

SGINFOTECH



Microsoft Office Excel 2007

infotech

STUDY MATERIAL

PREFACE

Dear Students,

Microsoft Excel is a spreadsheet application which is capable of performing calculations, analyzing data and integrating information from different programs.

This E-Book covers in-depth lessons on how to use various Excel formulas, Tables and Charts for managing small to large scale business process. It has been designed for computer users who would like to learn Microsoft Excel in easy and simple steps.

If this E-Book helps anyone to learn and to use the computer effectively, it will be of great success.

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Microsoft Office Excel 2007

Microsoft Excel, the spreadsheet component of Microsoft Office, is created for performing mathematical calculations on the data and provides tools you need for your data analysis and calculations.

Modern day analysis is heavily dependent on financial analysis. Spreadsheets are also utilized in numerous business applications like payroll, production planning, investment analysis and many other purposes.

The default extension of Microsoft Office Excel 2007 file called Workbook is “.xlsx”. It is a major revision of Microsoft Office Excel after Microsoft Office Excel 2003. We no longer use the Menu driven part but that is replaced by Tab Tabbed Ribbons instead. To utilize the full features of Microsoft Office Excel, .net Framework of Microsoft should be installed.

Features of Excxel

Excel has the following features

- Best fit
- Auto fill
- Comments
- Data form
- Sorting
- Macro Tools
- Goal Seek
- Scenario
- Formatting
- Charts

Terminology:

Spreadsheet or Worksheet

A spreadsheet or worksheet consists of rows and columns of the cells. The rows are usually identified by row numbers and the column name by letters. The majority of the screen is a blank area. Extensive data presentation features are standard in most spreadsheets, which include report generation and powerful graphing capabilities. Microsoft Office Excel 2007 has by default three worksheets present namely Sheet1, Sheet2, Sheet3 respectfully. We can add more sheets to it based on our need.

Workbook

A workbook is a container that holds one or more worksheets. That way a workbook can keep all the sheets related to a particular project in one file.

Rows and Columns

Columns run up and down (Vertical) and Rows run side to side (Horizontal) in a spreadsheet.

Cells

The intersection of a row and a column generates a cell identified by the cell number. For example, row 5 when intersects column V, the cell we get is V5.

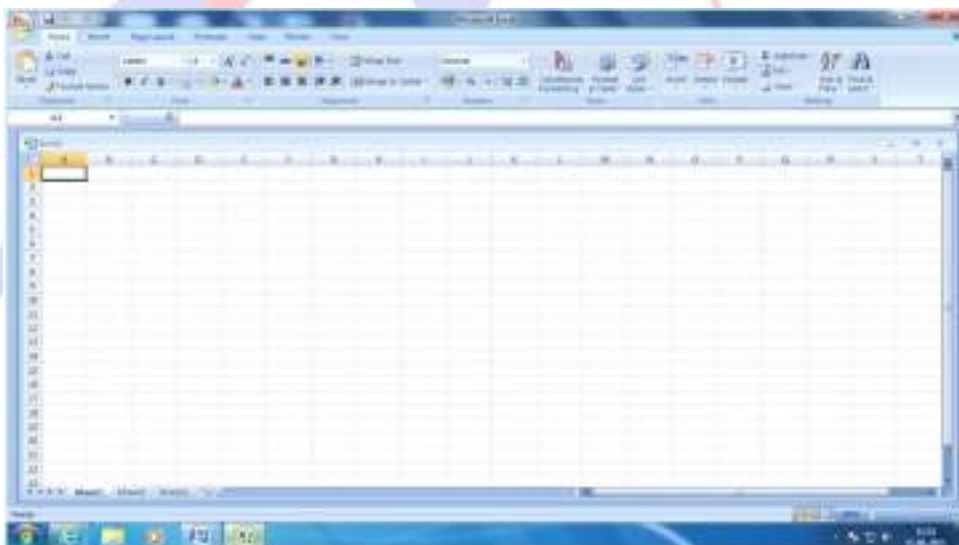
Getting Started

To start MS Office Excel 2007

Click on Start > All Programs > Microsoft Office > Microsoft Office Excel 2007

or

Click on Start > Run > Type "Excel " and Click on "OK" Button.



Microsoft Office Excel 2007 Interface

Inserting a new worksheet

Click on the icon next to Sheet 3 and we get a new worksheet called Sheet 4

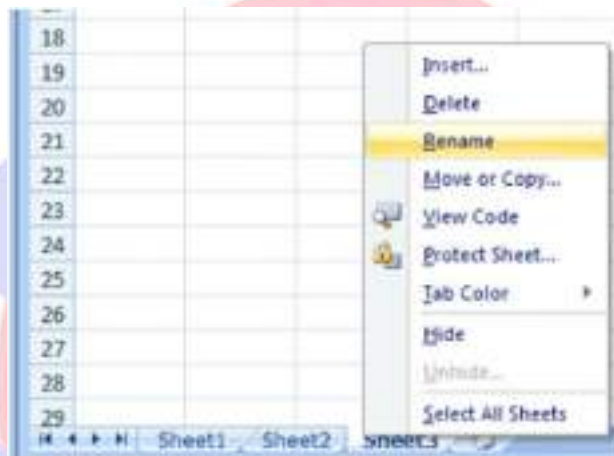




Three default Sheets of a workbook

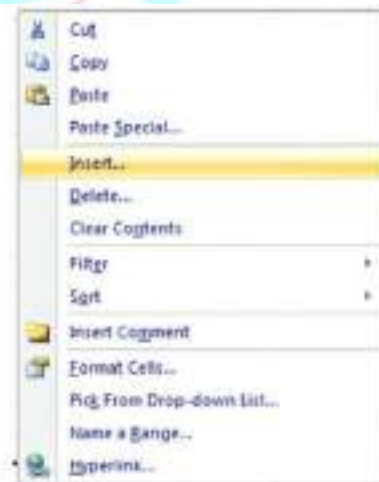
Renaming/ Deleting a Worksheet

Right click on the Sheet tab of which you want to Rename/Delete, scroll to Rename/Delete and click on it.



Insertion of a new Row/Column

Right Click on the worksheet > Insert



The Insert Dialog Box appears



Click on the Entire row/Entire column to insert new Row/Column>OK

Deletion of Cells:

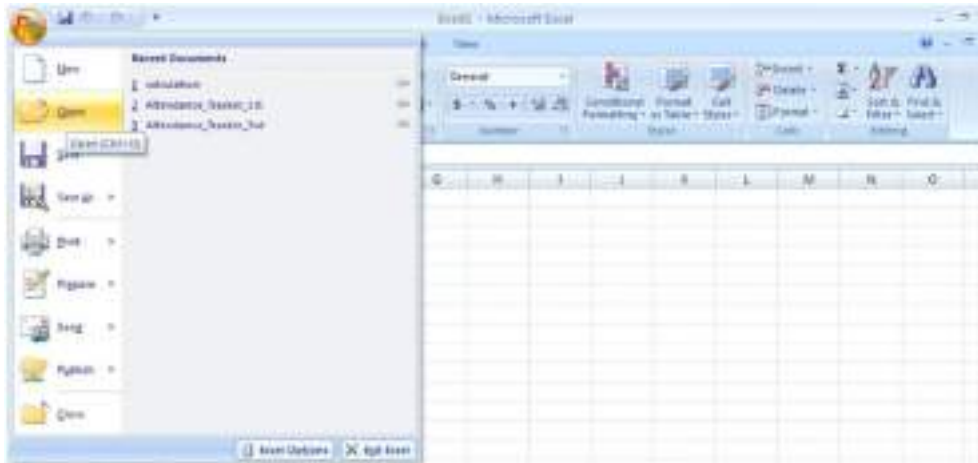
Right Click on the Row/Column to be deleted > Delete
The Delete Dialog Box appears



Click on the Entire row/Entire column to delete Row/Column>OK

Opening a Workbook:

Click on the Office button > Open. The open Dialog box Appears. Browse the location of the Workbook and Click on “Open “ button of the File Open Dialog box.

**Saving a Workbook:**

Click On Office Button > Save. The save As dialog Box appears. Give the name of the Workbook and Click on Save button.

If you want to save the workbook in older versions of Office excel, click on Office Button > Save As > “Excel 97-2003 Work Book” > Give the Name of the workbook and click on “Save” Button.



RELATIVE & ABSOLUTE ADDRESSING

There are different sorts of cell references. These are:

- Relative
- Absolute
- Mixed

A relative reference will change column and row numbers as it is copied to other cells. Think of it as an original instruction being to go in a certain direction e.g. 2 rows up and 2 columns across from your current position. When this instruction is copied elsewhere, it will still refer to 2 rows up and 2 columns across from your new current position.

An absolute reference is one that does not change. If you refer to a cell in a certain row and column and then copy that reference elsewhere, it will still refer to exactly the same cell or range.

A mixed reference is one that is half relative and half absolute.

An absolute address is defined with the use of the "\$" symbol. This can be typed in at the time of creating the formula, or by editing the cell afterwards.

Examples of relative and absolute addressing:

<i>Relative</i>	A4	A4:B5
<i>Absolute</i>	\$A\$4	\$A\$4:\$B\$5
<i>Mixed</i>	\$A4 or A\$4	\$A4:B\$5

The "\$" sign can be hand typed or inserted by pressing the keyboard shortcut **F4**. As you press **F4** the cell address will cycle between the four variations of an address - for example A4 would cycle between:

A4
\$A4
A\$4
\$A\$4

PASTE SPECIAL AND TEXT TO COLUMNS

Using the Cut, Copy, and Paste commands in Excel, you can move or copy entire cells or their contents. You can also copy specific contents or attributes from the cells. For example, using **Paste Special** you can copy the resulting value of a formula without copying the formula itself, or you can copy only the formula.

Using the Paste Special Dialog Box

The Paste Special dialog box allows you to select which aspects of the copied data you would like to paste.

1. Select the cell(s) whose values should be copied. These cells have a function as well as the value inside
2. Press **[Ctrl] + [C]**

or

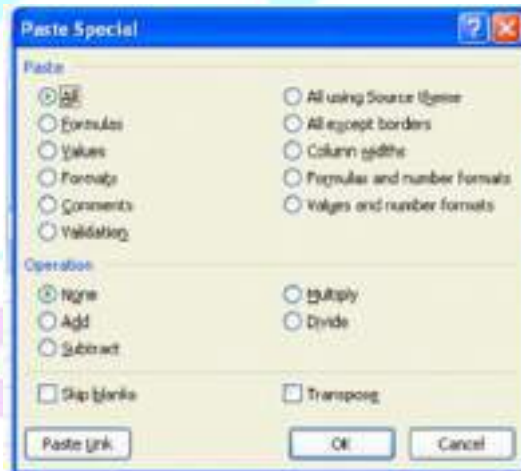
From the Home command tab, click **COPY**

3. Select the cell(s) where the results should be pasted. From the Home command tab, click the **PASTE>Select Paste Special**

or

Press **[Ctrl] + [V]>Select Paste Special**

The Paste Special dialog box appears.



1. Select the desired options

EXAMPLE: To paste only the results of a formula, Select **Values**

2. Click **OK**. The results of the formula are pasted into the selected cell(s).

Paste Special Options

You may choose to paste many different aspects of your copied data.

1. **All**: pastes all information in the copied cell; this is the default option

2. **Formulas:** paste only the formula from the selected cell

NOTE: Any **relative cell references** within the formula are changed to reflect its new location.

3. **Values:** paste only the result of the formula from the selected cell

4. **Formats:** paste only the formatting applied to the cell (e.g., font or color of the text)

5. **Comments:** paste only annotations that were made to the cell

6. **Validation:** pastes any rules about what text can be entered in the cell (e.g., only numbers between 1 and 25)

7. **All except borders:** paste the formatting and contents of the cell, excluding any cell borders

8. **Column widths:** paste only the width of the selected column

9. **Formulas and number formats:** paste the formula from the selected cell and any formatting applied to numbers (e.g., number of decimal places displayed)

10. **Values and number formats:** paste the numerical result of the formula from the selected cell, as well as any formatting applied to numbers (e.g., number of decimal places displayed)

11. **None:** the values that are being pasted override any data already in the destination cells; this is the default option

12. **Add** the values that were copied to the data in the destination cells

13. **Subtract** the values that were copied from the data in the destination cells

14. **Multiply** the values that were copied by the data in the destination cells

15. **Divide** the values that were copied by the data in the destination cells

16. **Skip blanks** paste the contents of all cells except for empty cells

NOTE: This option is only useful when pasting a range of cells into an area that already contains information. This will ensure that a blank cell will not be pasted in place of information that is already in place.

17. **Transpose** causes information that extended down a column to extend across rows and vice versa

NOTE: If you select more space for the information to be pasted into than you have cells to be pasted, the information will be repeated to fill the selected space. For example, if you copy one column and paste it into four rows while using *Transpose*, the information from the column will be repeated in every row.

18. **All using Source theme:** when using a document theme, pastes all information using formatting from the theme that was applied to the copied cells

19. **Paste Link:** connects the cells that were copied with the pasted cells; if the data in one group changes, so will the data in the other group

A. Paste Special

1. Copy the names from **cells**

i. These cells have a function as well as the value inside

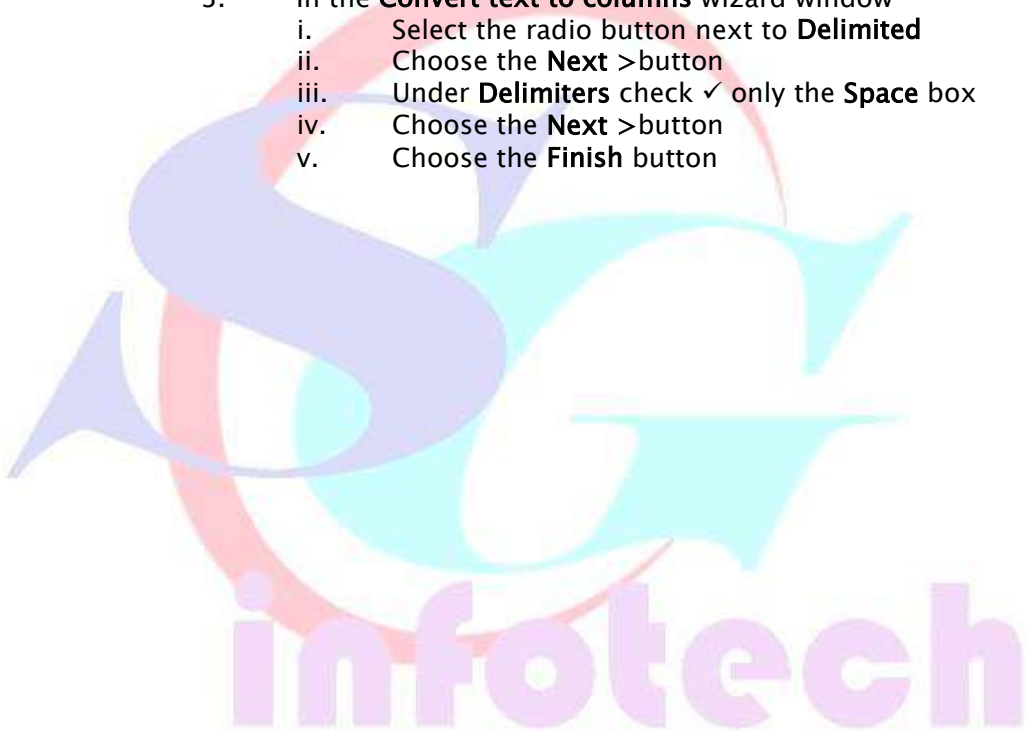
2. Paste only the values

i. Select **cell**

- ii. On the **Ribbon** >select the **Home** tab>in the **Clipboard** group>click the **Paste** down arrow >in the menu choose **Paste Values**
- iii. Clear the information in **cells**

B. Text to Columns

1. Select **cells**
2. On the **Ribbon** >select the **Data** tab>in the **Data Tools** group>click **Text to Columns**
3. In the **Convert text to columns** wizard window
 - i. Select the radio button next to **Delimited**
 - ii. Choose the **Next** >button
 - iii. Under **Delimiters** check only the **Space** box
 - iv. Choose the **Next** >button
 - v. Choose the **Finish** button



NAMING CELLS AND RANGES

Cells and ranges can be given a name so that when you need to refer to that cell or range of cells, you can refer to its name rather than an address.

Traditional cell addresses have been used for working out January's profit or loss.

Using the traditional cell addresses to work out profit or loss

	A	B	C	D	E
		January	February		
1					
2	Income				
3	Newspapers	123	321		
4	Magazines	258	258		
5					
6	Total Income	381	579		
7					
8					
9	Expenditure				
10	Rent	200	500		
11	Wages	123	214		
12					
13	Total Expenditure	323	714		
14					
15	Total Profit (Loss)	58	-135		
16					

Row 6 has been given the name **Total_Income** and Row 15 the name **Total_Expenditure**. When the formula for February was done, the syntax was **Total_Income-Total_Expenditure**.

Using names may make it easier to understand what the formula is doing—it might make more sense to some, than saying **B6-B13**.

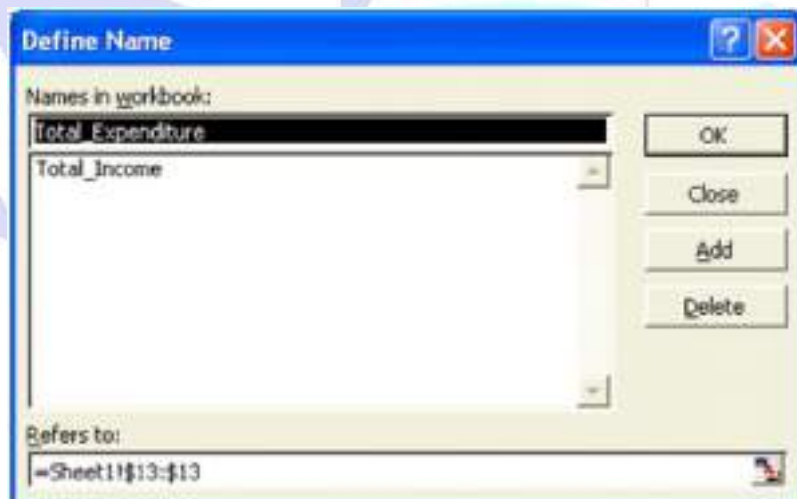
Using range names to work out the profit or loss

	A	B	C	D	E
		January	February		
1					
2	Income				
3	Newspapers	123	321		
4	Magazines	258	258		
5					
6	Total Income	381	579		
7					
8					
9	Expenditure				
10	Rent	200	500		
11	Wages	123	214		
12					
13	Total Expenditure	323	714		
14					
15	Total Profit (Loss)	58	-135		
16					

There are a couple of ways to create a range name. They both require that you select the cell or range or before creating the name.

Method 1: INSERT, NAME, DEFINE option (or CTRL + F3)

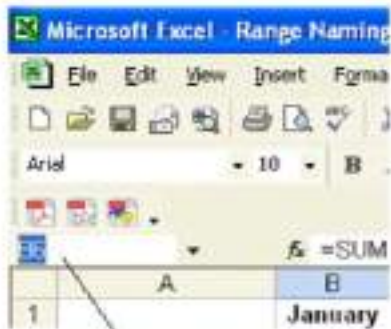
1. Go to the INSERT, NAME, DEFINE dialog box (or press the keyboard shortcut CTRL + F3). The DEFINE NAME dialog box will appear;
 2. Give the cell or range you selected a name
 3. Click on ADD, and then click on CLOSE.
- Range names must be one word - if you require 2 words, join them with an under score as in the example below.
 - The names can be a combination of numbers and letters, but must not start with a number.
 - The default is to show the address as being ABSOLUTE. By clicking in the REFERS TO text box, this can be edited to what is required.



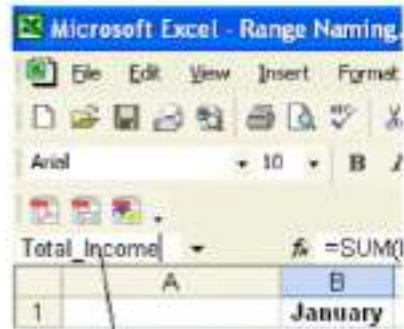
- As a default, names are work book level i.e. the name you create is available throughout the whole work book.
- If the worksheet has been named with a name that includes spaces, the worksheet name will have to be enclosed in single quotation marks.

Method 2: Using the NAME box

1. Highlight the cell or range(s) that is going to be named;
2. Click in the NAME box. The contents of the name box will be highlighted;
3. Type the RANGE NAME you want and ENTER to accept the name.



Click in the NAME box, the address will be highlighted

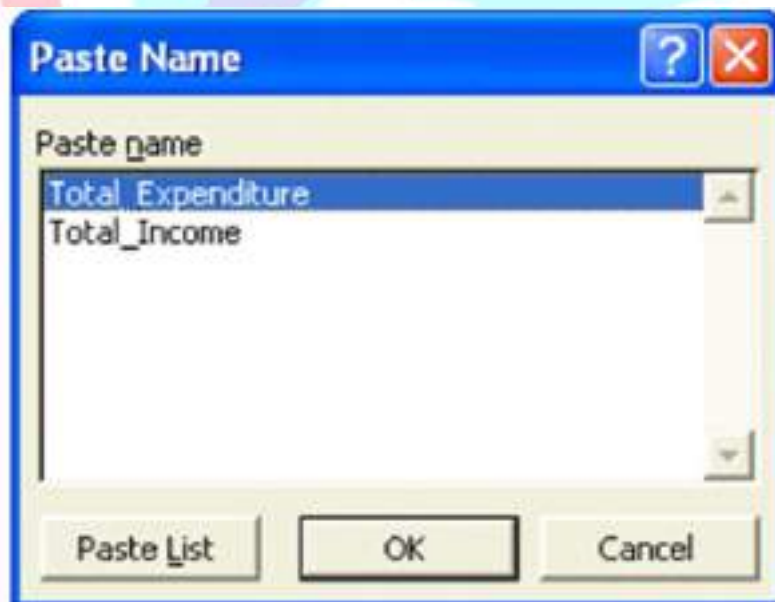


Type the name of the range, then hit ENTER on the keyboard to accept.

Applying a Range Name in a Formula

To use the RANGE NAME in a formula either:

1. Type the name - make sure you use the correct spelling or else the function will not recognize the name; or
2. When you are in the part of the formula that requires the RANGE NAME, press the keyboard shortcut **F3**. This brings up the PASTE NAME dialog box. Select the name and click on OK.



When working with many names, you can have a list of these names and the cells or ranges they refer to be placed in your workbook by using the PASTE LIST option (located in the PASTE NAME dialog box). Make sure you are in an empty cell and have 2 columns free and as many rows as there are names before using this option. The first column will list the RANGE NAMES, the second column shows the range address that the range name refers to.

H	I
Total_Expenditure	=Sheet1!\$13:\$13
Total_Income	=Sheet1!\$6:\$6



USING NAMES FOR CONSTANTS OR FORMULAS

In addition to using Names to name cells or ranges, you can also name constants or formulas, these constants or formulas don't have to appear in a cell. This is a good way of storing a constant or a formula that may have to be used several times.

Naming a constant

Imagine having to work out someone's holiday leave loading. You might have the leave loading in a cell (H6 in the example below), so that you can use this value in a formula. By having the value in a separate cell, if the leave loading rate ever changes you would only have to change the value in H6 and all formulas referring to this cell would update.

The formula in this case is $=(D5/52)*4*\$H\6 , i.e. the salary divided by 52 weeks, multiplied by 4 weeks and then multiplied by 17.5%.

	A	B	C	D	E	F	G	H
1	Naming Formulas							
2								
3								
4	Name	Home Town	Airfare	Salary	L>Loading			
5	Smith, Fred	Melbourne	230.00	37956	510.96		Leave Loading	
6	Jones, Tom	Darwin	799.00	40000			Amount	17.50%
7	Brown, John	Melbourne	230.00	27500				
8	Thomson, Helen	Adelaide	400.00	52400				
9	Pritchard, Peter	Adelaide	400.00	45000				
10	Witmer, Valera	Darwin	799.00	37956				
11	Harris, Thomas	Perth	690.00	35000				
12	Robertson, Sarah	Hobart	350.00	27500				
13	Roe, Denise	Deniliquin	799.00	35000				
14	Luck, Mane	Sydney	220.00	37956				
15	Lawrence, Anthony	Brisbane	504.00	40000				
16	Liebeck, Chris	Canberra	99.00	27500				
17	Beckett, Neil	Brisbane	504.00	35000				
18	Crockett, Brian	Sydney	220.00	37956				
19	Daniels, Dean	Canberra	99.00	27500				

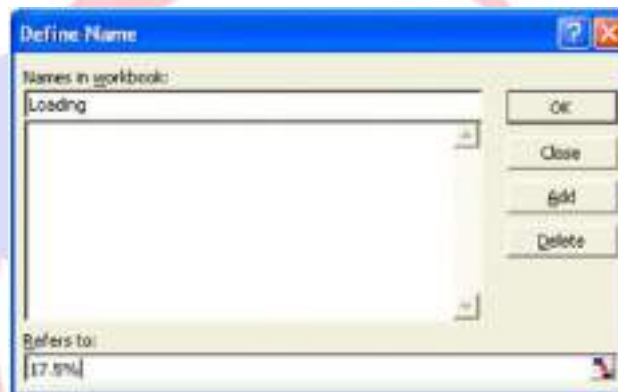
By using a name in the formula rather than a cell address, you save space in the spreadsheet and make the formula more readable i.e. what is easier to read

$=(D5/52)*4*\$H\6 ; or

$=(D5/52)*4*\text{loading}$

To give the leave loading of 17.5% (which is a constant) a name, you:

1. Open the DEFINE NAME dialogbox (INSERT, NAME, DEFINE or CTRL+F3).
2. Give the constant a name i.e. **Loading**
3. In the REFERS TO: section enter the amount of the constant (without an "=" sign, Excel will add this in for you).
4. Click on ADD, then CLOSE to close the DEFINE NAME dialogbox.
5. When creating the formula, use **F3** when it is time to refer to the loading, select the name **Loading** and ENTER to accept the setting (or click on OK), then continue creating the formula in the normal way.



