

Learning Services IT Guides

Excel – Advanced features


This guide is intended for those who already know their way around a spreadsheet and will look at some slightly more advanced features such as:

1. Creating a form
2. Freezing column and row titles
3. Adding notes to cells
4. Conditional formatting
5. Using more than one worksheet
6. Using advanced formulas
7. Using the If function
8. Statistical Functions – Averages, Standard Deviations, Correlations
9. Sharing and protecting a spreadsheet

Creating a form

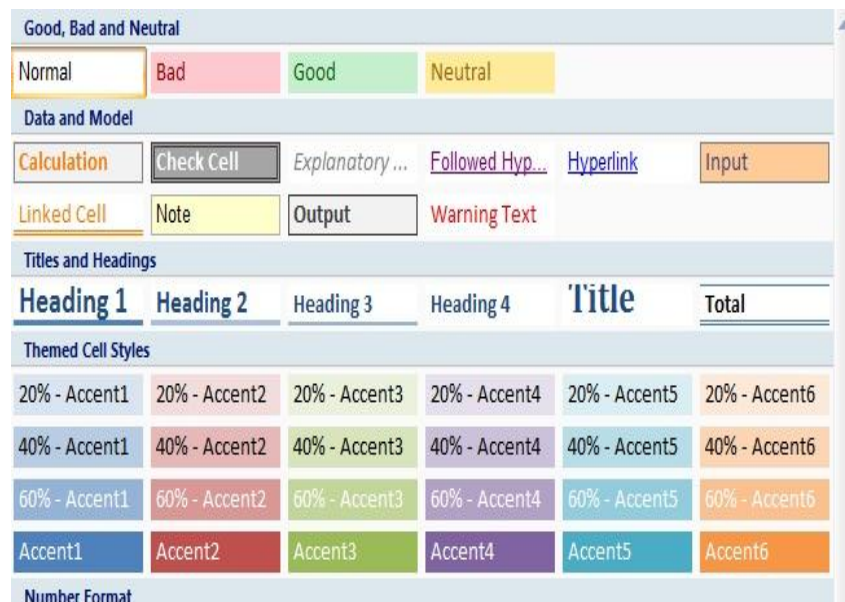
Excel can be used for creating forms. The grid format of the spreadsheet makes it easier to make boxes and lines.

❖ **Putting borders around cells**

Highlight the cell, or selection of cells, you want to put a border around. Click on the **borders**  button from the **Font** group on the **Home** tab, select the type of border you would like, and you can alter the colour and thickness of line etc.

❖ **Shading cells**

To shade an area of cells, first highlight the area you want to shade. Click on **Cell Styles**, from the **Styles** group on the **Home** tab. You will be presented with a palette of different shades, colours and styles to choose from. Make your selection to change the cells.

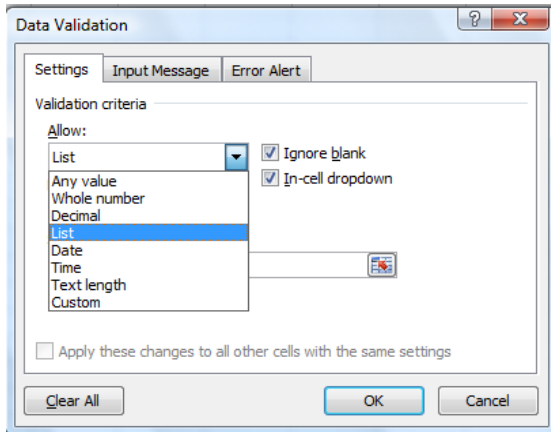
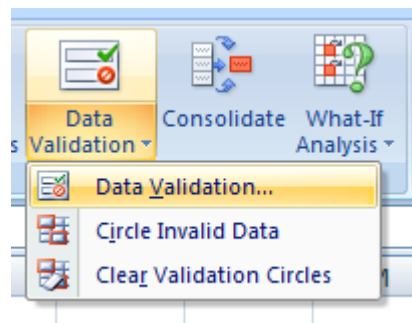


❖ **Creating Drop Down Menus**

Type the data you want to include in your drop down list in a single column in an area of the spreadsheet that is not included in your form, you may want to use another sheet .

