

ECDL[®]

European Computer Driving Licence[®]

Spreadsheet Software

BCS ITQ Level 1

Using Microsoft[®] Excel[®] 2010

Syllabus Version 1.0

This training, which has been approved by BCS, includes exercise items intended to assist learners in their training for a BCS or ECDL Certification Programme. These exercises are not certification tests. For information about how to take a certification test and to find Approved Centres in the UK, please refer to the BCS website at www.bcs.org/qualifications.

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Skill Set 1

Fundamentals

By the end of this Skill Set you should be able to:

Understand Spreadsheet Principles

Start Microsoft *Excel*

Understand the Screen Layout

Understand the Ribbon and Quick Access Toolbar

Understand the Worksheet Window

Exit *Excel*

Exercise 1 - Spreadsheet Principles

Knowledge:

A spreadsheet package is a computer program created specifically to help in the processing of tabular information, usually numbers. The spreadsheet stores information in **rows** (across the screen) and **columns** (down the screen), forming a **Worksheet** (the *Excel* term for a spreadsheet). Several worksheets are bound together (three initially) to form a **Workbook**, the name *Excel* gives to a saved file.

Spreadsheets are most commonly used to manipulate figures. They can be used in:

- Accounting
- Cash flows
- Budgets
- Forecasts, etc.

Any job involving the use of numbers can be done on a spreadsheet.

The biggest advantage that a spreadsheet has over other methods of manipulating data - using a table in a word processing application for example, is its ability to constantly update figures without the user having to do any calculations. Once a spreadsheet is set up correctly, its calculations will always be correct and any changes in data are recalculated automatically.

Spreadsheets can also take basic data and present it in an attractive way, for example as formatted lists, tables and graphs.

Cells can contain, text (labels), numbers or formulas. The relationship between **Labels**, **Numbers** and **Formulas** is shown below (remember this is a typical example of a table - cell contents can be arranged in other ways).

| | | | | | | |
|--------|--|--|----------|--|--|----------|
| | | | Labels | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Labels | | | Numbers | | | Formulas |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | Formulas | | | |

Exercise 2 - Starting Excel


Knowledge:

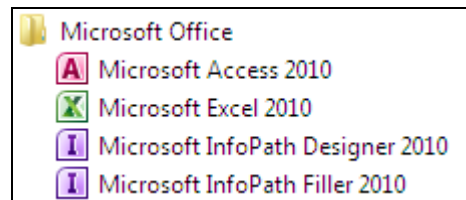
Microsoft Excel is a spreadsheet program that is part of the *Microsoft Office* suite of applications. *Excel* can be started by selecting its entry from the **Start** menu.

Activity:

1. When the computer is started, the *Windows Desktop* is automatically displayed.



2. Click once on the **Start** button, , in the bottom left corner of the screen, to show the list of options available.
3. Move to **All Programs** and then click **Microsoft Office**.



4. Click **Microsoft Excel 2010**. The application will open and the *Excel* window will appear.

Note: You can also open *Excel* by searching for and selecting its name using the Windows search feature (available on the **Start Menu**).

Note: If an icon for *Excel* is available on the **Desktop**, you can double-click this to launch the program.

