**To the user**

It is important to know how to use some basic features, functions and formulas in spreadsheets before we start with N4 Computer Practice in Excel.

1. Start Excel application and open a blank workbook.

2. Print the document and work through the exercises.

**What is a spreadsheet?**

A very large electronic page divided into columns (**A,B,C,.....**etc) and rows (**1,2,3.....**etc)

Where a column and row intersect, the intersection point is called a **cell**

Each cell on the page has an “address” indicated by the column and row, e.g. **B5, M20, J56**, etc

When you open a blank Excel spreadsheet, it is known as a “workbook”

The top of the portion is called “ribbon”; it’s again divided into the “tabs” (Red border)

The figure illustrates some of the components of a typical spreadsheet.

⏵ Explore by moving the mouse pointer over components on the screen and clicking on the tabs to become familiar with the Excel interface.

**➀** File tab

**➅** Document window

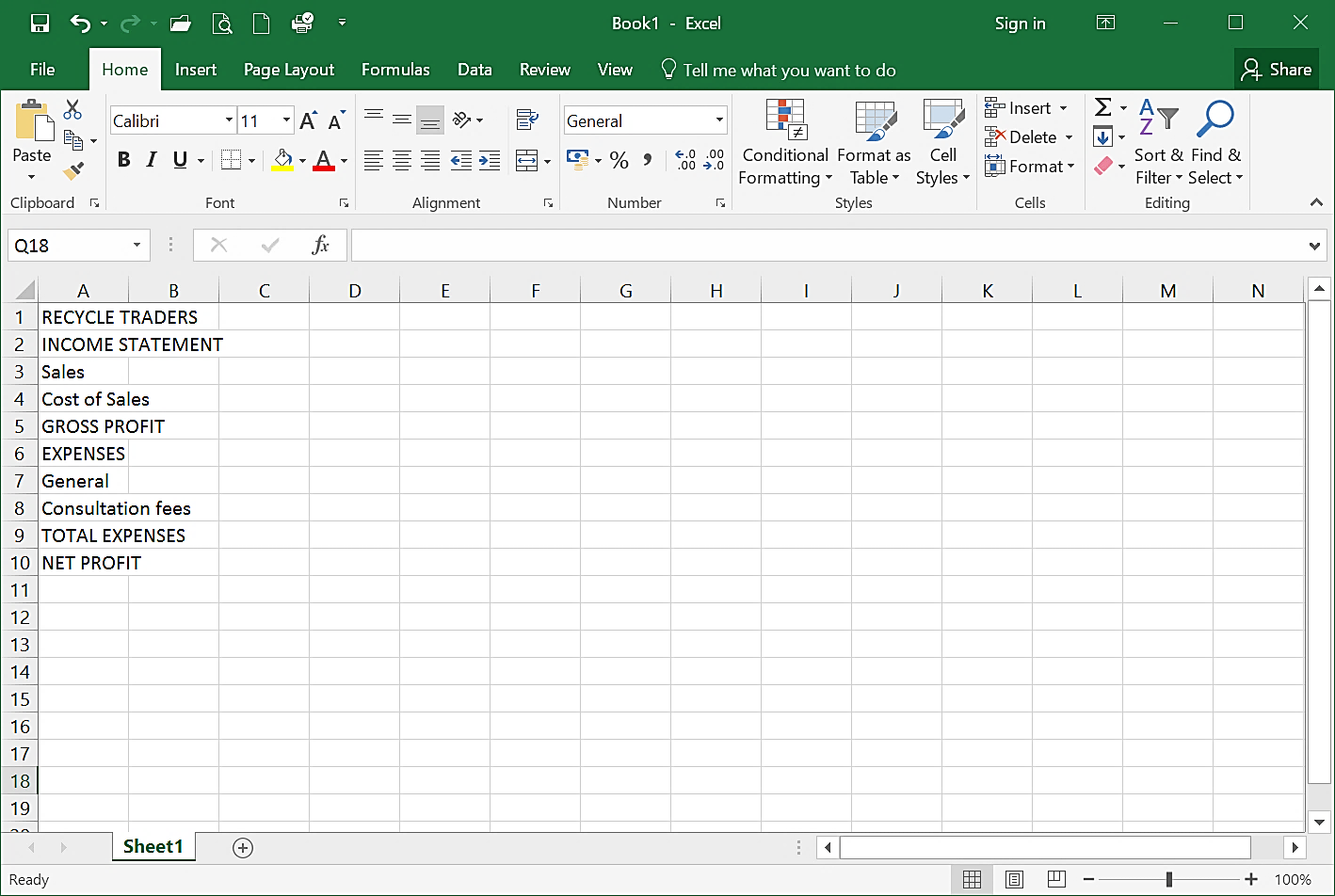
Active cell

**➄** Active cell address and Formula bar oint

**➂** Quick Access Toolbar **➁** Title bar Help

**➃** Ribbon command tabs **➃** Ribbon





Active Sheet tab

New sheet button

Vertical scroll bar

Horizontal scroll bar

**➆** Sheet scroll buttons and Sheet tabs **➉** Zoom slider

Row headings **➇** Status Bar

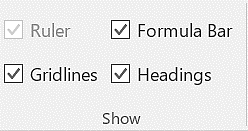
Normal

**➈** Display modes

Column headings Page Layout

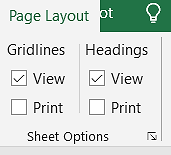
Page Break Preview

**Show and hide workbook elements**



If you need more display space to see your data or to see how data looks without gridlines, you can select view settings on the *View* tab in Excel.