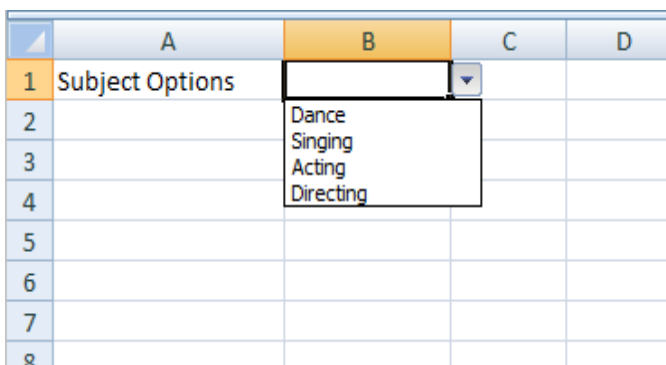
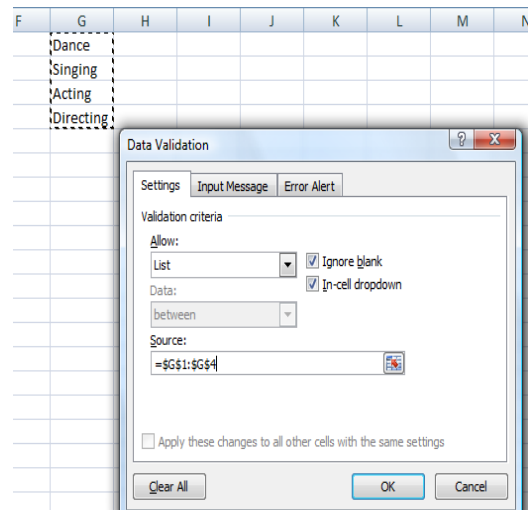
Select the cell you want the drop down list to appear in.

From the **Data** tab select **Data Validation**



Select **List** from the **Allow** box


In the **Source** box enter the data range of your drop down list (G1:G4) and press ok

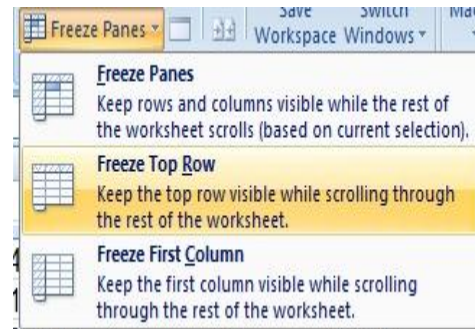


The drop down list should now appear in the selected cell

Freezing Column and Row Headings

Where a spreadsheet contains many rows and columns of data, you may find by scrolling down or across the spreadsheet you lose sight of the column or row titles making the data difficult to understand. You can freeze the titles so that they are always visible no matter how far you scroll down.

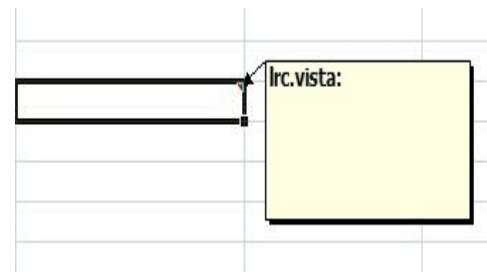
- ❖ Click and drag the vertical split box  at the top of the vertical scroll bar to just below the row with the column titles, the row will now show in a different pane
- ❖ From the **View** tab, select **Freeze Panes** from the **Windows** group, then select **Freeze Top Row** from the menu. The split divider is now replaced by a line and the column titles remain visible when scrolling down the worksheet. To freeze row titles follow same procedure dragging the horizontal split box to the right of Column A



Adding notes to cells

- ❖ You can add a note to any cell, this can be useful if you want to add additional information without crowding the spreadsheet.
- ❖ Simply click with the right hand mouse button on the cell you want to add the note to and select **Insert Comment** from the drop down menu.

