal places, I suggest formatting cells C2 through C10, the highlighted range above, so that one decimal place is displayed. Right-click on the highlighted range of cells, and select Format Cells...
In the category list select Number, and in the Decimal places: box use the down arrow to choose 1.

Click OK, your column of data has a nice uniform appearance.

CHARTS

Why use a chart?

➢ To simplify the analysis of a mass of data.
➢ To be able to compare the data.
➢ To quickly analyze the trends in data series.
➢ To analyze proportions among different data series.

Create a chart

This exercise consists in creating a "3D Column chart" on a new worksheet.

• Enter the following data in the appropriate cells.

	A	B	C	D
1		2005	2006	2007
2	Other	15	20	25
3	Carpets	25	30	35
4	Furniture	30	35	40

• Select the data by using a block (continuous or non-continuous), for the exercise, from **A1** to **D4**.

• The selection of data is very important. Avoid selecting empty lines or columns otherwise you will have empty spots in your chart. Use the instructions in the Basic operations page to select only the blocks of cells that you need. Make sure that the range of cells you have selected represents data that is valuable to the chart. Don't take single cells scattered everywhere on your worksheet.

• Generally, the first line or row selected from the range of cells will be used by the chart for the description of the X axis. The content of the first column from the range of cells is be used as the description for the legend of the chart. Keep in mind that Excel for the X axis are numbers.

- From the **Insert** menu, select the **Chart** option**.**
  OR
  Use Excel's chart assistant by pressing the button.
  Answer the questions that you will be shown in the next windows.
- The first stage consists in choosing a chart from the 14 categories that are represented in the left column. In the right part of the screen, there are subcategories to represent the same data in a different ways.
- These subcategories are alike, but will give a different representation from the same data. The first line shows the data in two dimensions (2D). The second line shows these same data but in three dimensions (3D). Further more, the first column shows the series of data side by side.
- The second column shows the data in cumulative mode (one on top of the other). The last column shows the proportion of each of the series. Notice that each of the bars is of the same height, only the proportion of each series changes.
- Before continuing, you may preview the chart this allows you to chose the best chart that represents the data. Press the button "**Press and Hold to View Sample**" to preview the chart. The section with the subcategories of chart will be replaced by a representation of the chart. You can try different types of charts before going any further and preview them.
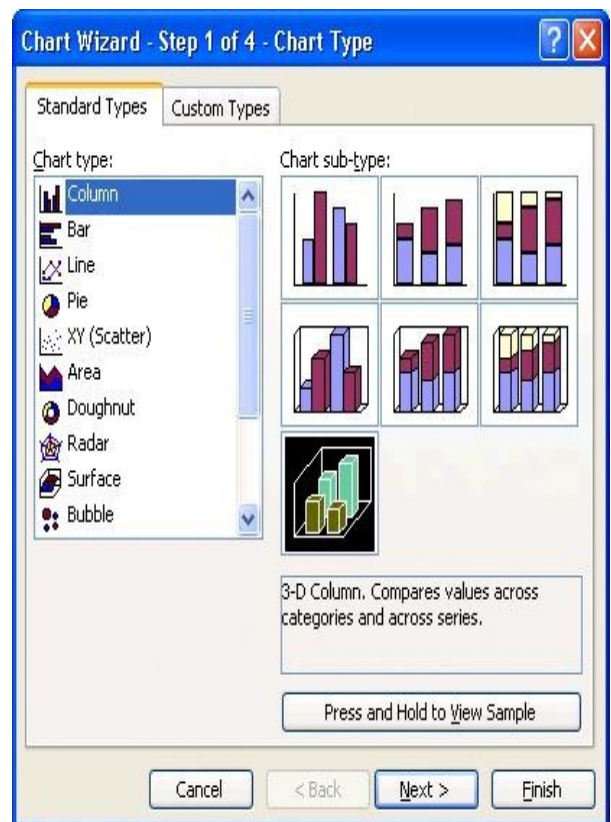
- The **Data range** tab is there to make sure that you choose the right area of cells for the chart. If there is an error, you can always press the button at the end of the box to re-select the cells that you need for the chart. You can determine the range of the data are in columns or in lines. This means that every line or every column represent a data or an item of the chart. For the purpose of this exercise, make sure that the
- range of the series are in rows and not in columns. That means that every row from the range of cells you selected will be a data series.
- You also have a preview of the final chart before having finished it! You can experiment and see that will be the final result by changing the presentation of the series of data.