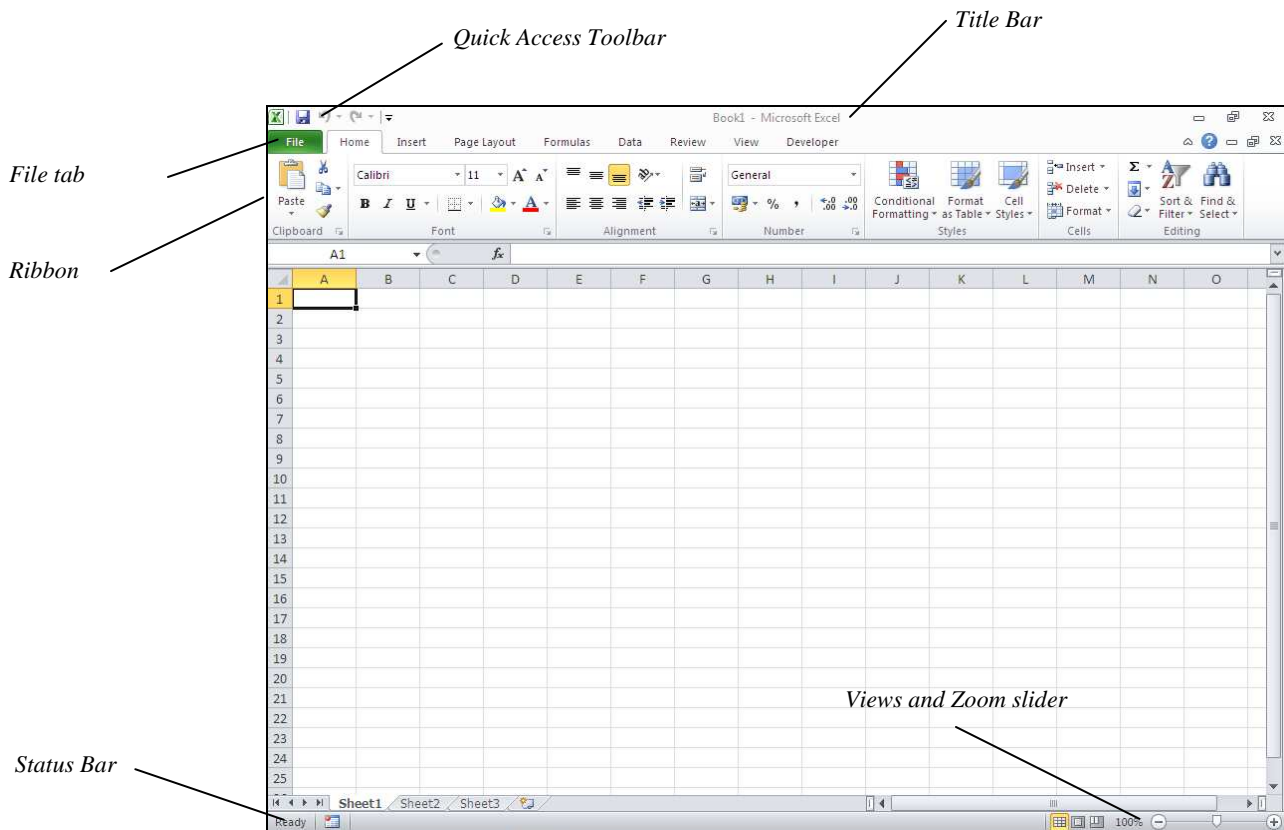
Exercise 3 - The Layout of the Excel Screen

Knowledge:

When the *Excel* screen (window) appears, the program displays a blank worksheet.

Activity:

1. The *Excel* screen will be similar to the picture below. Locate and familiarise yourself with all the features highlighted.



Note: Depending on your display settings, the screen you see may not appear exactly as shown above.

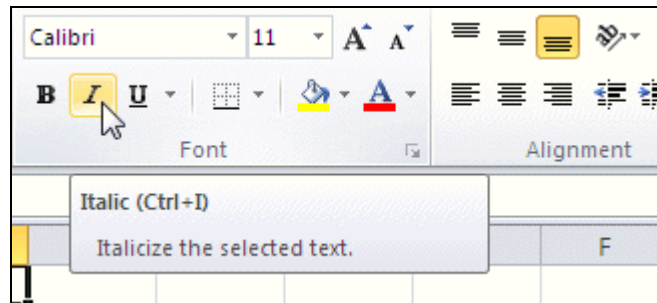
2. The **Title Bar** is the top line of the *Excel* screen. It shows the application and the name of the workbook that is on the screen. Identify the **Title Bar**.
3. The name of the current workbook is **Book1** or similar. Check this in the **Title Bar**.
4. At the top left of the screen is the **Quick Access Toolbar**.




5. By default this contains three buttons, **Save**, **Undo** and **Redo**. More buttons can be added to this toolbar.

Exercise 3 - Continued

6. Under this toolbar is an area called the **Ribbon**. This consists of a range of tabs, containing buttons within groups (used to select commands in *Excel*).
7. The **Home** tab is displayed by default, if it is not then click on the **Home** tab. The buttons are used to select an action or basic feature. Move the cursor over any button but do not click. Read the **ToolTip**, which gives the name of that button, with a small description, e.g. **Italic** in the **Font** group.