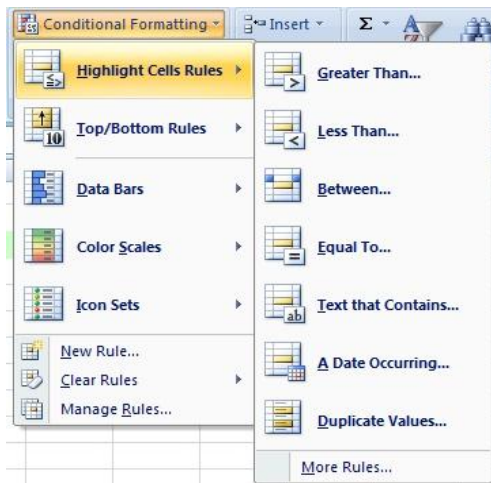
A yellow box will appear allowing you to type in your comment. This is not visible at all times as it would obscure other cells, instead a small red triangle appears in the corner of the cell to indicate it holds a comment. When the mouse moves over the red triangle the comment box appears.



Conditional Formatting

It is possible to apply a certain type of formatting to data only if it satisfies certain criteria, e.g . you may want data in a cell range to show as light red with dark red text if the value is greater than a specified amount so it can be easily identified.

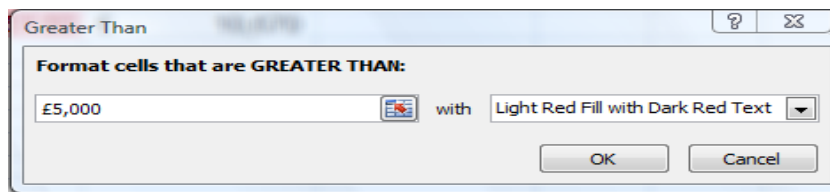
- ❖ Highlight the range of cells that need to be formatted



- ❖ From the **Home** tab, click on **Conditional Formatting** in the Styles group.

- ❖ From the **Highlighting Cell Rules** menu select **Greater than**.


- ❖ A box will appear for you to specify an amount and the type of formatting you want if the value satisfies that criteria.



- ❖ From Conditional Formatting menu you can also emphasise top ten items, data which is above or below a specified average etc.

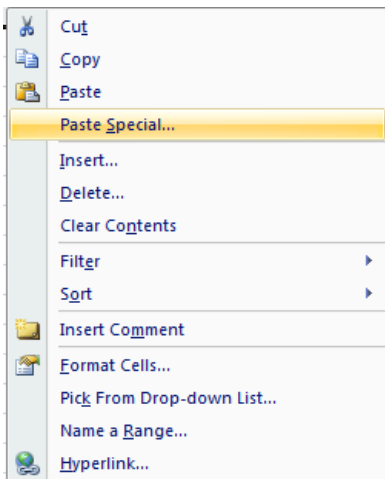
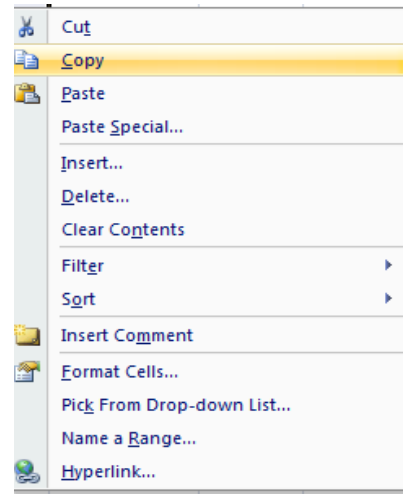
Using more than one worksheet. & Linking Data

When you open a new spreadsheet, along the bottom you will see a number of tabs numbered sheet 1 - sheet 16. These are like pages in Word, but each sheet is 16384 rows deep and 256 columns wide! You can use different sheets to store different information. This prevents any one sheet becoming too large and unwieldy.

