

**MULGA TRAINING NETWORK**

**SKILLS & KNOWLEDGE  
TO DO THE JOB**

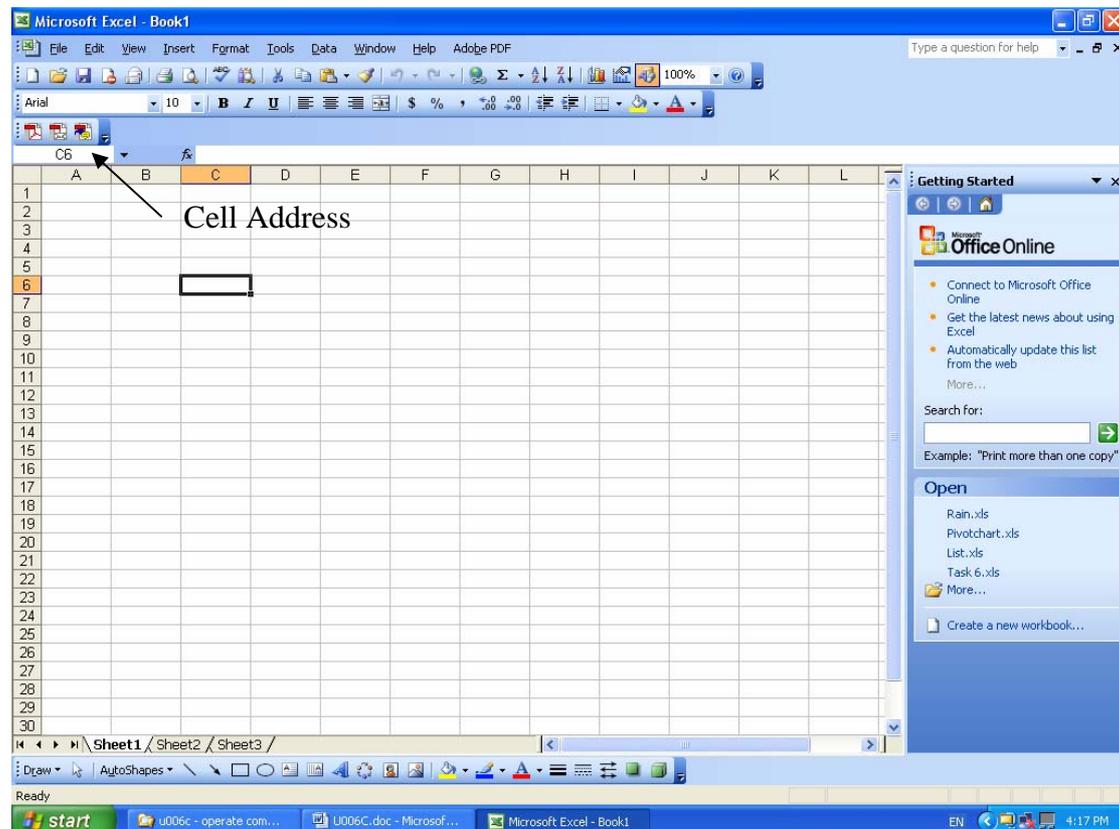


# **Operate Microsoft Excel 2003**

## What is a Spreadsheet

Spreadsheets are mainly used for mathematical work. Some people use them to work out their yearly budgets, while others use spreadsheets for reconciling their bank accounts. Teachers use spreadsheets for recording student marks and large companies use them for forecasting and projecting the future of their businesses.

Spreadsheets in Excel are made up of cells. Each cell has a unique address, which is determined by its Column Letter and Row Number. For example in the following Worksheet the cursor is in the cell that has the address C6



Notice when the cursor is in a cell, the cell has a thick black line around it. The address of the cell is shown on the line above the column letters.

## Moving the Cursor around the Worksheet

There are many ways of navigating around the Worksheet. The image viewed on the screen is only a small part or window of the actual Worksheet. To move the cursor, one of the easiest methods is to click the mouse in the desired cell. To move up or down a column the arrow keys and enter key can be used. The up and down arrows move the cursor up and down the rows. The Enter key moves the cursor down a cell. The left and right arrows also move the cursor one cell to the left or right.

To move the part of the worksheet visible on the screen, vertical and horizontal scroll bars are positioned on the right hand side and bottom of the worksheet.

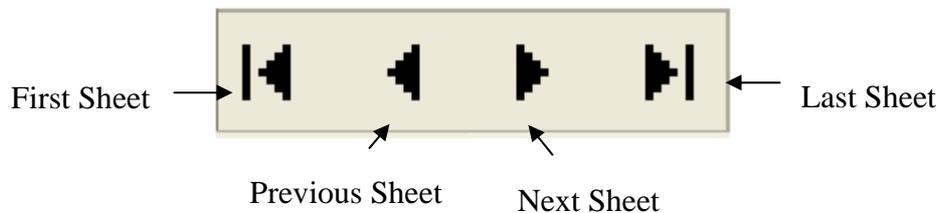
## The Workbook and Worksheet

Spreadsheets in Excel are contained in a single file called a Workbook. Each Workbook can contain one or more Worksheets (sometimes just called sheets). When Excel is opened, a new Workbook appears with a number of Worksheets contained in the Book and shown by Tabs at the bottom of the screen:



Click on the Worksheet name to select a different worksheet

Four buttons are positioned in the left-hand corner of the window that can be used to move through the sheets in a Workbook. The purpose of each button is shown below:



## Placing Data into a Cell

Any cell can contain one of three different things:

- A value or number
- A label consisting of the text, headings and subheadings used to give the sheet meaning
- A formula

To enter data into a cell, click the cursor into the cell, type in the value, label or formula, then hit Enter, Tab or click in another cell. All formulae in Excel begin with an equal sign (=).

## Simple Formulae

The simplest formula that can be placed onto a sheet involves adding up a column or row. Adding up in Excel is called a Sum and uses the =Sum formula. To enter a sum into a cell, click the cursor where the **answer** should appear then click the  $\Sigma$  tool from the toolbar. The first click of the tool will enter the formula into the cell. The formula will be in the form:

=Sum(B3:B7)

which indicates that Excel will add up the cells B3 to B7.

For example, the following section of a worksheet shows the formula entered by pressing the  $\Sigma$  tool to calculate the total of the figures in column B:

	A	B	C
1			
2			
3		4	
4		8	
5		9	
6		3	
7		=SUM(B3:B6)	
8			

Notice that when Excel enters the formula, it also places a dashed line around the cells that are going to be added together. If the dashed line is incorrect it is possible at this stage to use the mouse to highlight an alternative set of cells. To calculate the answer to the formula, click on the  $\Sigma$  tool a second time.

## Highlighting a Range of Cells

Many functions in Excel require that a number of cells be selected before performing the required operation. A range of cells in Excel can refer to a single cell, a column, a row or rectangular block of cells or in fact any number of individual cells highlighted by the user. The following are examples of ranges of cells selected in Excel:

	A	B	C
1			
2			
3			
4			
5			
6			
7	Income	16664.00	
8	Copying	6673.15	
9	Expenses	447.30	
10	Software	654.00	
11	Equipment	1477.00	
12			
13	Income	7412.55	
14			

F	G	H
	Expenses	
13/08/99	Log Book	2.95
15/08/99	CD-ROM	41.00
21/09/99	Disks	9.90
28/09/99	Laminating	30.60
1/10/99	Disks	165.90
3/10/99	TNT	37.00

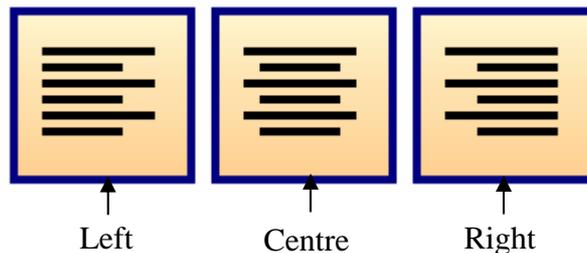
To select a number of ranges at the same time, such as that shown on the right above, hold the CTRL key down while selecting each individual range

## Working with Labels

When a label is placed into a cell it will automatically be placed on the left hand side of the cell. When a number is entered into a cell however, it will automatically be placed on the right of the cell. To help the readability of a sheet, it is important to justify the labels placed on top of a column of figures to the right. The following example shows firstly the automatic placement of labels and numbers and secondly the sheet with the labels justified on the right:

	A	B	C	D		A	B	C	D
1					1				
2					2				
3		Jan	Feb	Mar	3		Jan	Feb	Mar
4	Phone	103	89	120	4	Phone	103	89	120
5	Electricity	108	154	100	5	Electricity	108	154	100
6	Gas	56	99	78	6	Gas	56	99	78
7					7				

To adjust the labels, use one of the justification buttons. The justification buttons on the toolbar (shown below) will only justify the contents of a cell. They do not centre headings across a number of cells.



