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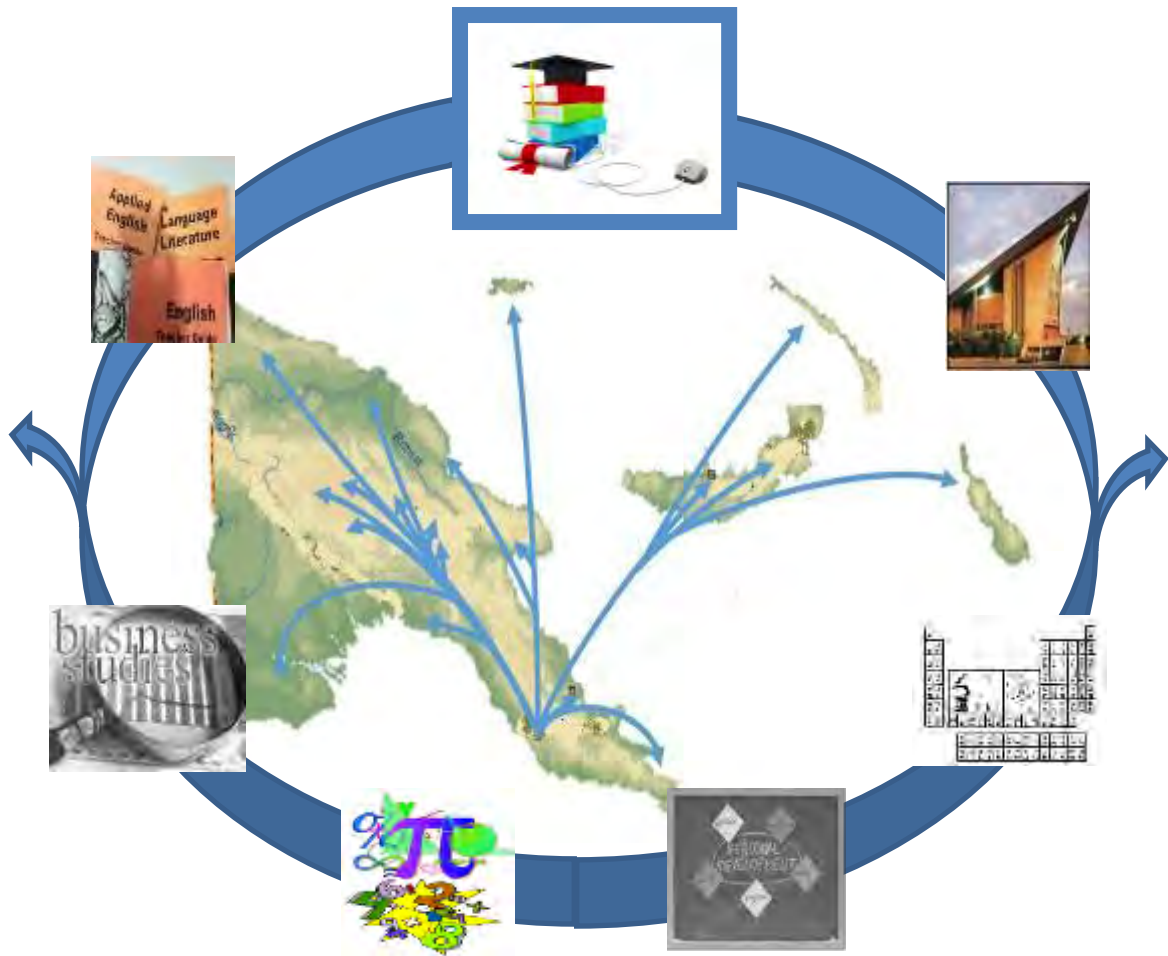
GRADE 11

INFORMATION COMMUNICATION TECHNOLOGY

MODULE 4 – SPREADSHEET 2

FODE DISTANCE LEARNING

Writers and Editors

Maria Imelda Somtragool

Writer

Dr. Janet S. Marcelo

Cleofe Dagale

Diana Akis

Judy Mirou

Martha Pitpit

Editors

GRADE 11

INFORMATION COMMUNICATION TECHNOLOGY

UNIT MODULE 4

SPREADSHEET 2

TOPIC 1: SPREADSHEET

TOPIC 2: WORKING WITH MULTIPLE WORKSHEETS, WORKBOOKS AND INTEGRATING WITH OTHER APPLICATIONS

TOPIC 3: CREATING PIVOT TABLES AND ANALYSING DATA

TOPIC 4: USING ADVANCED FUNCTIONS AND PROTECTING AND AUDITING FORMS AND TEMPLATES

Acknowledgements

We acknowledge the contribution of all Secondary and Upper Primary teachers who in one way or another have helped to develop this Course.

Our profound gratitude goes to the former Principal of FODE, Mr. Demas Tongogo for leading FODE team towards this great achievement. Special thanks are given to the staff of the Information Communication Technology Department-FODE who played active role in coordinating writing workshops, outsourcing of lesson writing and editing processes involving selected teachers in NCD.

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Information Communication Technology Subject Review Committee-FODE
Academic Advisory Committee-FODE
Information Communication Technology Department- CDAD
.
This book was developed with the invaluable support and co-funding of the GO-PNG and World Bank.

DIANA TEIT AKIS
Principal-FODE

CONTENTS

11.4.4:   USING ADVANCED FUNCTIONS AND PROTECTING AND AUDITING FORMS AND TEMPLATES

SECRETARY'S MESSAGE

Achieving a better future by individual students, their families, communities or the nation as a whole, depends on the curriculum and the way it is delivered.

This course is part and parcel of the new reformed curriculum – the Outcome Base Education (OBE). Its learning outcomes are student centred and written in terms that allow them to be demonstrated, assessed and measured.

It maintains the rationale, goals, aims and principles of the National OBE Curriculum and identifies the knowledge, skills, attitudes and values that students should achieve.

This is a provision of Flexible, Open and Distance Education as an alternative pathway of formal education.

The Course promotes Papua New Guinea values and beliefs which are found in our constitution, Government policies and reports. It is developed in line with the National Education Plan (2005 – 2014) and addresses an increase in the number of school leavers which has been coupled with a limited access to secondary and higher educational institutions.

Flexible, Open and Distance Education is guided by the Department of Education's Mission which is fivefold;

- to facilitate and promote integral development of every individual
- to develop and encourage an education system which satisfies the requirements of Papua New Guinea and its people
- to establish, preserve, and improve standards of education throughout Papua New Guinea
- to make the benefits of such education available as widely as possible to all of the people
- to make education accessible to the physically, mentally and socially handicapped as well as to those who are educationally disadvantaged

The College is enhanced to provide alternative and comparable path ways for students and adults to complete their education, through one system, many path ways and same learning outcomes.

It is our vision that Papua New Guineans harness all appropriate and affordable technologies to pursue this program.

I commend all those teachers, curriculum writers, university lecturers and many others who have contributed in developing this course.

UKE KOMBRA, PhD
Secretary for Education

UNIT 4:   SPREADSHEET 2

INTRODUCTION

Excel is a spreadsheet application and is intended to be used to calculate and analyse numerical information such as household budgets, company finances, inventory, and more.

Microsoft Excel 2010 the latest version which is out now. Worksheets contain numerical information presented in tabular row and column format with text that labels the data. They can also contain graphics and charts. It allows you to store, organise, and analyse numerical and text data.

With Excel you can analyse, manage and share information quickly and easily to make more informed decisions. With the new user interface, rich data visualization, and PivotTable views, professional-looking charts are easier to create and use than ever before.

But that is not a spreadsheet. However, if you bought Microsoft Excel and entered the same numbers into the software, you have a spreadsheet. The best part about a spreadsheet is - you do not have to do any adding up yourself. The program will add the numbers up for you. Spreadsheet are software programs consisting of a grid of data cells that can be used to organise, analyse and graphically represent data.

A spreadsheet does not only add up, of course. It can do a whole lot more besides simple arithmetic. It can handle financial calculations, statistical information, and do complex trigonometry. And it can make a pretty graph for you. Though, a Spreadsheet is just a glorified calculator. The main point of using a spreadsheet is to do some number crunching. The software will puzzle out the answers to sums for you, and save you a lot of time and effort carrying numbers.

Take note that activities are found at the end of every module lesson and summative exercises after every topic. All answers to activities are found after the summative exercises.

The following icons are used in this module:

 Student Aims

 Student Activity

 Time Frame

 Note

 Practical Student Activity

 Answers to Learning Activities

Students Learning Outcomes

On successful completion of this module, students will be able to:

- demonstrate the ability to use advanced features and functions of spreadsheet tools to record and analyse data

- apply appropriate techniques in formatting, manipulating and protection of data

- apply advanced skills, techniques and strategies to creatively and methodically apply spreadsheets

- demonstrate the use of formula

Time Frame

This unit should be completed within 10 weeks.

If you set an average of 3 hours per day, you should be able to complete the unit comfortably by the end of the assigned week.

Try to do all the learning activities and compare your answers with the ones provided at the end of the unit. If you do not get a particular exercise right in the first attempt, you should not get discouraged but instead, go back and attempt it again. If you still do not get it right after several attempts then you should seek help from your friend or even your tutor. Do not pass any question without solving it first.

11.4.1   EXCEL BASICS REVIEW

11.4.1.1 Excel Window

Microsoft Excel is a spreadsheet program included in the Microsoft Office suite of applications. Spreadsheets present tables of values arranged in rows and columns that can be manipulated mathematically using both basic and complex arithmetic operations and functions.

Common scenarios for using Excel include:

- **Accounting**: You can use the powerful calculation features of Excel in many financial accounting statements—for example, a cash flow statement, income statement, or profit and loss statement.

- **Budgeting**: Whether your needs are personal or business related, you can create any type of budget in Excel—for example, a marketing budget plan, an event budget, or a retirement budget.

- **Billing and Sales**: Excel is also useful for managing billing and sales data, and you can easily create the forms that you need—for example, sales invoices, packing slips, or purchase orders.

- **Reporting**: You can create various types of reports in Excel that reflect your data analysis or summarise your data—for example, reports that measure project performance, show variance between projected and actual results, or reports that you can use to forecast data.

- **Planning**: Excel is a great tool for creating professional plans or useful planners—for example, a weekly class plan, a marketing research plan, a year-end tax plan, or planners that help you organise weekly meals, parties, or vacations.

- **Tracking**: You can use Excel to keep track of data in a time sheet or list—for example, a time sheet for tracking work, or an inventory list that keeps track of equipment.

A cell in Excel is simply an individual container for data (like a box or pigeonhole). An array of cells is called a sheet or worksheet or Excel Window. Technically, a **worksheet** is a single document inside a **workbook**, but the terms workbook, worksheet or Excel Window and Spreadsheet are often used interchangeably. A Spreadsheet or worksheet holds information presented in tabular row and column format.
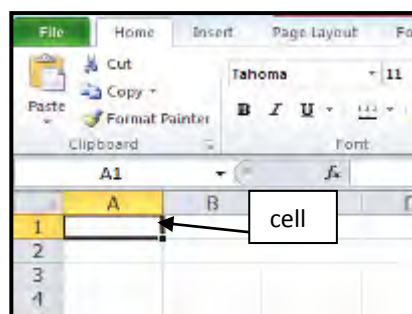
The Excel Window

Parts of an Excel Window
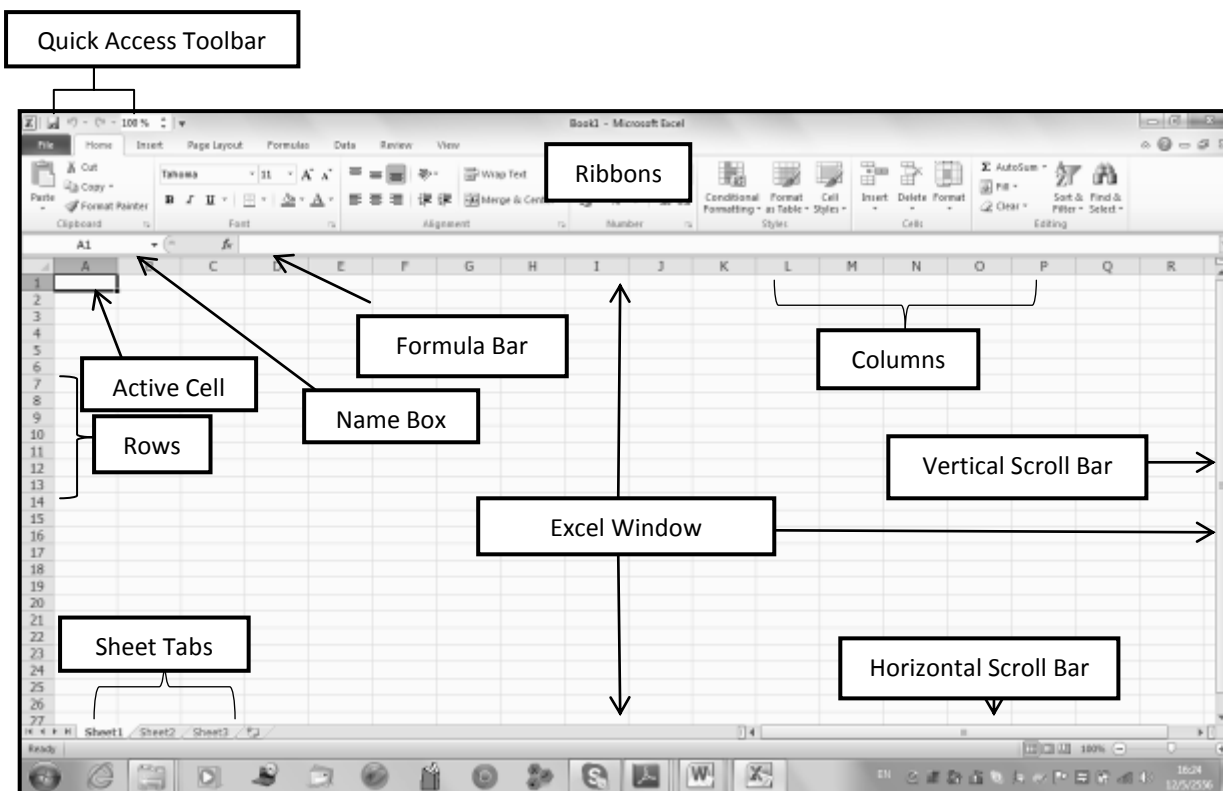
The Parts of an Excel Window

The parts of an Excel Window was discussed and identified in Unit 3 Lesson 1 in Grade 10 Spreadsheet.

1. **Quick Access Toolbar** is located above the Ribbon, and it lets you access common commands no matter which tabs you are on. By default, it shows the **Save**, **Undo**, and **Repeat** commands.

2. **Ribbons** contain multiple **tabs** each with several **groups** of commands.

3. **Formula Bar** displays information entered or being entered as you type-in the current or active cell. The contents of a cell can also be edited in the Formula Bar.

4. **Name Box** shows the cell address of the current selection or active cell.

5. **Active Cell (Cell Address)** is an intersection of a column and row.

6. **Sheet Tabs** separate workbook into specific worksheets. A workbook defaults to three worksheets. A workbook must contain at least one   worksheet.

7. **Rows** are represented by numbers that appear on the left and then run down the   Excel screen.

8. **Columns** are represented by alphabetic characters in the gray boxes that run across the Excel screen.

9. **Vertical Scroll Bar** is located along the right edge of the screen is used to move up or down of the Spreadsheet.

10. **Horizontal Scroll Bar** is located at the bottom of the screen and is used to move left or right of the Spreadsheet.

The cells in a Spreadsheet can contain three types of information. Excel will treat cells differently depending on the cell contents.

• Texts are any names or labels that are required on the spreadsheet.

• Numbers are all numerical values including dates or times, percentages and dollar values.

• Formula is written in a cell to automatically calculate an answer.

An Excel Workbook

A workbook is a single file in Excel. Each new workbook contains three worksheets, which are named as Sheet1, Sheet2, Sheet3, and others. Worksheets are designed to display different data, example, and a company might use a worksheet for each sales branch, then a final worksheet which total all sales figures from each branch and displays a summary.

Sheet tabs are displayed at the bottom of the screen. You can move from worksheet to worksheet by clicking on a sheet tab, as shown below.

- A **workbook** is made up of three worksheets.

- The worksheets are labeled **Sheet1, Sheet2,** and **Sheet3.**

- Each Excel worksheet is made up of columns and rows.
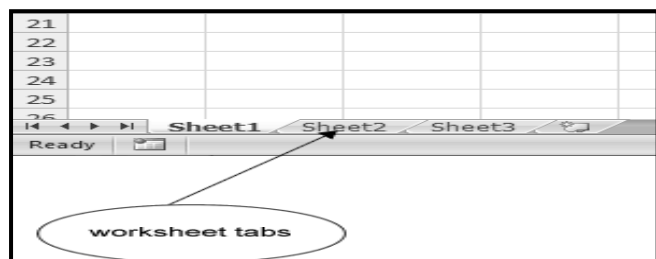
Click to move from worksheet to worksheet.

- In order to access a **worksheet**, click on the tab that says **Sheet#**.

Some Keyboard Short Cuts in Excel

If you have a large worksheet, navigating using this method becomes awkward and slow. Instead, you can press **F5** and use the Go To dialogue box. In this dialogue box, a history of the Previous Go To, you have performed is displayed. You can either type in a new cell reference, or highlight a previously used one and then click enter. The selected cell becomes active.

As well as using the arrow keys to move one cell at a time in the appropriate direction, you can use the following shortcuts below to navigate further fields. The descriptions may sound confusing, but if you spend a couple of minutes trying them out, you will easily become familiar with them.

The Shortcut Keys of MS Excel:

Ctrl + A - Select all contents of the worksheet.	**Ctrl + Tab -** Move between Two or more open Excel files.
Ctrl + B - Bold highlighted selection.	**Ctrl + F6 -** Switch between open workbooks or windows.
Ctrl + P - Bring up the print dialogue box to begin printing.	**Alt + = -** Create a formula to sum all of the above cells
Ctrl + F9 - Minimise current window.	**Ctrl + ' -** Insert the value of the above cell into cell currently selected.
Ctrl + Page up - Move between Excel work sheets in the same Excel document.	**Ctrl + Page down -** Move between Excel work sheets in the same Excel document.
Ctrl + Shift +! - Format number in comma format.	**Ctrl + Shift + $ -** Format number in currency format.
Ctrl + Shift + # - Format number in date format.	**Ctrl + Shift +; -** Enter the current time.
Shift + F3 - Open the Excel formula window.	**Ctrl +; -** Enter the current date.

Familiarising yourself with Excel Window will allow you to work easily; you can use it to organise your data into rows and columns. You can also use it to perform mathematical calculations quickly. And it is also a big help to navigate in an Excel Window.

Student Activity 11.4.1.1

A.   Do the following instructions on how to navigate Excel.

1.   Open MS Excel, click the Start Button →MS Excel icon.

2.   Click each of the three worksheet tabs—Sheet1, Sheet2 and Sheet3 to become familiar, moving from sheet to sheet in the workbook.

3.   From the starting cell which is A1 in Sheet1, use your mouse to go to C3.

4.   Open Sheet2 and make your active cell in D2.

5.   Again open Sheet3 and make your active cell in E5.

6.   Use the Page Up (PgUp) and Page Down (PgDn) keys to get used to scrolling in a worksheet.

7.   Use the horizontal and vertical scrollbars to practice scrolling up, down, left, and right in the worksheet.

B.   Identify the Parts of an Excel Window.
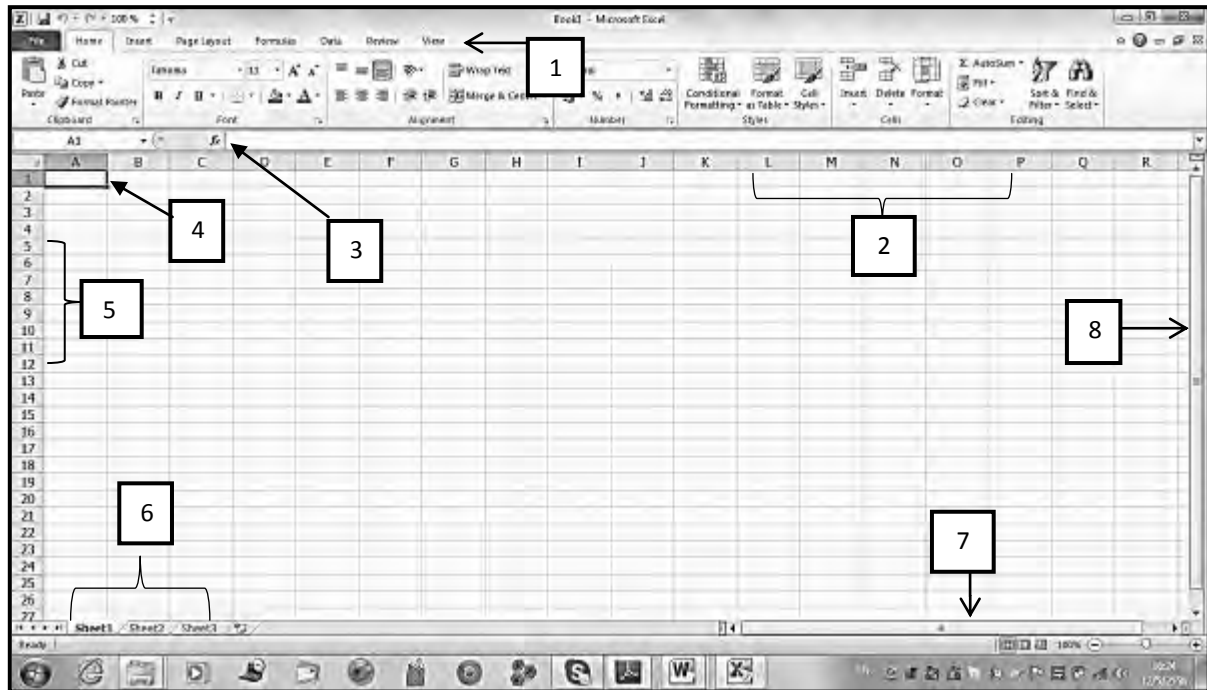
Write the answers on the blank spaces provided.

1. _____   5. _____

2. _____   6. _____

3. _____   7. _____

4. _____   8. _____

11.4.1.2   Customising Data Appearance with Advanced Formatting

Customizing Data Appearance

Excel is not a formatting program although it has similar features with other Office program when it comes to formatting. Spreadsheet features like font colours and size, grid line inclusion or exclusion, and automatic rounding allow you to turn a functional worksheet into a document suitable for presentation.

A. Change the Font
    By default, Excel 2010 uses the 11-point Calibri font for cell entries, but you can change this to another font style of your choice for all new workbooks. Follow the steps below on how to change the font.

Changing font

1. Select the cells you want to modify.

2. Click the drop-down arrow next to the font command on the Home tab. The font drop-down menu appears.

3. Move your mouse over the various fonts. A live preview of the font will appear in the worksheet.

4. Select the font you want to use.
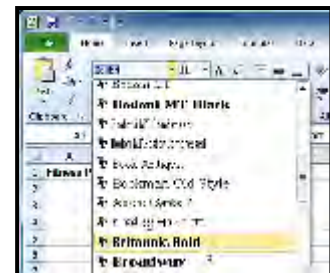
B. Change the Font Size
    Excel 2010 uses the 11-point Calibri font for cell entries, but you can change this to another font size of your choice for all new workbooks. Follow the steps below on how to change the font size.

1. Select the cells you want to modify.

2. Click the drop-down arrow next to the font size command on the Home tab. The font size drop-down menu appears.

3. Move your mouse over the various font sizes. A live preview of the font size will appear in the worksheet.

Changing font size

4. Select the font size you want to use.

C. Grow Font and Shrink Font
    You can also use the Grow Font and Shrink Font commands to change the size.
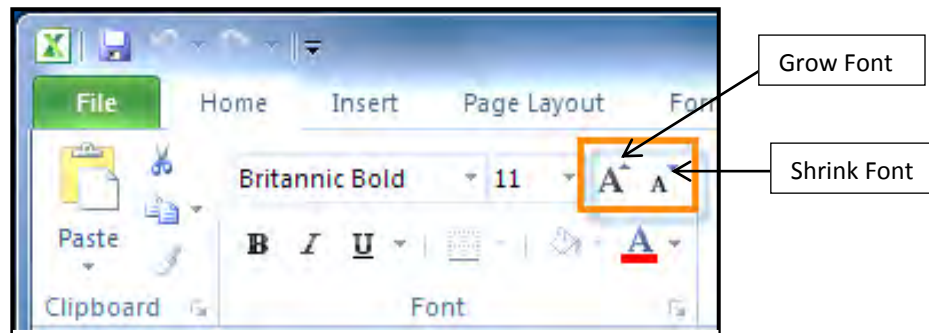
The Grow Font and Shrink Font commands

D.   Using the Bold, Italic, and Underline Commands
     You can bold, italicise and underline the fonts by using
     the following commands below.

     1.   Select the cells or range of cells.

     2.   Click the Bold, Italic and/or Underline button in
          located in the Home tab.

The Bold, Italic, and Underline
commands

     3.   You can also use the keyboard shortcut by doing step one and pressing **Ctrl + B**
          (Bold), **Ctrl + I** (Italics) and/or **Ctrl + U** (Underline).

     4.   Tick the buttons again to remove the selection.
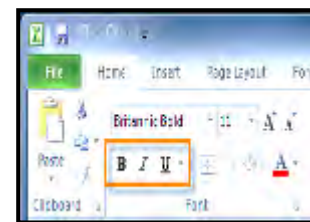
E.   Add a Border
     By using predefined border styles, you can quickly add a border around cells or ranges of
     cells. If predefined cell borders do not meet your needs, you can create a custom
     border. Follow the steps below on how to add a border.

     1.   Select the cells you want to modify.

     2.   Click the drop-down arrow next to the Borders
          command on the Home tab. The border drop-down
          menu appears.

     3.   Select the border style you want to use. You can
          draw borders and change the line style and colour of
          borders with the Draw Borders tools at the bottom
          of the Borders drop-down menu.
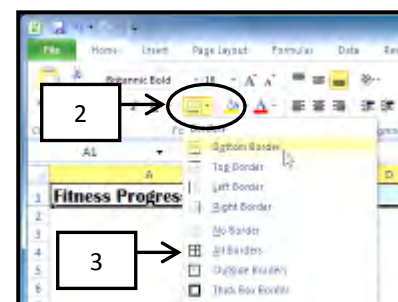
Adding a border

F.   Change the Font Colour

     You can change the colour of the text in cells and the cell's background colour. For the
     background colour, you can use a solid colour, or you can apply special effects, such as
     gradients, textures, and pictures. Follow the steps below on how to change the font
     colour.

     1.   Select the cells you want to modify.

2. Click the drop-down arrow next to the font colour command on the Home tab. The colour menu appears.

3. Move your mouse over the various font co [   ] appear in the worksheet.
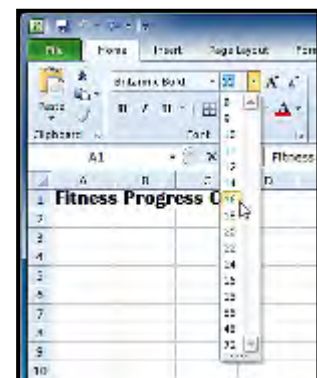
4. Select the font colour you want to use. You [   ] drop-down menu that appears. Select More [   ] access additional colour options.

G.   Add a Fill Colour
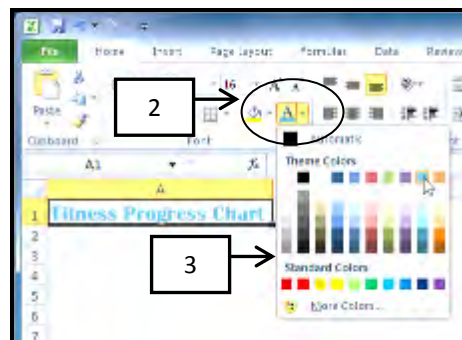
Changing Font Colour

You can add shading to cells by filling them with solid colours or specific patterns. Follow the steps below on how to add a fill colour.

1. Select the cells you want to modify.

2. Click the drop-down arrow next to the fill colour command on the Home tab. The colour menu appears.

3. Move your cursor over the various fill colours. A live preview of the colour will appear in the worksheet.

G. More Text-decoration Options
    More options available for text decoration in Formatting cells → Font Tab Effects cells as below:

    •   **Strike-through:** It makes strikes the text in the centre vertically.

    •   **Super Script:** It makes content to appear as super.

    •   **Sub Script:** It makes content to appear as sub.
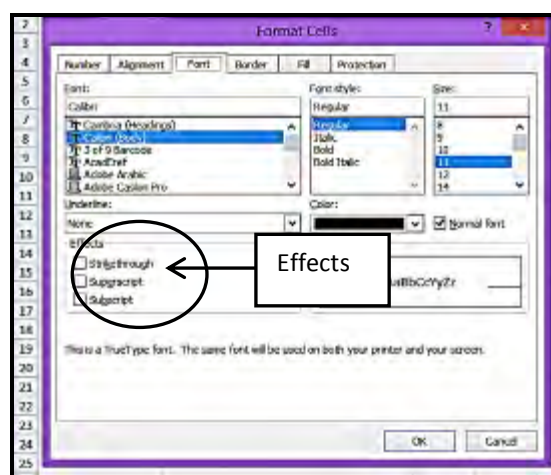
Advance Formatting

Excel provides many options for displaying numbers as percentages, currency, dates, and so on. If these built-in formats do not meet your needs, you can customise a built-in number format to create your own. To create a custom number format, you start by selecting one of the built-in number formats as a starting point.

You can then change any one of the code sections of that format to create your own custom number format. A number format can have up to four sections of code, separated by semicolons. These code sections define the format for positive numbers, negative numbers, zero values, and text, in that order.