- ❖ To begin a new sheet, click on the **Insert Worksheet** tab at the bottom of the worksheet  and a new sheet will open up.
- ❖ You can rename a sheet by clicking on the **tab** with the right mouse button. Choose **Rename** from the menu and type in what you want to call it. To delete a sheet, click again with the right mouse button, but choose **Delete** instead.
- ❖ If you want to change the order of your sheets click on the **tab** with the left mouse button, hold it down and drag it to its new location.

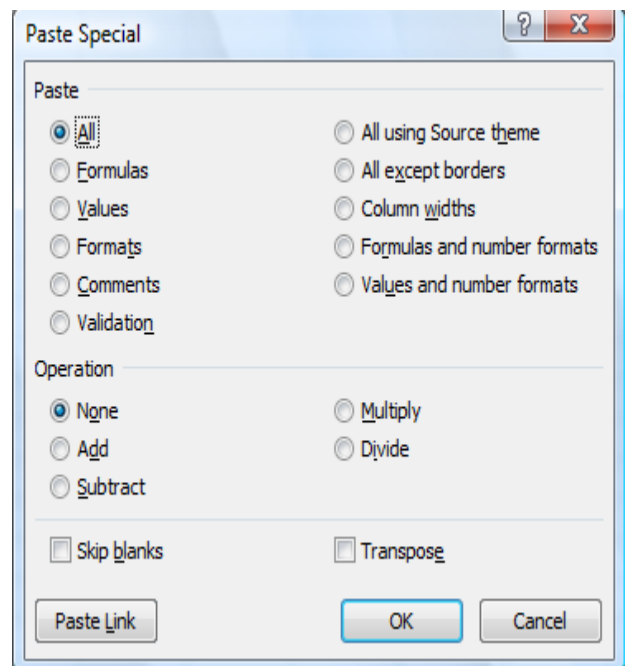
- ❖ **Linking Data** – If you need to copy data from one worksheet to another (or even from one cell or spreadsheet to another) it is possible to create a link between the two sets of data so that any editing on one set of data will automatically update the other.

Highlight the data to be copied, right click on the area and select **Copy** from the menu



Open up the new worksheet, right click and select **Paste Special** from the menu

From the **Paste Special** box select **Paste Link** – this will ensure both sets of data are linked and any changes to one set will effect the other




Using Advanced Formulas

You can include more than one mathematical operation in a formula, in fact you can create quite complex formulas but remember there is a mathematical order in which calculations are carried out. As a rule anything in brackets is carried out first, followed by square roots & powers etc, then division, multiplication, addition and subtraction.

❖ **Displaying and using Percentages in Excel**

When using percentages in a formula they should be entered as a fraction or a decimal e.g. 30% is 30/100 or 0.3

If you enter 30% in a cell Excel displays it as 30% but stores it as 0.3

If you format the cells with the  icon, found on the **Home** tab it will automatically multiply any figure entered by 100 so if you enter 30 it will display 3000% but store it as 30

So either type in the % sign after each figure or type in the figure as a decimal then use the toolbar icon to display it as a percentage.

To calculate a percentage of a number

To find a percentage of a number simply multiply the number by the percent number

Example

	A	B	C	D
1				
2	Courses	Fees	VAT 17%	
3	Acting	£ 320.00	=B3*17/100	
4	Dance	£ 160.00		
5	Music	£ 340.00		
6				


The formula to find 17% of £320 can be expressed as $B3*17/100$, or $B3*0.17$ or simply $B3*17\%$

Calculating a percentage increase

Divide the smaller number by the larger number (the part by the whole) and multiply by 100.

Example

	A	B	C	D	E
1					
2	Courses	2005	2006	Increase	%Increase
3	Dance	112	196	84	=D3/B3*100
4	Acting	120	180	60	
5	Singing	212	300	88	
6					

To find the percentage increase of the number of students enrolled from the 2005 figures, divide the increase D3 (the part) by the 2005 figure B3 (the whole) and multiply by 100 or instead of multiplying by 100, format the cells in the E column with the  icon and the result of D3/B3 will automatically be multiplied by 100.