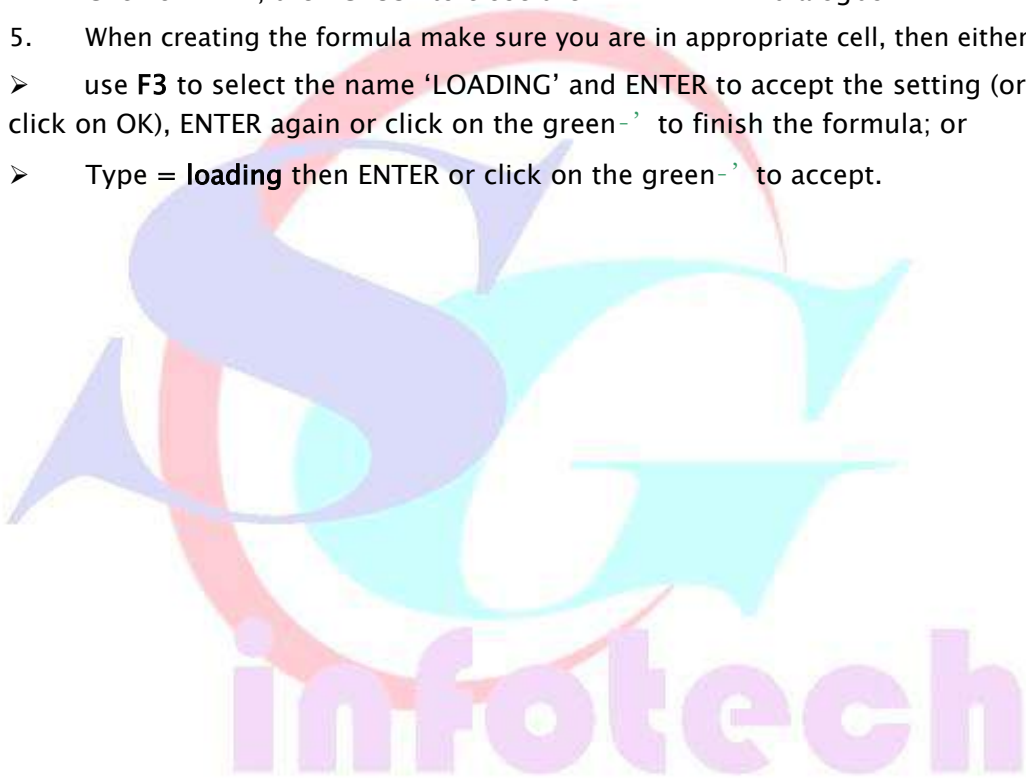
Naming a Formula

Instead of referring to the leave loading to do the last bit of multiplying, why not put the whole part of working out the leave loading into one name? i.e. Take the cell containing the salary and multiply it by loading. The formula would look like: **=Loading**

To name a formula you:

1. Open the DEFINE NAME dialogbox (INSERT, NAME, DEFINE or CTRL+F3).
2. Give the formula a name i.e. **Loading**
3. In the REFERS TO: section
 - type an "=" sign to start off the formula
 - open a left bracket "("
 - in the spreadsheet click on the cell containing the salary

- This cell address is ABSOLUTE (i.e. it says **\$D\$5**). Use the F4 key to make the reference relative i.e. **D5**. If you don't, when you copy the formula to all the other staff members, each formula will refer to Fred Smith's salary.
- `type/52)*4*17.5%`
- The formula should read `=('NAMING FORMULAS'!D5/52)*4*17.5%`. If you use a new sheet it will look something like `=(Sheet1!D5/52)*4*17.5%`
- 4. Click on ADD, then CLOSE to close the DEFINE NAME dialogbox.
- 5. When creating the formula make sure you are in appropriate cell, then either:
 - use **F3** to select the name 'LOADING' and ENTER to accept the setting (or click on OK), ENTER again or click on the green '-' to finish the formula; or
 - Type = **loading** then ENTER or click on the green '-' to accept.



REFERENCING OTHER WORKSHEETS AND WORKBOOKS

Referencing Other Worksheets

The easiest and most accurate way to reference a cell or range in another worksheet is to use the point method (i.e. physically go to the worksheet and select the cell or range whilst you are creating your formula). Excel then refers to that worksheet in the correct syntax which is the sheet name, followed by an exclamation mark (!), followed by the cell or range, e.g. **Sheet1!A1:B4**.

- If the worksheet has been renamed, the name is used instead of the sheet and number, e.g. for a sheet that is named Budget it would be **Budget! A1:B4**.
- If the sheet name includes spaces, the sheet name must be enclosed within quotation marks, e.g. a sheet that is named Budget 2004 would be **'Budget 2004'!A1:B4**

The following steps show how to use the pointing method to make a reference to another worksheet in a formula.

1. Click in **B7** on the sheet called "Budget". An amount from the "Recurring Expenses" sheet is to go here.
2. Type an equal sign (=). This tells Excel you are starting a function, at the same time it 'anchors' you to this cell so that you can go to other worksheets or workbooks and be able to point at cell references in those worksheets/workbooks.
3. Click on the **Recurring Expenses** sheet tab and click on **B7**, which is the total of recurring expenses.
4. Press ENTER on the keyboard to finish the function off or if you prefer, click on the green -' next to the formula bar.

The amount of the total recurring expenses is now placed in Cell B7 on the Budget sheet. Notice the formula in **B7** reads=**'RecurringExpenses'!B7**

1. Click in **B8** on the sheet called "Budget". A small formula that works out 5% of salary (located on the **Recurring Expenses** worksheet) is to go here.
2. Type an equal sign (=) and then click on cell **B11** on the Recurring Expenses sheet.
3. Now type an asterisk (*) to multiply the total income by 5%.
4. Type **.05** (i.e.5/100) and press ENTER on the keyboard to click on the green-'to finish the function (typing 5% will also work)

Your functions should read **= 'Recurring Expenses'!B11*0.05** or
= 'Recurring Expenses' !B11*5%

Keep this workbook open for the "Referencing other Workbooks" example.

Referencing other Workbooks

The easiest way to reference another workbook is to have that workbook open while you are making reference to it. If you do not have the workbook open you will have to type in the full name and path of the workbook when referring to it, which can be quite tedious. The syntax for referring to a worksheet is the name of the worksheet enclosed in square brackets, followed by the sheet name, an exclamation mark, then cell addresses or ranges. e.g. **[worksheet.xls] Sheet1! Cellreference**

If the workbook name includes spaces, the workbook and sheet name must be enclosed within quotation marks, e.g. to refer to a cell in a workbook called "Yearly Expenses.xls" you would type: **'[YearlyExpenses.xls]Sheet1'!A1**

If the workbook you are referencing is closed at the time of building the function, you must include the full path name of the workbook.e.g. **'d:\excel files\[Yearly Expenses.xls]Sheet1'!A1**

By having the worksheet that you are working on, and the worksheet you are going to refer to open at the same time, you can use the point method to reference the worksheet. The following instructions place a reference in "Referencing other workbooks and sheets.xls" from the workbook "Yearly Expenses.xls". These should be open at the same time: (*Hint*

- use the WINDOW, ARRANGE command to place the worksheets side by side).

1. In cell **B14** of "Referencing other workbooks and files", type an equal sign (=) to start off a formula (which also anchors you to this cell while you go to another workbook).
2. Either using the taskbar or the WINDOWS menu, go to the workbook called "Yearly Expenses". Click in cell **B4**. (if you have arranged the worksheets side by side, this is where you can simply click in B4 of the Yearly Expenses workbook)
3. To finish referring to this cell, press the ENTER key on the keyboard or use the green-'.

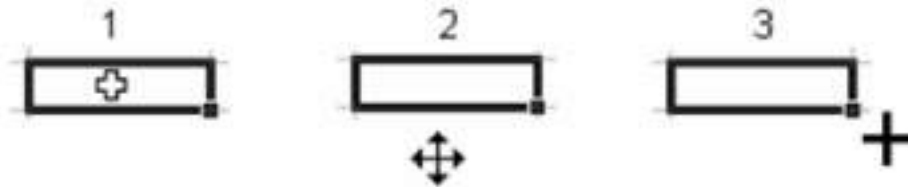
Notice the syntax of the formula is: **='[Yearly expenses.xls]Sheet1'!\$B\$4**

Excel makes the cell or range reference ABSOLUTE when you point and click on another workbook. If you need to copy this to other cells you will need to change the reference so it is RELATIVE (no \$ signs)

4. Repeat for cells **B15**, **B16** and **B17** Hint: use the **fill handle**
5. If you have both workbooks open, have a look at the syntax of this formula in the formula bar of the "Referencing other workbooks and sheets" window. Now close 'Yearly Expenses.xls', click in cell B14 in 'Referencing other workbooks and sheets' and have another look at the formula bar. The syntax has automatically changed to include the full pathname of the closed file, which as you can see is very long and would be awkward to type accurately.

FILL HANDLE AND FILL SERIES COMMAND

There are three ways to click and drag on a cell - each having a different effect.



When you have the mouse inside a cell, the cursor will be shaped like the Swiss Cross. If you click and drag when this symbol is showing you will select a range of cells.

1. When you point to any border of a cell the cursor changes to a 4-sided arrow or an arrow. Clicking and dragging with this symbol will drag and drop the contents of the cell (to copy instead of move, hold down the CTRL key as you drag the contents of the cell).
2. In the right-hand bottom corner of every cell there is a small square. If you hold the mouse above this, the cursor changes into a thick plus sign. In this mode, if you click and drag, you are using the **FILL HANDLE** to fill cells you drag over.

If the fill handle is not showing, go to TOOLS, OPTIONS, EDIT and ensure the ALLOW CELL DRAG AND DROP option is enabled.

The fill handle is a copying tool for copying formulas, and values; however it is also used to fill in a variety of series such as sequential numbers, dates and mixed text.

This Entry	Can be extended to
1,2,3	4,5,6,7 etc
January	February, March, April etc
Jan	Feb, Mar, Apr etc
Monday	Tuesday, Wednesday, Thursday etc
Mon	Tue, Wed, Thu etc
Qtr 1	Qtr2, Qtr3, Qtr4
1 June	2 June, 3 June, 4 June etc
01/04/04	02/04/04, 03/04/04, 04/04/04 etc.
1 st Period,	2 nd Period, 3 rd Period etc.
9:00 AM	10:00 AM, 11:00 AM etc.

Using the Fill Handle

Open a blank worksheet and try the following fill handle techniques:

	A	B	C	D	E	F	G	H
1	1		1 Monday	MON	Monday	1/04/2004		5 January
2	1	2	Tuesday	TUE	Monday	1/05/2004		10 February
3	1	3	Wednesday	WED	Monday	1/06/2004		15 March
4	1	4	Thursday	THU	Monday	1/07/2004		20 April
5	1	5	Friday	FRI	Monday	1/08/2004		25 May
6	1	6	Saturday	SAT	Monday	1/09/2004		30 June
7	1	7	Sunday	SUN	Monday	1/10/2004		35 July
8	1	8	Monday	MON	Monday	1/11/2004		40 August
9	1	9	Tuesday	TUE	Monday	1/12/2004		45 September
10	1	10	Wednesday	WED	Monday	1/01/2005		50 October
11	1	11	Thursday	THU	Monday	1/02/2005		55 November
12	1	12	Friday	FRI	Monday	1/03/2005		60 December
13								

- A. Type a #1 in A1. Drag down to A12. You should end up with all number ones. This is because Excel has no idea you want to have a series, i.e. 1, 2, 3 etc.
- B. Type a #1 in B1. Hold down the CTRL key and drag down to B12. You now have a series. The CTRL key makes Excel do the opposite of its natural function when using the fill handle.
- C. Monday will drag down the days of the week
- D. The fill handle is case sensitive and will recognize abbreviations.
- E. Here the CTRL key was held down while dragging Monday, hence Excel did its opposite function.
- F. Type in a date. Drag with the RIGHT mouse button. When you release the mouse, you can select different options from the shortcut menu. FILL MONTHS was selected in this example.
- G. To get a series such as this you need to give Excel a bit of a hand. In G1 type #5, in G2 type #10. Now select both these cells and drag down with the fill handle. Excel now recognizes the sequence.
- H. Finally, a trick which is handy especially if it is a very long list you have to drag. Type the first entry and then DOUBLE CLICK on the fill handle. The series will fill as far down as the column next to it, so this will not work if there isn't any data in the column nextdoor.

Using the Fill Series Command

If you have a specialized or very long list, it may be more efficient to use the EDIT, FILL, SERIES option.

If you had to have a column numbered 1 to 600, it would be quicker to use the EDIT, FILL, SERIES command. Another example is if you had to have a monthly date entered for 25 years (for a mortgage repayment schedule)



The above Example shows having a column numbered from 1 to 600.

1. Type a #1 in a blank cell.
2. Click on EDIT, FILL, SERIES
3. Select either ROWS or COLUMNS (specifies where data will be filled- column is the more common).
4. Excel recognizes #1 as being a number and therefore has automatically selected LINEAR.
5. Make sure Step Value = 1, and Stop value = 600
6. Click on OK to finalize.

Linear - will create a linear series based on the value you have entered on the worksheet. If the TREND option is cleared, Linear uses the value in the STEP VALUE text box. This value is the amount you want adding each time to the value you have on the worksheet - 1 would make it 1,2,3,4 etc. 2 would make it 1,3,5,7 etc). STOP VALUE is the value you want to stop at.

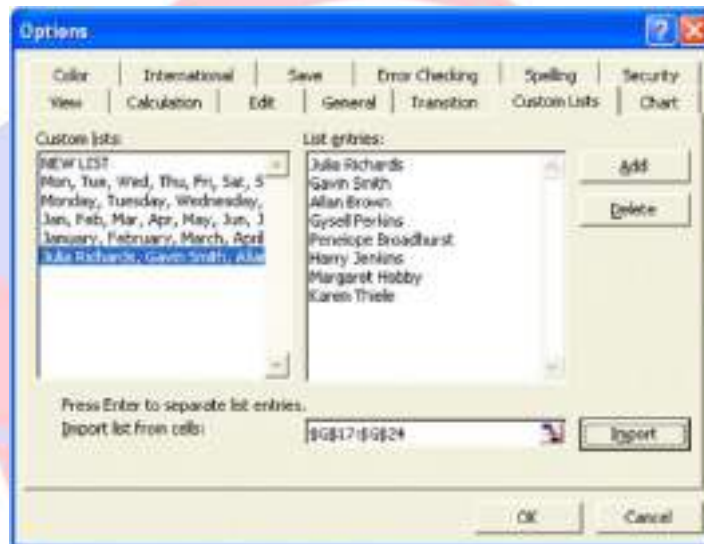
If TREND is enabled, the STEP VALUE AND STOP VALUE are greyed out. In this scenario you would enter an example of the trend desired in 2 or more cells on the worksheet, then select all the cells which you want filling before going to the EDIT, FILL, SERIES command. For example, if you put #5 in cell A1, and #10 in cell A2, then select A1:A12, the result would be 5,10,15,20,25,30,35,40.....60.

Growth - will create a series whereby the number is multiplied by the number in the STEP VALUE. If you have #1 in cell A1, then go into EDIT, FILL, SERIES and select COLUMN, GROWTH, STEP VALUE = 2 and STOP VALUE = 20 the result would be 1,2,4,8,16.

Customizing a Fill Series

Any list of items that you use constantly can be made into a customized list. For example - a roster of staff members

1. If you have a list typed, select the list.
2. Click on TOOLS, OPTIONS, CUSTOM LISTS



3. Click on the IMPORT button. The list you selected will appear in the LIST ENTRIES window.
4. If you did not select a list before you entered this option, click in the LIST ENTRIES window and type in the list, using a new line for each entry. When you have finished adding items, click on the ADD button.
5. Click on OK to finish.

Deleting a Custom List

1. Click on TOOLS, OPTIONS, CUSTOMLISTS
2. In the CUSTOM LISTS window, select the list to be deleted
3. Click on the DELETE button

Click on OK to accept the warning that the list will be deleted and then OK again to close the CUSTOM LISTS window.

CONDITIONAL FORMATTING

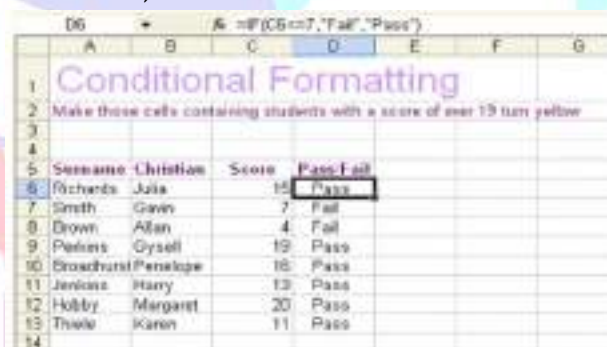
Conditional formatting is extremely useful for things like changing the color of cells or text in order to flag an event. Formatting occurs when a cell reaches the condition that is set in the Conditional Formatting option.

Example1 If you are doing a roster, having cells that reach a certain date turn red.

Example2 A spreadsheet that has student exam results – having those that Pass turn yellow in order to see who should receive a Distinction. You may also want to highlight the “Fail” marks in red so as to flag them for follow up. The instructions for doing this example are below.

Creating a Conditional Format

Steps 1–8 show how to make cells in Column D below change color if a student has passed (using 19 marks or over as the benchmark), (the formula will have to refer to the data in Column C to work this out). Steps 9–10 show how to make the score in Column C change color if a student has 10 marks or less (to show that they have failed).

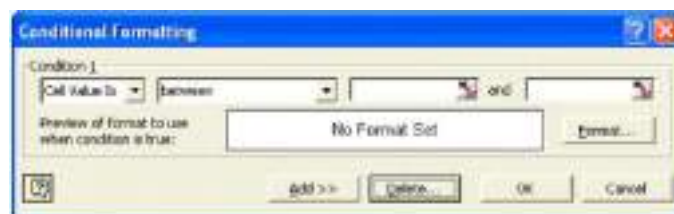


The screenshot shows an Excel spreadsheet with the following data:

Surname	Christian	Score	Pass/Fail
Richards	Julia	15	Pass
Smith	Gavin	7	Fail
Brown	Alan	4	Fail
Peeters	Gysell	19	Pass
Croschurst	Penelope	16	Pass
Jenkinson	Harry	13	Pass
Hobby	Margaret	20	Pass
Thule	Karen	11	Pass

The 'Pass/Fail' column is highlighted in yellow for 'Pass' and red for 'Fail'. The formula bar shows the formula: `=IF(C5<=7,"Fail","Pass")`.

1. Click in the first cell that will have conditional formatting attached (D6)
2. Click on FORMAT, CONDITIONAL FORMATTING. The CONDITIONAL FORMATTING dialog box will appear.



3. Change the first dialogue box to FORMULA IS. This allows you to enter the instructions to refer to another location other than the one you are currently in.
4. The formula is the condition i.e. to find out if the figure to the left is greater than or equal to (\geq) 19 . If you use the pointer to enter the cell address, make sure you change it to relative (as a default Excel will make it Absolute).
5. Click on the FORMAT button
6. In the FORMAT CELLS dialogue box that appears, make all the required changes. In the example being used here you would choose the PATTERNS tab, and then choose a yellow fill color for the cell.
7. Click on OK (twice) to finalize the formatting.
8. To copy the formatting to the rest of the cells in the column either:
 - use the FORMAT PAINTER
 - use the fill handle (use this **only** if the cell contains a formula) to copy to the other cells - beware - if you use the fill handle on cells containing values, you will change the values; or
 - use the normal COPY command and then use the EDIT, PASTE SPECIAL, FORMATS option to apply to the other cells
9. To apply conditional formatting to an active cell (in our example, changing the cell to red if the student has 10 or less marks) - place the cursor in Cell C6. Click on FORMAT, CONDITIONAL FORMATTING
10. Select CELL VALUE IS (this will make Excel look at the value of the cell you are currently placed in). Make the changes the same as below (the fill color is red). Click on OK to finish, and then copy the formatting to the rest of the column as previously described.



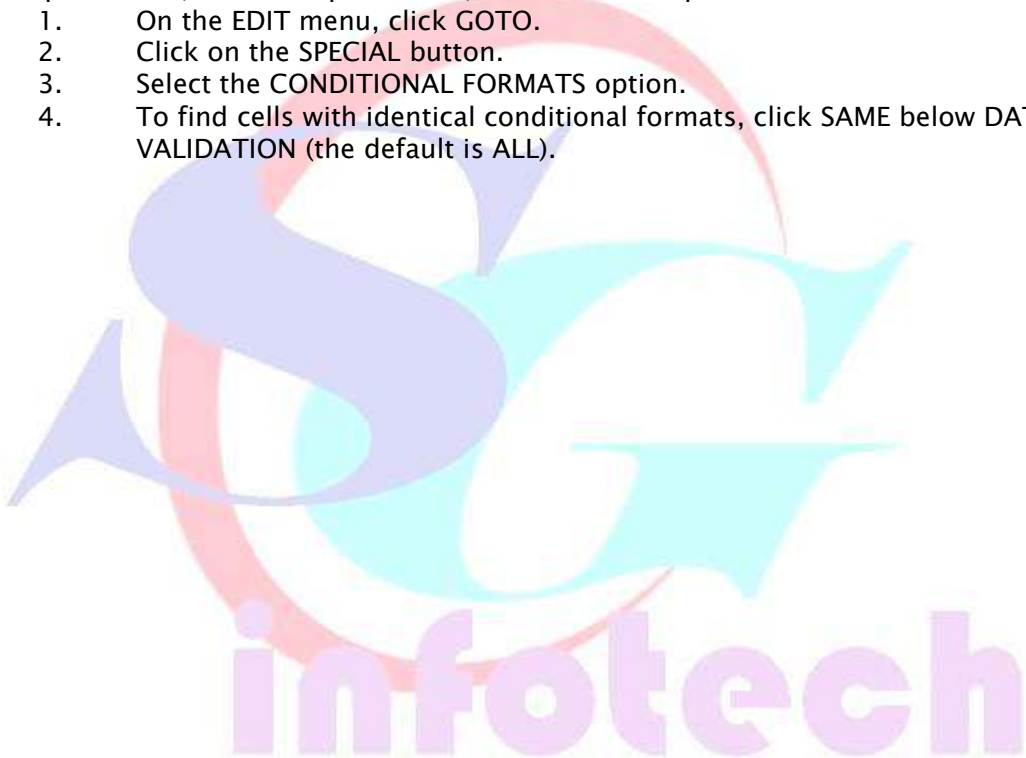
Should you require more than one condition, click on the ADD button. If you want to get rid of a condition, select the DELETE button and then specify which condition is to be erased.

Find cells that have conditional formats

To find all cells that have conditional formatting, click any cell in the worksheet then follow the steps 1–3 below.

To find cells that have conditional formatting settings identical to the settings of a specific cell, click the specific cell, and then do steps 1–4 below.

1. On the EDIT menu, click GOTO.
2. Click on the SPECIAL button.
3. Select the CONDITIONAL FORMATS option.
4. To find cells with identical conditional formats, click SAME below DATA VALIDATION (the default is ALL).



TABLES

A table is made up of columns and rows. Where they intersect, a cell is created. When you create a table in Excel, you can manage and analyze the data in that table independently of data outside of the table. For example, you can filter table columns, add a row for totals, apply table formatting, and apply a style to a word, line, or paragraph

A. **Insert a table**

1. Select the **cell** range
2. On the **Ribbon**, select the **Insert** tab>in the **Tables** group >click **Table**
3. In the new window under **Where is the data for your table?** Make sure the range is the same as the one you selected
4. Check the box to the right of **My table has headers**
5. Click **OK**

B. **Table design**

1. The **Design** tab is now showing on the **Ribbon**

C. **Table expansion**

1. One of the great options with using a table format is that you can expand the table
 - i. Move your mouse pointer to the bottom right corner of the table and use the **Fill Handle** to click and drag to the right and down
 - ii. Notice how the added **cells** change their look and feel to match the table

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CHART

The Charts are used to give a graphical touch to the written data. It is very useful for analyzing and understanding them very quickly.

In Microsoft Excel, you can represent numbers in a chart. On the Insert tab, you can choose from a variety of chart types, including column, line, pie, bar, area, and scatter. The basic procedure for creating a chart is the same no matter what type of chart you choose. As you change your data, your chart will automatically update. You select a chart type by choosing an option from the Insert tab's Chart group. After you choose a chart type, such as column, line, or bar, you choose a chart sub-type. For example, after you choose Column Chart, you can choose to have your chart represented as a two-dimensional chart, a three-dimensional chart, a cylinder chart, a cone chart, or a pyramid chart. There are further sub-types within each of these categories. As you roll your mouse pointer over each option, Excel supplies a brief description of each chart-

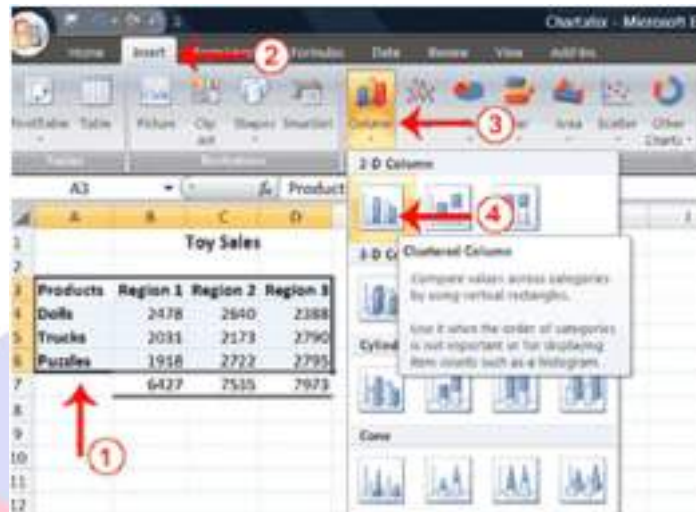
Create a Chart



To create the column chart shown above, start by creating the worksheet below exactly as shown.

	A	B	C	D	E
1		Toy Sales			
2					
3	Products	Region 1	Region 2	Region 3	
4	Dolls	2478	2640	2388	
5	Trucks	2031	2173	2790	
6	Puzzles	1918	2722	2795	
7	Total	6427	7535	7973	
8					

After you have created the worksheet, you are ready to create your chart.

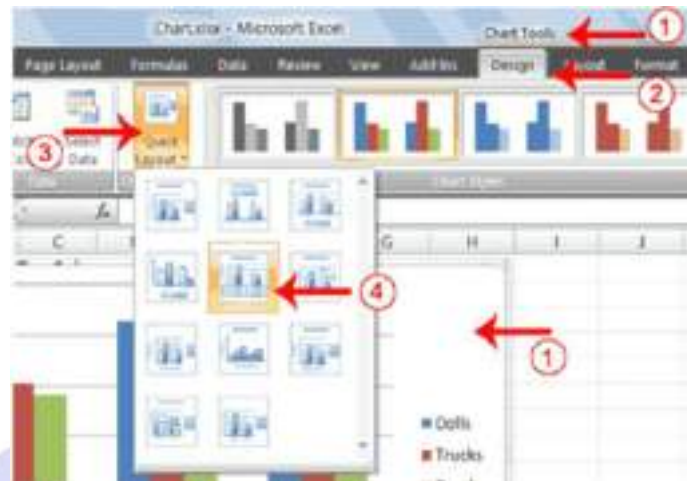
EXERCISE 1**Create a Column Chart**

1. Select cells A3 to D6. You must select all the cells containing the data you want in your chart. You should also include the data labels.
2. Choose the Insert tab.
3. Click the Column button in the Charts group. A list of column chart sub-types appears.
4. Click the Clustered Column chart sub-type. Excel creates a Clustered Column chart and the Chart Tools context tabs appear.

Apply a Chart Layout

Context tabs are tabs that only appear when you need them. Called Chart Tools, there are three chart context tabs: Design, Layout, and Format. The tabs become available when you create a new chart or when you click on a chart. You can use these tabs to customize your chart.