## Centering Labels over a Number of Columns

To centre a heading across several columns:

- Type the heading, into the first cell in the row where the heading is to be centred:

	A	B	C	D
1	Monthly Budget			
2				
3		Jan	Feb	Mar
4	Phone	103	89	120
5	Electricity	108	154	100
6	Gas	56	99	78
7				

- Select the range of the cells across which the heading is to be centred

	A	B	C	D
1	Monthly Budget			
2				
3		Jan	Feb	Mar
4	Phone	103	89	120
5	Electricity	108	154	100
6	Gas	56	99	78
7				

- Click the merge and centre tool from the toolbar



If the worksheet changes and the heading has to be centred over fewer columns:

- Click in the heading cell
- Click the Merge and Centre tool to remove the centring
- Select the new range for the heading
- Click the Merge and Centre tool to re-centre.

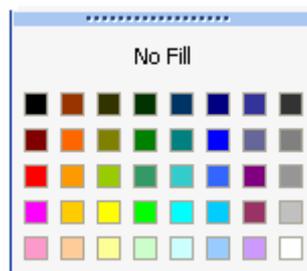
## Formatting the Data in a Spreadsheet

---

### Shading cells

To highlight certain figures on a worksheet, shading is often applied to the cells. To shade a range of cells:

- Select the cells to shade
- Click on the down arrow beside the Fill Color tool on the toolbar
- The following colour palette will appear:



- Click on the fill colour required.

### Changing the Font for Labels (Text) on the Worksheet

To change the size, style and colour of the font for labels:

- Select the label or labels to change
- Click on the down arrow beside the font style tool on the toolbar to change the type of font and click on the down arrow beside the font size tool to change the size of the font:



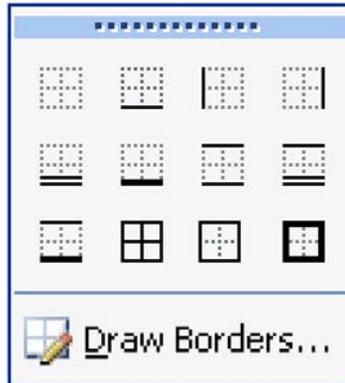
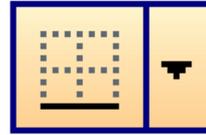
- Click on the down arrow beside the font colour tool on the toolbar to change the text colour



## Placing Borders on a Worksheet

The grid lines that are shown around each cell in the Worksheet do not print. In order to include printable borders on a sheet:

- Select the cells requiring the borders
- Click on the down arrow beside the Border tool
- A number of alternative borders appear:



The borders toolbar allows borders to be placed around the selected cells, inside them, to the left, right, bottom or top of the cells or place a grid over the whole selection. Notice there are two different outside border thicknesses.

## The Format Cells Menu Option

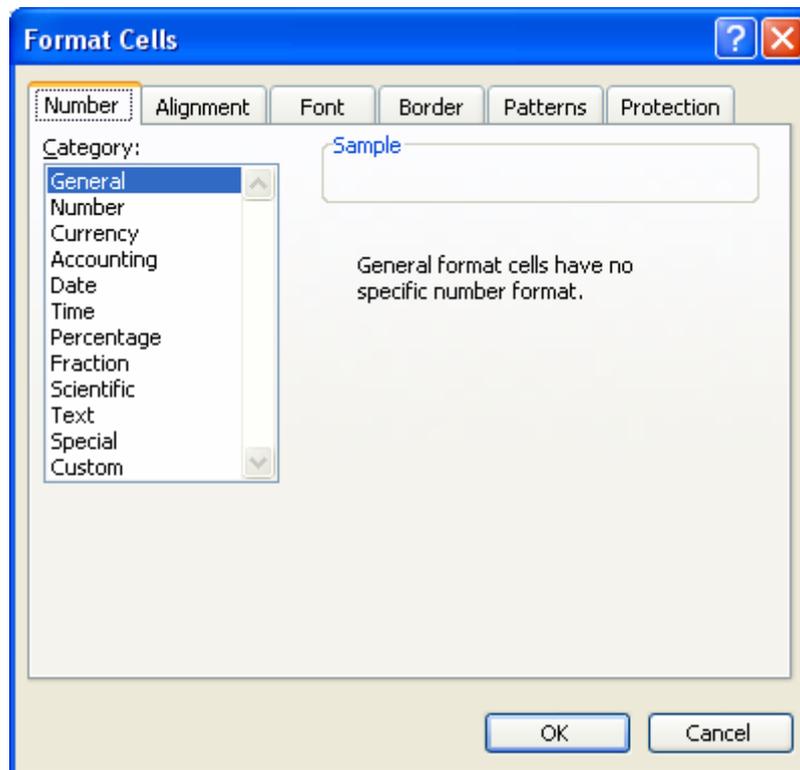
---

The full set of formatting options for a cell (or range of cells) is accessed by:

- Clicking on the cell(s) to format
- With the mouse over the cells, press the Right Mouse Button and choose Format Cells...

or

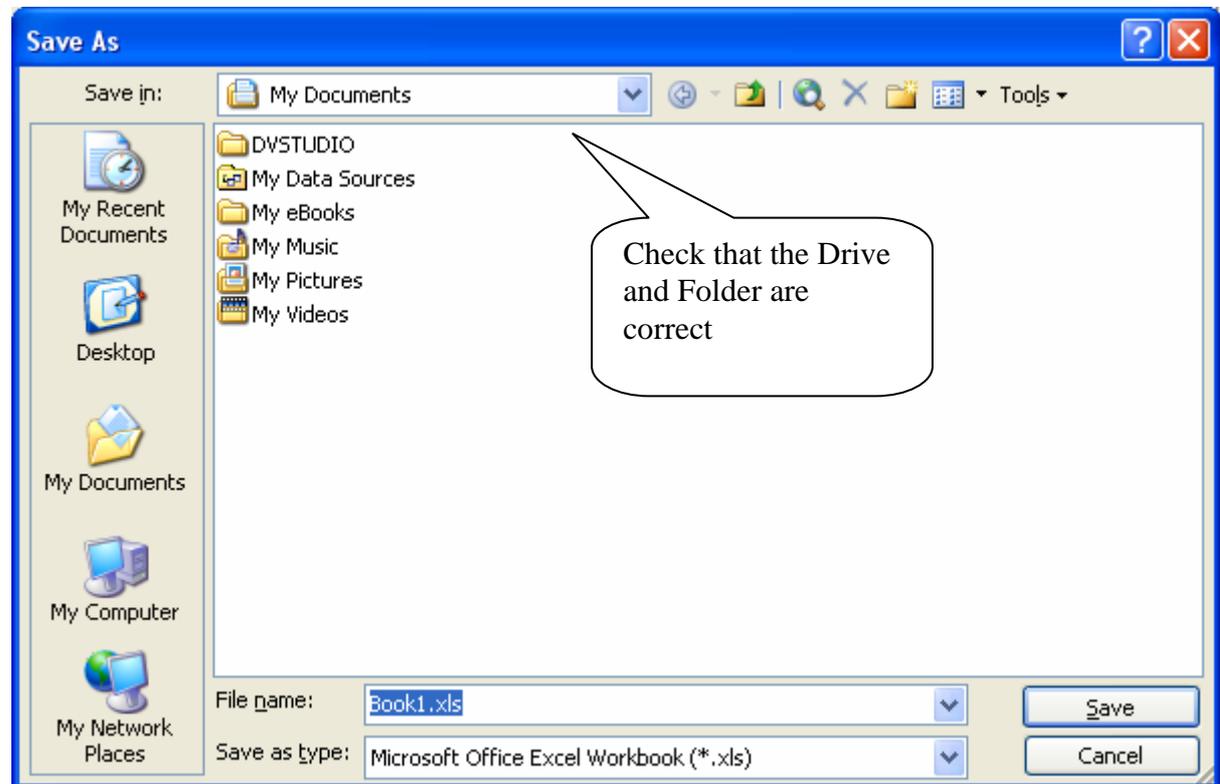
- Choose Format|Cells from the main menu
- The following tabbed dialog box appears:



- By clicking on the various tabs in this box it is possible to alter the format of numbers in cells, the alignment and font of the text, border and patterns of the cells and protection of cells.
- When the formatting for the cell is complete click on OK.

## Saving a Workbook

As mentioned previously all Worksheets are saved in one file known as the Workbook. To save the Worksheets in a Workbook, click on the save tool on the toolbar. The following dialog box will appear:



Enter the name of the file, check the folder and drive where the file is to be stored then click on the Save button.

## Printing a Worksheet

The simplest method for printing a worksheet is to open the worksheet then click on the printer tool on the toolbar.





## Task 20

Open Excel and type the following spreadsheet into Worksheet1. The instructions for the sheet are as follows:

- Format the cells and place borders on the sheet as shown.
- The TOTALS must be entered using a **formula**. To enter the formula click on the  $\Sigma$  tool, check the range of cells selected by Excel, then click the  $\Sigma$  tool a second time to get the answer.
- Save the workbook as TASK20 and then print the worksheet with your name placed in cell A12.
- Experiment by changing some of the table data to see the totals change. Edit the Dept A figure for Apr-Jun making it 5,320 and the Dept C figure for Oct-Dec making it 5,800.
- Print a second copy of the sheet showing the new figures. To save paper, place the second copy of the sheet on the back of the first print out.
- Close the Workbook by choosing File and then Close from the menu.