Calculating the Percentage of a Total

Divide the value by the total and multiply by 100

Example

	A	B	C	D
1				
2	Courses	2006	% Of Total	
3	Dance	196	=B3/\$B\$7*100	
4	Acting	180		
5	Singing	300		
6				
7	Total	676		
8				

B3 is the value divided by the total B7, which should be set as an **absolute reference** if it is to be copied to the other cells, multiply by 100 or format the cell for %

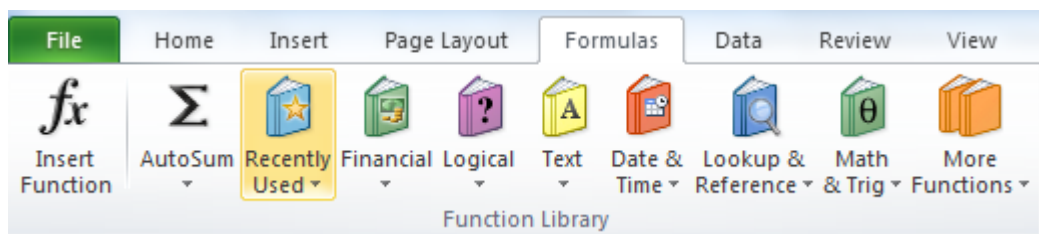
- ❖ **Using Brackets** - You can use brackets to separate different parts of a formula. For example to calculate the income for Short Summer Courses at LIPA

	A	B	C	D	E	F
1	Short Summer Courses at LIPA 2005					
2						
3	Courses	No. of Students	Fees	VAT 17%	Length of Course	Income
4	Acting		25 £ 300 £	51	10 Weeks	=B4*(C4+D4)
5	Dance - Ballet		14 £ 100 £	17	6Weeks	
6	Dance - Tap		18 £ 150 £	26	6 Weeks	

We need to add the Fee for the course with the VAT and then multiply by the number of students enrolled on the course. To get Excel to do the addition first we need to put that part of the formula in brackets, anything in brackets is calculated first, the result will then be multiplied by the number of students. So the formula will be **=B4*(C4 +D4)** if you leave out the brackets you will get a completely different answer. Care must be taken to establish the mathematical order when creating formulas

Using Functions in Excel

You can perform a wide range of functions in Excel, these are pre-set formulas and are found on the **Formulas** tab in the **Function Library** group



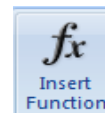
IF Function

- ❖ A useful function is the **IF** function. This is a logical function, which allows you to display a customised message in a cell depending on the value displayed in another cell.

Example

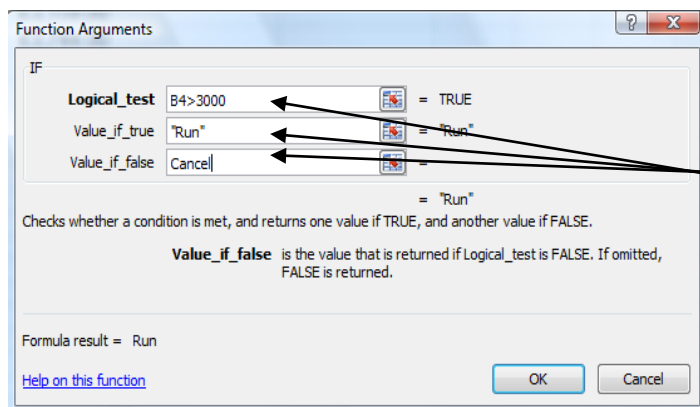
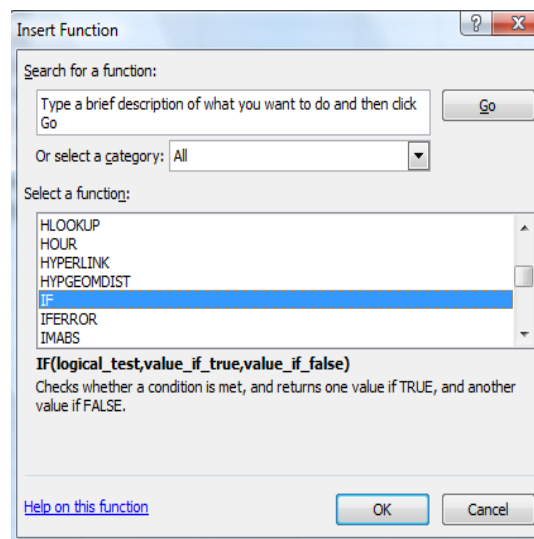
	A	B	C
1	Income from Summer School Courses		
2			
3	Courses	Income 2005	Courses to Run
4	Acting	£8,775.00	
5	Dance - Ballet	£1,638.00	
6	Dance - Tap	£3,159.00	
7	Guitar	£3,744.00	