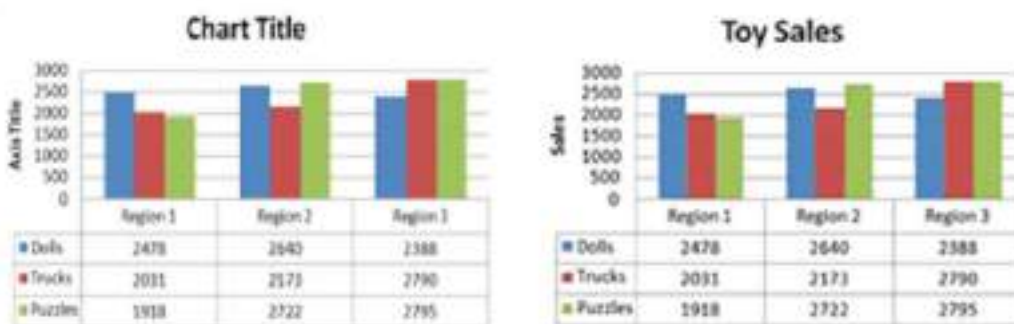
You can determine what your chart displays by choosing a layout. For example, the layout you choose determines whether your chart displays a title, where the title displays, whether your chart has a legend, where the legend displays, whether the chart has axis labels and so on. Excel provides several layouts from which you can choose.



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click the Quick Layout button in the Chart Layout group. A list of chart layouts appears.
4. Click Layout 5. Excel applies the layout to your chart.

Add Labels

When you apply a layout, Excel may create areas where you can insert labels. You use labels to give your chart a title or to label your axes. When you applied layout 5, Excel created label areas for a title and for the vertical axis.



Before

After

1. Select Chart Title. Click on Chart Title and then place your cursor before the C in Chart and hold down the Shift key while you use the right arrow key to highlight the words Chart Title.
2. Type **Toy Sales**. Excel adds your title.
3. Select Axis Title. Click on Axis Title. Place your cursor before the A in Axis. Hold down the Shift key while you use the right arrow key to highlight the words Axis Title.
4. Type **Sales**. Excel labels the axis.
5. Click anywhere on the chart to end your entry.

Switch Data

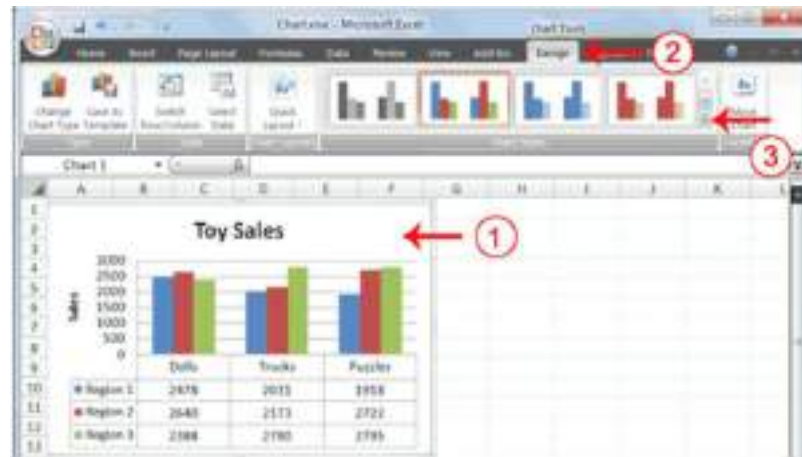
If you want to change what displays in your chart, you can switch from row data to column data and vice versa.



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click the Switch Row/Column button in the Data group. Excel changes the data in your chart.

Change the Style of a Chart

A style is a set of formatting options. You can use a style to change the color and format of your chart. Excel 2007 has several predefined styles that you can use. They are numbered from left to right, starting with 1, which is located in the upper-left corner.



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click the More button  in the Chart Styles group. The chart styles appear.



4. Click Style 42. Excel applies the style to your chart.

Change the Size and Position of a Chart

When you click a chart, handles appear on the right and left sides, the top and bottom, and the corners of the chart. You can drag the handles on the top and bottom of the chart to increase or decrease the height of the chart. You can drag the handles on the left and right sides to increase or decrease the width of the chart. You can drag the handles on the corners to increase or decrease the size of the chart proportionally. You can change the position of a chart by clicking on an unused area of the chart and dragging.



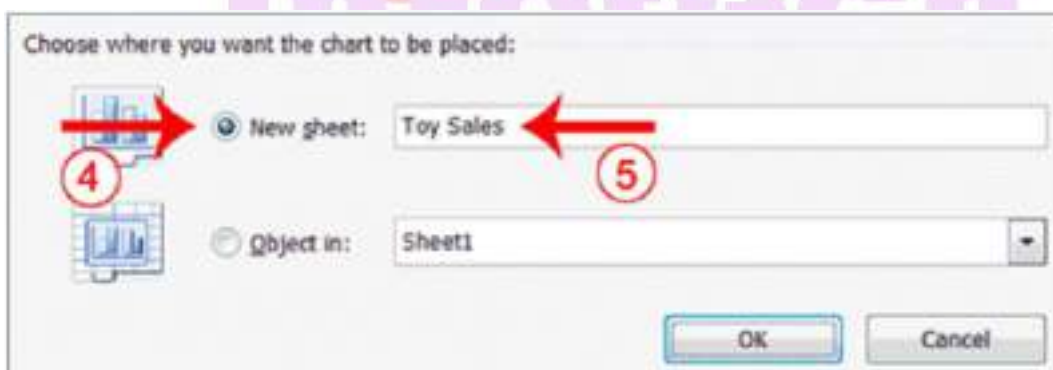
1. Use the handles to adjust the size of your chart.
2. Click an unused portion of the chart and drag to position the chart beside the data.

Move a Chart to a Chart Sheet

By default, when you create a chart, Excel embeds the chart in the active worksheet. However, you can move a chart to another worksheet or to a chart sheet. A chart sheet is a sheet dedicated to a particular chart. By default Excel names each chart sheet sequentially, starting with Chart1. You can change the name.



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click the Move Chart button in the Location group. The Move Chart dialog box appears.



4. Click the New Sheet radio button.
5. Type Toy Sales to name the chart sheet. Excel creates a chart sheet named Toy Sales and places your chart on it.

Change the Chart Type

Any change you can make to a chart that is embedded in a worksheet, you can also make to a chart sheet. For example, you can change the chart type from a column chart to a bar chart.



1. Click your chart. The Chart Tools become available.
2. Choose the Design tab.
3. Click Change Chart Type in the Type group. The Chart Type dialog box appears.
4. Click Bar.
5. Click Clustered Horizontal Cylinder.
6. Click OK. Excel changes your chart type.



EXERCISE 2

Create a Pie Chart

The steps below will create a basic pie chart. Select the Data

- Click on the *Insert* > *Pie* > *Select the Style*

ADDING THE CHART TITLE

Edit the default *Chart Title* by clicking on it twice – but don't double click

1. Click once on the default chart title to select it – a box should appear around the words *Chart Title*
2. Click a second time to put Excel in *edit mode*, which places the cursor inside the title box
3. Delete the default text using the Delete/Backspace keys on the keyboard
4. Enter the chart title into the title box

ADDING THE DATA LABELS

1. Click once on the pie chart in the plot area to select it
2. Right click on the chart to open the data series context menu
3. In the context menu, hover the mouse above the *Add Data Labels* option to open a second context menu
4. In the second context menu, click on *Add Data Labels* to add the values for each School– to each slice of pie in the chart

CHANGING THE COLOR OF THE PIE SLICES

1. Click on the chart background to select the entire chart
2. Click on the *Change Colors* option located on the left hand side of the *Design* tab of the ribbon to open a drop down list of color choices
3. Hover your mouse pointer over each row of colors to see the option name
4. Click on the *Color 5* option in the list – the first choice in the *Monochromatic* section of the list
5. The slices of pie in the chart should change to varying shades

CHANGING THE CHART'S BACKGROUND COLOR

Formatting the background is a two-step process because a gradient is added to show slight changes in color vertically from top to bottom in the chart.

1. Click on the background to select the entire chart
2. Click on the *Format* tab of the ribbon
3. Click on the *Shape Fill* option to open the Fill Colors drop down panel
4. Choose **Blue, Accent 1, Darker 25%** from the *Theme Colors* section of the panel to change the chart's background color to dark blue
5. Click on the *Shape Fill* option a second time to open the Colors drop down panel
6. Hover the mouse pointer over the *Gradient* option near the bottom of the list to open the Gradient panel
7. In the *Dark Variations* section, click on the *Linear Up* option to add a gradient that gets progressively darker from bottom to top

CHANGING THE TEXT COLOR

Change the color of all text in the chart to white

1. Click on the background to select the entire chart
 2. Click on the *Format* tab of the ribbon if necessary
 3. Click on the *Text Fill* option to open the Text Colors drop down list
 4. Choose **White, Background 1** from the *Theme Colors* section of the list
 5. All the text in the title and data labels should change to white
-

ADDING CATEGORY NAMES AND MOVING THE DATA LABELS

This step will add the name of each School to the data labels along with the value that is currently displayed. It will also ensure that the data labels are displayed inside the chart so there will be no need to display leader lines linking the label to its respective slice of the pie chart.

1. Click once on one of the data labels in the chart – all data labels in the chart should be selected
2. Click on the *Format* tab of the ribbon if necessary
3. Click on the *Format Selection* option on the left side of the ribbon to open the *Formatting Task* pane on the right side of the screen
4. If necessary, click on the *Options* icon in the pane to open the *label options*
5. Under the *Label Contains* section of the list, add a check mark to the *Category Name* option to display the School names as well as their Percentage, and remove the check mark from the *Show Leader Lines* option
6. Under the *Label Position* section of the list, click on the *Inside end* to move all data labels to the outer edge of their respective sections of the chart

CHANGING THE FONT TYPE AND SIZE

Changing the size and type of font used in the chart, will not only be an improvement over the default font used in the chart, but it will also make it easier to read the category names and data values in the chart.

Note: The size of a font is measured in *points* – often shortened to *pt*.

72 pt text is equal to one inch – 2.5 cm – in size.

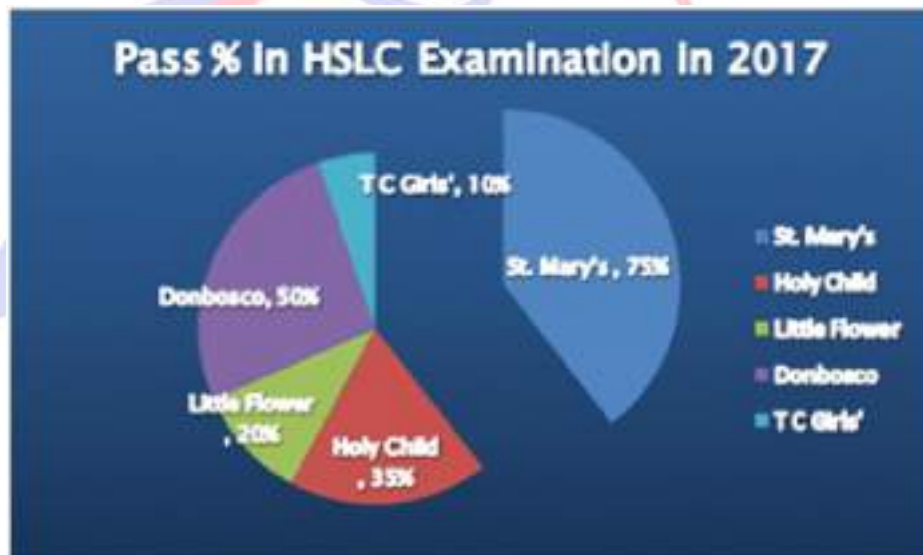
1. Click once on the chart's title to select it
2. Click on the *Home* tab of the ribbon
3. In the font section of the ribbon, click on the *Font* box to open the drop down list of available fonts
4. Scroll to find and click on the font Lucida Sans Unicode in the list to change the title to this font
5. In the *Font Size* box next to the font box, set the title font size to 16 pt
6. Click once on the data labels in the chart to select all four labels
7. Using the steps above, set the data labels to 8 pt Lucida Sans Unicode

EXPLODING A PIECE OF THE PIE CHART

This last formatting step is to drag or *explode* the St. Mary's slice out from the rest of the pie to add emphasis to it.

After exploding out the St. Mary's slice, the rest of the pie chart will shrink in size to accommodate the change. As a result, it may be necessary to reposition one or more of the data labels to place them fully inside their respective sections.

1. Click once on the pie chart in the plot area to select it
2. Click once on the St. Mary's slice of the pie chart to select just that section of the chart – make sure that only the St. Mary's slice is surrounded by the small blue highlight dots
3. Click and drag the St. Mary's slice out from the pie chart to *explode* it
4. To reposition a data label, click once on the data label – all data labels should be selected
5. Click a second time on the data label to be moved and drag it to the desired location



Operators

Operators are those which works on operands. For example **A + B**. Here **A** and **B** are the operands and **+** is the operator. Based on the type of operations we can have grouping of these operators:

- 1. Arithmetic Operators:** To perform basic mathematical operations such as addition, subtraction, divisions, multiplications, etc, we use arithmetic operators.

Arithmetic Operators	Meaning	Example
+	Addition	3+3
-	Subtraction	6-4
*	Multiplication	5*9
- (Negation)	Unary negative operator	-89
/	Division	45/8
%	Percent	20%
^ (Caret)	Exponentiation	3^2=9 means 3 ₂

- 2. Comparison Operators:** We can compare two values with comparison operators such as are they equal, greater less than the operand with whom we are comparing them. When we compare two operands, the result is always in either true or false.

Comparison Operator	Meaning	Example
=	Equal to	A1=B1
>	Greater than	C1>C5
>=	Greater than equal to	B1>=E1
<	Less than	M2<H4
<=	Less than Equal to	D5<=D10
<>	Not equal to	H1<>H2

- 3. Text Concatenation Operator:** We use & (ampersand operator) to join or concatenate one or more strings. Example : “north” & “Wind” will give the result as “northWind”.

- 4. Reference Operators:** Combines range of cells for calculations with the following operators:

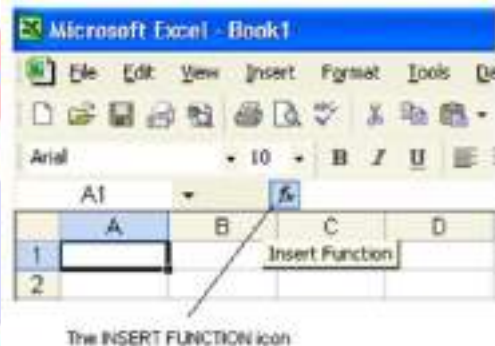
Reference Operator	Meaning	Example
:	Range Operator, which provides a range of all the cells in between two given cells.	B1:B10
,	Union operator, which combines multiple references into one reference.	=Sum(B1:B5, C3:C10)

THE FUNCTION WIZARD

A function is inserted into a spreadsheet either by typing it directly into the active cell; or in the formula bar; or by using the INSERT FUNCTION option in Excel. The latter automates the process, ensuring that you get arguments in the right order.

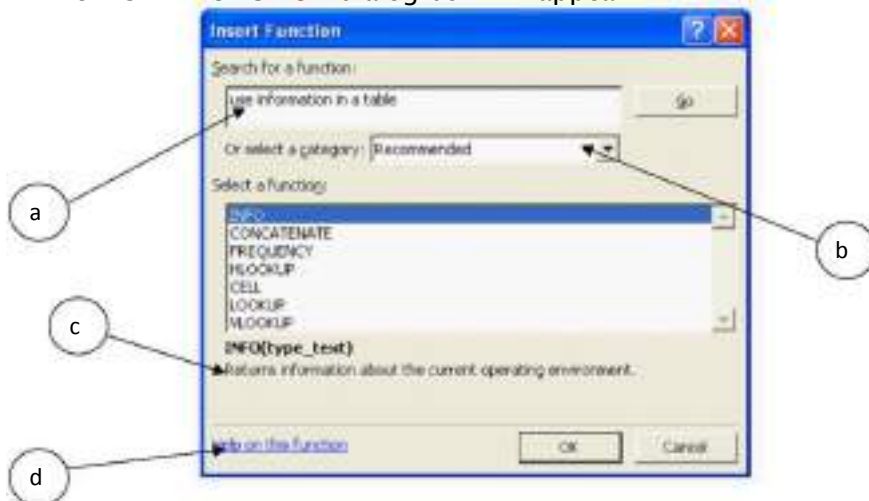
There are several ways of accessing the INSERT FUNCTION dialog box:

- Use the INSERT menu, select the FUNCTION option;
- Use the shortcut - SHIFT + F3; or
- Click on the INSERT FUNCTION icon next to the formula bar.



Using the Function Wizard

1. Make sure you are in the cell where you want to place a function, and then open the INSERT FUNCTION dialog box by one of the methods listed above.
2. The INSERT FUNCTION dialog box will appear.



- a) Type a brief description of what you want to do - then click on GO. Excel will search for functions that might perform the job; or
- b) If you prefer, and if you know the name of the function, you can drop down a list and select a category. If you aren't sure which category your function is in, select ALL.

To make scrolling to your function quicker when you are in the ALL category:

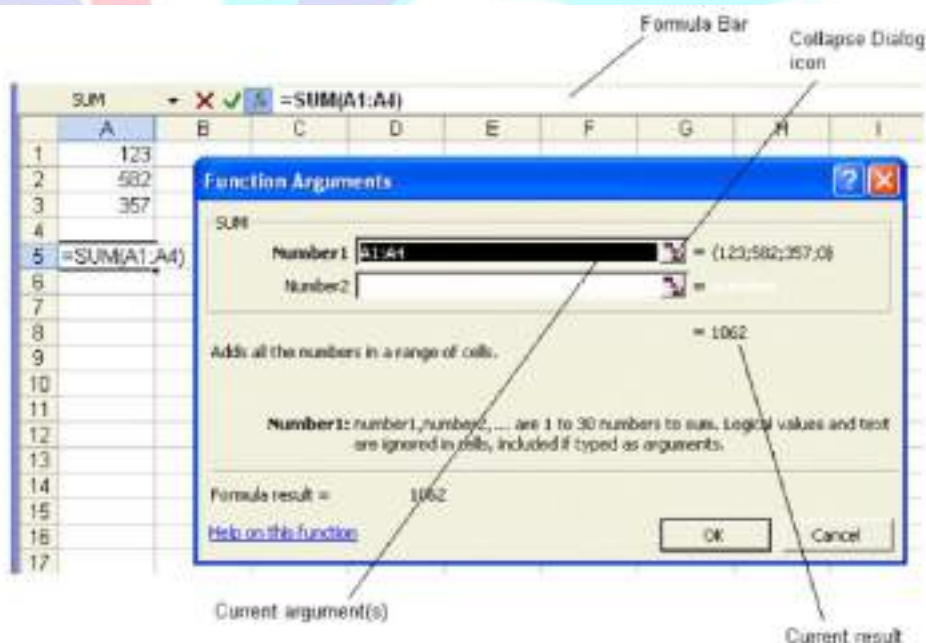
- Click somewhere in the "SELECT A FUNCTION" area of the dialogbox;
- Type in the first two or three letters of the name very quickly.

For example

if you type VLO quickly, it will return VLOOKUP. If you type it slowly, you will get the functions starting with the letter "V", and then when you type "L" the list will change to the functions beginning with the letter "L".

If you used the function recently, select the MOST RECENTLY USED category - this is a convenience list of your recently used functions.

- c) A brief description of the selected function.
 - d) A link to take you to Excel's comprehensive help menu for further details on the selected function, this includes examples of use.
3. Once you have found the function you require, select it then click on OK.
 4. The **FUNCTION ARGUMENTS** dialogbox appears. Most of the time you will be required to enter the arguments yourself.



The data in the text box can be changed by either:

- Clicking in the formula bar in the main excel window in and changing the data;
- Dragging over cells behind the FUNCTION ARGUMENTS dialog box (the dialog box can be moved to make viewing easier – just click and drag on the title bar); or
- Temporarily collapsing the FUNCTION ARGUMENTS dialog box by clicking on the COLLAPSE DIALOG icon. This will then allow you to select larger ranges without hindrance. When you have selected the range/data click on the restore button



Click here to restore the
FUNCTION ARGUMENTS dialog
box

5. When you have finished filling in all the arguments required in your function, click on OK.

Restoring the Function Arguments dialog box in order to edit a function

1. Click in the cell where the function is.
2. Click on the INSERT FUNCTION icon (the fx button) to restore the dialog box.

	A5		fx	=SUM(A1:A3)
	A	B	C	D
1	123			
2	582			
3	357			
4				
5	1062			
6				

Diagram illustrating the steps to restore the Function Arguments dialog box:

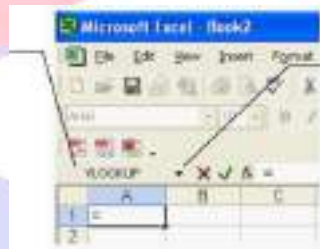
1. Click in the cell where the function is (cell A5).
2. Click on the INSERT FUNCTION icon (the fx button) to restore the dialog box.

Shortcut for entering a function

You can access your most recently used functions without having to go through the INSERT FUNCTION dialog box.

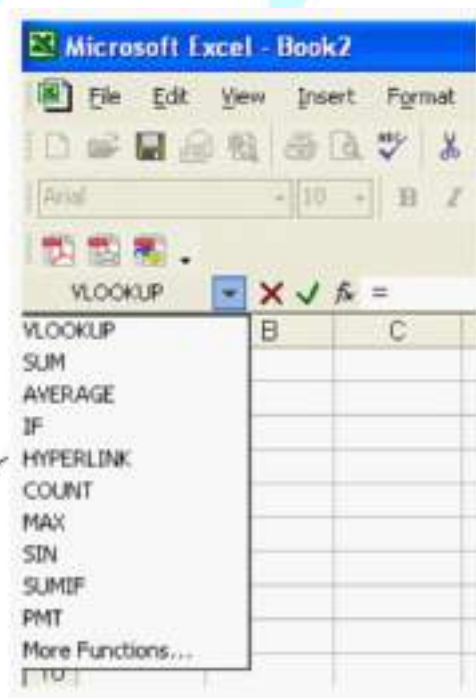
1. Make sure you are in the cell where you want the function to be. Instead of clicking on the **fx** icon to start your function, type an equal sign (=). You will see the function that was last used in the space where the cell address normally shows.
2. Either click on the function name (if it is the one you want to use), or click on the drop down arrow next to the function name to see the list of recently used functions.

Click here if you want to use the function that is shown.



Click on the drop down arrow to access the Most Recently Used list.

The Most Recently Used List.



3. As soon as you click on the required function, you will go straight to the FUNCTION ARGUMENTS dialog box, bypassing the INSERT FUNCTION option.

Some commonly used Functions

- Char(Number): This function returns Character of any ASCII code. Example =char(97) will return "a".
- Concatenate: ("Text1", "Text2"): Will concatenate two strings.
- Len(String): Counts number of character in a string. This includes the white spaces also.
- Trim(String): Removes unwanted white spaces of a string.

Date and Time Function:

- Days360("StartDate","EndDate"): This function returns difference between the start date and the end date in integer value in a 360 day year. Example: =Days360("12/12/2011","12/13/2011) will return 1.
- Date(year, Month, Day): This function returns a numeric equivalent of the date. Example, =DATE(2012,10,5) will return 05-10-2012
- Now(): This function returns the current System date and time.
- Today(): Returns System's Current Date.

Mathematical and Statistical Functions:

- ABS(Number): This function returns the absolute value of the number supplied as the argument.
 - Int(Number): This function returns rounds of the number, passed as the parameter to the near integer.
 - Sqrt(Number) : This function returns the square root of the number passed as the parameter.
 - Power(Number, Power): Multiplies a number with itself for the given number of power. Used to find out squares, cubes etc.
 - Mod(number, Divisor(): Returns the remainder of the division of the number divided by the divisor.
 - Max(Number1, Number2,...): Finds out the maximum out of the given numbers.
 - Min(Number1, Number2,...): Finds out the minimum out of the given numbers.
 - Average(Number1, Number2,...): Finds out the average out of the given numbers.
 - Count(Value1, Value2...): Counts the number of values passed as the arguments.
-

Logical Functions:

- AND(logical1, Logical2,...): Returns true if all the conditions satisfies and returns false if any single condition fails to comply.
Example, =AND(A3>10,B3>20) will return True only when both A3 >10 and b3>20 or else will return False.
- OR(Logical1, Logical2,...): Returns true if any of the condition satisfies.
Example, =OR(A3>23,B3>10) will return true if either value at cell A3 > 23 or B3 > 10 else it will return false.
- NOT(Logical) : Will return True if the logic is false or else returns True.

Example, say value at cell A3 is 10 then “=NOT(A3>30)” will return True.

- IF(condition, IFTrue, IFFalse): Returns one value if condition specified is true or the other value if the condition is false.

Example=(if(b4>35,”Pass”,”Fail”) will return Pass if value at cell b4 > 35 and will return “Fail” if value less then equal to 35.

CONCATENATION

The CONCATENATE function joins strings of text together. It is often used when working with databases but is also useful for consolidating information. There are two methods of concatenating text, with the CONCATENATE function or by using the & operator. Both are explained here.

Example : When doing consolidations where you have to combine information, you may end up with a list where items often mean the same thing e.g. imagine working with two different companies each with their own expense sheet. It is your job to bring the expenses together in a consolidated expense sheet.

DodgyBrothers	Sweet ToothCafe
Wages	Telephone
Electricity	
Communications	
Power	COGS
Rent	Lease
COGS	Salaries

In a consolidated expense sheet this may look better presented as:
Wages & Salaries

Electricity & Power
Rent & Lease
Telephone & Communications
COGS & COGS

COGS would look unusual being mentioned twice so we have combined it into one listing, using an IF function.

The listing for the consolidated information could be typed as ordinary text, however you would be breaking a basic rule of spreadsheeting – **Do not repeat information, use cell references.** If you change the ORIGINAL text in any way whatsoever, the change will automatically be reflected in the Consolidation if you use Concatenation to combine the information.

In the following detailed instructions there are two ways of handling concatenation, one where words are combined (Electricity and Power) and one where the listing is only mentioned once (COGS). An exercise has been set up for your convenience and can be found in the working example [Consolidation](#). The first two worksheets belong one each to Dodgy Brothers and Sweet Tooth Café, the third worksheet is the consolidation where you can concatenate the cells.

