# Microsoft Excel 2007

## Foundation Level



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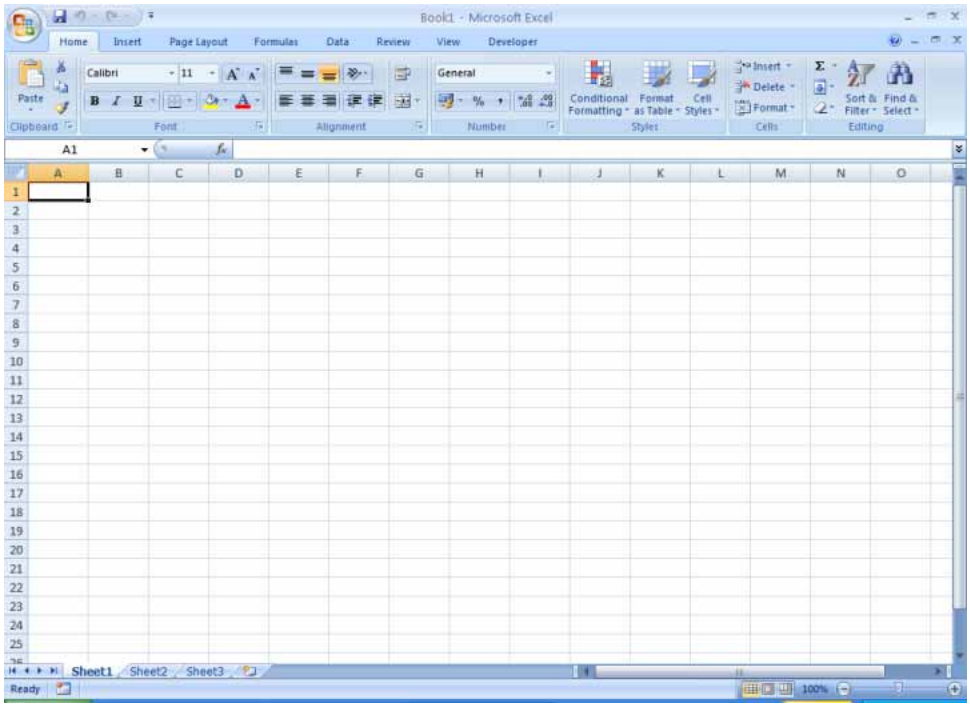
## A first look at Excel

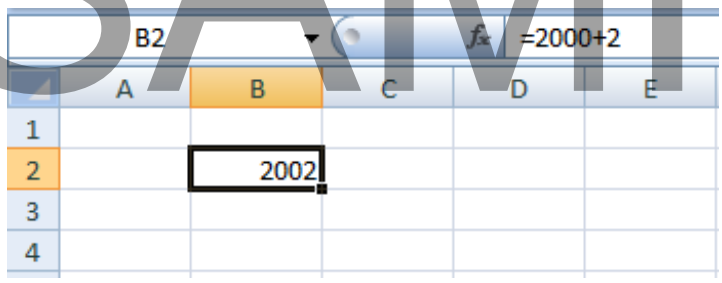
# Starting the Excel program

- Click on the **Start** button (bottom-left of the screen). Click on **All Programs**. Click on **Microsoft Office**. Click on **Microsoft Office Excel 2007**. The Excel window will be displayed, as illustrated.




# What is the Active Cell?

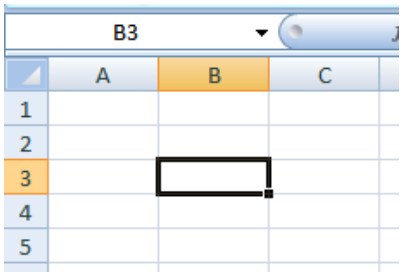
- Excel identifies the **active cell** with a bold outline around the cell and highlighting the column heading letter and row heading number of the cell. In the following example, **B2** is the active cell:



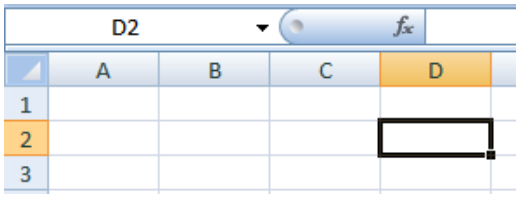
- In the above illustration, notice that **B2** is displayed in the **Name Box**, and the contents of the cell is displayed in the **Formula Bar**. In this case, **2002** is a calculated value, **2000+2**.
- In order for you to enter data into a cell, it needs to be the active cell. The active cell will accept keyboard entries. You can make a cell active by clicking on it or navigating to it.

## The Excel cell referencing system

- An Excel worksheet is made up of individual cells, each of which had a unique reference. Look at the illustration below. We have clicked on cell **B3**, which means that the cell is in **column B, row 3**.




In the illustration below, we have clicked on cell **D2**.

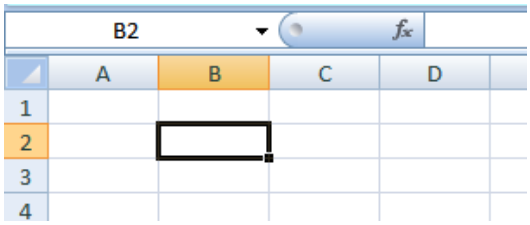



If you look carefully you will see that the current cell reference is displayed just above the actual worksheet.

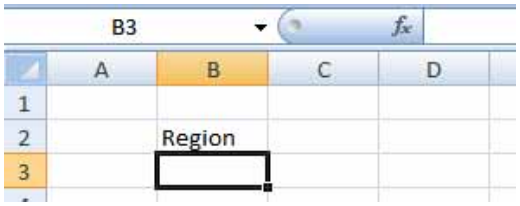


## Entering numbers and text

- Click on cell **B2**, as illustrated.

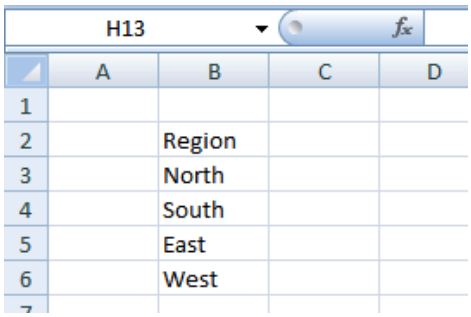


- Type in the word '**Region**'. Press the **Enter** key. When you press the **Enter** key you will automatically drop down to the next cell within the worksheet. Your screen will now look like this.



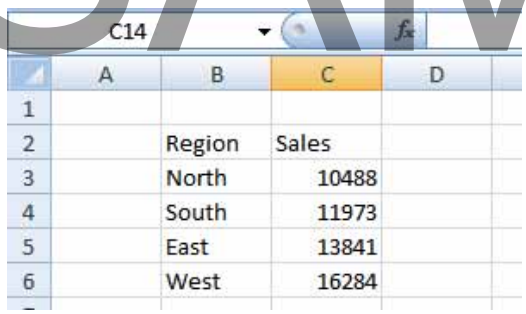

- The active cell is now **B3**. Type in the word '**North**'. Press the **Enter** key.
- The active cell is now **B4**. Type in the word '**South**'. Press the **Enter** key.
- The active cell is now **B5**. Type in the word '**East**'. Press the **Enter** key.
- The active cell is now **B6**. Type in the word '**West**'. Press the **Enter** key.

Your screen will now look like this:




- Click on cell **C2**. Type in the word '**Sales**'. Press the **Enter** key.
- Type in the number **10488** and press the **Enter** key.
- Type in the number **11973** and press the **Enter** key.
- Type in the number **13841** and press the **Enter** key.
- Type in the number **16284** and press the **Enter** key.

Your screen will now look like this:

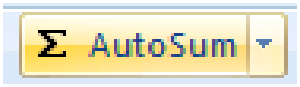


## Default text and number alignment

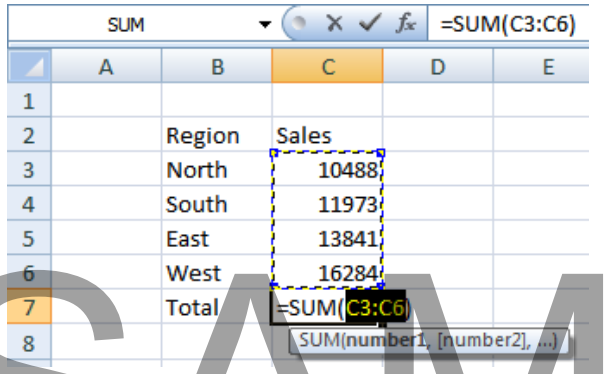
- If you look carefully at what you have typed in you will see that by default text is aligned within a cell to the left, while numbers are aligned within the cell to the right. This makes sense, as normally text starts from the left of a page and it is the same within a cell. Numbers on the other hand normally align to the right. Think how you would write down a column of numbers on a page that you want to add up. Numbers align to the right.

## Summing a column of numbers

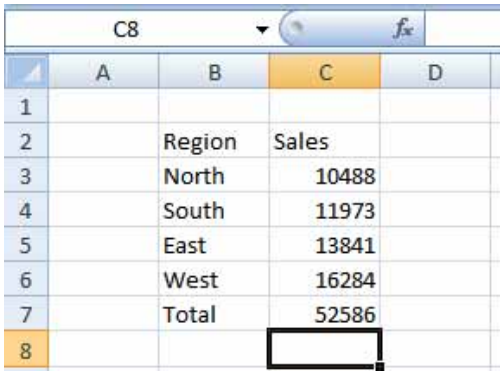
- Click on cell **B7** and type in the word '**Total**'.
- Click on cell **C7**. Click on the **Formulas** tab, and then click on the **AutoSum** button.


Your screen will look like this:




- Press the **Enter** key and Excel will automatically add up the column of numbers, as illustrated.

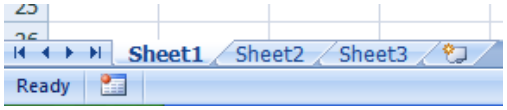



- We have hardly started to use Excel but already you have seen how powerful and easy to use it is. We will see more of the Excel functions for performing calculations later.

  The best thing about Excel is that if you make changes to the numbers then totals and other calculations are automatically updated. Click on cell **C4** and type in a different number. When you press the **Enter** key you will see that the total value displayed in cell **C7** changes to recalculate the total vales of the sales.

## Worksheets and Workbooks

- Look at the bottom-left of your screen and you will see the worksheet tabs displayed.

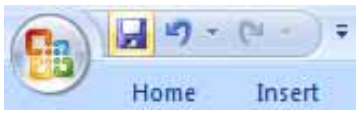



  By default each workbook contains three worksheets. This is similar to a notebook that contains separate pages. Click on the **Sheet 2** worksheet tab and the second worksheet is displayed. Click on the **Sheet 3** worksheet tab and the third worksheet is displayed. Click on the **Sheet 1** worksheet tab and the first worksheet, containing your data is displayed again. As we will see later you can add or remove worksheets as well as reordering and renaming them.

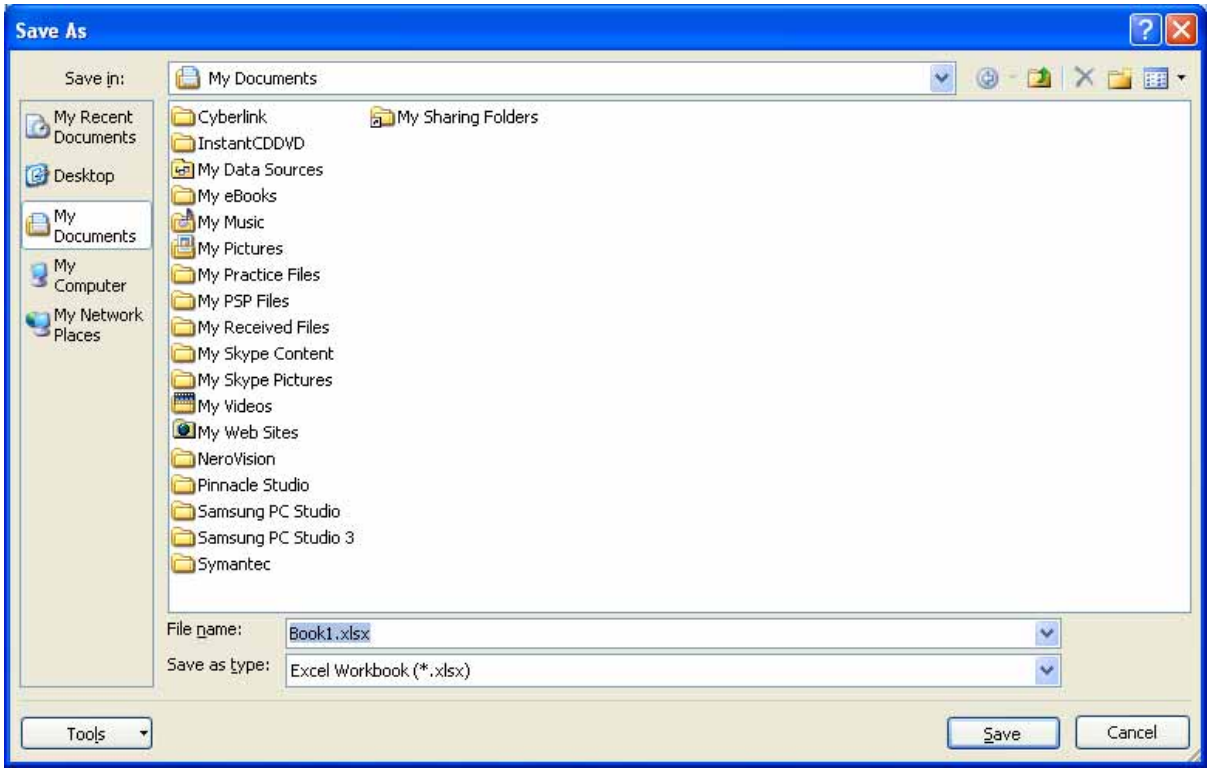


## Saving a workbook

- To save the workbook click on the **Save** icon (top-left part of your screen).



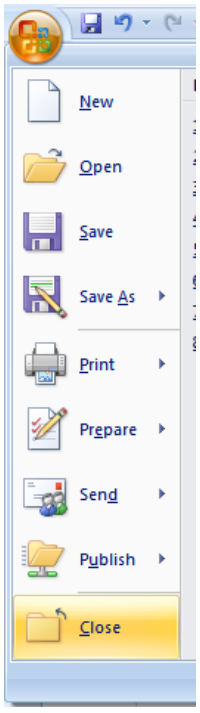

  This will display the **Save As** dialog box.



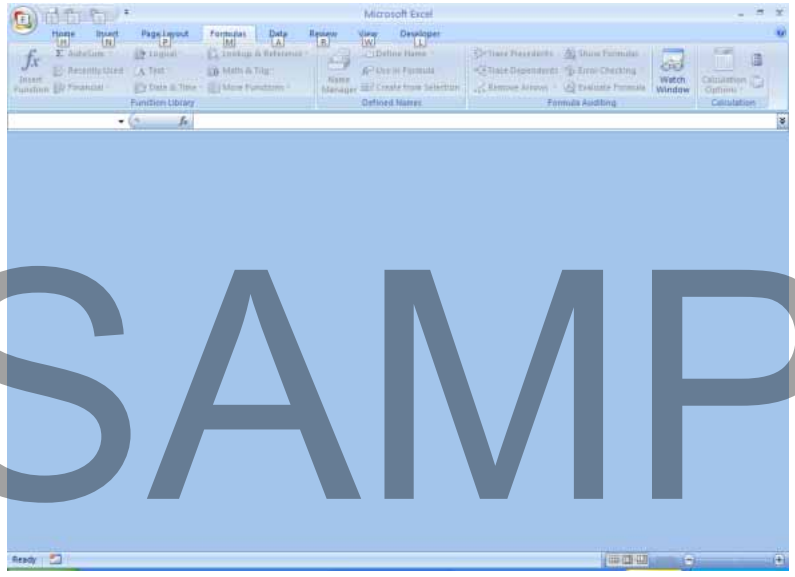

- Click on the **down arrow** next to the **Save in** section of the dialog box to navigate to the folder containing your sample files.
- Click within the **File name** section of the dialog box to name the file. In this case use the file name **My First Spreadsheet**.
- Click on the **Save** button the save the file to disk.

## Closing a workbook

- To close the workbook, click on the **Microsoft Office Button** (top-left of your screen), from the drop down options displayed, click on the **Close** command.




- The screen will now look like the illustration below. The Excel program is open but no workbook is displayed within the program.





- To close the Excel program, click on the **Close** icon. This icon is the small cross displayed at the top right of the Excel screen.

## Creating a new workbook

- Start the Excel program. Each time you start the Excel program, by default, it displays a new blank workbook containing three blank worksheets. Type in your **First Name** in to cell **A1**.
- To create a new workbook, press **Ctrl+N.** This is the keyboard shortcut for creating a new file. A new workbook will be created containing three worksheets. Type in your **Second Name** in to cell **A1**.
- Close both workbooks without saving your changes.

## Opening a workbook

- Press **Ctrl+O** the keyboard shortcut to open an existing file.