A. Create a custom number format

In Excel, you are not limited to using the built-in number formats. You can define your own **custom number formats** to do things like display values as thousands or millions (like 23K or 95.3M), add leading zeros, display " - " for zero values, or make negative values red. This feature is very well documented in Excel's help system. Just search for "custom number format" and look for "create or delete a custom number format".

Follow the steps below on how to create a custom number format.

1. Open the workbook in which you want to create and store a custom number format.

2. Type 12345 as a sample value we will use for formatting.

3. On the **Home** tab, click the Dialogue Box Launcher next to **Number**. The dialogue box will appear.

4. In the Number tab, click **Custom**.

5. Locate the **#,##0.00** format in the list box. The number format that you select appears in the **Type** box above the **Type** list.

6. Click OK. Observe that the cell now has a set format.

7. Repeat steps 1-5 but this time add letter **K** to customize the selected number format.
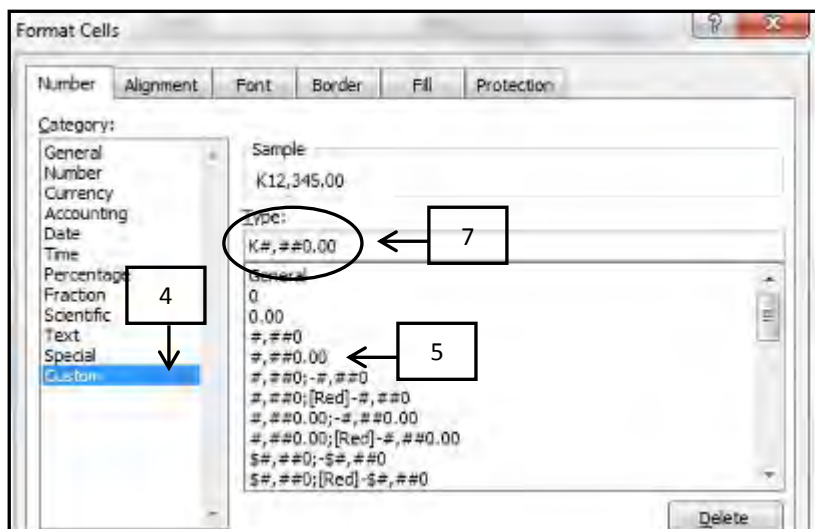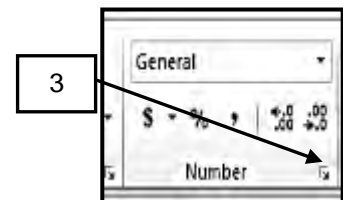
The Format Cells Category

B. Delete a Custom Number Format

An Excel file sometimes plays trick and has set the default style to currency. One way to reset this is to select the normal style in the list, and change this back to general all the format. Follow the steps below on how to delete a custom number format.

1. On the **Home** tab, click the Dialogue Box Launcher next to **Number**.

2. In the **Category** box, click **Custom**.

3. In the **Type** list, scroll down and locate the custom number format (**K#,##0.00**) that you want to created earlier.

4. Click the custom format and choose Delete

Conditional Formatting

MS Excel 2010 Conditional Formatting   feature enables you to format a range of values so that values outside certain limits are automatically formatted. Follow the steps below on how to apply conditional formatting in Excel 2010.

1. Select the cells you want to analyse.

2. Click **Home**.

3. Click **Styles → Conditional Formatting**.

4. Explore the different options given. The format is applied to your cells as you scroll the mouse through it.
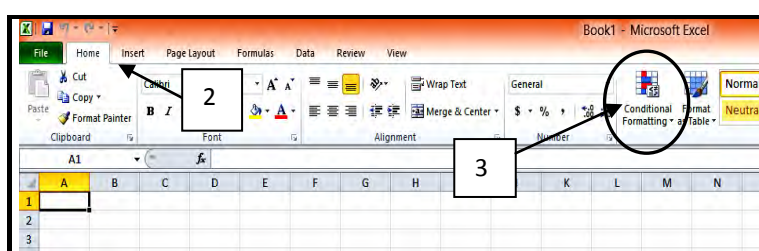
The Conditional Formatting
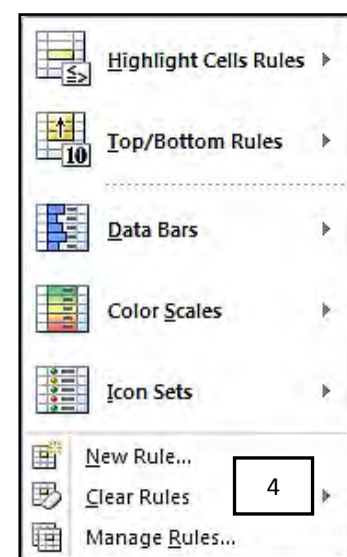
Student Activity 11.4.1.2

Follow the instructions below.

1. Type the following text in a blank worksheet.

	A	B	C	D	E	F
1	Attendance					
2		Last Name	First Nam	Sex	Outstanding	
3	1	Oibe	Tristan	M	500	
4	2	John	Phyllis	F	1250	
5	3	Michael	Ronan	M	300	
6	4	Timothy	Hannah	F	600	
7	5	Brown	Jeremiah	M	500	
8	6	Brown	Janet	F	235	
9	7	Brown	Derick	M	385	
10	8	Kiri	Carol	F	120	
11	9	Mekere	Winston	M	280	
12	10	King	Laila	F	330	

2. Format Sheet1 cells by changing the fonts, applying borders, Fill Colours and alignment. Adjust column width as needed.

3. Apply number formats in column E. Use the number format `#,##0.00;-#,##0.00`

4. Save your workbook as **Attendance.**

11.4.1.3   Maintaining Format Consistency with Style

Formatting worksheets can be one of the most time consuming tasks in Excel, particularly if you are forced to replicate the organisation's standard colours and font schemes. A style is simply a collection of formatting options, such as font size, cell colour and border style settings, saved with a sensible name and which can be applied to the cells quickly. Style can consist of settings for up to different attributes:

- Font (type, size, and colour)

- Borders

- Alignment (vertical and   horizontal)

- Number format

- Pattern

- Protection (locked and hidden)
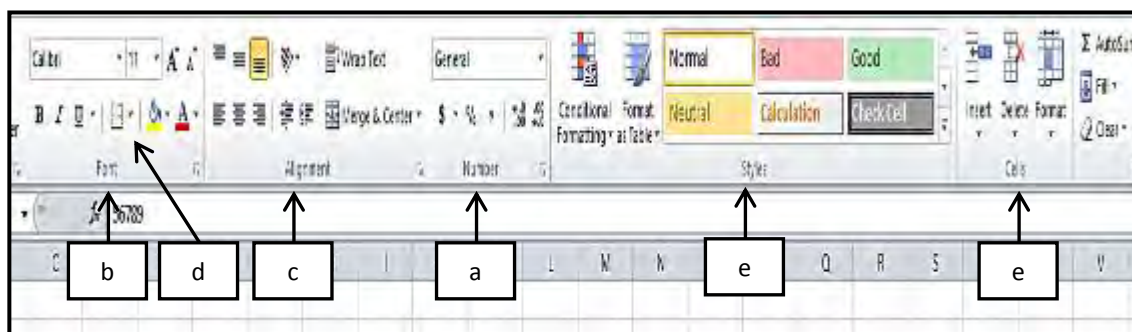
Style attributes

Add the Style Box Button to the Quick Access Toolbar

Using styles is a fantastic way to save time when formatting a worksheet as you can apply a whole range of formatting options to cells with a couple of clicks of the mouse. Follow the steps below on how to add the Style Box button to the Quick Access Toolbar.

1.   Click **File** menu and choose **Options**. The Excel Options dialogue box appears.

2.   Click **Quick Access** Toolbar.

3.   Click the desired commands to be added to the Quick Access Toolbar

4.   Click **Add**.

5.   Click **OK**.
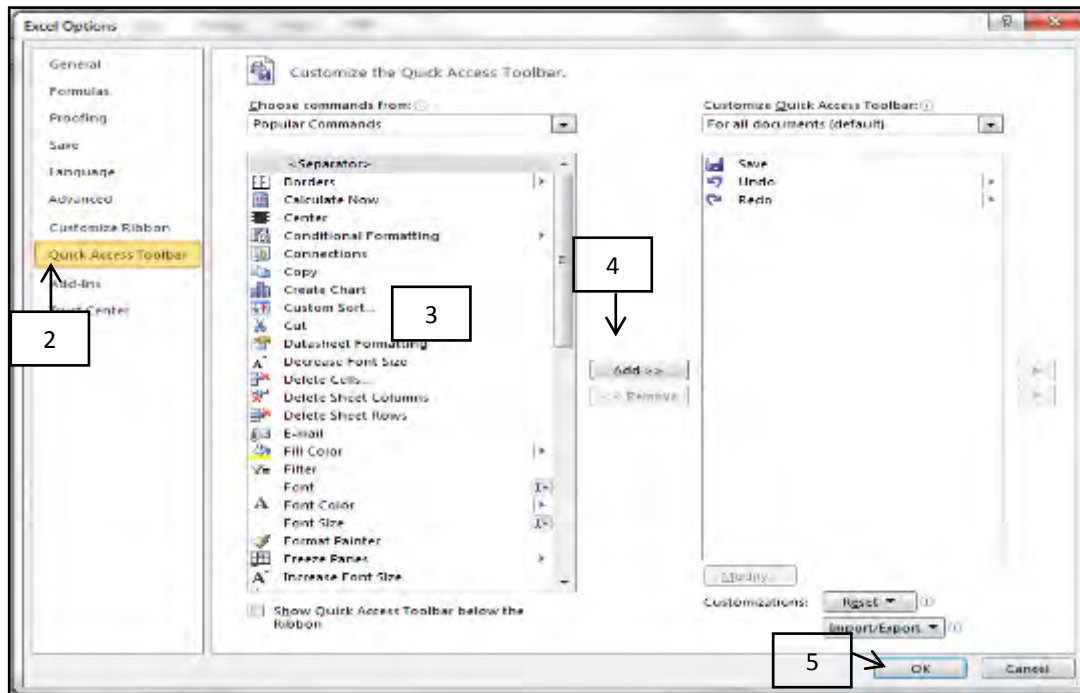
Applying a Style to Cells

Now let us see how styles are helpful. Suppose that you apply a particular style to some twenty cells scattered throughout your worksheet. Later, you realise that these cells should have a font size of 12 pt. rather than 14 pt. Perform the steps below to apply styles to cells.

1.   Type **MY STYLE** in cell C3, select the cell you want to apply the style to.

2.   Select the cells that contain the text that you typed.

3.   In the Home tab, click **Cell Styles** located in the Styles group.

4.   The display is a live preview, that is, as you move your mouse over the style choices, the selected cell or range temporarily displays the style. When you see a style you like, click it to apply the style to the selection.
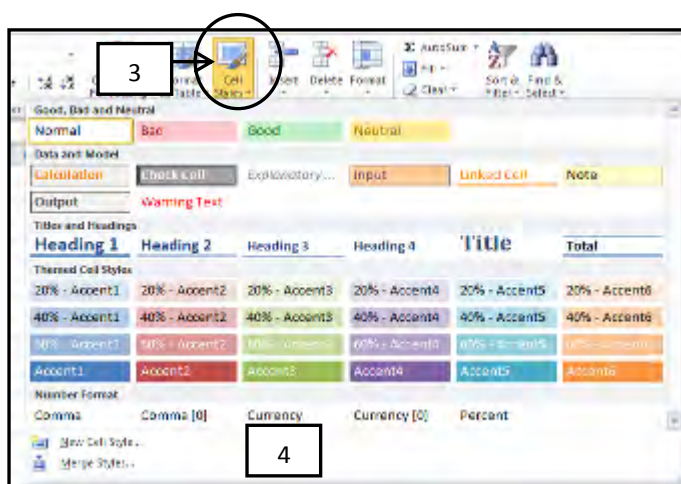
Cell Styles

Deleting Styles

You cannot technically remove a style from a cell - every cell uses a style. Each cell uses the **Normal** style by default. To remove the formatting applied by a style you can simply set the cells back to using the **Normal** style.

If you want to delete the styles that you have created, highlight the cell or cells to be deleted and click **Home →** **Styles** then click **Normal.**
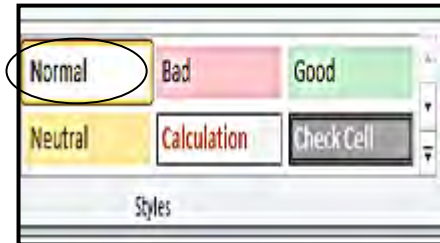
Normal Style

Merging Style from Other Workbook

When you create new cell styles in a workbook, you may want to make them available in other workbooks. You can copy the cell styles from that workbook to another workbook. Follow the steps below on how to merge style from another workbook.

1. Open the workbook that contains the cell styles that you want to copy.

2. Open the workbook that you want to copy the styles into.

3. On the **Home** tab, in the **Cell Styles** group, click **More** button [ ] .

4. Scroll down and click **Merge Styles**.

5. In the **Merge Styles** dialogue box, click the workbook that contains the styles that you want to copy, and then click **OK**.
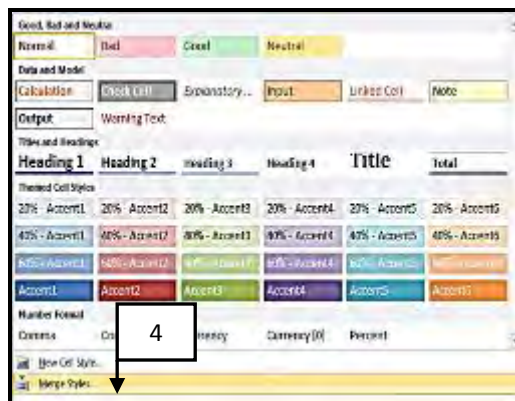
Merge Styles
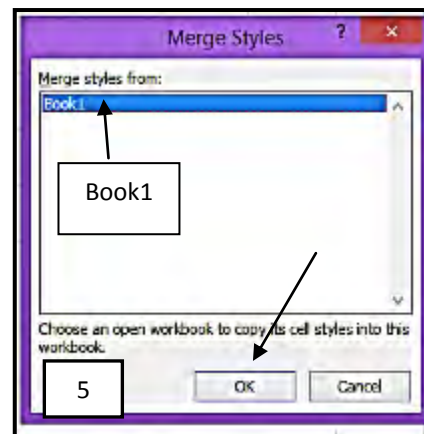
6. If both workbooks contain styles that have identical names, you must indicate whether you want to merge these styles by doing the following:

  • Click **Yes,** to replace the styles in the active workbook with the copied styles.

  • Click **No**, to keep the styles in the active workbook as they are.

> **Note:** Excel asks Yes or No only once, regardless of the number of pairs of identical style names. And also, when you move or copy a worksheet from one workbook to another workbook, all the styles that are used on that worksheet are also copied to that workbook.

Changing the column width

If you are working in Page Layout view (**View** tab, **Workbook Views** group, **Page Layout** button), you can specify a column width or row height in inches. In this view, inches are the measurement unit by default, but you can change the measurement unit to centimeters or millimeters (On the **File** tab, click **Options**, and then click the **Advanced** category). Follow the steps below on how to set columns width and row height.

A. Set a Column to a Specific Width

On a worksheet, you can specify a column width of 0 (zero) to 255. This value represents the number of characters that can be displayed in a cell that is formatted with the standard font. The default column width is 8.43 characters. If a column has a width of 0 (zero), the column is hidden. Follow the steps below to set the column width to a specific width.

1. Select the column or columns that you want to change.

2. On the **Home** tab, in the **Cells** group, click **Format**.

3. Under **Cell Size**, click **Column Width**.

4. In the **Column width** box, type the value that you want.

Cells Group
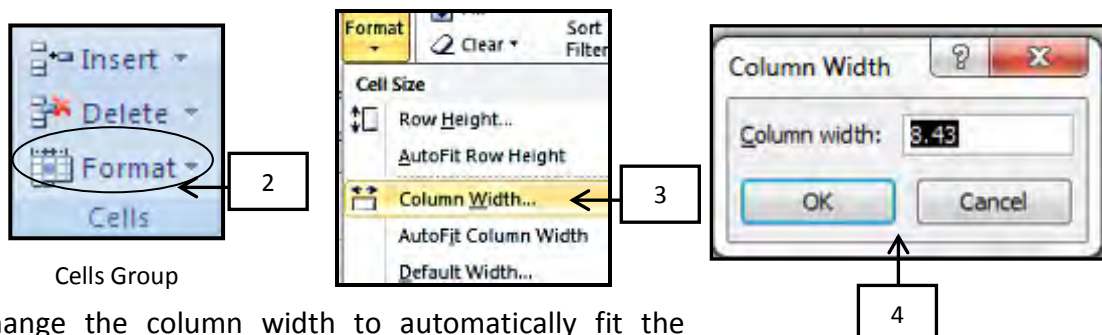
B. Change the column width to automatically fit the contents (AutoFit)

AutoFit refers to automatically adjust the column width according to the cell that has the most content. Perform the steps below to change the column width to fit the content of the cell.

1. Select the column or columns that you want to change.

2. On the **Home** tab, in the **Cells** group, click **Format**.
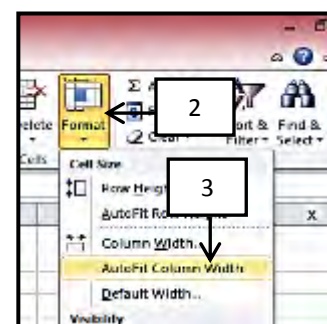
The AutoFit Column Width

3. Under **Cell Size**, click **AutoFit Column Width**.

C.   Match the column width to another column

You can also copy the width of the column/s and paste it using Paste Special. Follow the steps below to copy column width.

1. Select a cell in the column that has the width that you want to use.

2. On the **Home** tab, in the **Clipboard** group, click **Copy or** use the keyboard shortcut **CTRL+C**.

3. Right-click a cell in the target column, point to **Paste Special**, and then click the **Keep Source Columns Width** button.
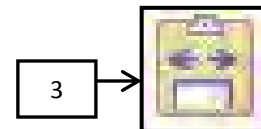
D.   Change the default width for all columns on a worksheet or workbook

The value for the default column width indicates the average number of characters of the standard font that fit in a cell. You can specify a different number for the default column width for a worksheet or workbook. Follow the steps below to change the default column width of the worksheet or workbook.

1. Click any of the worksheet tab. You can also change all worksheet in the workbook by right-clicking a sheet tab and then click **Select All Sheets** on the shortcut menu.

Worksheet Tabs

2. On the **Home** tab, in the **Cells** group, click **Format**.

3. Under **Cell Size**, click **Default Width**.

4. In the **Standard column width** box, type a new measurement.
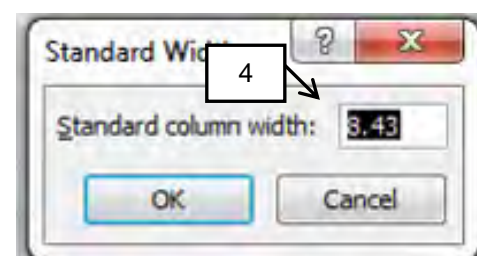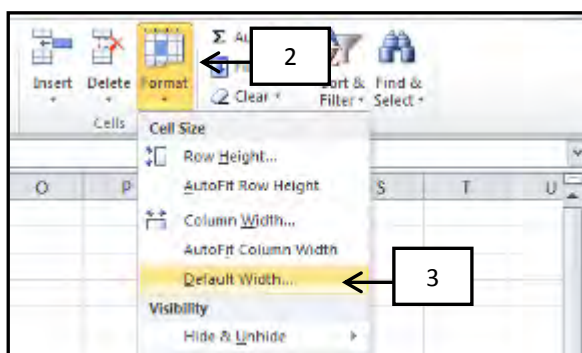
E.   Changing column width using the mouse

Follow the steps below to change the column width using the mouse.

1. Position the mouse over the boundary of the column header between two column and when your mouse
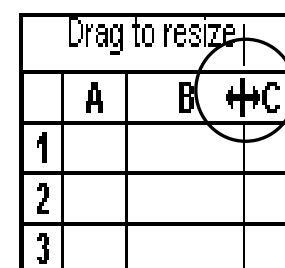
Drag to resize

pointer changes shape, click-hold and drag the mouse until the column is the width that you want.

2. To change the width of multiple columns, select the columns that you want to change, and then drag a boundary to the right of a selected column heading.

3. To change the width of columns to fit the contents, select the column or columns that you want to change, and then double-click the boundary to the right of a selected column heading.

4. To change the width of all columns on the worksheet, click the **Select All** button, and then drag the boundary of any column heading.

Changing Row Height

You can specify a row height of 0 (zero) to 409. This value represents the height measurement in points (1 point equals approximately 1/72 inch or 0.035 cm). The default row height is 12.75 points (approximately 1/6 inch or 0.4 cm). If a row has a height of 0 (zero), the row is hidden.

A. Set a row to a specific height

Follow the following instruction to change row to a specific height.

1. Select the row or rows that you want to change.

2. On the **Home** tab, in the **Cells group**, click **Format**.

3. Under **Cell Size**, click **Row Height**.

4. In the **Row height** box, type the value that you want.

B. Change the row height to fit the contents (AutoFit)

Perform the steps below to change row height to fit the contents.

1. Select the row or rows that you want to change or you can drag to resize.

2. On the **Home** tab, in the **Cells** group, click **Format**.

3. Under **Cell Size**, click **AutoFit Row Height**.

C. Change the height of rows by using the mouse.

Drag to resize

Follow the steps below to change row height using the mouse.

1. To change the row height of one row, drag the boundary below the row heading until the row is the height that you want.

2. To change the row height of multiple rows, select the rows
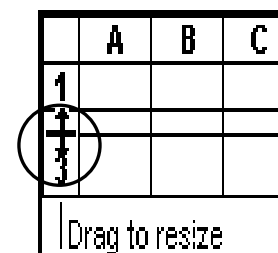
that you want to change, and then drag the boundary below one of the selected row headings.

3. To change the row height for all rows on the worksheet, click the **Select All** button, and then drag the boundary below any row heading.

4. To change the row height to fit the contents, double-click the boundary below the row heading.

Student Activity 11.4.1.3

A. **Add Format Painter Icon** to the **Quick Access Toolbar. Identify the steps on how to add the Format Painter Icon.**

1. _____

2. _____

3. _____

4. _____

B. **Follow the given instructions.**

1. Open **Attendance** workbook and remove styles previously applied to the table.

2. Apply Styles to the heading (Row 1&2), use **Heading1**.

3. Adjust the column width and row height to its desired column width.

4. Use **Accent1** for the body of the text.

5. Save your work as **Assignment 2**.

11.4.1.4   Using Data Outlining

Outlining data makes your data easier to view. If you have a list of data that you want to group and summarise, you can create an outline of up to eight levels, one for each group. Each inner level, represented by a higher number in the outline symbols displays detail data for the preceding outer level, represented by a lower number in the outline symbols. Use an outline to quickly display summary rows or columns, or to reveal the detail data for each group. You can create an outline of rows, an outline of columns, or an outline of both rows and columns.

1. Open **Attendance** workbook.

2. Sort all the males and females together. You can jump to the next lesson 11.4.1.5 Editing and Sorting Data or position cursor in any cell in column D and click **Sort Ascending** and **Sort Descending** button.
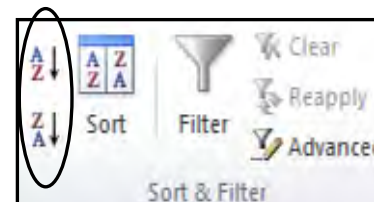
4. In the Data tab Outline group, click **Subtotal**. A Subtotal dialogue box will appear and your table will be selected.

5. We want to get the subtotal of outstanding fees of the male and female student. Click the dropdown list box and choose **Sex**.

6. We will get the sum of the outstanding fees so we will not change Sum from the **Use function** drop down list.

7. We will get the subtotal of outstanding fees. Make sure that the Outstanding column is ticked.

8. Click OK. Your work should look like the example below.

9. The table now displays the M Total , F Total and Grand Total.

10. Tick 1, 2 or 3 to display the outline of calculations.

11. You can also click the – and + sign placed at the right side which will collapse and expand the outline displayed on the screen.
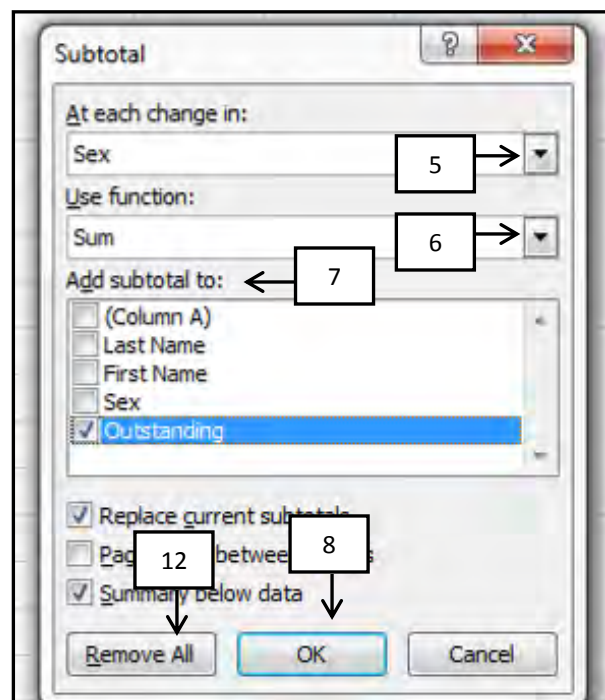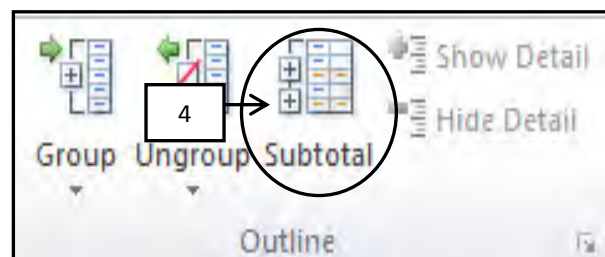
	A	B	C	D	E
1		Attendance			
2		Last Name	First Name	Sex	Outstanding
3	9	Mekere	Winston	M	280.00
4	3	Michael	Ronan	M	300.00
5	7	Brown	Derick	M	385.00
6	1	Oibe	Tristan	M	500.00
7	5	Brown	Jeremiah	M	500.00
8				M Total	1,965.00
9	8	Kiri	Carol	F	120.00
10	6	Brown	Janet	F	235.00
11	2	John	Phyllis	F	250.00
12	10	King	Laila	F	330.00
13	4	Timothy	Hannah	F	600.00
14				F Total	1,535.00
15				Grand Tota	3,500.00

12. Choose **Remove All** if you want to remove the outline. For this exercise to do click Remove All.

Change Outline Setting

Excel assumes that the summary rows in the data table are below their detailed data, and that the summary columns are to the right of the detailed data. If though, the summary rows are above and the summary columns are to the left, Excel can still build the outline

In order to do that we just select the right arrow that is in the corner of the Outline area of the Data tab, in order for the appropriate dialog box to appear as we can see in the image below.
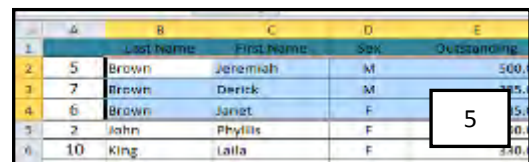
1. Click the show Outline dialogue box icon. The outline dialogue box will appear.

2. Tick/Untick the tick button as to what direction you want the data to be displayed.

3. Tick/Untick Automatic styles if you want to apply format to your outline.

4. Click **Create** not **OK** otherwise new setting will not be applied.

5. Apply the Subtotal outline again to your table and see the difference.

28
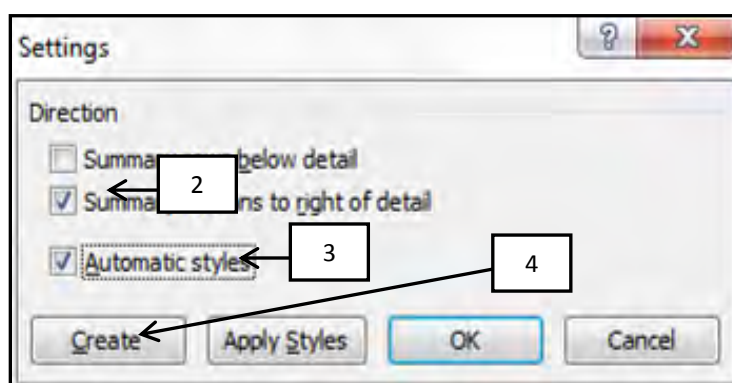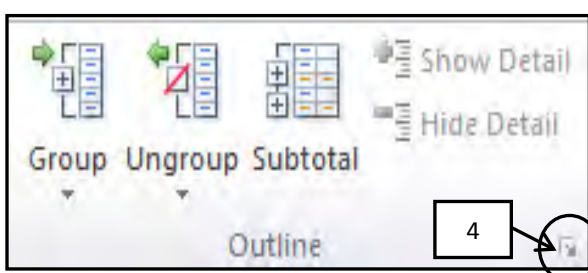
Group and Ungroup outline

Unless it is needed, it is advisable to remove all settings and outlines you have previously set for your table. This will ensure that the new outline that you are creating will display the information correctly.