Example 1 – Combining two entries using the & operator

Join the two cell references with "&" and "&"

Wages and Salaries have been combined

A5		fx =Dodgy Bros!A5&" and "&'Sweet Tooth Cafe!A5				
	A	B	C	D	E	F
1	CONSOLIDATION					
2						
3		January	February	March		
4	Expenses					
5	Wages and Salaries					
6						
7						
8						
9						
10						
11	Total Expenses	\$ -	\$ -	\$ -		
12						

In Excel you normally have operators such as +, -, / or * between cell references, which asks Excel to add, subtract, divide or multiply the contents of those cells. In this scenario however, we are joining two cells that contain text. The & symbol is the operator used for joining cells with text. They are usually in pairs so that in between the symbols you can indicate what text you want to join the words (a space or words, punctuation etc). This text must be enclosed in double quotation marks - ""

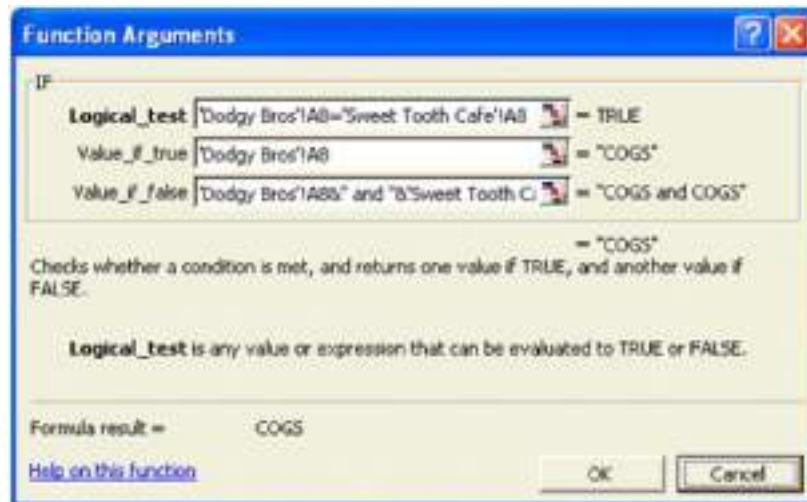
1. Using the Consolidation workbook as an example, make sure you are in Cell A5 on the CONSOLIDATION worksheet.
2. Type an “=” sign (the beginning of every formula).
3. To get the first cell which contains the word “Wages”, click on the DODGY BROS worksheet tab at the bottom of the window, then click in **A5**, the cell address ‘**Dodgy Bros**’!A5 should be in the address bar.
4. Type an ampersand (a & symbol, found above the number 7 on the keyboard). This tells Excel you are going to add some text or point to another cell containing text.
5. We want some text between the words “Wages” and “Salaries”. This text is a space, followed by the word “and” followed by another space. After the & you just typed, type “ and ” (a double quotation mark, a space, the word “and” and then another space, close the quotation marks). Any text you want between cells **MUST BE ENCLOSED IN DOUBLE QUOTATION MARKS**.
6. Type another &. This tells Excel you are ready to point to another cell. The “&”.....”& is the way to combine cells containing text with whatever text or symbols you place between these characters – in our case with a space, the word “and” and another space.
7. Click on the SWEET TOOTH CAFÉ worksheet tab. Then click in cell A5 (the cell containing the word “Salaries”).
8. To finalize the formula, click on the Green-’ or hit ENTER on the keyboard.
9. Repeat the above instructions to create the Electricity & Power, Rent & Lease and Telephone & Communications cells. (if you were sure they were entered in the same order on both worksheets, you could use the Fill Handle to copy the formula).

Example 2 – By using an IF function, combine two entries, ending up with one entry

In the case of the COGS entry, combining them as in the first example, we would end up with **COGS and COGS** which is exactly the same thing and would not look very professional. By using an IF function we can say make Excel show COGS only once, but if the original text changes then reflect that change automatically.

	A	B	C	D	E	F	G	H	I	J
1	CONSOLIDATION									
2										
3		January	February	March						
4	Expenses									
5	Wages and Salaries									
6	Power and Electricity									
7	Phone and Communications									
8	Rent and Lease									
9	COGS									
10										
11	Total Expenses	\$ -	\$ -	\$ -						

1. Ensure you are in Cell A9 of the CONSOLIDATION worksheet.
2. Call up an IF FUNCTIONS ARGUMENTS window.



Logical_test

- click on DODGY BROS worksheet and select A8.
- Type an “=” sign
- Click on SWEET TOOTH CAFÉ worksheet and select A8.

i.e. you are asking “is the cell A8 in Dodgy Bros the same as cell A8 in Sweet Tooth Café”. The result of the logical test is “True”. The cells are the same as each other.

1. value_if_true
 - Click on DODGY BROS worksheet and select A8.

i.e. if the cells are the same, you only wish to have the word “COGS” appear once.

2. value_if_false
 - Click on DODGY BROS worksheet and select A8
 - Type the following &” and”&
 - Click on SWEET TOOTH CAFÉ worksheet and select A8

i.e. if the cells aren’t the same, show the contents of the two cells joined by the text “ and “

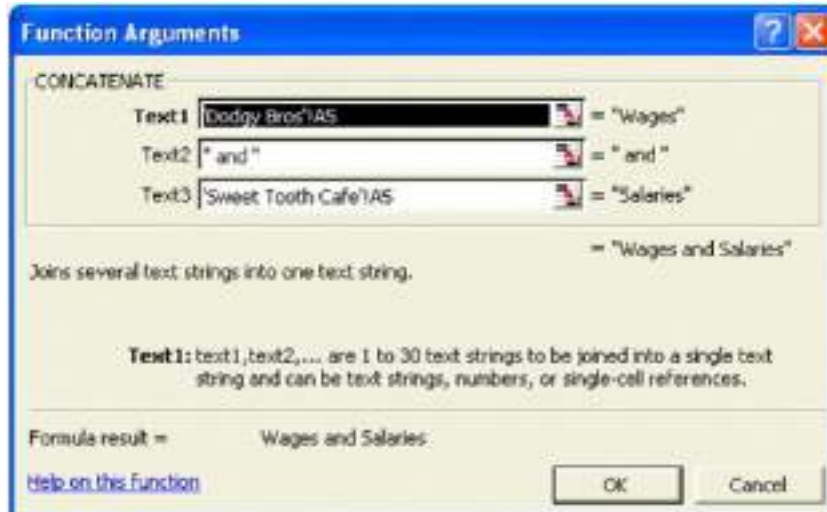
3. Click on OK to finish the formula.

To see if this works correctly, try going to the DODGY BROS worksheet and changing Cell A8 to read “**Cost of Goods Sold**”. Go back to the CONSOLIDATION worksheet and see if the cell containing COGS now reads “**Cost of Goods Sold and COGS**”

Example 3 – Using the CONCATENATE Function

The text cells can be joined by using the CONCATENATE function, which is found under the TEXT category of functions.

1. Call up a CONCATENATE FUNCTION ARGUMENTS window



2. In Text1, click on DODGY BROS worksheet and select **A8**. Then click in Text2. Note Text 3 automatically appears (you can join upto 30 strings of text)
3. In Text 2 type a space, then the word **and**, then type another space.
4. Click in Text3 - note how the quotation marks have been added automatically for you in the Text 2 dialogbox
5. Click on SWEET TOOTH CAFÉ worksheet and select **A8**
6. Click on OK to finalize the formula.

To fix up the problem of COGS appearing twice, you would have to create an IF function and when you get to the "VALUE-IF_FALSE" section, call up a CONCATENATE function and fill in as per instructions above.

The final step to completing the exercise is to bring across the figures for DODGY BROS and SWEET TOOTH CAFÉ. These will be normal formulas - do not retype the figures because if the original figures change, the retyped ones on the CONSOLIDATION worksheet will not change. By using the following instructions the consolidation figures will automatically update with any changes.

Using Wages and Salaries as an example:

1. Using the CONSOLIDATION worksheet, click in B5. Type an "=" sign to start off a formula.
2. Click on the DODGY BROS worksheet tab and select **B5** (the first wages amount).

3. Type a "+" sign
4. Click on the SWEET TOOTH CAFÉ worksheet tab and select B5 (the first salaries amount)
5. Either click on the green– or hit ENTER on the keyboard to finalize.
6. Use the fill handle to drag this formula across to February and March
7. When you have finished inputting all the consolidated figures, check the final totals agree with the final totals of the first two worksheets.

WORKING WITH TEXT

There are many functions under the TEXT category and once you have worked with a few the others are quite easy to follow. Some of the more common text functions are:

- LOWER
- PROPER
- UPPER
- MID
- RIGHT
- LEFT

	A	B	C
1	Richards	julia	
2	Thompson	sarah	
3	Smith	fred	

Syntax	Description	Example
=lower(cell address)	Gives you the text all in lower case	=lower(A1) would return "richards"
=upper(cell address)	Returns text string in upper case	=upper(A1) would return "RICHARDS"
=left(cell address)	Returns the leftmost character in a text string	=left(A1) would return "R"
=right(cell address)	Returns the rightmost character in a text string	=right(A1) would return "s"
=mid(cell_address,where_to_start,how_many_characters_to_return)	Returns characters from a specified point in the text Has 3 arguments. 1. Cell address 2. Which character to start from (first character is no 1) 3. How many characters do you want to appear	Example – to return the 1 st three letters of the surname =mid(A1,1,3) would return "Ric"
=proper	Makes the first letter of character string uppercase	=proper(B1) would return "Julia"

Nested Text Functions

If nesting text functions (having more than one function in the same formula) ensure you enter the formulas in the right order.

For example: If you wanted the first 3 letters of the surname in Lower case:

Rightway: = lower(mid(A1,1,3)) would return "ric"

Wrongway: =mid(lower(A1,1,3)) would return an error

WORKING WITH DATES

Dates are stored as numbers in spreadsheets and because of this you can do calculations using dates. Take the number 36500.35 for example. The integer component (36500) is the date and the decimal fraction (.35) is the time. The integer number is the number of days since 01/01/1900. The number 36500.35 therefore, would be 6 December 1999, 8.24am.

By going to the TOOLS, OPTIONS menu and clicking on the CALCULATION tab you can enable the 1904 DATE SYSTEM option which calculates all dates from January 1, 1904.

When you enter a date into a cell in a worksheet Excel formats that cell as a date format. If you then try and put a normal number into that cell, it will appear as a date. This is because the formatting information and the data are stored separately in spreadsheets. To correct the situation you need to reformat the cell as a number (FORMAT, CELLS, NUMBER) or clear the format (EDIT, CLEAR, FORMATS). You can also use the shortcut key to return a cell to GENERAL format - CTRL + SHIFT + ~ (a tilde).

NOTES : If you are typing a date into a cell, you can use either / or -(slashes or hyphens) as separators. E.g. 31/12/99 or 31-12-99 do the same formatting.

If entering a date with the year between 1920 and 2029, you only need to enter the last two digits. Before or after these years, enter the four numbers for the date to appear correctly.

The easiest way to enter a quantity of dates in a row or column is to use the EDIT, FILL, SERIES command. You can then make the dates appear in Day, Weekday, Month or Year series. Alternatively you can use the fill handle with the Right Mouse Button to select a series of dates.

CTRL + ; is a shortcut for entering the current date.

A cell with a date can be reformatted to appear the way you want by going to FORMAT, CELLS, DATE (for pre-designed formats) or FORMAT, CELLS, CUSTOM to design your own format. The following table shows some of the different ways of formatting a date - using 6 August 2004 as an example:

m/d	8/6
d/m	6/8
d/m/yy	11/8/04
dd/mm/yy	06/08/04
d-mmm	6 Aug
d-mmmm	6 August
dddd d mmmm yyyy	Friday 6 August 2004

Useful Date Functions

There are many DATE functions available but some common ones are:

DATE Returns a serial number that represents a particular date. The result is formatted to appear as a date. This function is most often used when creating a date from values in a spreadsheet. Calculations can be performed on these dates because they are stored as a serial number

Syntax: = DATE (year, month, day)

	A	B	C	D	E	F
1	MEMBERSHIP LISTING					
2						
3	Surname	FirstName	Day_Joined	Month_Joined	Year_Joined	Date
4	Bloggs	Fred	11	8	2001	11/08/2001
5	Brown	John	27	23	2003	27/11/2004
6	Smith	Tom	23	4	1999	23/04/1999
7						

NOTE: If you enter an invalid month e.g. 14, Excel assumes you wish to use Febru-ary (12 months + extra 2 months into the new year). If you enter an invalid day such as 45, Excel will add that number to the first day of the month.

Example: DATE(2004,14,45) would return 17 March 2005. (1st February 2004 + 45 days)

Example:

DAY : Returns a number as a value corresponding to the day in a date-numbers range between 1 and 31.

Useful if you need to extract the day so as to perform calculations.

Syntax: DAY(serial_number)

Example: Two examples are given, the first where the formula refers to a cell containing a date, the other where the date is used in the formula itself - Note that the date is enclosed in quotation marks. If the quotation marks were not there Excel would attempt to take 17 and divide by 12, then the result would be divided by 1979.

B3		=DAY(B1)	
	A	B	C
1	Date Joined	17/12/1979	
2			
3	Day of month	17	
4	Month of year	12	
5	Year	1979	

B3		=DAY("17/12/79")	
	A	B	C
1	Date Joined	17/12/1979	
2			
3	Day of month	17	
4	Month of year	12	
5	Year	1979	

MONTH : Returns a number as a value corresponding to the month in a date-numbers range between 1 and 12.

Useful if you need to extract the month so as to perform calculations.

Syntax: MONTH(serial_number)

Example: Two examples are given, the first where the formula refers to a cell containing a date, the other where the date is used in the formula itself - Note that the date is enclosed in double quotation marks. If the quotation marks were not there Excel would attempt to take 17 and divide by 12, then the result would be divided by 1979.

B4		=MONTH(B1)	
	A	B	C
1	Date Joined	17/12/1979	
2			
3	Day of month	17	
4	Month of year	12	
5	Year	1979	

B4		=MONTH("17/12/79")	
	A	B	C
1	Date Joined	17/12/1979	
2			
3	Day of month	17	
4	Month of year	12	
5	Year	1979	

YEAR : Returns a number as a value corresponding to the year in a date-numbers range between 1900 and 9999.

Useful if you need to extract the year so as to perform calculations.

Syntax: YEAR(serial_number)

Example: Two examples are given, the first where the formula refers to a cell containing a date, the other where the date is used in the formula itself - Note that the date is enclosed in double quotation marks. If the quotation marks were not there Excel would attempt to take 17 and divide by 12, then the result would be divided by 1979.

B5		=YEAR(B1)	
	A	B	C
1	Date Joined	17/12/1979	
2			
3	Day of month	17	
4	Month of year	12	
5	Year	1979	

B5		=YEAR("17/12/79")	
	A	B	C
1	Date Joined	17/12/1979	
2			
3	Day of month	17	
4	Month of year	12	
5	Year	1979	

TODAY : Returns the current date. Useful for inserting into a spreadsheet where the current date is required. This function does not require any arguments. The date updates everytime a calculation is made in the worksheet.

Syntax: =TODAY()

Example:

C1		=TODAY()			
	A	B	C	D	E
1	CREDITORS AS AT:		9/06/2004		
2					
3	Country Energy	540.00			
4	Office Express	210.50			
5	Telstra	1020.15			

NOW : Returns the current date and time. This function does not require any arguments. The date and time update everytime a change is made in the worksheet.

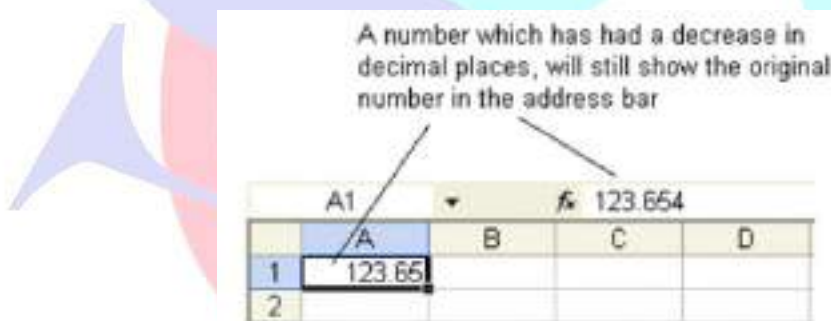
Syntax: =NOW()

Example:

	A	B	C	D	E
1	CREDITORS AS AT:		9/06/2004 9:11		
2					
3	Country Energy	540.00			
4	Office Express	210.50			
5	Telstra	1020.15			
6					

ROUNDING FUNCTIONS

Numbers can be rounded to decimal places by using the INCREASE or DECREASE DECIMAL on the Formatting toolbar or the FORMAT, CELLS, NUMBER option, however you are not changing the value of the number when you use these, only the display. For example, if you have 123.654 decreased to 123.65, you will see 123.65 in the worksheet but 123.654 in the address bar. Excel will use the underlying value (123.654) to do any calculations, not the displayed value.



ROUND : Rounds a number to a specific number of decimal places. It is made up of 2 arguments, the reference to a number and the number of decimal places that reference is to be rounded to.

Syntax: = ROUND (number, num_digits)

Notes: The *number* argument can be a number, a cell address referring to a cell that holds a number, or a formula which results in a number.

The *num_digits* argument can be a negative or positive integer (whole number). If you use a negative number it rounds that number of places to the left of the decimal point. If you use 0 (zero), it number rounds to the nearest whole number.

Numbers less than 5 get rounded down. Numbers that are 5 or more get rounded up.

Examples:

	A	B	C	D
1	123			
2	258.3			
3	654			
4	125.3			
5	258.456			
6	1419.056	=SUM(A1:A5)		
7	1419	=ROUND(SUM(A1:A5),0)		
8	1419.06	=ROUND(SUM(A1:A5),2)		

The ROUND function using a FORMULA that returns a number as its NUMBER argument

Assuming that Cell A1 holds the number 2365.854, using the ROUND formula in the following ways will return:

=ROUND(A1,0) 2366
 =ROUND(A1,1) 2365.9
 =ROUND(A1,2) 2365.85
 =ROUND(A1,3) 2365.854
 =ROUND(A1,-2) 2400

A number can be used as the Number argument e.g: =ROUND (2365.854,-3) would return 2000

ROUNDDOWN Works in the same way as ROUND, however as its name suggests, this function roundsdown.

Syntax: = ROUNDDOWN (number, num_digits)

Examples: Assuming that Cell A1 holds the number 2365.854, using the ROUNDDOWN formula in the following ways will return:

=ROUNDDOWN(A1,0) 2365
 =ROUNDDOWN(A1,1) 2365.8
 =ROUNDDOWN(A1,2) 2365.85
 =ROUNDDOWN(A1,3) 2365.854
 =ROUNDDOWN(A1,-2) 2300

ROUNDUP Works in the same way as ROUND, however as its name suggests, this function roundsup.

Syntax: =ROUNDUP(number,num_digits)

Examples: Assuming that Cell A1 holds the number 2365.854, using the ROUNDUP formula in the following ways will return:

=ROUNDUP(A1,0)	2366
=ROUNDUP(A1,1)	2365.9
=ROUNDUP(A1,2)	2365.86
=ROUNDUP(A1,3)	2365.854
=ROUNDUP(A1,-2)	2400

EVEN Using this function a number can be rounded up to the nearest even integer or down to the nearest even negative integer.

Syntax: =EVEN(number)

Examples:

=EVEN(13.6)	14
=EVEN(16.2)	18
=EVEN(16)	16
=EVEN(-3)	-4

ODD This function rounds a number up to the nearest odd integer or down to the nearest odd negative integer.

Syntax: =ODD(number)

Examples:

=ODD(13.6)	15
=ODD(16.2)	17
=ODD(17)	17
=ODD(-4)	-5

CEILING The CEILING function rounds a number up to the nearest specified multiple. This is a useful function for rounding someone's wages to the nearest 5 cents for example, since 1 and 2 cent pieces have been discontinued.

Syntax: =CEILING(number, multiple)

Examples:

=CEILING(2365.81,.05)	=CEILING(2365.81,-.05)	2365.85	#NUM!
=CEILING(-2365.81,-.05)		-2365.85	

Note: The number argument and the multiple argument must have the same sign or the function will return a #NUM! error.

FLOOR The FLOOR function rounds a number down to the nearest specified multiple.

Syntax: =FLOOR(number, multiple)

Examples:

=FLOOR(2365.81,.05)	=FLOOR(2365.81,-.05)	2365.80	#NUM!
=FLOOR(-2365.81,-.05)		-2365.80	

Note: The number argument and the multiple arguments must have the same sign or the function will return a #NUM!error.

INT The INT function rounds numbers down to the nearest integer.

Syntax: =INT(number)

Example: =INT(2365.80) 2365

TRUNC The TRUNC functions truncates numbers to the right of the decimal point.

Syntax: TRUNC (number, num_digits) *num_digits* is optional

Example:	=TRUNC(2365.8045)	2365
	=TRUNC(2365.8045,2)	2365.80
	=TRUNC(2365.8045,1)	2365.8

LOGICAL FUNCTIONS

The AND, OR and NOT functions, like the IF function, are found under the LOGICAL category of functions available in Excel.

Although they can be used in their own right, these functions are most often found being used to increase the logical comparisons you can make within an IF function.

The AND and OR Functions

Both of these functions can have up to 30 arguments. The difference between them is that:

- with an AND function, all arguments **MUST** be TRUE, to return a TRUE result. Only one comparison needs to be false to make the result FALSE.
- With an OR function, only one of the comparisons needs to be TRUE to return an answer of TRUE.

Example1 (Using the AND function) – Using a Sales Commission example, an employee gets a 10% bonus commission when his sales meets a target (\$1,500) AND he has worked for the company for 2 or more years (2 comparisons). If these comparisons are true he gets the 10% bonus, if he doesn't meet these conditions he gets a 5% bonus as long as he has sales of \$500 or more (another IF function). If sales are less than \$500, the commission is zero.

If we do an OR function using the same example, we would get a different result, What we would be saying is an employee gets a 10% bonus if he reaches the \$1500 target OR he has worked for the company for 2 or more years. Therefore in this case he would get his 10% bonus commission if he only has sales of \$1,000.

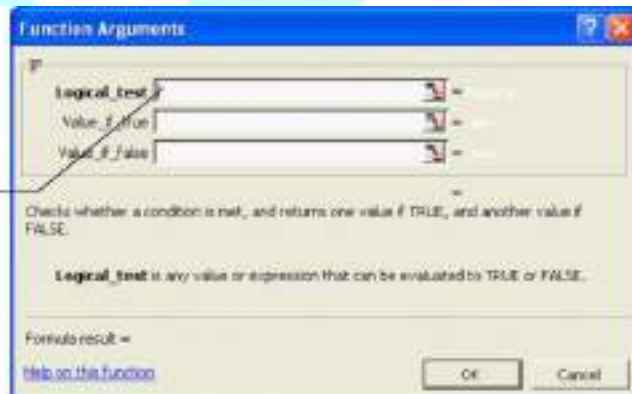
Syntax: =AND(logical1,logical2,.....logical30)
=OR(logical1,logical2,.....logical30)

logical# the comparisons you make, (each to be separated with a comma) upto 30 are allowed as long as it does not exceed 1,024 characters in total.

Creating the AND function within an IF statement

1. Ensure your cursor is in Cell D8. Bring up the IF FUNCTION ARGUMENT dialog box.
2. In a normal IF Function we would be using only one conditional test here. However we have two tests to make so we use the AND function. You have a choice of either manually typing the AND function in the Logical_test dialog box, or using the AND FUNCTION ARGUMENTS dialog box. If using the latter, make sure the cursor is in the Logical_test dialog box then click on the drop down arrow on the Name Box (which should have the word "IF" on it), and select the AND function from the list (go into MORE FUNCTIONS if AND is not in the list).

Step 1 – Make sure your cursor is in the Logical_test dialog box



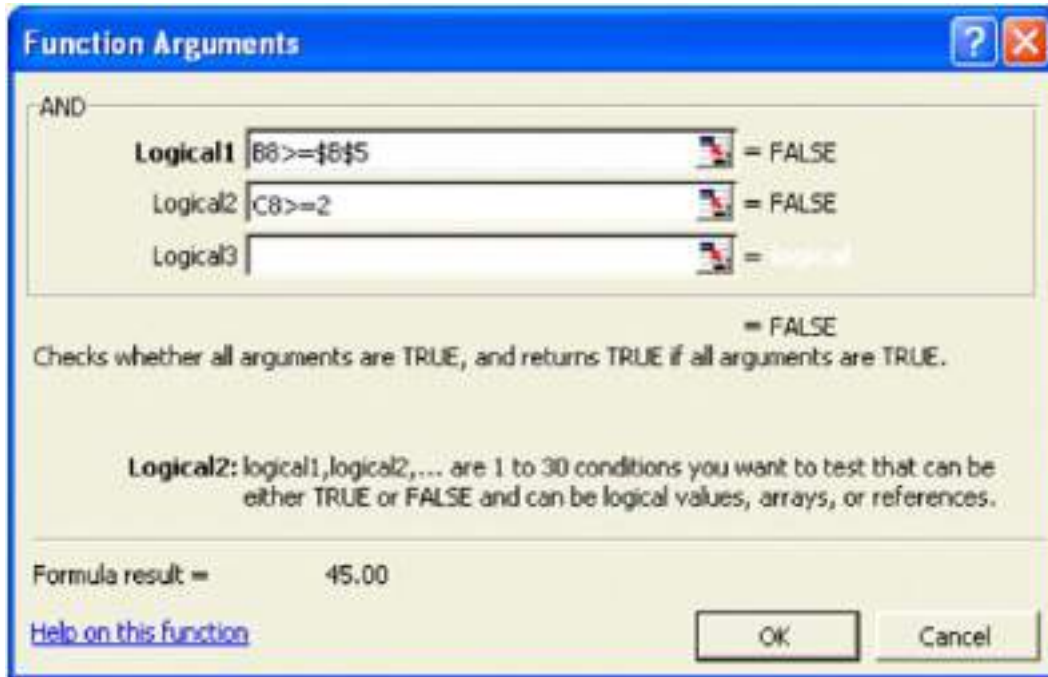
Step 2 - Click on the drop down arrow here

	A	B	C	D	E
4					
5	Sales Target	\$1,500.00			
6					
7	Staff Member	Sales	Service Length (years)	Commission	Total
8	Richards, J	900.00	1	=IF()	900.00
9	Smith, G	1600.00	1		1600.00

Step 3 - Select the AND function from the list or go into "More Functions" if AND is not in the list.

Function
IF
AND
VLOOKUP
SUM
AVERAGE
HYPERLINK
COUNT
MAX
SIN
SUMIF
More Functions...

3. The AND FUNCTION ARGUMENTS window appears. Your cursor should be in the Logical1 dialog box. Click in **B8** (the first sales figure), type in "**>=**" and then click in **B5** (the sales target figure). After clicking in **B5**, press the **F4** key to make **B5** absolute. (If you don't, when you copy the formula down to other rows, **B5** will change to **B6**, then **B7** and so on. This reference must always be talking about the figure in **B5**). Logical1 should now read **B8>=B5**
4. Click in the Logical2 dialog box (notice that Logical3 automatically gets added). The second comparison is now entered. Click in **C8** (the amount of years the staff member has worked for the company), type "**>=**", finally type the number **2**.



5. Click on OK. Excel now believes you have finished the formula and returns you to the worksheet. However there is an error (because the formula has not been finished), the following message will appear.



Click on OK to get rid of the message. To bring the FUNCTION ARGUMENTS dialog window back up, click in the formula bar where the IF function part of the formula is, and then click on the fx button.