  Or click on the **Microsoft Office Button** (top-left) and then click on the **Open** command.


- This will display the **Open** dialog box. Click on the **down arrow** within the **Look in** section of the dialog box and navigate to the folder containing your sample files. Select a file called **Sales 2005,** and then click on the **Open** button to open the workbook.
- Open the workbook called **Sales 2006** and also a workbook called **Sales 2007**. You now have three open workbooks.



## Switching between workbooks

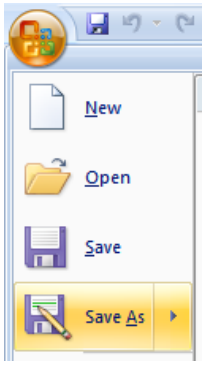
- To switch to a particular Excel workbook, click on the relevant Excel workbook icon displayed within the Windows **Taskbar** (across the bottom of the screen).


  **TIP**: You can use the **Alt+Tab** keyboard shortcut to switch between open programs.

- Close all open workbooks.

## Saving a workbook using another name

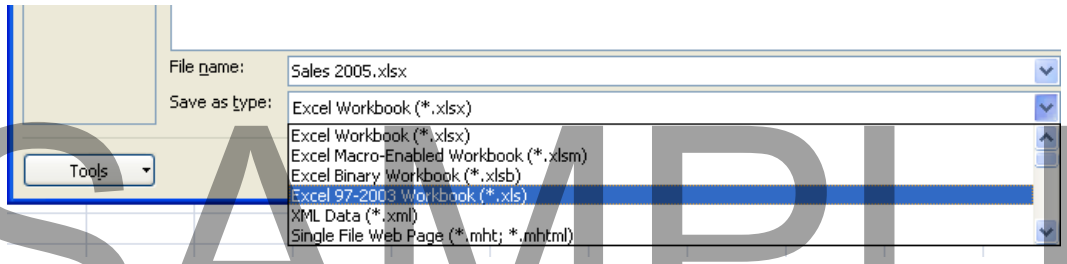
- Open the workbook called **Sales 2005**. Click on the **Microsoft Office Button** and the select the **Save As** command.




- In the **File name** section enter a new file name, in this case called **My Backup**. Click on the **Save** button. You now have two copies of the same file, both containing the same information. This can be useful for making backups of your data or for retaining copies of a workbook with different versions of the data in each file.

## Saving a workbook using a different file type

- Click on the **Microsoft Office Button** and the select the **Save As** command. The **Save As** dialog is displayed. Click on the **down arrow** within the **Save as type** section of the dialog box. You can select the required file type from the drop down displayed.






**TIP**: If you want to email a copy of an Excel 2007 workbook to someone that has an earlier version of Excel, such as Excel 2003, then you may need to save the file in the **Excel 97-2003 Workbook** file format.

Alternatively, people with earlier versions of Excel can download additional free software from Microsoft allowing them to open and view (but not necessary edit), files created using Excel 2007.

- Close any open dialog boxes and close all open worksheets.

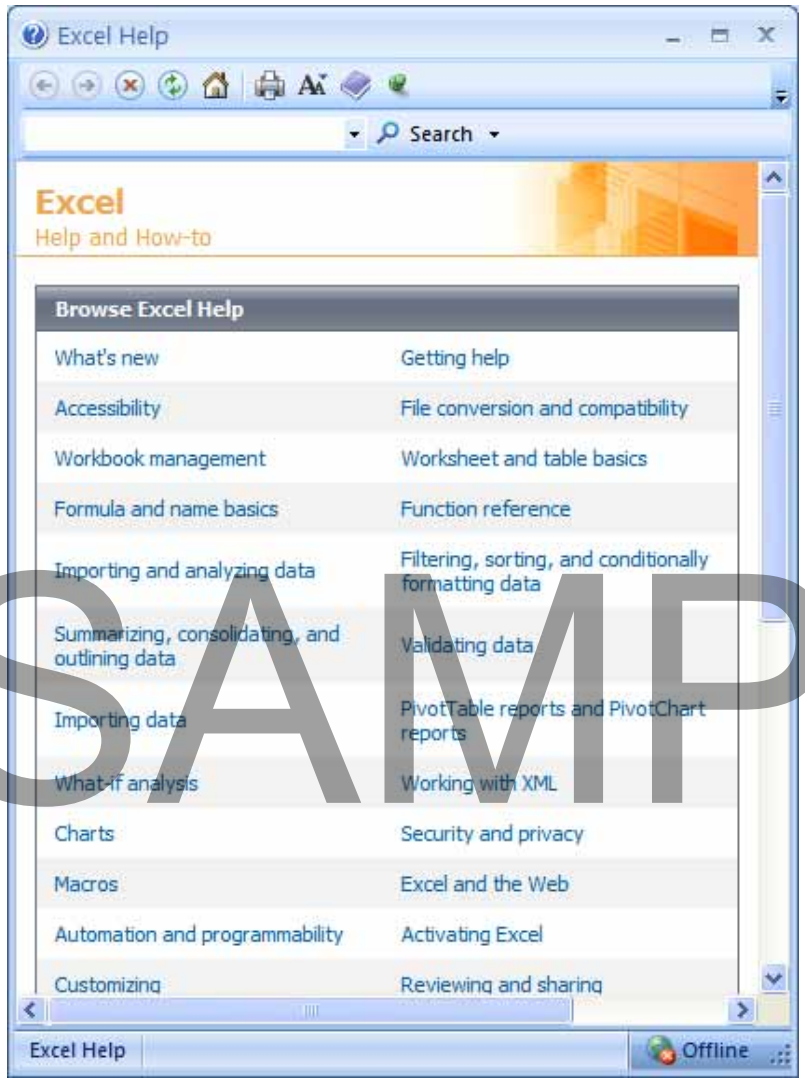
# Help

## Getting help

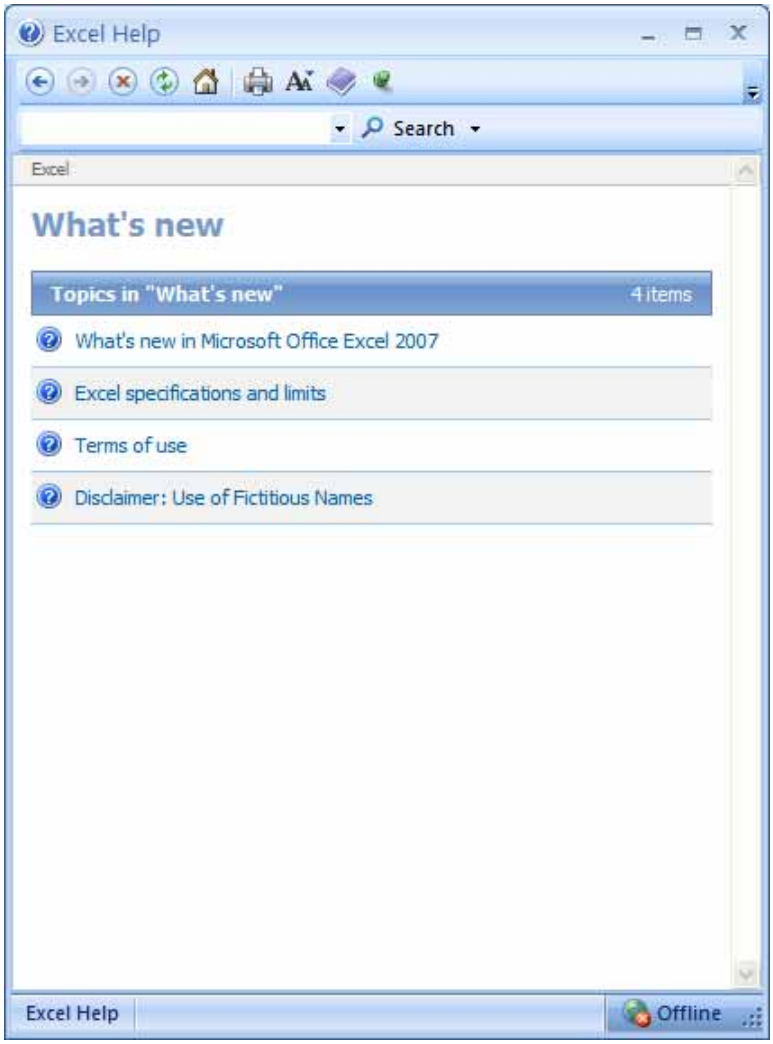
- Click on the **Microsoft Office Excel Help** icon (towards the top-right of the screen).

**TIP**: Or press the **F1** help key.

- The **Excel Help** window is displayed.



- As you can see a wide range of help topics are displayed. Click on the **What's new** link. You will see the following.

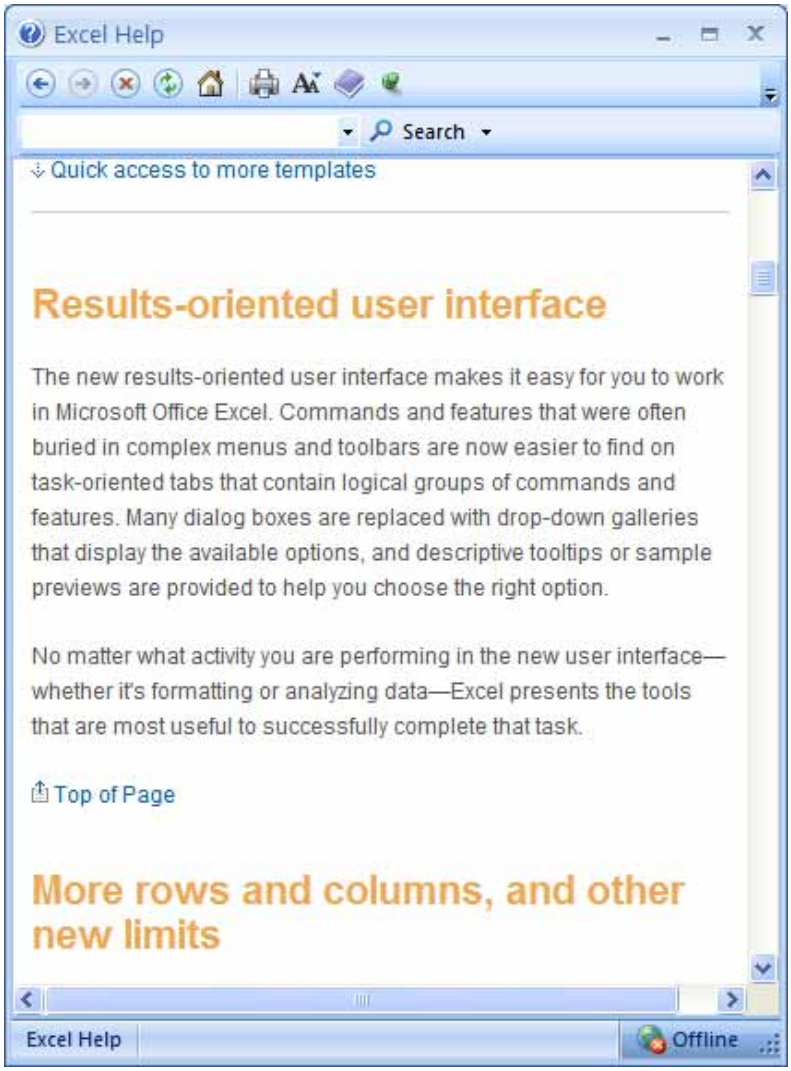



- Click on the **What's new in Microsoft Office Excel 2007** link. You will see the following.


**TIP**: Click on the **Maximize** button within the top-right part of the dialog box. This will make the dialog box fill the screen and the information within it will be easier to read.



- Spend a little time browsing what's new within this version of Excel. For instance if you click on the **Results Orientated User Interface** link you will see the following.

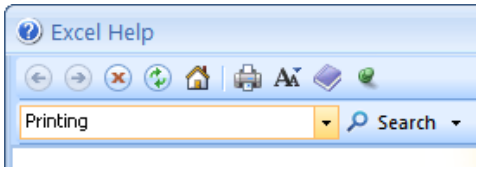



- When you have finished experimenting, close the **Excel Help** window.

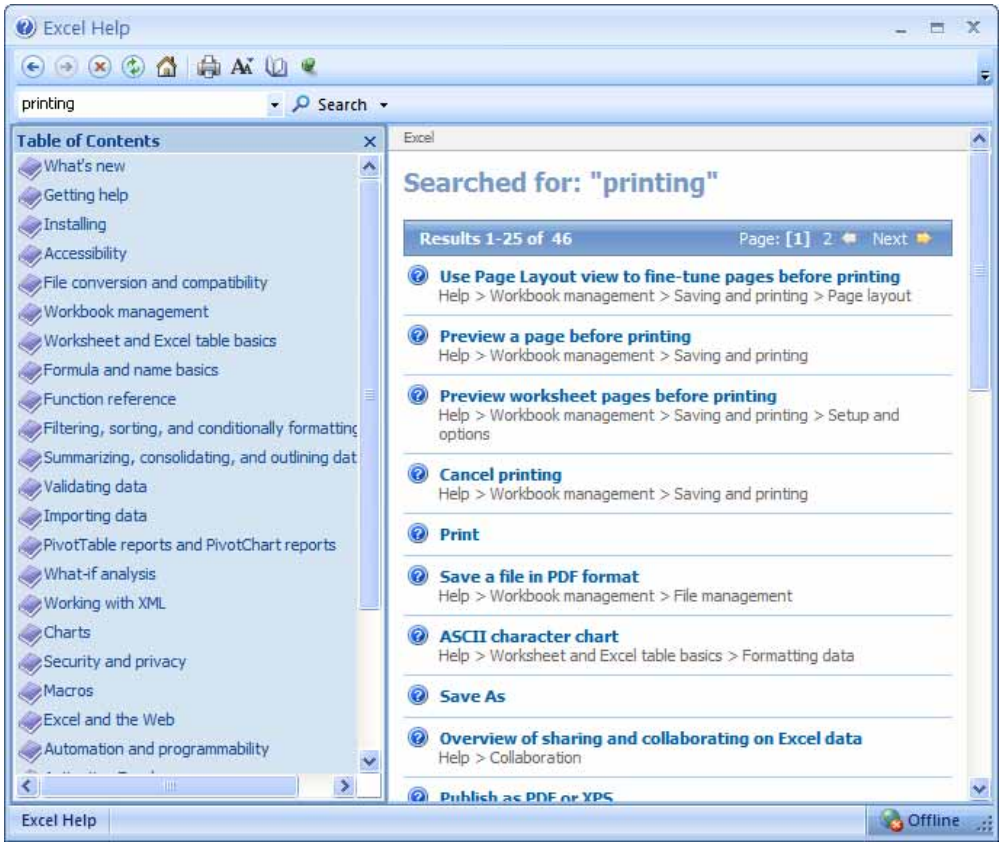


## Searching for Help

- You can search for help on a topic of particular interest. Press **F1** to display the **Excel Help** window. Within the text box near the top of the Excel Help window, type in a word or words relating to the help you need. For instance, to display help about printing, type in the word '**printing**'



- Click on the **Search** button next to the text input box. You will see a range of topics related to printing. Clicking on any of these topics will display more information about printing.



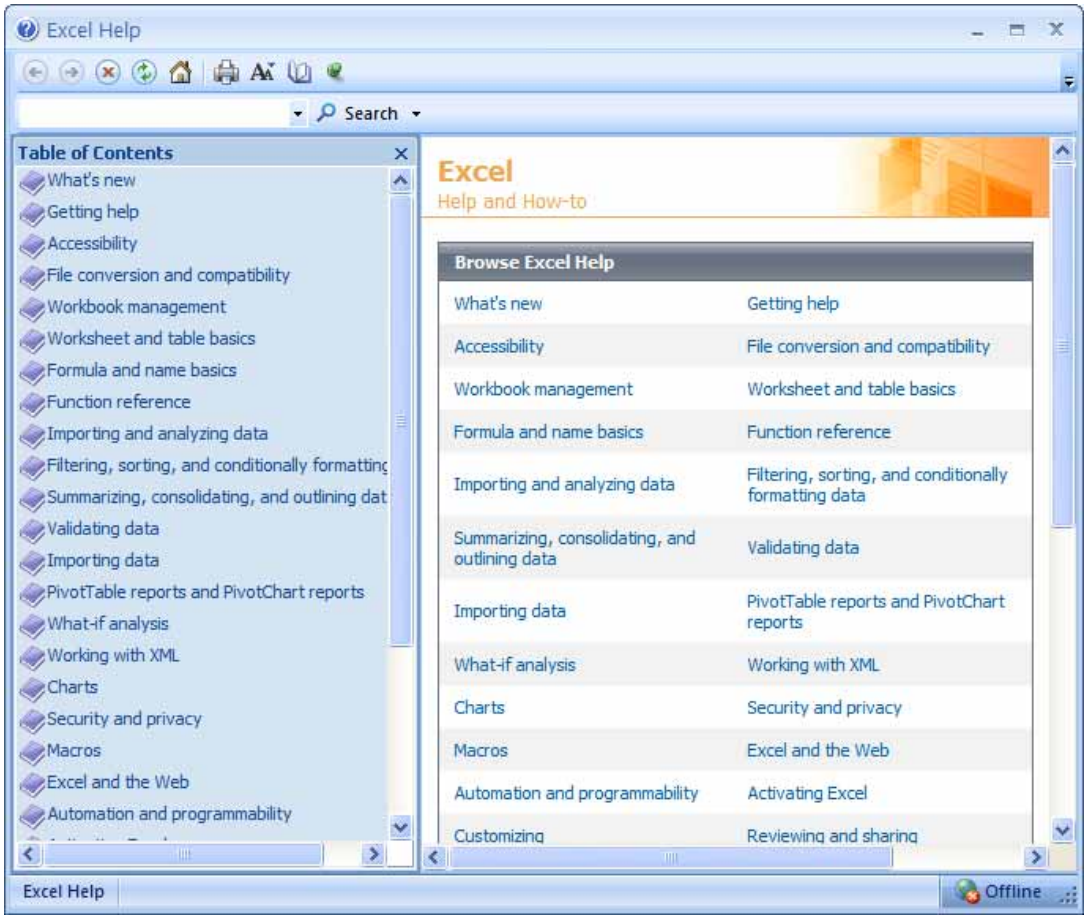

- Close the **Excel Help** window when you have finished experimenting.