⏵ Click the *View* tab and select or clear the check box for the element to show or hide:

* + *Ruler* in Page Layout view. (Check to display horizontal and vertical rulers.)
  + *Gridlines* are the gray outline around cells. Clear the check box to remove gridlines.
  + *****Formula bar*. Check to display below the ribbon.
  + *Headings*. To remove the column (letters) and row (numbers) headings, clear the check box.
* *Sheet Options*: Check the display on the Page Layout tab in the Sheet options group.

**How big is a single spreadsheet?**

1,048 576 rows (row 1,2,3...1,048 576) by 16,384 columns (A to Z, AA to XFD)

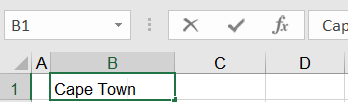
cells (17 179 869 184)

**Excel Basic Functions – Excel Worksheet**

* Each worksheet consists of columns and rows that intersect to form boxes called cells in which you enter text and numbers
* The tabs at the bottom of the workbook (labelled Sheet1, Sheet2, and so on) allow you to flip through the worksheets by clicking them with a mouse
* Double-clicking on a tab will allow you to change the name of a worksheet

**Formula Bar**

* Contains tools for creating and editing formulas
* Displays the contents of the active cell
* The cell’s location/reference address also appears in this bar
* Consists of the cell name box and the cell editor

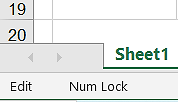


**Cell Name Box**

* Displays the name of the active cell(s); otherwise displays the cell address

**Cell Editor**

* Displays the content of the active cell; can be changed by typing new information. When Excel is in Edit mode, the work Edit appears in the lower-left corner of the Excel window.