	A	B	C	D	E	F
1	AND and NOT Functions					
2						
3	ABC Staff Sales Commission					
4						
5	Sales Target	\$1,500.00				
6						
7	Staff Member	Sales	Service Lenth (years)	Commission	Total	
8	Richards, J	900.00	1	=IF(AND(B8>=\$B\$5,C8>=2))		

Step 1 - Click on the fx button

Step 2 - Click in the "IF" part of the formula

6. The IF FUNCTION ARGUMENTS window will reappear, with the AND function information in the Logical_test dialog box.

NOTE: If you want to manually type in the AND Function, replace Step 2 by typing in the function name, open the brackets and put in the arguments, each separated by a comma. End by closing the brackets. (Don't forget to make the reference to B5 absolute. Go to Step 8 when you have done this. Your value_if_true should read :

AND(B8>=\$B\$5,C8>=2)

7. In the value_if_true dialog box, type in the TRUE result - i.e. click in B8 to select the sales amount then type "***10%**". value_if_true should then read **B8*10%**

Function Arguments

IF

Logical_test: =AND(B8>=\$B\$5,C8>=2) = FALSE

Value_if_true: =B8*10% = 90

Value_if_false: =

= FALSE

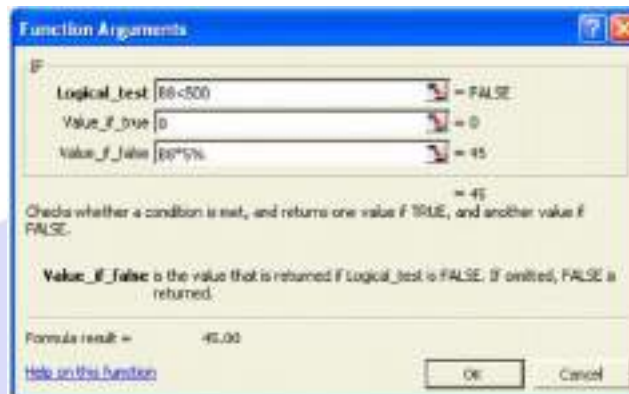
Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

Value_if_true is the value that is returned if Logical_test is TRUE. If omitted, TRUE is returned. You can nest up to seven IF functions.

Formula result = FALSE

[Help on this function](#) OK Cancel

8. The value_if_false is another IF function – to find out **IF** the salesperson has earned \$500 or more. Making sure your cursor is in the value_if_false box, go and request another IF Function. Use the instructions in Step 2 which show you where to click to request another function.
9. Fill in the details as shown below (note that value_if_true is 0 – they get no commission if sales are less than \$500).



10. Click on OK to finish the function. If filling several cells with this formula, use the FILL HANDLE to drag down to the other cells. If you were to manually enter the above formula it would look like:
IF(AND(B8>=\$B\$5,C8>=2),B8*10%,IF(B8<500,0,B8*5%))

Creating the OR function within an IF statement

Repeat all of the above instructions but using the OR function rather than the AND function. Note that the results are different. This is because anyone achieving either of the comparison tests (earning over \$1500 OR having worked for 2 or more years), will earn them a 10% bonus.

The NOT function

The NOT function only has one argument. Again it can be used on its own, but is usually used in conjunction with an IF function. Whereas most of our logical functions return TRUE if the argument is true, and FALSE if the argument is false, the NOT function returns FALSE if the argument is true, and returns TRUE if the argument is false.

Syntax: =NOT(logical)

Example: Using the Pass/Fail of students example, a letter must be sent to the students who failed. To aid in flagging these, a formula is created to put the word "Send" next to those who have failed.

Surname	Christian	Score	Pass/Fail	Letter to student
Richards	Julia	15	Pass	
Smith	Gavin	7	Fail	Send
Brown	Allan	4	Fail	Send
Perkins	Gysell	19	Pass	
Broadhurst	Penelope	16	Pass	
Jenkins	Harry	13	Pass	
Hobby	Margaret	9	Fail	Send
Thiele	Karen	11	Pass	

Create an IF Function and fill in the following details by going and calling in a NOT FUNCTION ARGUMENTS window. Remember that any text you request must be enclosed in quotation marks.

1. Click on OK to finish the function. If filling several cells with this formula, use the FILL HANDLE to drag down to the other cells.

If you were to manually enter the above formula it would look like: `=IF(NOT(D21="Pass"),"Send", "")`

IF FUNCTION

The IF function is located in the LOGICAL category of functions in Excel. Its job is to do a conditional test on criteria that return different answers depending on whether the results of the test are true or false.

The conditional test can be made on values, text or on formulas

Example1: A typical example is that of a lecturer giving a PASS to a student having a score of 10 or more in an exam, and a FAIL if they have a score less than 10. The logical test is to find out what their score is, then return a PASS or FAIL depending on the outcome of the test.

Example2: Staff in a hardware store receives 5% commission if they achieve budget. The logical test is to find out whether they have achieved budget and then give them 5% commission if they have, no commission if they haven't.

Syntax: **If (Logical test, value if true, value if false)** logical test is the test performed on a value or expression. The result of the test must be able to be evaluated to TRUE or FALSE. The logical test uses comparison calculation operators e.g:

= equal to
> greater than
< less than
>= greater than or equal to
<= less than or equal to
<> not equal to

Julia Richards has a score of 15 in her exam, the logical test would be to find out if C6 is greater than or equal to 10 (shown as **C6>=10**). In this case, the answer would be TRUE, cell C6 is greater than 10. Julia Richards will get a PASS.

	A	B	C	D	E
1	IF Function & Nested IF State				
2	Use the IF function to calculate the answers required.				
3					
4					
5	Surname	Christian	Score	Pass/Fail	Grade
6	Richards	Julia	15		
7	Smith	Gavin	7		
8	Brown	Allan	4		

The logical test would be to find out if the cells in column B are greater than the sales target found in cell B21. The logical test is to find out if B25 is greater than or equal to the amount found in cell B21 (**B25>=B\$21**). It isn't greater so the answer would be FALSE. (Note how B21 has been made absolute so that when the formula is copied down, each line will refer to the amount in B21). The first staff member has not reached or equaled the sales target and therefore will not get the 5% commission.

19	ABC Staff Sales Commission			
20				
21	Sales Target	\$ 1,500.00		
22				
23				
24	Staff Member	Sales	Commission	Total
25	Richards, J	900.00		900.00
26	Smith, G	1600.00		1600.00

value_if_true is one of the values that can be returned from the logical test.

If you want the answer to be "True", then the text "TRUE" would be used (can be lower or upper case). Any text can be used, just make sure it is enclosed in quotation marks ("text to be returned").

If you want the answer to be nothing, leave the argument blank or type "". (In Excel text expressions are enclosed within quotation marks).

You can use another formula if the answer is true i.e. sum figures or multiply by an amount.

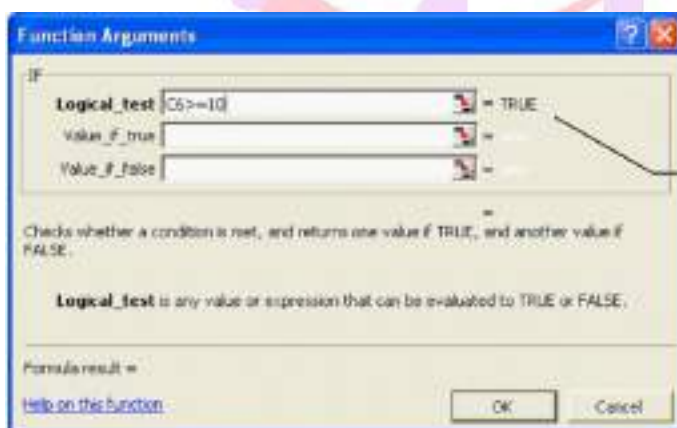
value_if_false is the other value that can be returned from the logical test. The same arguments as for **value_if_true** are used except if you want "False" to be returned, type the text "FALSE".

Creating the IF Function - Example 1

Use the IF function to work out whether students have a Pass or Fail (P or F).

1. Place your cursor in the cell where the result will be

IF FUNCTION ARGUMENTS dialog box showing on your Excel worksheet.



Message showing current result of your logical test



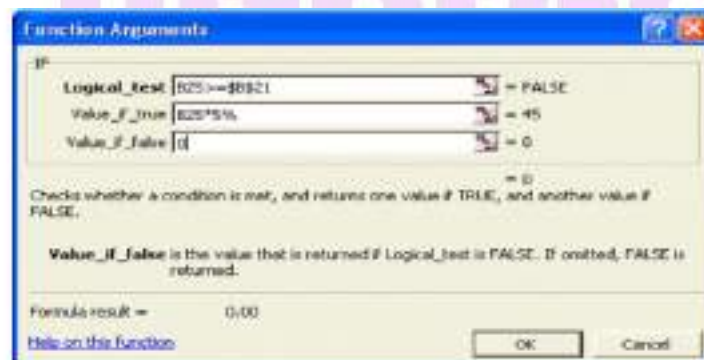
Results that will be used after the logical test has been completed.

3. The Logical_test is where you put your argument – which must return an answer of true or false. In the above figure we refer to Julia Richards' exam result in C6 and ask if it is greater than or equal to 10. Note the "TRUE" message.
4. value_if_true – Type the word "Pass" (If using the Function Wizard the quotation marks are automatically typed in for you). Note the result at the right-hand side of the dialog window. This is the result you will get if the argument is TRUE.
5. value_if_false – Type the word "Fail". This is the result you will get if the argument is FALSE.
6. Click on OK to finish the function. If filling several cells with this formula, use the FILL HANDLE to drag down to the other cells.

The arguments are not always text, it can be another formula or a value, or if a null (no result) is required, nothing (or ""). i.e. nothing between the quotation marks).

Creating the IF Function – Example 2

The second example – using sales commission, requires a formula to be used.



In this case the Logical_test is asking if the value in B25 (on the IF FUNCTIONS worksheet) is greater than or equal to B21 (the target the sales people have to achieve in order to get any commission, note that this reference is Absolute).

The value_if_true is saying if the target is achieved; multiply the amount by 5%. The value_if_false is saying if the target is not achieved, give 0 commission.

Manually Creating an IF Function

Once you are confident with IF functions you may decide to type the formula rather than use the FUNCTION ARGUMENT dialog box. Just remember:

- To use = IF as the function
 - In side the parenthesis (brackets) you have 3 argument which MUST be separated by commas(,)
 - If you require a result to be text, the text must be closed inside quotation marks e.g. "Pass" or "Fail" or "" (the latter is to have no text appear)).
- =IF(B25>=B21,B25*5%,0)
or
=IF(B25>=B21,B25*5%, "")

NESTED IF FUNCTION

Occasionally a single IF statement may not be enough to give you the results you are looking for. The traditional example of this is taking the student example. In the figure below, Column D is the normal IF function which finds out whether the student has passed or failed. Column E, however, is asking what grade the student is to receive based on the following table:

The normal IF Function will not give you the required result. You need more than one IF function to complete the job - you can do this with a NESTED IF FUNCTION i.e. more than one IF Function, one inside the other (you are allowed up to 7 nested functions).

A	=	17-20
B	=	14-16
C	=	11-13
D	=	8-10
E	=	7 or below

IF Function & Nested IF Statement					
Use the IF function to calculate the answers required					
	Surname	Christian	Score	Pass/Fail	Grade
6	Richards	Jula	15	Pass	
7	Smith	Gavin	7	Fail	
8	Brown	Alan	4	Fail	
9	Perkins	Gysel	19	Pass	
10	Broadhurst	Penelope	16	Pass	
11	Jenkins	Harry	13	Pass	
12	Hobby	Margaret	9	Fail	
13	Thiele	Karen	11	Pass	

Put in simple terms, our nested IF statement is going to be:

First IF statement:

Logical test - see if C6 has a value of 7 or below (C6<=7)

If true- Give an "E" grade

If false- see IF C6 has a value of 10 or below to work out whether this student should have a "D" grade - this will lead to the second IF statement

Second IF statement:

Logical test – see if C6 has a value of 10 or below ($C6 \leq 10$)

If true– Give a “D” grade

If false– see IF C6 has a value of 13 or below to work out whether they should get a “C” grade – this leads to the third IF statement

Third IF statement:

Logical test – see if C6 has a value of 13 or below ($C6 \leq 13$)

If true– Give a “C” grade

If false– see IF C6 is a value of 16 or below to work out whether they should get a “B” grade – this leads to the fourth (and last) IF statement

Fourth IF statement:

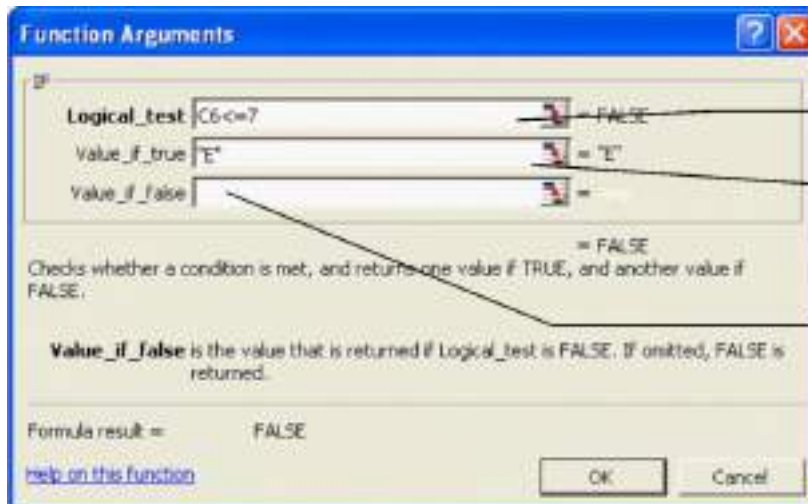
Logical test – see if C6 is a value of 16 or below ($C6 \leq 16$)

If true– Give a “B” grade

If false – it must be true that C6 is between 17 and 20 as there are no other possible marks left. Therefore “A” should be entered here to indicate the top grade possible.

Each statement above has a logical test, then a value_if_true, then a value_if_false. The step by step instructions, using the FUNCTION ARGUMENT dialog box and the scenario about a student’s grades as an example are:

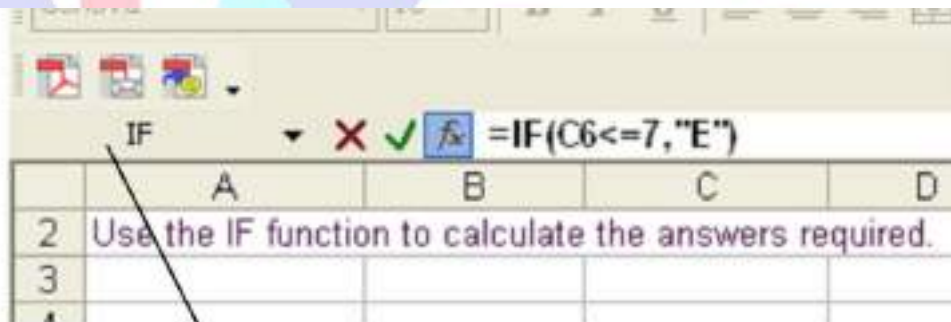
1. Ensure your cursor is in Cell E6. Call up the IF FUNCTION ARGUMENT dialog box.
2. Put in the first logical test (point and click on Cell C6 then type ≤ 7) and the Value_if_true result (the student would get an “E” if true).



1. Fill in the first two dialogboxes

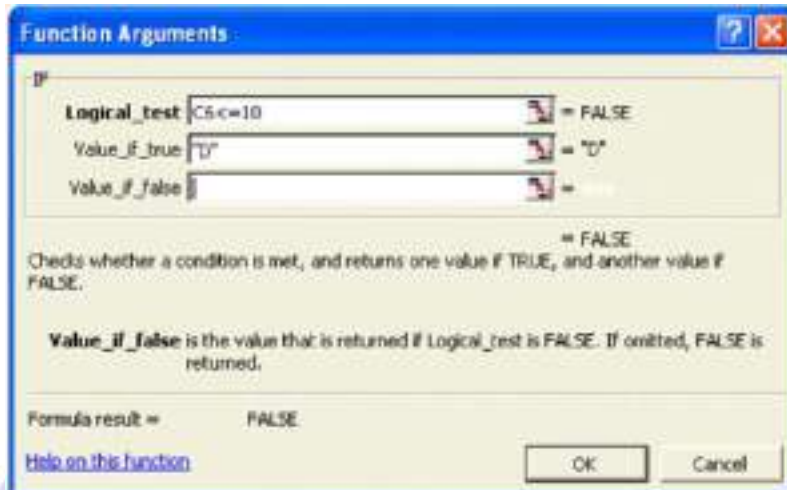
2. Then click in the "Value_if_false" dialogbox

3. Make sure your cursor is in the "Value_if_false" dialog box. Now click on the IF function in the name box to bring up a brand new FUNCTION ARGUMENTS dialog box.

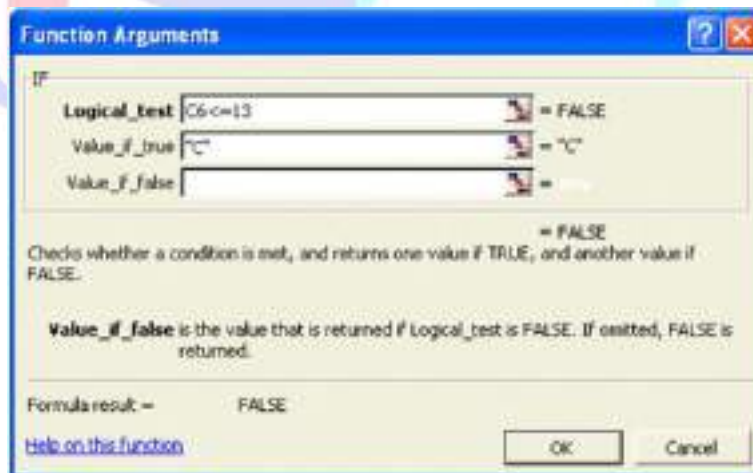


Click on the IF function to create a new FUNCTIONS ARGUMENT dialog box

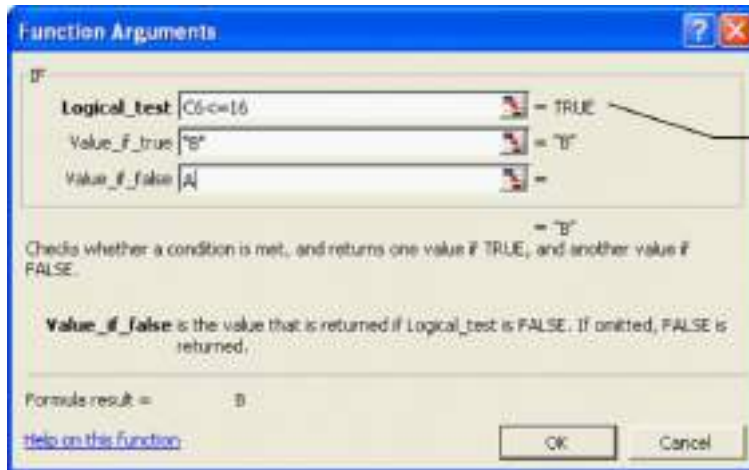
4. In the new FUNCTION ARGUMENTS dialog box, type in the next argument, and the Value_if_true result (see if the student has a mark of 10 or less, and if so give them a "D").



5. Repeat Step 3
6. Repeat Step 4 but this time the logical test is to see if the student has a mark of 13 or less. If it is TRUE, they will get a "C"



Repeat Step 3 to bring up a final FUNCTION ARGUMENTS dialog box. This is the only tricky part, knowing when to stop asking for more new arguments. Here the final logical test is entered (C6<=16). Notice that the result of this argument is TRUE. The value_if_true is a mark of B. The value_if_false must therefore be some-one who has more than 16 marks and gets an "A".



This argument is TRUE

7. Click on OK to finish the function. If filling several cells with this formula, use the FILL HANDLE to drag down to the other cells.

If you were to manually type the above formula it would look like:

```
=IF(C6<=7,"E",IF(C6<=10,"D",IF(C6<=13,"C",IF(C6<=16,"B","A"))))
```

As you can see it looks a little complex, just remember that you must have the right amount of parenthesis in the right order, and commas separating the arguments. Usually this sort of formula is easier to create using the FUNCTION ARGUMENTS dialog boxes.

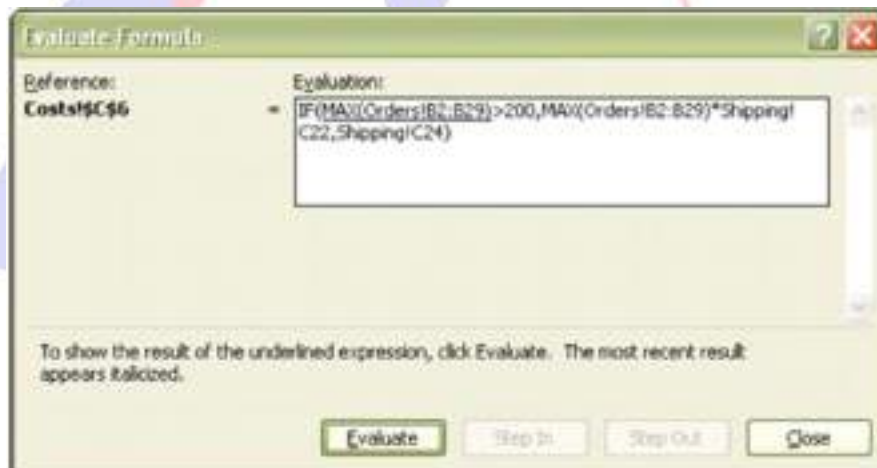
infotech

EVALUATING AND CHECKING ERRORS

The Evaluate Formula dialog box in Excel walks you through the steps used in calculating a result from a formula. This helps locate errors in formulas that are long, or have precedents. For example, the formula = IF (MAX (Orders!B2:B29) > 200, MAX (Orders!B2:B29)* Shipping!C22,Shipping!C24) refers to different worksheets. Using the Evaluate Formula dialog box makes it easy to see how this formula is worked out by Excel. The step-by-step approach lets you see what is done at each step.

EVALUATING FORMULAS

Follow these steps to evaluate a formula using the Evaluate Formula dialog box: Select the cell containing the formula and click the Evaluate Formula button on the Formulas tab of the Ribbon. The Evaluate Formula dialog box appears.



USING THE EVALUATE FORMULA DIALOG BOX TO ASSESS A FORMULA

Click the Evaluate button one or more times to evaluate each expression in the formula. With each successive click on the Evaluate button, the Evaluation box displays the interim results. The Step In and Step Out buttons are enabled during the steps that work on the precedents.

CHECKING ERRORS

A similar error-hunting tool is the Error Checking dialog box. To use this tool, follow these steps:

Select the cell containing the formula and click the Error Checking button on the Formulas tab. The Error Checking dialog box appears.



CHECKING THE CAUSE OF AN ERROR

Click any of the following buttons to help analyze the error and make decisions about how to correct it:

- **Help on This Error** starts the Excel Help system.
- **Show Calculation Steps** opens the Evaluate Formula dialog box.
- **Ignore Error** ensures that Excel no longer cares about the error. The cell may still display an error symbol, but Excel doesn't give a hoot, and probably you won't either, since you clicked the button.
- **Edit in the Formula Bar** places the cursor in the Formula Bar, making it easy for you to edit the formula.
- **Options** open the Excel Options dialog box.
- **Previous and Next** cycle through the multiple errors on the worksheet, assuming there is more than one error.

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SORTING AND FILTERING

Excel's sorting and filtering functions range from very simple sorts to being able to filter out unwanted data in large lists of information. Lists typed into an Excel worksheet are often used as a data source for creating merge documents in Word, or for exporting to other databases such as Microsoft Access.

If you are creating a list that is intended for using with a merge document, the information you type is organized into fields (columns) and records (rows). The fields (the headings of each column known as the header row), must be one word i.e. "Firstname" or "First_Name" is more correct than "First Name".

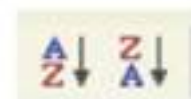
A list, unlike normal worksheet data, must not have entire blank rows or columns. However if information from a record is missing, a cell can be left blank.

Once a list is created, it becomes easy to sort and filter the information. It can also be used to create pivot tables

The Excel worksheet, Sorting and Filtering, has been set up to make practicing the following sorting and filtering methods more convenient.

Simple Sorts

Select any cell in the column that needs sorting, then use the SORT ASCENDING or SORT DESCENDING icons on the formatting toolbar.



Do not highlight the column to be sorted. If you do, only that column will sort, the rest of the data will remain static.

Sorting on more than one criteria (DATA, SORT)

The DATA, SORT option is used if you wish to sort on more than one criteria. For example, you may wish to have a sort done on surname, then if there is more than one surname the same, sort on the first name, then the city the person comes from. You can have up to three selections using the DATA, SORT option.

1. Select any cell within the list – this will help Excel to select the correct range of cells to be sorted.
2. Click on DATA, SORT. The SORT dialog box will open.
3. If your list has a header row, make sure this option is selected. Doing this makes the field names appear in the field names drop down text boxes.
4. Select which field names are to be sorted, specifying each time whether the sort is to be in ascending or descending order.
5. Click on OK



Filtering Data

Filtered lists allow you to view only the specified data. This data can then be copied, printed etc.

Example1: From your list you require a list of all males living in NSW

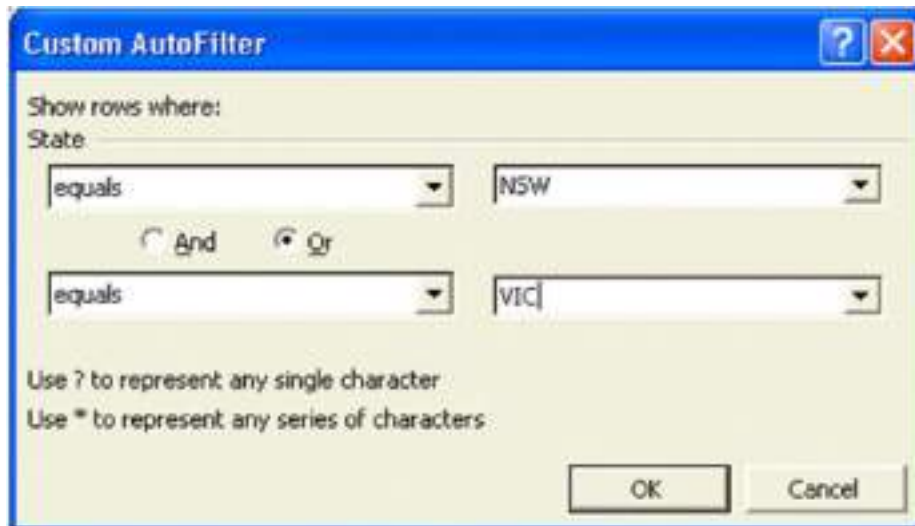
1. Click on DATA, FILTER,AUTOFILTER
2. Drop down arrows appear next to each heading in the list.
 - i. Click on the drop down arrow next to "GENDER" and select "Male"
 - ii. Click on the drop down arrow next to "STATE" and select "NSW"

- Notice that the drop down arrow on both of these fields have turned blue. This is to show that these particular fields have had filters applied.
- To return each of the columns information back to normal, click on the dropdown arrow and select "ALL"

If you have many columns to restore, it is quicker to click on DATA, FILTER, SHOW ALL

Example2: You need a report listing everybody who lives in VIC or NSW, and was born before 1 January 1985.