It may be decided that if the income from a particular course does not exceed £3,000 then it should be cancelled. In Column C we can use the IF function to see which courses should run.



- ❖ Click on C4 and from the **Formulas** tab click on Insert Function icon

- ❖ In the **Insert Function** box select the If function and ok. and the **Function Arguments** box will open.



In the Logical test box we are saying **If** it is true that the value of B4 is greater than £3000 then display 'Run', if not display 'Cancel'. Press **OK**

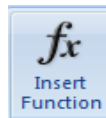
- ❖ The result will appear in cell C4, replicate the formula down to C7 to show the rest of the results

	A	B	C
1	Income from Summer Schools		
2			
3	Courses	Income 2005	Courses to Run
4	Acting	£8,775.00	Run
5	Dance - Ballet	£1,638.00	
6	Dance - Tap	£3,159.00	
7	Guitar	£3,744.00	

Statistical Functions – Averages, Standard Deviations & Correlations

To calculate the average (mean) of a set of figures, select the cell that the answer is to appear in.

click on the **Insert Function** from the **Formulas** tab



icon

Select **Statistical** category in the **Insert Function** box, highlight the **Average** function and press OK

	A	B
1	Record of Student Marks 2008-2009	
2		
3	Name	Essay
4	Jane Dawson	76
5	Chloe Pearson	45
6	Laura Kelsoe	42
7	John Carter	63
8	Hannah Benson	57
9	Sarah Davis	79
10	Stuart Barratt	78
11	Hannah Mason	41
12	Matt Taylor	59
13		
14	Class Average	=

Insert Function

Search for a function:

Type a brief description of what you want to do and then click

Or select a category: Statistical

Select a function:

- AVEDEV
- AVERAGE**
- AVERAGEA
- AVERAGEIF
- AVERAGEIFS
- BETADIST
- BETAINV

AVERAGE(number1,number2,...)
Returns the average (arithmetic mean) of its arguments, which can be numbers or names, arrays, or references that contain numbers.

[Help on this function](#)

	A	B	C	D
1	Record of Student Marks 2008-2009			
2				
3	Name	Essay		
4	Jane Dawson	76		
5	Chloe Pearson	45		
6	Laura Kelsoe	42		
7	John Carter	63		
8	Hannah Benson	57		
9	Sarah Davis	79		
10	Stuart Barratt	78		
11	Hannah Mason	41		
12	Matt Taylor	59		
13				
14	Class Average	=AVERAGE(B4:B13)		

Function Arguments

AVERAGE

Number1: B4:B13 = {76;45;42;63;57;79;78;41;59;0}

Number2: = number

= 60

Returns the average (arithmetic mean) of its arguments, which can be numbers or names, arrays, or references that contain numbers.

Number1: number1,number2,... are 1 to 255 numeric arguments for which you want the average.

Formula result = 60

[Help on this function](#)

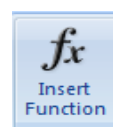
The **Function Arguments** box will appear with the data range to be used in the calculation (B4:B12), press OK to complete the calculation

The Standard Deviation measure will show the variation of values in a set of data from the calculated average.