## The Help 'Table of Contents'



- Press **F1** to display the Excel Help window. Click on the **Table of Contents** icon (the book icon displayed within the Excel Help window toolbar).


- You will now see a Table of Contents displayed down the left side of the Excel Help window.




## Printing a Help topic

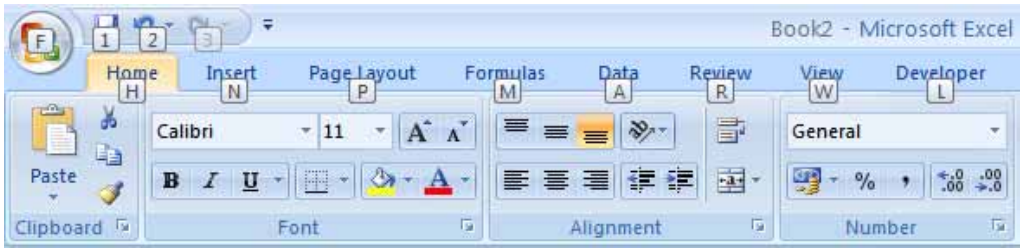
- Display an item of interest within the Excel Help window. Click on the **Print** icon displayed within the Excel Help toolbar.




- Close all open dialog boxes before continuing.

## Alt key help

- Press **CTRL+N** to open a new blank workbook
- Click on the **Home** tab.
- Press the **Alt** key and you will see numbers and letters displayed over icons, tabs or commands, towards the top of your screen.




- If you type in a number or letter you will activate a command. For instance in the example shown, the number **1** is displayed over the **Save** icon. Type in **1** and you will see the **Save As** dialog box displayed. Close this dialog box.
- Press the **Alt** key again and you will see an **N** displayed over the **Insert** tab. Pres **N** and you will see the contents of the **Insert** tab displayed.
- This is a very easy way of learning keyboard shortcuts. You now know that **Alt+S** will display the **Save As** dialog box and that **Alt+N** will display the **Insert** Tab.
- Click on the **Home** tab before continuing.

# Using Excel

## Selection techniques

## Why are selection techniques important?

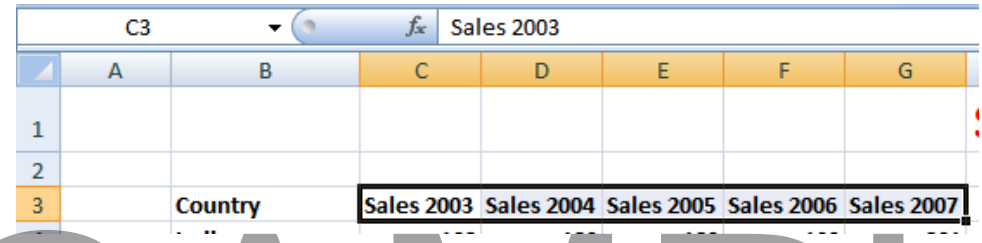
- Often when you want to do something within Excel you need to select an item first. This could involve selecting a cell or multiple cells. It many need you to select a row, a column or even the entire table.

## Selecting a cell

- Open a workbook called **Selection techniques**. To select a cell simply click on that cell. Thus to select cell **B3**, click on cell **B3**.

## Selecting a range of connecting cells

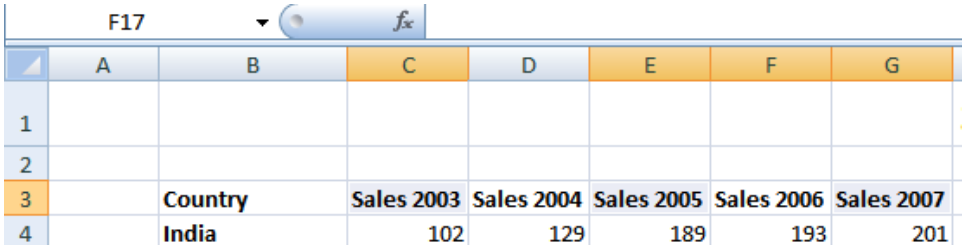
- We want to select the cells from **C3** to **G3**. To do this click on the first cell within the range, i.e. **C3**. Then press down the **Shift** key (and keep it held down). Click on cell **G3**. When you release the **Shift** key the cell range will remain selected, as illustrated.






## Selecting a range of non-connecting cells

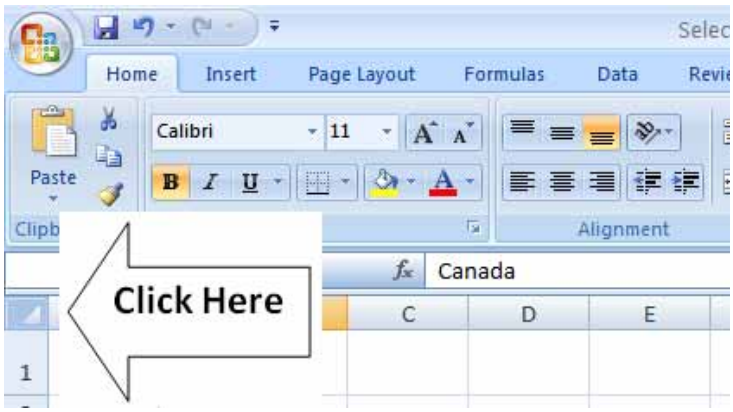
- Sometimes we need to select multiple cells that are not next to each other, as in the example below, where **C3**, **E3** and **G3** have been selected.



To do this click on the first cell, i.e. **C3**. Then while keeping the **Ctrl** key pressed click on the cells **E3** and **G3**. When you release the **Ctrl** key the cells will remain selected.

## Selecting the entire worksheet

- To select the entire worksheet, click on the intersection between the column and row referencing numbers.




## Selecting a row

- To select a row, say the row relating to Canada, click on the relevant row number displayed down the left side of the worksheet.

| | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
|---|---|---|---|---|---|---|
| 4 | India | 102 | 129 | 189 | 193 | 201 |
| 5 | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | Australia | 92 | 95 | 96 | 92 | 93 |
| 9 | New Zealand | 32 | 43 | 54 | 74 | 84 |
| 10 | China | 67 | 79 | 83 | 88 | 93 |
| 11 | Pakistan | 24 | 34 | 43 | 54 | 73 |
| 12 | Mexico | 12 | 24 | 20 | 23 | 32 |



## Selecting a range of connecting rows

- To select the rows relating to Canada, USA, UK and Australia. First click on the row number next to **Canada** (i.e. **5**). Press down the **Shift** key and keep it pressed. Click on the row number relating to **Australia** (i.e. **8**). When you release the **Shift** key the multiple rows remain selected.

| | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
|---|---|---|---|---|---|---|
| 3 | | | | | | |
| 4 | India | 102 | 129 | 189 | 193 | 201 |
| 5 | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | Australia | 92 | 95 | 96 | 92 | 93 |
| 9 | New Zealand | 32 | 43 | 54 | 74 | 84 |
| 10 | China | 67 | 79 | 83 | 88 | 93 |

## Selecting a range of non-connected rows

- Click on the row number **3** and press down the **Ctrl** key. Click on row number **5**, then row number **7** and finally number **9**. Release the **Ctrl** key and the rows will remain selected.

| | | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
|---|---|---|---|---|---|---|---|
| 2 | | | | | | | |
| 3 | | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | | Australia | 92 | 95 | 96 | 92 | 93 |
| 9 | | New Zealand | 32 | 43 | 54 | 74 | 84 |
| 10 | | China | 67 | 79 | 83 | 88 | 93 |

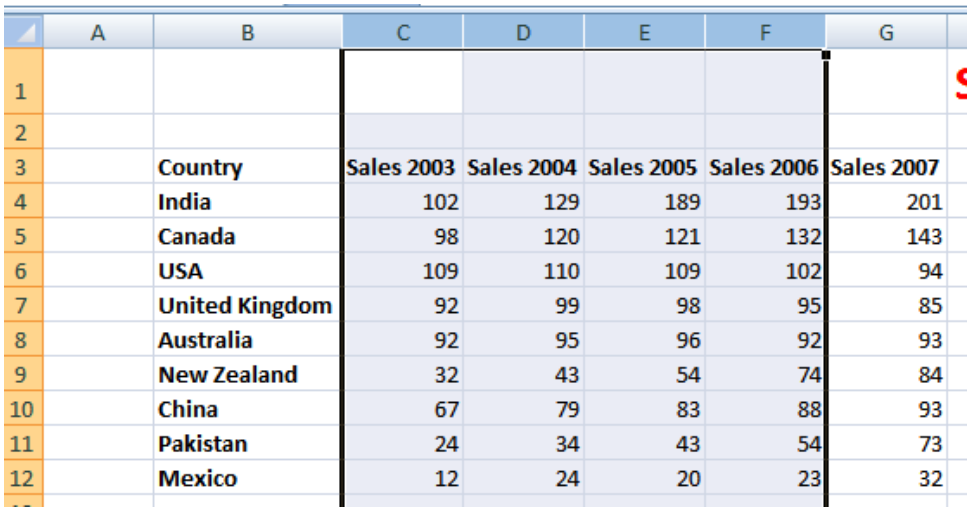
## Selecting a column

- To select the column containing data relating to **2003**, click on the column header C, as illustrated.

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | | Australia | 92 | 95 | 96 | 92 | 93 |
| 9 | | New Zealand | 32 | 43 | 54 | 74 | 84 |
| 10 | | China | 67 | 79 | 83 | 88 | 93 |
| 11 | | Pakistan | 24 | 34 | 43 | 54 | 73 |
| 12 | | Mexico | 12 | 24 | 20 | 23 | 32 |
| 13 | | | | | | | |

## Selecting a range of connecting columns

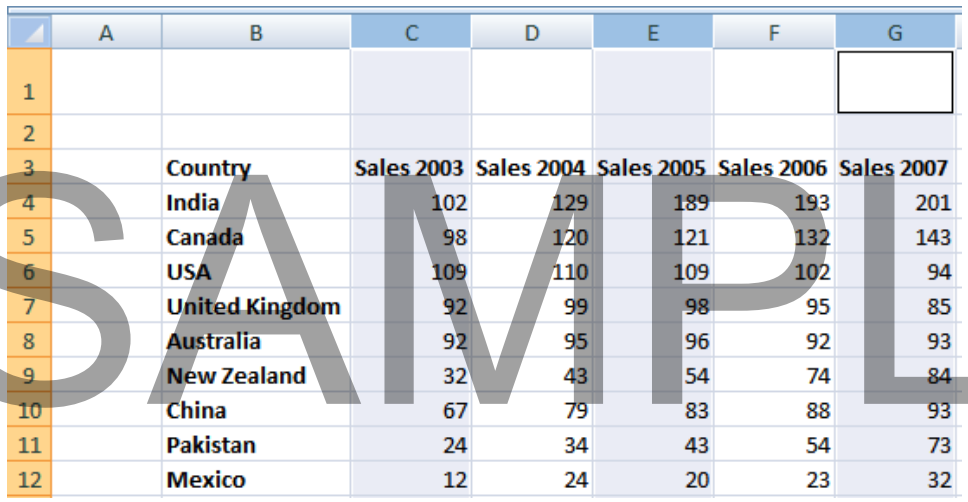
- To select the columns relating to the sales figures for **2003-2006**, first select column **C**. Press the **Shift** key and while keeping it pressed select column **F**. When you release the **Shift** key the columns will remain selected.



| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | | Australia | 92 | 95 | 96 | 92 | 93 |
| 9 | | New Zealand | 32 | 43 | 54 | 74 | 84 |
| 10 | | China | 67 | 79 | 83 | 88 | 93 |
| 11 | | Pakistan | 24 | 34 | 43 | 54 | 73 |
| 12 | | Mexico | 12 | 24 | 20 | 23 | 32 |

## Selecting a range of non-connecting columns

- To select the columns relating to **2003**, **2005** and **2005**, first select the column **C**. Press the **Ctrl** key and keep it pressed. Select column **E** and then select column **G**. Release the **Ctrl** key and the columns remain selected.



| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | | Australia | 92 | 95 | 96 | 92 | 93 |
| 9 | | New Zealand | 32 | 43 | 54 | 74 | 84 |
| 10 | | China | 67 | 79 | 83 | 88 | 93 |
| 11 | | Pakistan | 24 | 34 | 43 | 54 | 73 |
| 12 | | Mexico | 12 | 24 | 20 | 23 | 32 |



- Close the workbook without saving any changes you may have made.

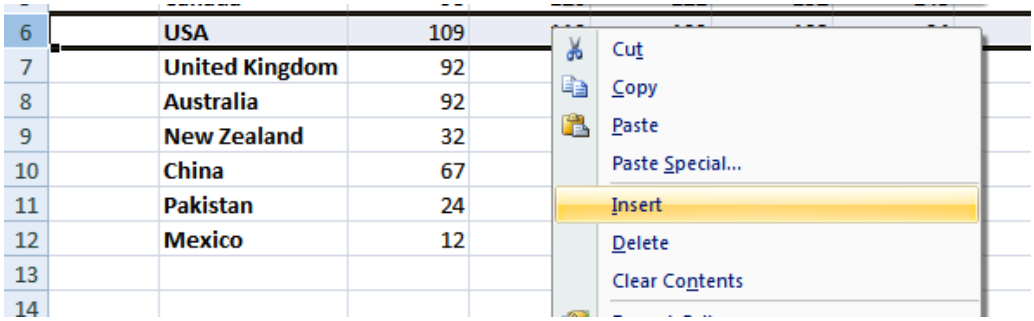
## Manipulating rows and columns

## Inserting rows into a worksheet

- Open a workbook called **Rows and columns**.
- We need to insert a row for Japan between the row for Canada and the row for the USA. Select the row for the USA, as illustrated.

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | India | 102 | 129 | 189 | 193 | 201 |
| 5 | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | USA | 109 | 110 | 109 | 102 | 94 |
| 7 | United Kingdom | 92 | 99 | 98 | 95 | 85 |
| 8 | Australia | 92 | 95 | 96 | 92 | 93 |

- Right click over the selected row and from the popup menu displayed select the **Insert** command.




- The table will now look like this.

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | India | 102 | 129 | 189 | 193 | 201 |
| 5 | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | | | | | | |
| 7 | USA | 109 | 110 | 109 | 102 | 94 |
| 8 | United Kingdom | 92 | 99 | 98 | 95 | 85 |

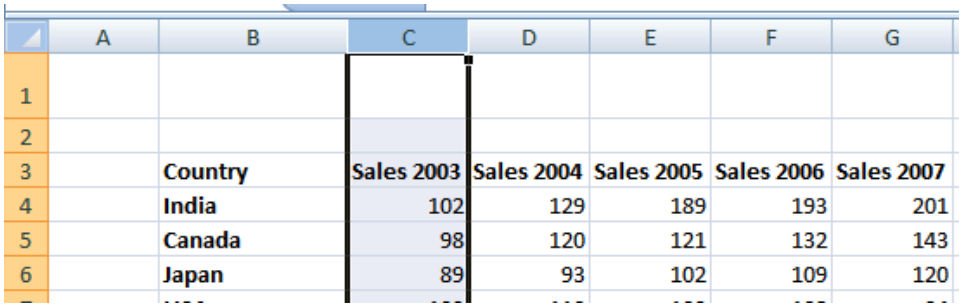


- Click on cell **B6** and type in the word '**Japan**'. Enter the following sales figures for Japan.

| Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
|---|---|---|---|---|---|
| India | 102 | 129 | 189 | 193 | 201 |
| Canada | 98 | 120 | 121 | 132 | 143 |
| Japan | 89 | 93 | 102 | 109 | 120 |

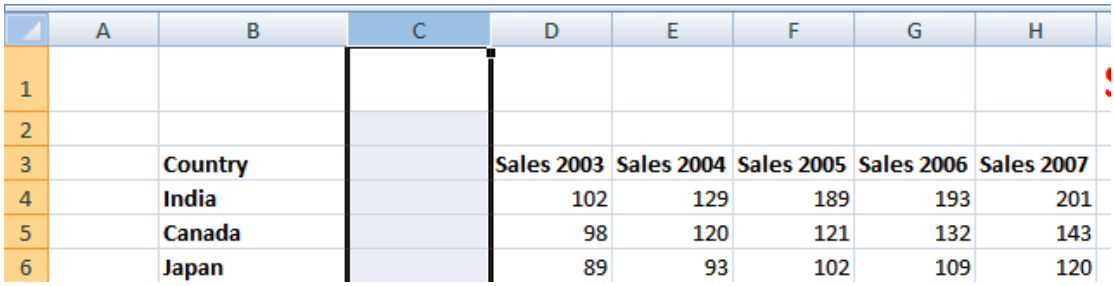
## Inserting columns into a worksheet

- We want to insert a column for sales figures in 2002, which needs to be inserted before the 2003 column. Select the column relating to 2003, as illustrated.