8. The **File** tab contains a list of basic program functions such as; **Open**, **Save**, **Print** and **Close**. Click on the **File** tab,  to display a list of the options.
9. Display the **Home** tab.
10. The **Status Bar** runs along the bottom of the window. This displays messages as tasks are performed. Check that the current message, at the left, states **Ready**.
11. The right side of the **Status Bar** contains **Views** buttons and a **Zoom** slider.



12. Along the bottom of the screen is the **Taskbar**, this contains the **Start** button, open application buttons and others, including **Time**.

Exercise 4 - The Ribbon

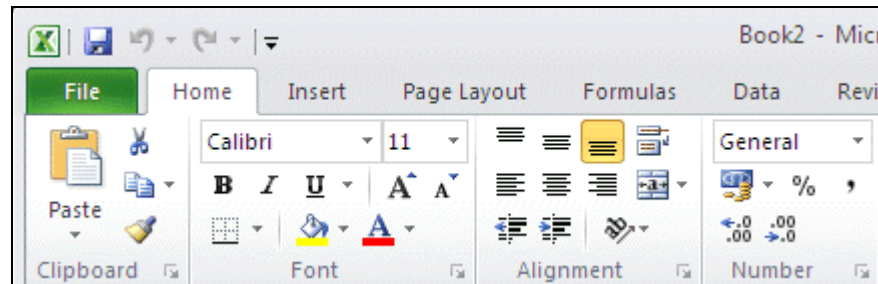
Knowledge:

The **Ribbon** is displayed across the top of the application window. The **Ribbon** contains buttons and drop down lists to control the operation of *Excel*. The **Ribbon** is divided into a series of **Tabs**, each one of which has a set of controls specific to a certain function or process. On each tab, the controls are further divided into separate **Groups** of connected functions.

Some tabs can be selected manually, some only appear when certain operations are active, for example only when a **Chart** is active, will three **Chart Tools** tabs be displayed on the **Ribbon**.

Activity:

1. On the **Ribbon**, the **Home** tab should be selected. Other basic tabs, are available.



Part of the **Ribbon** displaying the **Home** tab

Note: Any buttons displayed in pale grey are called *ghosted* and are not available to be selected at present.

2. Notice how the buttons on the **Ribbon** are divided into **Groups** (**Clipboard**, **Font**, **Alignment**, etc.).

Note: The display of buttons on the **Ribbon** is dynamic. That is it will change according to how much space there is available. If the window is not maximised or the screen resolution is anything other than 1024 by 768, the **Ribbon** will not always appear as shown in this guide.

3. Place the cursor over the **Bold** button, **B** in the **Font** group. The **ToolTip** appears which give more information and an alternative key press <Ctrl B> for the function.
4. Some buttons produce immediate effects, like the **Bold** <Ctrl B>, **Italic** <Ctrl I> and **Underline** <Ctrl U> buttons in the **Font** group.