- Under the tab **Series**, you may change, add or delete the range of data. In the bottom to the left of
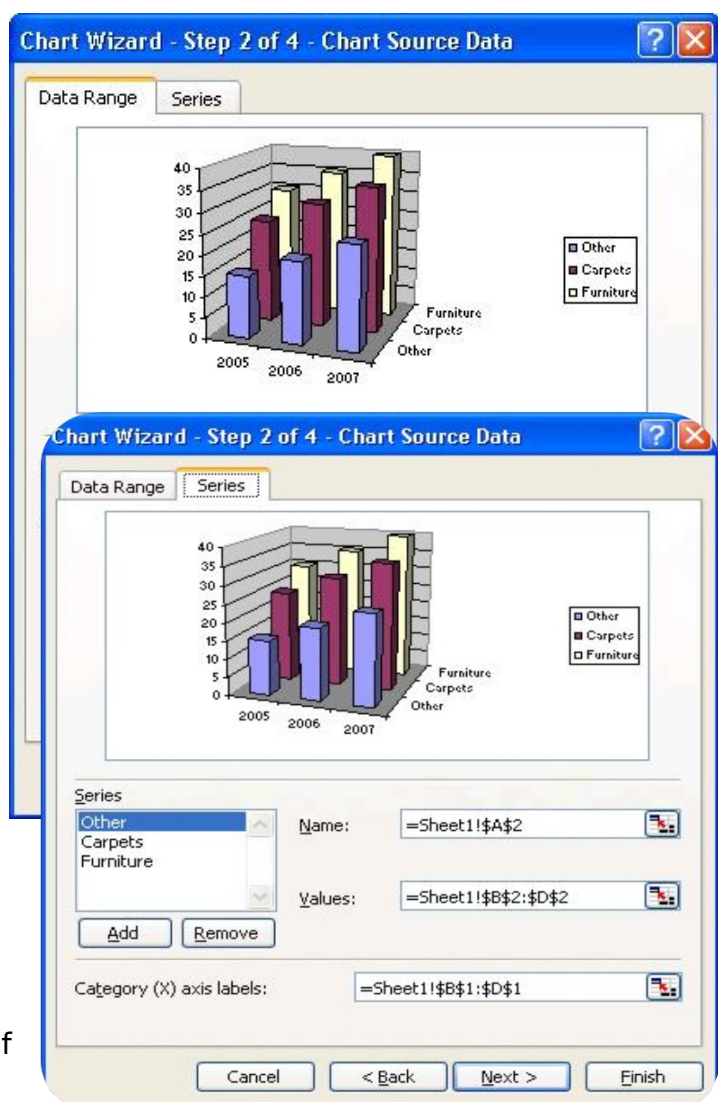
the window, you have the name of each of the series. In the right-hand side, the "Name" box allows you to change the name of a series. It's that name that will appear in the legend of the chart. You can select the content of a cell of one of the worksheets of the file or you can write the text of your choice.

- The "Values" box is an area of cells that contain the numbers you want to see in the chart for that data series. You can change the area at any time.
- The "Category (X) axis labels" box indicates the description that will be shown on the X axis of the chart. It's still possible to you to change it. You just need to press the button at the end of the box and select the cells that you wish for the X axis. You can also write the content. You need to place a semi-colon (;) between the text For example, orders could come from "In store";"Catalogue";"Internet".