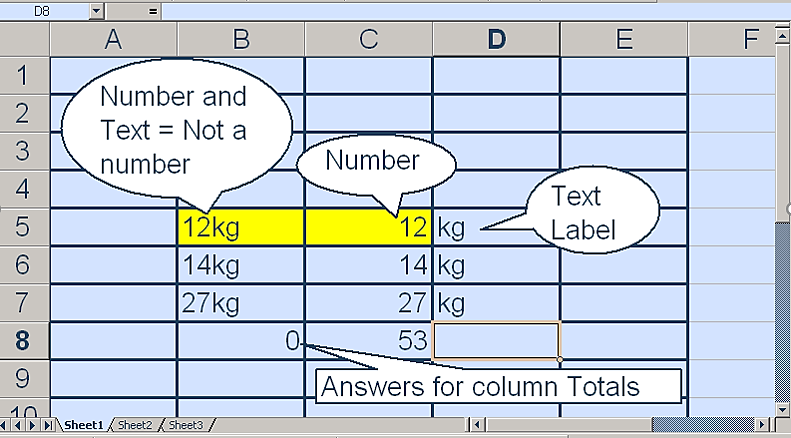


**Cell**

* An intersection of row and column where data are entered, such as B1, D8, etc.

**Excel Basic Functions – Entering Values:**

* Data can be text or numeric
* The text is defined as any combination of numbers and letters.
* Numeric entries are limited to numbers
* Numbers can exist as independent values or values derived from formula (calculated values)
* *Enter* – When done entering data; active cell will be the next cell down
* *ESC* – If you made a mistake and you want to cancel your entry or edit



**Here are some methods to edit in existing cells**

* You may add data to an existing cell entry through any of the following:
  + Double click on the cell to edit and type in the additional data
  + Click on the cell to edit and then click once in the formula bar. Anything you type in the formula bar will be added to the existing cell’s data
  + Click on the cell to edit and press F2.

**Visually aiding conditional formatting**

The options of adding colours, shades, italics, bold, etc help to differentiate the rows and columns to find out data fast and saves a lot of time. The colour difference makes a user to find out the respective column and row in the vast range of data pool. The formatting tab allows a user to input a colouring scheme at ease.

**Mastering the shortcuts**

Using short cut tools available in Microsoft Excel would help you saving time.

Some of the important short cuts in Excel include using short cut keys such as-

|  |  |
| --- | --- |
| **Keyboard Shortcut** | **Function** |
| Ctrl + Space | To select whole column |
| Shift + Space | Select an entire row for a function |
| Shift + Home | for selecting range from start cell to far left |
| Ctrl + Shift + ; | Insert the current time |
| Ctrl + ; | Insert current date |
| Ctrl + Shift + Enter/ | To enter an array formula |
| Ctrl + 1 | To display the Format dialog box |
| F1 | Activate the Help pane |
| ESC | To cancel your entry or edit. If there are menus, submenus, message windows or dialog boxes open, the shortcut will close them. |
| Shift key | Using the Shift key to extend or reduce the range selected. |
| Ctrl key | Use the Ctrl key to select more than one range simultaneously. |

**Entering information**

**Numeric values:** numbers 22000 R29.95 and 33%

**Text values**: Profit, 1st Term and 1820 Settlers

**Date & Time**: Feb-01, 11/19/02 or 1:45 pm

**Comments**: Yourself or others

**Formulas**: =B5\*2.546 or =Average(A3:A10)

Rounded Off and Integer =ROUND(B5,2) =INT(B5)

**Hyperlinks:** To Internet sites or other documents

**Electronic artwork**: Clip art, scanned photos, maps and illustrations.

**Quitting Excel – 5 important points**

1. **Save workbook** to a folder on the network with a clear, easy-to-remember filename. (Do not wait until you finished creating your document. Save every 10 minutes.
2. Use the spell check: labels and text
3. Print: File, Print or Print Preview Print to adjust the margins headers/footers before you print.

3.1 **Checking the worksheet before printing**:

A worksheet is only a tool, and like other tools it must be used properly, or else there can be serious consequences. It is important to check the worksheet before printing and distributing. If the wrong data and formulas were entered in a spreadsheet, then Excel will use this data and formulas and produce incorrect information. If the number 100 was typed as 10 in one cell, most calculations in the spreadsheet will be wrong.