To calculate the Standard Deviation in a set of figures

Select the cell the calculation is to appear in

click on the **Insert Function** icon from the **Formulas** tab



Select **Statistical** category in the **Insert Function** box, highlight the **STDEV** function and press OK

Name	Essay
Jane Dawson	76
Chloe Pearson	45
Laura Kelsoe	42
John Carter	63
Hannah Benson	57
Sarah Davis	79
Stuart Barratt	78
Hannah Mason	41
Matt Taylor	59
Class Average	60
Standard Deviation	=

Name	Essay	
Jane Dawson		76
Chloe Pearson		45
Laura Kelsoe		42
John Carter		63
Hannah Benson		57
Sarah Davis		79
Stuart Barratt		78
Hannah Mason		41
Matt Taylor		59
Class Average		60
Standard Deviation	=STDEV(B4:B12)	

In the **Function Arguments** box enter the data range in the Number1 box (B4:B12) then press ok to complete the calculation.

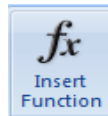
The higher the Standard Deviation the greater the variation of the values from the average, the lower the Standard Deviation the closer the values are to the average

Correlation is a measure to show the relationship between two sets of data

To calculate the correlation of two sets of data

Select the cell the calculation is to appear in

click on the **Insert Function** from the **Formulas** tab



icon

Select **Statistical** category in the **Insert Function** box, highlight the **CORREL** function and press OK

	A	B	C
1	Record of Student Marks 2008-2009		
2	2008-09		
3	Name	Essay	Performance
4	Jane Dawson	76	50
5	Chloe Pearson	45	56
6	Laura Kelsoe	42	63
7	John Carter	63	59
8	Hannah Benson	57	40
9	Sarah Davis	79	58
10	Stuart Barratt	78	70
11	Hannah Mason	41	60
12	Matt Taylor	59	46
13			
14	Correlation	=	

Insert Function

Search for a function:

Type a brief description of what you want to do and then click **Go**

Or select a category: **Statistical**

Select a function:

- BETAINV
- BINOMDIST
- CHIDIST
- CHIINV
- CHITEST
- CONFIDENCE
- CORREL**

CORREL(array1,array2)
Returns the correlation coefficient between two data sets.

[Help on this function](#) **OK** **Cancel**

	A	B	C
1	Record of Student Marks 2008-2009		
2	2008-09		
3	Name	Essay	Performance
4	Jane Dawson	76	50
5	Chloe Pearson	45	56
6	Laura Kelsoe	42	63
7	John Carter	63	59
8	Hannah Benson	57	40
9	Sarah Davis	79	58
10	Stuart Barratt	78	70
11	Hannah Mason	41	60
12	Matt Taylor	59	46
13			
14	Correlation	=CORREL(B4:B12,C4:C12)	

In the **Function Arguments** box enter the first data range in the **Array1** box (B4:B12) enter the second data range in the **Array2** box (C4:C12), then press ok to complete the calculation.

Function Arguments

CORREL

Array1 B4:B12 = {76;45;42;63;57;79;78;41;59}

Array2 C4:C12 = {50;56;63;59;40;58;70;60;46}

= 0.052885797

Returns the correlation coefficient between two data sets.

Array2 is a second cell range of values. The values should be numbers, names, arrays, or references that contain numbers.

Formula result = 0.052885797

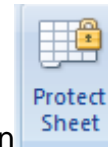
[Help on this function](#) **OK** **Cancel**

The Correlation measure will produce a number between 0 and 1, the higher the number the stronger the relationship between the two sets of data.

Sharing and Protecting a Spreadsheet

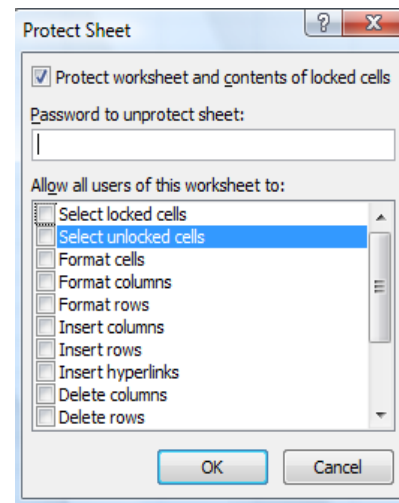
As spreadsheets can contain a lot of detailed and sensitive information, it may be necessary to protect the spreadsheet especially if it is shared by other people.