1. Click **Remove All** in the Subtotal dialogue box. This will remove the outline you have previously set.

2. Apply the type of setting you want to use on your new format.

3. Sort column B using **Sort AtoZ**. This will alphabetically arrange the rows.

4. Highlight the rows having the first letter of their lastname. In this example all the lastname that starts with B.

5. Select Group from the Outline group. Click Group. A dialogue box will appear.

6. Click **Rows or Column** from the radio buttons. For this exercise choose Rows and click **OK**.
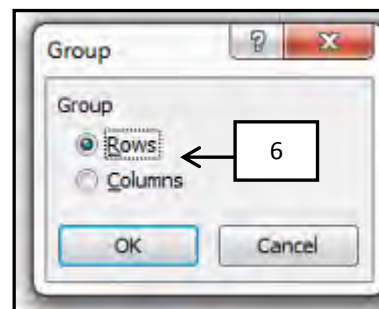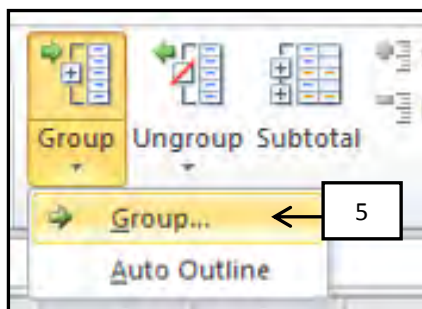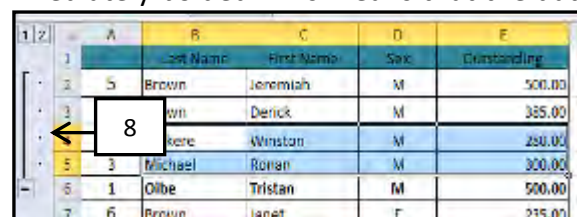
7. Observe that the next name on the list is immediately bolded. This means that the data above it is already grouped.

8. Highlight the next group of lastname and repeat steps 6 and 7. Observe that the first group is immediately joined to the new group you have created.

9. Click **Ungroup** from the Outline group. A dialogue box will appear. Select Row or Column that you want to ungroup.

10. You must skip the next set of names so that it will not become a part of the previous outline.
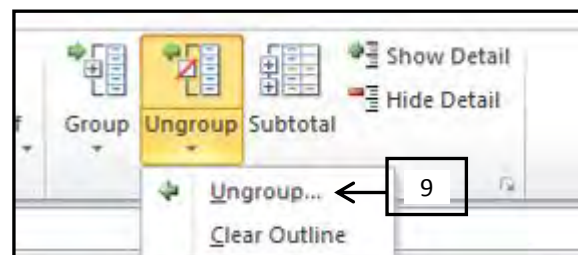
11. Highlight the next group of cells and repeat steps 6 and 7.

12. Skip the next group of lastnames and highlight the last group there.

13. Highlight to select the last part of the outline and repeat steps 6 and 7.

14. Save your work as **Attendance Outline**.

Student Activity 11.4.1.4

Follow the instructions below.

1. Use our sample data **Attendance Outline** to do your activity by creating an outline grouping using columns.

2. Create an outline for Oustanding using columns.

3. Remove an outline.

4. Save your work as **Attendance OutlineColumns.**

11.4.1.5   Editing Data and Sorting Data

Sorting Data

Sorting is a common task that allows you to change or customise the order of your spreadsheet data. For example, you could organize an office birthday list by employee, birthdate, or department, making it easier to find what you are looking for. Custom sorting takes it a step further, giving you the ability to sort multiple levels such as department first, then birthdate to group birthdates by department.

Type the following data into your blank MS Excel.

	A	B	C	D	E
1	Name	Payment	Size	Homeroom No.	
2	Ellison	7-Oct	Small	101	
3	Chan	5-Oct	Small	110	
4	Kelly	15-Oct	Large	104	
5	Means	13-Oct	Medium	105	
6	Benson	1-Oct	Medium	107	

A. To sort in alphabetical order
    With more than 17 billion cells in a single worksheet, Excel 2010 gives you the ability to work with an enormous amount of data. Arranging your data alphabetically, from smallest to largest, or using other criteria can help you find the information you are looking for more quickly.
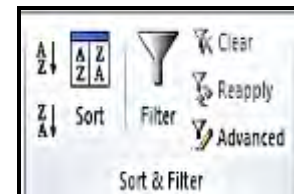
Sort and Filter Group

Follow the steps below to sort by alphabetical order.

1. Make a cell in the column you want to sort by active. In this example, we will sort by **Name** so click any cell in the column.

2. Select the **Data** tab, then locate the **Sort and Filter** group.

3. Click the ascending command ⬆ to **Sort A to Z** or the descending command ⬇ to **Sort Z to A**.

B. To sort in numerical order, follow the steps below.

1. Make a cell in the column you want to sort by active. In this example, we will sort by **Homeroom No.** so click any cell in the column.

2. From the **Data** tab, click the ascending command ⬆ to **Sort Smallest to Largest** or the descending command ⬇ to **Sort Largest to Smallest**.

3. The data in the spreadsheet will be organised numerically.

C.   To sort by date or time, follow the steps below.
     Follow the steps below to sort by date or time order.

1.   Select a cell in the **Payment** column you want to sort.

2.   From the **Data** tab, click the ascending command [A-Z] to **Sort Oldest to Newest** or the descending command [Z-A] to **Sort Newest to Oldest**.

3.   The data in the spreadsheet will be organised by date or time.

D.   Custom sorting
     MS Excel 2010 worksheet has become quite large; using the Sort dialogue box to sort on multiple columns can make it easier to find the data you need. The Sort dialogue box lets you tell Excel what column to sort on next if two cells in the main sort column contain the same value or data.

Custom Sort

1.   Make sure that the workbook is still open.

2.   Make any cell in the table active.

3.   From the **Data** tab, click the **Sort** command to open the **Sort** dialogue box. Observe that the entire table is automatically selected except the table header.

4.   Identify the column you want to **Sort by** clicking the drop-down arrow in the **Column** field. In this example, we will choose **Size**. Make sure **Values** is selected in the **Sort On** field. Click the drop-down arrow in the **Order** field, then choose **A to Z**.

5.   Click **Add Level**. A new level will appear.

6.   Identify **Name** as the column you want to sort next. Let **Values** remain in the Sort On. And **Z to A** as the Order.

7.   Click **OK**.
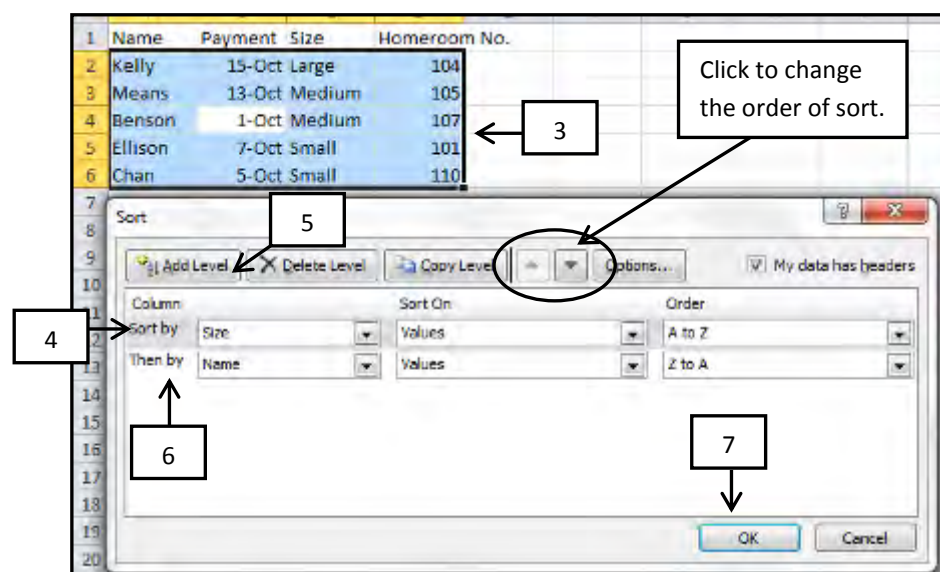
Your work should look like the example given:

	A	B	C	D	E
1	Name	Payment	Size	Homeroom No.	
2	Kelly	15-Oct	Large	104	
3	Means	13-Oct	Medium	105	
4	Benson	1-Oct	Medium	107	
5	Ellison	7-Oct	Small	101	
6	Chan	5-Oct	Small	110	

> The Size column was arranged alphabetically (A-Z.). Observe that the Benson and Means both have the same size. Custom sorting allows you to further sort information. By adding Name as the next level, you can control how the information will be displayed. In this case we have Means name displayed before Benson because of the arrangement Z-A.

E. To change the sorting priority, follow the steps below.

1. From the **Data** tab, click the **Sort** command to open the **Custom Sort** dialogue box.

2. Select the **level** you want to reorder.

3. Use the **Move Up** or **Move Down** arrows. The higher the level is on the list, the higher its priority.

4. Click **OK**.

5. Save your work as **SortData.**

Editing Data

To work with data on a worksheet, you first have to enter that data in the cells on the worksheet. Then, you might want to adjust the data so that it is visible, and display it just the way that you want. Editing data in MS Excel will enable the users to know various ways to change data in the cells in order to meet the user's needs.

Let us get our sample data from the MS Excel with a filename SortData.

A. Overtype
   Over typing is one way of editing our data, just hold on to the mouse and place the cursor to the cell that you want to replace. Follow the steps below on how to overtype.

1. Click the left button of the mouse.

2. Type or replace the data inside the cell.

B. Formula Bar
   Follow the steps below on how to use the formula bar.

1.   Click your mouse to the cell where you need to edit.

2.   Click your mouse to the formula bar, edit or replace the data by typing onto the formula bar the word or data to be replaced.

C.   Double Click
     Follow the step below on how to use the double click command.

1.   By double clicking the cell that you want to edit, you can also replace or edit your data by doing so.

Student Activity 11.4.1.5

Follow the instructions below.

1.   Open your filename **SortData**.

2.   Insert the following the new column (T-Shirt Colour). Use the example below as guide.

	A	B	C	D	E
1	Name	Payment	Size	T-SHIRT COLOUR	Homeroom No.
2	Kelly	15-Oct	Large	Yellow	104
3	Means	13-Oct	Medium	Dark Red	105
4	Benson	1-Oct	Medium	Dark Red	107
5	Ellison	7-Oct	Small	Yellow	101
6	Chan	5-Oct	Small	Grey	110

2.   But before sorting your data, apply **Text Hightlight Colour** to column C for T-shirt Colour.

3.   Choose Name, **Sort On** (Values), **Order** (Z to A).

4.   Add Level by T-shirt Colour, **Sort On** (Cell Colour), **Order (**Dark Red and On Top).

5.   Add Level by Payment, **Sort On** (Values), **Order** (Newest to Oldest).

6.   Click **OK.**

7.   Save your work **SortData2.**

11.4.1.6   Chart Review

Charts are used to display series of numeric data in a graphical format to make it easy to understand large quantities of data and the relationship between different series of data. MS Excel supports many types of charts to help you display data in ways that are meaningful to your audience.

A chart has many elements. Some of these elements are displayed by default, others can be added as needed. You can change the display of the chart elements by moving them to other locations in the chart, resizing them, or by changing the format. You can also remove chart elements that you do not want to display.

Types of Charts

A.   **Column:** Column chart shows data changes over a period of time or illustrates comparisons among items.

B.   **Bar:** A bar chart illustrates comparisons among individual items.

C.   **Pie:** A pie chart shows the size of items that make up a data series, proportional to the sum of the items. It always shows only one data series and is useful when you want to emphasize a significant element in the data.

D.   **Line:** A line chart shows trends in data at equal intervals.

E.   **Area:** An area chart emphasizes the magnitude of change over time.

F.   **X Y Scatter:** An XY (scatter) chart shows the relationships among the numerical values in several data series, or plots two groups of numbers as one series of XY coordinates.

G.   **Stock:** This chart type is most often used for stock price data, but can also be used for scientific data (for example, to indicate temperature changes).

H.   **Surface:** A surface chart is useful when you want to find optimum combinations between two sets of data. As in a topographic map, colours and patterns indicate areas that are in the same range of values.

I.   **Doughnut:** Like a pie chart, a doughnut chart shows the relationship of parts to a whole; however, it can contain more than one data series.

J.   **Bubble :** Data that is arranged in columns on a worksheet so that x values are listed in the first column and corresponding y values and bubble size values are listed in adjacent columns, can be plotted in a bubble chart.

K.   **Radar:** A radar chart compares the aggregate values of a number of data series

A. Column Chart

B. Bar Chart
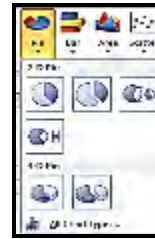
C. Pie Chart

D. Line Chart

E. Area Chart

F. XY Scatter

G. Stock

H. Surface

I. Doughnut

J. Bubble
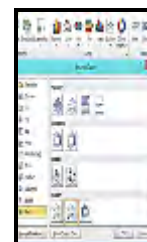
K. Radar

Create and Edit Chart

A.   Create a Chart

When you create a chart or change an existing chart, you can select from a variety of chart types (such as a column chart or a pie chart) and their subtypes (such as a stacked column chart or a pie in 3-D chart). You can also create a combination chart by using more than one chart type in your chart. We will use Line chart as an example for our exercise. To create a line chart execute the following steps.

1.   Type the Following text:

	A	B	C	D
1	Month	Bears	Dolphins	Whales
2	Jan	8	150	80
3	Feb	54	77	54
4	Mar	93	32	100
5	Apr	116	11	76
6	May	137	6	93
7	Jun	184	1	72

2. Select the range A1:D7.

3. On the Insert tab, in the **Charts** group, choose Line, and select Line with Markers.
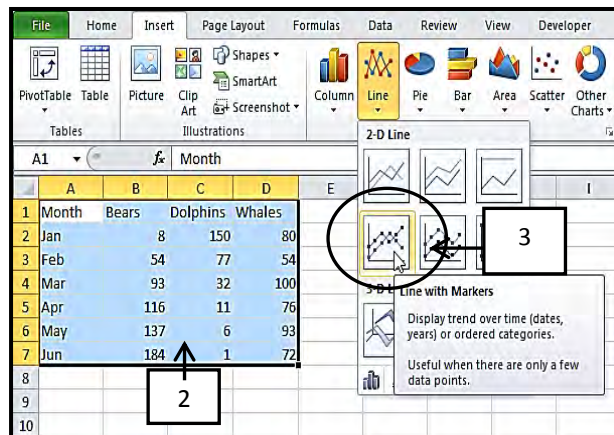
B. **Change Chart Type**

In Microsoft Excel, you can represent numbers in a chart. On the Insert tab, you can choose from a variety of chart types, including column, line, pie, bar, area, and scatter. The basic procedure for creating a chart is the same no matter what type of chart you choose. As you change your data, your chart will automatically update. A colourful chart is ideal for presentations or for printing on a colour printer. But shades of grey are best for monochrome printing of charts.

You can easily change to a different type of chart at any time. To change the chart type.

1. Select the chart you recently created.

2. On the Insert tab, in the **Charts** group, choose **Column**, and select **Clustered Column**.

Original 2D chart

Chart changed 2D Column Result

Selecting Clustered Columns

C. **Switch Row/Column**

If you want the animals, displayed on the vertical axis, to be displayed on the horizontal axis instead, execute the following steps.

1. Select the chart you created.

2.   On the **Design** tab, click **Switch Row/Column**. Observe how the legend of the chart changes. Appearance of the data will depend on the type of chart you are using.
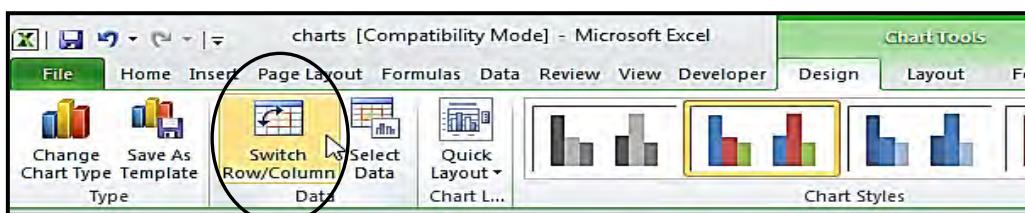
Click to switch the presentation of the data in the chart.

Chart Component

The typical chart (or graph) in Excel 2010 comprises several distinct parts, including the chart area, data series, axes, legend, plot area, gridlines, data markers, and more. The following list summarises the parts of a typical Excel chart, some of which appear in the illustration.
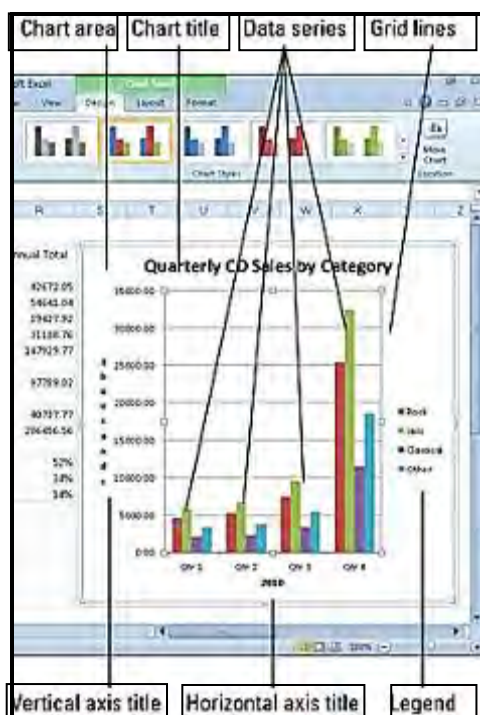
A typical column chart containing a variety of standard chart components.

- **Chart area:** Everything inside the chart window, including all parts of the chart (labels, axes, data markers, tick marks, and other elements listed here).

- **Data marker:** A symbol on the chart that represents a single value in the worksheet. A data marker (or data point) may be a bar in a bar chart, a pie in a pie chart, or a line on a line chart. Data markers with the same shape or pattern represent a single data series in the chart.

- **Data series:** A group of related values, such as all the values in a single row in the chart. A chart can have just one data series (shown in a single bar or line), but it usually has several.

- **Axis:** A line that serves as a major reference for plotting data in a chart. In two-dimensional charts there are two axes — the x-axis (horizontal/category) and the y-axis (vertical/value). In most two-dimensional charts (except bar charts), Excel plots categories (labels) along the x-axis and values (numbers) along the y-axis. Bar charts reverse the scheme, plotting values along the x-axis. Pie charts have no axes. Three-dimensional charts have an x-axis, a y-axis, and a z-axis. The x- and y-axes delineate the horizontal surface of the chart. The z-axis is the vertical axis, showing the depth of the third dimension in the chart.

- **Tick mark:** A small line intersecting an axis. A tick mark indicates a category, scale, or chart data series. A tick mark can have a label attached.

- **Plot area:** The area where Excel plots your data, including the axes and all markers that represent data points.

- **Gridlines:** Optional lines extending from the tick marks across the plot area, thus making it easier to view the data values represented by the tick marks.

- **Chart text:** A label or title that you add to the chart. *Attached text* is a title or label linked to an axis such as the Chart Title, Vertical Axis Title, and Horizontal Axis Title that you cannot move independently of the chart. *Unattached text* is text that you add with the Text Box command button on the Insert tab of the Ribbon.

- **Legend:** A key that identifies patterns, colours, or symbols associated with the markers of a chart data series. The legend shows the data series name corresponding to each data marker (such as the name of the blue columns in a column chart).

A. Change the format of Chart Components

The Chart Tools Format tab in Excel 2010 contains command buttons that make it easy to format particular chart elements after you select them. Excel gives you a choice of methods for selecting individual chart components. All chart components have shortcut menus attached to them. If you know that you want to choose a command from the shortcut menu as soon as you select a part of the chart, you can both select the object and open the shortcut menu by right-clicking the chart object.

Follow the steps below on how to change the format of a selected chart element.

1. Click anywhere in the chart. This displays the **Chart Tools.** Three new tabs were added: the **Design** and **Format** tabs.

2. On the **Format** tab, in the **Current Selection** group, click the arrow next to the **Chart Elements** box, and then select the chart element that you want to format.

3. On the **Format** tab, in the **Current Selection** group, click **Format Selection**. The dialogue box appears.
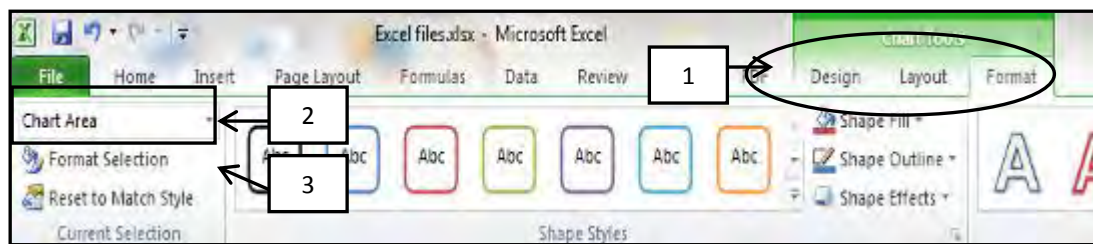
The name of the dialogue box will be the name of the chart element you selected. Any changes you made in the dialogue box will be applied only to the selected element,

4.   In the **Format (Chart Element)** dialogue box, click a category, and then select the formatting options that you want.

5.   Click Close to apply changes.
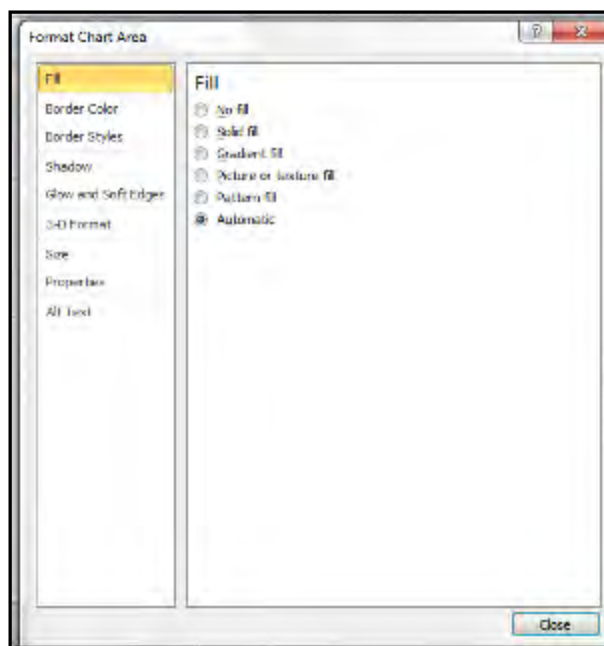
You can undo multiple changes that you made to one dialogue box option as long as you did not make changes to another dialogue box option in between. You may want to move the dialogue box so that you can see both the chart and the dialogue box at the same time.

B. Change the shape style of a selected chart element

You can change the format of chart elements by selecting the chart area, plot area, data series, axes, titles, data labels, or legend. You can use the Format (Chart Element) dialogue box to make formatting changes, or you can apply predefined or custom shape styles. You can also format the text in a chart element.

Follow the steps below on how to change the shape style of a selected chart element.

1. In a chart, click the chart element that you want to change or follow the steps discussed in the previous lesson on how to select chart element.

2. To apply a predefined shape style, on the **Format** tab, in the **Shape Styles** group, click the style that you want.

3. Click More button to display all available shape styles.
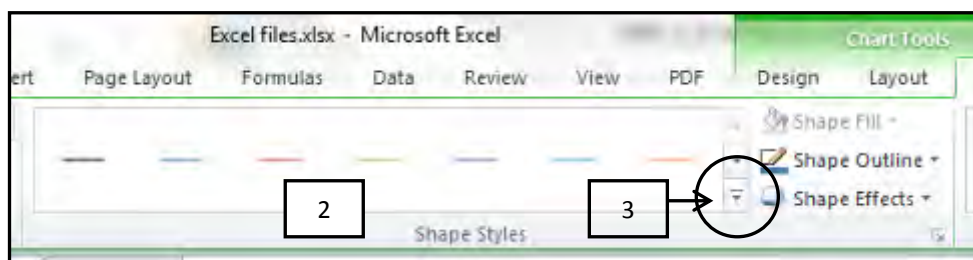
4. To apply a different shape fill, click **Shape Fill**, and then do one of the following:

    a. Change the colour using **Theme Colours** or **Standard Colours**.

    b. To remove the colour from the selected chart element. Click **No Fill**.

    c. To use a fill colour that is not available under **Theme Colours** or **Standard Colours**. Click **More Fill Colours**. In the **Colours** dialogue box, specify the colour that you want to use on the **Standard** or **Custom** tab, and then click **OK**. Custom fill colours that you create are added under **Recent Colours** so that you can use them again.

    d. To fill the shape with a picture, click **Picture**. In the **Insert Picture** dialogue box. Click the picture that you want to use, and then click **Insert**.
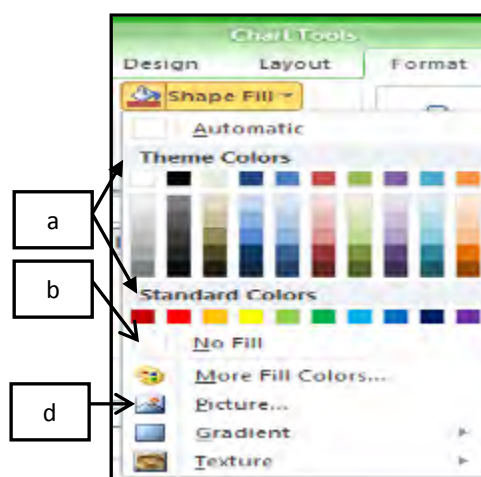
Colours palette will display
More Fill Colours

5. To apply a different shape outline, click **Shape Outline**, and then do one of the following:

   a. To use a different outline colour, under **Theme Colours** or **Standard Colours**, click the colour that you want to use.

   b. To remove the outline colour from the selected chart element, click **No Outline**. If the selected element is a line, the line will no longer be visible on the chart.

   c. To use an outline colour that is not available under **Theme Colours** or **Standard Colours**, click **More Outline Colours**. In the **Colours** dialogue box, specify the colour that you want to use on the **Standard** or **Custom** tab, and then click **OK**. Custom outline colours that you create are added under **Recent Colours** so that you can use them again.

   d. To change the weight of a line or border, click **Weight**, and then click the line weight that you want to use. For additional line style or border style options, click **More Lines**, and then click the line style or border style options that you want to use.

Shape Outline drop-down list

   e. To use a dashed line or border, click **Dashes**, and then click the dash type that you want to use. For additional dash-type options, click **More Lines**, and then click the dash type that you want to use.

   f. To add arrows to lines, click **Arrows**, and then click the arrow style that you want to use. You cannot use arrow styles for borders. For additional arrow style or border style options, click **More Arrows**, and then click the arrow setting that you want to use.
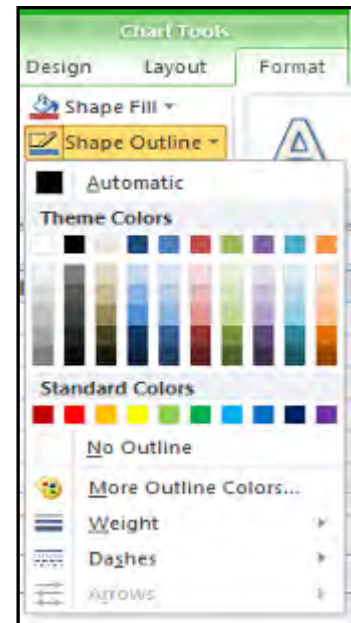
> **Note:** Available shape effects depend on the chart element that you selected. Pre-set, reflection, and bevel effects are not available for all chart elements.

C. Change the format of text in a selected chart element

To format the text in chart elements, you can use regular **text formatting** options, or you can apply **a WordArt** format.

1. Make sure that the chart you created is still
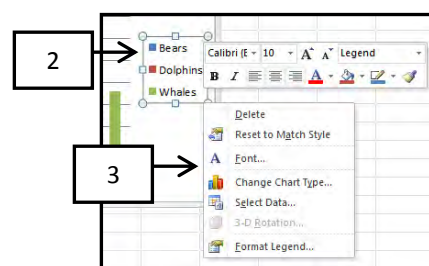
open.

2.   Click the chart element that contains the text that you want to format.

3.   Right-click the text or select the text that you want to format and click the formatting options that you want on the **Mini toolbar** or

On the **Home** tab, in the **Font** group, click the formatting buttons that you want to use.

4.   In a chart, click the chart element that contains the text that you want to change, or do the following to select the chart element from a list of chart elements:

a.   Make sure that the chart you created is still open. Click the chart element that contains the text that you want to format.

b.   On the **Format** tab, in the **WordArt Styles** group click the style that you want. To see all available WordArt styles, click the **More** button.
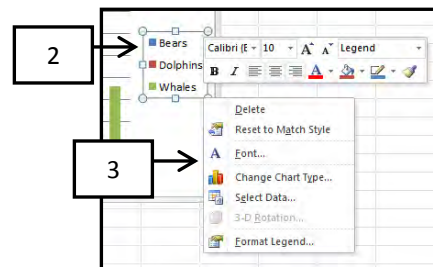
c.   To apply a custom WordArt style, click **Text Fill**, **Text Outline**, or **Text Effects**, and then select the formatting options that you want.

Student Activity 11.4.1.6

A.   Identify the Different Chart Lay Outs by writing the answers on the spaces provided after the pictures.
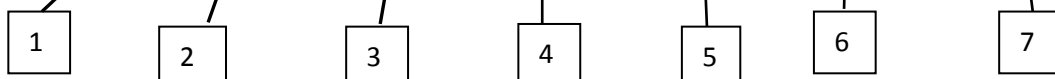
1.   _____

2.   _____

3.   _____

4.   _____

5.   _____

6. _____

7. _____

B.   Change into different Lay out.

1.   Using our filename **ChartType** change the charts into different Layout.

2.   Highlight the whole cells, and select a chart (Cylinder).

3.   Use the Design tab and use the Switch Row/Column.

4.   Change the font colour to Green and the font style into Algerian size 8.

Summative Activity 11.4.1

A.   Follow the given instructions.

Type the following data into your blank MS Excel.