Data integrityrefers to the quality of the data – that is, to its accuracy, reliability, and timeliness. Data integrity must always be maintained. Use the following steps to develop a reliable and professional spreadsheet before printing or distribution:

**Note**: Attention to detail

* Always compare the entered data to the original information sources.
* One single typing error when entering numbers, results in incorrect answers.
* Perform some calculations manually to check the spreadsheet answers.
* Check whether formulas were adjusted correctly when adding columns/rows.
* Use check totals to verify the answers. For example, find a total horizontally and vertically or calculate the total by using another method.
* After sorting data, check that items and numbers were kept together. Undo, if necessary, and redo the sort. (**Undo button**)

**Make sure that the *Error Checking Rules* as shown, are selected in the *Options* dialog box.** (Choose *File*, *Options, Formulas* and in the section *Error Checking Rules, and check all the boxes except *

* 1. Display the document on the screen as it will be printed. Check the layout before printing. (PRINT *PREVIEW and PRINT*):

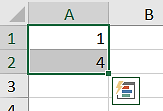
1. Make a backup copy of your valuable workbook. Best way to keep your data safe.

**How do I automatically fill in a series of numbers?**

Type in the first number **ENTER**

Type in the second number **ENTER**

(This will indicate the increment or difference between the values in the series e.g. 1,2 or 1,5 will produce a series with an increment of 1 for the first example as in 1,2,3,4. or an increment of 4 in the second example ,. as in 1,5,9,13..)



Highlight (click, drag) both cells with the WHITE CROSS  mouse pointer

Move to the bottom right corner of the highlighted block

Cursor changes to small BLACK CROSS. 🞦 mouse pointer.

Click, drag down

**ORDER OF OPERATIONS IN EXCEL FORMULAS**

In EXCEL, calculations are carried out in the following sequence:

1. Calculations between brackets (Parentheses).

2. Exponentiation.

3. Multiplication: from left to right.

4. Division: from left to right.

5. Addition and subtraction: from left to right.

Use brackets when certain amounts must be added or subtracted before being multiplied or divided, for example =(A3+B3)\*5: Add the number in cell A3 to the number in B3 and multiply the answer by 5. (In this example, the numbers are already typed in on the worksheet in cells A3 and B3.)

**PEDMAS - WHAT’S THAT?**

Arithmetic calculations are done according to a set of rules. PEDMAS is the acronym for these rules.

Brackets () have the highest priority and anything inside a bracket is calculated first. Brackets inside brackets? The innermost brackets are performed first.

Orders have the next highest priority i.e. nx as in 103 = 1000 and they will be calculated after brackets.

Division and Multiplication have the same rank and are performed simply from left to right e.g. 4x3/2=6.

The same answer is produced regardless of which one is done first i.e. 4x3=12 and 12/2=6 which is the same as 3/2=1.5 and 1.5x4=6

Addition and Subtraction have the same rank and like / and x the calculation will work from left to right. These two arithmetical operations have the lowest priority or rank and will always be done last, unless the order is changed by placing them inside brackets.

Be careful when mixing operators with different ranks e.g. 6+4/2=8

If the answer 5 is required then the calculation must be (6+4)/2=5

Applying these rules to spreadsheets is often more difficult since a formula consists of cell references only and not values. The same example shown in cell reference form might look like this =M8+B5/J6.

You need to clearly establish that the answer is not supposed to be =(M8+B5)/J6

**Remember: Computers do not make mistakes, but people do!!**

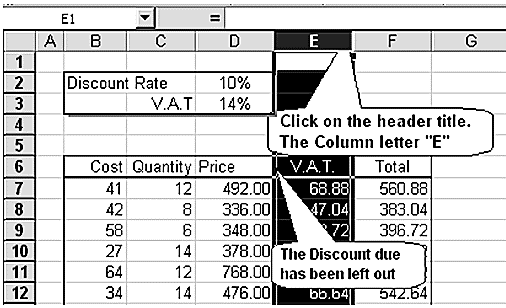
**What about moving data?**

Whereas copying cells will leave the originals behind and create a duplicate, **CUT** and **Paste** will **remove** the original cell or group of cells and place it/them into a new location on the worksheet.