	A	B	C	D	E	F
1	<b>Quarterly Figures</b>					
2	Year ending December 2004					
3						
4		<b>Jan-Mar</b>	<b>Apr-Jun</b>	<b>Jul-Sep</b>	<b>Oct-Dec</b>	<b>Total</b>
5	Dept A	5,600	4,800	6,900	5,300	22,600
6	Dept B	5,430	4,367	5,780	5,700	21,277
7	Dept C	3,800	2,300	4,300	3,900	14,300
8	Dept D	5,809	4,600	5,200	5,390	20,999
9	<b>Qtr Totals</b>	20,639	16,067	22,180	20,290	

This column must have a formula for each total

This Row must have a formula for each total

..... End of Task 20 .....

## Widening or Narrowing Columns on a Worksheet

---

Often large names or long descriptions will not fit into a cell on the worksheet. If there is no data in the cell beside the entry, Excel will spread the data over two or more cells. If however, data is later placed in the second cell then Excel will only display the data that fits in the first cell. The only way to overcome this problem is to widen the whole column of the Worksheet.

Once data has been placed into a number of cells it is possible to have Excel widen the column so that the largest entry just fits. To have Excel make the column width fit the cell entry, move the mouse pointer to the top of the sheet where the column letters are displayed. A double-headed arrow will appear when the mouse is over the column boundary. A double click on this symbol will widen the column to a size sufficient to hold the largest entry in the column. 

To manually widen or narrow the columns, move the mouse to the boundary between the columns. When the double arrow appears hold the left mouse button down and **drag** the column boundary to the left or right to adjust the width of the column.

To enter an exact size for a column move the mouse up to the column letter. Press the Right Mouse Button over the double-headed arrow and a menu will appear. Select Column Width... from the menu and the following dialog box appears:



Enter the desired width, then press OK.

To widen or narrow multiple columns highlight the column letters for the set of columns before widening or narrowing as a group.

## Averaging Figures in a Worksheet

---

To enter a formula to calculate the average of a number of figures:

- Place the cursor in the answer cell
- Type in =**AVERAGE**(
- Using the mouse, highlight the cells to average
- Type in )
- Press Enter

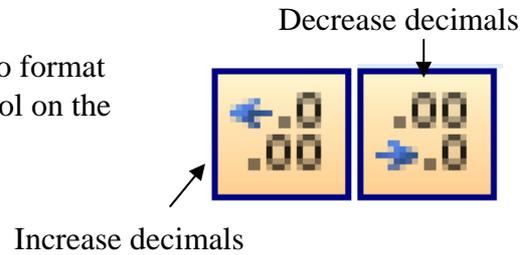
The average of the figures highlighted should appear.

## To Change the Number of Decimal Places in Numbers

---

When entering numbers in a cell only the significant digits will appear. For example, a number such as 89.90 will be entered into the cell as 89.9. To increase or decrease the number of decimal places in numbers:

- Select the range of cells with the number(s) to format
- Click on the increase or decrease decimals tool on the toolbar



NOTE: Each click on the tool will alter the number of decimal places by one.



## Task 21

Open a new workbook in Excel by clicking on the New tool on the toolbar. Enter the following spreadsheet into Worksheet1. The instructions for the sheet are as follows:



- Format the sheet as shown, including the shading and borders.
- Enter the **formula** into the sheet to calculate the average distance for each contestant. Format the average's column so that each number has two decimal places.
- Save the Workbook as TASK21. Place your name on the bottom of the sheet and print a copy of the Worksheet.
- Edit the worksheet so that the distances for Jacinta Reed are now 1.13, 1.29, 1.31, 1.21. Print a copy of this new sheet on the back of the first print out.

	A	B	C	D	E	F
1	<b>Average Distances</b>					
2	Lockwood Gymnastic Club					
3	Summer 2004 Season					
4						
5	<i>Under 10 Long Jump Event</i>					
6	<b>Swimmer's Name</b>	<b>Race 1</b>	<b>Race 2</b>	<b>Race 3</b>	<b>Race 4</b>	<b>Average Distance</b>
7	Jacinta Reed	1.29	1.12	1.03	1.23	1.17
8	Melanie Parker	1.30	1.56	1.44	1.60	1.48
9	Julie Miller	1.50	1.45	1.67	1.33	1.49
10	Danielle Steel	1.06	1.21	1.44	1.32	1.26
11	Samantha Jones	1.11	1.22	1.12	1.41	1.22
12	Penelope Carr	1.20	1.34	1.22	1.41	1.29
13	Paula Smith	1.18	1.23	1.33	1.26	1.25
14	Josephine Wilson	1.34	1.32	1.43	1.48	1.39
15	Carole Barton	1.26	1.55	1.38	1.42	1.40
16	Louise Miles	1.56	1.50	1.66	1.73	1.61
17						
18	Distances are in metres					

This column must use a formula to calculate the average

..... End of Task 21 .....

## Removing Columns or Rows from a Worksheet

---

Often it is necessary to remove an entire row or column from a worksheet. To do this:

- Select the columns or rows to delete by highlighting either the column letters on the top of the sheet or row numbers on the left of the sheet.
- Select EDIT from the menu
- Select DELETE
- The columns or rows selected will disappear.

## Inserting New Columns or Rows into a Worksheet

---

If a new column or row is needed in a worksheet:

- Select either the column letter to the right of the new column or the row below the new row
- Choose Insert from the menu
- Choose either Rows or Columns

The new column or row will appear and push the existing columns to the right or rows down. If a number of rows need to be inserted select the number of rows below where the rows are to be inserted and then choose Insert|Rows. The same process will work to insert a number of columns.

## Building Formula on a Worksheet

---

Excel basically has two types of formulae – those using in-built Excel functions such as Sum or Average and those built using normal arithmetic operations such as addition or subtraction, which the user builds. When building a formula in Excel the following symbols may be used:

+	addition
-	subtraction
*	multiplication
/	division
^	raise to the power e.g. $4^3$ is the same as $4^3$

Formulae in Excel all begin with the = sign. When an equal sign is pressed in a cell Excel begins to build a formula. Any click of the mouse in a cell, will register the address of the cell in the formula.

When building formulae it is important to consider the order in which the operations are calculated. All arithmetic operations follow specific rules. These rules are often referred to as **BODMAS**. BODMAS is explained in the table below:

B	Brackets	Anything in brackets is calculated first
O	Of	Powers of are calculated next e.g. $2^3$ would be calculated next
DM	Division or Multiplication	Division or multiplication is calculated next, in order from left to right
AS	Addition or Subtraction	Addition or subtraction is calculated last, in order from left to right

This can be illustrated by working out a number of example formulae. For example:

$$2 + 3 * 8 = 26 \text{ not } 40$$

$$7 - 4 / 2 = 5 \text{ not } 1\frac{1}{2}$$

$$(2+5)*3 = 21$$

The importance of the order of operations is further illustrated by a longer example:

$$2 + 3 - 8 / 4 - 3 + 6 * 2 + 2^3 - 6 / (2 + 1)$$

Step 1

Brackets first

$$2 + 3 - 8 / 4 - 3 + 6 * 2 + 2^3 - 6 / 3$$

Step 2

Powers of

$$2 + 3 - 8 / 4 - 3 + 6 * 2 + 8 - 6 / 3$$

Step 3

Multiplication or division from left to right

$$2 + 3 - 2 - 3 + 6 * 2 + 8 - 6 / 3$$

$$2 + 3 - 2 - 3 + 12 + 8 - 6 / 3$$

$$2 + 3 - 2 - 3 + 12 + 8 - 2$$

Step 4

Addition or subtraction from left to right

$$5 - 2 - 3 + 12 + 8 - 2$$

$$3 - 3 + 12 + 8 - 2$$

$$0 + 12 + 8 - 2$$

$$12 + 8 - 2$$

$$20 - 2$$

$$18$$

## Printing Formulae in Cells rather than Answers

---

The quickest way to view the formulae in a worksheet, in place of the answers, is to press CTRL ~. The columns widen in this view and it is often necessary to narrow the columns before printing the sheet.

To return the sheet to a normal sheet, with answers visible, press CTRL ~ a second time. This is known as a toggle key since one press turns on the feature and a second press turns the feature off.



## Task 22

Open a new workbook in Excel and type in the following spreadsheet. This Task illustrates the need for brackets in a formula. The instructions for this sheet are as follows:

- The formula for the Margin row is Sales – Cost of Goods Sold. Design the correct formula for the row and place in into B10, C10, D10 and E10.
- The total column is also a formula. Use the  $\Sigma$  tool to calculate the answer.
- Save the Worksheet as TASK22.
- Place your name under the sheet and print a copy of the Worksheet.
- Change the worksheet so that the formulae are visible and not the answers. Adjust the columns if necessary and print the sheet with the formula, on the back of your worksheet.