A1	Name	B1	Gender	C1	Class	D1	House Colour	E1	Sports
A2	Peter Leno	B2	M	C2	9-H	D2	BLUE	E2	Rugby
A3	John Mose	B3	M	C3	10 –M	D3	GREEN	E3	Soccer
A4	Junior Abesano	B4	M	C4	9-H	D4	YELLOW	E4	Soccer
A5	Mary Ann Santos	B5	F	C5	10-H	D5	RED	E5	Netball
A6	Vaima Jonathan	B6	F	C6	9-H	D6	RED	E6	Netball
A7	Ila Brown	B7	M	C7	10-M	D7	BLUE	E7	Soccer
A8	Joseph Cays	B8	M	C8	10-M	D8	BLUE	E8	Soccer
A9	Christopher Maino	B9	M	C9	9-H	D9	GREEN	E9	Soccer
A10	Angeline Topal	B10	F	C10	9-H	D10	RED	E10	Netball
A11	Sorella Moses	B11	F	C11	10-M	D11	GREEN	E11	Soccer

1.   Change Font styles for the titles (in row 1) into Bodoni MT Black, Font size 16, Font colour Red.

2.   Adjust the titles for the columns accordingly.

3.   Align all the titles in row 1 to the center.

4.   Align columns B, C, D, E to the center.

5.   Change the colours of the text for Column D according to the given House Colours.

6.   Apply cell's backgroung colour for Column E.

        For Soccer apply Light Green.

        For Rugby apply Orange.

        For Netball apply Pink.

7.   Save it with a filename **My_Activity1**.

        Check and compare your answers after this Learning Activities.

8.   Highlight row 1 of the titles and apply font styles.

9.   Using the ribbon or toolbar, select the style **Heading 1** to the selected cells.

10.   Sort the Gender in column B, wherein M for Gender will be on top, followed by sorting the names in column A alphabetically.

11.   Save it with a filename **My_Activity2**.

        Check and compare your answers after this Learning Activities.

12.   Now, try to **Delete Level** from the styles and sort your data by Sports, Netball should be On Top and followed by their Class sorting it by descending order.

13.   Save it with a filename **My_Activity3**.

Check and compare your answers after these Activities.

B.   Follow the instructions below for data outlining

1.   Open your file **My_Activity2,** in Column F type the following data.

        F1   Allowance

        F2   300

        F3   200

        F4   180

        F5   150

        F6   230

        F7   240

F8   180

F9   200

F10   250

F11   270

2.   Modify the title F1 by following the corresponding title and adjust the column width.

3.   Center the data in Column F.

4.   Insert row in between cells A7 and A8.

5.   Change the cell theme colour for cell E8 to **No Fill**.

6.   Type **Total for Males** in cell A8, bold the fonts and change the font size to 14.

7.   Type **Total for Females** in cell A13, bold the fonts and change the font size to 14.

8.   Compute for the Total in cells F8 for males and F13 for females.

9.   Format column E by clicking the Number format from the Home tab using two decimal places.

10.   Highlight cells A1 to F8, and create Outline of Rows.

       Save it with a filename **My_Activity4**.

Check and compare your answers after these Summative Activities.

C.   Follow the instructions below for creating a chart.

1.   Using your file **My_Activity4**, highlight cells A2 to A13 and F2 to F13.

2.   Insert Chart by selecting 3-D Column Chart (Cylinder).

3.   From the Chart Layouts, select the first layout to create a title of your chart.

4.   Double click the title from the chart and type **Student's Allowance.**

5.   Click the inside of your chart and change the Chart Styles in your desired layout.

6.   Save your file **My_Activity5.**

✔ Answers to Student Activities 11.4.1

Student Activity 11.4.1.1

A.
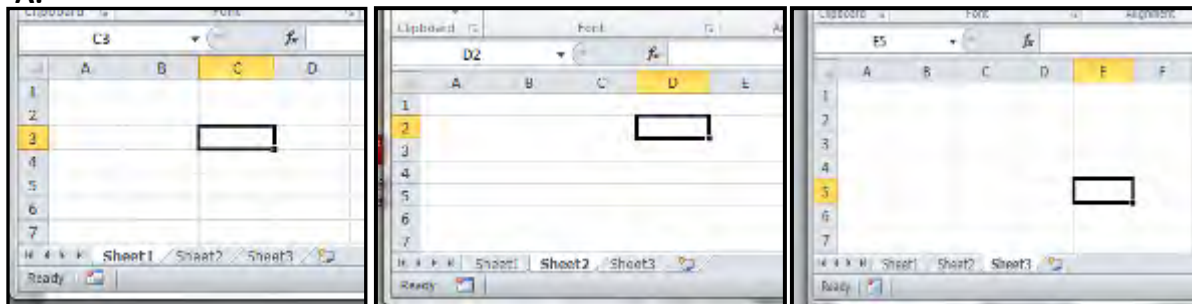
Step 3 Screen shot   Step 4 Screen shot   Step 5 Screen shot

B.

1.	Ribbons	5.	Rows
2.	Columns	6.	Sheet Tabs
3.	Formula Bar	7.	Horizontal Scroll Bar
4.	Active Cell	8.	Vertical Scroll Bar

Student Activity 11.4.1.2

The example given is just an example of what your text could look like. However the number format used in column E must be exactly like the example given below.

	Last Name	First Name	Sex	Outstanding
	Attendance			
1	Oibe	Tristan	M	500.00
2	John	Phyllis	F	1,250.00
3	Michael	Ronan	M	300.00
4	Timothy	Hannah	F	600.00
5	Brown	Jeremiah	M	500.00
6	Brown	Janet	F	235.00
7	Brown	Derick	M	385.00
8	Kiri	Carol	F	120.00
9	Mekere	Winston	M	280.00
10	King	Laila	F	330.00

Student Activity 11.4.1.3

A. Steps to include Paint Icon to the Quick Access Toolbar

    1. Open a blank worksheet.

2.   Click File Menu and choose Options.

3.   Click Quick Access Toolbar

4.   Select Paint Icon to be added to the Quick Access Toolbar.

5.   Click OK.

B.

Your work should look like the example below.

The following formats were done using the following option.

1.   Open Assignment workbook.

2.   Highlight cells and click Cell Styles

3.   Choose Normal.

4.   Highlight A1 to E2 and apply Heading 1 format.

5.   Highlight cells A3 to E12 and apply Accent1 format.

5.   Save your work as **Assignment 2**.

Student Activity 11.4.1.4

Student Activity 11.4.1.5

Student Activity 11.4.1.6

A

1.   Column

2.   Line

3.   Pie

4.   Bar

5.   Area

6.   Scatter

7.   Other Charts

B

✔ **Answers to Summative Activities 11.4.1**

A.

After modifying the cell, the cell fonts and font styles

B.

C.
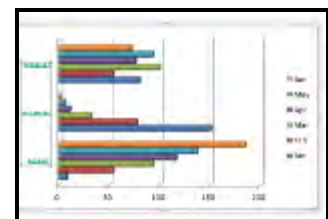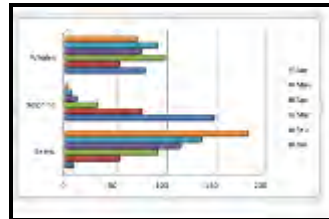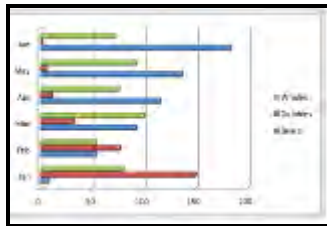
	A	B	C	D	E
1	Name	Gender	Class	House Colour	Sports
2	Mary Ann Santos	F	10-M	RED	Netball
3	Angeline Topal	F	9-H	RED	Netball
4	Vaima Jonathan	F	9-H	RED	Netball
5	Ila Brown	M	10-M	BLUE	Soccer
6	John Mose	M	10-M	GREEN	Soccer
7	Joseph Cays	M	10-M	BLUE	Soccer
8	Sorella Moses	F	10-M	GREEN	Soccer
9	Christopher Maino	M	9-H	GREEN	Soccer
10	Junior Abesano	M	9-H	YELLOW	Soccer
11	Peter Leno	M	9-H	BLUE	Rugby

Data Outlining

	A	B	C	D	E	F
1	Name	Gender	Class	House Colour	Sports	Allowance
2	Christopher Maino	M	9-H	GREEN	Soccer	300.00
3	Ila Brown	M	10-M	BLUE	Soccer	200.00
4	John Mose	M	10-M	GREEN	Soccer	180.00
5	Joseph Cays	M	10-M	BLUE	Soccer	150.00
6	Junior Abesano	M	9-H	YELLOW	Soccer	230.00
7	Peter Leno	M	9-H	BLUE	Rugby	240.00
8	Total for Males					1300.00
9	Angeline Topal	F	9-H	RED	Netball	180.00
10	Mary Ann Santos	F	10-M	RED	Netball	200.00
11	Sorella Moses	F	10-M	GREEN	Soccer	250.00
12	Vaima Jonathan	F	9-H	RED	Netball	270.00
13	Total for Females					900.00

Creating a Chart
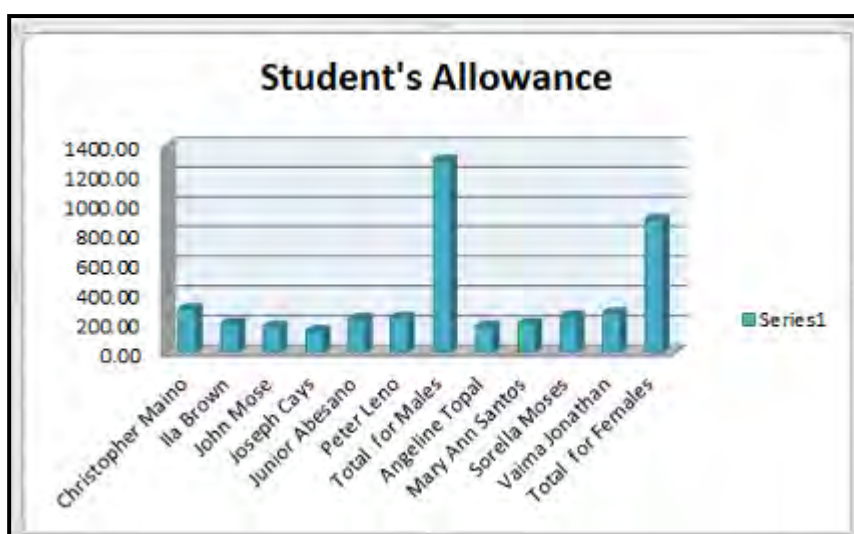
Chart result after selecting the names and the allowance

11.4.2 Working with Multiple Worksheets, Workbooks and Integrating with Other Applications

11.4.2.1 3-D Formula

It is helpful to be able to create a single formula that calculates data gathered from multiple worksheets. These types of formulas are called 3-D formulas. They calculate information from multiple worksheets and show the result in a selected formula cell.

When you use 3-D formulas, you must also expand your knowledge of formula syntax. You will be using additional punctuation marks when you write these formulas in order to tell Excel specifically which cells from which worksheet you will be using. The additional punctuation marks you will need to know are:

1.   **!** – used to separate the sheet name from the cell reference.

2.   **$** - used to denote an absolute value.

3.   **:** - used to separate sheet names in ranged 3-D formulas.

4.   **,** - used to separate individual sheet/cell references from each other.

Preparing your worksheets.

6.   Open a blank workbook, create the following worksheet.

7.   Rename your worksheet POM, LAE, GOROKA and XYZ Co.

	B	C	D	E
	Qtr1	Qtr2	Qtr3	Qtr4
Mobile Phone	25000	23600	32650	65200
Tablet	19200	28600	46350	72180
Laptop	33500	55300	83250	105400

Sheet 1 - POM

	B	C	D	E
	Qtr1	Qtr2	Qtr3	Qtr4
Mobile Phone	12550	32680	23380	29650
Tablet	23650	29180	33260	45880
Laptop	68350	79560	85230	180230

Sheet 2 - LAE

B15		fx	
A	B	C	D	E
	Qtr1	Qtr2	Qtr3	Qtr4
Mobile Phone	25000	23600	32650	65200
Tablet	19200	28600	46350	72180
Laptop	33500	55300	83250	105400

Sheet 3 - Goroka

A	B	C	D	E
	Qtr1	Qtr2	Qtr3	Qtr4
Mobile Phone				
Tablet				
Laptop				

Sheet 4 – XYZ Co

A.   Simple 3D Formula Syntax
The best way to learn how 3-D formula works is to look at some examples. Follow the steps below to create a 3D formula

1.   In cell B2 in XYZ Co worksheet, type "=" sign

2. Click POM worksheet. Notice that the formula bar now displays "**=pom!**".

3. Click cell B2 in POM worksheet. The formula bar now display **=pom!B2**. Pom refers to the name of the worksheet and **!** separates the name of the worksheet from the cell address.

4. Type the plus sign (+). Your formula now displays **=pom!B2+**

5. Repeat steps 2 to 4 for Lae and Goroka worksheets. Press Enter after you have linked the last worksheet. Your formula should display **=pom!B2+lae!B2+goroka!B2**

6. Repeat the same steps to get the total for Tablet and Laptop or copy the formula down.

Let us use another way of using 3D formula:

1. In cell C2 of XYZ Co worksheet, type "**=sum(**". Sum is a function command that means to add. Using the Sum function eliminates the need to use (+) sign and means to add up everything inside the bracket().

2. Repeat the steps indicated above but instead of using plus sign (+) we will replace it with a comma (,) symbol.

3. Your formula should display "**=sum(pom!C2,lae!C2,Goroka!C2)**". the comma (,) separates the group of cells you want to add from another group.

4. Repeat the same steps to get the total for Tablet and Laptop or copy the formula down.

B. Creating 3-D Range References
    When referencing 3-D ranges in formulas, you use the colon **(:)** to separate the names of the first and last sheets in the range, followed by a single cell range reference. The cell reference given is then used as the selected cell range through all of the worksheets listed. So in the above example, you are adding cell B2 from Sheet1, Sheet2, and Sheet3.

    In 3-D ranges the given cell range cannot change from one sheet to another. Otherwise it is just another 3-D formula, and you should use one of the other two alternate syntaxes available.

    Follow the steps below to create a 3D range reference.

1. In cell D2 of XYZ Co worksheet, type "**=sum(**".

2. Click pom worksheet and select cell D2. Your formula bar will display "**=sum(pom!**"

3. Erase the symbol (!) and replace (**:**). The colon symbol (:) means a range.

4. Click the last worksheet Goroka. Your formula will now display **=sum(pom:goroka!** In this case the range from the first worksheet to the last worksheet will be added and the exclamation mark is automatically added.

5. Click the cell that you want to add. In this example, click D2.

6. Save your work as **XYZ Co Sales**

The importance of using the 3-D formula is to create a single formula that calculates data gathered from multiple worksheets. It calculates information from multiple worksheets and show the result in a selected formula cell. Punctuation marks needed are **(!)** – used to separate the sheet name from the cell reference, **($)** - used to denote an absolute value, **(:)** - used to separate sheet names in ranged 3-D formulas, **(,)** - used to separate individual sheet/cell references from each other.

Student Activity 11.4.2.1

1. Open **XYZ Co Sales** workbook.

2. Add **Total** column to all worksheet in column F.

3. Calculate for the total sales for all the quarters for each item.

4. In the XYZ Co workbook, calculate for the total of the 4th quarter for all the three branches. Use simple 3D formula to do your calculation in the XYZ Co workbook.

5. Add another Total column in XYZ Co workbook. Use 3D range to do your calculations.

6. Save your work **XYZ Co Sales 3D**.

11.4.2.2   Using Range Names

Types of names

Assign a descriptive name to a cell or range in Excel 2010 to help make formulas in your worksheets much easier to understand and maintain. Range names make it easier for you to remember the purpose of a formula, rather than using obscure cell references.

For example, the formula =SUM(Qtr2Sales) is much more simplified than =SUM(C5:C12). In this example, you would assign the name Qtr2Sales to the range C5:C12 in the worksheet. There are several types of names that you can create and use.

- **Defined name** is a name that represents a cell, range of cells, formula, or constant value. You can create your own defined name, and Microsoft Excel sometimes creates a defined name for you, such as when you set a print area.

Format tab
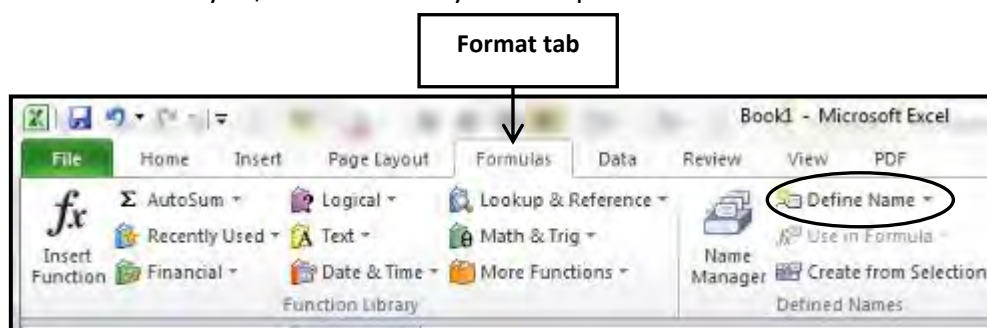
- **Table name** is a name for an Excel table, which is a collection of data about a particular subject that is stored in records (rows) and fields (columns). Excel creates a default Excel table name of Table1, Table2, and so on, each time that you insert an Excel table, but you can change a table's name to make it more meaningful.

Example Type	Example with no name	Example with a name
Reference	=SUM(C20:C30)	=SUM(FirstQuarterSales)
Constant	=PRODUCT(A5,8.3)	=PRODUCT(Price,WASalesTax)
Formula	=SUM(VLOOKUP(A1,B1:F20,5,FALSE), -G5)	=SUM(Inventory_Level,-Order_Amt)
Table	C4:G36	=TopSales06

Naming cells

A named cell represents a cell, range of cells, formula, or constant value. You can create your own defined name or Microsoft Excel sometimes creates a defined name for you, such as when you set a print area. By using names, you can make your formulas much easier to understand and maintain. You can define a name for a cell range, function, constant, or table. Once you adopt the practice of using names in your workbook, you can easily update, audit, and manage these names.

To name a cell or range, follow these steps:

1. Open our filename **SortData,** select the cells (C1 to C5) or cell range that you want to name. You can also select noncontiguous cells (press Ctrl as you select each cell or range).

2. On the **Formulas** tab, click **Define Name** in the Defined Names group. The New Name dialogue box displays the suggested name Sales because it is the name written in the column title.

3. In the Name text box, type up to a 255-character name for the range.

    Range names are not case-sensitive; however, range names must follow these conventions:

    *   The first character must be a letter, an underscore, or a backslash.

    *   No spaces are allowed in a range name.

    *   The range name should not be the same as a cell address. For example, you cannot name a range U2 or UB40, but BLINK182 and ABBA are just fine.

4. Now, let change the data Sales with **March_Sales** and click **OK.**

5. Select cells C7:C9 and give it a range name of **April_Sales**.

6. Click **OK**.

Selecting a named range
Alternatively, you can enter a range name into the Name box located at the left end of the Formula bar and press Enter to create the name.

Follow the steps below on how to use a named range.

1. To use a named cell or range, click the down arrow in the Name box at the left end of the Formula bar.

2. Select the range name you want to access, and Excel highlights the named cells. You also can use range names with the Go To dialogue box, to make it easier to locate specific areas of a worksheet.

3. Press F5 to display the Go To dialogue box, select the range name you want to jump to, and click **OK**. Or Select Home Tab, go to Editing Group, click on Find and Select. A drop down arrow will display Go to.

Use range names in formula

You can insert range names into formulas just like they were normal cell references. Be careful using named multi-cell ranges, though. Remember to use functions that require a range instead of a single cell reference — such as MAX, SUM, or AVERAGE — or else you will get an error message. To use range names in formulas:

1. In cell C6, type "**=sum(March_Sales)"** and press Enter. The total of all the cells in the group.

2. In cell C10, type "**sum(April_Sales)".** The range name is automatically converted to uppercase.

3. In cell C11, type **"=March_Sales+April_Sales**" and press Enter. Observe that a **#Value** error appears. This is because a named range only works with function commands.

4. Change the formula to "**=sum(March_Sales,April_Sales)** and press Enter.

5. Save changes to your work.

Student Activity 11.4.2.2

1. From your filename **SortData** type the following data in cell:

D1	Latest Sales	D2	5020	D3	4500
D4	3011	D5	1294	D7	3332
D8	999	D9	4565		

2. Use the Range Name for cell D1:D5 to **March** and D7:D9 to **April**.

3. Use range names to solve for the SUM for March Total, April Total, and East Total for column D.

4. Save your work as **Name Range Formula**.

11.4.2.3 Combining Worksheets and Data from Different Workbooks

Over the course of business, you may find yourself with copious Excel files that you want to combine into a single workbook to make life a little easier. Excel 2010 allows you to copy or move individual worksheets from one workbook into another without hassle. No cutting and pasting needed. There is no upward limit on the number of sheets you can merge into a single workbook; you can have as many as your computer's memory can handle.

We usually maintain the data in multiple worksheets to check the data for each instance and to view them individually but it would be great to merge all the data from different worksheets in Excel Spreadsheet to analyse it. **Consolidate** feature in Excel 2010, allows you to pull-each record from the worksheet into one master worksheet, which adds-up all the data from Spreadsheets. Through Consolidation, you can summarise data from multiple sheets into one designated master sheet. By assembling data into master sheet, you can modify or aggregate it under one window.

Summarising data from one or more source areas by consolidating it and creating a consolidation table. These source areas can be on the same worksheet as the consolidation table, on different sheets in the same workbook, or in different workbooks. When you consolidate the source data, you apply a summary function, such as the SUM function, to create the summary data.

To create a summary data:

1. Create another new workbook, by clicking **File** tab, **New →Create**.

2. Type the following data into your blank worksheets. Save your work. Use the filename written in the text box.

	A	B	C	D
1		January	February	March
2	Coffee	2128	3486	9400
3	Tea	4939	2148	5921
4	Milk	4239	4234	1535

Save as: Consolidate1

	A	B	C	D
1		January	February	March
2	Coffee	2016	3546	7019
3	Milk	8258	3837	9605
4				

Save as: Consolidate2

	A	B	C	D
1		January	February	March
2	Coffee	9037	7156	2480
3	Tea	9629	1230	6002
4	Milk	7144	2505	8674

Save as: Consolidate 3

A blank workbook which you will save later

7. Open all the four workbooks and make the blank workbook active. Consolidation will not work if any or all of the books are closed

8. In the blank workbook, click the **Data**

9. Choose **Consolidate.** This will display the consolidate dialogue box.

10. Make Consolidate1 workbook active and highlight cells A1:D4. The name of range of cells immediately appears in the **Reference** list box.

11. Click **Add**. A reference address will be displayed in the All Reference list box. Click Delete if your make a mistake.
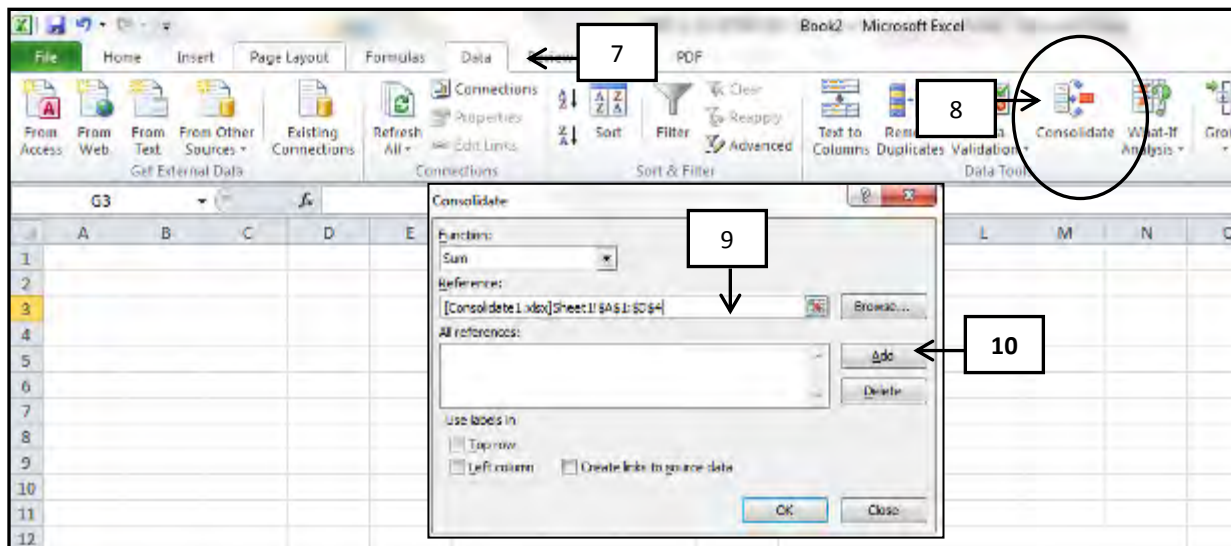
12. Repeat steps 9 to 10 to for **Consolidate2** and **Consolidate3** workbook.

13. Tick **Top row and Left column** to place the labels in the workbook you will use to consolidate all the three workbooks: Consolidate1, Consolidate2, Consolidate3.

14. Tick **Create links to source date**. To update your workbook every time there are changes to any of the workbooks.
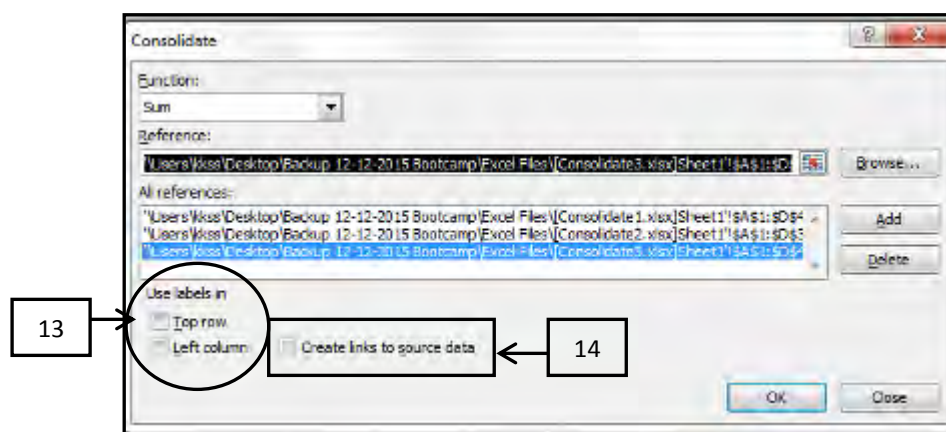
As you can see, the worksheets are not identical. However, the beauty of the Consolidate feature is that it can easily sum, count, average, this data by looking at the labels. This is a lot easier than creating formulas, open all three workbooks.

15. Click **OK**. The result will now display the outline of the consolidated workbook.

> **Note:** if you do not check the Top row and Left column, Excel sums all cells that have the same position. For example, cell B2 (in Consolidate1.xls) + cell B2 (in Consolidate2.xls) + cell B2 (in Consolidate3.xls). Because our worksheets are not identical, we want Excel to sum cells that have the same labels. If you check Create links to source data, Excel creates a link to your source data (your consolidated data will be updated if your source data changes) and creates an outline.

13.   Save your work with the filename **Consolidate4.**

Student Activity 11.4.2.3

Type and follow the instructions below.

1.   Type the following data into your blank MS Excel Worksheet. (Sheet1)

A1:Letter	B1:Code Number	C1:More Number
A2:M	B2:50	C2:62
A3:H	B3:99	C3:11
A4:G	B4:86	C4:68
A5:C	B5:18	C5:31
A6:K	B6:67	C6: 9

2.   Save your work with the filename **Consolidate5.**

3.   Go to **File tab**, Click **New**. Type the following data into your blank worksheet. (Sheet1)

A1:Letter	B1:Code Number	C1:More Number
A2:M	B2:38	C2:17
A3:H	B3:53	C3:25
A4:G	B4:48	C4:18
A5:C	B5:59	C5:53
A6:K	B6:78	C6:97

3. Save your work with the filename **Consolidate6.**

4. Go to **File tab**, Click **New**.

5. Go to **Data tab**, and Click **Consolidate**.

6. Save your answers with the filename **Consolidate7.**

11.4.2.4   Linking Information from Different Worksheets and Workbooks

Microsoft Excel provides the ability for one worksheet to link to data in another worksheet. This is a great productivity tool. A link formula that dynamically pulls in data from a cell in another worksheet. The worksheet can be in the same workbook or a different workbook. The **destination** worksheet contains the formula, and it receives data from a cell in the **source** worksheet. Anytime the cell value in the source worksheet changes, the cell containing the link formula will be updated as well, the next time it is opened. This is just one of many reasons the Excel software program is so powerful

Link cells from different worksheet
When you link a cell in Excel to a cell from another worksheet, the cell that contains the link shows the same data as the cell from the other worksheet. The cell that contains the link is called a dependent cell. The cell in another worksheet that contains data to which the link refers is called a precedent cell. Dependent cells automatically change if the precedent cells change.

1.   Open **XYZ Co Sales 3D** workbook.

2.   Add a new row to **Total Quarter** to all of the branch worksheets (POM, Lae and Goroka).

3.   Get the total of all the total quarter sales for the entire branch and all the quarters. Use the example below as guide.