1. Click on DATA, FILTER,AUTOFILTER
2. Select the drop down arrow next to "STATE" and select CUSTOM
3. Fill in the CUSTOM AUTOFILTER dialog box the same as the following screenshot (make sure you select the OR option, this makes sure you are left with everyone who lives in NSW or VIC)



4. Click on OK
5. Select the drop down arrow next to "DOB" and select CUSTOM
6. Fill in the CUSTOM AUTO FILTER dialogbox



Turning AUTOFILTER off

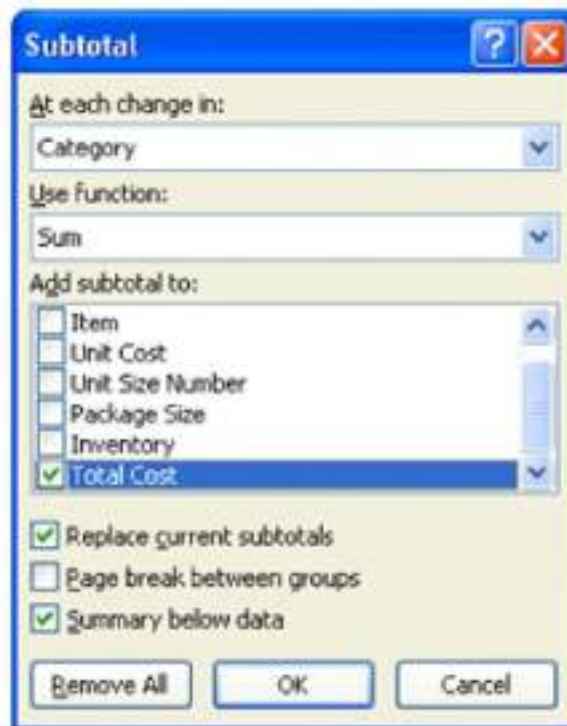
When you have finished filtering your data, click on DATA, FILTER, AUTOFILTER (there should be a tick next to AUTOFILTER, clicking on this 'unticks' the option).

GROUPING CELLS USING THE SUBTOTAL COMMAND

Grouping is a useful Excel feature that gives you control over how the information is displayed. You must **sort before you can group**. In this section, we will learn how to create groups using the Subtotal command.

To create groups with subtotals:

- Select any cell with information in it.
- Click the **Subtotal** command on the **Data** tab. The information in your spreadsheet is automatically selected, and the Subtotal dialog box appears.

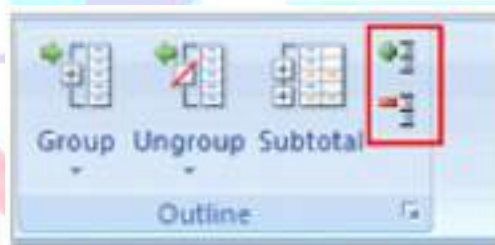


- Decide how you want things grouped. In this example, we will organize by **Category**.
 - Select a **function**. In this example, we will leave the SUM function selected.
 - Select the column where you want the Subtotal to appear. In this example, Total Cost is selected by default.
 - Click **OK**. The selected cells are organized into **groups with subtotals**.
-

	A	B	C	D	E	F	G
1	Category	Item	Unit Cost	Unit Size	Number	Package Size	Inventory Total Cost
2	Bowl	Small Icecream	\$ 20.00		160	ct./case	1 \$ 20.00
3	Bowl	Regular Icecream	\$ 20.00		144	ct./case	1 \$ 20.00
4	Bowl Total						\$ 40.00
5	Cone	Small Sugar	\$ 13.55		200	ct./case	4 \$ 54.20
6	Cone	Large Sugar	\$ 17.00		200	ct./case	4 \$ 68.00
7	Cone	Large Waffle	\$ 43.55		193	ct./case	1 \$ 43.55
8	Cone	Small Waffle	\$ 46.00		264	ct./case	2 \$ 92.00
9	Cone	Sm. Chocolate Waffle	\$ 89.00		140	ct./case	2 \$ 178.00
10	Cone	Lg. Chocolate Waffle	\$ 95.00		128	ct./case	3 \$ 285.00
11	Cone Total						\$ 720.75
12	Cup	Small Shake	\$ 38.00		120	ct./case	2 \$ 76.00
13	Cup	Regular Shake	\$ 40.00		120	ct./case	4 \$ 160.00
14	Cup Total						\$ 236.00
15	Flavor	Bubblegum	\$ 15.75		2.5	gallon tub	2 \$ 31.50

To collapse or display the group:

- Click the **black minus sign**, which is the **hide detail icon**, to **collapse** the group.
- Click the **black plus sign**, which is the **show detail icon**, to **expand** the group.
- Use the **Show Details** and **Hide Details** commands in the Outline group to collapse and display the group as well.



To ungroup select cells:

- Select the cells you want to **remove** from the group.
- Click the **Ungroup** command.
- Select **Ungroup** from the list. A dialog box will appear.
- Click **OK**.

To ungroup the entire worksheet:

- Select all cells with grouping.
- Click **Clear Outline** from the menu.

PIVOT TABLE

Use a Pivot Table report to summarize, analyze, explore, and present summary data. Use a Pivot Chart report to visualize this summary data in a Pivot Table report, and to easily see comparisons, patterns, and trends. Both a Pivot Table report and a Pivot Chart report enable you to make informed decisions about critical data in your enterprise. The following sections provide an overview of Pivot Table reports and Pivot Chart reports

Pivot tables are one of Excel's most powerful features. A pivot table allows you to extract the significance from a large, detailed data set.

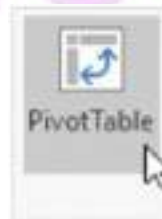
Our data set consists of 213 records and 6 fields. Order ID, Product, Category, Amount, Date and Country.

	A	B	C	D	E	F	G	H
1	Order ID	Product	Category	Amount	Date	Country		
2	1	Carrots	Vegetables	\$4,270	1/6/2016	United States		
3	2	Broccoli	Vegetables	\$8,239	1/7/2016	United Kingdom		
4	3	Banana	Fruit	\$517	1/8/2016	United States		
5	4	Banana	Fruit	\$8,384	1/10/2016	Canada		
6	5	Beans	Vegetables	\$2,626	1/10/2016	Germany		
7	6	Orange	Fruit	\$3,610	1/11/2016	United States		
8	7	Broccoli	Vegetables	\$9,062	1/11/2016	Australia		
9	8	Banana	Fruit	\$6,906	1/16/2016	New Zealand		
10	9	Apple	Fruit	\$2,417	1/16/2016	France		
11	10	Apple	Fruit	\$7,431	1/16/2016	Canada		

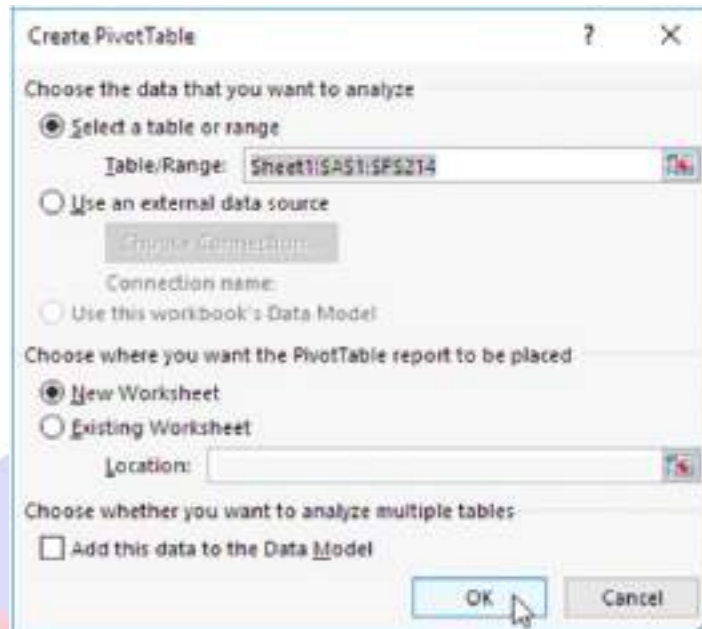
Insert a Pivot Table

To insert a pivot table, execute the following steps.

1. Click any single cell inside the data set.
2. On the Insert tab, in the Tables group, click Pivot Table.



The following dialog box appears. Excel automatically selects the data for you. The default location for a new pivot table is New Worksheet.



1. Click OK.

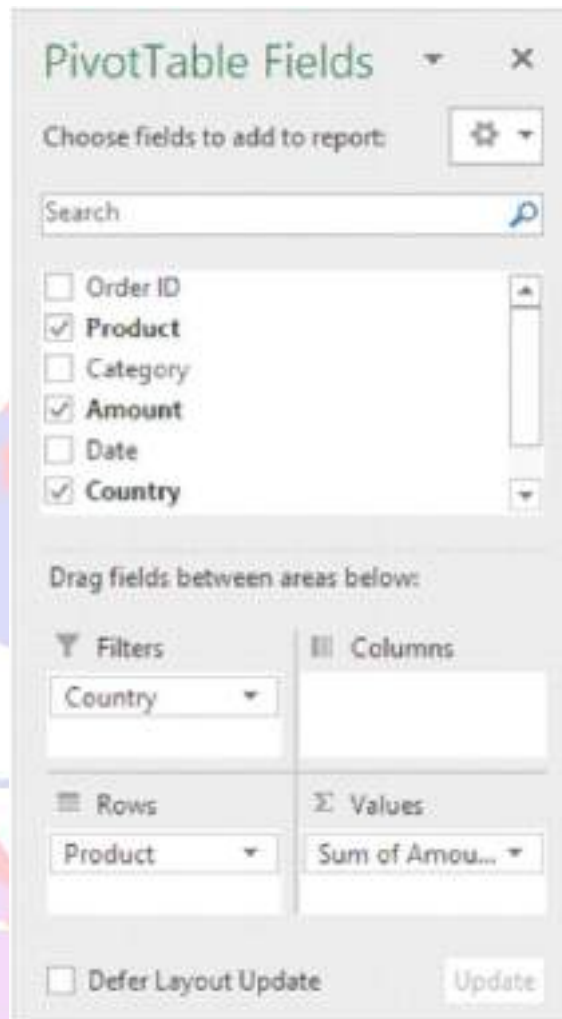
Drag fields

The PivotTable Fields pane appears. To get the total amount exported of each product, drag the following fields to the different areas.

1. Product field to the Rows area.
2. Amount field to the Values area.
3. Country field to the Filters area.

	A	B	C
1	Country	(All)	-
2			
3	Row Labels	Sum of Amount	
4	Apple	191257	
5	Banana	340295	
6	Beans	57281	
7	Broccoli	142439	
8	Carrots	138945	
9	Mango	57078	
10	Orange	104438	
11	Grand Total	1029734	
12			

Below you can find the pivot table. Bananas are our main export product. That's how easy pivot tables can be!

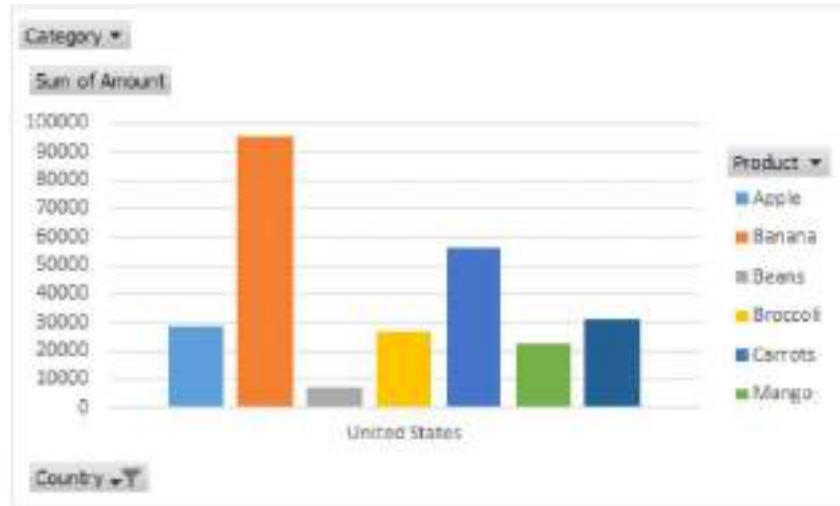


Two-dimensional Pivot Table

If you drag a field to the Rows area and Columns area, you can create a two-dimensional pivot table. First, insert a pivot table. Next, to get the total amount exported to each country, of each product, drag the following fields to the different areas.

1. Country field to the Rows area.
2. Product field to the Columns area.
3. Amount field to the Values area.
4. Category field to the Filters area.

To easily compare these numbers, create a pivot chart and apply a filter.



MACROS

Introduction

A macro is a recording of actions to automate tasks that are tedious or you do frequently. Some examples:

- A macro to open a document you use everyday;
- A macro to add the months of the year across a row, centering and bolding the names of the month;
- A macro to select a group of cells;
- A macro to find out which cells have Conditional Formatting;
- A macro to setup a worksheet in a certain way and then print the worksheet. Excel provides some useful tools to help beginners to use macros and to start achieving results straight away without having to learn much about Visual Basic for Applications.

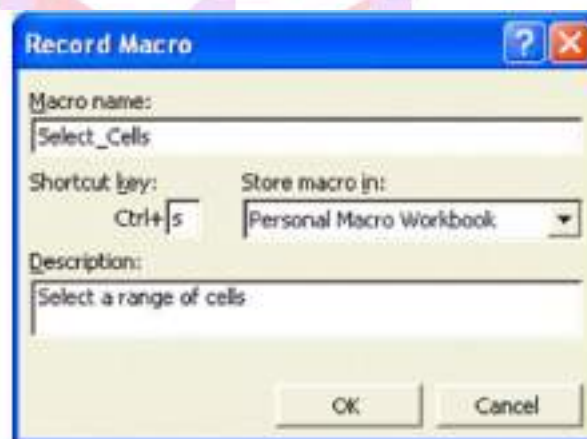
The following notes show how to:

- record a simple macro
- toggle between absolute and relative references when recording
- place a macro (assign a macro) on a tool bar icon
- assign a macro to a button on a worksheet so it is only available to that worksheet
- delete macros

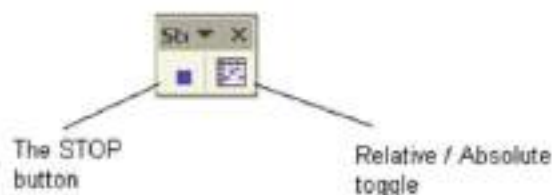
Recording a macro

These are instructions for recording a simple macro - selecting a range of cells you need to enter data into on a regular basis.

Select TOOLS, MACRO, RECORD NEW MACRO. The RECORD MACRO dialogbox will appear.



2. In the MACRO NAME text box, type a name for your macro. Macro names cannot include spaces – an underscore is a good way to separate words. Do not use a cell address in the name as this will cause an error. Also, you may not use names of commands that already exist, e.g. Close. We have used **Select Cells** for our example.
3. You may wish to give the macro a keyboard shortcut (which is typed in the SHORTCUT KEY text box). You can have a lower case or upper case letter. If you use a shortcut that is already assigned to another function (i.e. CTRL + B has already been assigned to BOLD), you will overwrite that shortcut whilst the workbook that is storing the macro is open.
4. Decide where to store the macro. This information gets entered in the STORE MACRO IN textbox:
 - Personal Macro Workbook – a workbook that is usually hidden from view, a macro stored here will be available everytime you use Excel, no matter which workbook or worksheet.
 - This Workbook – the current workbook. Useful if the macro you are going to record is only to be available when you are using this workbook.
 - New Workbook – Will open a new workbook where you can store the macro. You might do this because you want to have a similar macro workbook like the Personal Macro workbook – although unlike the Personal Macro workbook, this one will not open automatically. If you want to use the macros stored in this new workbook, you would have to physically open it first.
5. If desired, fill in a brief description in the DESCRIPTION text box – this is for your information only.
6. Click on OK to start the recording process. You will be placed back in the main worksheet. A STOP RECORDING toolbar should appear (if not, click on VIEW, TOOLBARS, STOP RECORDING). This toolbar has two icons. An icon to stop the recording and one to toggle between recording relative or absolute addresses



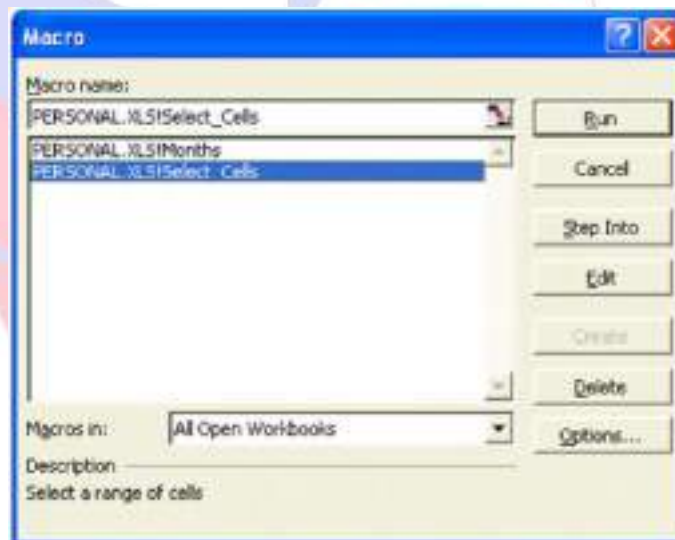
The Macro Recorder is active at this stage. The Macro Recorder records all keystrokes and commands that you use, so now is the time to be careful as any mistakes you may make will also be recorded.

7. Enter data as normal. For our example, select a range of cells e.g.F1:G12.
8. Click on the STOP button to stop recording or alternatively, click on TOOLS, MACRO, STOP RECORDING.

Running a Macro

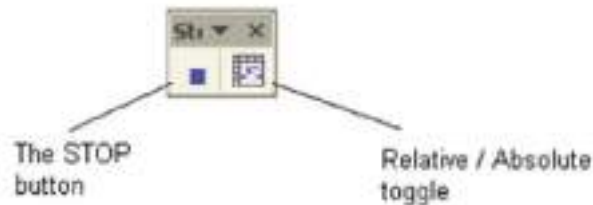
The computer terminology for playing a macro is "Run". To run a macro you can use any one of the methods following:

1. Click on TOOLS, MACRO, MACROS (or use the keyboard shortcut ALT + F8), select your macro from the list.
2. Click on RUN;
3. Use the shortcut key if you created one (our example is CTRL + s);
4. Use an icon on the toolbar if one has been created for the macro or
5. Use a button on the worksheet if one has been created



Absolute vs Relative

If you followed the example above, run the macro a couple of times from different locations. For example, place your cursor in **A1** and run the macro – it will select cells **F1:G12**. Place your cursor in **H12** and run the macro. It will still select the cells **F1:G12**. This is because the macro you created recorded ABSOLUTE cell references – the default way of recording. If you want to select a range of cells relative to where your cursor is at the time of recording, ensure you click on the Relative / Absolute icon on the Macro toolbar before commencing to record.



Assigning buttons to macros

Macros can be assigned to buttons or any AutoShape on the worksheet. These buttons will only show on the worksheet that you assign it to and therefore the macro will only be available to the worksheet the button is on. To assign a button:

1. Make sure the FORMS toolbar is showing (right click mouse over a toolbar that is already showing and select FORMS from the list, or VIEW, TOOLBARS, FORMS)
2. Select the BUTTON shape from the toolbar. Once you have clicked on the shape, go into the worksheet and click and drag the mouse until the desired size of the button is achieved (this can be edited later if necessary).
3. The ASSIGN MACRO window will immediately appear. Select the macro being assigned to the button from the list. Click on OK. You will be returned to the Excel worksheet where you will see your button with sizing handles around it. You can change the text inside the button by dragging over the text and retyping.



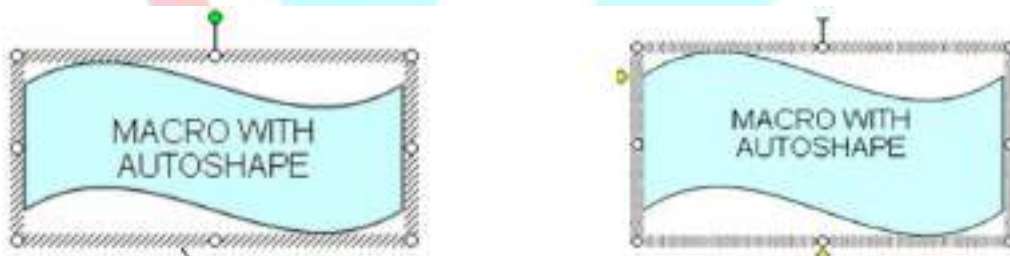
Sizing handles
(used for
resizing object)

- a) To resize, hold mouse over a sizing handle and drag in or out
 - b) To retype label drag over text, then type. If the button is not selected, select it by:
 - Holding down CTRL key and clicking on the button;or
 - Click on the button with Right Mouse button and select EDITTEXT.

Do not use left mouse button to select the button as this runs the macro.
 - c) To move the button, click and drag on the frame surrounding the button, avoid dragging on the sizing handles.
5. Once you click away from the button you have created, it becomes active and will run the macro assigned to it when clicked on.

Assigning the macro to an AutoShape

1. Draw an AutoShape on your worksheet.
2. Format the AutoShape in any way you like e.g. borders and patterns.
3. Add descriptive text to the AutoShape (right Mouse click on the AutoShape and select ADDTEXT)
4. Right mouse click on the AutoShape and select ASSIGN MACRO (if Assign Macro is not available try clicking on the frame surrounding the Auto Shape again, it should be made up of tiny dots, not diagonal lines).



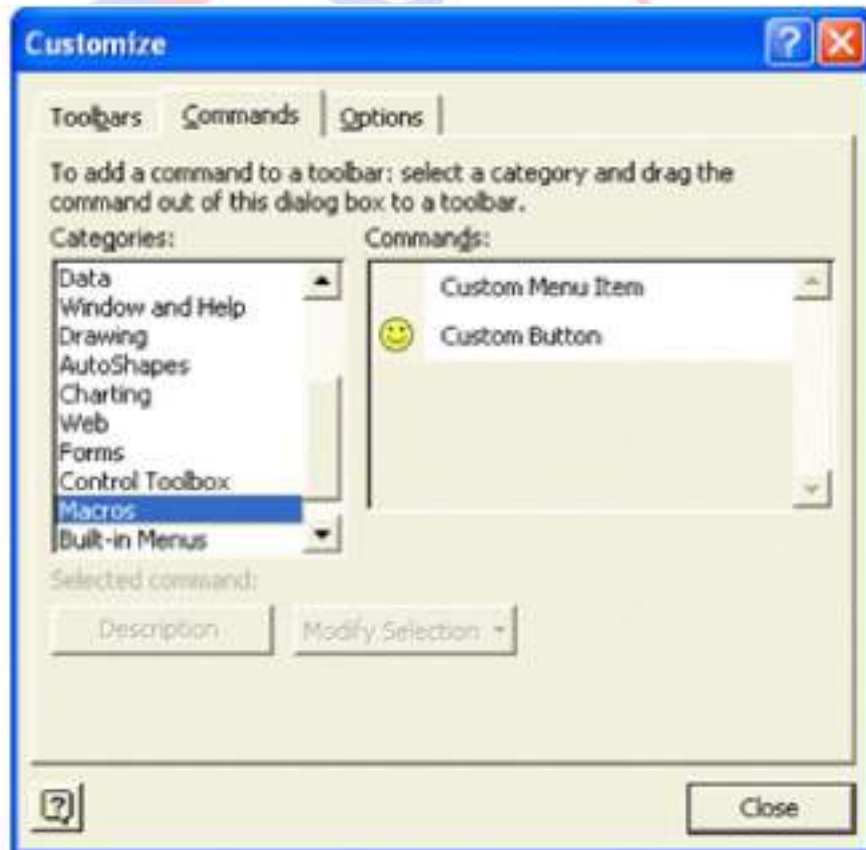
If the frame surrounding the object is made up of diagonal lines, click on the frame again so that it is made up of tiny dots. "Assign Macro" will then be active in the shortcut menu

5. The ASSIGN MACRO window will immediately appear. Select the macro being assigned to the AutoShape from the list. Click on OK.
6. When you deselect the AutoShape, it becomes active and will run the macro assigned to it when clicked on.

Assigning a macro to an icon on a Toolbar

Macros can be assigned to icons on an existing toolbar or on a new toolbar. This macro will be available whenever you open a worksheet showing that toolbar.

1. Use either the VIEW, TOOLBARS, CUSTOMIZE command or click on any toolbar with the right mouse button and select the CUSTOMIZE option. The CUSTOMIZE dialog box will appear.
2. Choose the COMMANDS index card and select MACROS from the CATEGORIES listing textbox.



3. Click on the CUSTOM BUTTON (the smiley face) in the COMMANDS window and drag and drop this icon on to the desired toolbar, in the desired location.
4. Click with the Right mouse button on the icon you have just put on the toolbar and select the ASSIGN MACRO option from the shortcut menu. Select your macro from the list.
5. Optional – to change the button image, make sure the CUSTOMIZE dialog box is still on the screen, then use the Right Mouse button over the icon you want to change, choose CHANGE BUTTON IMAGE from the menu. Choose a new icon.
6. Close the CUSTOMIZE dialogue box.

Viewing the Macro

1. Once you have recorded your macro you may view it by Selecting TOOLS, MACRO, MACROS. The Macro Dialogue box will appear.
2. Select your macro from the list and then click on the EDIT button

Deleting a Macro

1. Open the TOOLS, MACRO, MACROS dialogbox.
2. Select the macro to be deleted, then click on the DELETE button.

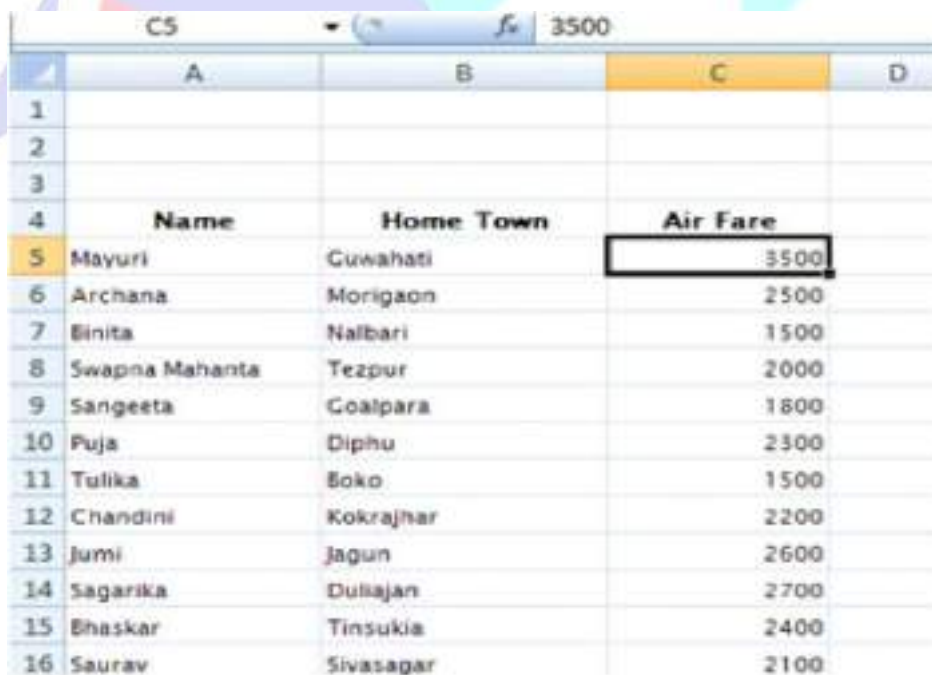
infotech

LOOKUP TABLES

The functions VLOOKUP and HLOOKUP enter information into a spreadsheet from a table made up of possible values. The result can be a value or text. The advantages of using VLOOKUP and HLOOKUP are:

- They avoid the need for repetitious data;
- Cuts down on the possibility of entering data incorrectly; and
- Allows automatic updating of entries by changing the values in the look up table.