	A	B	C	D	E	F
1	<b>Riley's Corner Store</b>					
2	<b>Quarterly Sales Figures</b>					
3	<b>2004</b>					
4						
5						
6		Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
7	Sales	100,000	120,000	150,000	162,500	532,500
8	Cost of Goods Sold	68,000	72,000	81,500	109,000	330,500
9						
10	Margin	32,000	48,000	68,500	53,500	202,000
11						

Enter the formula to subtract the Cost of Goods Sold from Sales

The total column uses =Sum() formulae

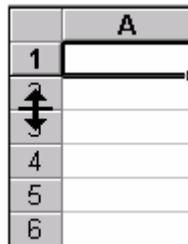
..... *End of Task 22* .....

## Expanding the Height of a Row

---

To make a row larger, to allow more than one line in the cell:

- Move the cursor between the row numbers until a double headed arrow appears thus:



- With the double headed arrow visible hold the left mouse button down while dragging the row divider down to expand the size of the row.

To set the exact row height:

- Move the mouse over the row number and press the Right Mouse Button
- Choose Row Height... from the menu
- The following dialog box appears:



- Enter the exact row height then click OK

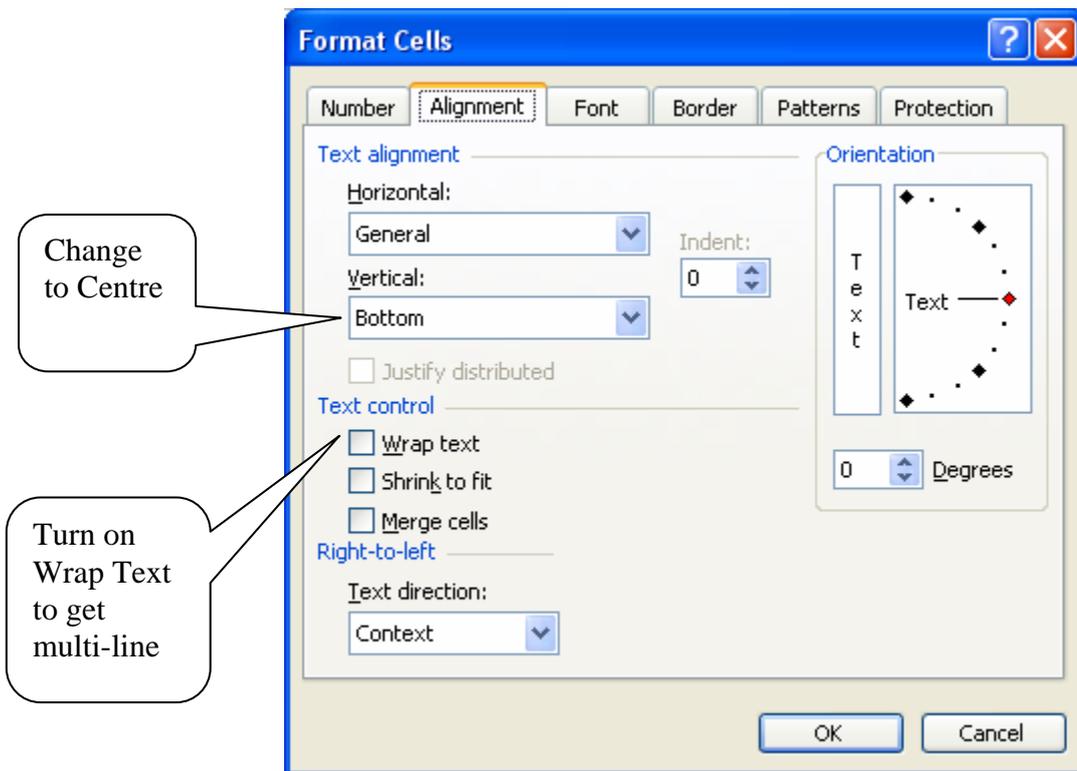
To format the row to allow multiple lines of text:

- Press the Right Mouse Button over the row number for the expanded row
- The following menu appears:



- Select Format Cells...

- The following dialog box will appear. Alter the settings as shown:





## Task 23

Open a new workbook in Excel and then type the following into Worksheet 1. The instructions for the sheet are as follows:

- The heading is in Times New Roman 14 point bolded font. It is centred across columns A to D.
- Column B is 11 mm wide.
- Widen row 3 and change the settings to allow multi-line text.
- The formula in column C that calculates the Markup is Cost Price \* Percentage Markup
- The formula in column D that calculates the sale price is Cost Price + Markup
- Format the sheet as shown below
- Save the sheet as TASK23 and print a copy of the sheet. Print a second copy of the sheet with the formulae shown. Use recycling techniques to save paper.

	A	B	C	D
1	<b>Pricing Guide</b>			
2				
3	<b>Cost Price</b>	<b>Percentage Markup</b>	<b>Markup</b>	<b>Sale Price</b>
4	\$1.50	10%	0.15	\$1.65
5	\$3.20	15%	0.48	\$3.68
6	\$8.10	13%	1.01	\$9.11
7	\$10.00	20%	2.00	\$12.00
8	\$12.00	25%	3.00	\$15.00

Enter a formula in this column

Use a formula to calculate the markup

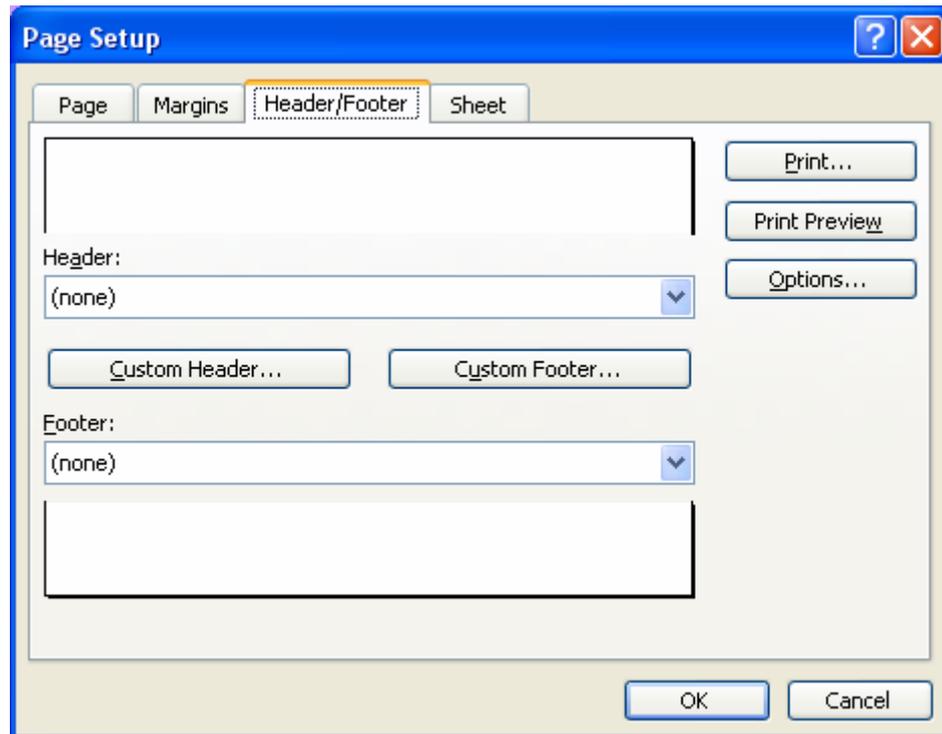
..... *End of Task 23* .....

## Adding Headers and Footers to a Worksheet

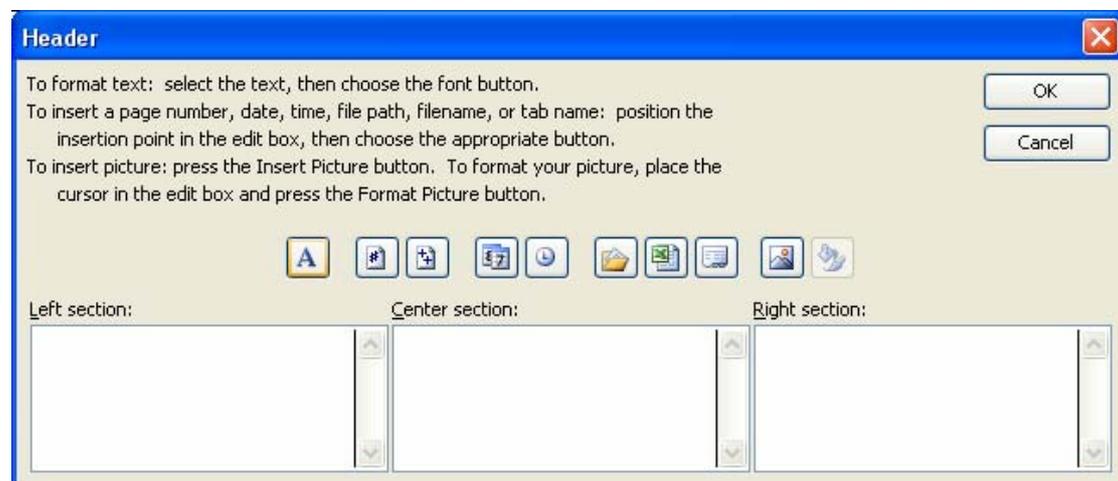
Headers and Footers can be quickly added to a worksheet by choosing:

- View from the menu
- Header and Footer...