- Make your selection and press the **Next** button.
- For the third step, there are several tabs. Each describes a characteristic of the chart.
- Click on the **Titles** tab.
- The tab of the titles serves for writing the text that will appear to the main title of the chart as well as for the descriptions of each of the axes of the chart. For this exercise:
  In the **Chart title** box, write: **Revenues by Categories**.
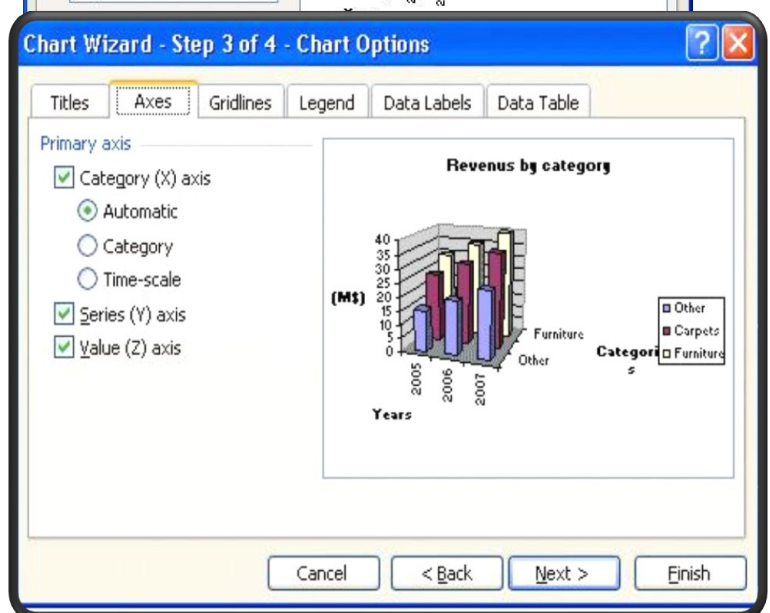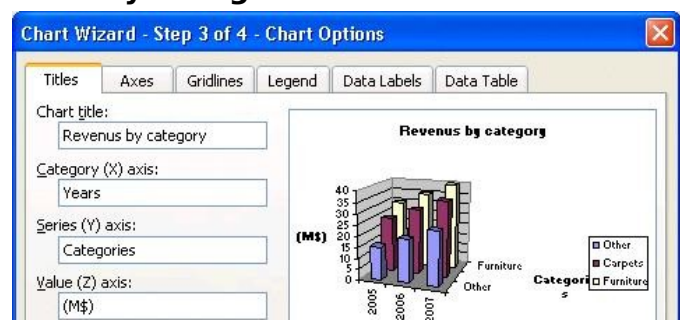
In the **Category (X) axis** box, write: **Years**.
In the **Series (Y) axis** box, write: **Categories**.
In the **Value (Z) axis** box, write **(M$)**.

- Click on the **Axes** tab.
- The Axes tab gives you the choice to show or to hide the data of the various axes of the chart. For the moment, leave all axis visible.

- Click on the **Gridlines** tab.
- Gridlines help you compare items that are not close to each other. You compare them to the gridlines to see a trend upward or downward. Under this tab, you may show or hide the gridlines of the chart. For the purpose of this exercise, select the same options as the image. Just activate the major gridlines for each axis.
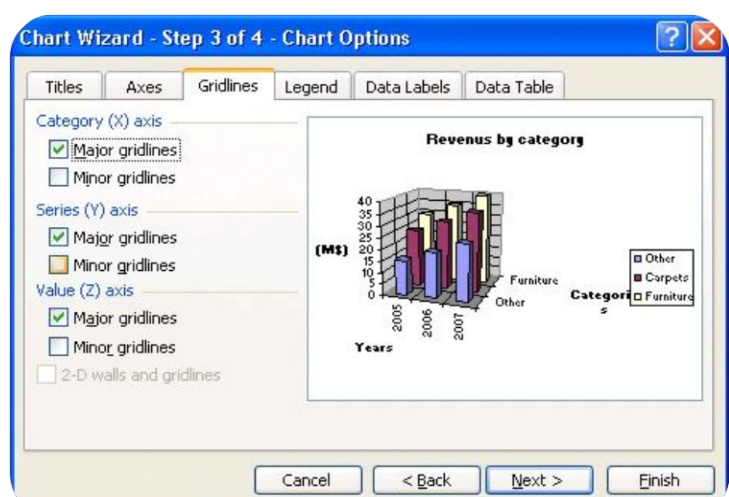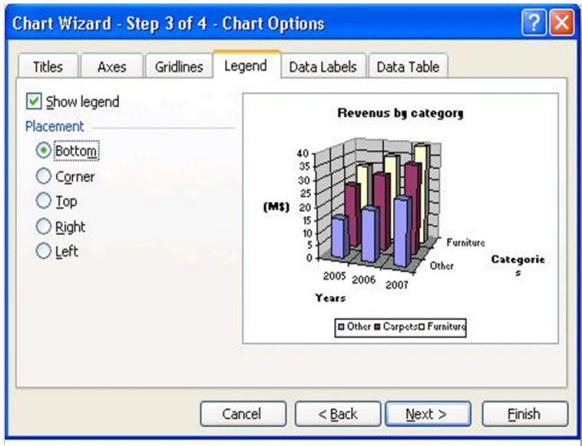
- Click on the **Legend** tab.
- This tab gives you the choice to show or hide the legend of the chart. It contains the names of each series of your chart with a color representation beside it. You can even decide on the position of the legend.
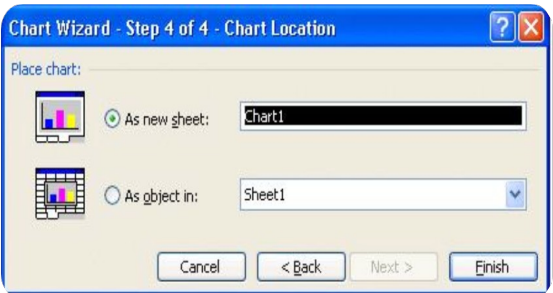- Select the **Bottom** position.