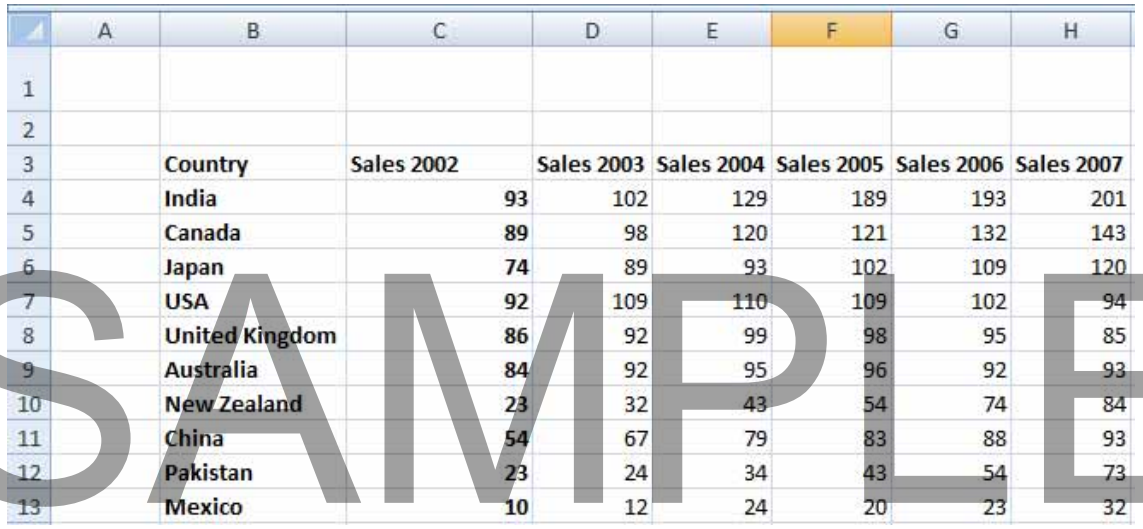
| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | 98 | 120 | 121 | 132 | 143 |
| 6 | | Japan | 89 | 93 | 102 | 109 | 120 |

- Right click over the selected column and from the popup menu displayed select the **Insert** command. The column will be inserted, as illustrated.



| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | Country | | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | | 98 | 120 | 121 | 132 | 143 |
| 6 | | Japan | | 89 | 93 | 102 | 109 | 120 |

- Enter the following data into the column.

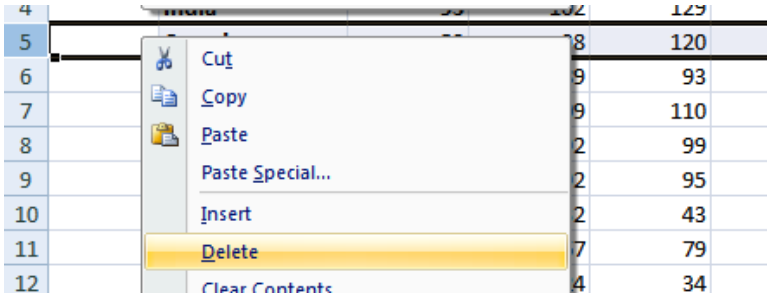


| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | Country | Sales 2002 | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
| 4 | | India | 93 | 102 | 129 | 189 | 193 | 201 |
| 5 | | Canada | 89 | 98 | 120 | 121 | 132 | 143 |
| 6 | | Japan | 74 | 89 | 93 | 102 | 109 | 120 |
| 7 | | USA | 92 | 109 | 110 | 109 | 102 | 94 |
| 8 | | United Kingdom | 86 | 92 | 99 | 98 | 95 | 85 |
| 9 | | Australia | 84 | 92 | 95 | 96 | 92 | 93 |
| 10 | | New Zealand | 23 | 32 | 43 | 54 | 74 | 84 |
| 11 | | China | 54 | 67 | 79 | 83 | 88 | 93 |
| 12 | | Pakistan | 23 | 24 | 34 | 43 | 54 | 73 |
| 13 | | Mexico | 10 | 12 | 24 | 20 | 23 | 32 |



## Deleting rows within a worksheet

- Select the row relating to **Canada**. Right click over the selected row and from the popup menu displayed select the **Delete** command.




- The row is deleted without any additional warning.

  **TIP**: To delete multiple connected rows, just the **Shift** key trick to select multiple rows and then right click to delete the rows. To delete multiple non-connected rows, use the **Ctrl** key trick to select the multiple rows and then right click to delete the rows.

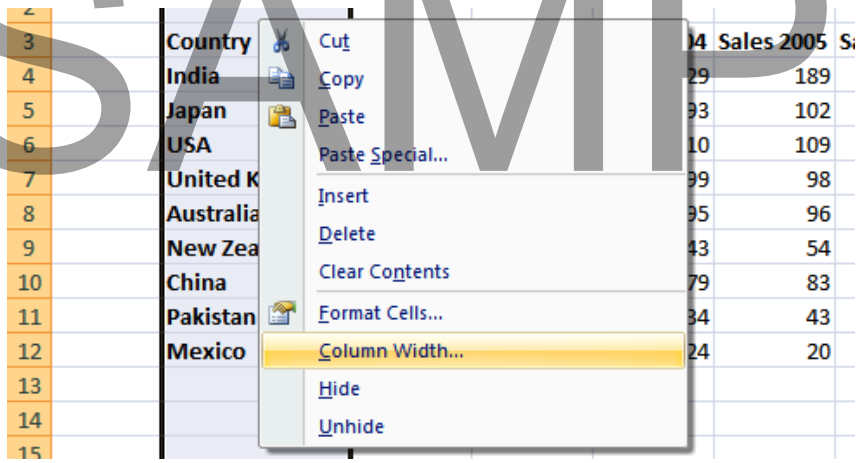
## Deleting columns within a worksheet

- Select the column relating to **Sales 2007**. Right click over the selected column and from the popup menu displayed select the **Delete** command. The column is deleted without any additional warning.

  **TIP**: To delete multiple connected columns, use the **Shift** key trick to select multiple columns and then right click to delete the columns. To delete multiple non-connected columns, use the **Ctrl** key trick to select the multiple columns and then right click to delete the columns.

## Modifying column widths

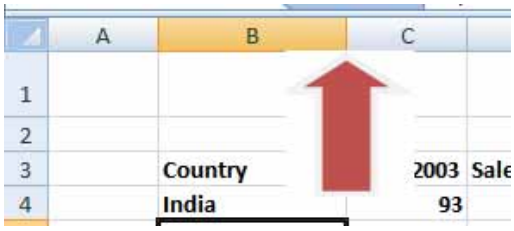
- Select a column, such as the **Country** column. Right click over the selected column and from the popup menu displayed select the **Column Width** command.



- The **Column Width** dialog box is displayed which allows you to set the column width. Click on the **Cancel** button to close the dialog box.


## Modifying column widths using 'drag and drop'

- Move the mouse pointer to the line between the header for **column B** and **column C**, as illustrated below.




- Press the mouse button and keep it pressed. Move the mouse pointer left or right to make the column narrower or wider. Release the mouse button and the column width will change as required.

## Automatically resizing the column width to fit contents

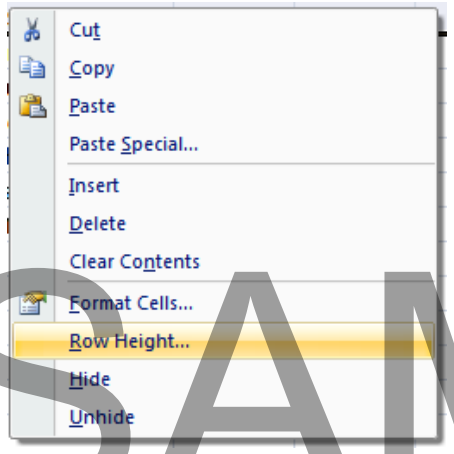
- Resize all the columns so that they are too narrow to properly display the data contained within the columns. Your screen will look similar that the illustration below.

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | S |
| 2 | | | | | | | | |
| 3 | | Country | Sales 2 | Sales 20( | Sales : | Sales 2 | Sales 20 | Sales 2007 |
| 4 | | India | 93 | 102 | 129 | 189 | 193 | 201 |
| 5 | | Japan | 74 | 89 | 93 | 102 | 109 | 120 |
| 6 | | USA | 92 | 109 | 110 | 109 | 102 | 94 |
| 7 | | United King | 86 | 92 | 99 | 98 | 95 | 85 |
| 8 | | Australia | 84 | 92 | 95 | 96 | 92 | 93 |
| 9 | | New Zealar | 23 | 32 | 43 | 54 | 74 | 84 |
| 10 | | China | 54 | 67 | 79 | 83 | 88 | 93 |
| 11 | | Pakistan | 23 | 24 | 34 | 43 | 54 | 73 |
| 12 | | Mexico | 10 | 12 | 24 | 20 | 23 | 32 |

- To automatically resize each column width to fit the contents, select all the columns containing data. Double click on the junction between one of the column header headers within the selected columns.

## Modifying row heights

- Select one or more rows and then right click over the selected row(s). From the popup menu displayed select the **Row Height** command.






- The **Row Height** dialog is displayed allowing you to set the exact row height, as required.

**TIP**: If you click between any two row headers, you can drag the row height up or down as required, to modify the row height.

- Save your changes and close the workbook.

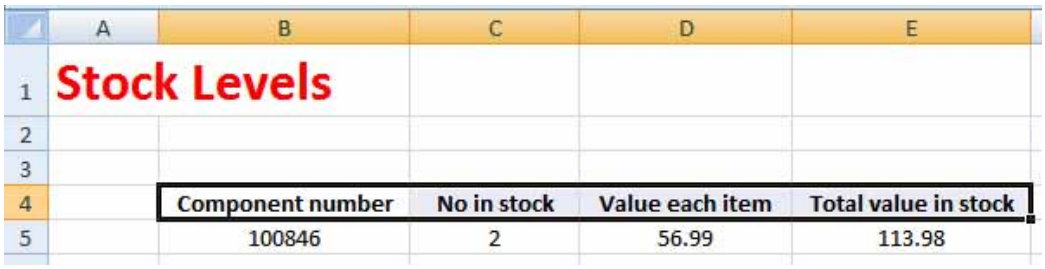
## Copying, Moving and Deleting

# Copying the cell or range contents

- Open a workbook called **Copying moving and deleting**.
- Select a cell, range, row or column to copy. In this case select the range **B4** to **E4**.

  **TIP**: A range like this is often written as **B4:E4**.

  Your screen will look something like this:



| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | Stock Levels | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | Component number | No in stock | Value each item | Total value in stock |
| 5 | | 100846 | 2 | 56.99 | 113.98 |

- Press **Ctrl+C** to copy the selected range to the Clipboard.

  **TIP**: To copy a selected item to the Clipboard, click on the **Home** tab and then click on the **Copy** icon in the **Clipboard** group on the **Ribbon**.




- Click at the location you wish to paste the data to. In this case click on cell **B14** and press the **Ctrl+V** keys to paste the data from the Clipboard.

  **TIP**: To copy a selected item to the Clipboard, click on the **Home** tab and then click on the **Paste** icon, in the **Clipboard** group on the **Ribbon**.


- Your data will now look like this.

| | | | | | |
|---|---|---|---|---|---|
| 4 | | Component number | No in stock | Value each item | Total value in stock |
| 5 | | 100846 | 2 | 56.99 | 113.98 |
| 6 | | 100332 | 0 | 28.38 | 0 |
| 7 | | 100622 | 5 | 12.74 | 63.7 |
| 8 | | 100847 | 2 | 32.99 | 65.98 |
| 9 | | 100743 | 5 | 18.99 | 94.95 |
| 10 | | 100934 | 1 | 12.99 | 12.99 |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | Component number | No in stock | Value each item | Total value in stock |

**TIP**: You can use the same technique to copy entire rows or columns. Pressing **Ctrl+A** will select everything within a worksheet and allow you to copy the entire worksheet contents to the Clipboard when you press **Ctrl+C.**

## Deleting cell contents

- Select the range that you wish to delete the contents of. In this case select the range **B10:E10**, as illustrated.

| | | | | | |
|---|---|---|---|---|---|
| 9 | | 100743 | 5 | 18.99 | 94.95 |
| 10 | | 100934 | 1 | 12.99 | 12.99 |
| 11 | | | | | |



- Press the **Del** key and the cell contents will be deleted.

**TIP**: You can use the same technique to delete entire rows or columns. Pressing **Ctrl+A** will select everything within a worksheet will allow you to delete the entire worksheet contents when you press the **Del** key.

## Moving the contents of a cell or range

- Select the range to wish to move and then cut it to the Clipboard. In this case select the data, as illustrated.

| Component number | No in stock | Value each item | Total value in stock |
|---|---|---|---|
| 100846 | 2 | 56.99 | 113.98 |
| 100332 | 0 | 28.38 | 0 |
| 100622 | 5 | 12.74 | 63.7 |
| 100847 | 2 | 32.99 | 65.98 |
| 100743 | 5 | 18.99 | 94.95 |

- Press the **Ctrl+X** keys to cut the selected data to the Clipboard.
  Click at the location you wish to move the selected data to, in this case click in cell **B15**, and press **Ctrl+V**, to paste the data.

  **TIP**: You can use the same technique to move entire rows or columns.

- Save your changes and close the workbook.

## Editing cell content

- It is easy to edit existing data within a cell or to replace existing data within a cell. Open a workbook called **Editing**.
- Click on cell **B3**. Double click in front of the word '**Region**' and insert the word '**Sales**' followed by a space.
- Click on cell **B7**. Double click on the word '**West**', to select it and then over type the selected word with the word '**Central**'.

## Undo and Redo

- Click on the **Undo** icon (top-left of your screen) to reverse the last action. Try it now.



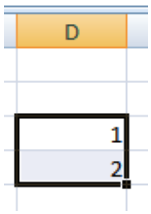

- Click on the **Redo** icon (top-left of your screen) to reapply the last action. Try it now.


- Save your changes and close the workbook.

## AutoFill

- Open a workbook called **AutoFill**.

- Click on cell **B3** which contains the word **Monday**. Move the mouse pointer to the bottom-right corner of this cell and the mouse pointer shape will change to the shape of a small black cross. When the mouse pointer changes shape, press the mouse button down, and while keeping it pressed move slowly down the page. When you release the mouse button you will see that Excel has 'AutoFilled' the range you dragged across with days of the week.
- Click on cell **C3** which contains the word **January**. Use the AutoFill feature to automatically create a column containing all the months of the year.
- Select the cell range **D3:D4**. Use **AutoFill** to extend the series down the page. As you will see the series becomes **1,2,3,4,5,6,7** etc.




- Select the cell range **E3:E4**. Use **AutoFill** to extend the series down the page. As you will see the series becomes **2,4,6,8,10** etc.

- Save your changes and close the workbook.

## Sorting a cell range

- Open a workbook called **Sorting**.
- Click within the data contained within column **B**.
- Click on the **Data** tab and from within the **Sort & Filter** group, click on **Sort A to Z** icon.

The data will be displayed as illustrated.

| Countries | Value of Sales |
|---|---|
| Australia | 3281746 |
| Canada | 2183721 |
| China | 2917438 |
| India | 1846276 |
| Ireland | 2948183 |
| New Zealand | 1019483 |
| Pakistan | 1281637 |
| United Kingdom | 2093627 |
| USA | 4817423 |

- Click on the **Sort Z to A** icon.

The data will be displayed as illustrated.

| Countries | Value of Sales |
|---|---|
| USA | 4817423 |
| United Kingdom | 2093627 |
| Pakistan | 1281637 |
| New Zealand | 1019483 |
| Ireland | 2948183 |
| India | 1846276 |
| China | 2917438 |
| Canada | 2183721 |
| Australia | 3281746 |



- Click within the data contained in column **C**.
- Click on the **Data** tab, and from within the **Sort & Filter** group, click on **Sort A to Z** icon.

The data will be displayed as illustrated.

| Countries | Value of Sales |
|---|---|
| New Zealand | 1019483 |
| Pakistan | 1281637 |
| India | 1846276 |
| United Kingdom | 2093627 |
| Canada | 2183721 |
| China | 2917438 |
| Ireland | 2948183 |
| Australia | 3281746 |
| USA | 4817423 |

- Click on the **Sort Z to A** icon.