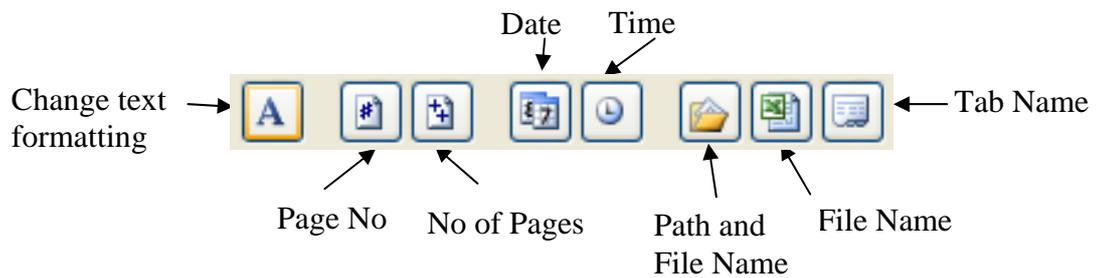
The following dialog box appears:



There are a number of suggested Headers and Footers in the drop down list boxes under each heading. If a different Header or Footer is required click on the Custom Header or Custom Footer button and the following dialog box appears:



The three boxes allow a different left, right and centred section for the header and footer. The toolbar supplied has the following tools:



- Add any text required and/or click the relevant tool on the toolbar to the Header or Footer section. Click on OK to exit this dialog box.
- Click OK a second time to close the Header and Footer dialog box.



## Task 24

Open a new Workbook in Excel and type into Worksheet 1 the Petty Cash book shown below. The instructions for the sheet are as follows:

- The heading is in Arial 14 point bolded italic font.
- Place the formulae into column D to calculate the Balance. The actual formulae are explained beside the column.
- Carry the Balance Forward by placing a formula into D20.
- Format the cell as shown.

Add a footer to the sheet, with your name in the left section, the date in the centre and the File Name in the right section. Save the sheet as TASK24 and print a copy. Change the Balance Brought Forward to \$125.00 and print a second copy of the sheet on the back of the first.

	A	B	C	D
1	<b><i>Basford Real Estate</i></b>			
2				
3	<b>PETTY CASH BOOK</b>			
4	30-Jun-04			
5				
6	Balance Brought Forward			\$150.00
7				
8	<b>Date</b>	<b>Expense</b>	<b>Amount</b>	<b>Balance</b>
9	2-Jun	Postage	5.00	\$145.00
10	5-Jun	Tea	3.56	\$141.44
11	10-Jun	Stationery	12.45	\$128.99
12	15-Jun	Morning Tea	8.76	\$120.23
13	17-Jun	Postage	7.50	\$112.73
14	19-Jun	Envelopes	5.80	\$106.93
15	21-Jun	Photocopying	21.90	\$85.03
16	23-Jun	Business Cards	19.80	\$65.23
17	24-Jun	Freight	10.00	\$55.23
18	28-Jun	Postage	6.40	\$48.83
19				
20	Balance Carried Forward			\$48.83

Calculate the first figure by taking the amount away from the Balance Brought Forward

Calculate the rest of the Balances by taking the amount away from the previous balance

Carry the Balance forward using the formula =D18

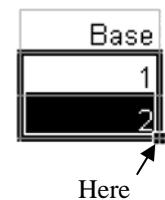
..... End of Task 24 .....

## To Autofill cells with a series of numbers

---

Excel will fill cells with a series of numbers provided that the first two numbers in the series have been entered into the cells. Excel also knows how to autofill dates, using the months of the year or the years themselves, as well as quarters in a year. These autofills only require the first in the series to be entered. To autofill a series of numbers:

- Enter the first number in the series into a cell
- Enter the second number in a cell beside the first
- Select both cells
- Move the mouse over the bottom right of the two cells near the small square shown in this diagram
- Notice that the pointer changes to a bold cross
- With the cross visible hold down the left mouse button and highlight the range for the series.
- Release the mouse button and the range will fill with numbers, using the interval between the first two numbers as the step in the series.



## To copy a cell's contents to other cells

---

Copying and autofill are very similar in that they both utilise the same cross at the bottom right of the selected cell. Excel however, knows by the contents of the cell whether to copy or autofill. To copy a cell's contents:

- Select the cell to copy **from**
- Move the mouse over the small square in the bottom right of the cell
- Notice that the pointer changes to a bold cross (the same cross as for Autofill)
- With the cross visible hold the left mouse button down and highlight the cells to **copy to**.



## Task 25

Open a new Workbook in Excel and type the following data into Worksheet 1. The instructions for the sheet are as follows:

- Change the height of Row 3 to 24 and wrap the text
- Widen column C to 26
- The heading uses 12 point bolded Arial font
- Use Data fill to place the numbers in Column A
- Copy formulae wherever possible
- The formula for Column B is  $\text{Speed in km/h} * 1000 / 60 / 60$
- The formula for Column C is  $\text{Speed in m/s} * 2.52$
- Format the cells as shown
- Save the Task as TASK25
- Print a copy as shown below and a second copy on the back of the first with formulae shown.

	A	B	C
1	<b>Vehicle Reaction Times</b>		
2			
3	<b>Speed Km/Hr</b>	<b>Speed Metres/s</b>	<b>Metres travelled after the driver presses the brake</b>
4	10	2.78	7
5	20	5.56	14
6	30	8.33	21
7	40	11.11	28
8	50	13.89	35
9	60	16.67	42
10	70	19.44	49
11	80	22.22	56
12	90	25.00	63
13	100	27.78	70

Use a formula to calculate the speed in metres/sec

Use a formula to calculate the distance in metres

..... End of Task 25 .....

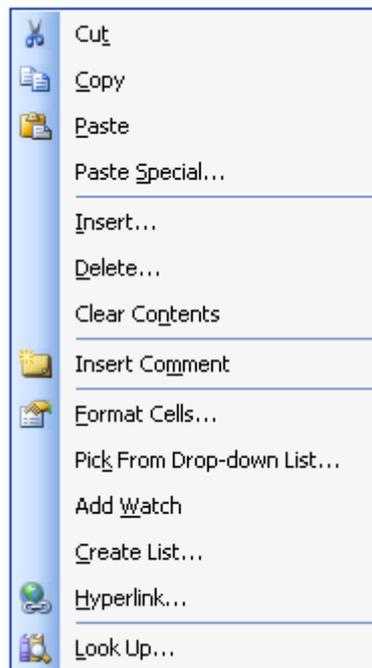
## Dates in Excel

---

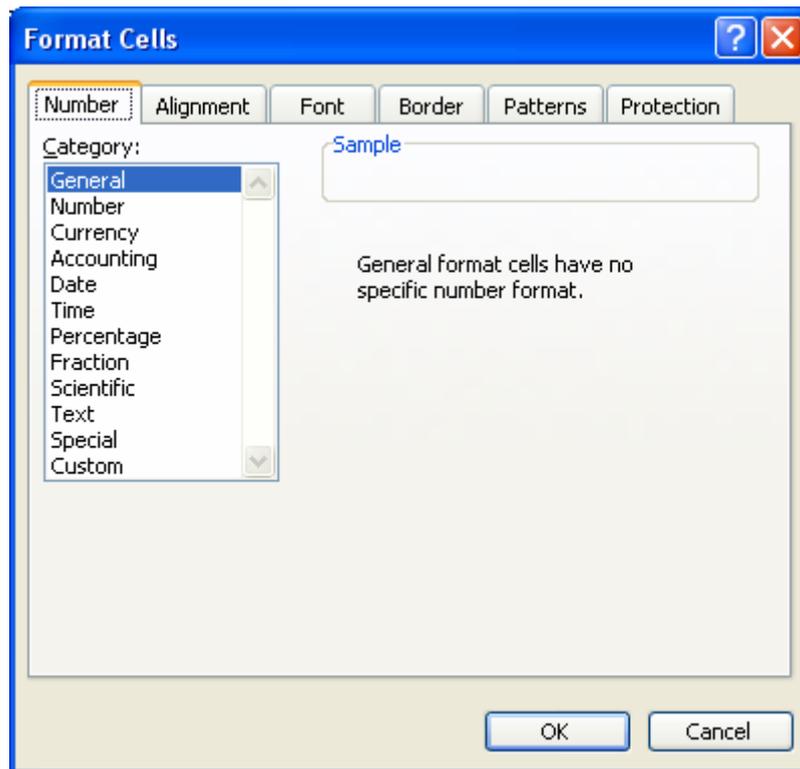
Dates are used extensively in Excel and can be used in formulae to calculate the amount of time that has elapsed between two dates. They are stored in Excel as a number. By default this number represents the number of days that have elapsed since 1<sup>st</sup> February 1900. To avoid confusion with the century it is recommended that all dates be entered using four digits for the year rather than two e.g. 1900 and 2000 rather than 00.