Exercise 4 - Continued

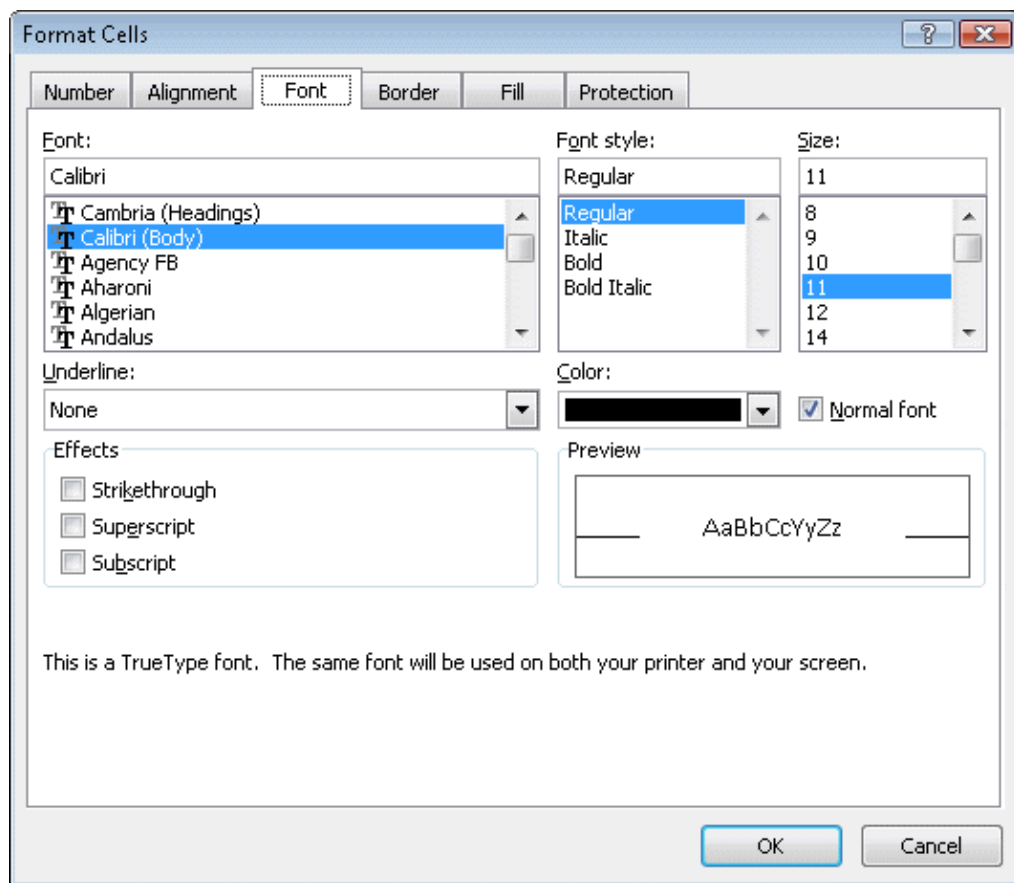
- Buttons with a drop down arrow lead to further options. Click the **Find & Select** button, which is found in the **Editing** group. A list of further options is displayed.



- Some options will display a dialog box which needs data to be entered. Click the first option **Find**, the **Find and Replace** dialog box is displayed. Click the **Close** button in the dialog box to remove it.

- Some groups have a dialog box launcher to the right of the group name, e.g. the **Font** group, .

- Click the **Font** dialog box launcher to display the **Format Cells** dialog box.



- This is a tabbed dialog box, similar to those used in previous versions of *Excel*. Click **Cancel** to close the **Format Cells** dialog box.
- Display the other basic tabs, one at a time, **Insert**, **Page Layout**, **Formulas**, **Data**, **Review** and **View** to see which other commands are available.

Note: There may be a **Developer** tab displayed, used for controlling macros. This tab is not displayed by default.

- Select the **Home** tab again.