F5		fx	=SUM(F2:F4)		
	A	B	C	D	E	F
1		Qtr1	Qtr2	Qtr3	Qtr4	TOTAL
2	Mobile Phone	25000	23600	32650	65200	146450
3	Tablet	19200	28600	46350	72180	166330
4	Laptop	33500	55300	83250	105400	277450
5	total sales					590230

4.   Create a new worksheet by clicking the Insert Worksheet button at the bottom of the worksheet tabs.

       Note that in Office 2016, the Insert Worksheet button will appear as (+)
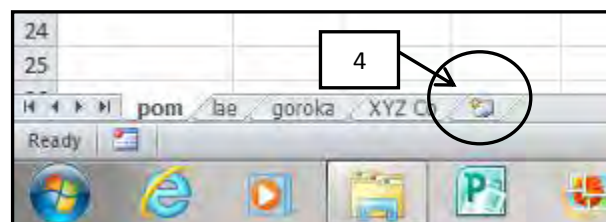
5.   Type the following information in the new workbook.

6.   In cell B2 type "=" and click the Pom worksheet.

	A	B	C
1		Yearly Sales	
2	Pom		
3	Lae		
4	Goroka		

7.   Click cell F5. Your formula bar now displays "**=pom!F5**". the formula displayed is in syntax to your previous lesson on 3D reference.

8.   Repeat the steps 6 to 7 for Lae and Goroka branch.

9.   Save your work as **XYZ Co Sales Link.**

Link multiple cells from another workbook
You can link multiple cells from another. Follow the steps below to link information from different worksheet/workbook by using an array function, which allows you to link a range of cells using one formula. Follow the steps below to
link multiple cells ranges.

1.   Open POM, LAE and Goroka worksheets.

	A	B	C
1		Yearly Sales	
2	Pom		
3	Lae		
4	Goroka		
5			

2.   Open a new blank workbook. In Sheet1 type the following information.

3.   Make cell B2 active and type "=sum(" inside the cell.

4.   Click POM worksheet and select cells F2 → F4 .

5.   Your formula bar should display the example below.

SUM	▾	X ✓ fx	=sum(PomIF5			
	A	B	C	SUM(number1, [number2], ...)		
1		Qtr1	Qtr2	Qtr3	Qtr4	Total
2	Mobile Phone	25000	23600	32650	65200	146450
3	Tablet	19200	28600	46350	72180	166330
4	Laptop	33500	55300	83250	105400	277450
5						590230
6						

POM Worksheet

6.   Press **Enter**.

	A	B	C
1		Yearly Sales	
2	Pom	590230	
3	Lae		
4	Goroka		
5			

7.   Complete the table by following steps 2 to 6.

	A	B	C
1		Yearly Sales	
2	Pom	590230	
3	Lae	643600	
4	Goroka	567730	
5			

The result after linking POM, LAE and Goroka

8.   Save your work as **XYZ Co Link2**.

Student Activity 11.4.2.4

   Type and follow the steps.

1.   Open XYZ Co Link2 and POM, LAE, Goroka workbooks.

2.   Open a blank workbook.

3.   Type the following data.

4.   Link the Total for each items accordingly.

11.4.2.5   Importing Data

If you have data from an alternative source, you may be able to import it into Excel 2010 instead of having to re-enter all the information again. Depending on the type of data you would like to import, you can select from a number of options. We will look at one of the most common import types – a text file.

You can open a text file that you created in another program as an Excel workbook by using the **Open** command. Opening a text file in Excel does not change the format of the file — you can see this in the Excel title bar, where the name of the file retains the text file name extension (for example, .txt or .csv). Before we begin, type the following text in MS Word.

January	1000
February	2000
March	3000
April	4000
May	5000
June	6000

1. Type the following data into your blank MS Word.

2. Click File → Save As. The dialogue box appears.

3. In the File name box, type **Monthly Bills.**

8. Save As dialogue box, click the drop down list and select Plain Text (*.txt). This will save your document as a Plain Text file.
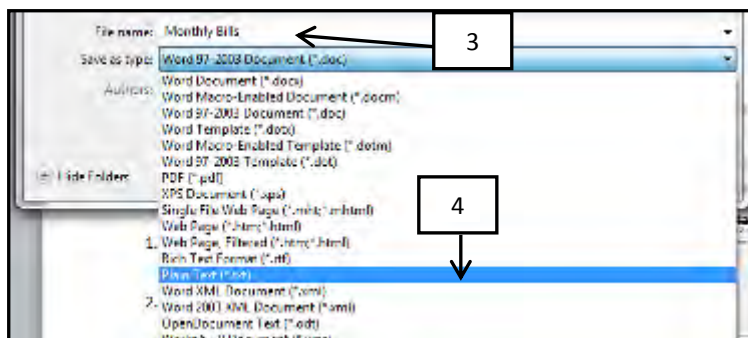
Note: If you have an existing MS Word document that you want to Import you must first save it as a text file. To do this, Click File → Open → Select MS Word file → Save As →Plain Text → OK.

Import a text file to MS Excel
You can import data from a text file into an existing worksheet as an external data range. Follow the steps on how to Import a text file.

1. Open a blank MS Excel workbook.

2. Click the cell where you want to put the data from the text file.

2. On the **Data** tab, in the **Get External Data** group, click **From Text**. The Import Data dialogue box will

To get External Data

appear.

3. Locate and double-click the text file that you want to import.

4. Follow the instructions in the Text Import Wizard. Click **Help** [?] on any page of the Text Import Wizard for more information about using the wizard. When you are done with the steps in the wizard, click **Finish** to complete the import operation.

5. The **Import Data** dialogue box will appear. Under **Where do you want to put the data?**, do one of the following:

*   To return the data to the location that you selected, click **Existing worksheet** or New Worksheet if you want to save it another worksheet.

*   Click **OK**. Excel puts the external data range in the location that you specify.
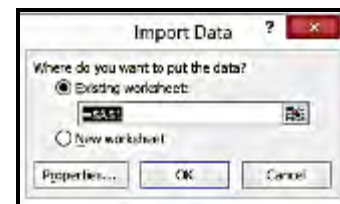
To Import Data

Student Activity 11.4.2.5

Type and follow the steps.

1. Type the following data below into your blank MS Word.

January	2000
February	6000
March	8000
April	10000
May	10000
June	2000

2. Import data from **Monthly Bills.**

3. Transfer data in column C1.

4. Save your data with the filename **MonthlyBills2.**

11.4.2.6   Exporting Data

Sometimes we need to export workbook's data to **Comma delimited (CSV)** files. We need to send a CSV file of the Excel data to other users or to import a CSV file of the Excel data in other programs.

By default, the Excel workbook will be saved in the format of *.xlsx*. If you need to export data of active worksheet to a CSV file, you can use the **Save As** command with the following steps. You can convert an Excel worksheet to a text by using the **Save As** command.

Follow the steps in Exporting data.

1.   Open Consolidate4 workbook.

2.   Click the **File → Save As** type box, choose the text file format for the worksheet.

3.   Click **Comma delimited (CSV)**
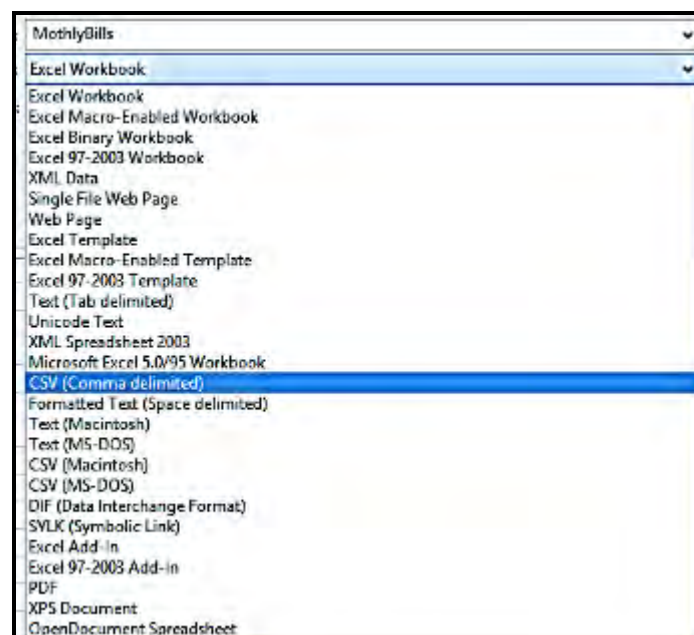
Comma delimited (CSV)

3.   Browse to the location where you want to save the new text file, and then Click **Save**.

4.   A dialogue box appears, reminding you that the current worksheet will be saved to the new file. If you are certain that the current worksheet is the one that you want to save as a text file, click **OK**. You can save other worksheets as separate text files by repeating this procedure for each worksheet.

5.   A second dialogue box appears that your worksheet may contain features that are not supported by text file formats. If you are interested only in saving the worksheet data into the new text file, click **OK**. If you are unsure and would like to know more about which Excel features are not supported by text file formats, click **Help** for more information.

To export data (creating a .csv file) you can only do it on the worksheet that you are working on. If the other worksheets are blank, you should not get a warning message. If you have other data that you also want to export, you will have to go to each sheet and create a new .csv file for that worksheet. You need to give it a different name. It just appears that your file type is set to create a .csv file. Once you switch it to .xls or .xlsx (depending upon your version of Excel) it should stay that way until you select a different file type.

Student Activity 11.4.2.6

Lists down the steps on how to export data.

1._____

_____

2._____

_____

3._____

_____

4._____

_____

5._____

_____

Summative Activities 11.4.2

A.

Type and follow the instructions below.

1.   Type the data into your new blank worksheet. In Cell,

A1	List of Grocery Items for the Month of January				
A2	Rice	B2	20 kgs.	C2	80.00
A3	Flour	B3	6 packs	C3	55.00
A4	Cooking Oil	B4	6 bottles	C4	124.00
A5	Milk	B5	10 Boxes	C5	200.00
A6	Shampoo	B6	5 bottles	C6	90.00
A7	Soap	B7	6 boxes	C7	14.00
A8	Tissues	B8	20 rolls	C8	80.00
A9	Cookies	B9	6 packs	C9	60.00

2.   Save this file in MS Excel **My_Activity6.**

3.   Make a new blank workbook and type this data. In Cell,

A1	List of Grocery Items for the Month of February.				
A2	Rice	B2	30 kgs.	C2	170.00
A3	Flour	B3	7 packs	C3	70.00
A4	Cooking Oil	B4	10 bottles	C4	220.00
A5	Milk	B5	10 Boxes	C5	220.00
A6	Shampoo	B6	4 bottles	C6	85.00
A7	Soap	B7	9 boxes	C7	24.00
A8	Tissues	B8	40 rolls	C8	160.00
A9	Cookies	B9	10 packs	C9	100.00

4.   Save this file in MS Excel **My_Activity7.**

5.   Use two decimal number format for Column C for the two workbooks.

6. Have your active worksheet in filename **My_Activity6,** place your answers in sheet2 and use the 3-D formula to compute for the Total for (Rice, Flour and Cooking Oil), for **My_Activity6** and **My_Activity7.**

7. Type the title in cell A1, My Total for Rice, Flour and Cooking Oil.

8. Type Rice in cell A4, Flour in A5 and Cooking Oil in A6.

9. Solve for the Total for the two workbooks using the 3-D formula.

B.

10. Define columns in the two workbooks defining it as **Price.**

C.

11. Solve for the Grand Total for column C in **My_Activity6** and **My_Activity7.**

12. From **My_Activity6** Sheet1, link (Rice, Flour and Cooking Oil) to Sheet2.

D.

13. Get your file **MonthlyBills** to Import data in **My_Activity6.**

✔ Answers to Student Activities 11.4.2

Student Activity 11.4.2.1

POM

	A	B	C	D	E	F
1		Qtr1	Qtr2	Qtr3	Qtr4	Total
2	Mobile Phone	25000	23600	32650	65200	146450
3	Tablet	19200	28600	46350	72180	166330
4	Laptop	33500	55300	83250	105400	277450
5						

LAE

	A	B	C	D	E	F
1		Qtr1	Qtr2	Qtr3	Qtr4	Total
2	Mobile Phone	25000	23600	32650	65200	146450
3	Tablet	19200	28600	46350	72180	166330
4	Laptop	33500	55300	83250	105400	277450
5						

GOROKA

	A	B	C	D	E	F
1		Qtr1	Qtr2	Qtr3	Qtr4	Total
2	Mobile Phone	2500	23600	32650	65200	123950
3	Tablet	19200	28600	46350	72180	166330
4	Laptop	33500	55300	83250	105400	277450

XYZ CO.

	A	B	C	D	E	F	G
1		Qtr1	Qtr2	Qtr3	Qtr4	Total	
2	Mobile Phone	40050	79880	88680	160050	368660	
3	Tablet	62050	86380	125960	190240	464630	
4	Laptop	146560	190160	251730	391030	968270	
5							

Student Activity 11.4.2.2

	A	B	C	D
1	Region	Month	Sales	Latest Sales
2	East	March	9,647	5020
3	East	March	4,101	4500
4	East	March	7,115	3011
5	East	March	2,957	1294
6	East	March Total	23,820	13825
7	East	April	4,257	3332
8	East	April	1,829	999
9	East	April	6,550	4565
10	East	April Total	12,636	8896
11	East Total		36,456	22721

The result with the Totals

Student Activity 11.4.2.3

	A	B	C
1		Code Number	More Number
4	M	88	79
7	H	152	36
10	G	134	86
13	C	77	84
16	K	145	106
17			

Student Activity 11.4.2.4

	A	B	C	D
1		POM	LAE	GOROKA
2				
3	Mobile Phone	146450	98260	123950
4	Tablet	166330	131970	166330
5	Laptop	277450	413370	277450

Student Activity 11.4.2.5

	A	B	C	D
1	January	2000	January	1000
2	February	6000	February	3000
3	March	8000	March	4000
4	April	10000	April	5000
5	May	10000	May	5000
6	June	2000	June	1000

After Importing data from MonthlyBills file

Student Activity 11.4.2.6

1.   Click the **File** tab, and then click **Save As.**

2.   In the **Save As** dialogue box type box, choose the text file format for the worksheet.

3.   Browse to the location where you want to save the new text file, and then Click **Save**.

4.   Click **OK**. (If you are certain that the current worksheets is the one that you want to save as a text file).

5.   Click **OK**.) If you are unsure and would like to know more about which Excel features are not supported by text file formats), or Click **Help** for more information.

✔ **Answers to Summative Activities 11.4.2**

A.

	A	B	C
1	List of Grocery Items for the Month of January		
2	Rice	20 kgs.	80.00
3	Flour	6 packs	55.00
4	Cooking Oil	6 bottles	124.00
5	Milk	10 Boxes	200.00
6	Shampoo	5 bottles	90.00
7	Soap	6 boxes	14.00
8	Tissues	20 rolls	80.00
9	Cookies	6 packs	60.00
10	Grand Total		703.00

My_Activity6

	A	B	C
1	List of Grocery Items for the Month of February		
2	Rice	30 kgs.	170.00
3	Flour	7 packs	70.00
4	Cooking Oil	10 bottles	220.00
5	Milk	10 Boxes	220.00
6	Shampoo	4 bottles	85.00
7	Soap	9 boxes	24.00
8	Tissues	40 rolls	160.00
9	Cookies	10 packs	100.00
10	Grand Total		

My_Activity7

B.

B4			fx	=SUM[Sheet1!C2,[Book2]Sheet1!$C$2)			
	A	B	C	D	E	F	G
1	Total for Rice, Flour and Cooking Oil						
2							
3							
4	Rice	250.00					
5	Flour	225.00					
6	Cooking Oil	294.00					

After using the 3-D formula for the two workbooks

C.

The result after Linking

The result after importing data

11.4.3   Creating PivotTables and Analysing Data

11.4.3.1   Creating a PivotTable

A pivot table is a special type of summary table that is unique to Excel. Pivot tables are great for summarising values in a table because they do their magic without making you create formulas to perform the calculations. Pivot tables also let you play around with the arrangement of the summarized data. It is this capability of changing the arrangement of the summarised data on the fly simply by rotating row and column headings that gives the pivot table its name. Follow the steps in creating a PivotTable.

1.   Type the following text. Save your work **Light Inventory**.

	A	B	C	D	E	F	G	H
1	ITEM CODE	DESCRIPTION	WATTAGE	ILLUMINATION	QUANTITY	PRICE (K)	Sold	Stock
2	CLPB009	Claro Non-Dimmable Bulb	9w	Warm White	150	35	100	50
3	CLPB009	Claro Non-Dimmable Bulb	9w	Day Light	100	35	53	47
4	CLPB009	Claro Non-Dimmable Bulb	7w	Warm White	180	30	112	68
5	CLPB009	Claro Non-Dimmable Bulb	7w	Day Light	120	30	20	100
6	CLPLSQ18	Panel Light Square	18w	Warm White	85	28.5	25	60
7	CLPLSQ18	Panel Light Square	18w	Day Light	115	28.5	35	80
8	CLPLSQ12	Panel Light Square	12w	Warm White	165	25	85	80
9	CLPLSQ12	Panel Light Square	12w	Day Light	160	25	55	105
10	CLPLRD18	Panel Light Round	18w	Warm White	155	40	66	89
11	CLPLRD18	Panel Light Round	18w	Day Light	185	40	105	80

Note: You can also open the worksheet that contains the table you want to summarised by pivot table and select any cell in the table. Ensure that the table has no blank rows or columns and that each column has a header.

2.   Position the cursor anywhere in the table.

3.   Click the Pivot Table located in in the Insert tab of the Tables group.

4.   Click PivotTable in the drop-down menu.
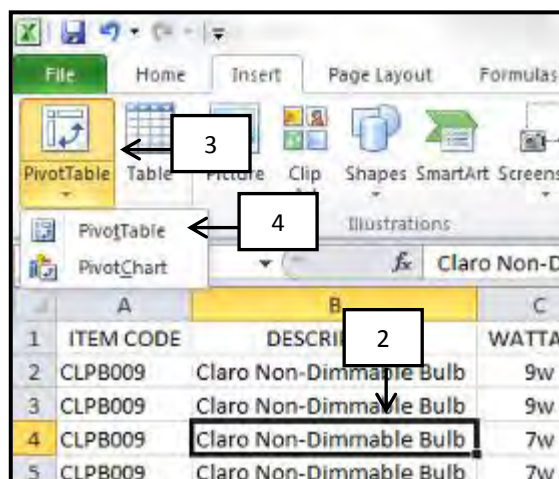
5.   Excel opens the Create PivotTable dialogue box.

6.   All the table data is selected as indicated by a marquee around the cell range. If necessary, adjust the range in the Table/Range text box under the Select a **Table** or **Range** option button.

7.   Click **OK**. Excel creates the new pivot table in a new worksheet.
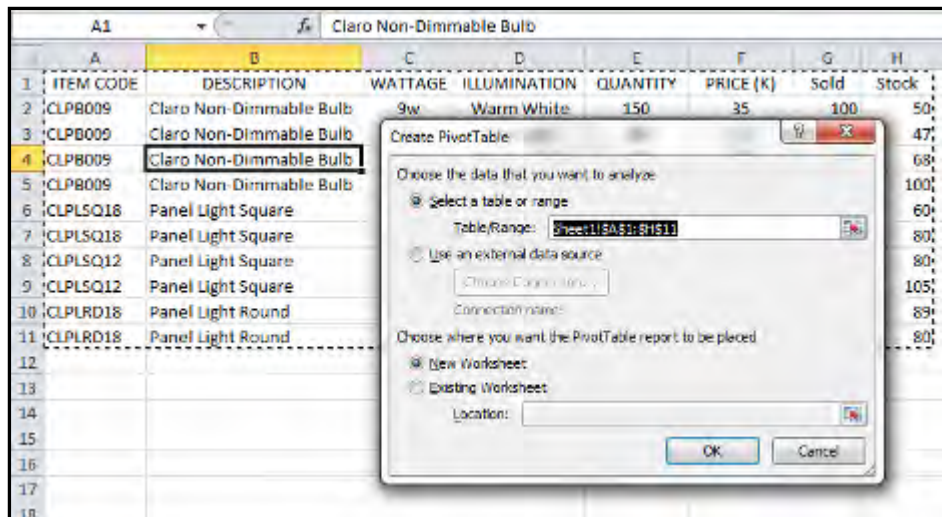
Note: By default, Excel builds the pivot table on a new worksheet it adds to the workbook. If you want the pivot table to appear on the same worksheet. Click the Existing Worksheet option button and then indicate the location of the first cell of the new table in the Location text box.

8.   Your screen will display the Pivot Table on the left side and the Pivot Table List on the right side.
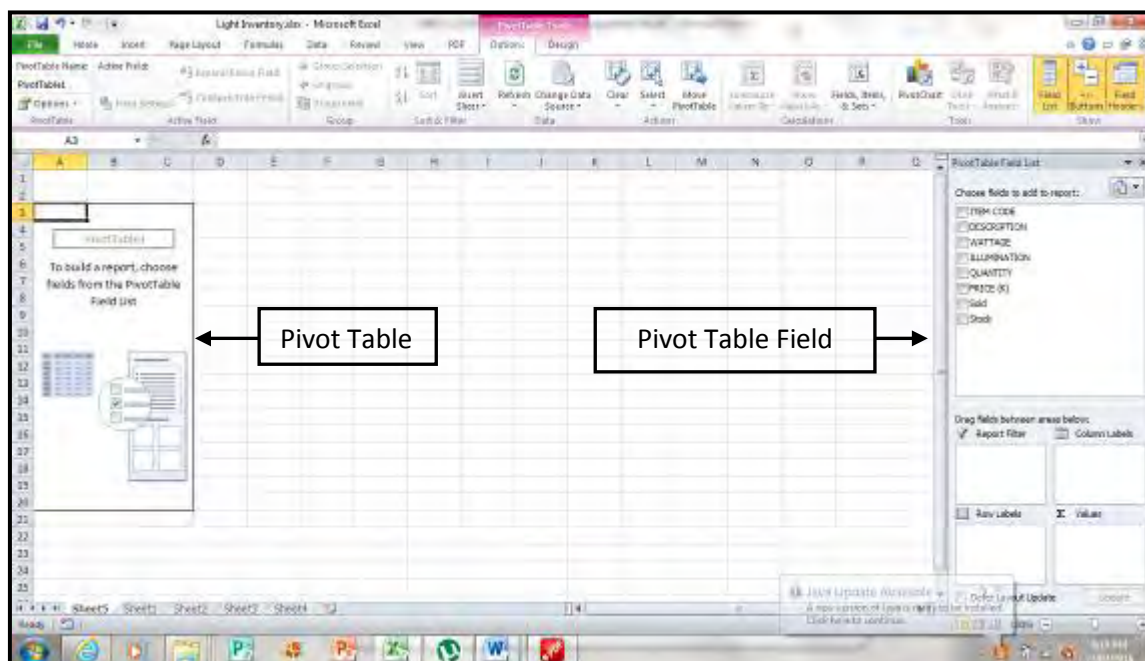
Excel adds a blank grid for the new pivot table and displays a PivotTable Field List task pane on the right side of the worksheet area. The PivotTable Field List task pane is divided into two areas: the Choose Fields to Add to Report list box with the names of all the fields in the source data for the PivotTable and an area divided into four drop zones (Report Filter, Column Labels, Row Labels, and Values) at the bottom.

Report Filter: This area contains the fields tha enable you to page through the data summaries shown in the actual pivot table. You do this by filtering out sets of data which act as the filters for the report. So, for example, if you designate the Year Field from a table as a Report Filter, you can display data summaries in the pivot table for individual years or for all years represented in the table.

Column Labels: This area contains the fields that determine the arrangement of data shown in the columns of the pivot table.

Row Labels: This area contains the fields that determine the arrangement of data shown in the rows of the pivot table.

Values: This area contains the fields that determine which data are presented in the cells of the PivotTable — they are the values that are summarised in its last column (total by default).
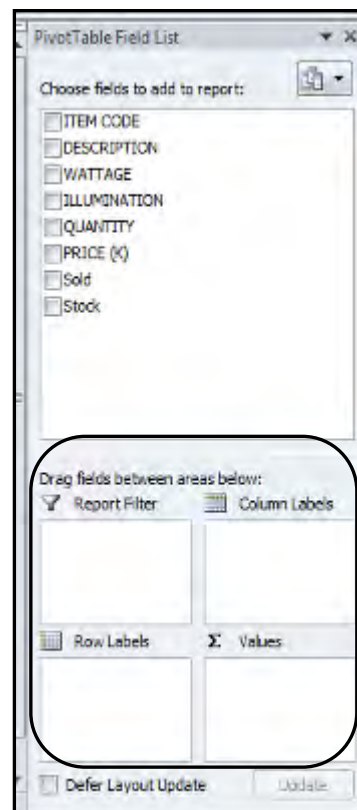
To complete the pivot table, assign the fields in the PivotTable Field List task pane to the various parts of the table.

1.   Tick Item Code and Illumination. This will create a Pivot Table in the worksheet. Click the tick box again to remove the selection or

        You can also drag the field name in the drop zone. Choose from Report filter, column labels, row labels and values.

2.   As soon as you create a new pivot table (or select the cell of an existing table in worksheet), Excel displays the Options tab of the PivotTable Tools contextual tab.
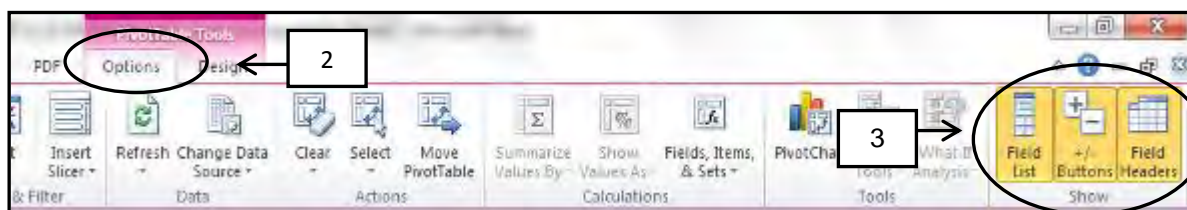
3.   Among the many groups on this tab, you find the Show/Hide group that contains the following useful command buttons:

- **Field List** to hide and redisplay the PivotTable Field List task pane on the right side of the Worksheet area.

- **+/- Buttons** to hide and redisplay the expand (+) and collapse (-) buttons in front of particular Column Fields or Row Fields that enable you to temporarily remove and then redisplay their particular summarised values in the pivot table.

- **Field Headers** to hide and redisplay the fields assigned to the Column Labels and Row Labels in the PivotTable.

4.   If you want to clear a pivot table and start over, use the Clear control, on the Options tab of the PivotTable Tools Ribbon. Click, Clear, then choose "Clear All"
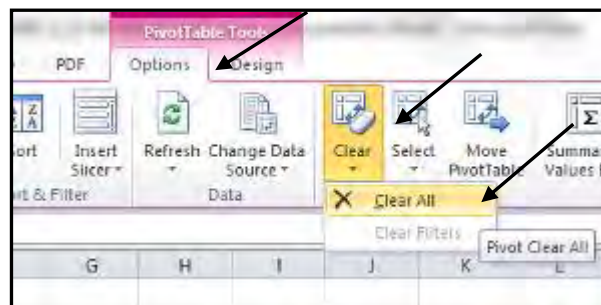
Student Activity 11.4.3.1

Follow the steps.

1.   Make sure that the **Light Inventory** workbook is still open.

2.   Click Sheet1 or the work sheet containing the table you typed.

3.   Create a new Pivot Table containing the Item Code, Quantity and Stock.

4.   Your work should look like the example below.

Row Labels	Sum of QUANTITY	Sum of Stock
CLPB009	550	265
CLPLRD18	340	169
CLPLSQ12	325	185
CLPLSQ18	200	140
Grand Total	**1415**	**759**

5.   Save your work as **Light Inventory Activity**.

11.4.3.2   Updating a PivotTable

Excel PivotTables provide a powerful tool you can use to analyse your data. Whenever you change the information in your source data table, you will need to update the PivotTable. There is no need to recreate the table, instead you simply select a cell in the PivotTable and then select Refresh Data from the Data menu, or click on the Refresh Data tool on the PivotTable toolbar.

Updating changes is simple enough, but there is probably an additional step you will take if you have added records to your data table. If you have added information at the end of the data table, either manually or using a data form, you need to redefine the data range used to create the PivotTable.

By default, PivotTables are not refreshed automatically, but you can specify that the PivotTable is automatically refreshed when you open the workbook that contains the PivotTable

A.   Refresh
If you change any of the text or numbers in your data set, you need to refresh the pivot table. Follow the steps on how to Refresh, open your file name **Light Inventory.**

1.   Make sure that the worksheet containing the table is the active worksheet.

2.   Insert a new column called Damaged between column Sold and Stock Field. Add the following data.

G	H	I
Sold	Damaged	Stock
100	10	50
53	5	47
111	3	68
20	5	100
25	1	60
35	2	80
85	4	80
55	3	105
66	1	89
105	10	80

Insert and type Damaged column

3.   Select the worksheet that contains your pivot table. The Options tab will appear.

4.   Right click on the mouse and click on **Refresh**.
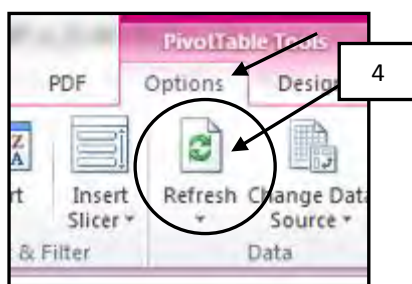
5.   Observe the Pivot Table Field list will now display the new field (Damaged) you recently added to your table.
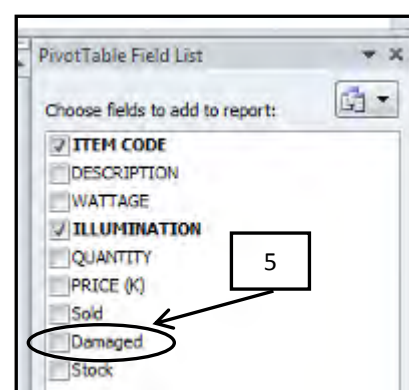
Refresh PivotTable data manually
Follow the steps below on how to refresh pivot table data manually.