Once a date has been entered into a cell it can then be formatted to look many different ways. To change the format of a date:

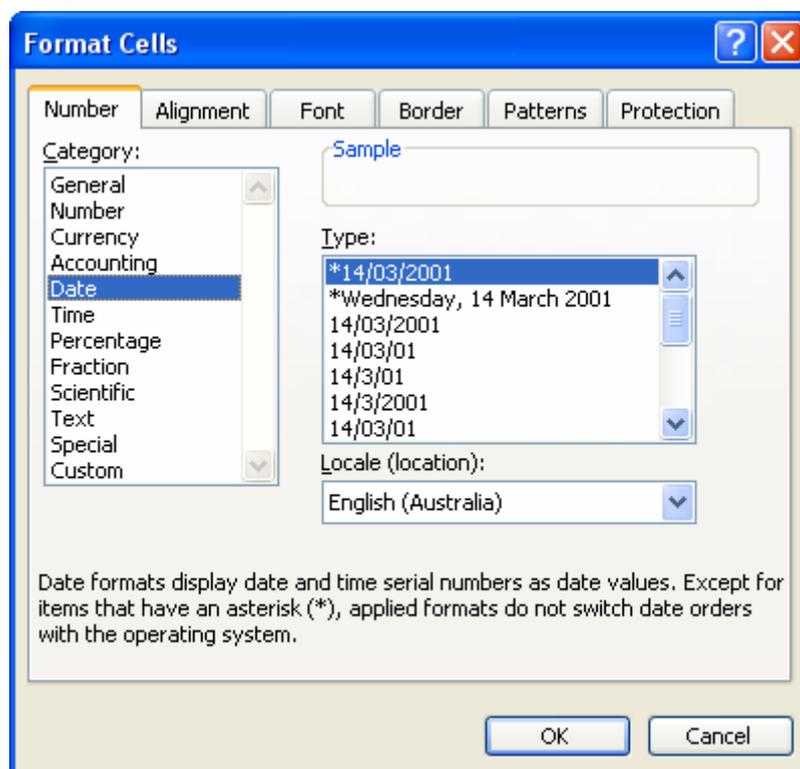
- Select the cells that contain the dates
- Click the Right Mouse Button over the cells
- The following menu appears:



- Select Format Cells...
- The following dialog box appears:



- Click the Date option from the Category box and the following list of sample formats will appear:



- Scroll through the list of options in the Type box until a suitable format is found. Click on the format then OK to apply it.



## Task 26

Open a new workbook in Excel and type the following sheet into Worksheet 1. The instructions for the sheet are as follows:

- Change the height of Row 4 to 25.5 and make the row multi-line
- Use Autofill to place the Invoice Numbers into Column C
- Enter the date using dd/mm/yyyy and then format the column to display dd-mmm as shown.
- Use an =sum formula to calculate the total amount
- Format the sheet as shown
- Save the Task as TASK26
- Print a copy as shown below and a second copy on the back of the first with formulae shown.

	A	B	C	D	E
1	<b>Accounts Receivable Journal</b>				
2	<b>31st March 2004</b>				
3					
4	Name	Paid	Invoice Numbers	Date	Amount
5	Wendy Oliver	N	31132	10-Feb	\$150.50
6	Julie Sutherland	N	31133	10-Feb	\$100.00
7	Julian Paterson	Y	31134	19-Feb	\$137.00
8	Aaron Davidson	N	31135	21-Feb	\$170.00
9	Pat Jacks	Y	31136	21-Feb	\$80.00
10	Charles Carr	N	31137	3-Mar	\$90.00
11	Eileen Robertson	Y	31138	5-Mar	\$120.00
12	Percival Boag	N	31139	5-Mar	\$110.00
13	Peter Haynes	N	31140	15-Mar	\$95.00
14	Ruby Wilson	Y	31141	21-Mar	\$100.00
15	Diana Swift	N	31142	23-Mar	\$210.00
16					<b>\$1,362.50</b>

Use Autofill to enter the invoice numbers

Format the date column

Use a formula

..... End of Task 26 .....



## Task 27

Open a new workbook in Excel and type in the following simple Profit and Loss Sheet. The instructions for the sheet are as follows:

- The heading is in 12 point bolded Arial
- The Interest is 5% of the Gross Profit
- The Taxes are calculated as 23% of the Gross Profit
- The Net Profit is Gross Profit – (Interest+Taxes)
- Format the sheet as shown
- Save and Print a copy. Print a second copy with formulae shown.

	A	B	C	D
1	<b>Simple Profit and Loss Statement</b>			
2	<b>Quarterly Report</b>			
3				
4		<b>Jan</b>	<b>Feb</b>	<b>Mar</b>
5	Gross Profit	12590	13250	14250
6				
7	Interest	629.5	662.5	712.5
8	Taxes	2895.7	3047.5	3277.5
9				
10	Net Profit	9064.8	9540	10260

These three rows must contain formulae

..... *End of Task 27* .....

## Opening an Existing Workbook

---

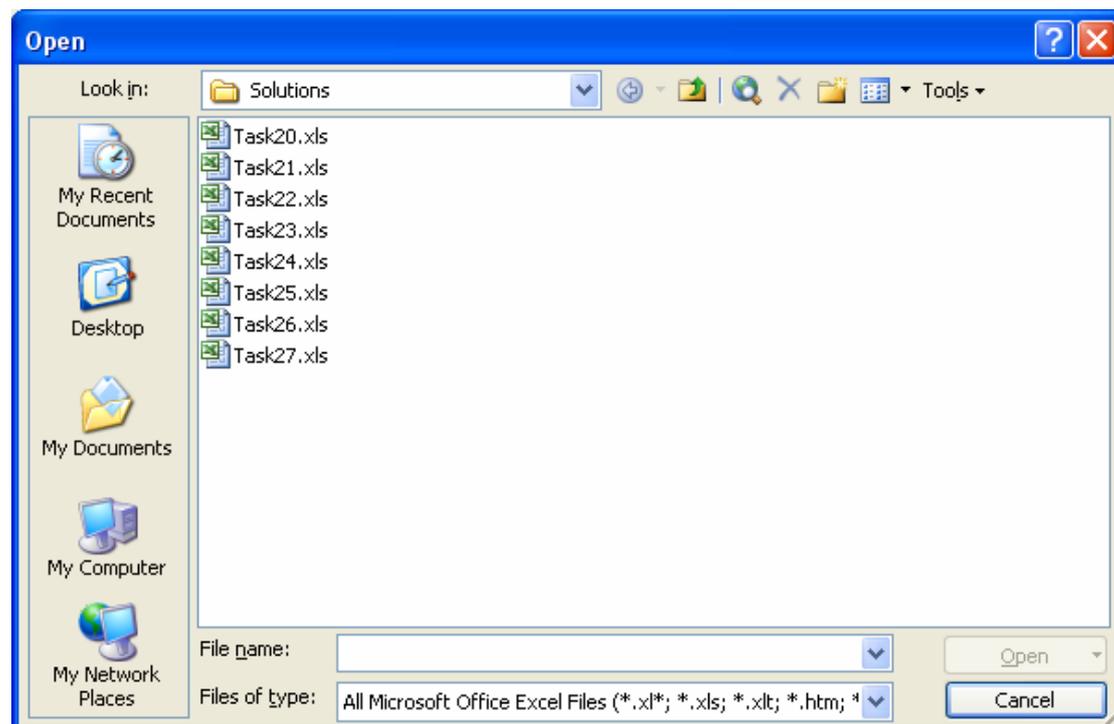
Once a Workbook has been saved it can be retrieved from disk by choosing:

- File
- Open

from the menu, or clicking on the File Open tool on the toolbar:



The File Open dialog box will be displayed:



- Change to the drive or folder where the file is located
- Click on the name of the Workbook from the list displayed.
- Click on Open

The workbook will display, with the sheet that was last used open.

## Editing a Cell Range in a Formula

To edit a formula:

- Click in the cell where the formula is located
- Press the F2 key to put the formula into edit mode
- Notice a blue line appears around the cell range in the Worksheet and the cell range in the formula is also shown in blue:

AVERAGE							X	✓	=	=AVERAGE(B8:E8)
	A	B	C	D	E	F	G			
1										
2										
3	<b>Sydney High School</b>									
4										
5	<b>Student Results 2000</b>									
6										
7	Name	Test 1	Test 2	Test 3	Test 4	Average				
8	Fred Johnson	65	78	67	81	=AVERAGE(B8:E8)				
9	Mary Peters	67	77	54	71	67.25				
10	Louise Wright	45	38	51	44	44.5				

- Move the blue square found at the bottom right of the cell range to adjust the formula
- Press Enter.



## Task 28

Open a new worksheet in Excel and type in the data shown below. Use an =Average formula in Column F:

	A	B	C	D	E	F
1	<b>Sydney High School</b>					
2	<b>Year 11 Mathematics</b>					
3						
4	<b>Student Results 2004</b>					
5						
6	<b>Name</b>	<b>Test 1</b>	<b>Test 2</b>	<b>Test 3</b>	<b>Test 4</b>	<b>Average</b>
7	Fred Johnson	65	78	67	81	72.75
8	Mary Peters	67	77	54	71	67.25
9	Louise Wright	45	38	51	44	44.50
10	Ciro Donata	66	75	73	62	69.00
11	Tham Chin	72	88	69	75	76.00
12	John Wilson	91	87	84	86	87.00
13	Betty Spillane	88	76	78	80	80.50

Print a copy of the sheet showing the formula in each cell in Column F. Save the sheet calling it TASK28.