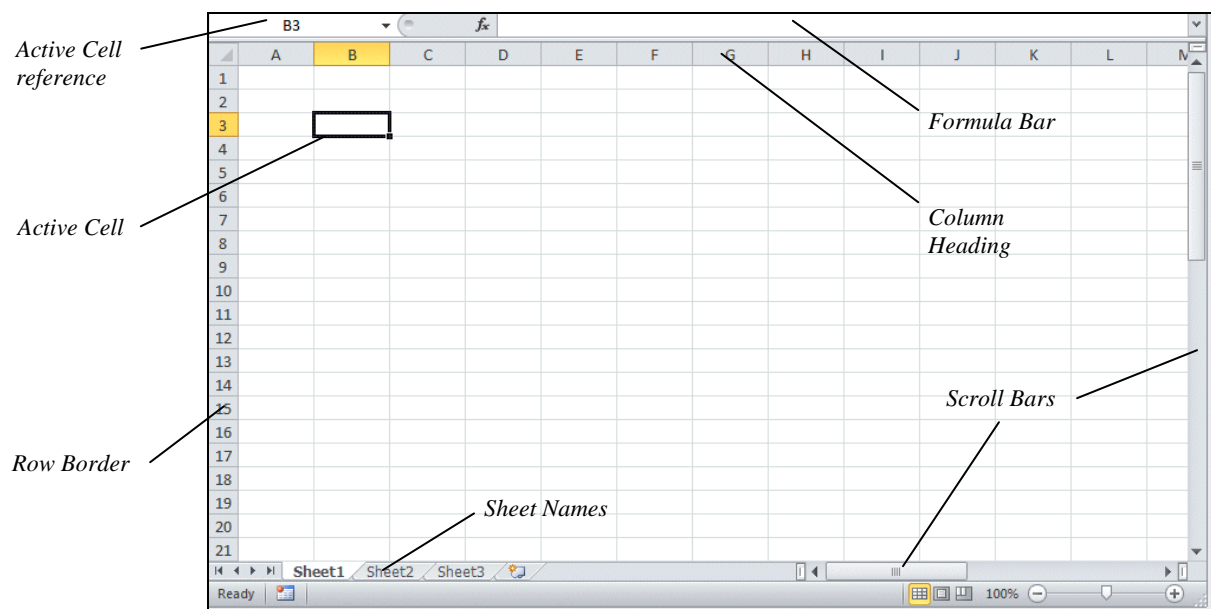
Exercise 5 - The Worksheet Window

Knowledge:

Spreadsheets help in the processing of numbers. They store information in **rows** (across the screen) and **columns** (down the screen). A **cell** is the intersection of a row and column. All the cells form a **worksheet** (the *Excel* term for a spreadsheet). Several **worksheets** are bound together and called a **workbook**.

Activity:

- Each cell is identified by the column letter and row number, which form the intersection, e.g. the cell formed where column **D** and row **8** meet is known as cell **D8**. Move the mouse pointer to cell **B3** and click. The **Current** or **Active** cell is now **B3**. It has a dark border.



- Look for the **Active Cell Reference**, which is shown in the **Name Box** at the left of the **Formula Bar**. It displays **B3**.
- Click in cell **C6**. The **Active Cell Reference** now shows **C6**. These letters and numbers are shown highlighted in the **Row** and **Column Headings** on the worksheet. **C6** is now the **Current** or **Active** cell.
- The active cell can be moved using various key presses. Press the right cursor key →. The active cell moves right into cell **D6**.
- Press the down cursor ↓ to move into cell **D7**. Press the left cursor ← to move into **C7**.
- Press the up cursor ↑. The active cell should now be **C6** again.