The data will be displayed as illustrated.

| Countries | Value of Sales |
|---|---|
| USA | 4817423 |
| Australia | 3281746 |
| Ireland | 2948183 |
| China | 2917438 |
| Canada | 2183721 |
| United Kingdom | 2093627 |
| India | 1846276 |
| Pakistan | 1281637 |
| New Zealand | 1019483 |

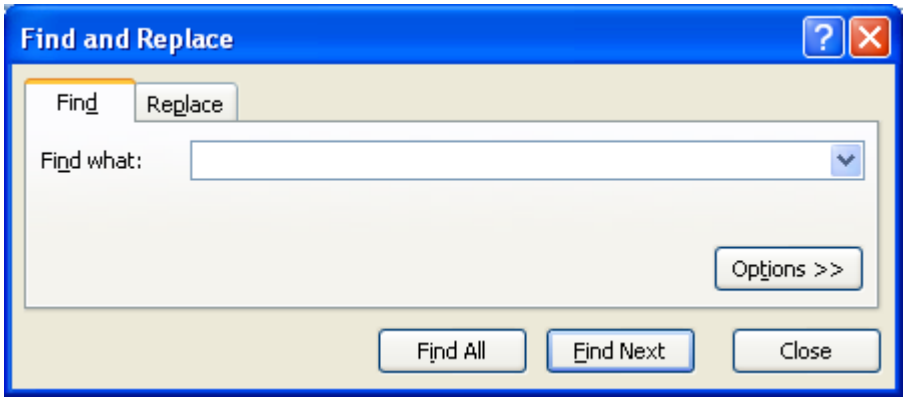


- Save your changes and close the workbook.

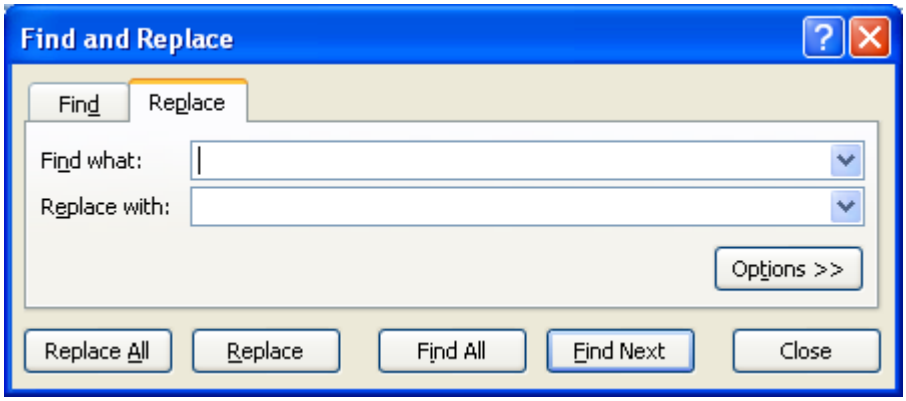
## Searching and replacing data

- Open a workbook called **Search and replace**.
- Press **Ctrl+F** to start the **Search** utility (or click on the **Home** tab, then click on the **Find & Select** icon, from the menu displayed select the **Find** command).

This will display the **Find and Replace** dialog box, as illustrated.




- Within the **Find what** section of the dialog box, enter the word '**Blue**'. Click on the **Find Next** button and you will find the next occurrence of the word Blue. Keep pressing on this button to find all occurrences within the worksheet.
- Click on the **Replace** tab within the **Find and Replace** dialog box.






- Within the **Find what** section type in the word '**Blue**'.
- Within the **Replace with** section type in the word '**Purple**'.
- Click on the **Find Next** button and once found click on the **Replace** button. Carry on replacing all occurrence of the word **Blue** with the word **Purple**.
- Close the **Find and Replace** dialog box.

- Press **Ctrl+H** to display the **Find and Replace** dialog box, with the **Replace** tab already selected for you.
- Within the **Find what** section type in the word '**Red**'.
- Within the **Replace with** section type in the word '**Orange**'.
- Click on the **Replace All** button and all occurrences of the word **Red** will immediately be replaced by the word **Orange**.

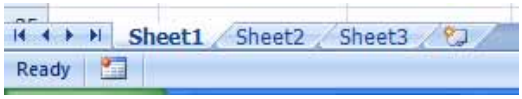
- Save your changes and close the workbook.

# Worksheets

## Manipulating Worksheets

## Switching between worksheets

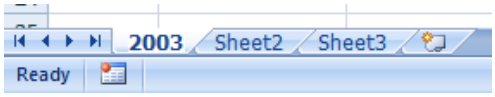
- Open a workbook called **Worksheets**.
- You are looking at the first worksheet within the workbook. You can confirm this by looking at the worksheet tabs at the bottom-left of your screen.



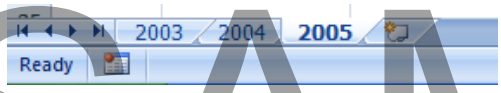

- To switch to another worksheet click on either the **Sheet2** or **Sheet3** tab.

## Renaming a worksheet

- Click on the **Sheet1** tab to display the first worksheet. Double click on the **Sheet1** tab and you will be able to type in a new name. In this case type in the name **2003**, as illustrated.



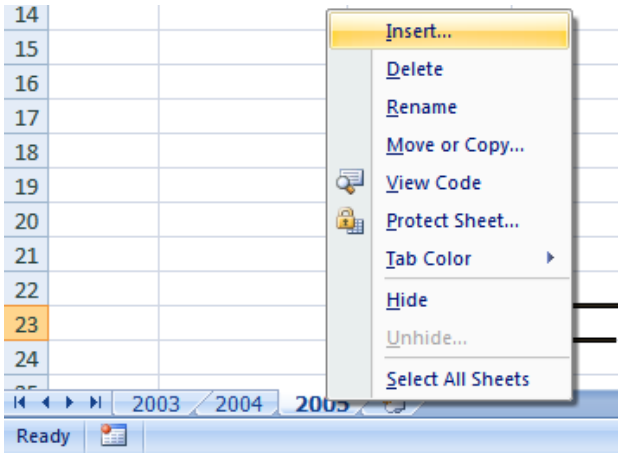

- Double click on the **Sheet2** tab and rename it **2004**.
- Double click on the **Sheet3** tab and rename it **2005**. Your tabs will now look like this:



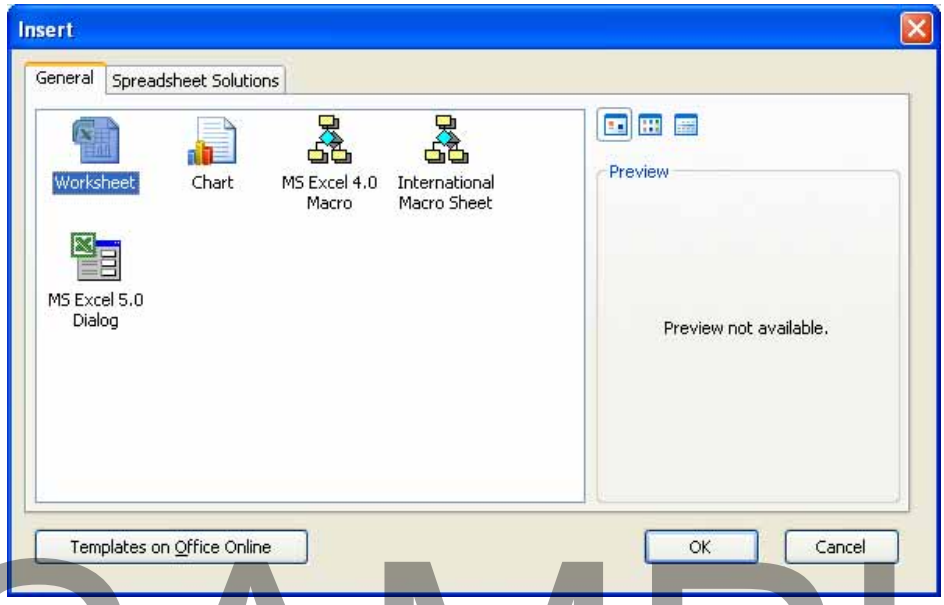



## Inserting a new worksheet

- Click on the **2005** worksheet tab to select it. Right click over the tab and from the popup menu displayed, click on the **Insert** command.

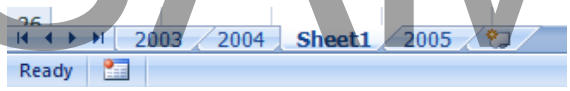



- The **Insert** dialog is displayed. Make sure that the **Worksheet** object is selected within the dialog box.



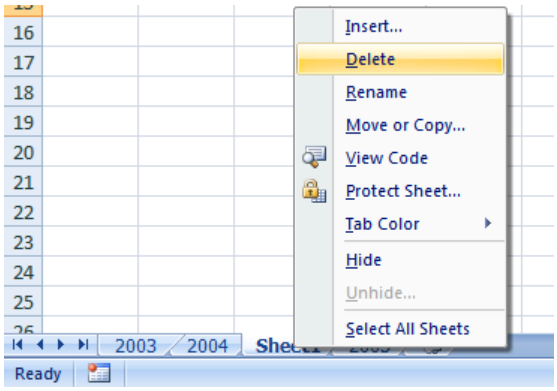



- Click on the **OK** button and a new worksheet will be inserted just before the selected worksheet, as illustrated.



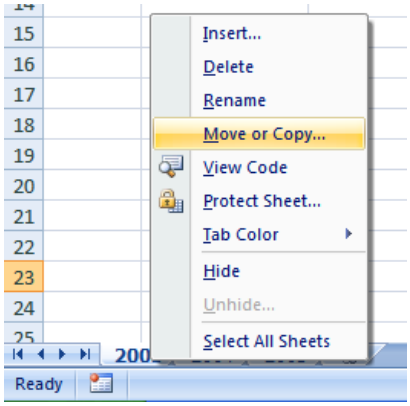

## Deleting a worksheet

- Make sure that the new tab that you have just inserted is selected. Right click on the tab and from the popup menu displayed select the **Delete** command. The new worksheet will be deleted.

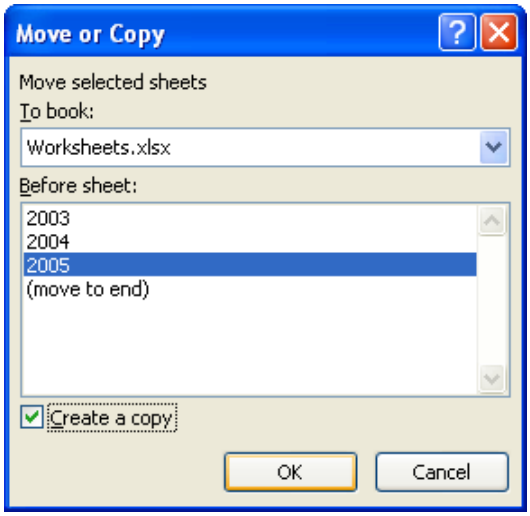



## Copying a worksheet within a workbook

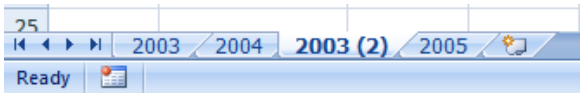
- Select the **2003** tab. Right click on the tab and from the popup menu displayed select the **Move or Copy** command.




- The **Move or Copy** dialog box is displayed. As we want to copy rather than move, click on the **Create a copy** check box. In the **Before sheet** section of the dialog box, select which worksheet you wish to insert the copy in front of. In this case select **2005**.



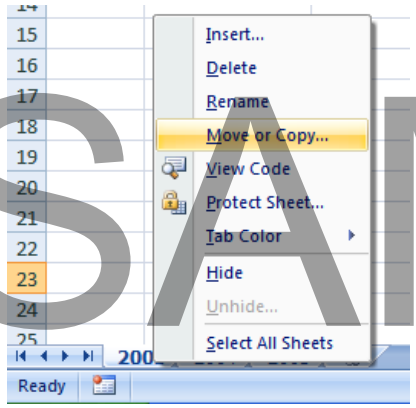

- When you click on the **OK** button a copy of the first worksheet will be inserted, as illustrated.




- Delete this copied worksheet before continuing.

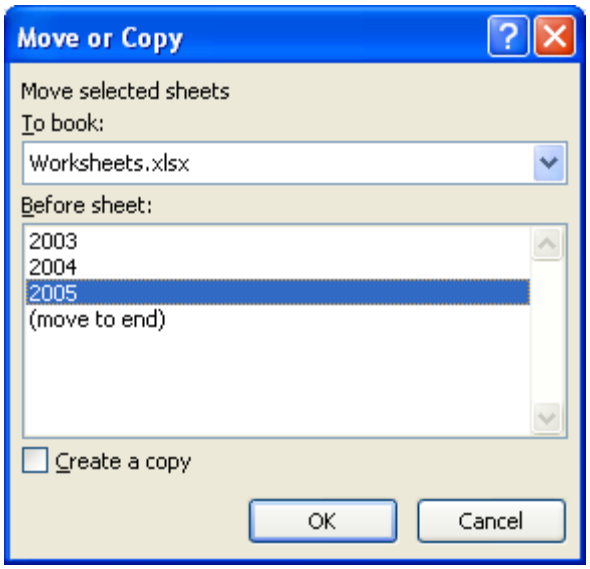
## Moving a worksheet within a workbook

- Select the **2003** tab. Right click on the tab and from the popup menu displayed select the **Move or Copy** command.

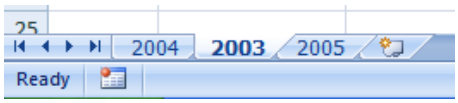





- The **Move or Copy** dialog box is displayed. In the **Before sheet** section of the dialog box, select which worksheet you wish to insert the moved worksheet in front of. In this case select **2005**.



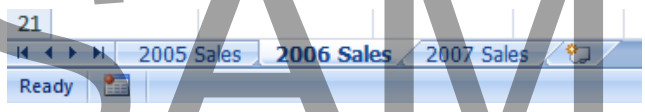

- When you click on the **OK** button the worksheet will be moved, as illustrated below.



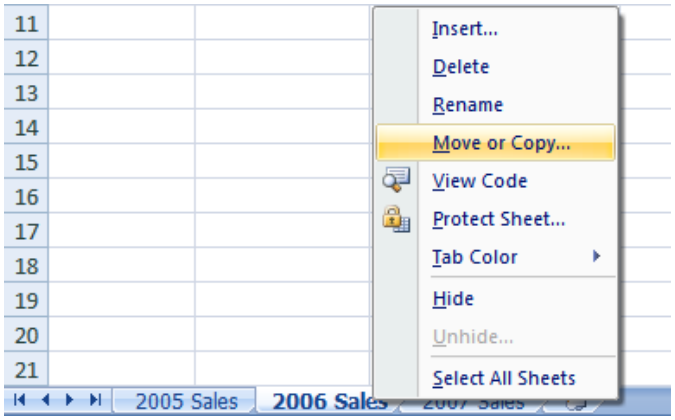

- Before continuing, rearrange the worksheets in the correct order.
- Save your changes and close the workbook.

## Copying or moving worksheets between workbooks

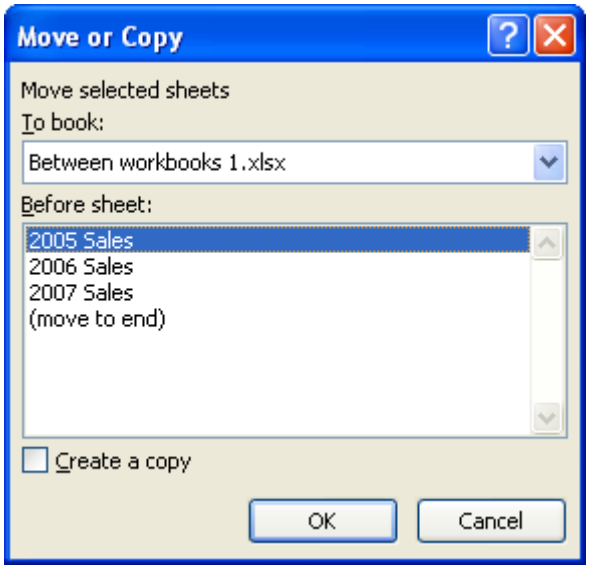
- Open a workbook called **Between workbooks 2**. Leave this workbook open.
- Open a workbook called **Between workbooks 1**.
- Click on the worksheet tab for **2006 Sales**.