Make the following changes to the Worksheet and resave it as TASK28b. Add your name centred in the footer of the sheet. Print a copy of the new worksheet.

- Add a new row 9 to the Worksheet so that a new student can be entered into the sheet. Place the results for Paula Costello (74, 73, 81, 69) into the table and add the formula required to calculate her average mark.
- Change Fred Johnson's Test 4 mark to 68.
- Remove Mary Peters from the table by deleting her row.
- Add a new column to the Worksheet and add the marks shown in the sheet over the page for Test 5
- Check the formula in the average column. As numbers are entered into the new column Excel automatically updates the formula.

	A	B	C	D	E	F	G
1	<b>Sydney High School Year 11 Mathematics</b>						
2							
3							
4	<b>Student Results 2004</b>						
5							
6	<b>Name</b>	<b>Test 1</b>	<b>Test 2</b>	<b>Test 3</b>	<b>Test 4</b>	<b>Test 5</b>	<b>Average</b>
7	Fred Johnson	65	78	67	68	75	70.60
8	Paula Costello	74	73	81	69	69	73.20
9	Louise Wright	45	38	51	44	49	45.40
10	Ciro Donata	66	75	73	62	65	68.20
11	Tham Chin	72	88	69	75	73	75.40
12	John Wilson	91	87	84	86	81	85.80
13	Betty Spillane	88	76	78	80	70	78.40

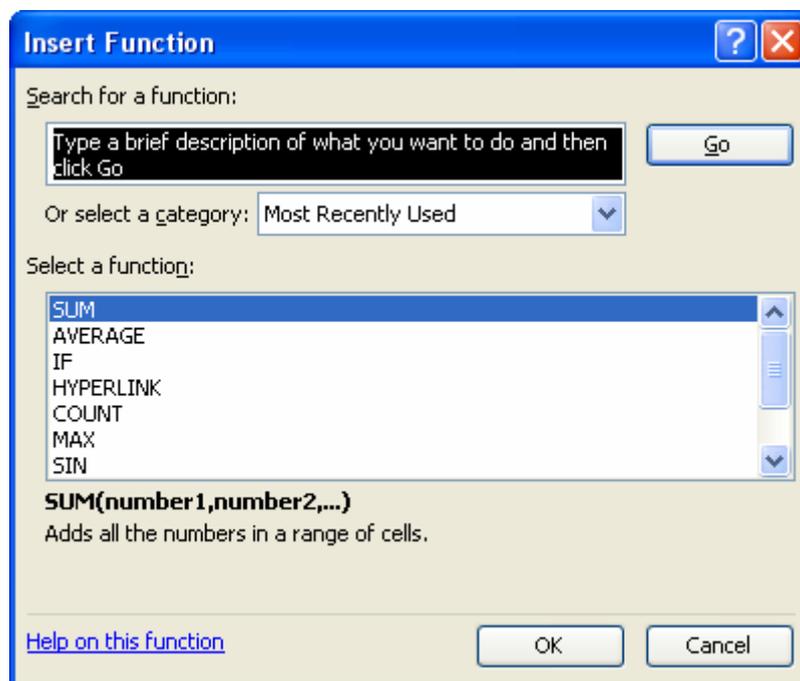
..... *End of Task 28* .....

## Functions in Excel

Excel has hundreds of built-in functions that can be used within formulae in an Excel spreadsheet. In order to find out the syntax or correct format for each, click on the function key to the right of the address on the formula bar:



A dialog box appears:



Enter a short description of what the function is to do or select a category for the function from the list box. Select the required function from the function list box and short explanation of the function appears below the two list boxes. To get further details on the function click on the Help link at the bottom of the dialog box:

[Help on this function](#)

## Math and Trig Functions

---

Excel has numerous mathematical and trigonometry functions that can be used in formulae. To see a full-list select the Math and Trig category from the Insert Function dialog box described previously. The mathematical functions deal with numbers, while the trigonometry functions deal with the angles and sides of triangles. To illustrate the use of some of these functions the following three Tasks will illustrate the use of the functions Pi, Sqrt, Round and Ceiling. A detailed description of each function is given prior to its corresponding Task.

Function	Purpose
PI()	Gives the value of pi to 15 digits This function is commonly used in calculations related to circles and spheres.

Pi is approximately equal to  $22/7$  or  $3.14159\dots$  Pi is an irrational number, which means the number of decimal places in the number goes on forever. This special number is used in determining the circumference or outside distance of a circle and the area of a circle. For example the formula for the area of a circle is:

$$\text{Area} = \pi r^2$$

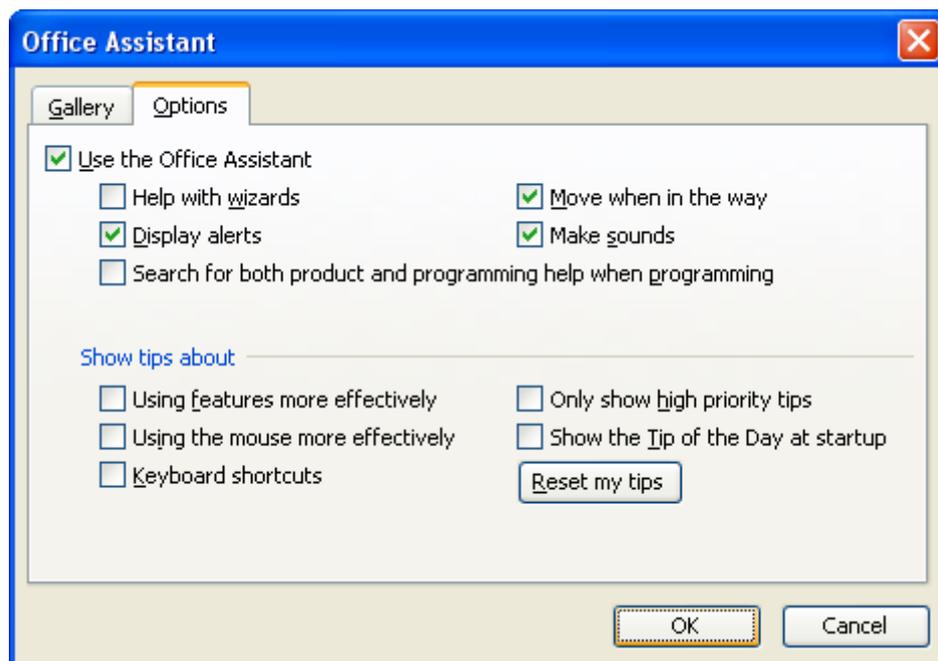
where  $\pi$  is the mathematical symbol for Pi() and r represents the radius of the circle.

## Using On-Line Help

---

All Microsoft Office packages come with an on-line help manual that gives detailed information about the capabilities of the particular package. Help also comes with an Office Assistant that may or may not be of assistance. In order to turn it off so that the Help Index can be accessed directly:

- Click the mouse over the Assistant and choose Options
- The following dialog box appears:



- Remove the tick beside Use the Office Assistant

To open Help choose:

- Help
- Microsoft Excel Help from the menu
- The Help Task Pane appears:



- Enter the Search topic in the top text box
- Click the Green arrow button.
- A list of Help topics will appear in the centre of the Task Pane. Choose the topic from the list and a full help screen will appear in a new window.



## Task 29

This worksheet demonstrates the use of PI() to calculate the volume of water (in litres) in variously sized round water tanks. Use on-line help to get a **copy of the help sheet** on Pi(). The volume of water in a tank is determined by finding the area of the top of the tank (m<sup>2</sup>), then multiplying it by the depth of water (m) in the tank, multiplied by 1000.

Open a new spreadsheet in Excel and type in the following sheet. The instructions for the sheet are as follows:

- The headings are in 12 point Arial font
- Centre the heading across columns A to C.
- Row 4 is 39 in height and multi-lined
- The figures in Column C are calculated using the formula:

$$\text{Volume} = (\text{Diameter}/2)^2 * \text{pi}() * \text{Height} * 1000$$

- Copy the formula down the column.
- Reduce the number of decimal places in the cells so they are whole numbers and format to commas.

Place your name into cell A13 so that it will print on the sheet. Save the sheet as TASK29. Print the sheet as shown and then print the sheet a second time showing the formulae in the cells. **Do not** resave the sheet.

	A	B	C
1	<b>Watersafe Poly Rain Tanks</b>		
2	<b>Storage Capacity Chart</b>		
3			
4	Diameter of the Tank in metres	Height of the Tank in metres	Capacity in litres
5	0.5	1.0	196
6	1.0	1.0	785
7	1.2	1.0	1,131
8	1.5	1.5	2,651
9	2.0	2.0	6,283
10	2.0	3.0	9,425
11	3.0	3.0	21,206

Work out the formula for this column

..... End of Task 29 .....