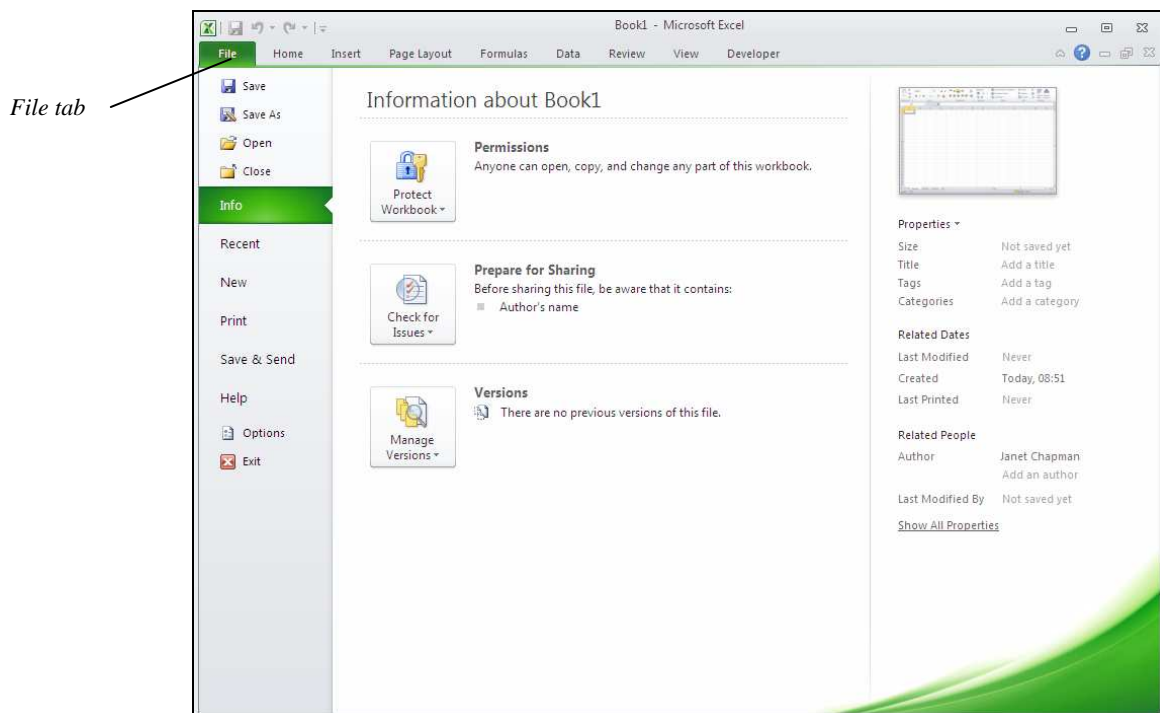
Exercise 6 - Closing Excel

Knowledge:


When *Excel* is closed, if any workbooks are still open and have not been saved, a warning will be displayed with an option to save the changes.

Activity:

1. Display the **File** tab to show the menu.
2. Click **Info** on the left and look at the options available.



3. Click **Exit** and *Excel* closes, however, if an open workbook needs saving because of changes then a save prompt is displayed. Click **Don't Save** if there is a prompt to save.

Note: *Excel* can also be closed by clicking the **Close** button,  in the top right corner of the screen.

Exercise 7 - Develop Your Skills

Note: This training, which has been approved by the BCS, includes exercise items intended to assist learners in their training for a BCS or ECDL Certification Programme. These exercises are not certification tests. For information about how to take a certification test and to find Approved Centres in the UK, please refer to the BCS website at www.bcs.org/qualifications.

You will find a *Develop Your Skills* exercise at the end of each Skill Set. Work through it to ensure you've understood the previous exercises.

1. Start *Excel* using the **Start** button.
2. What is the name of the current workbook?
3. How is the **Active Cell** displayed?
4. How many worksheets are in a workbook by default?
5. Use the mouse pointer to find **ToolTips** for the following buttons, located on the **Home** tab:



6. How many groups are displayed on the **Data** tab of the **Ribbon**?
7. The **Formulas** tab has the following groups: **Function Library**, **Calculation**, **Formula Auditing** and which other?
8. Close down *Excel* using the **File** tab. What is the option called that actually closes the application down?
9. Close *Excel*.

Note: The answers are listed in the **Answers** section at the end of the guide.

Summary: Fundamentals

In this Skill Set you have been introduced to the principles of a spreadsheet software program, Excel.

You have opened Excel, become familiar with the screen layout, and identified the various parts of the screen and their uses.

You have also closed Excel

You should be able to demonstrate your ability to:

- Understand spreadsheet structure

Skill Set 5

Formulas

By the end of this Skill Set you should be able to:

Create Simple Formulas

Understand Mathematical Operators

Select Cells with the Mouse to Create Formulas

Use the functions SUM, AVERAGE and ROUND

Copy and Check Formulas

Use the Fill Handle

Exercise 30 - Introducing Formulas

Knowledge:

A calculation in Excel is called a Formula. Formulas are used to calculate answers from numbers entered on the sheet, e.g. sales for the year, net profit in a month, overall profitability of the company, etc.

All formulas begin with an equals sign (=), followed by the calculation.

Formulas automatically calculate results from the data. Any changes in the data will cause the formulas to be recalculated automatically.

Activity:

1. Open the workbook **Formulas**.
2. To add the contents of **B4** and **B5**, make **B6** the active cell by clicking on it. Do not add spaces and use the **+** symbol on the numeric keypad at the right of the keyboard to type in **=b4+b5**. Ignore any shortcut formula lists that may appear.

| | A | B | C | D | E | F |
|---|--------|--------|----------|----------|--------|---|
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | Number | Add | Subtract | Multiply | Divide | |
| 4 | First | 6 | 7 | 3 | 12 | |
| 5 | Second | 3 | 4 | 5 | 4 | |
| 6 | Result | =b4+b5 | | | | |

3. Press **<Enter>** to complete the formula. The cells being selected in the formula are highlighted automatically when entered on the screen. This creates a formula to add the contents of cells **B4** and **B5**.