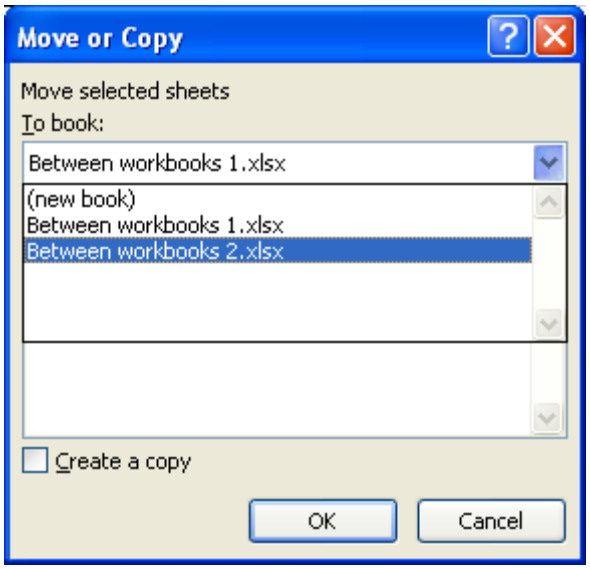

- Right click on the **2006 Sales** tab and from the popup menu displayed select the **Move or Copy** command.



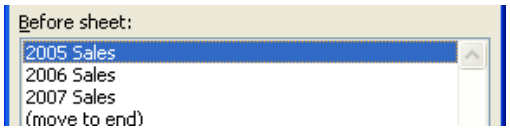

- The **Move or Copy** dialog box is displayed.




- Click on the **down arrow** in the **To book** section of the dialog box. From the drop down list, select the workbook called **Between wordbooks 2**, as illustrated below.




- Use the **Before sheet** section of the dialog box to determine where in the second workbook the worksheet will be copied to.




- Click on the **Create a copy** check box.


- Click on the **OK** button.
- Switch to the second workbook and you should see a copy of the worksheet inserted into the workbook.

**TIP**: Experiment with moving a worksheet between workbooks using the same method, but this time do not click on the **Create a copy** check box.


- When you have finished experimenting save the changes in both your workbooks and close all open files.

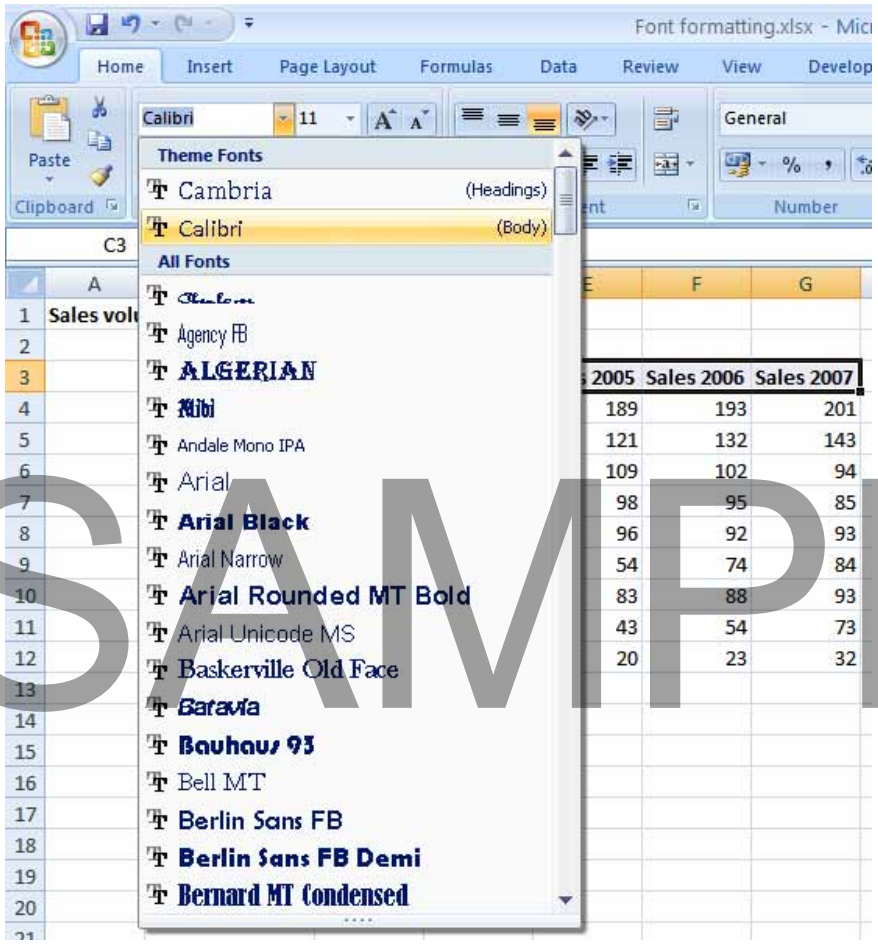
# Formatting

## Font formatting

- The font formatting options are located on the **Home** tab within the **Font** group.


## Font type

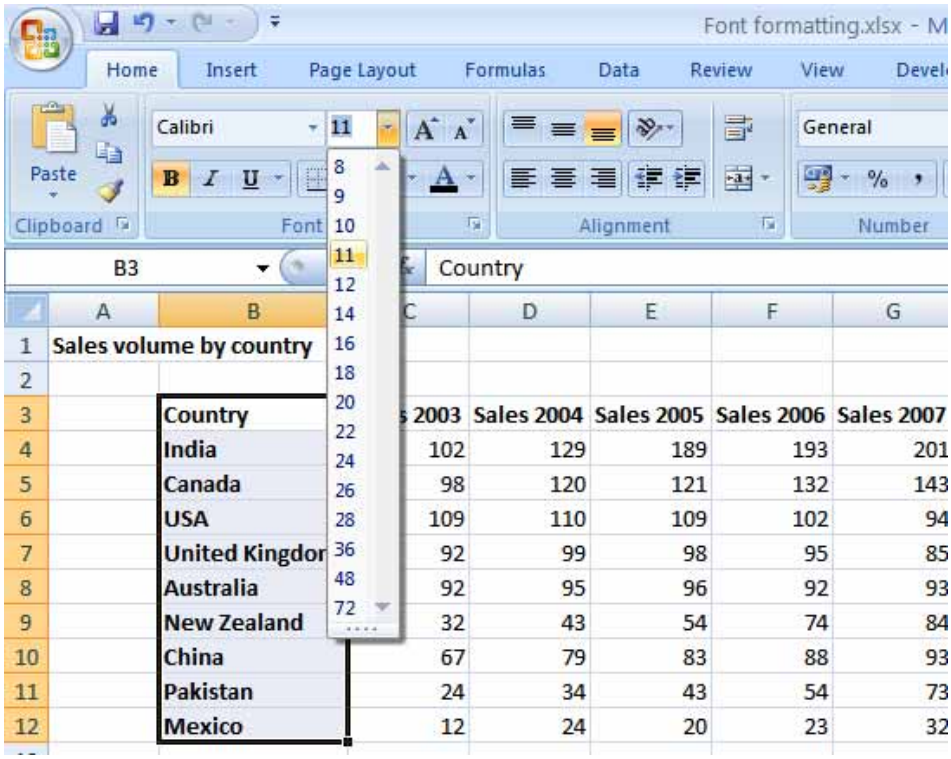
- Open a workbook called **Font formatting**. Select the range **C3:G3**. Click on the **down arrow** within the **Font** section and select a different font type, such as **Arial**.



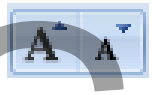

- Experiment with applying different fonts to your data.

## Font size

- Select the range **B3:B12**. Click on the **down arrow** within the **Font Size** section and select a different font size.



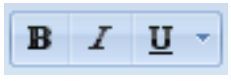

**TIP**: You can also select a range and use the **Increase Font Size** and **Decrease Font Size** icons.



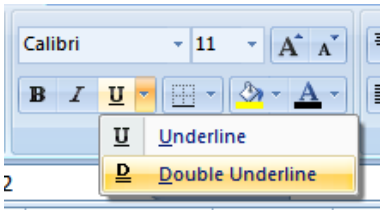


## Bold, italic, underline formatting

- Select the range **C4:G12** and experiment with applying bold, italic and underlining formatting using the icons illustrated below.

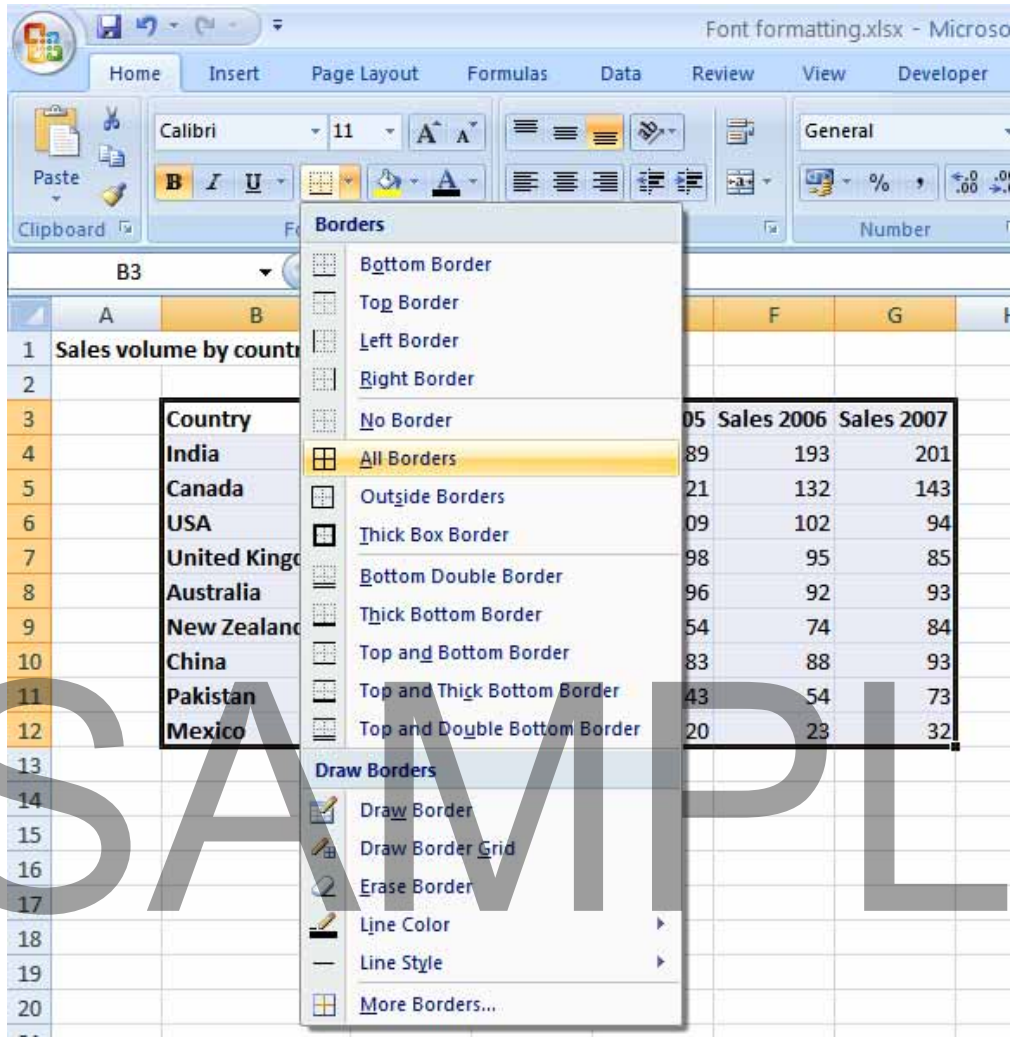


**TIP**: You can easily apply double underline formatting. To do this click on the **down arrow** next to the **Underline** icon. Select the **Double Underline** command.




## Cell border formatting

- Select the range **B3:G12**. Click on the **down arrow** next to the **Border** icon. A drop down is displayed from which you can select the required border. Select **All Borders**.






- Your data will now look like this.

| Country | Sales 2003 | Sales 2004 | Sales 2005 | Sales 2006 | Sales 2007 |
|---|---|---|---|---|---|
| India | 102 | 129 | 189 | 193 | 201 |
| Canada | 98 | 120 | 121 | 132 | 143 |
| USA | 109 | 110 | 109 | 102 | 94 |
| United Kingdom | 92 | 99 | 98 | 95 | 85 |
| Australia | 92 | 95 | 96 | 92 | 93 |
| New Zealand | 32 | 43 | 54 | 74 | 84 |
| China | 67 | 79 | 83 | 88 | 93 |
| Pakistan | 24 | 34 | 43 | 54 | 73 |
| Mexico | 12 | 24 | 20 | 23 | 32 |

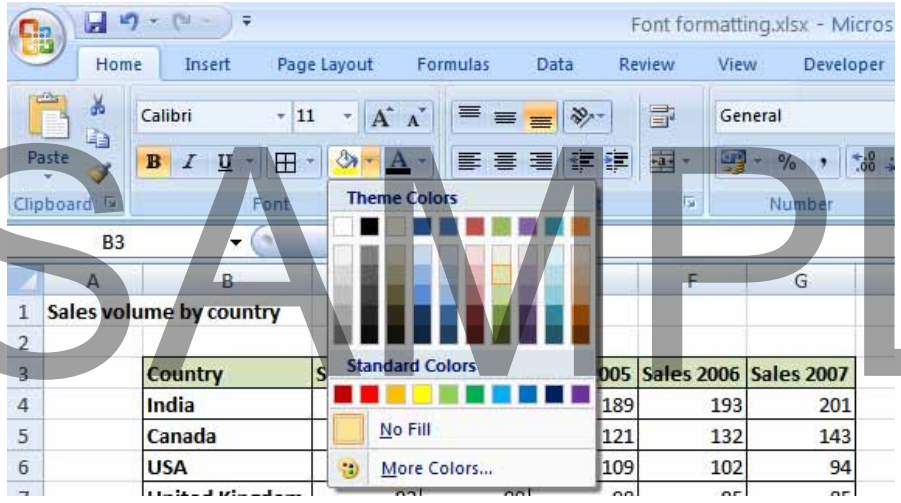
- Click on the **Undo** icon (top-left of your screen) to undo this formatting.


- Spend a little time experimenting with applying different types of borders. Remember that you can use the **Undo** icon to undo any formatting that you apply.

  **TIP**: Experiment with applying border formatting effects, such a thick or double edged border effects.

## Formatting the background color

- Select the range **B3:G3**. Click on the **Fill Color** icon. Move the mouse over a color and you will see the color formatting previewed within your data. Click on a color to apply it.

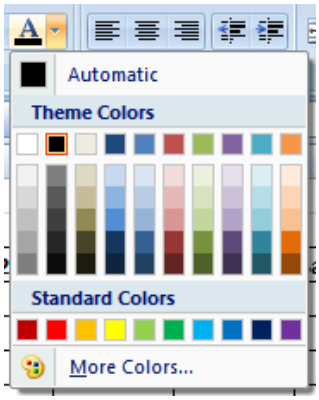





**TIP**: Be carful when applying background fill colors as it may make any text within the range difficult to see. Avoid using similar text colors and background fill colors.

## Formatting the font color

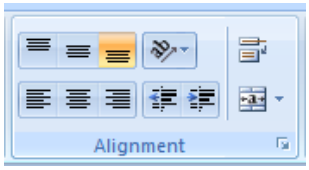
- Select the range **B3:B12**. Click on the **down arrow** next to the **Font Color** icon. This will display a drop down from which you can select the required color. Experiment with applying different font colors.




- Save your changes and close the workbook.

### Alignment formatting

- The alignment options are contained within the **Alignment** group on the **Home** tab.




## Aligning contents in a cell range

- Open a workbook called **Alignment**. Select the range **C3:G12**. Click on the **Center** icon to centre the cell contents in this range. Try applying **left** and then **right** alignment formatting. Use the alignment icons illustrated below.



## Centering a title over a cell range

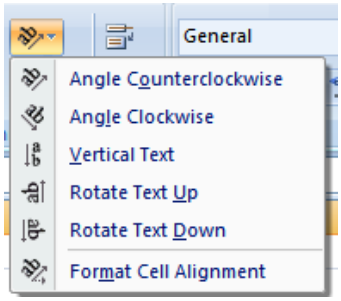
- Click on cell **C2** and type in the word '**Sales**'. We want to centre this within the range **C2:G2**. To do this, select the range **C2:G2** and then click on the **Merge and Center** icon.

- Your screen will now look like this.

| | | Sales | | | |
|---|---|---|---|---|---|
| Country | 2003 | 2004 | 2005 | 2006 | 2007 |
| India | 102 | 129 | 189 | 193 | 201 |
| Canada | 98 | 120 | 121 | 132 | 143 |
| USA | 109 | 110 | 109 | 102 | 94 |
| United Kingdom | 92 | 99 | 98 | 95 | 85 |

## Cell orientation

- Select the range **C3:G3**. Click on the **Orientation** icon. You will see a drop down menu allowing you to format the cell orientation.




- Select the **Angle Counterclockwise** command. Your data will now look like this.

| Country | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|
| India | 102 | 129 | 189 | 193 | 201 |
| Canada | 98 | 120 | 121 | 132 | 143 |
| USA | 109 | 110 | 109 | 102 | 94 |



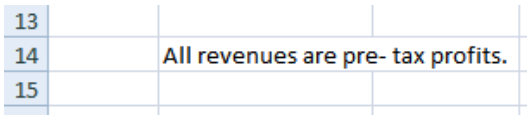
- Experiment with applying some of the other orientation effects.

## Text wrapping

- Click on cell **B14**. Type the following txt into cell **B14**.