1. Click anywhere in the PivotTable report. This displays the PivotTable Tools, adding an Options and a Design tab.

2. Let us change the data in cell F2 to 40.

3. To update the information to match the data source, click the **Refresh** button, or press ALT+F5.

a. You can also right-click the PivotTable, and then click **Refresh**.

4. To refresh all PivotTables in the workbook, click the **Refresh** button arrow, and then click **Refresh All**.

> **Note:** If you experience display or formatting changes when you refresh the PivotTable report, make sure that the **AutoFit column** width on update and **Preserve cell** formatting on update check boxes are selected on the **Layout & Format** tab in the **PivotTable Options** dialogue box (**PivotTable Tools**, **Options** tab, **PivotTable** group, **Options** command).

B. View the refresh status or cancel the refresh
After starting a refresh, you can review the status or cancel it at any time.

On the **Options** tab, in the **Data** group, click the **Refresh** button arrow, and then click **Refresh Status** to view the status or **Cancel Refresh** to stop refreshing.

C. Refresh PivotTable data automatically when opening the workbook
Follow the steps below on how to refresh pivot table data automatically when opening a workbook.

1. Click anywhere in the PivotTable report.

This displays the **PivotTable Tools**, adding an **Options** and a **Design** tab.

2. On the **Options** tab, in the **PivotTable** group, click **Options**.

In the **PivotTable Options** dialogue box, on the **Data** tab, select the **Refresh data** when opening the file check box.

Any changes you make to the data set are not automatically picked up by the pivot table. **Refresh** the **pivot table** or **change the data source** to update the pivot table with the applied changes. Each time you refresh the PivotTable data, you will see the most recent version of the data, including changes that were made to the data since it was last refreshed.

Student Activity 11.4.3.2

A. List down the steps on how to update a PivotTable.

1._____

2._____

3._____

B.   Type and follow the steps.

1.   Open **Light Inventory** workbook.

2.   Create a Pivot table showing the Item Code, Description, Price and Stock. Take a screen shot of your pivot table.

3.   Paste you screen shot in a blank document.

4.   Insert a new column called Supplier between Description and Wattage. For now this column will remain blank.

5.   Apply **Refresh** to update the PivotTable.

6.   Take a screen shot of your revised Pivot Table Field List after you apply Refresh.

7.   Paste the copy of your screen shot together with the first screen shot

8.   Save changes to your **Light Inventory** workbook.

9.   Save your document as **Light Inventory Screenshot.**

11.4.3.3   Modifying a Calculated Field in a PivotTable

In a PivotTable, you can create a new field that performs a calculation on the sum of other pivot fields. PivotTable, being the most celebrated feature of Excel, includes multitude of options to manipulate the data in desired way. Once PivotTable is created from the source data, you can add fields and items without modifying source data, which comes in handy for doing quick calculations. In this post we will demonstrate adding a calculated field in Pivot table. Follow the steps in modifying a calculated field in a PivotTable.

1.   Let us type our new data into our blank MS Excel.

In Cells,

A1	Region	B1	Month	C1	Sales
A2	South	B2	May	C2	8677
A3	South	B3	Apr	C3	450
A4	North	B4	Apr	C4	1500
A5	South	B5	May	C5	3802
A6	East	B6	Mar	C6	2741
A7	North	B7	Apr	C7	9291
A8	West	B8	May	C8	5477
A9	East	B9	May	C9	5416
A10	East	B10	Apr	C10	9136

Row Labels	Sum of Sales
East	17473
Mar	2741
Apr	9316
May	5416
North	10791
Apr	10791
South	12929
Apr	450
May	12479
West	5477
May	5477
Grand Total	46670

Pivot Table

2.   Create a PivotTable containing all Region, Month and Sales fields.

Now in PivotTable, we need to insert a new field without inserting field in data source which will show the 2% commission.

3.   In PivotTable Tools Options tab locate the Calculation group

4.   Under Fields, Items, and Sets options, click **Calculated Fields**.
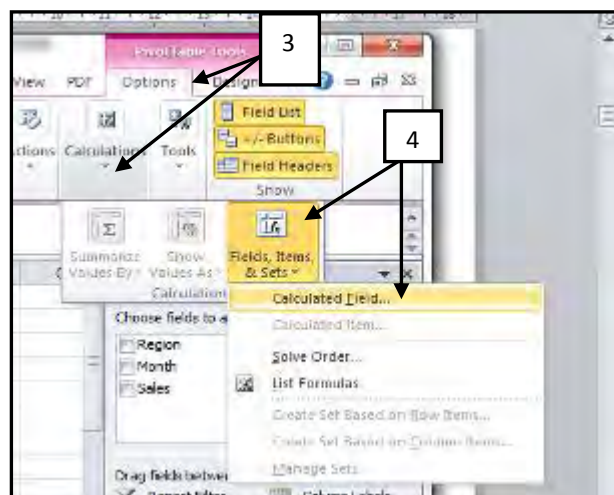
4.   It will bring up Insert Calculated Field dialogue box. Enter an appropriate name of calculated field and formula for evaluating calculating field as shown below.

	Commission 2%
	=(Sales*2%)
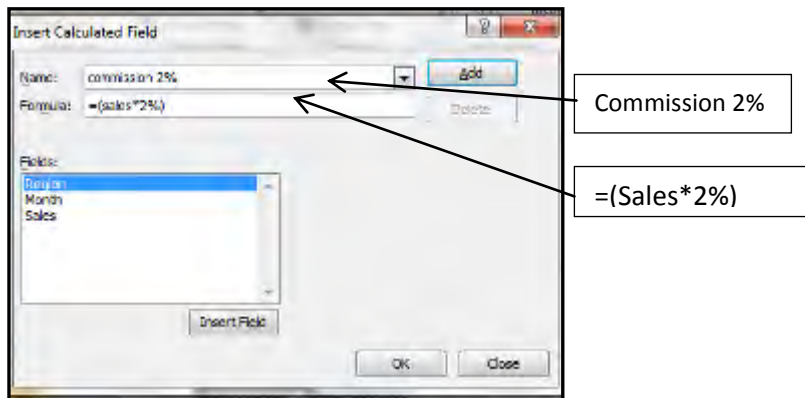
Note: In the Insert Calculated Field dialogue box, do not forget to click the **Insert Field** box to select the appropriate field for your Formula

5.   Click **OK.** This will add a Sum of Commission field in Pivot table and the Pivot Table Field List will add a new field name.
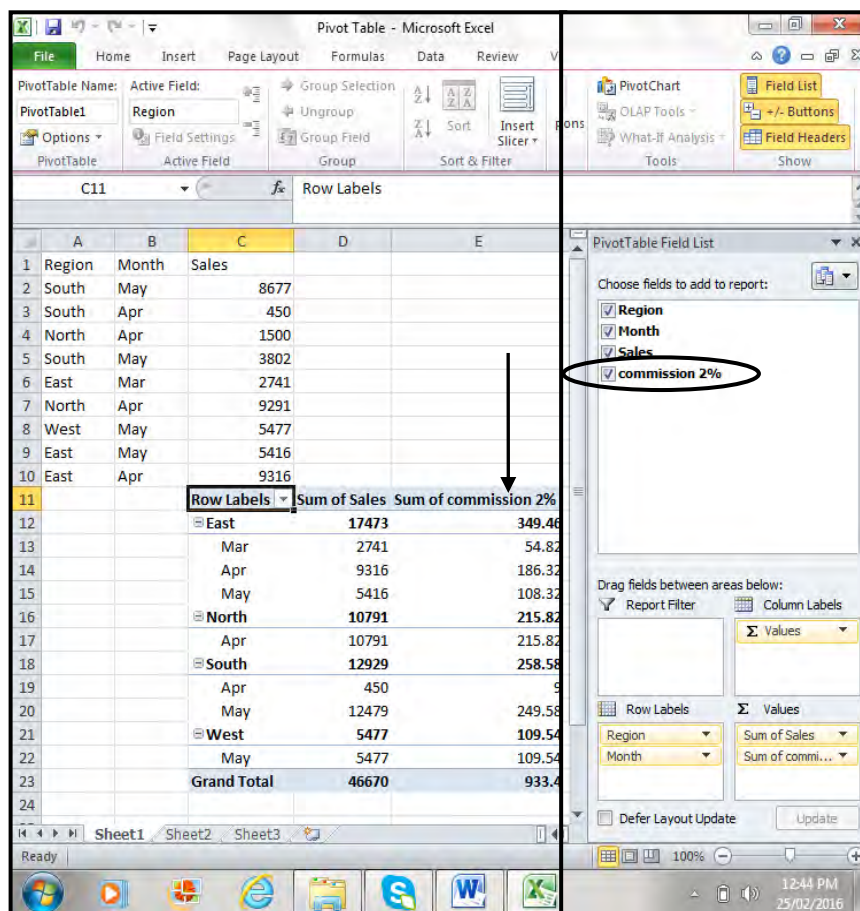
Result after calculating the percentage

6.   Save your work with a filename **PivotTable Commission.**

Student Activity 11.4.3.3

A.

Write the steps to create a Pivot Table.

1.   _____

2.   _____

3.   _____

4.   _____

5.   _____

6.   _____

7.   _____

8.   _____

B.

1.   Open **Light Inventory** workbook.

2.   Create a Pivot table using the fields Item Code, Description and Price.

3.   Change the **Price (K)** field header of your table to **Price.** Having a value enclosed in parenthesis () signifies that the content of the parenthesis is part of the formula.

4.   Click **Refresh** to apply changes to your Pivot table.

3.   Calculate for the K5 increase in price of all the products. The name of the Calculated field is **Price Change** and a formula must be created to calculate for the price change increase.

3.   Save your work as **Light Inventory Price Change.**

11.4.3.4   Creating a Chart from a PivotTable – Exploring What IF Table

Scenarios are part of a suite of commands called **what-if analysis tools**. When you use scenarios, you are doing what-if analysis.

What-if analysis is the process of changing the values in cells to see how those changes will affect the outcome of formulas on the worksheet. You can use scenarios to create and save different sets of values and switch between them. You can also create a scenario summary report, which combines all the scenarios on one worksheet. For example, you can create several different budget scenarios that compare various possible income levels and expenses, and then create a report that lets you compare the scenarios side-by-side.

Kinds of What-If Analysis

1.   Scenarios

2.   Data tables

3.   Goal Seek
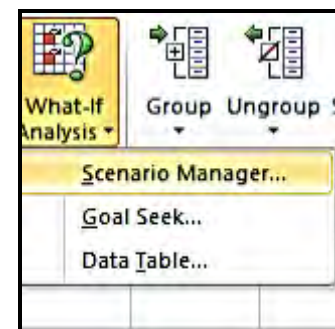
The Scenario Manager

Scenarios and data tables take sets of input values and project forward to determine possible results. Goal seek differs from scenarios and data tables in that it takes a result and projects backwards to determine possible input values that produce that result.

What-If Analysis in Excel allows you to try out different values (scenarios) for formulas. The following example helps you master what-if analysis quickly and easily.

Assume you own a book store and have 100 books in storage. You sell a certain % for the highest price of 50 and a certain % for the lower price of 20.

1.   Type the following data into your blank worksheet.

2.   In cell D10, type the following formula: **=(C7*D7)+(C8*D8)**. This will calculate the sales of books at 60% profit.

3.   Save your work as **Profit Analysis**.

Creating Different Scenarios

Study this situation: What if you sell 70% for the highest price? And what if you sell 80% for the highest price? Or 90%, or even 100%?

Each different percentage is a different **scenario**. You can use the Scenario Manager to create these scenarios.

What-if analysis enables you to easily compare the results of different scenarios.

1.   Make sure that the Profit Analysis workbook is still open.

2.   On the **Data** tab, click **What-If Analysis** and select **Scenario Manager** from the list.
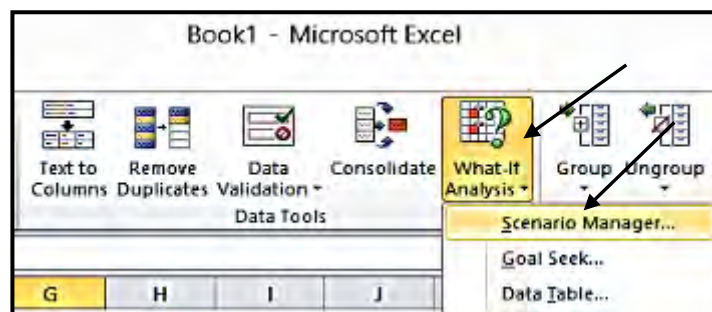
The Scenario Manager dialogue box appears.

3.   Add a scenario by clicking on **Add**.

4.   Type **60% highest** in the Scenario Name.

5.   Click the **Changing cells** window and select cell C4 (% sold for the highest price). This will display the cell inside.

6.   Click **OK**. A dialogue box will appear.
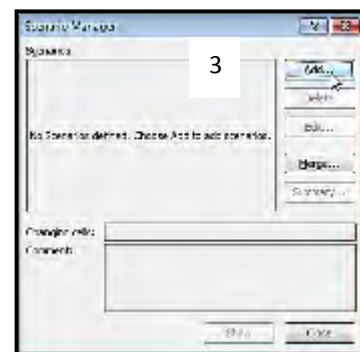
To add a Scenario
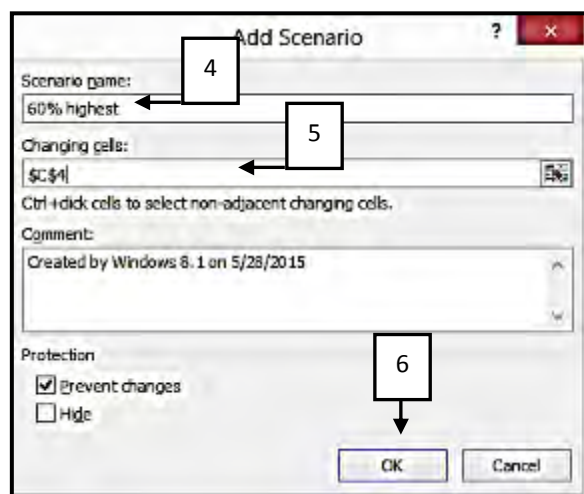
The **Add Scenario** dialogue box consists of four parts:

a.   **Scenario Name:** You can give any name for this Scenario name field. Given name should be something meaningful.

b.   **Changing Cells:** These are the input cells for the scenario. You can enter the cell addresses directly or point to them. If you have been given names for the cells, type the name. Nonadjacent cells are allowed for this field. If you are required to point multiple cells, press CTRL key in your keyboard while you click on the cells. Not every scenario will use the same set of changing cells. Different scenario can use different changing cells. The number of changing cells is not unlimited for a scenario; it is limited to 32.

c.   **Comment:** By default, Excel shows the name of the person who created the scenario and the date when it was created. But you can change this text, add new text to it, or delete it completely.

d.   **Protection:** The two Protection options are preventing changes and hiding a scenario. These two are in effect only when you protect the worksheet and choose the **Scenario** option in the **Protect Sheet** dialogue box. When you are protecting a scenario, it will prevent anyone from modifying it; a hidden scenario does not appear in the **Scenario Manager** dialogue box.

7.   In the dialogue box, enter the corresponding value 0.6 and Click on **OK** again.
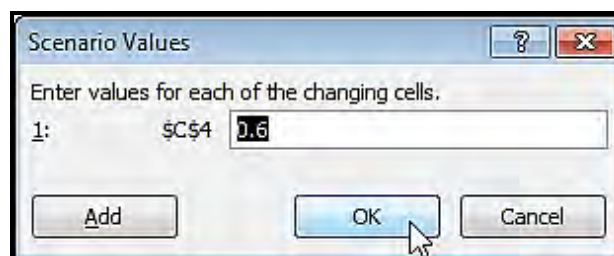
The Scenario Values

8.   Next, add 4 other scenarios (70%, 80%, 90% and 100%). You can do this clicking **Add**.

9.   Repeat steps 4-7 to change the scenarios but still using cell C4 as cell reference.

Replace with 70% highest, 80% highest, 90% highest and 100% highest.

Use the same cell address for all 4 scenarios.

To be change to 0.7, 0.8, 0.9 and 100

10.   Finally, your Scenario Manager should be consistent with the picture below:
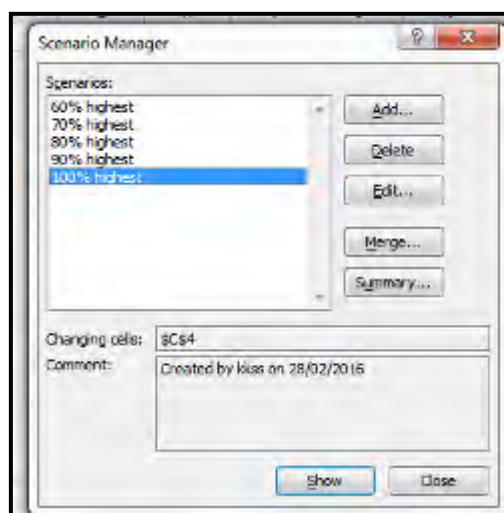
The Scenario Manager

Note: To see the result of a scenario, select the scenario and click on the Show button. Excel will change the value of cell C4 accordingly for you to see the corresponding result on the sheet.

Scenario Summary

To easily compare the results of these scenarios, execute the following steps.

1.   Click the **Summary** button in the **Scenario Manager**.

2.   Next, select cell D10 (total profit) for the result cell and click on **OK**.

The Scenario Summary

The Result after the Scenario Summary

Therefore if you sell 70% for the highest price, you obtain a total profit of $4100, if you sell 80% for the highest price, you obtain a total profit of $4400, etc.

3. Save your work as **Scenario Summary Exercise.**

 Student Activity 11.4.3.4

1.   **Change the data in the cells that was encircled and see what happen to your Scenario Summary.**

11.4.3.5   Creating a Chart from a PivotTable – Using Scenarios

For a different view of the Scenario data, you can create a pivot table report: Follow the steps in creating a chart from a PivotTable – using scenarios.

> **Note:** Delete this report after printing it, and create a new Summary when necessary.

Use the file **Scenario Summary Exercise** for your pivot table.

1.   On the Ribbon's Data tab, click **What-If Analysis**.

2.   Click the drop down arrow, and click **Scenario Manager**.
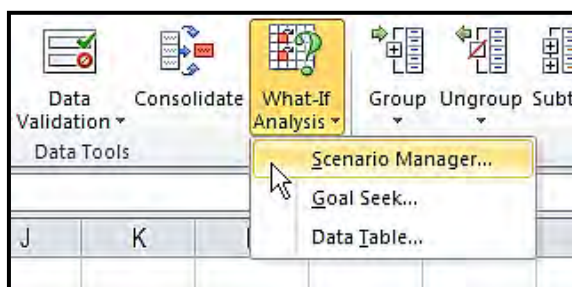
The What-If Analysis Tab

3.   Click the **Summary** button.

4.   In the Scenario Summary dialogue box, for Report type, select **Scenario PivotTable Report**.

5.   Press the **Tab** key, to move to the **Result** cells box.

6.   On the worksheet, click on cell D10.This is the Profit cell, and it changes, based on the sales and expense amounts.

7.   Click the **OK** button.

8.   A Scenario PivotTable sheet is added to the workbook.
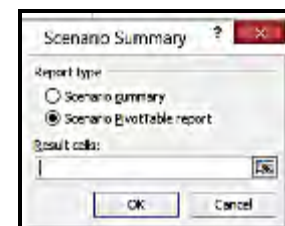
The Scenario Summary

A Scenario of a PivotTable sheet

9.   By clicking Styles from the Home tab you can choose different styles for your table, try to choose any design from the templates.
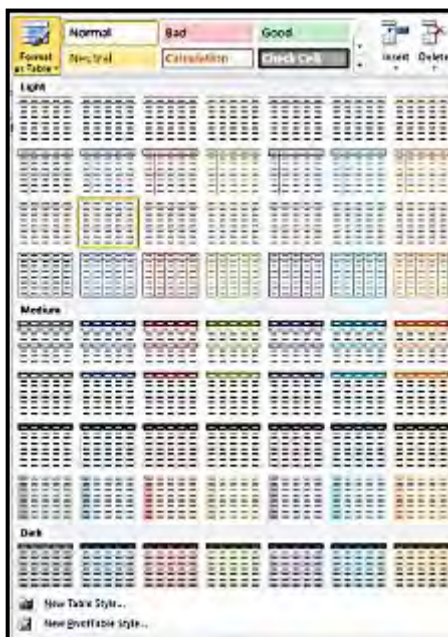
The different design templates

To View the Scenario PivotTable Report
Follow the steps on how to view the scenario pivot table report.

1.   Select the **Scenario PivotTable** worksheet

2.   To rearrange the data, drag the field buttons to a different area of the Pivot Table. For example, drag the Dept,$B$3:$B$4 button from cell A4 (row area) to cell B3 (column area).

       There is no option for formatting the Scenario PivotTable Report when you create it. You can change the formatting in the completed pivot table, by selecting a different PivotTable Style.

Creating a chart from a PivotTable – using Scenario
Follow the steps for creating a chart from a PivotTable – using scenario.

1.   Highlight the cells to create a chart from a table.

	A	B	C	D
1	Book Store			
2				
3		total number of books	% sold for the highest price	
4		100	60%	
5				
6			unit of books	unit profit
7		highest price	60	$ 50
8		lower price	40	$ 20
9				
10			total profit	$ 3,800

To create a chart from a table

2.   Click the **Insert** tab from the Ribbon and select Chart Column 2-D.
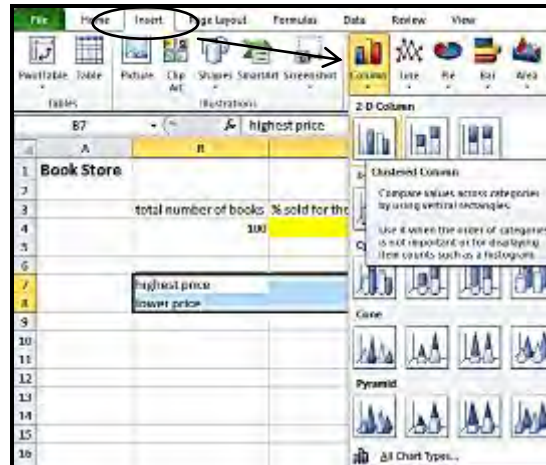
The Insert Tab and the Column Chart

3.   Click Enter, save it by the filename **Pivot Chart Exercise.**
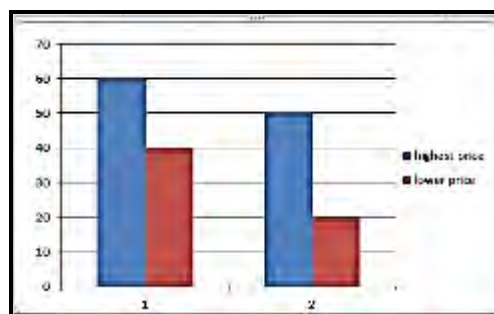
The result after selecting the column

Student Activity 11.4.3.5

Follow the steps. Use the file **Pivot Chart Exercise**.

1.   Change this chart into different charts.
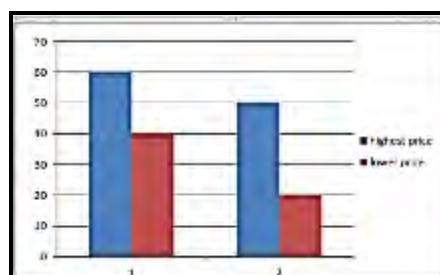
a.   Select the **Bar Chart**, Clustered Bar in 3-D.

b.   Select the **Line Chart**, Line with markers.

11.4.3.6   Creating a Chart from a PivotTable – Implementing Problem Solving

A PivotChart can help you make sense of this data. While a PivotChart shows data series, categories, and chart axes the same way a standard chart does, it also gives you interactive filtering controls right on the chart so you can quickly analyse a subset of your data.

As soon you create a pivot chart, Excel displays these items in the worksheet:

PivotChart using the type of chart you selected that you can move and resize as needed (officially known as an **embedded chart**).

PivotChart Tools contextual tab divided into four tabs and these are: Design, Layout, Format, and Analyse. Each with its own set of buttons for customising and refining the pivot chart.

The command buttons on the Design, Layout, and Format tabs attached to the PivotChart Tools contextual tab make it easy to further format and customise your pivot chart:

- **Design tab**: Use these buttons to select a new chart style for your pivot chart or even a brand new chart type.

- **Layout tab**: Use these buttons to further refine your pivot chart by adding chart titles, text boxes, and gridlines.

- **Format tab**: Use these buttons to refine the look of any graphics you have added to the chart as well as select a new background color for your chart.

Follow the steps in creating a chart from a pivot table.

1.   Get your file **PivotTable Commission.**

	A	B	C	D
1	Region	Month	Sales	Commission 2%
2	South	May	8677	
3	South	Apr	450	
4	North	Apr	1500	
5	South	May	3802	
6	East	Mar	2741	
7	North	Apr	9291	
8	West	May	5477	
9	East	May	5416	
10	East	Apr	9136	

The PivotTable Commission

2.   Solve for the Commission which is the 2% for column D.

3.   Use Pivot Table to solve for the Commission 2%. (Refer to your previous lesson on 11.4.3.3).

PivotTable result for 2% Commission.

4. Create a Chart from the Pivot Table Tools, on Insert tab; choose Bar Chart for your Pivot table.

5. Save your file **PivotTable2.**
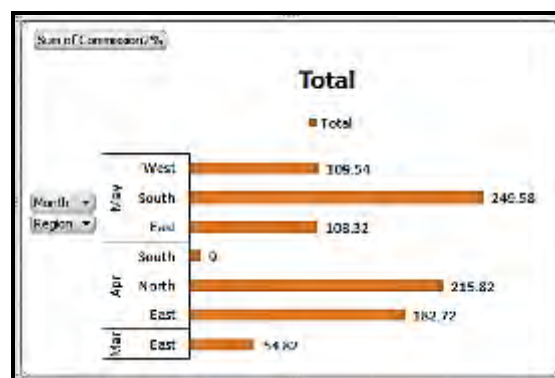
The Bar Chart output

 Student Activity 11.4.3.6

Use the data from the file PivotTable2.

1. Change the chart type of the chart created from the data of the file Pivot Table2.

2. Change the chart layouts and its chart styles.

    Try at least two to charts and its layouts and styles.

    a. Column Chart, Clustered Cone

    b. Other Charts, Exploded Doughnut

Summative Activities 11.4.3

A.

1.   Type the following data into your blank MS Excel.

2.   Click the $ sign.

3.   Solve for the Profit by subtracting the Sales to Expenses.

4.   Apply double lines to your answer for the Profit.

5.   Create a Scenario Summary.

6.   Use B6 for your Result Cells for Scenario Summary **Report Type**.

7.   From Scenario Manager, click Add and have these following data to enter (Finance, 2400000 and Marketing, 2000000).

8.   Click Summary.

B.

Make a Bar Chart from the given PivotTable using Scenario.

✔ **Answers to Student Activities 11.4.3**

Student Activity 11.4.3.1

The following tasks were done to perform the exercise.

1.   Select the worksheet containing the table you have typed.

2.   Click Insert tab →Pivot Table → Pivot Table. The dialogue box appears.

3.   The table range is selected. Click OK.

4.   In the Pivot Table Field List, click Item Code, Quantity and Stock

5.   Your work should look like the example on the next page.

PivotTable Field List ▼ ✕
Choose fields to add to report:
☑ ITEM CODE
☐ DESCRIPTION
☐ WATTAGE
☐ ILLUMINATION
☑ QUANTITY
☐ PRICE (K)
☐ Sold
☑ Stock

4
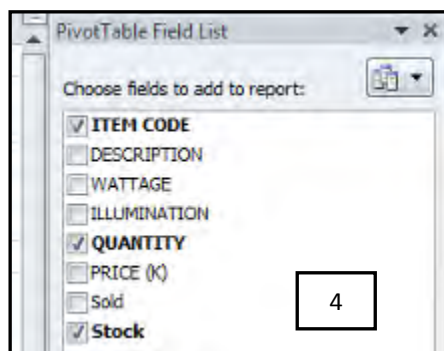
3	Row Labels ▼	Sum of QUANTITY	Sum of Stock
4	CLPB009	550	265
5	CLPLRD18	340	169
6	CLPLSQ12	325	185
7	CLPLSQ18	200	140
8	Grand Total	1415	759
9			

5

Student Activity 11.4.3.2

A.

1.   Column Labels - This area contains the fields that determine the arrangement of data shown in the columns of the pivot table.

2.   Report Filter - This area contains the fields that enable you to page through the data summaries shown in the actual pivot table by filtering out sets of data — they act as the filters for the report.

3.   Row Labels - This area contains the fields that determine the arrangement of data shown in the rows of the pivot table.

4.   Values - This area contains the fields that determine which data are presented in the cells of the pivot table — they are the values that are summarised in its last column (total by default).

B.

Open Light Inventory Screenshot document. Your work Pivot Table Field List should look like the example below.
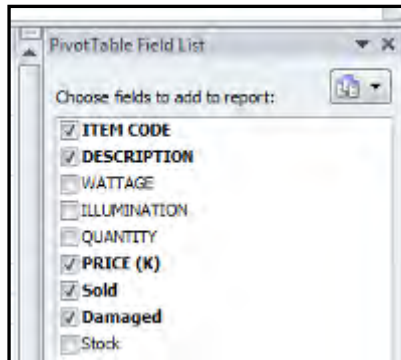
Pivot Table Field List before the
Supplier column was added.
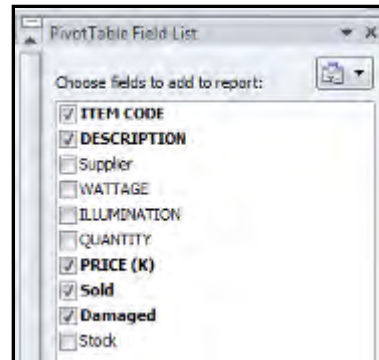
Pivot Table Field List after the
Supplier column was added.