Note: When entering cell references, like **B4**, it does not matter if they are entered in capitals or not, as Excel converts them to uppercase.

4. Click back on cell **B6** and note the cell displays **9** and the **Formula Bar** displays **=B4+B5**, the formula.

| | | B6 | | fx =B4+B5 | | |
|---|--------|-----|----------|-----------|--------|---|
| | A | B | C | D | E | F |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | Number | Add | Subtract | Multiply | Divide | |
| 4 | First | 6 | 7 | 3 | 12 | |
| 5 | Second | 3 | 4 | 5 | 4 | |
| 6 | Result | 9 | | | | |

5. Leave the workbook **Formulas** open.

Exercise 31 - Mathematical Operators

Knowledge:

The basic mathematical operators are add, subtract, multiply and divide. You have already used the operator +; the others are introduced here. The symbols on a keyboard are slightly different to those used normally and are:

| | |
|---|----------|
| + | Add |
| - | Subtract |
| * | Multiply |
| / | Divide |

These symbols appear twice, one set placed around the main keyboard and the other set on the numeric keypad (right side). The keypad is easier to use because the keys are closer together and the <Shift> key is not used.

More complicated calculations are entered using **Functions**. Apart from a couple of basic functions, **SUM** and **AVERAGE**, introduced in this guide, many more are available.

Activity:

1. With the workbook **Formulas** open, click on cell **C6**.

Note: To use the numeric keypad for number entries, the **Num Lock** light on the keyboard must be on. If not, press <Num Lock>.

2. Enter the formula to subtract the two numbers above =**c4-c5**. Complete the entry by pressing the right arrow key. The answer is displayed as **3**.
3. In cell **D6**, enter the formula to multiply the two numbers above =**d4*d5**. Complete the entry by pressing the right arrow key. The answer is displayed as **15**.
4. In cell **E6**, enter the formula to divide the two numbers above =**e4/e5**. Complete the entry by pressing the right arrow key. The answer is displayed as **3**.

| | A | B | C | D | E | F | G |
|---|--------|-----|----------|----------|--------|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | Number | Add | Subtract | Multiply | Divide | | |
| 4 | First | 6 | 7 | 3 | 12 | | |
| 5 | Second | 3 | 4 | 5 | 4 | | |
| 6 | Result | 9 | 3 | 15 | 3 | | |
| 7 | | | | | | | |

5. Leave the workbook open for the next exercise.

Exercise 32 - Selecting Cells with the Mouse

Knowledge:

When entering formulas that involve the use of cell references, e.g. **=E6+F6** typing errors can be made. The mouse can be used to enter the cell references. This is called **pointing**. The mouse pointer is moved to the required cell and clicked.

Activity:

1. If the workbook **Formulas** is not open then open it.
2. Click on cell **B6** and press the **<Delete>** key to remove the formula you typed earlier.
3. You want to add the 6 and the 3 above the cursor position. Type **=** and click on the number **6** under **Add**, cell **B4**, the cell reference is entered into the formula for you.

| Number | Add | Subtract | |
|--------|-----|----------|---|
| First | 6 | | 7 |
| Second | 3 | | 4 |
| Result | =B4 | | 3 |

4. Press the **+** key on the numeric keypad (or **<Shift +=>** if you prefer). Click on the number **3** to enter **B5** into the formula.

| Number | Add | Subtract | |
|--------|--------|----------|---|
| First | 6 | | 7 |
| Second | 3 | | 4 |
| Result | =B4+B5 | | 3 |

5. Press **<Enter>** to complete the formula.

| B6 | | fx =B4+B5 | | | | |
|----|--------|-----------|----------|----------|--------|---|
| | A | B | C | D | E | F |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | Number | Add | Subtract | Multiply | Divide | |
| 4 | First | 6 | 7 | 3 | 12 | |
| 5 | Second | 3 | 4 | 5 | 4 | |
| 6 | Result | 9 | 3 | 15 | 3 | |
| 7 | | | | | | |

The Formula Bar shows the formula and the cell shows the answer


6. Click in cell **C6**, press **<Delete>** and enter a formula to subtract **4** from **7** using pointing. Repeat the step to enter the formulas in **D6** and **E6** to multiply and divide the numbers above by pointing.
7. Save the workbook using the file name, **formulas2**, then close it.