It is fairly easy to copy text and values using copy/paste but be careful when **copying formulas** as this can produce completely false answers if the relative distances between referenced cells are not the same, e.g. “2 to the left x 1 to the left” no longer refers to 2 numbers that must be multiplied together.

**What do I do when I leave something out?**

Insert a row or column where required by clicking on the row/column header buttons.

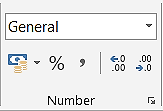
For example: The “3” at the left of row 3 or the E at the top of column E to select the entire row or column.

* Right-click on the Header button, e.g. “E”
* Select *Insert* from the drop-down list
* Click row (or column), Move to the inserted row or column and add the data

**Values do not display in a uniform way -**

**Some have too many decimals, some have too few and others are %?**

Remembering that a number **must** appear in a cell by itself, how then can the display be altered so that the number displays as a Financial value [R] or with more decimal places, or as a percentage?

Once again, there are a number of ways to solve this problem and this is demonstrated by the following examples: -

**Formatting numbers**

**Using the *Home* tab, *Number* group**

⏵ Select the range to be formatted and click on:

 *Accounting number format*:

(*Currency style*) To display numbers with the default currency symbol before the numbers,

for example R1 305.40.

Click the drop-down arrow and choose R, $ or *More Accounting Formats*.

 *Percent style*: To display numbers in percentage form, for example 82.3%.

The numbers are multiplied by 100 and % signs are added after the numbers.

 *Increase decimal*:Click on the icon and repeat to display the desired number of decimals. One decimal place will be added when clicking and the number will be rounded off.

 *Decrease decimal*:Click and repeat to display the desired number of decimals. One decimal place will be removed with each click and the number will be rounded off.

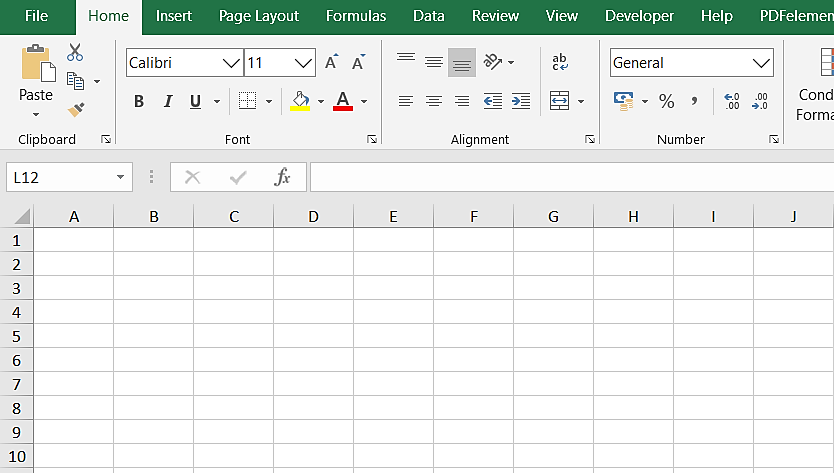
 *Comma style*: To display numbers with a thousand separator, for example as 1 205.13.

OR

⏵ On the *Home* tab, *Number* group, click the arrow on the *Number Format* icon and choose a format from the format list.

**These features are illustrated in the figure below.**

On the *Home* tab in the *Number* group the Formatting tools are displayed.