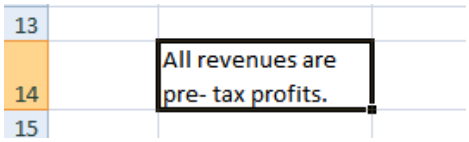
  **All revenues are pre- tax profits**.

- When you press the **Enter** key you will see that the text does not 'fit' into the cell.




- Select cell **B14** and click on the **Wrap Text** icon.

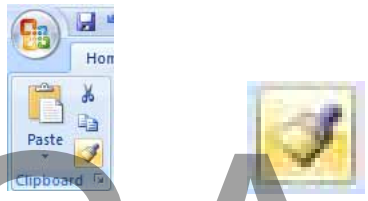
- The cell will now look like this.




- Save your changes and close the workbook.

## Format painter

- Open a workbook called **Format painter**.
- Click within the upper table and click on the **Format Painter** icon. This icon is contained within the **Clipboard** group of the **Home** tab.



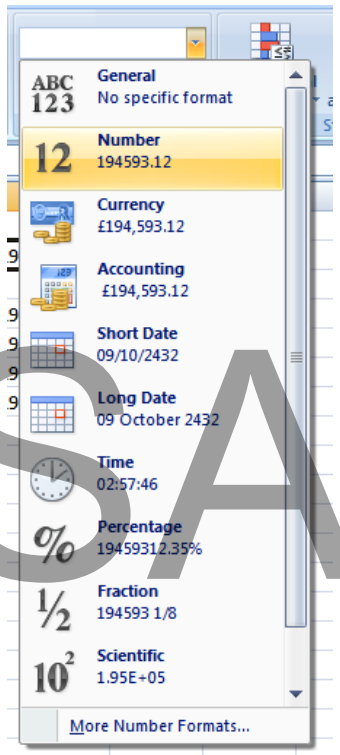

- Once you click on the Format Painter icon, you will notice that the shape of the mouse pointer changes to the shape of a paintbrush. You can now apply the formatting within the cell that you clicked on, to another range within the worksheet.
- Click on cell **B14**, and while keeping the mouse button pressed, move the mouse pointer to cell **G23**. Release the mouse button and the formatting will be copied to the second range within your worksheet, as illustrated.

- Save your changes and close the workbook.

## Number formatting

## Number formatting

- Open a workbook called **Number formatting**. Click on cell **C2**. Click on the **down arrow** next to the **Number Format** control. You will see a drop down menu from which you can select the format. In this case select **Number**.

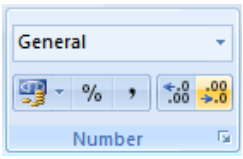





- This tells Excel that the data contained within this cell should always now be treated as a number, rather than say text or a date.

## Decimal point display

- Click on cell **C4.** Click on the **Decrease Decimal** icon so that no decimal places are displayed.




- The cell contents should now look like this.

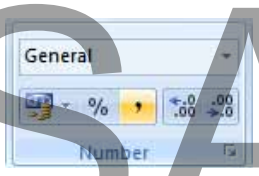
| | |
|---|---|
| Format this number to display no decimal places. | 194593 |

- Set the contents of cell **C5** to display **1** decimal point.
- Set the contents of cell **C6** to display **2** decimal points.

**TIP**: To increase the number of decimal points displayed, click on the **Increase Decimal** icon.

## Comma formatting

- Click on cell **C8**. Click on the **Comma Style** icon to format the number using commas.



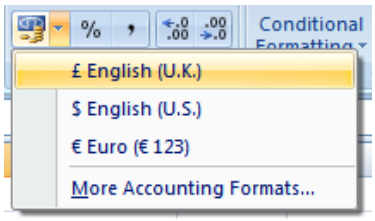



- Your number should now look like this.

1,945,968,573.00

## Currency symbol

- Select cell **C10** and format it to display the **British Pound** symbol. To do this click on the **down arrow** next to the **Currency** icon and select the £ option.

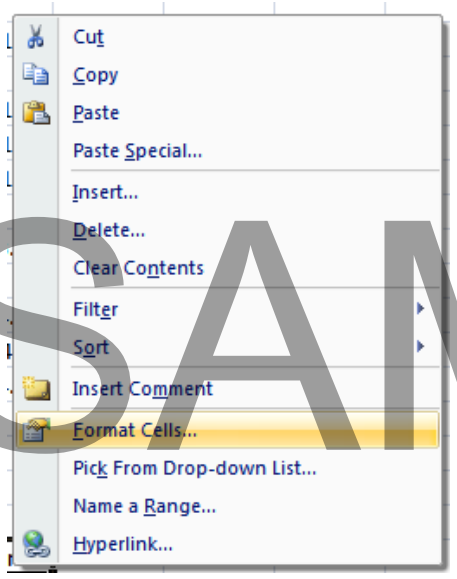



- Select cell **C11** and format it to display the **Dollar** symbol.
- Select cell **C12** and format it to display the **Euro** symbol. Your data will now look like this.

| | |
|---|---|
| £ | 234.98 |
| $ | 234.98 |
| € | 234.98 |

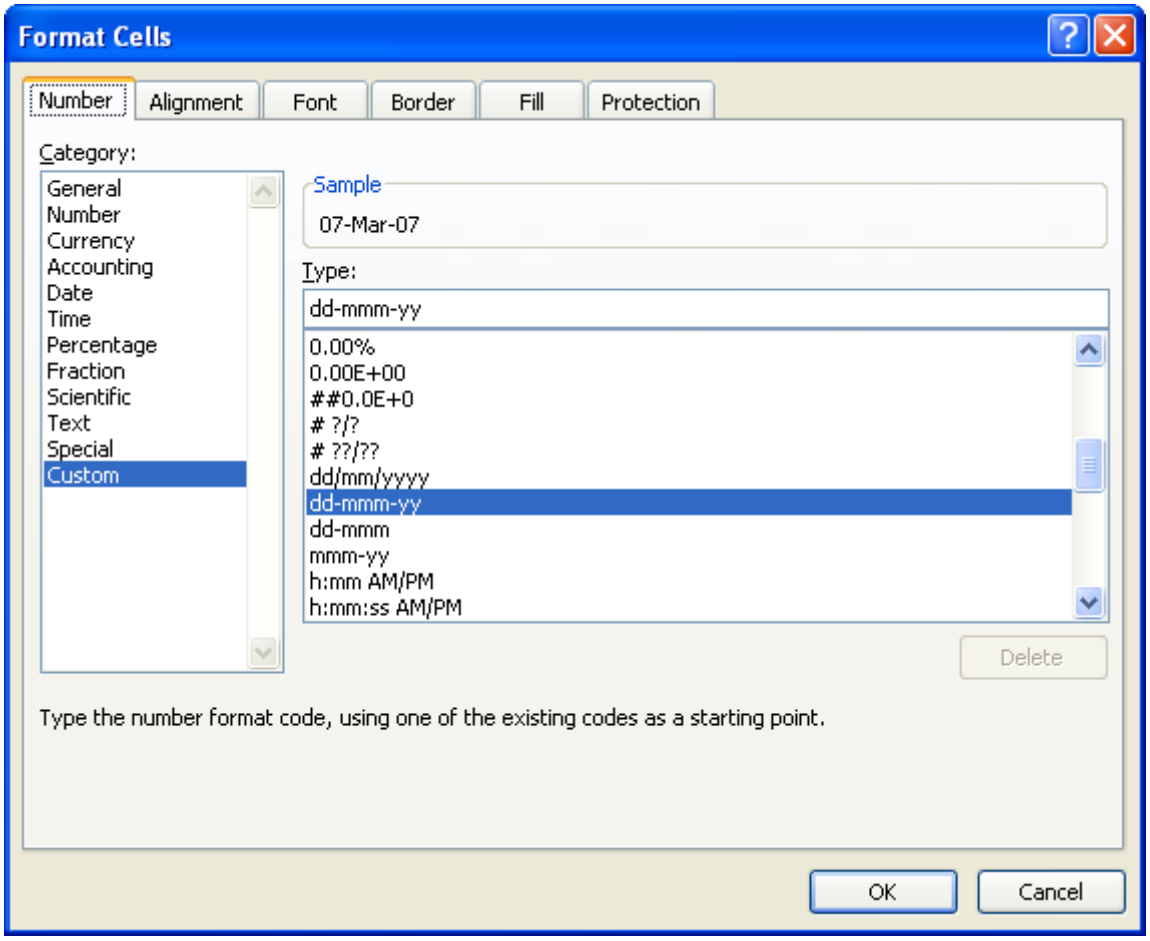
## Date styles

- Click on cell **B17** and type in the text '**The date today is**'. Click on cell **C17** and type in today's date. When you press the **Enter** key you may find that the style of the date changes automatically.
- Right click over cell **C17** and from the popup menu displayed select the **Format Cells** command.

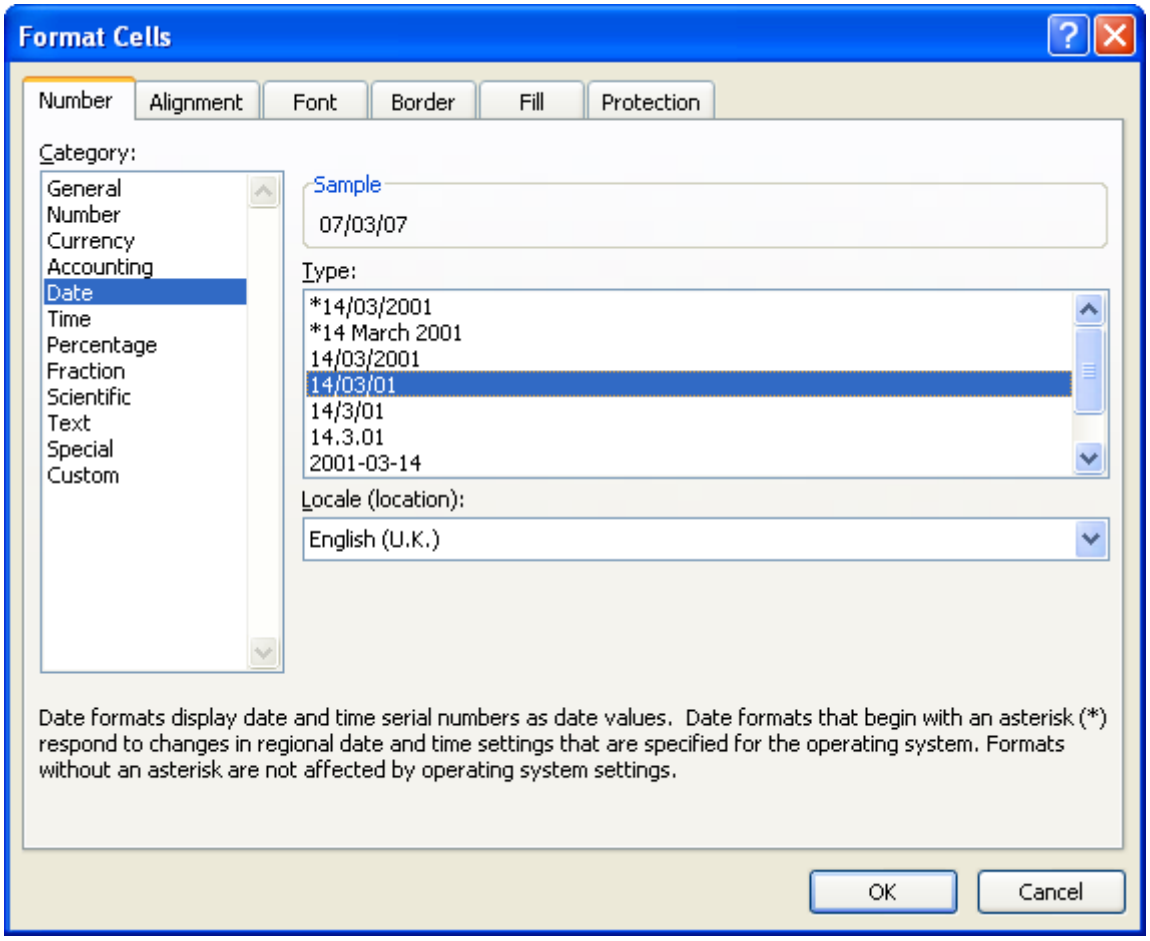





- This will display the **Format Cells** dialog box.




- Within the **Category** section of the dialog box, select the **Date** category. Select the required format from the **Type** section of the dialog box.




- Click on the **OK** button to apply the date format. Experiment with applying different types of date format to the cell.

## Percentages

- Click on the cell **C15**. To change this number from **17** to **17%**, type in **17%** and press the **Enter** key. You will then see the contents displayed as illustrated below.




- Save your changes and close the workbook.

## Freezing row and column titles

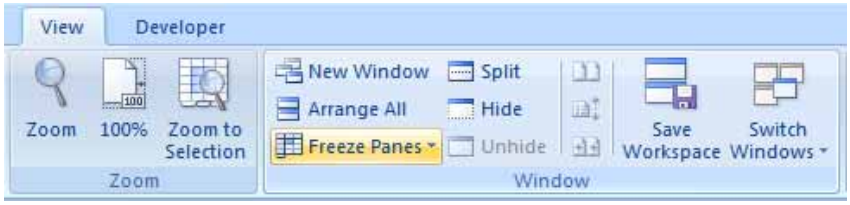
# Freezing row and column titles

- Open a workbook called **Freezing**.
- Scroll down through the data and you will see that the title row, which contains a description of each columns contents, scroll out of sight. This makes it difficult to remember what the data in each column represents, if you cannot see the column title row.
- Make sure that you can see the title row displayed, as illustrated.

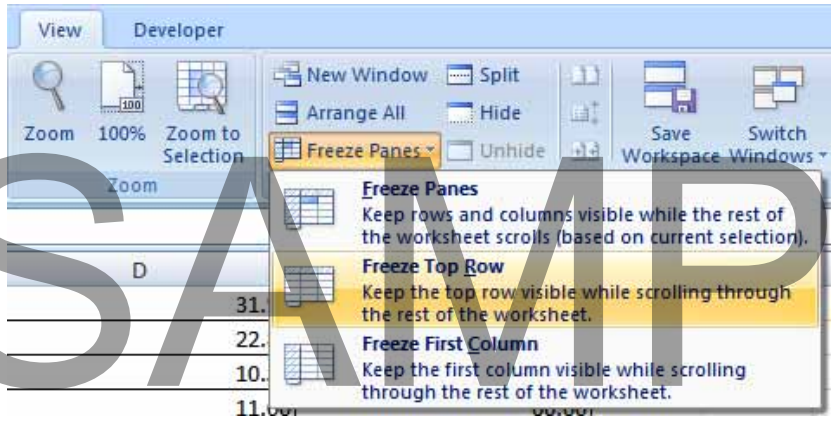
G18

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Component code** | **Color** | **Number in stock** | **Value of each component** | **Total value of stock** |
| 2 | 100001 | Red | 2 | 22.99 | 0.00 |
| 3 | 100002 | Red | 2 | 11.50 | 23.00 |

- To freeze the top row so that it remains in sight at all time, click on the **View** tab and from within the **Window** group on the Ribbon, click on the **Freeze Panes** command.




- From the drop down list displayed, click on the **Freeze Top Row** command.

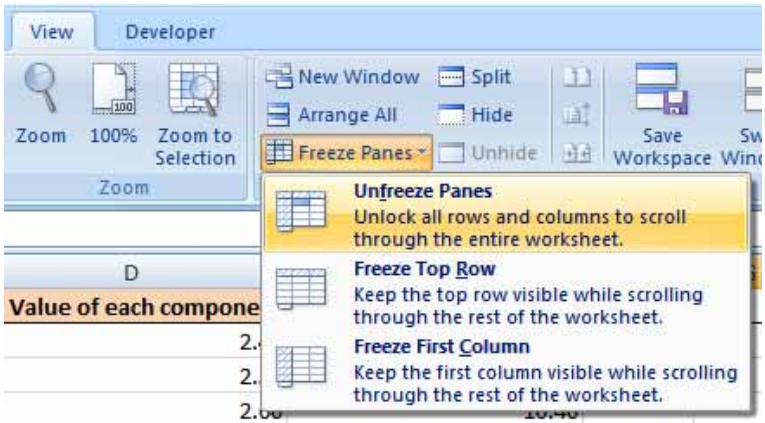




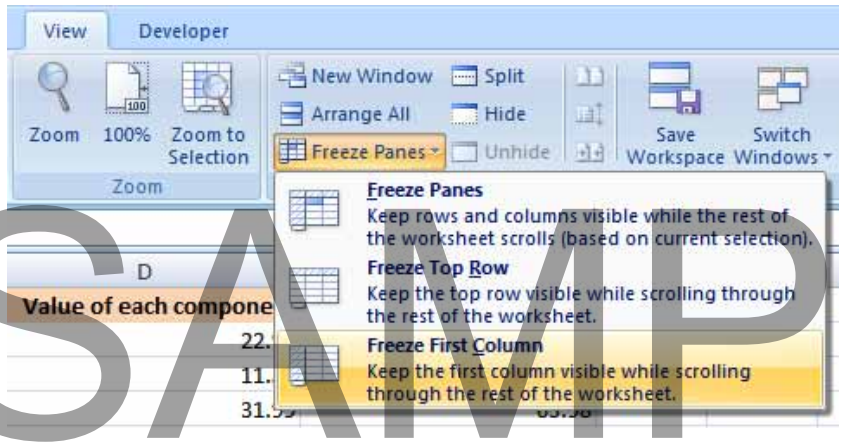

- Scroll down through the data. As you can see the top row stays visible at all times now.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Component code | Color | Number in stock | Value of each component | Total value of stock |
| 53 | 100052 | White | 1 | 2.40 | 2.40 |
| 54 | 100053 | White | 4 | 2.50 | 10.00 |
| 55 | 100054 | White | 4 | 2.60 | 10.40 |

- To unfreeze the top row, click on the **View** tab and from within the **Window** group on the Ribbon, click on the **Unfreeze Panes** command.