Exercise 33 - The SUM Function


Knowledge:

The most common formula is addition. This calculation has been simplified by the creation of a **Function** called **Sum**. Functions are pre-created formulas. There are buttons on the **Ribbon** called **AutoSum** that creates the **Sum** function automatically (on the **Home** and **Formulas** tabs).

Activity:

1. Open the workbook **Computer Sales**.
2. Click in cell **B7**. The three cells above need to be added together to find the total. Add them using the mouse to select each of the cells. The formula is **=B4+B5+B6**. The answer should be **21**.
3. As more and more numbers are added this method becomes unworkable. There is a function, **SUM** that adds a group of cells. This is so widely used that there is a button on the **Ribbon** to perform it automatically.
4. Select cell **C7** and click on the **AutoSum** button,  on the **Home** tab in the **Editing** group.

| | A | B | C | D | E | F |
|---|--------------------------|-----|-------------|----------|-------------|---|
| 1 | Computer Equipment Sales | | | | | |
| 2 | | | | | | |
| 3 | Sales | PCs | Printers | Scanners | Total Units | |
| 4 | John | 9 | 3 | 2 | | |
| 5 | Natalie | 5 | 5 | 4 | | |
| 6 | Asif | 7 | 2 | 5 | | |
| 7 | Total | 21 | =SUM(C4:C6) | | | |
| 8 | | | | | | |
| 9 | | | | | | |

5. The program looks for numbers to add. **AutoSum** tries above first, if there are no numbers above it looks left. **AutoSum** finds the 3 numbers and adds them. Press **<Enter>** to complete the function and display the answer **10** in cell **C7**.
6. Click in cell **E4** and click the **AutoSum** button, . There are no numbers above so **AutoSum** looks left and sums the 3 cells **B4**, **C4** and **D4**. Press **<Enter>**. The answer is **14**.

Note: If there are no existing numbers in the worksheet, the range for **AutoSum** will need to be defined manually. If **AutoSum** has numbers in both directions it will sum upwards by default.

7. The other formulas are created later by copying. Save the workbook as **sales2** and then close it.

Exercise 34 - The AVERAGE Function

Knowledge:

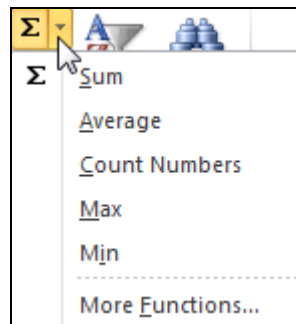
Average is another basic function that adds a list of numbers and then divides by the number of numbers. The average of **10** and **20** is **15**, the sum (30) divided by how many numbers (2).

Activity:

1. Start a new workbook and enter a column of **4** numbers, starting in **B3**.
2. To average the numbers in cell **B7**, type **=Average(B3:B6)**. Ignore the list that is displayed, for now. Read the message that describes the function as you type. Press **<Enter>**, the result is displayed.

Note: A group of cells are called a range and are represented by the first cell, then a colon, followed by the last cell, e.g. **B3:B6**, the cells **B3**, **B4**, **B5** and **B6**.

3. Delete the contents of cell **B7** by clicking on it and pressing the **<Delete>** key and repeat the function by typing **=Average(** and then select the range by clicking and dragging **B3:B6**. Finish the formula by typing **)** and then pressing **<Enter>**.
4. The **Average** function can also be generated automatically, similar to **Sum**. Delete the contents of cell **B7**. With cell **B7** active, click the drop arrow next to the **AutoSum** button.



5. Select **Average**. The function is entered, check that the correct range is highlighted (**B3:B6**) and then press **<Enter>** to complete the function.
6. The average of the 4 numbers is displayed. To see the effect change one of the original numbers by clicking on it and typing a new number. The average changes automatically.
7. Enter **10**, **20**, **30** and **40** as the 4 numbers. The average should be displayed as **25**.
8. Leave the workbook open for the next exercise.