Example: Imagine having to workout staff allowances for 100 staff, each entitled to turn airfare to their home town each year. If you enter a value next to each staff member for the price of the airfare, and the airfares change (as they do), you would have to change each value every time the airfares changes. By using VLOOKUP, only the airfares in the lookup table are updated.



The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1				
2				
3				
4	Name	Home Town	Air Fare	
5	Mayuri	Guwahati	3500	
6	Archana	Morigaon	2500	
7	Binita	Nalbari	1500	
8	Swapna Mahanta	Tezpur	2000	
9	Sangeeta	Goalpara	1800	
10	Puja	Diphu	2300	
11	Tulika	Boko	1500	
12	Chandini	Kokrajhar	2200	
13	Jumi	Jagun	2600	
14	Sagarika	Duliajan	2700	
15	Bhaskar	Tinsukia	2400	
16	Saurav	Sivasagar	2100	

Figure 1 – Airfares entered manually

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4		Name	Home Town	Air Fare			Home Town	Air Fare	
5		Mayuri	Guwahati	3100			Soko	1500	
6		Archana	Morigaon	2500			Diphu	2900	
7		Binta	Nalbari	1500			Dulajon	2700	
8		Swarna Mahanta	Tezpur	2000			Goalgara	1800	
9		Sangruti	Goalgara	1800			Guwahati	3500	
10		Puja	Daha	2300			Jagan	2500	
11		Talika	Soko	1500			Kokrajhar	2200	
12		Chandini	Kokrajhar	2200			Morigaon	2500	
13		Jumi	Jagan	2500			Nalbari	1500	
14		Sagarika	Dulajon	2700			Sivasagar	2100	
15		Bhaskar	Timuka	2400			Tezpur	2000	
16		Saurav	Sivasagar	2100			Timuka	2400	

Figure 2 – Airfares using a VLOOKUP formula – if the airfares change then only the amounts in column H will be changed – the amounts in column C will update automatically.

VLOOKUP function (see Figure 2), looks up a value from the LEFT most column of a table. This function is used when your data is arranged in columns.

HLOOKUP function looks up a value from the top row of a table. HLOOKUP is used when your table is arranged in rows.

Syntax:

VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)

HLOOKUP(lookup_value,table_array,row_index_num,range_lookup)

The bold part of the formula above is required, the last bit is optional. lookup_value refers to a cell in the main part of your worksheet whose information also appears in the first column (or row if using HLOOKUP) of your table. Using Figure 2 as an example, the lookup value for the first staff member is cell **B5** (Guwahati). This information is also found in the first column of the Lookup table (the table you are going to refer to, to get the amount of the airfare).

The lookup value can be text, a value or a cell reference. table_array refers to the reference table from which you are going to get information. When referring to this

table you should refer to an ABSOLUTE range (in Figure 2 the table's range is **\$G\$5:\$H\$16**). You can also refer to a Range Name. If you give the table a range name, by default the cells will be absolute. Having an absolute range ensures that the formula always refers to the same set of cells making up the table when copying.

The first column (or first row) of the table can be text, numbers or logical values. It doesn't matter if it is uppercase or lowercase. The first column (or row) should be in either numerical or alphabetical order; it can be sorted using the DATA, SORT menu

col_index_num The third part of the function is asking which column of the reference table do you want your answer to come from. In Figure 2 the table is a 2-column table and we want the answer to be the amount of the airfare, therefore in this case the col_index_num would be 2.

- If the col_index_num is less than 1, you will get a #VALUEerror.
- If col_index_num is more than the number of columns in the table, you will get a #REF!error.

range_lookup The 4th part of the formula is optional depending on the answer you want. If you require an exact match, use FALSE. If you want an approximate match, leave this option out or use TRUE (they are the same).

For example (refer to Figure 3), Saurav's home town has been changed from Sivasagar to Dibrugarh. The fourth part of the LOOKUP function has been made to say TRUE and will therefore look up an approximate match. Dibrugarh is not in the table of airfares therefore the formula returns the nearest match which is less than or equal to what is being looked up (Dibrugarh). Boko is the nearest match. This formula would be unsuitable in this case because hopefully the airfare to Dibrugarh would be nowhere near the amount of Rs. 1500. FALSE should have been used in the fourth part of this function.

Formula bar: =VLOOKUP(B5,\$G\$5:\$H\$16,2,TRUE)

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4		Name	Home Town	Air Fare			Home Town	Air Fare	
5		Mayuri	Cuwahati	3100			Boko	1500	
6		Archana	Morigaon	2500			Dighu	2100	
7		Binita	Nalbari	1500			Dulajon	2700	
8		Swagna Mahanta	Tezpur	2000			Coalpara	1800	
9		Sangecta	Coalpara	1800			Cuwahati	3100	
10		Puja	Dighu	2100			Jagun	2600	
11		Tulika	Boko	1500			Kokrajhar	2200	
12		Chandini	Kokrajhar	2200			Morigaon	2500	
13		Jami	Jagun	2600			Nalbari	1500	
14		Saperika	Dulajon	2700			Sivasagar	2100	
15		Shankar	Tinsukia	2400			Tezpur	2000	
16		Saurav	Dibrugarh	1500			Tinsukia	2400	

Figure 3 – Finding an Approximate Match

- When TRUE is used, or the range_lookup is omitted, the VLOOKUP and HLOOKUP will return the largest match which is less than or equal to the lookup_value.
- If using FALSE and exact match is not found, a #N/A error is returned.

Formula bar: =VLOOKUP(B5,\$G\$5:\$H\$16,2,FALSE)

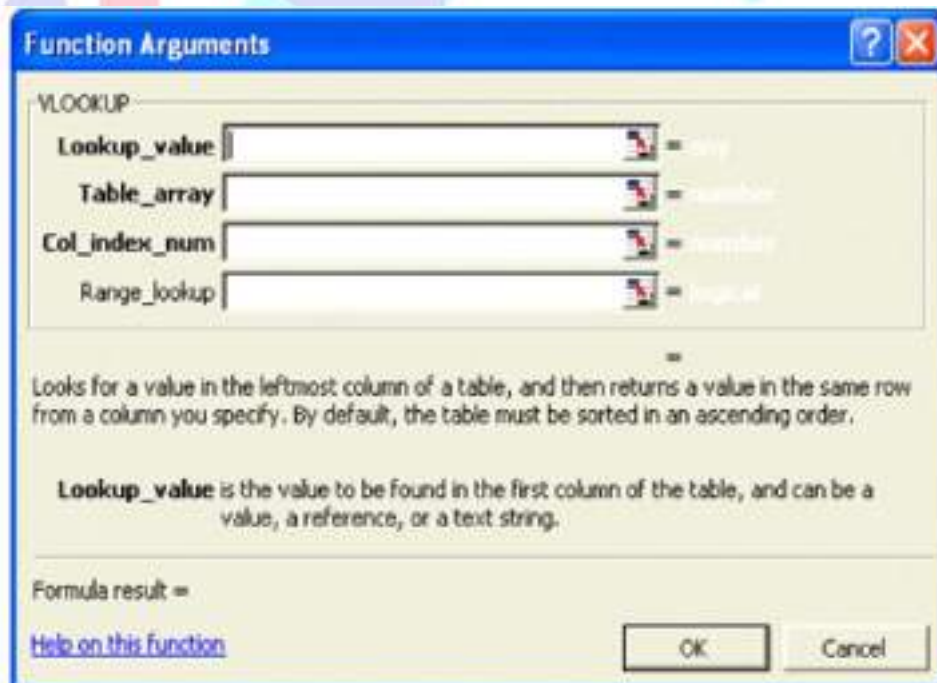
	A	B	C	D	E	F	G	H	I
1									
2									
3									
4		Name	Home Town	Air Fare			Home Town	Air Fare	
5		Mayuri	Cuwahati	3100			Boko	1500	
6		Archana	Morigaon	2500			Dighu	2100	
7		Binita	Nalbari	1500			Dulajon	2700	
8		Swagna Mahanta	Tezpur	2000			Coalpara	1800	
9		Sangecta	Coalpara	1800			Cuwahati	3100	
10		Puja	Dighu	2100			Jagun	2600	
11		Tulika	Boko	1500			Kokrajhar	2200	
12		Chandini	Kokrajhar	2200			Morigaon	2500	
13		Jami	Jagun	2600			Nalbari	1500	
14		Saperika	Dulajon	2700			Sivasagar	2100	
15		Shankar	Tinsukia	2400			Tezpur	2000	
16		Saurav	Dibrugarh	#N/A			Tinsukia	2400	

- If lookup_value is smaller than the smallest value in the first column/row of the table, you will get a #N/A error.
- When referring to the table range, the range should be made to be ABSOLUTE. i.e. highlight the table (do not include headings), press F4 until the range has "\$" signs in front of column and row references. e.g. **\$G\$5:\$H\$16**. (F4 is the shortcut key to toggle between different sorts of addresses – relative, absolute and a combination of the two. A way to remember this shortcut key is that the normal number 4 has the \$ sign above it).
- Consider giving the table a range name. Using the airfare example, a good name would be "Airfares". As a default range names are made absolute.
- The table can be put on the same worksheet as your data however you should take into account security issues. If you don't want just anyone changing the core data of the table you might wish to put the table on a different worksheet or even in a totally different file.

Creating the VLOOKUP Function

1. Place your cursor in the cell where the first result will be (C5).
2. Formulas>LOOKUP & Reference>VLOOKUP

The VLOOKUP FUNCTION ARGUMENTS dialog box showing on your Excel worksheet.



4. The `Lookup_value` is asking you to refer to a cell in the main part of your worksheet that has the data that also appears in the first column of the reference table. Using our airfare example, B5 has this information. B5 has the text "Guwahati". Guwahati also appears in the first column of our reference table. If you can see B5 on your spreadsheet, click on it. This cell address will then appear in the first reference. (Use the COLLAPSE DIALOG icon if you can't see the spreadsheet behind the FUNCTION ARGUMENTS dialog box, or move the dialog box by dragging on the titlebar).
5. `Table_array` is asking for the details about the table. Highlight the entire table, do not include any headings. When the range address appears in the reference area, use the **F4** key to make the range ABSOLUTE (each column and row reference has a "\$" sign in front of it); or If you have previously given the table a RANGE NAME, use **F3** to bring up the PASTE dialog box, select the table name from the list.
6. `Col_index_num` is asking for the number of the column in the table the result is to come from. In our example, the table has only 2 columns and the prices of airfares are in the second column, therefore type the number 2 in the third reference area.
7. `Range_lookup` is optional (notice the text is not bold like the compulsory arguments). If you want an exact match, type FALSE in here. If you want an approximate match, leave it blank or type TRUE. In our example you would need an exact match.
If you are doing the VLOOKUPS exercise, try leaving this option blank and then look at Row 11 and Row 16 of the example. Saurav's airfare would read Rs. 1500 - the amount someone flying to Boko would receive. Dibrugarh is not mentioned in the airfares table so it used the nearest matches -Boko. Fill the option in with "FALSE". You will now have a "#N/ A" error. This will serve to draw your attention to the fact that Dibrugarh needs to be added into the table information.
8. Click on OK to finish the function. If filling several cells with this formula, use the FILL HANDLE to drag down to the other cells.

Note: In the example used, NEW STAFF entries should have #N/A errors. As soon as a new staff member and city is added, the prebuilt formula will immediately show the amount of airfare (if the city is mentioned in the table).

If you are putting formulas in a worksheet where no data has yet been entered (such as the NEW STAFF in our example) #N/A errors will occur. This type of error can be 'hidden' by using the ISNA or ISERROR function.

If you add new data to the table, your range address used in each formula will have to be changed to include the new cells of the table. If you used a range name this will be taken care of automatically if you ensure that the new data falls within the boundary of the range name - you can check by looking at the reference in the INSERT, NAME, DEFINE dialog box. As a hint, if you add a couple of rows in the middle of the table, add the new data then re-sort the first column of the table into alphabetical/numerical order, the new data will be confined within the boundaries of the range name.



ISNA AND ISERROR FUNCTIONS

When doing IF and LOOKUP Functions (amongst others) you may be left with #N/A or #REF! error codes that look unsightly or “clutter” up the page. In the VLOOKUP example formulas have been built in for Staff not yet employed. #N/A errors will disappear as soon as a Home Town has been added to column B. #N/A errors occur if there is no information available to make the formula work.

C5 =VLOOKUP(B5,\$G\$5:\$H\$12,2,FALSE)

	A	B	C	D	E	F	G	H
1	ISERROR and ISNA functions							
2								
3								
4	Name	Home Town	Airfare				Town	Airfare
5	Smith, Fred	Melbourne	230.00				Adelaide	400.00
6	Jones, Tom	Darwin	799.00				Brisbane	504.00
7	Brown, John	Melbourne	230.00				Canberra	99.00
8	Thomson, Helen	Adelaide	400.00				Darwin	799.00
9	Pritchard, Peter	Adelaide	400.00				Hobart	350.00
10	Witmer, Valene	Darwin	799.00				Melbourne	230.00
11	Harris, Thomas	Perth	690.00				Perth	690.00
12	Robertson, Sarah	Hobart	350.00				Sydney	220.00
13	Ree, Denise	Deniliquin	#N/A					
14	Luck, Marie	Sydney	220.00					
15	Lawrence, Anthony	Brisbane	504.00					
16	Liebeck, Chris	Canberra	99.00					
17	Beckett, Neil	Brisbane	504.00					
18	Crockett, Brian	Sydney	220.00					
19	Daniels, Dean	Canberra	99.00					
20	Bloggs, Joe	Alice Springs	#N/A					
21	NEW STAFF		#N/A					
22	NEW STAFF		#N/A					
23	NEW STAFF		#N/A					

The ISNA and the ISERROR functions allow you to use other functions without returning an error. Instead you can have a “0” appear or alternatively an empty cell (or any text you enclose within double quotation marks). This would be useful, for example, when information is yet to be added i.e. you have formulas entered for a budget using January through to December. If the current month is March error codes will probably appear in April through to December cells. It would look better to have them blank (or with a “0”).

The ISNA command avoids the #N/A code.

The ISERROR command enables you to avoid the #N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME? and the #NULL codes.

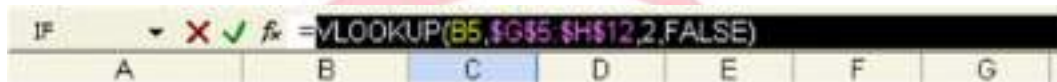
Syntax:

=IF(ISERROR(VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)),"",
VLOOKUP(lookup_value,table_array,col_index_num,range_lookup))

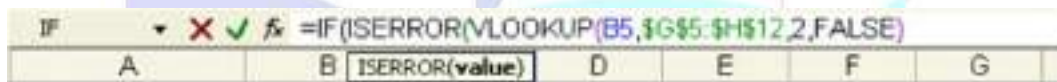
=IF(ISNA(VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)),"",
VLOOKUP(lookup_value,table_array,col_index_num,range_lookup))

Click in C5 in the workbook and follow the steps below:

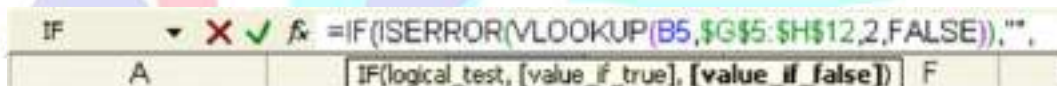
1. Highlight the formula in the formula bar (without the "=" sign). Copy this formula (use the copy icon or CTRL +C)



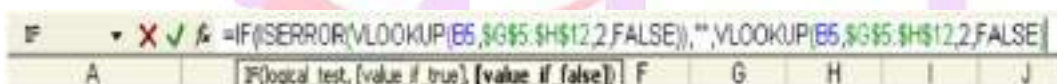
2. In front of the VLOOKUP formula, BUT after the "=" sign, type IF(ISERROR)



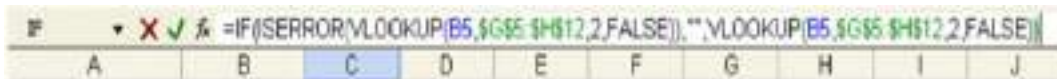
3. Now hit END on the keyboard to go to the end of the formula. Type),"", (if you want the cell to be blank) or),0, (if you want a"0").



4. Paste in the formula you previously copied (use paste icon or CTRL+V).



5. Finish off by typing a closing)



6. Use the ENTER key to finish the function. If filling several cells with this formula, use the FILL HANDLE to drag down to the other cells. Those cells that previously had an error code should now be blank.

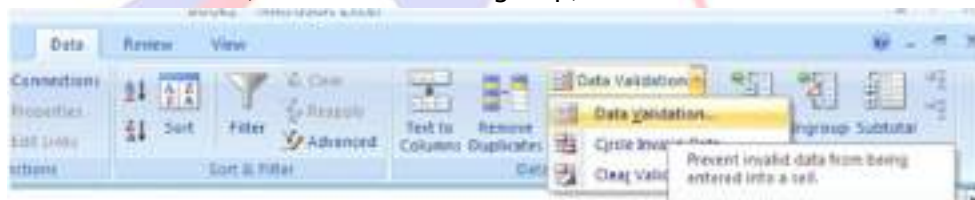
Data Validation

Data validation allows you to **control exactly what a user can enter into a cell**. We can use data validation to ensure that the user chooses one of the three possible shipping options.

Data validation allows you to build a powerful, fool-proof spreadsheet. Since users won't have to type in data manually, the spreadsheet will be faster to use, and there's a much lower chance that someone can introduce an error. Depending on what spreadsheet program you're using, the process of adding data validation will vary.

To create the data validation rule, execute the following steps.

1. Select the cell you want to validate.
2. On the Data tab, in the Data Tools group, click Data Validation.



3. The Data Validation dialog box will open



4. In the Data Validation dialog box, click the Settings tab.
5. Click on the Allow box then select List from the drop-down list.

6. Click the Source box and then type the valid values separated by the appropriate list separator character depending on your installation(usually a comma “,” or semicolon “;”). For example if the cell is for a color of a car then you can limit the values by entering: Silver, Green, Blue.
7. Instead of typing your list manually, you can also create the list entries by referring to a range of cells in the same worksheet or another worksheet in the workbook.
8. To specify the location of the list of valid entries, do one of the following:
 - i. If the list is in the current worksheet, enter a reference to your list in the Source box, for example enter: =\$A\$1:\$A\$6.
 - ii.If the list is on a different worksheet, define a name for your list then enter the name that you defined for your list in the Sourcebox, for example, enter: =ValidProjects.

Notes:

1. Make sure that the In-cell dropdown check box is selected. Otherwise, you won't be able to see the drop-down arrow next to the cell.
2. To specify how you want to handle blank (null) values, select or clear the Ignore blank check box.
3. If your allowed values are based on a cell range that has a defined name and there is a blank cell anywhere in that range, selecting the Ignore blank check box allows any value to be entered in the validated cell. This is also true for any cells that are referenced by validation formulas: if any referenced cell is blank, selecting the Ignore blank check box allows any value to be entered in the validated cell.

More Validation options:

1. Display an input message when the cell is clicked.
Click the Input Message tab.
Select Show input message when cell is selected check box.
Fill in the Title and text for the Input message.
2. Display an error message when wrong data is entered.
Click the Error Alert tab.
Select Show error alert after invalid data is entered check box. Fill in the Title and text for the Error message.
3. Select one of the following options for the Style box:
 - Information: Display an information message. Does not prevent entry of invalid data.
 - Warning: Display a warning message. Does not prevent entry of
 - Stop : Prevent entry of invalid data.

Tip

If you change the validation settings for a cell, you can automatically apply your changes to all other cells that have the same settings. To do so

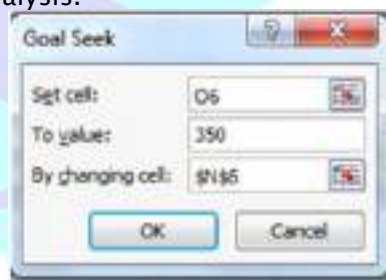
1. Open the Data Validation dialog box.
 2. Click the Settings tab.
 3. Select the Apply these changes to all other cells with the same settings check box.
-

Using What-if Analysis:

One of the most powerful features of Microsoft Office Excel is the automatic recalculation of a formula when any of the source data will change. Using these features we can observe change or one set of data make a reflection on another set of data. It is found in Data Tab.



Goal Seek : When you know the desired result of a single formula but not the input value the formula needs to determine the result, you can use Goal seek feature inside What-if Analysis.



Click on the cell where you have put the formula and click on Data tab > What-if Analysis > Goal seek. Then give the required value for the selected cell and by changing which cell it should obtain it. Click on OK button. The Goal Seek Status dialog box appears.



Click on the OK button to keep the changes done intact.

Scenarios:

Scenarios come under the heading of “What-If Analysis” in Excel. They are similar to tables in that you are changing values to get new results. For example, What if I reduce the amount I’m spending on food? How much will I have left then? Scenarios can be saved, so that you can apply them with a quick click of the mouse.

An example of a scenario you might want to create is a family budget. You can then make changes to individual amounts, like food, clothes, or fuel, and see how these changes effect your overall budget.

We’ll see how they work now, as we tackle a family budget. So, create the spreadsheet below:

	A	B	C	D	E	F
1	The Family Budget					
2		OUTGOINGS		INCOME		
3	Mortgage	440		1200		
4	Fuel Bills	85				
5	Council Tax	45				
6	Credit Cards	29				
7	Food	280				
8	Clothes	150				
9	Phone Bill	45				
10	Direct Debits	80				
11						
12	Total Outgoings	1154				
13	Income Left			46		
14						

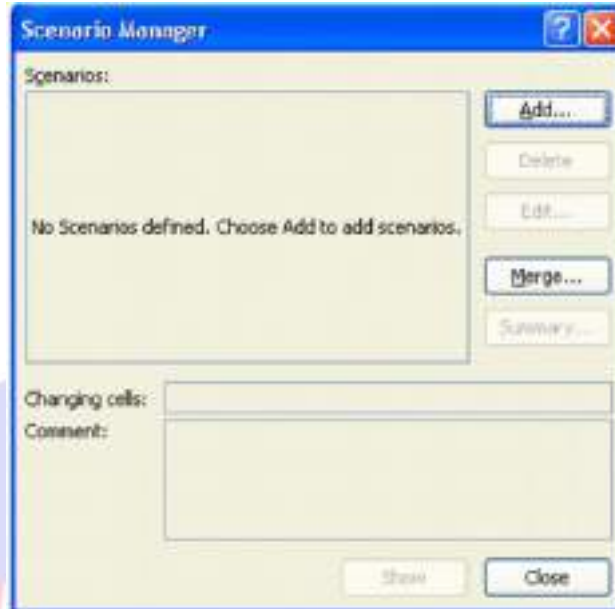
The figure in B12 above is just a SUM function, and is your total debts. The figure in D3 is how much you have to spend each month (not a lot!). The figure in D13 is how much you have left after you deduct all your debts.

With only 46 pounds spending money left each month, clearly some changes have to be made. We’ll create a scenario to see what effect the various budgets cuts have.

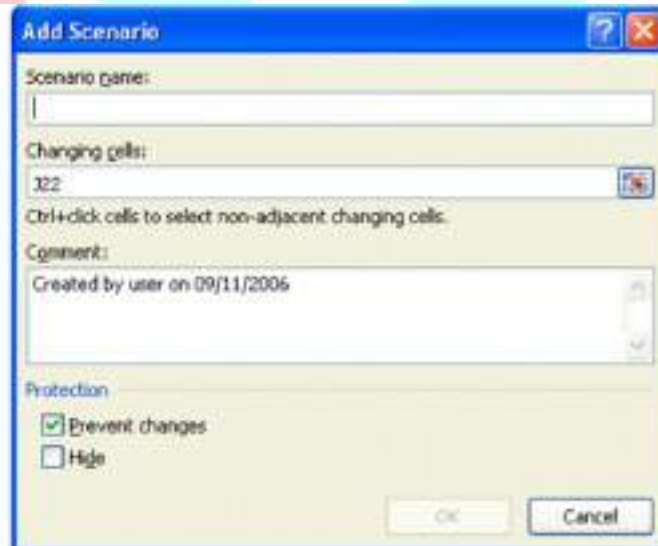
- From the top of Excel click the **Data** menu
- On the Data menu, locate the **Data Tools** panel
- Click on the **What if Analysis** item, and select **Scenario Manager** from the menu:



When you click **Scenario Manager**, you should see the following dialogue box:



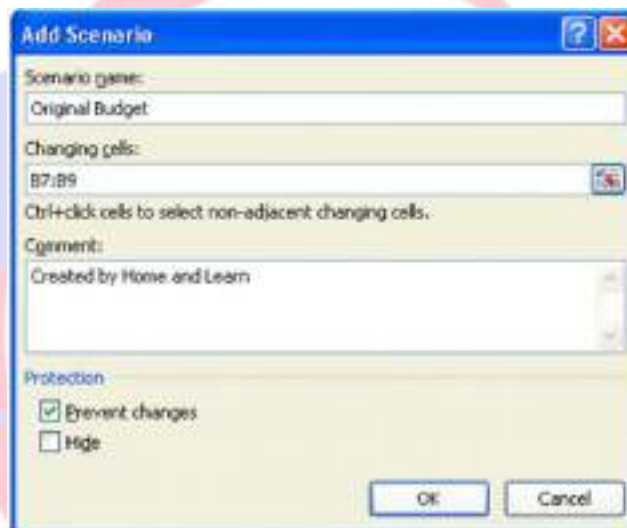
We want to create a new scenario. So click the **Add** button. You'll then get another dialogue box popping up:



The J22 in the image is just whatever cell you had selected when you brought up the dialogue boxes. We'll change this. First, type a Name for your Scenario in the **Scenario Name** box. Call it **Original Budget**.