**TIP**: You can use the same technique to freeze the first column, so that when you scroll to the right it is always visible. To do this you would select the **Freeze First Column** command.






- Save your changes and close the workbook

## Formulas and Functions

## Formulas

# Creating formulas

- Open a workbook called **Formulas**. Click on cell **E3**.

  In cell **E3** we need to create a formula that will calculate the value of the stock for that particular component. To do this we need to multiply the contents of cell **C3** by the content of cell **D3**.

- All formulas within Excel start with the 'equals' symbol.

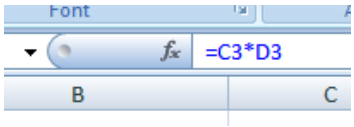
  Type in the following formula.

  **=C3*D3**

  **TIP**: the ***** symbol means 'times'.

  Press the **Enter** key and you will see the result of the calculation in cell **E3**.

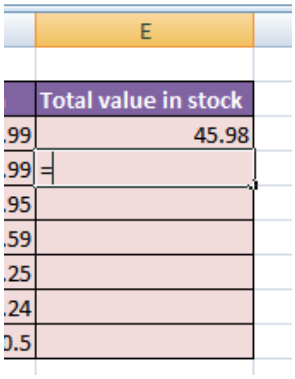
- Click on cell **E3** and you will see the formula displayed in the bar above the worksheet.



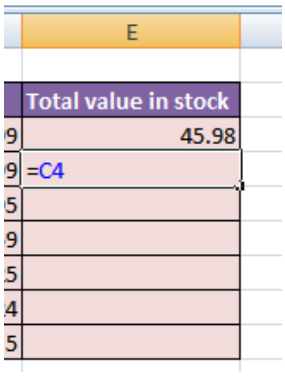



# Easy way to create formulas

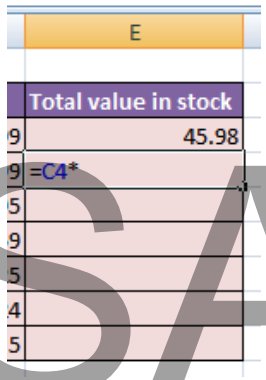
- Click on cell **E4** and type in the equals sign.




- Click on cell **C4** and you see this.

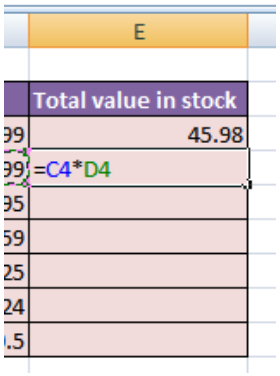



- Type in the ***** symbol, you see this.






- Click on cell **D4** and you will see this.




- Press the **Enter** key and you see the result of the calculation. This method may seem more complicated at first but when you are creating complex formulas, you will find this method is actually easier and helps to reduce errors, such as typing incorrect cell references.

## Copying formulas

- Click on cell **E4**.
- Move the mouse pointer to the bottom-right border of this cell and you will notice that the mouse pointer changes to the shape of a small, solid black cross. When you see this shape change press the mouse button and while keeping the mouse button depressed, drag down to cell **E9**. Release the mouse button and you will see the formula copied down this range. If you look at the formula in each cell of the range the cell references are automatically adjusted to match each row, i.e. row 8 contains the formula **=C8*D8,** while row 9 contains the formula **=C9*D9**.

  Your screen will now look like this.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | Component Code Number | Number in stock | Value of each item | Total value in stock |
| 3 | | 100847 | 2 | 22.99 | 45.98 |
| 4 | | 100846 | 4 | 34.99 | 139.96 |
| 5 | | 100645 | 9 | 12.95 | 116.55 |
| 6 | | 100837 | 1 | 13.59 | 13.59 |
| 7 | | 100846 | 0 | 9.25 | 0 |
| 8 | | 100243 | 2 | 5.24 | 10.48 |
| 9 | | 100773 | 5 | 40.5 | 202.5 |



- Close the workbook.

## Operators

- Operators sound complicated. In reality they are items such as:

| | |
|---|---|
| **+** | (plus) |
| **-** | (minus) |
| **/** | (divide) |
| ***** | (multiply) |

You use operators as part of your formulas. There are other operators but these are the commonly used ones.

## Formula error messages

- When writing formulas it is easy to make a mistake: listed below are some common error messages.

**#####**

The contents of the cell cannot be displayed correctly as the column is too narrow.

**#REF!**

Indicates that a cell reference is invalid. This is often displayed when you delete cells which are involved in a formula.

**#NAME?**

Excel does not recognize text contained within a formula.

### Relative, mixed and absolute cell referencing



## Relative cell referencing within formulas

- Open a workbook called **Cell referencing**.
- The first worksheet within the workbook lets us look at relative addressing.
- Click on cell **E4**. We need to insert the formula for multiplying items in column C by the items in columns D. Type in the following formula:

**=C4*D4**

- Press the **Enter** key and you will see the result of the calculation in cell **E4**.
- Click on cell **E4**, and move the mouse pointer to the bottom-right corner of cell **E4**, and when the pointer changes to the shape of a small black cross, press the mouse button, and keep it pressed down. Drag down the page to cell **E12** and then release

the mouse button.

- If you click on cell **E5** you will see the following **=C5*D5**.
- If you click on cell **E6** you will see the following **=C6*D6**.
- If you click on cell **E7** you will see the following **=C7*D7**.
- If you click on cell **E8** you will see the following **=C8*D8**.
- If you click on cell **E9** you will see the following **=C9*D9**.
- If you click on cell **E10** you will see the following **=C10*D10**
- If you click on cell **E11** you will see the following **=C11*D11**.
- If you click on cell **E12** you will see the following **=C12*D12**.

- As you can see the referencing is completely relative. This will become clearer when you have worked through the rest of this section.

## Absolute cell referencing within formulas

- Click on the **Absolute** tab at the bottom of the worksheet.
- Click on cell **D4**. We need to enter a formula that will take the price and then add 5% to the price to give a total value.

  The 5% figure has been entered into cell **C15**.

- Type in the following formula into cell **D4**.

  **=C4*C15**

  If you do the sums, you will find that this formula displays the correct delivery charge price in cell **D4**.

- Click on cell **D4**, and move the mouse pointer to the bottom-right corner of cell **D4**, and when the pointer changes to the shape of a small black cross, press the mouse button, and keep it pressed down. Drag down the page to cell **D12** and then release the mouse button. The data will look something like this.

| Part Number | Price (excluding delivery) | Cost of delivery |
|---|---|---|
| 100837 | 22.99 | 1.15 |
| 100263 | 10.95 | 0.00 |
| 100937 | 20.50 | 0.00 |
| 100234 | 10.50 | 0.00 |
| 100375 | 12.95 | 0.00 |
| 100746 | 29.84 | 0.00 |
| 100387 | 23.43 | 0.00 |
| 100883 | 9.48 | 0.00 |
| 100338 | 20.50 | 0.00 |

As you can see something has gone very wrong, as the 5% delivery charge appears to be 0 for most of the items.

- Click on cell **D5** and you can see what the problem is. The formula contained within this cell is:

  **=C5*C16**

  Part of the cell reference points to cell **C16** (which if you check is empty). The problem is that because of the relative nature of the formula, the component that should always refer to the contents of the cell in **C15** (i.e. the delivery charge percentage), in fact move down as you drag down the screen to extend your calculations.

- Select the range **D4:D12** and press the **Del** key to delete the cell contents.

- Click on cell **D4** and we will try again. This time type in the following formula.

  **=C4*$C$15**

  The dollar signs make the reference to cell **C15** absolute.

- Try extending the formula to fill the range down to **D12**. This time you should find that the delivery charges are calculated correctly.

| Part Number | Price (excluding delivery) | Cost of delivery |
|---|---|---|
| 100837 | 22.99 | 1.15 |
| 100263 | 10.95 | 0.55 |
| 100937 | 20.50 | 1.03 |
| 100234 | 10.50 | 0.53 |
| 100375 | 12.95 | 0.65 |
| 100746 | 29.84 | 1.49 |
| 100387 | 23.43 | 1.17 |
| 100883 | 9.48 | 0.47 |
| 100338 | 20.50 | 1.03 |

**TIP**: You have seen relative and absolute referencing. You can also have mixed references, which contain an absolute and a relative reference.

- Save your changes and close the workbook.

## Functions

## What is a function?

- A function allows you to calculate a result such as adding numbers together, or finding the average of a range of numbers.

## Common functions

- Some commonly used functions include:

**AVERAGE:** Used to determine the average value of the selected cells contents.

**COLUMNS:** Used to return the number of columns within a reference.

**COUNT:** Used to count how many numbers are in the list.

**MAX:** Used to return the maximum number from a list.

**MIN:** Used to return the minimum number from a list.

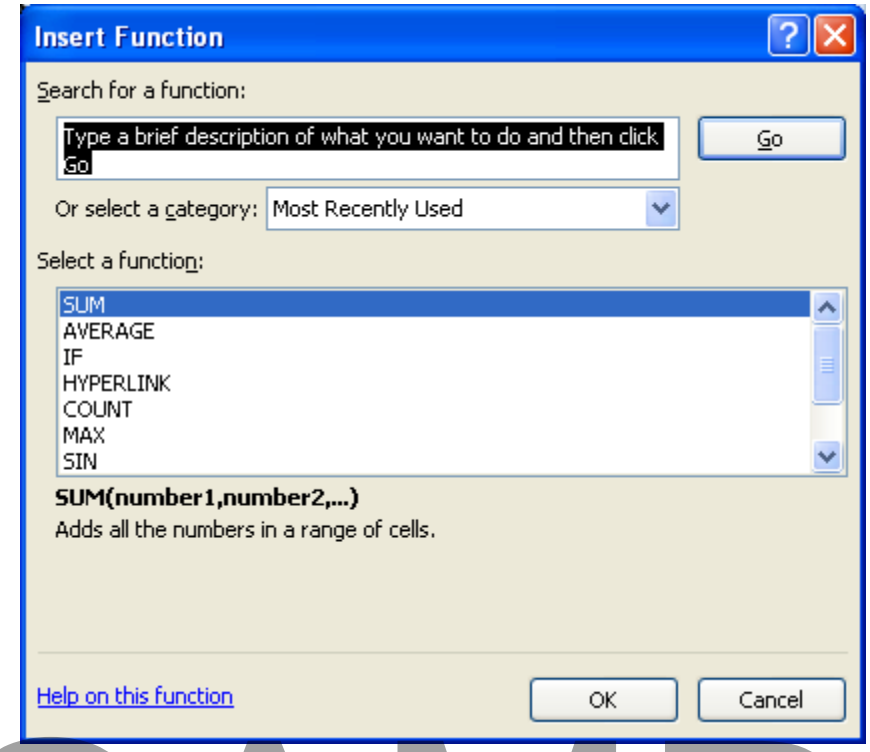
**ROUND:** Used to round off numbers to a specified number of decimal points.

**SUM:** Used to add the contents of selected cells.

To display the available functions, press **Ctrl+N** to display a blank workbook and then click on the **Formulas** tab and within the **Function Library** group click on the

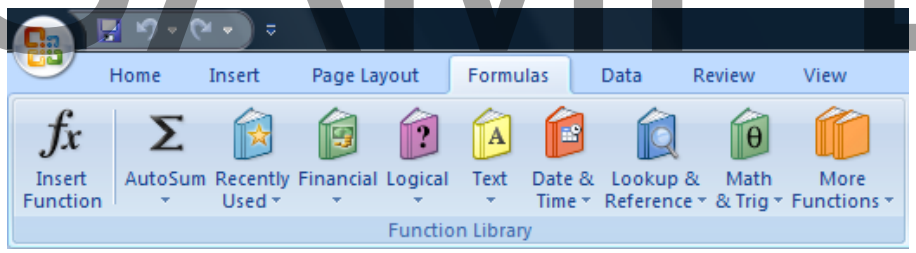
**Insert Function** icon.


This will display the **Insert Function** dialog box.



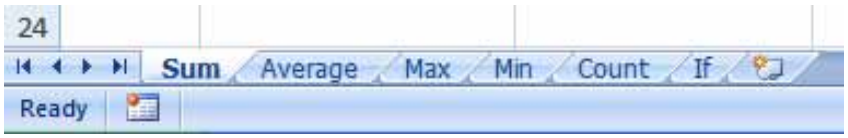



**NOTE**: Depending on the configuration of your PC the **Function Library** group of the **Formulas** tab may look slightly different, as illustrated below. The options however are identical.

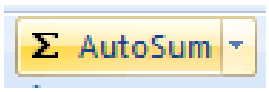


## Sum function

- Open a workbook called **Functions**.
- If necessary, click on the **Sum** worksheet tab.

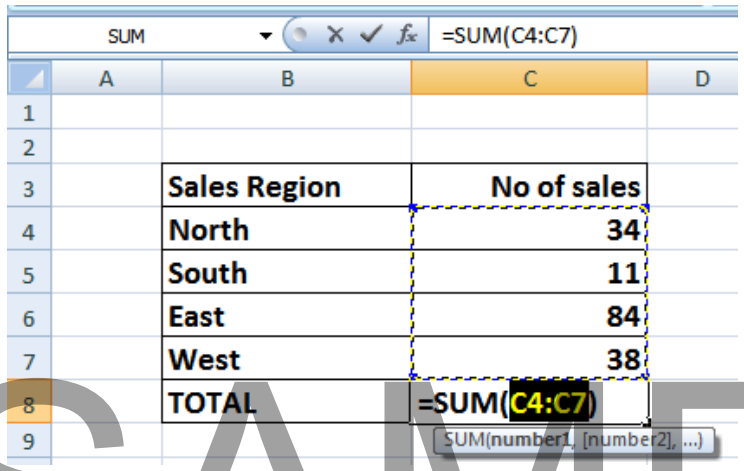



- Click on cell **C8**. In this cell we need to sum the values in the column above.
- Click on the **Formulas** tab and within the **Function Library** group click on the **AutoSum** icon.

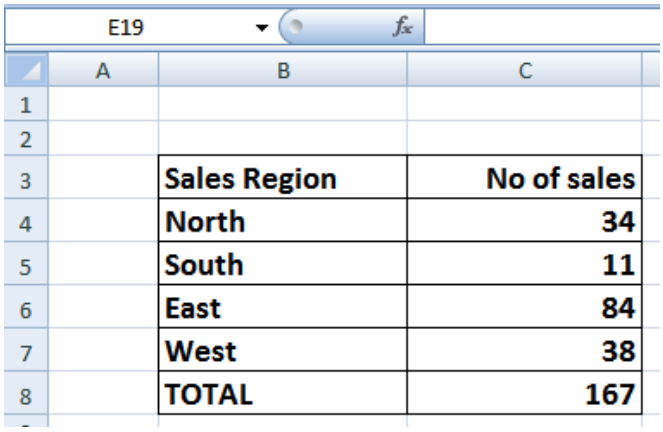



**TIP**: Click on the **AutoSum** icon, not the **down arrow** beside the icon.

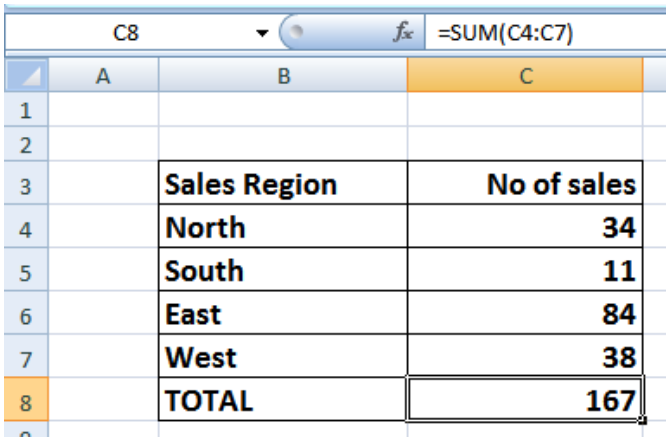
- You will see the following displayed on your screen.




- Press the **Enter** key and you will see the AutoSum result in cell **C8**.




- Click on cell **C8**, and you will see the function displayed in the bar just above your worksheet.




As you can see the function is:

**=SUM(C4:C7)**

- This function tells Excel to sum the values in the range **C4:C7**.

## End of the preview sample

CHELTENHAM COURSEWARE

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