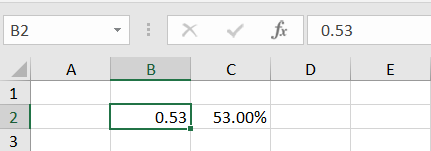


*Currency*

*Comma/space after 1000’s*

*Percentage*

*Increase Decimal*



*The display differs after formatting as percentage*

**EXAMPLE 1:**

1. Type in the value **12.00**

2. Note that in most cases the display is changed to **12**

3. Click on the **Increase decimals** button in the Toolbar (see the diagram on the next page). The one immediately next to it is therefore the exact opposite in function and will **decrease decimals** when it is clicked.

4. For each click on this button, an extra decimal is added, i.e. 2 clicks are required to produce the display **12.00**

**EXAMPLE 2:**

1. Type in the value 0.53 press **Enter** then click back on the cell

2. Now click on the Percentage button in the Formatting Toolbar followed by

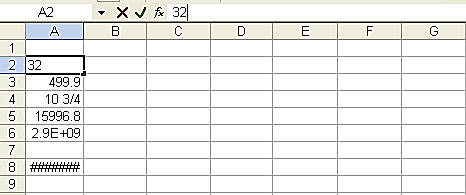
3. Clicking once on the Increase decimal button in the Formatting Toolbar

4. Note how the decimal fraction now displays as a % value on the spreadsheet, but retains its fractional value in the formula bar.

**Entering numeric values**

Calculations can be done only with numbers. To enter a number in a cell select the cell. Selecting the cell makes it the active cell. Type the number. The number appears simultaneously in the active cell and on the formula bar.

To cancel the entry, click on the **Cancel** button on the *formula bar* or press ESC.



Indicates that you must widen the column to display the value produced.

Insertion point

A numeric value can be an integer, a decimal number, an integer fraction or a scientific notation.



**Caution**

**❑ Numbers are stored to 15 decimal places in the memory. On the worksheet the numbers however can be formatted to display two decimal points, for example 80,15. The figures will be printed in the form that appears on the screen. Calculations will still be done with the stored number (15 decimal places).**

**❑ When a cell displays a green triangle  the formula in the cell may have an error or be inconsistent with other formulas in the same area. Click on the button that appears next to the cell  for options to check the error.**

**❑ If a column is too narrow to display a value produced by a formula, ########### appears in the column. Make the column wider so that the value can be displayed. (N.B.: Format before making the column wider.)**

**❑ The following message box appears when the cell in which the answer must appear (for example B16) is included incorrectly in the formula:**

**•Click *OK* and the following displays in the status bar:** **Circular: B16**

**• Click *View, Toolbars* and switch on the display of the *Circular Reference toolbar.***

**The incorrect formula caused a *circular reference* in cell B16. The *Circular Reference toolbar* can be used to determine the problem. Correct the formula.**



**Troubleshooting**

**Error values**

When an incorrect formula is entered, an error value displays in a cell. The calculations for that cell cannot be done properly. *Error values* always begin with a **#**-character and can be one of the following:

**#REF!** An invalid cell reference is included in the formula.

**#VALUE!** An incorrect operator or text is included in the formula.

**#NAME?** A non-existing *Range name* is included in the formula.

**#DIV/0!** In calculations, division by zero (0) cannot be done. The cell referred to in the formula contains a 0 or is empty.

**#NULL!** Normally this refers to a space incorrectly included in a formula to separate cell references. The correct list separator must be used: a comma or semicolon.

**#NUM!** This refers to a number used incorrectly in the formula.

**#N/A** Refers to a value that is not available.

**LOGICAL FORMULAS**

The following symbols are used in logical calculations to compare two values and produce the logical value TRUE or FALSE:

= equal to >= greater than or equal to (NOT =>)

> greater than <= less than or equal to

< less than <> not equal to

**Example:**

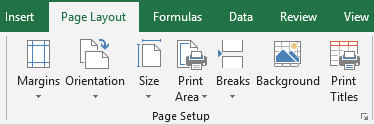
The following is a simple spreadsheet where logical formulas are used to compare the numbers in column A with the numbers in column B:

The following answers appear:

****

**Creating headers and footers**

⏵ Open the workbook and select the worksheet.