Excel now needs you to enter which cells in your spreadsheet will be changing. In this first scenario, nothing will be changing (because it's our original). But we still need to specify which cells will be changing. Let's try to reduce the Food bill, the Clothes Bill, and the Phone bill. These are in cells B7 to B9 in our spreadsheet. So in the **Changing Cells** box, enter B7:B9

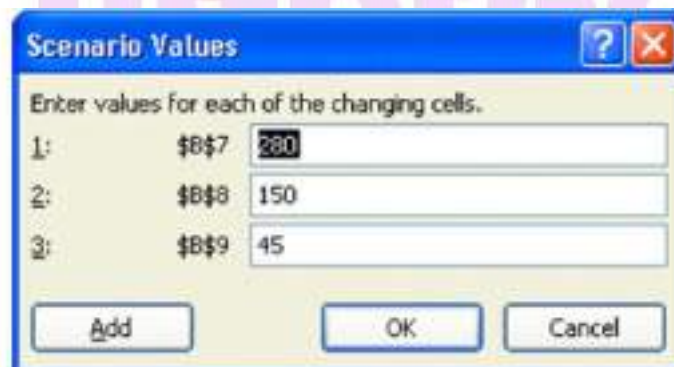
Don't forget to include the colon in the middle! But your Add Scenario box should look like this:



The 'Add Scenario' dialog box is shown with the following details:

- Scenario name:** Original Budget
- Changing cells:** B7:B9
- Comment:** Created by Home and Learn
- Protection:**
 - Prevent changes
 - Hide

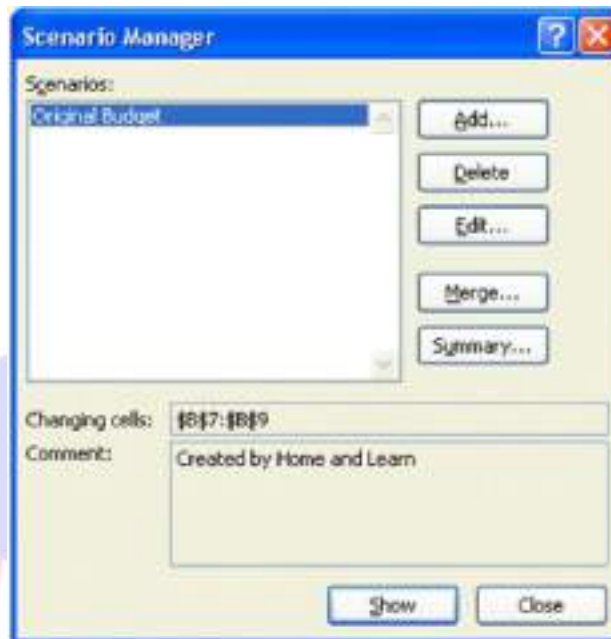
Click OK and Excel will ask you for some values:



The 'Scenario Values' dialog box is shown with the following details:

	Cell Reference	Value
1:	\$B\$7	200
2:	\$B\$8	150
3:	\$B\$9	45

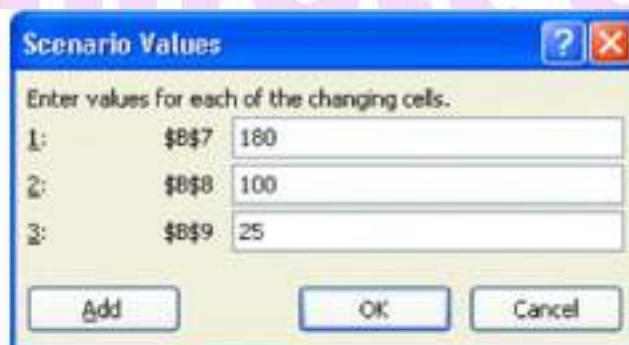
We don't want any values to change in this first scenario, so just click OK. You will be taken back to the Scenario Manager box. It should now look like this:



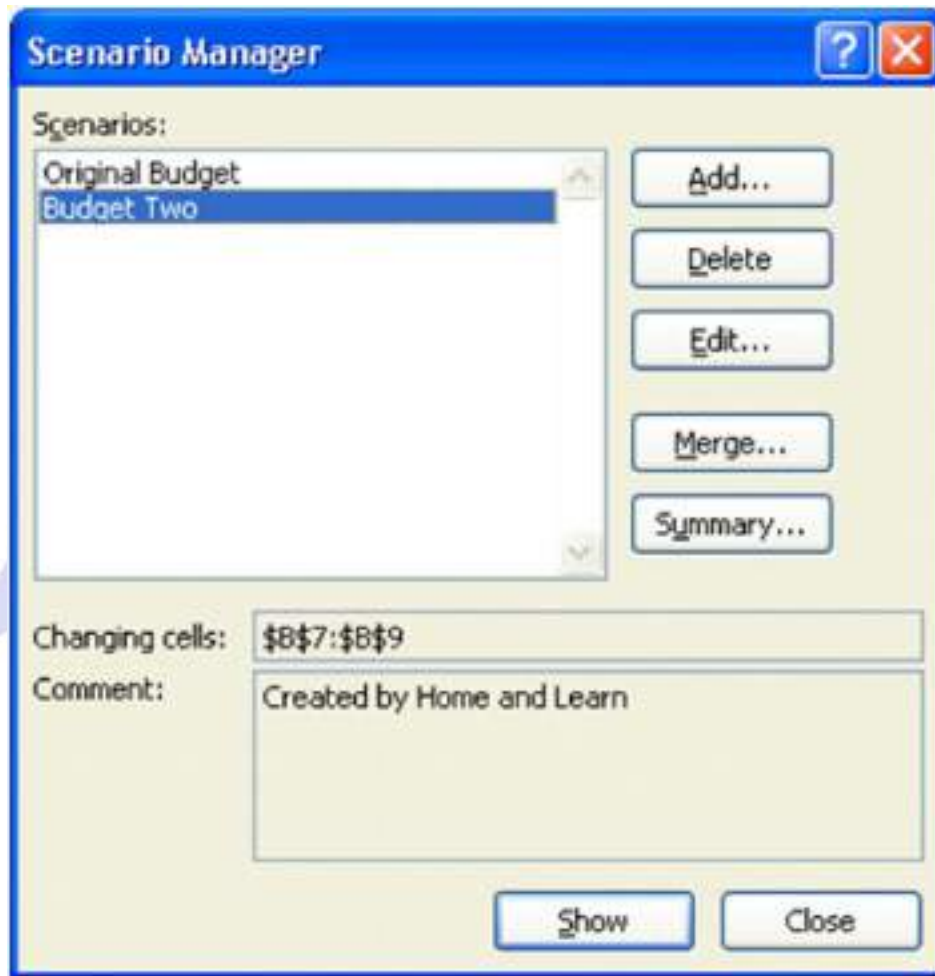
Now that we have one scenario set up, we can add a second one. This is where we'll enter some new values – our savings.

Click the Add button again. You'll get the Add Scenario dialogue box back up. Type a new Name, something like **Budget Two**. The Changing Cells area should already say B7:B9. So just click OK.

You will be taken to the Scenario Values dialogue box again. This time, we do want to change the values. Enter the same ones as in the image below:



These are the new values for our Budget. Click OK and you'll be taken back to the Scenario Manager. This time, you'll have two scenarios to view:



As you can see, we have our Original Budget, and Budget Two. With Budget Two selected, click the **Show** button at the bottom. The values in your spreadsheet will change, and the new budget will be calculated. The image below shows what it looks like in the spreadsheet:

	A	B	C	D	E
1	The Family Budget				
2		OUTGOINGS		INCOME	
3	Mortgage	440		1200	
4	Fuel Bills	85			
5	Council Tax	45			
6	Credit Cards	29			
7	Food	180			
8	Clothes	100			
9	Phone Bill	25			
10	Direct Debits	80			
11					
12	Total Outgoings	984			
13	Income Left			216	
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					

Scenario Manager [?] [X]

Scenarios:

- Original Budget
- Budget Two

Buttons: Add... Delete Edit... Merge... Summary...

Changing cells: \$B\$7:\$B\$9

Comment: Created by Home and Learn

Buttons: Show Close

Click on the Original Budget to highlight it. Then click the Show button. The first values will be displayed!

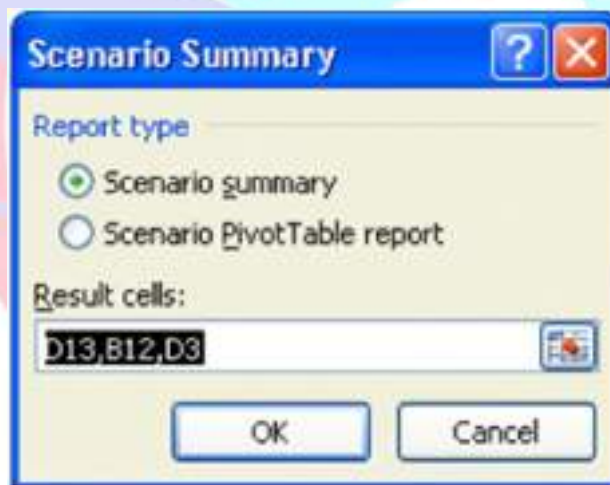
Click the **Close** button on the dialogue box when you're done.

So a Scenario offers you different ways to view a set of figures, and allows you to switch between them quite easily.

How to Create a Report from a Scenario

Another thing you can do with a scenario is create a report. To create a report from your scenarios, do the following:

- Click on **Data** from the Excel menu bar
- Locate the **Data Tools** panel
- On the Data Tools panel, click **What if Analysis**
- From the What if Analysis menu, click **Scenario Manager**
- From the Scenario Manager dialogue box, click the Summary button to see the following dialogue box:



What you're doing here is selecting cells to go in your report. To change the cells, click on your spreadsheet. Click individual cells by holding down the CTRL key on your keyboard, and clicking a cell with your left mouse button. Select the cells D3, B12 and D13. If you want to get rid of a highlighted cell, just click inside it again with the CTRL key held down. Click OK when you've selected the cells. Excel will then create your Scenario Summary:

Scenario Summary				
	Current Values:		Original Budget	Budget Two
Changing Cells:				
\$B\$7	280	280	180	
\$B\$8	150	150	100	
\$B\$9	45	45	25	
Result Cells:				
\$D\$13	46	46	216	
\$B\$12	1154	1154	984	
\$D\$3	1200	1200	1200	

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.



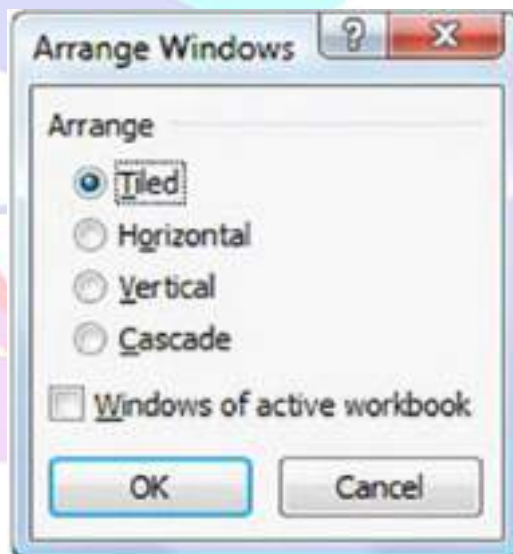
ARRANGING WINDOWS IN WORKBOOKS

You can open multiple workbook windows and arrange them into windows of varying displays so that you can view different parts of a worksheet from each workbook on the screen at one time.

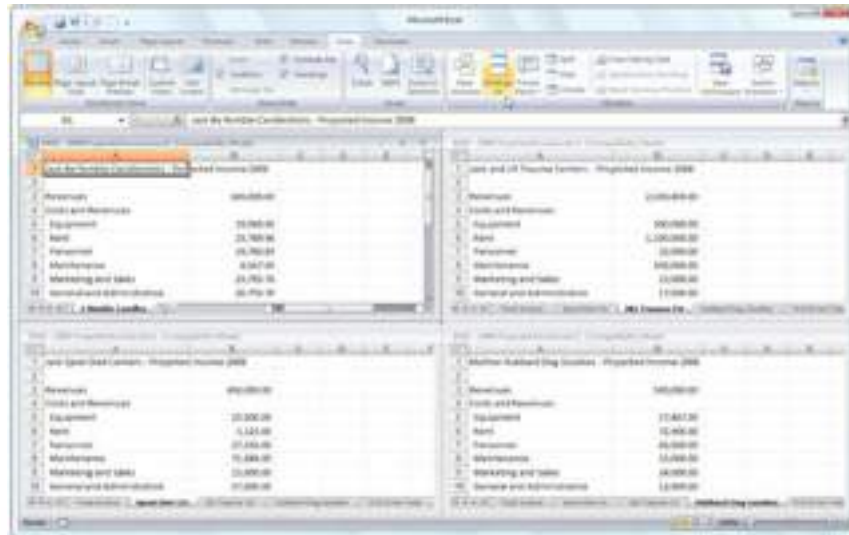
After you arrange windows, activate the one you want to use (if it's not already selected) by clicking it. In the case of the cascade arrangement (described below), you need to click the worksheet window's title bar, or you can click its button on the taskbar.

Follow these steps to arrange workbook windows:

1. Open the workbooks that you want to arrange. If you want to open at least two workbooks and select the worksheet in each workbook that you want to display.
2. Click the Arrange All button in the Window group on the View tab. The Arrange Windows dialog box appears. Select the desired Arrange setting in the Arrange Windows dialog box.

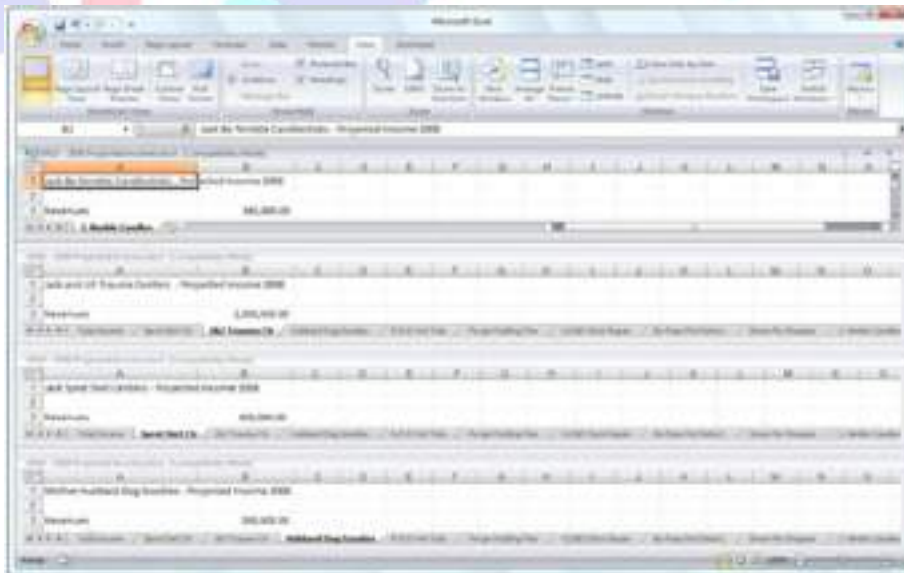


4. Make one of the following selections:
 - **Tiled:** Select this option button to have Excel arrange and size the windows so that they all fit side by side on the screen in the order in which you opened them.



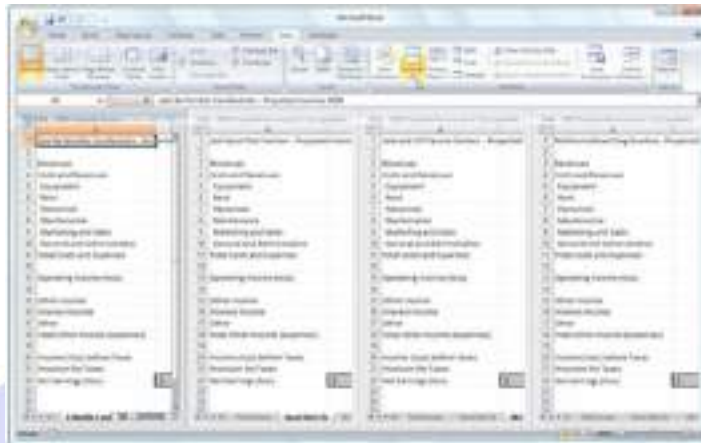
Arrange four worksheet windows with the Tiled option.

- **Horizontal:** Select this option button to have Excel size the windows equally and place them one above the other.



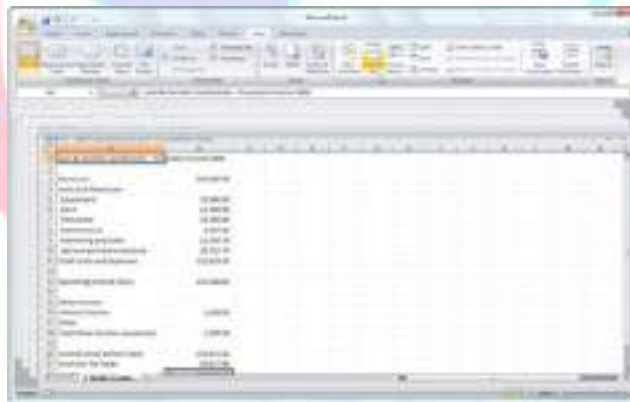
Four worksheet windows arranged with the Horizontal option.

Vertical: Select this option button to have Excel size the windows equally and place them next to each other.



Arrange four worksheet windows with the Vertical option.

- **Cascade:** Select this option button to have Excel arrange and size the windows so that they overlap one another with only their title bars showing.



Four worksheet windows arranged with the Cascade option.

1. Click OK.

The workbooks are arranged on-screen based on your selection in the previous step.

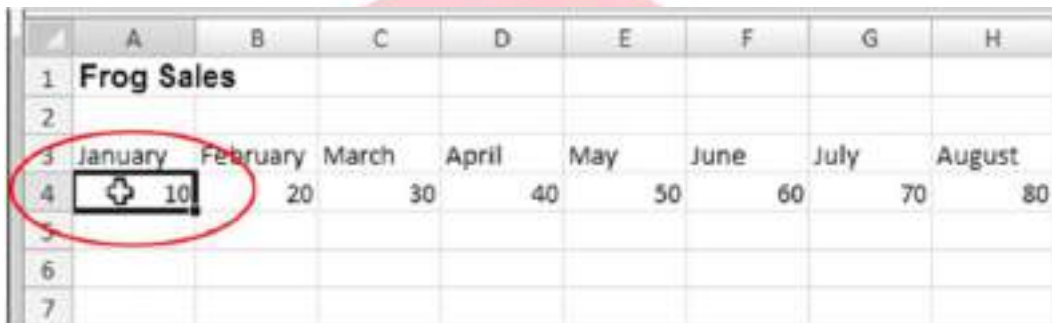
If you want to have Excel show only the windows that you have open in the current workbook, select the Windows of Active Workbook check box in the Arrange Windows dialog box.

FREEZING

Freezing panes is a great help when working with large spreadsheets. Freezing panes makes it easier to see what numbers in cells represent.

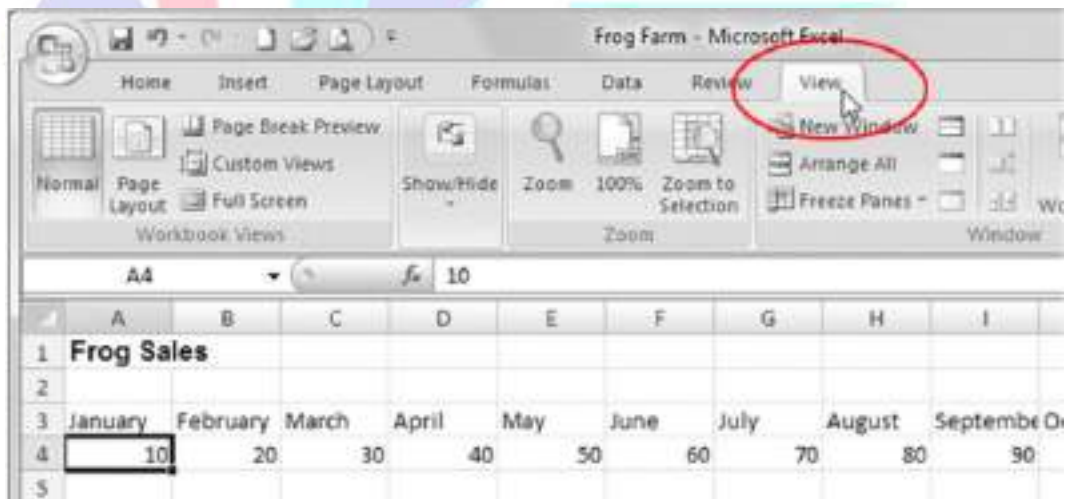
Freeze panes

1. Click the **Sales** tab.
2. In the **Sales** worksheet, click cell **A4**.

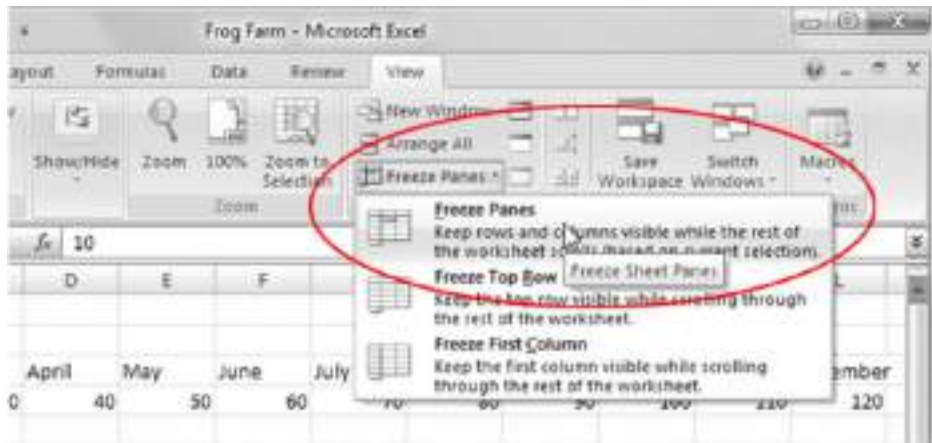


	A	B	C	D	E	F	G	H
1	Frog Sales							
2								
3	January	February	March	April	May	June	July	August
4	10	20	30	40	50	60	70	80
5								
6								
7								

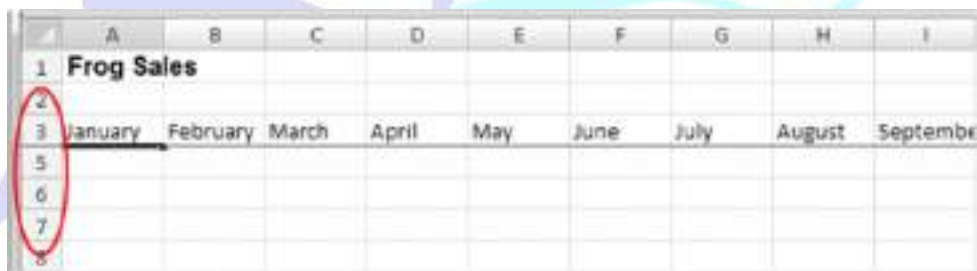
3. Click the **View** tab.



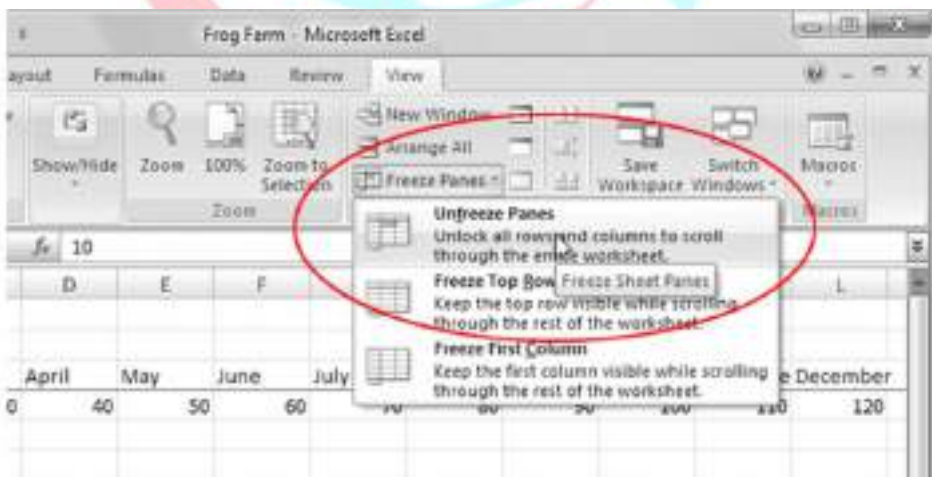
4. In the Ribbon, click **Freeze Panes**, then **Freeze Panes**.



5. Scroll vertically in the worksheet. The rows below the months should scroll.



6. In the Ribbon, click **Freeze Panes**, then **Unfreeze Panes**.



7. Scroll vertically in the worksheet. The view should have returned to normal.

	A	B	C	D	E	F	G	H	I	
1	Frog Sales									
2										
3	January	February	March	April	May	June	July	August	September	October
4	10	20	30	40	50	60	70	80	90	
5										
6										
7										
8										

8. Click the heading for column C.

	A	B	C	D	E	F	G	H	I	
1	Frog Sales									
2										
3	January	February	March	April	May	June	July	August	September	October
4	10	20	30	40	50	60	70	80	90	
5										
6										
7										
8										
9										
10										
11										
12										

9. In the Ribbon, click **Freeze Panes**, then **Freeze Panes**.

10. Scroll horizontally in the worksheet. The columns to the right of column B should scroll.

	A	B	E	F	G	H	I	J		
1	Frog Sales									
2										
3	January	February	May	June	July	August	September	October		
4	10	20	50	60	70	80	90	100		
5										
6										
7										
8										
9										
10										

11. In the Ribbon, click **Freeze Panes**, then **Unfreeze Panes**.

PROTECTING YOUR WORK

Create a password that only allows certain users to change the worksheet or the entire workbook.

1. **Cell protection format**
 - i. The default protection for every **cell** is a **locked cell**
 - ii. To see this, right click inside any **cell**
 - iii. From the menu click on **Format Cells...**
 - iv. In the **Custom Lists** window, select the **Protection** tab
 - v. **Locked** is checked as a default
This will allow us to password protect our worksheet
 - vi. Click the **cancel** button in the bottom right of the window
 2. **Protect your worksheet**
 - i. On the **Ribbon** >select the **Review** tab>in the **Changes** group >click **Protect Sheet**
 - ii. Check the box next to **Protect worksheet and contents of locked cells**
 - iii. In the text box under **Password to unprotect sheet:**, type the password
 - iv. Check the box next to both **Select locked cells** and **Select unlocked cells**
 - v. Click the **OK** button
 3. **Changing any of the data in your worksheet**
 - i. Once you try to change something, a window will open explaining how the sheet is protected from change
 - ii. To change the data you need to **unprotect** the worksheet
 - iii. On the **Ribbon** >select the **Review** tab>in the **Changes** group >click **Unprotect Sheet**
 - iv. The password is now gone and you can edit the file
 4. **Protect workbook**
 - i. It is the same thing as protecting the worksheet except this time you protect the entire file
 5. Save the file
-