You can protect the spreadsheet by making it **read only** this will prevent unauthorised people from deleting or editing any of the data.



- ❖ From the **Review** tab, click on the **Protect sheet** icon

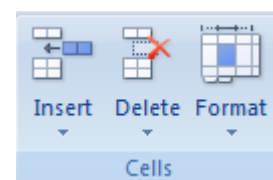
- ❖ On the **Protect Sheet** dialogue box ensure the checkbox for **Protect Sheet** is ticked and enter a password, you will be asked to confirm the password and then the worksheet is protected against any unauthorised use.



To unprotect the worksheet select the **Unprotect Worksheet** icon and enter the password when prompted.

- ❖ If other people need to enter information into your spreadsheet you can restrict them to editing only specified cells. When you protect a worksheet Excel assumes you want all cells to be locked, to make some of the cells editable you will need to unlock them before you protect the worksheet.

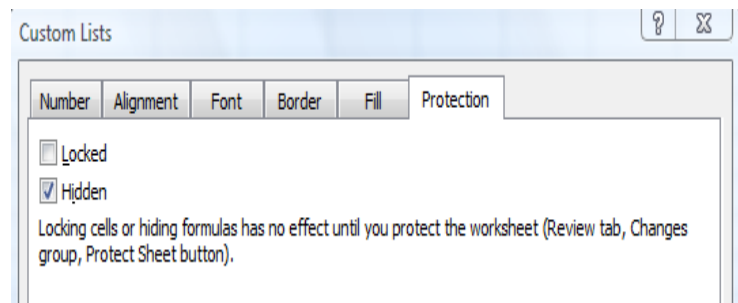
Highlight the cell range that people will be allowed to edit, on the **Home** tab select **Format** in the **Cells** group.



From the menu select **Format Cells**

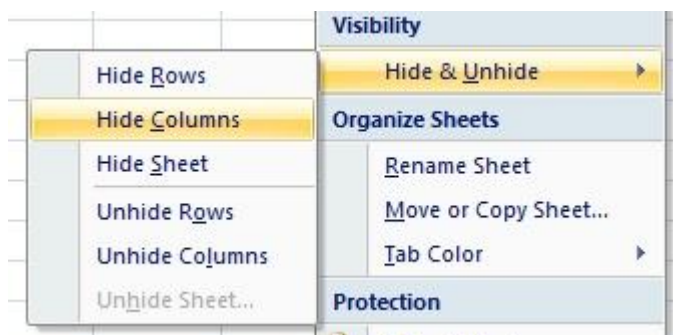
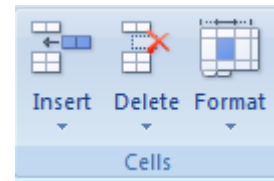


Under the **Protection** tab ensure the **Locked** checkbox is unticked. You can now protect the worksheet and the specified cell range will allow editing.



- ❖ It is possible to hide certain columns and rows from view.

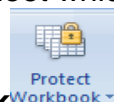
Select the column or row. From the **Home** tab, select **Format** in the **Cells** group.



From the menu select **Hide column/row** and the selected column or rows will disappear from view, to unhide the column/row follow the same procedure but choose 'Unhide' from the menu.

- ❖ If you have a large spreadsheet you can protect it so that a specified area will show on the screen every time it is opened. This prevents scrolling down to search for a particular area, which is to be worked on.

Select the area of the worksheet which is to be prominent. From the **Review**



tab select **Protect Workbook** icon

From the **Protect Structure and Windows** dialogue box tick the **Windows** checkbox, enter a password. Now every time you open the spreadsheet the specified area should be prominent on the screen.