⏵ Click the *Page Setup* dialog box launcher on the *Page Layout* tab.

The *Page Setup* dialog box appears.

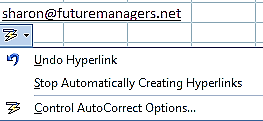
The four tabs, *Page, Margins, Header/Footer* and *Sheet* are used to change the way the page is set up for printing.

⏵ Click on the *Header/Footer* tab.

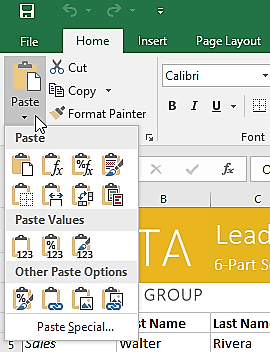
## Paste Options in Excel

Excel offers several options buttons and coloured triangles that can appear next to a cell or in the corners of cells. These buttons and triangles provide useful commands and information about the contents of the cell. Select the cell to display the option button. By default, Excel displays the *Paste Options* button on the worksheet to provide special options when pasting cells. You can turn this option off by clicking *File* tab, *Options,* and then click *Advanced*. Under the Cut, copy, and paste section, **deselect** the required check box.

** The *AutoCorrect* *Options* button appears when text was automatically corrected with the AutoCorrect function, for example if you type an e-mail address in a cell. Point to the small blue box under the text; the *AutoCorrect Options* button appears.

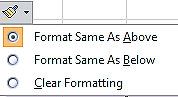


Click to display the options; select an option.

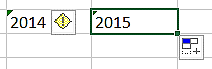
** The *Paste Options* button appears when copied text had been pasted. Click the button to display the paste options. The available options depend on the type and format of content that you are pasting.

When working with cells that contain formulas or formatting just click the drop-down arrow on the *Paste* command to see these options.

The options include *Formulas* to paste the formulas, *Keep Source Formatting* to retain the original formatting and *Values* to switch formulas to values.

 The *Insert Options* button appears when cells, rows, or columns were inserted. Click the arrow on the icon to display a list of formatting options.

 The *Trace Error* button appears next to a cell in which a formula



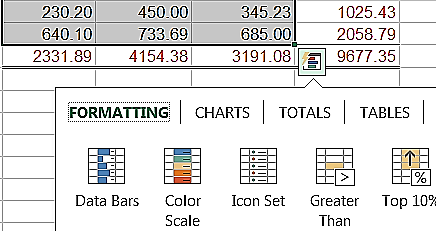
error occurs; a green triangle appears in the top left corner of the cell.

Click the button to display a list of options for error checking.

 The *Auto Fill Options* button appears after using the *Auto Fill* handleto copy text or data.

The *Quick Analysis* option simplifies the process of formatting, charting tables and other options.

This tool combines five common options in one place and offers live previews of their effects.



The *Quick Analysis* action button analyse the data instantly. For example, select the cells and click the *Quick Analysis* button below to the right of the selection (or press Ctrl + Q). Select a tab and point to each option to see a preview.

**Saving workbooks in Excel 2016**

* Filename: Excel offers a default name of “BOOK1.XLSX”
* Filenames are limited to a maximum of 256 characters (letters and/or numbers) without any special characters, Especially a period (.) or “full stop”, since this character is used to separate the filename part from the filename extension part.
* The Extension is used to group files of the same kind together. For example, all MSWord files end with .DOCX and all Excel files end with .XLSX to indicate to the operating system that they were created by a word-processor and a spreadsheet program respectively.

**Practise the Essential Editing techniques**

**PRACTICAL**

1. Open the following workbooks. **Topic 1 Excel** to practise the basics in Excel.

**Simple Budget Revision**

**Revision Basics in Excel** and follow the instructions on the multiple worksheets.

2. Remember to save the workbooks.