Student Activity 11.4.3.3

1.   Create a Pivot Table. To to this click Insert → Pivot Table → Create Pivot table dialogue box → OK → Tick the fields in the Pivot Field List: Item Code, Description and Price (K)

2.   Click Refresh after you changed the field Price (K) to Price.

3.   Create a Calculated Field. In the Options tab, click Fields, Items and Sets →Calculated Field. The dialogue box will appear.

4.   The Name of the field you created may be different but you formula will look like the example given.
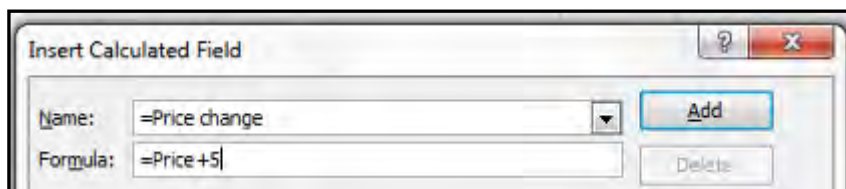
6.   Click OK. A new field will be added in your Pivot Table and Pivot Table Field List.

Pivot Table

Pivot Table Field List

7. Save your work as Light Inventory Price Change.

Student Activity 11.4.3.4

Student Activity 11.4.3.5

The chart for Clustered Bar in 3-D
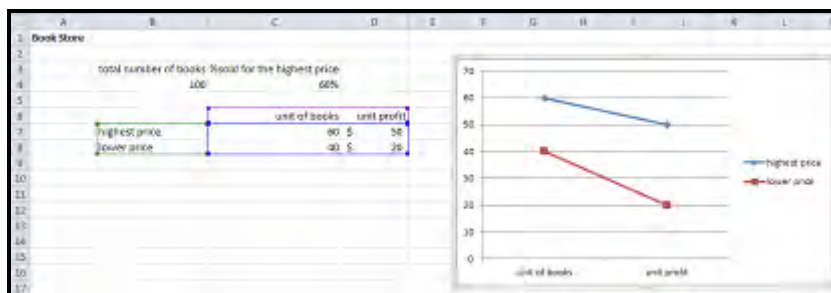
The chart for Line with markers

Student Activity 11.4.3.6

a.

Column Chart, Clustered Cone

b.
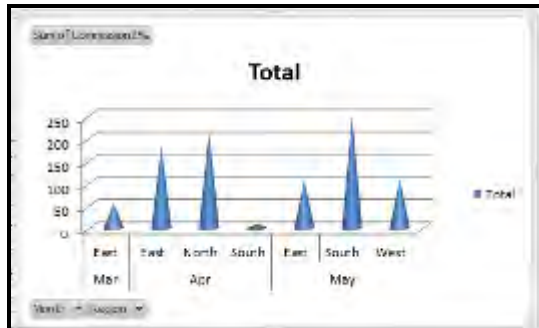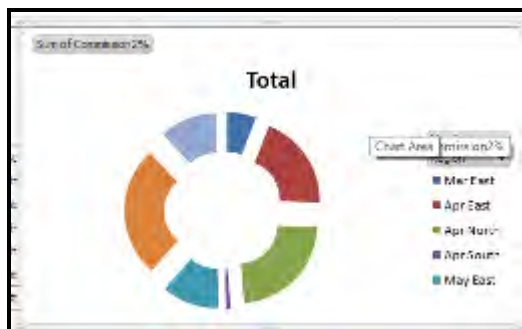
Other Charts, Exploded Doughnut

 Answers to Summative Activities 11.4.3

A.

B.

11.4.4   Using Advanced Functions and Protecting and Auditing Forms and Templates

11.4.4.1   Using the Financial Functions

The Excel **financial functions** have been made available to execute a variety of financial calculations, including calculations of yield, investment valuations, interest rates, internal rate of return, asset depreciation, and payments. These financial functions can be, however, classified into different categories so as to enable you to meet on the required function.

A list of Excel Financial Functions is provided below for your reference:

- **PV** is the **present value**, the principal amount of the annuity.

- **FV** is the **future value**, the principal plus interest on the annuity.

- **PMT** is the **payment** made each period in the annuity. Normally, the payment is set over the life of the annuity and includes principal plus interest without any other fees.

- **RATE** is the **interest** *rate* per period. Normally, the rate is expressed as an annual percentage.

- **NPER** is the total **number of payment periods** in the life of the annuity. You calculate this number by taking the Term (the amount of time that interest is paid) and multiplying it by the Period (the point in time when interest is paid or earned) so that a loan with a three-year term with 12 monthly interest payments has 3 x 12, or 36 payment periods.

When using financial functions, keep in mind that the **fv**, **pv**, and **pmt** arguments can be positive or negative, depending on whether you are receiving the money or paying out the money. Also if you want to express the **rate** argument in the same units as the **nper** argument you can make monthly payments on a loan and you express the **nper** as the total number of monthly payments, as in 360 (30 x 12) for a 30-year mortgage, you need to express the annual interest rate in monthly terms as well.

Calculating the present value (PV)

The PV function returns the present value of an investment, which is the total amount that a series of future payments is worth presently. The syntax of the PV function is as follows:

=PV(rate,nper,pmt,[fv],[type])

The **fv** and **type** arguments are optional. The *fv* argument is the future value or cash balance that you want to have after making your last payment. If you omit the *fv* argument, Excel assumes a future value of zero. The type argument indicates whether the payment is made at the beginning or end of the period: Enter 0 (or omit the *type* argument) when the payment is made at the end of the period and use 1 when it is made at the beginning of the period.

1.   Type the following data into your blank MS Excel.

The given data

2.   Bold the titles, and use **Wrap Text** from the **Alignment** tab.
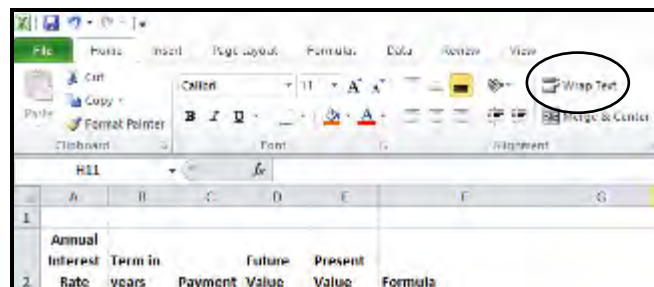
The Alignment Tab

The following figure contains several examples using the PV function. All three PV functions use the same annual percentage rate of 7.25 percent and term of 10 years. Because payments are made monthly, each function converts these annual figures into monthly ones.

For example, in the PV function in cell E3, the annual interest rate in cell A3 is converted into a monthly rate by dividing by 12 (A3/12) and the annual term in cell B3 is converted into equivalent monthly periods by multiplying by 12 (B3*12).

3.   Compute for the **Present Value** (PV) using the formula in cells F3, F5 and F7.

4.   Compute for the **Future Value** (FV) by typing, =FV(A7,10,C5*2.61934).

Using the PV function to calculate the present value of various investments.

Determining the future value (FV)

The FV function calculates the future value of an investment. The syntax of this function is:

=FV(rate,nper,pmt,[pv],[type])

The **rate**, **nper**, **pmt**, and **type** arguments are the same as those used by the PV function. The **pv** argument is the present value or lump-sum amount for which you want to calculate the future value. As with the **fv** and *type* arguments in the PV function, both the **pv** and **type** arguments are optional in the FV function. If you omit these arguments, Excel assumes their values to be zero.

You can use the FV function to calculate the future value of an investment, such as an IRA (Individual Retirement Account). For example, suppose that you establish an IRA at age 43 and will retire 22 years hence at age 65 and that you plan to make annual payments into the IRA at the beginning of each year. If you assume a rate of return of 8.5 percent a year, you would enter the following FV function in your worksheet:

=FV(8.5%,22,-1000,1)

Excel then indicates that you can expect a future value of $64,053.66 for your IRA when you retire at age 65. If you had established the IRA a year prior and the account already has a present value of $1,085, you would amend the FV function as follows:

=FV(8.5%,22,-1000,-1085,1)

In this case, Excel indicates that you can expect a future value of $70,583.22 for your IRA at retirement.

StudentActivity 11.4.4.1

Execute the following steps and use the Financial Functions.

Let us consider a loan with monthly payments,

    a. an annual interest rate of 6%,

    b. a 20-year duration,

    c. a present value of $150,000 (amount borrowed) and

    d. a future value of 0 (that's what you hope to achieve when you pay off a loan).

We make monthly payments, so we will use 6%/12 = 0.5% for **RATE** and 20*12 = 240 for **NPER** (total number of periods). If we make annual payments on the same loan, we use 6% for RATE and 20 for NPER.

1. Type **PMT** in cell A1, **RATE** in cell B1, **NPER** in cell C1, **PV** in Cell D1 and **FV** in cell E1.

2. Select cell A2 and insert the **PMT function**.

3. Type the formula for PMT which is =PMT(B2,C2,D2,E2). Check your answer for PMT at the   end of this lesson.

4. Select cell B2 to calculate the interest rate.

5. Type the formula for RATE =RATE(C2,A2,D2,E2). Check your answers at the end of this lesson.

6. Select cell C2 to calculate for the NPER.

7. Type the formula for NPER, =NPER(B2,A2,D2,E2)

8. But, let us try to change the PMT to ($2,074.65) and see what happen to NPER. Check your answers at the end of this lesson.

9. PV (Present Value) function. If we make monthly payments of $1,074.65 on a 20-year loan, with an annual interest rate of 6%, type, =PV(B2,C2,A2,E2).

10. If you make monthly payments of only $1,000.00 for your PMT. Then type for your FV, =FV(B2,C2,A2,D2). Check your answers at the end of these lessons.

11.4.4.2   Using Logical Functions

Using logical functions provided by Excel 2010 could apply and evaluate the specific rationale on the data. The most commonly used logical functions are **AND, OR,** and **NOT.** They take values as arguments to apply a simple logic over them and yield TRUE and FALSE result. The logical function helps users in situations where they want to categorise the value into groups, so that further complex functions can be easily performed. For example, if you want to check two different values that belong to different fields against a condition, you can use the logical function to check where the required condition is met. This may assist you in filtering out unwanted values and in focusing on only those values that you require. Additionally, Excel 2010 lets you use the multiple logical functions to check required conditions for the data set in one go. In what follows, we will demonstrate the usage of AND and OR logical functions.

Here are the names of the logical functions along with their argument syntax:

- **AND** (logical1,logical2,...)

    Tests whether the logical arguments are TRUE or FALSE. If they are all TRUE, the AND function returns TRUE to the cell. If any are FALSE, the AND function returns FALSE.

- **NOT** (logical)

    Tests whether the logical argument is TRUE or FALSE. If TRUE, the NOT function returns FALSE. IF FALSE, the NOT function returns TRUE.

- **OR** (logical1,logical2,...)

Test whether the logical arguments are TRUE or FALSE. If any are TRUE, the OR function returns TRUE. If all are FALSE, the OR function returns FALSE.

IF function examples for numbers: greater than, less than, equal to

The use of the IF function with numeric values is based on using different comparison operators to express your conditions. You will find the full list of logical operators illustrated with formula examples on the next page.

Condition	Operator	Formula Example	Description
Greater than	>	=IF(A2>5, "OK",)	If the number in cell A2 is greater than 5, the formula returns "OK"; otherwise 0 is returned.
Less than	<	=IF(A2<5, "OK", "")	If the number in cell A2 is less than 5, the formula returns "OK"; an empty string otherwise.
Equal to	=	=IF(A2=5, "OK", "Wrong number")	If the number in cell A2 is equal to 5, the formula returns "OK"; otherwise the

			function displays "Wrong number".
Not equal to	<>	**=IF(A2<>5, "Wrong number", "OK")**	If the number in cell A2 is not equal to 5, the formula returns "Wrong number "; otherwise - "OK".
Greater than or equal to	>=	**=IF(A2>=5, "OK", "Poor")**	If the number in cell A2 is greater than or equal to 5, the formula returns "OK"; otherwise - "Poor".
Less than or equal to	<=	**=IF(A2<=5, "OK", "")**	If the number in cell A2 is less than or equal to 5, the formula returns "OK"; an empty string otherwise.

IF Function

The **IF function** checks whether a condition is met, and returns one value if TRUE and another value if FALSE.

1. Type the given data into your blank worksheet.

    In Cell A1, type 12   In Cell B1, type 3

2. Select C1 and type on the Formula Bar the given logical function

    =IF(A1>10,"Correct","Incorrect")

The IF function returns Correct because the value in cell A1 is higher than 10

3. Try to change the value of A1 from 0 to 9 and observe cell C1 how it will change.

The IF function printed Incorrect because the value in cell A1 is lower than 10.

AND Function

The **AND Function** returns TRUE if all conditions are true and returns FALSE if any of the conditions are false.

1. Select cell D1 and enter the following formula.

    =IF(AND(A1>10,B1>5),"Correct","Incorrect")

The AND function returns FALSE because the value in cell B2 is not higher than 5. As a result the IF function returns Incorrect.

2.   Try to change the value of A1 to 15 and B1 to 6 and observe cell D1 on how it will change.

OR Function

The **OR function** returns TRUE if any of the conditions are TRUE and returns FALSE if all conditions are false.

1.   Select cell E1 and enter the following formula.

=IF(OR(A1>10,B1>5),"Correct","Incorrect")

The OR function returns TRUE because the value in cell A1 is higher than 10. As a result the IF function returns Correct.

2.   Try to change cell A1 to 8 and observe the result in cell C1 and D1.

Student Activity 11.4.4.2

Type and execute the following steps using logical functions.

1.   Type the given data into your blank worksheet.

In cell A1, type 20   in Cell B1, type15   in cell C1, type 10

2.   Use the IF function to compare cell A1 to a number. Select cell A3 for your answer.

=IF(A1<>6,"YES","NO") . Check your answers at the end of the lessons.

3. Use the IF function to compare cells B1 and C1. Write your answer to cell C3.

=IF(B1<=C1,"OK","NOT OK"). Check your answers at the end of the lessons.

4. Use the AND function and type this equation, select cell E1 for your answer.

=IF(AND(B1>2,C1>8),"Less than A1","Greater than A1"). Check your answers at the end of the lessons.

5. Use the OR function and type this equation, select cell G1 for your answer.

=IF(OR(B1>2,C1>8),"Less than A1","Greater than A1"). Check your answers at the end of the lessons.

11.4.4.3   Using VLOOKUP Function

VLOOKUP searches for the value you specify and returns a matching value from another column. More technically, the VLOOKUP function looks up a value in the first column of the specified range of cells, and returns a value in the same row from another column.

In its common usage, Excel VLOOKUP searches through your lists of data based on the unique identifier and brings you a piece of information associated with that unique identifier.

The letter "V" in VLOOKUP stands for "vertical". It is used to differentiate VLOOKUP from the HLOOKUP function that looks up a value in the top row of an array (H stands for "horizontal").

Excel VLOOKUP syntax
The syntax for the VLOOKUP function is as follows:

VLOOKUP(lookup_value,table_array,col_index_num,[range_lookup])

The Microsoft Excel VLOOKUP function has 4 parameters, or arguments. The first three parameters are requited, the last one is optional.

a.   lookup_value is the value to search for.

This can be either a **value** (number, date or text) or a **cell reference** (reference to a cell containing a lookup value), or the value returned by some other Excel function.

For example, the formula **=VLOOKUP(40, A2:B15,2)** will search for value 40.

> **Note:** If the lookup value is smaller than the smallest value in the first column of your lookup array, the VLOOKUP function returns the #N/A error.

b.   table_array consists of two or more columns of data.

VLOOKUP function always searches for the lookup value in the **first column** of table_array. Your table_array may contain various values such as text, dates, numbers, or logical values. Values are case-insensitive, meaning that uppercase and lowercase text are treated as identical.

c.   col_index_num is the **column number** in table_array from which the value in the corresponding row should be returned.

The left-most column in the specified table_array is 1, the second column is 2, the third column is 3, and so on.

d.   range_lookup determines whether you are looking for an exact match (FALSE) or approximate match (TRUE or omitted). This final parameter is optional but very important.

A.   To do VLOOKUP in Excel in a worksheet
Type and follow the instructions using VLOOKUP Functions

1.   Type the given data into your blank worksheet.

In cell,	A1	Speed (mph)	B1	Animal
	A2	30	B2	Cat
	A3	32	B3	Reindeer
	A4	35	B4	Rabbit
	A5	70	B5	Cheetah
	A6	61	B6	Antelope
	A7	40	B7	Ostrich
	A8	42	B8	Gray fox
	A9	43	B9	Coyote
	A10	50	B10	Lion

2.   Type the formula **=VLOOKUP(40, A2:B15,2)**

You can read the entire formula **=VLOOKUP(40, A2:B10,2)**. The formula searches for "40" in cells A2 through A10 and returns a matching value from column B (because B is the 2nd column in the specified table_array A2:B10). Specified table_array A2:B10.

3.   Select D2 to show your answer and to type your VLOOKUP formula.
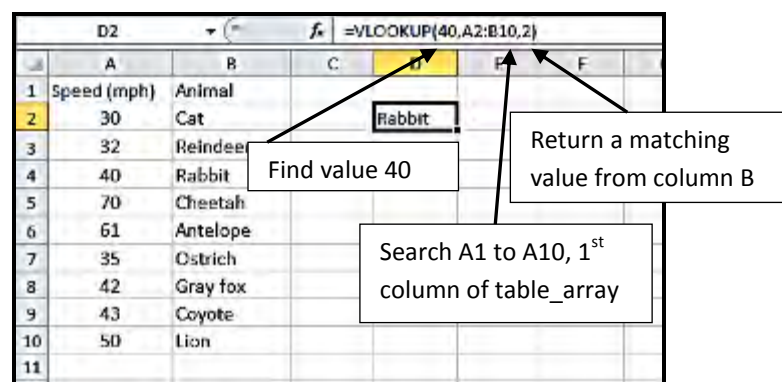
4.   Save this work with a filename **My_Activity8.**

Note. If your col_index_num argument is less than 1, the VLOOKUP formula will return the #VALUE! error. In case it is greater than the number of columns in table_array, your function will return the #REF! error.

B.   To do VLOOKUP in Excel from another worksheet

In practice, VLOOKUP formulas are rarely used to find data in the same worksheet. Most often you will have to look up and pull the matching data from a different sheet.

To do a vlookup from a different Excel sheet, you should enter the worksheet's name and an exclamation mark in the table_array argument before the range of cells, e.g. **=VLOOKUP(40, Sheet2!A2:B15,2)**. The formula indicates that the lookup range A2:B15 is located in Sheet2.

Of course, you do not have to type the sheet's name manually. Simply start typing the formula and when it comes to the table_array argument, switch to the lookup worksheet and select the range using a mouse.

> **Note:** It is a good idea to always use **absolute cell references** (with $) in the table_array parameter of VLOOKUP formulas. In this case, the lookup range will remain constant when you copy the formula to other cells.

C.   To do a VLOOKUP in Excel with exact match

As you remember, to search for exact match, you have to put FALSE as the final argument in a VLOOKUP formula in Excel.

Let us take the 'Animal speed' table from the very first example again and find out which animal can run 50 miles per hour. I believe you will not have any difficulties with the formula: **=VLOOKUP(50,$A$2:$B$15,2,FALSE)**.

D.   Using VLOOKUP in Excel with approximate match

When using VLOOKUP formulas with approximate match, for example with range_lookup set to TRUE or omitted, the first thing you need to do is sort the first column in your lookup range in **ascending order**.

Arranged in ascending order.

This is very important because your VLOOKUP formula is going to return the next largest value for the lookup value you specify and then stop searching. If you neglect to sort your data properly, you will end up having really strange results or the #N/A error. And now you can utilise either of the following formulas:

=VLOOKUP(69,$A$2:$B$15,2,TRUE)

=VLOOKUP(69,$A$2:$B$15,2)

Student Activity 11.4.4.3

Follow the steps below.

1.   Using our file **My_Activity8**, to look for the value of 70 in column A and write your answer in cell E3.

=VLOOKUP(70,A2:B5,2).

Check your answers at the end of the lessons.

2.   Look for the value of 35 in column A and write your answer in cell F5.

=VLOOKUP(35,A5:B10,2).

Check your answers at the end of the lessons.

11.4.4.4   Creating a New Workbook Using a Template

In Excel 2010, you have many templates that can save you a lot of time. A template is a pre-designed Spreadsheet you can use to create new Spreadsheet with the **same formatting** and **pre-defined formulas**. With templates, you do not need to know how to do the math, or even how to write formulas—these are already integrated into the Spreadsheet.

In this lesson, you will learn how to create a new workbook with a **template**, as well as basic information about how templates work in Excel 2010.

Creating a new workbook using a template

You can create a workbook based on a **template** linstead of creating an **Excel** workbook from scratch. There are many free templates available, waiting to be used.

A.   Existing Templates
To create a workbook based on an existing template, execute the following steps.

1.   On the green **File** tab, click **New**.

2.   To choose a template from one of the sample templates (these are already installed on your computer), click on **Sample templates**.
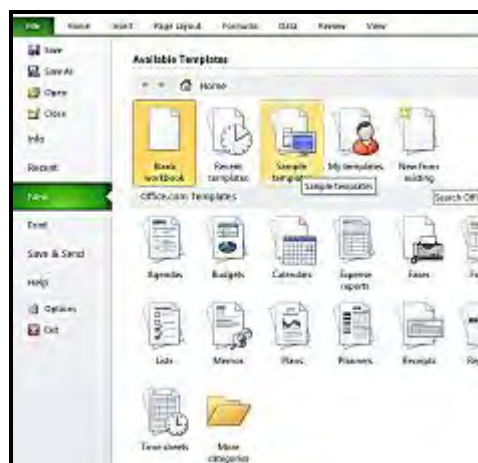
The Sample Templates

3.   To choose a template from the Office.com Templates, click a category, for example, click **Calendars**.

The Calendar Template

4.   To **download** a template, select a template and then click **Download**.

Downloaded templates in MS Excel
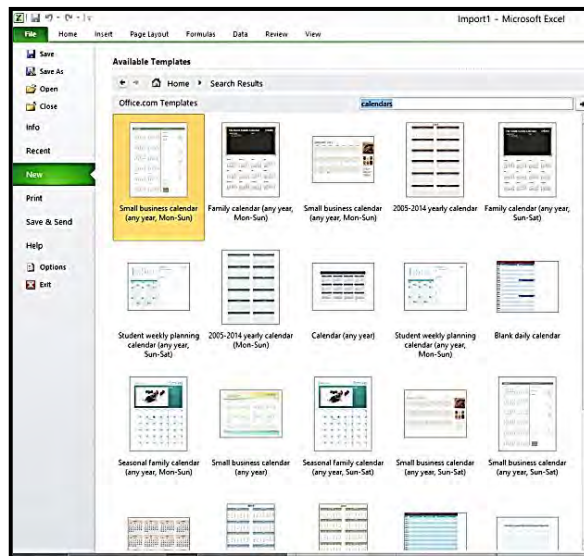
To download in

Office.com

Excel creates a workbook (UniversalCalendar1.xlsx) based on this template. Excel also stores the template (UniversalCalendar.xltx) in the Templates folder.

B.   Create a Template

If you create your own template, you can safely store it in the Templates folder. As a result, you can create new workbooks based on this template without worrying that you overwrite the original file.

1.   Create a workbook.

2.   On the green **File** tab, click **Save As**.

3.   Enter a file name.

4.   Select **Excel Template (*.xltx)** from the drop-
        down list.

Excel automatically activates the Templates folder. Notice the location of the Templates folder on your computer. It is usually located here:
C:\Users\<username>\AppData\Roaming\Microsoft\Templates

5.   Click **Save**.

Using templates can save you a lot of time. A template is a pre-designed Spreadsheet you can use to create new Spreadsheet with the **same formatting** and **pre-defined formulas**. With templates, you do not need to know how to do the math, or even how to write formulas—these are already integrated into the Spreadsheet.

Student Activity 11.4.4.4

Write the steps on how to open a certain sample templates which are already installed on your computer. Try to open Family Calendar, in ANY YEAR folder.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

11.4.4.5   Protecting a Worksheet Style, Contents and Elements

A.   Protect Worksheet
You may want to protect a worksheet for a variety of reasons. One   reason   is   to prevent yourself or others from accidentally deleting formulas or other critical data. A common scenario is   to protect a worksheet so that the data can be changed, but the formulas cannot be changed.

To protect a worksheet follow the steps below.

1.   Choose **Review ⟶ Changes group ⟶ Protect Sheet.**

2.   Excel displays the **Protect Sheet** dialogue box.

      Providing a password is optional. If you enter a password, that password will be required to unprotect the worksheet. You can select various options in which the sheet should be protected. Suppose we check Format Cells option then Excel will not allow to format cells.

3.   Enter your password **123**. Click **OK**.

4.   Another message will appear on your screen. Reenter your password **123.**

Protect Sheet Tab

5.   Click **OK**.
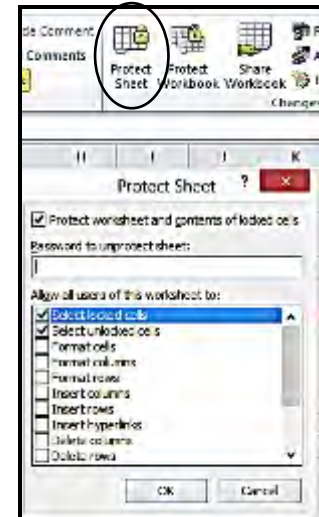
To confirm your password

When somebody tries to format the cells he or she will come across the error as displayed on the next page.
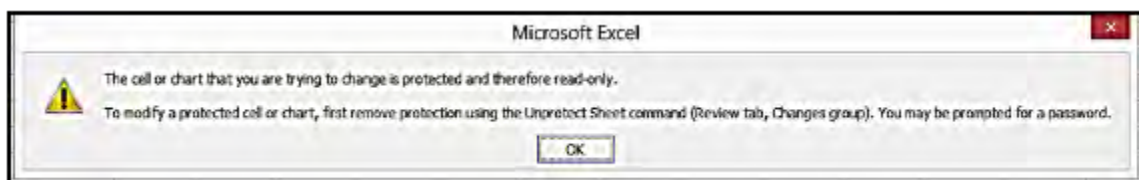
The error message

B.   Unprotect a protected sheet
To unprotect a protected sheet, follow the steps below.

1.   Choose **Review ⟶Changes group ⟶Unprotect Sheet**.

To unprotect the sheet

2.   If the sheet was protected with a password, you are prompted to enter that password.

3.   Type the password **123.**

4.   Click **OK**.

Protecting a worksheet is to prevent yourself or others from accidentally deleting formulas or other critical data. A common scenario is to protect a worksheet so that the data can be changed, but the formulas cannot be changed.

Let us try to type this sample worksheet into our blank worksheet.

Sample Worksheet

1.   Compute for the TOTAL.

2.   Protect column B.
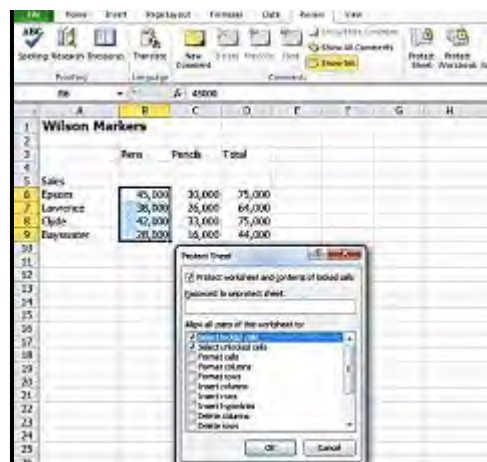
To protect column B.

3.   Let us try to a password by typing "**Sample123**".

Typing the password

4.   Click **OK**.

5.   You are about to re-enter the password that you typed, which is **Sample123** to confirm.

6.   Click **OK**.

7.   Save your data **My_Activity10.**

Re-entering the password

Student Activity 11.4.4.5

Use the data of the file **My_Activity10**, create and write the steps on Protecting a worksheet style, content and elements. Create a password **Sample457.**

1.   _____

2.   _____

3.   _____

4.   _____

5.   _____

11.4.4.6   Protecting the Worksheet from Unauthorised User Access

We can apply security to the workbook by the concept of protection available in the Review Tab of ribbon. MS Excel's protection-related features fall into three categories.

- **Worksheet protection:** Protecting a worksheet from being modified, or restricting the modifications to certain users

- **Workbook protection:** Protecting a workbook from having sheets inserted or deleted, and also requiring the use of password to open the workbook

A.   Protecting a Workbook
Excel provides three ways to protect a workbook.

To encrypt with password

1.   Require a password to open the workbook.

2.   Prevent users from adding sheets, deleting sheets, hiding sheets, and unhiding sheets.

3.   Prevent users from changing the size or position of windows.

Encrypt Document

Requiring a password to open a workbook

Excel allows you save a workbook with a password. After doing so, whoever tries to open the workbook must enter the password. To add a password to a workbook, follow these steps. Use your sample data from your Activity 11.4.4.5.