## The Square Root Function

---

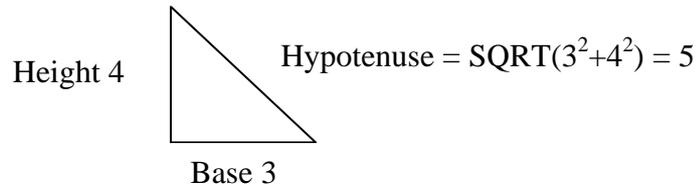
The square root function, SQRT, is used such that, given a number, the square root is the number that when multiplied by itself will yield the original number. For example the square root of 9 is 3, since  $3 \times 3 = 9$ . Many mathematical calculations require square roots.

Function	Purpose
SQRT	Returns the positive square root of a number



## Task 30

This worksheet demonstrates the use of `SQRT()` to calculate the length of the hypotenuse (the longest side) of a triangle, given different sizes for the base and height of the triangle. To find the length of the hypotenuse, the length of the base is squared and added to the length of the height squared and then the square root of this answer is found. For example:



Open a new worksheet in Excel and type in the sheet shown below. The instructions for the sheet are as follows:

- Use Autofill to place the base figures down column A.
- Place grid lines into the worksheet and a large line across the bottom of row 2.
- Shade the subheadings light grey as shown.
- Do not enter the figures shown for the hypotenuse in column C - these are derived from a formula. Place the formula `=SQRT(A4^2+B4^2)` into C4. Use copy to place the formulae down the column.

	A	B	C
1	<b>Table of Hypotenuse Lengths</b>		
2			
3	Base	Height	Hypotenuse
4	1	1	1.414214
5	2	1	2.236068
6	3	1	3.162278
7	4	1	4.123106
8	5	1	5.099020

Use a formula in this column

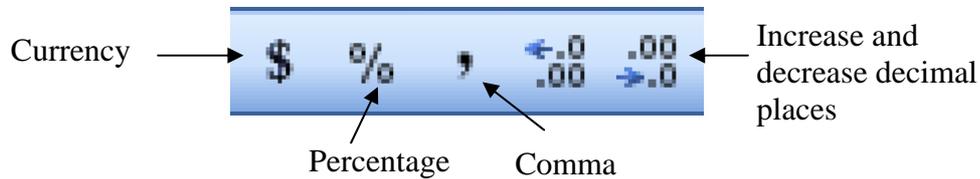
Place your name on the bottom of the sheet and save the sheet as TASK30. Print a copy of the sheet as it is shown and a second copy with the formulae shown.

Change the base figures so that they go from 10 to 50 and change the height to 2. Print the sheet, showing the new hypotenuse figures.

..... End of Task 30 .....

## Formatting Numbers

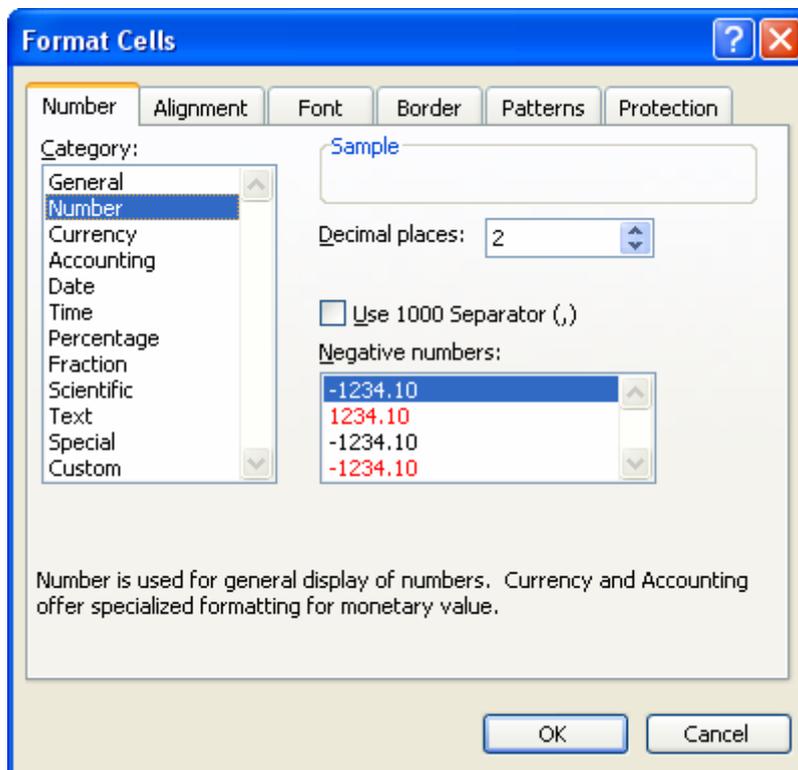
Excel provides a number of tools on the toolbar for formatting numbers. To use them, simply select the cells to format and then click on the relevant tool:



While a large proportion of the formatting required for numbers is provided by these tools, a more extensive list of number formats are provided using the Format Cells dialog box. To format numbers using this dialog box:

- Select the cells to format
- Press the right mouse button
- Choose Format Cells
- The Format Cells dialog box appears.

The Number tab provides an extensive list of formatting for numbers including Currency, Percentage, Fraction and Scientific.



The options on the form allow the number of decimal places to be set, the comma separator to be included or not and also a choice of how negative numbers will be displayed.

## Basic Statistical Functions

---

Many of the Statistical functions in Excel deal with ranges of cells. Most of these functions are used with entered statistics or lists of figures. For example, the average for a list can be found, then for each number the difference from the average can be calculated. Also it is possible to determine the most common number in a list, the maximum number or minimum number in a list.

The following Tasks use a number of these statistical functions. The first Task determines the average score for each student in a class and the maximum and minimum scores for each test.

Function	Purpose
MAX	Returns the maximum value in a list
MIN	Returns the minimum value in a list
AVERAGE	Returns the average in a list



## Task 31

Open a new worksheet in Excel and type in the sheet shown below. Do not enter the average, minimum or maximum readings they are generated by formulae. The instructions for the worksheet are as follows

- To type in the Heading January 2000 place a single quote before the word January. This will convert the date to a string and stop Excel dropping the Century from the entry.
- Centre the headings between columns A and D
- Widen columns B to D to 14 and Row 4 to 34 ½. Make the row multi-line
- Enter the formula =Average(B5:B16) into B20 and copy to D20
- Enter the formula =Min(B5:B16) into B21 and copy to D21
- Enter the formula =Max(B5:B16) into B22 and copy to D22
- Format the sheet as shown

	A	B	C	D
1	<b>Salinity Readings along the Murray River</b>			
2	<b>January 2004</b>			
3				
4		EC Reading on 17th Aug	EC Reading on 25th Aug	EC Reading on 30th Aug
5	Albury	340	330	290
6	Burtundy	360	330	360
7	Euston	280	420	240
8	Barham	300	350	320
9	Red Cliffs	360	320	300
10	Robinvale	380	400	390
11	Mildura	220	240	190
12	Merbein	260	240	330
13	Wentworth	340	380	300
14	Renmark	300	320	310
15	Waikerie	280	260	240
16	Tailem Bend	380	320	360
17				
18	<b>SUMMARY INFORMATION</b>			
19				
20	Average along the river	316.67	325.83	302.50
21	Minimum Reading	220	240	190
22	Maximum Reading	380	420	390

All shaded cells hold a formula

Place your name at the bottom of the sheet. Save the sheet as TASK31. Print the sheet as shown and a second time with the formulae displayed.

..... End of Task 31 .....

## Moving cells on a sheet

---

Often a spreadsheet needs to have the data moved around as new data is added to the sheet. In to move a range of cells:

- Select the cells to move
- Move the mouse pointer close to the edge of the highlighted cells until the pointer turns to an arrow:



- With the arrow visible press the Left Mouse Button down and drag the pointer to the location where the cells are to be moved
- Release the button and the cells will be moved.

## The Count Function

---

The count function is used to determine the number of items in a list. This is another of the statistical functions in Excel.

Function	Purpose
COUNT	Counts how many numbers are in the list



## Task 32

Open the worksheet saved in the previous task called TASK31. The instructions for this Task are as follows:

- Move the Summary heading and information down so that the heading is in row 20.
- Place the label Number of Readings Taken in A18
- Enter the formula = Count(B5:B16) in D18
- The sheet will now look as follows:

	A	B	C	D
1	<b>Salinity Readings along the Murray River</b>			
2	<b>January 2004</b>			
3				
4		EC Reading on 17th Aug	EC Reading on 25th Aug	EC Reading on 30th Aug
5	Albury	340	330	290
6	Burtundy	360	330	360
7	Euston	280	420	240
8	Barham	300	350	320
9	Red Cliffs	360	320	300
10	Robinvale	380	400	390
11	Mildura	220	240	190
12	Merbein	260	240	330
13	Wentworth	340	380	300
14	Renmark	300	320	310
15	Waikerie	280	260	240
16	Tailem Bend	380	320	360
17				
18	Number of readings taken			12
19				
20	<b>SUMMARY INFORMATION</b>			
21				
22	Average along the river	316.67	325.83	302.50
23	Minimum Reading	220	240	190
24	Maximum Reading	380	420	390

Resave the document as TASK32 and print a copy of the sheet as shown. Print a second copy displaying the formulae used.

..... *End of Task 32* .....