- Click on the **Data Labels** tab.
- Under the **Data Labels** you can show the labels and values of each of the elements of the series. You can show the value, the percentage, both or even the description of the X axis (series name). The big problem with this option is that it crowds the chart with too much information making it more difficult to read. One option is to activate the label you want but move them on the side of the bar instead of over the top of each bar. It gives more information without blocking the view on the trends or the proportions of the chart.
- For this exercise, do not activate any options.

Click on the **Data Labels** tab.
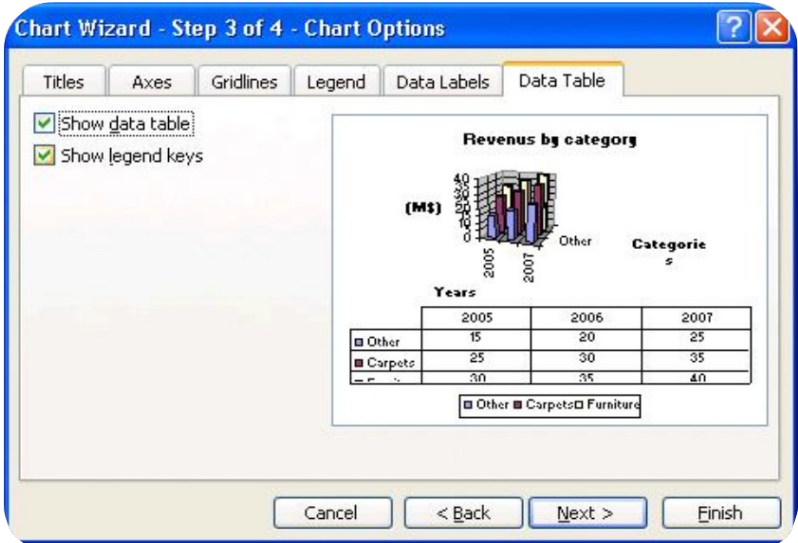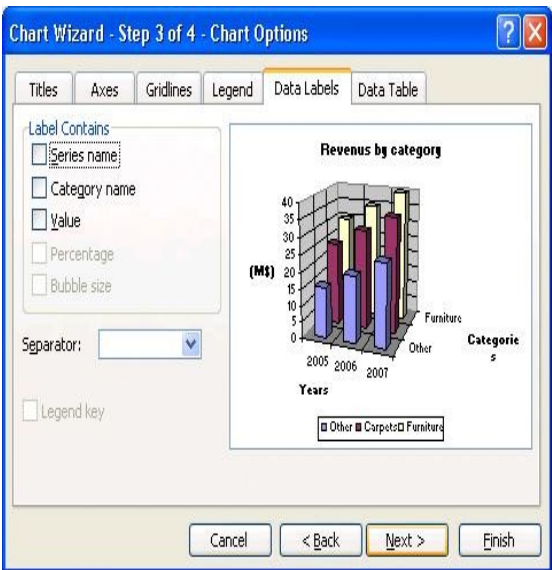
- This is a recent addition to Excel. It's possible not only to show a chart but also the numbers themselves in a table below the chart. Select the **Show the data table** option to have a preview of the result. However, for the needs of the exercise, don't show the data table.

- For this exercise, do not activate the Data table.
  Press the **Next** button.
- The chart assistant will ask you a last question. Do you want this chart in a worksheet that has numbers or on a new chart sheet? You can also give a name to this new working sheet.

- For this exercise, select a new chart sheet that will be called **Chart1**.
- Press the **Finish** button.
- Excel will show you the finished chart with the options you selected.

Revenus by category