1.   Choose **File → Info → Protect Workbook → Encrypt With Password**.

2.   Excel displays the Encrypt Document dialogue box. Type a password.
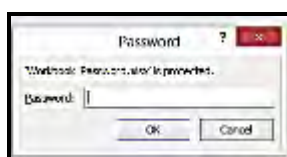
Enter Password

3.   Click **OK**.

4.   Confirm the password by typing the password again.

Confirm the password

5.   Click **OK**.

After clicking OK the Protect Workbook box will change its colour to dark orange, and a message will come out.
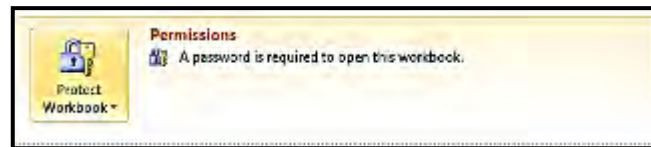
Permission, Protect workbook

6.   Save the workbook, **My_Activity11.**

7.   Go out from your activity by clicking the **Close** Button.

8.   Try to open your **My_Activity11** and a message will come out before you can see your worksheet.

To remove a password from a workbook, repeat the same procedure. In Step 2, however, delete the existing password symbols.

B.   Protecting workbook's structure and Windows
To prevent others (or yourself) from performing certain actions in a workbook, you can protect the workbook's structure and windows. When a workbook's structure and windows is protected, the user may not Add a sheet, Delete a sheet, Hide a sheet, unhide a sheet, etc. and may not allowed to change size or position of a workbook's windows respectively.

Protect workbook tab

To protect a worksheet's structure and windows, follow the steps below.

1.   To display the Protect Workbook dialogue box.

     Choose **Review →Changes group → Protect →Workbook.**

In the Protect Workbook dialogue box, select the Structure check box and Windows check box.

•   (Optional) Enter a password.

•   Click **OK**.

Protecting a worksheet from unauthorised user requires a password to open the workbook it also prevent users from adding sheets, deleting sheets, hiding sheets, and unhiding sheets and prevent users from changing the size or position of windows. Let us try to protect the worksheet with filename **My_Activity11** by creating a password "**123**".

Student Activity 11.4.4.6

List the steps on how to protect the worksheet from unauthorised user access.

1. _____

   _____

2. _____

   _____

3. _____

   _____

4. _____

   _____

5. _____

   _____

Summative Activities 11.4

A.   Follow the steps using Financial Functions

Let us change a loan with monthly payments,

a.   an annual interest rate of 5%,

b.   a 10-year duration,

c.   a present value of $100,000 (amount borrowed) and

d.   a future value of 0 (that is what you hope to achieve when you pay off a loan).

Use 5%/12 = 0.42% for **RATE** and 10*12 = 120 for **NPER** (total number of periods). If we make annual payments on the same loan, we use 4.2% for RATE and 10 for NPER.

Solve for PMT

	A	B	C	D
1	PMT	RATE	NPER	PV
2				

B.   Type the given data into your blank worksheet.

Given:

	A	B	C	D
1				COMMENTS
2				
3	30	10	65	
4				
5				

1.   Type the given data above into your blank worksheet.

2.   Use row 5 to write your answers.

3.   For column A5, compare A3 with B3 and print YES if A3 is greater than B3 or else NO.

4.   For column B5, compare B3 with C3 and print YES if B3 is less than C3 or else NO.

C.   Follow and execute the given steps using the VLOOKUP functions.

Using our data files in filename **My_Activity8.**

1.   Look for the value of 43 in column A and write your answer in cell G1 using VLOOKUP with exact match.

2.   Look for the value of 69 in column A and write your answer in cell G4 using VLOOKUP
     with approximate match.

✓   **Answers to Student Activities 11.4.4**

Student Activity 11.4.4.1

PMT

Result. The monthly payment equals $1,074.65.

RATE

B2	fx	=RATE(C2,A2,D2,E2)				
	A	B	C	D	E	F
1	Pmt	Rate	Nper	Pv	Fv	
2	($1,074.65)	0.50%	240	$150,000	0	
3						
4						

To calculate for the Rate.

NPER

C2	fx	=NPER(B2,A2,D2,E2)				
	A	B	C	D	E	F
1	Pmt	Rate	Nper	Pv	Fv	
2	($1,074.65)	0.50%	240	$150,000	0	
3						
4						

C2	fx	=NPER(B2,A2,D2,E2)				
	A	B	C	D	E	F
1	Pmt	Rate	Nper	Pv	Fv	
2	($2,074.65)	0.50%	89.95316057	$150,000	0	
3						
4						

PV

D2	fx	=PV(B2,C2,A2,E2)				
	A	B	C	D	E	F
1	Pmt	Rate	Nper	Pv	Fv	
2	($1,074.65)	0.50%	240	$150,000	0	
3						
4						

E2	fx	=FV(B2,C2,A2,D2)				
	A	B	C	D	E	F
1	Pmt	Rate	Nper	Pv	Fv	
2	($1,074.65)	0.50%	240	$150,000	0	
3						
4						

Student Activity 11.4.4.2

1. =IF(A1<>6,"YES","NO")

2. =IF(B1<=C1,"OK","NOT OK")

3. =IF(AND(B1>2,C1>8),"Less than A1","Greater than A1")

4. =IF(OR(B1>2,C1>8),"Less than A1","Greater than A1")

Student Activity 11.4.4.3

VLOOK UP

1.

2.

Student Activity 11.4.4.4

1.   Click File Tab of MS Excel.

2.   Select New tab to open available templates in MS Excel.

3.   Choose **Any Year** folder from the templates available in MS Excel.

4.   Click **OK.**

5.   Choose **Family Calendar.**

6.   Click **OK**.

Student Activity 11.4.4.5

1.   Protect the data by entering your password **Sample457.**

2.   Tick **Edit Objects** from the Protect Sheet menu.

3.   Try to type or edit any of the cells and see what will happen.

4.   Unprotect your Sheet by entering the password **Sample457.**

5.   Click **OK**.

Student Activity 11.4.4.6

1.   Choose **File → Info → Protect Workbook → Encrypt With Password**.

2.   Excel displays the Encrypt Document dialogue box. Type a password.

3.   Click **OK**.

4.   Confirm the password by typing the password again.

5.   Click **OK**.

✓ **Answers to Summative Activities 11.4.4**

A.   Financial Functions

PMT, =PMT(B2,C2,D2,E2)

B.

Logical Functions

C.

VLOOK UP

1.

2.

Summary

Excel is a spreadsheet program in the Microsoft Office system. You can use Excel to create and format workbooks (a collection of spreadsheets) in order to analyse data and make more informed business decisions. Specifically, you can use Excel to track data, build models for analysing data, write formulas to perform calculations on that data, pivot the data in numerous ways, and present data in a variety of professional looking charts.

With Excel you can analyse, manage and share information quickly and easily to make more informed decisions. With the new user interface, rich data visualization, and PivotTable views, professional-looking charts are easier to create and use than ever before.

The best part about a spreadsheet is - you do not have to do any adding up yourself. The program will add the numbers up for you. Spreadsheets are software programs consisting of a grid of data cells that can be used to organise, analyse and graphically represent data.

A spreadsheet does not only add up, of course. It can do a whole lot more besides simple arithmetic. It can handle financial calculations, statistical information, and do complex trigonometry. And it can make a pretty graph for you. Though, a Spreadsheet is just a glorified calculator. Using a spreadsheet is to do some number crunching. The software will puzzle out the answers to sums for you, and save you a lot of time and effort carrying numbers.

Spreadsheet also let you to protect a worksheet for a variety of reasons. One reason is to prevent yourself or others from accidentally deleting formulas or other critical data. A common scenario is   to protect a worksheet so that the data can be changed, but the formulas cannot be changed.

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Glossary

3-D reference
A reference to a range that spans two or more worksheets in a workbook.

3-D walls and floor
The areas surrounding many 3-D chart types that give dimension and boundaries to the chart. Two walls and one floor are displayed within the plot area.

Activate
To make a chart sheet or worksheet the active, or selected, sheet. The sheet that you activate determines which tabs are displayed. To activate a sheet, click the tab for the sheet in the workbook.

Active cell
The selected cell in which data is entered when you begin typing. Only one cell is active at a time. The active cell is bounded by a heavy border.

Active sheet
The sheet that you are working on in a workbook. The name on the tab of the active sheet is bold.

Address
The path to an object, document, file, page, or other destination. An address can be a URL (Web address) or a UNC path (network address), and can include a specific location within a file, such as a Word bookmark or an Excel cell range.

Alternate start up folder
A folder in addition to the XLStart folder that contains workbooks or other files that you want to be opened automatically when you start Excel and templates that you want to be available when you create new workbooks.

Annuity
A specified income payable at stated intervals for a fixed or a contingent period, often for the recipient's life, in consideration of a stipulated premium paid either in prior instalment payments or in a single payment.
The right to receive such as income.

Argument
The values that a function uses to perform operations or calculations. The type of argument a function uses is specific to the function. Common arguments that are used within functions include numbers, text, cell references, and names.

Array
Used to build single formulas that produce multiple results or that operate on a group of arguments that are arranged in rows and columns. An array range shares a common formula; an array constant is a group of constants used as an argument.

Array formula
A formula that performs multiple calculations on one or more sets of values, and then returns either a single result or multiple results. Array formulas are enclosed between braces { } and are entered by pressing CTRL+SHIFT+ENTER.

Associated PivotTable report

The PivotTable report that supplies the source data to the PivotChart report. It is created automatically when you create a new PivotChart report. When you change the layout of either report, the other also changes.

Auto format

A built-in collection of cell formats (such as font size, patterns, and alignment) that you can apply to a range of data. Excel determines the levels of summary and detail in the selected range and applies the formats accordingly.

Average Function

It returns the average (arithmetic mean) of the arguments. For example, if the range A1:A20 contains numbers, the formula, **=AVERAGE(A1:A20)** returns the average of those numbers. AVERAGE(NUMBER1[NUMBER2],….)

Axis

A line bordering the chart plot area used as a frame of reference for measurement. The y axis is usually the vertical axis and contains data. The x-axis is usually the horizontal axis and contains categories.

Base address

The relative path that Excel uses for the destination address when you insert a hyperlink. This can be an Internet address (URL), a path to a folder on your hard drive, or a path to a folder on a network.

Bevel

An edge that is canted, one that is not a 90 degree angle.

Border

A decorative line that can be applied to worksheet cells or objects, such as charts, pictures, or text boxes. Borders distinguish, emphasise, or group items.

Calculated column

In an Excel table, a calculated column uses a single formula that adjusts for each row. It automatically expands to include additional rows so that the formula is immediately extended to those rows.

Calculated field (database)

A field in the result set of a query that displays the result of an expression rather than data from a database.

Calculated field (PivotTable report)

A field in a PivotTable report or PivotChart report that uses a formula you create. Calculated fields can perform calculations by using the contents of other fields in the PivotTable report or PivotChart report.

Calculated item

An item within a PivotTable field or PivotChart field that uses a formula you create. Calculated items can perform calculations by using the contents of other items within the same field of the PivotTable report or PivotChart report.

Category axis

A chart axis that represents the category for each data point. It displays arbitrary text values like Qtr1, Qtr2, and Qtr3; it cannot display scaled numerical values.

Category field

A field that is displayed in the category area of the PivotChart report. Items in a category field appear as the labels on the category axis.

Cell

A box formed by the intersection of a row and column in a worksheet or a table, in which you enter information.

Cell reference

The set of coordinates that a cell occupies on a worksheet. For example, the reference of the cell that appears at the intersection of column B and row 3 is B3.

Change history

In a shared workbook, information that is maintained about changes made in past editing sessions. The information includes the name of the person who made each change, when the change was made, and what data was changed.

Chart area

The entire chart and all its elements.

Chart sheet

A sheet in a workbook that contains only a chart. A chart sheet is beneficial when you want to view a chart or a PivotChart report separately from worksheet data or a PivotTable report.

Column field

A field that is assigned a column orientation in a PivotTable report. Items associated with a column field are displayed as column labels.

Column heading

The shaded area at the top of each Data pane column that contains the field name.

Column heading

The lettered or numbered gray area at the top of each column. Click the column heading to select an entire column. To increase or decrease the width of a column, drag the line to the right of the column heading.

Comparison criteria

A set of search conditions that is used to find data. Comparison criteria can be a series of characters that you want to match, such as "Northwind Traders," or an expression, such as ">300."

Comparison operator

A sign that is used in comparison criteria to compare two values. The six standards are = Equal to, > Greater than, < Less than, >= Greater than or equal to, <= Less than or equal to, and <> Not equal to.

Conditional format

A format, such as cell shading or font colour, that Excel automatically applies to cells if a specified condition is true.

Consolidation table

The table of combined results that appears in the destination area. Excel creates the consolidation table by applying the summary function that you select to the source area values that you specify.

Constant

A value that is not calculated. For example, the number 210 and the text "Quarterly Earnings" are constants. An expression, or a value resulting from an expression, is not a constant.

Constraints

The limitations placed on a Solver problem. You can apply constraints to adjustable cells, the target cell, or other cells that are directly or indirectly related to the target cell.

Copy area

The cells that you copy when you want to paste data into another location. After you copy cells, a moving border appears around them to indicate that they have been copied.

Criteria

Conditions you specify to limit which records are included in the result set of a query. For example, the following criterion selects records for which the value for the Order Amount field is greater than 30,000: Order Amount > 30000.

Criteria pane

The area of the window that displays the criteria used to limit the records included in the result set of your query.

Data form

A dialogue box that displays one complete record at a time. You can use data forms to add, change, locate, and delete records.

Data label

A label that provides additional information about a data marker, which represents a single data point or value that originates from a datasheet cell.

Data marker

A bar, area, dot, slice, or other symbol in a chart that represents a single data point or value that originates from a datasheet cell. Related data markers in a chart constitute a data series.

Data pane

The area of the window that displays the result set of your query.

Data points

Individual values that are plotted in a chart. Related data points make up a data series. Data points are represented by bars, columns, lines, slices, dots, and other shapes. These shapes are called data markers.

Data region

A range of cells that contains data and that is bounded by empty cells or datasheet borders.

Data series

Related data points that are plotted in a chart and originate from datasheet rows or columns. Each data series in a chart has a unique colour or pattern. You can plot one or more data series in a chart. Pie charts have only one data series.

Data source

A stored set of "source" information used to connect to a database. A data source can include the name and location of the database server, the name of the database driver, and information that the database needs when you log on.

Data source driver

A program file used to connect to a specific database. Each database program or management system requires a different driver.

Data table

A range of cells that shows the results of substituting different values in one or more formulas. There are two types of data tables: one-input tables and two-input tables.

Data table in charts

A grid that can be added to some charts and contains the numeric data used to create the chart. The data table usually is attached to the horizontal axis of the chart and replaces the tick-mark labels on the horizontal axis.

Data validation

An Excel feature that you can use to define restrictions on what data can or should be entered in a cell, and to display messages that prompt users for correct entries and notify users about incorrect entries.

Database

A collection of data related to a particular subject or purpose. Within a database, information about a particular entity, such as an employee or order, is categorised into tables, records, and fields.

DDE conversation

The interaction between two applications that are communicating and exchanging data through special functions and code known as dynamic data exchange (DDE).

Default start up workbook

The new, unsaved workbook that is displayed when you start Excel. The default startup workbook is displayed only if you haven't included other workbooks in the XLStart folder.

Default workbook template

The Book.xlt template that you create to change the default format of new workbooks. Excel uses the template to create a blank workbook when you start Excel or create a new workbook without specifying a template.

Default worksheet template

The Sheet.xlt template that you create to change the default format of new worksheets. Excel uses the template to create a blank worksheet when you add a new worksheet to a workbook.

Dependents

Cells that contain formulas that refer to other cells. For example, if cell D10 contains the formula =B5, cell D10 is a dependent of cell B5.

Destination area

The range of cells that you select to hold the summarised data in a consolidation. The destination area can be on the same worksheet as the source data or on a different worksheet. A worksheet can contain only one consolidation.

Detail data

For automatic subtotals and worksheet outlines, the subtotal rows or columns that are total by summary data. Detail data is typically adjacent to and either above or to the left of the summary data.

Drop lines

In line and area charts, lines that extend from a data point to the category (x) axis. Useful in area charts to clarify where one data marker ends and the next begins.

Drop-down list box

A control on a menu, toolbar, or dialogue box that displays a list of options when you click the small arrow next to the list box.

Embedded chart

A chart that is placed on a worksheet rather than on a separate chart sheet. Embedded charts are beneficial when you want to view or print a chart or a PivotChart report with its source data or other information in a worksheet.

Error bars

Usually used in statistical or scientific data, error bars show potential error or degree of uncertainty relative to each data marker in a series.

Excel add-in

Components that can be installed on your computer to add commands and functions to Excel. These add-in programs are specific to Excel. Other add-in programs that are available for Excel or Office are Component Object Model (COM) add-ins.

Excel table

Formerly known as an Excel list, you can create, format, and expand an Excel table to organise the data on your worksheet.

Expression

A combination of operators, field names, functions, literals, and constants that evaluates to a single value. Expressions can specify criteria (such as Order Amount>10000) or perform calculations on field values (such as Price*Quantity).

External data

Data that is stored in a database, such as Access, dBASE, or SQL Server, that is separate from Query and the program from which you started Query.

External data

Data that is stored outside of Excel. Examples include databases created in Access, dBASE, SQL Server, or on a Web server.

External data range

A range of data that is brought into a worksheet but that originates outside of Excel, such as in a database or text file. In Excel, you can format the data or use it in calculations as you would any other data.

External reference

A reference to a cell or range on a sheet in another Excel workbook, or a reference to a defined name in another workbook.

Field (database)

A category of information, such as last name or order amount, that is stored in a table. When Query displays a result set in its Data pane, a field is represented as a column.

Field (PivotTable report)

In a PivotTable or PivotChart report, a category of data that is derived from a field in the source data. PivotTable reports have row, column, page, and data fields. PivotChart reports have series, category, page, and data fields.

Fill handle

The small black square in the lower-right corner of the selection. When you point to the fill handle, the pointer changes to a black cross.

Filter

To display only the rows in a list that satisfy the conditions you specify. You use the AutoFilter command to display rows that match one or more specific values, calculated values, or conditions.

Font

A graphic design applied to all numerals, symbols, and alphabetic characters. Also called type or typeface. Arial and Courier New are examples of fonts. Fonts usually come in different sizes, such as 10 point, and various styles, such as bold.

Formula

A sequence of values, cell references, names, functions, or operators in a cell that together produce a new value. A formula always begins with an equal sign (=).

Formula bar

A bar at the top of the Excel window that you use to enter or edit values or formulas in cells or charts. Displays the constant value or formula stored in the active cell.

Formula Palette

A tool that helps you create or edit a formula and also provides information about functions and their arguments.

Function (Microsoft Query)

An expression that returns a value based on the results of a calculation. Query assumes that data sources support the Avg, Count, Max, Min, and Sum functions. Some data sources may not support all of these, or may support additional functions.

Function (Office Excel)

A prewritten formula that takes a value or values, performs an operation, and returns a value or values. Use functions to simplify and shorten formulas on a worksheet, especially those that perform lengthy or complex calculations.

Grid

A set of intersecting lines used to align objects.

Gridlines in charts

Lines you can add to a chart that makes it easier to view and evaluate data. Gridlines extend from the tick marks on an axis across the plot area.

Group

In an outline or PivotTable report, one or more detail rows or columns that are adjacent and subordinate to a summary row or column.

High-low lines

In 2-D line charts, lines that extend from the highest to the lowest value in each category. High-low lines are often used in stock charts.

History worksheet

A separate worksheet that lists changes being tracked in a shared workbook, including the name of the person who made the change, when and where it was made, what data was deleted or replaced, and how conflicts were resolved.

Identifier

A field name used in an expression. For example, Order Amount is the identifier (field name) for a field that contains order amounts. You can use an expression (such as Price*Quantity) in place of an identifier.

Implicit intersection

A reference to a range of cells, instead of a single cell, that is calculated like a single cell. If cell C10 contains the formula =B5:B15*5, Excel multiplies the value in cell B10 by 5 because cells B10 and C10 are in the same row.

Index

A database component that speeds up searching for data. When a table has an index, data in the table can be found by looking it up in the index.

Inner join

In Query, default type of join between two tables where only the records that have the same values in the joined fields are selected. The two matching records from each table are combined and displayed as one record in the result set.

Input cell

The cell in which each input value from a data table is substituted. Any cell on a worksheet can be the input cell. Although the input cell does not need to be part of the data table, the formulas in data tables must refer to the input cell.

Insert row

In an Excel table, a special row that facilitates data entry. The Insert row is indicated by an asterisk.

Internet Explorer

A Web browser that interprets HTML files, formats them into Web pages, and displays them to the user. You can download Internet Explorer from the Microsoft Web site at http://www.microsoft.com.

Item

A subcategory of a field in PivotTable and PivotChart reports. For instance, the field "Month" could have items such as "January," "February," and so on.

Iteration

Repeated calculation of a worksheet until a specific numeric condition is met.

Join

A connection between multiple tables where records from related fields that match are combined and shown as one record. Records that do not match may be included or excluded, depending on the type of join.

Join line

In Query, a line that connects fields between two tables and shows Query how the data is related. The type of join indicates which records are selected for the query's result set.

Justify

To adjust horizontal spacing so that text is aligned evenly along both the left and right margins. Justifying text creates a smooth edge on both sides.

Legend

A box that identifies the patterns or colours that are assigned to the data series or categories in a chart.

Legend keys

Symbols in legends that show the patterns and colours assigned to the data series (or categories) in a chart. Legend keys appear to the left of legend entries. Formatting a legend key also formats the data marker that's associated with it.

Locked field or record

The condition of a record, field, or other object in a database that permits it to be viewed but not changed (read-only) in Query.

Marquee

Another term in MS Excel for marching ants.

Matrix

A rectangular array of values or a range of cells that is combined with other arrays or ranges to produce multiple sums or products. Excel has predefined matrix functions that can produce the sums or products.

MAX Function

It describes the formula syntax and usage of the MAX function in Microsoft Excel. It returns the largest value in a set of value. **MAX(number1,[number2],…)**. The arguments can either be numbers or names, arrays, or references that contains numbers.

Merged cell

A single cell that is created by combining two or more selected cells. The cell reference for a merged cell is the upper-left cell in the original selected range.

Microsoft Excel control

A native Excel control other than an ActiveX control.

Microsoft Visual Basic Help

To get help for Visual Basic in Excel, on the **Developer** tab, in the **Code** group, click **Visual Basic**, and then under the **Help** menu, click **Microsoft Visual Basic Help**.

MIN Function

Microsoft Excel function returns the smallest value from the numbers provided the syntax for the MIN function in Microsoft Excel is **MIN(number1[number2,…number_n])**.

Moving average
A sequence of averages computed from parts of a data series. In a chart, a moving average smooth the fluctuations in data, thus showing the pattern or trend more clearly.

Moving border
An animated border that appears around a worksheet range that has been cut or copied. To cancel a moving border, press ESC.

Multiple-level category labels
Category labels in a chart that, based on worksheet data, are automatically displayed on more than one line in a hierarchy. For example, the heading Produce might appear above a row with headings Tofu, Apples, and Pears.

Name
A word or string of characters that represents a cell, range of cells, formula, or constant value. Use easy-to-understand names, such as Products, to refer to hard to understand ranges, such as Sales!C20:C30.

Name box
Box at left end of the formula bar that identifies the selected cell, chart item, or drawing object. To name a cell or range, type the name in the Name box and press ENTER. To move to and select a named cell, click its name in the Name box.

Nonadjacent selection
A selection of two or more cells or ranges that do not touch each other. When plotting nonadjacent selections in a chart, make sure that the combined selections form a rectangular shape.

ObjectLink
An OLE data format that describes a linked object, identifying the class, document name, and name of an object. Each of these data items is a null-terminated string.

OLAP
A database technology that has been optimised for querying and reporting, instead of processing transactions. OLAP data is organised hierarchically and stored in cubes instead of tables.

OLAP provider
A set of software that provides access to a particular type of OLAP database. This software can include a data source driver and other client software that is necessary to connect to a database.

Operand
Items on either side of an operator in a formula. In Excel, operands can be values, cell references, names, labels, and functions.

Operator
A sign or symbol that specifies the type of calculation to perform within an expression. There are mathematical, comparison, logical, and reference operators.

Outer join
In Query, a join where all records from one table are selected, even if there are no matching records in another table. Records that match are combined and shown as one. Records that do not have matches in the other table are shown empty.

Outer join

Join in which all records from one table are selected, even if there are no matching records in another table. Records that matches are combined and shown as one. Records that do not have matches in the other table are shown as empty.

Outline

Worksheet data in which rows or columns of detail data are grouped so that you can create summary reports. The outline can summarise either an entire worksheet or a selected portion of it.

Outline data

The data that is contained within a worksheet outline. Outline data includes both the summary and detail rows or columns of an outline.

Outline symbols

Symbols that you use to change the view of an outlined worksheet. You can show or hide detailed data by pressing the plus sign, minus sign, and the numbers 1, 2, 3, or 4, indicating the outline level.

Page break

Divider that breaks a worksheet into separate pages for printing. Excel inserts automatic page breaks based on the paper size, margin settings, scaling options, and the positions of any manual page breaks that you insert.

Page break preview

Worksheet view that displays the areas to be printed and the locations of page breaks. The area to be printed is displayed in white, automatic page breaks appear as dashed lines, and manual page breaks appear as solid lines.

Parameter

In Excel, you can add, change, or remove parameters to specify cells that are editable in the viewable worksheet data of Excel Services. When you save the workbook, the changes are automatically reflected on the server.

Parameter query

A type of query that, when you run it, prompts for values (criteria) to use to select the records for the result set so that the same query can be used to retrieve different result sets.

Password

A way to protect your worksheet or workbook. When you protect worksheet or workbook elements with a password, it is very important that you remember that password. Without it, there is no way to unprotect the workbook or worksheet. You should always use strong passwords that combine uppercase and lowercase letters, numbers, and symbols. Weak passwords don't mix these elements. Strong password: Y6dh!et5. Weak password: House27. Use a strong password that you can remember so that you don't have to write it down.

Paste area

The target destination for data that is been cut or copied by using the Office Clipboard.

Pivot area

The worksheet area into which you drag PivotTable or PivotChart fields to change the layout of the report. On a new report, dashed blue outlines indicate the pivot area on the worksheet.

PivotChart category field

A field that is assigned a category orientation in a PivotChart report. In a chart, categories usually appear on the x-axis, or horizontal axis, of the chart.

PivotChart report

A chart that provides interactive analysis of data, like a PivotTable report. You can change views of data, see different levels of detail, or reorganise the chart layout by dragging fields and by showing or hiding items in fields.

PivotChart series field

A field that is assigned a series orientation in a PivotChart report. In a chart, series are represented in the legend.

PivotTable data

In a PivotTable report, the summarised data that is calculated from the data fields of a source list or table.

PivotTable grand totals

Total values for all cells in a row or all cells in a column of a PivotTable report. Values in a grand total row or column are calculated by using the same summary function used in the data area of the PivotTable report.

PivotTable list

A Microsoft Office Web Component that allows you to create a structure similar to an Excel PivotTable report. Users can view the PivotTable list in a Web browser and change its layout in a manner similar to an Excel PivotTable report.

PivotTable report

An interactive, cross-tabulated Excel report that summarises and analyses data, such as database records, from various sources including ones external to Excel.

PivotTable subtotal

A row or column that uses a summary function to display the total of detail items in a PivotTable field.

Plot area

In a 2-D chart, the area bounded by the axes, including all data series. In a 3-D chart, the area bounded by the axes, including the data series, category names, tick-mark labels, and axis titles.

Point

A unit of measurement equal to 1/72 of an inch.

Precedents

Cells that are referred to by a formula in another cell. For example, if cell D10 contains the formula =B5, cell B5 is a precedent to cell D10.

Primary key

One or more fields that uniquely identify each record in a table. In the same way that a license plate number identifies a car, the primary key uniquely identifies a record.

Print area

One or more ranges of cells that you designate to print when you do not want to print the entire worksheet. If a worksheet includes a print area, only the print area is printed.

Print titles

Row or column labels that are printed at the top of or on the left side of every page on a printed worksheet.

Property fields

Independent attributes associated with items, or members, in an OLAP cube. For example, if city items have size and population properties stored in the server cube, a PivotTable report can display the size and population of each city.

Protect

To make settings for a worksheet or workbook that prevent users from viewing or gaining access to the specified worksheet or workbook elements.

Report filter

A field that is used to filter a subset of data in a PivotTable or PivotChart report into one page for further layout and analysis. You can either display a summary of all items in a report filter, or display one item at a time, which filters out the data for all other items.

Query

In Query or Access, a means of finding the records that answer a particular question you ask about the data stored in a database.

Query channel

You use a query channel in a DDE conversation between the destination application and a specific query (for example, Query1) in Query. To use a query channel, you must have already opened the query window using a system channel.

Query design

All elements included in the Query window, such as tables, criteria, the order in which fields are arranged, and so on. The design also specifies whether Auto Query is turned on, and whether you can edit the source data.

Range

Two or more cells on a sheet. The cells in a range can be adjacent or nonadjacent.

Read-only

A setting that allows a file to be read or copied but not changed or saved.

Record

A collection of information about a particular person, place, event, or thing. When Query displays a result set in the Data pane, a record is represented as a row.

Refresh (external data range)

To update data from an external data source. Each time you refresh data, you see the most recent version of the information in the database, including any changes that were made to the data.

Refresh (PivotTable report)

To update the contents of a PivotTable or PivotChart report to reflect changes to the underlying source data. If the report is based on external data, refreshing runs the underlying query to retrieve new or changed data.

Regression analysis
A form of statistical analysis used for forecasting. Regression analysis estimates the relationship between variables so that a given variable can be predicted from one or more other variables.

Relative reference
In a formula, the address of a cell based on the relative position of the cell that contains the formula and the cell referred to. If you copy the formula, the reference automatically adjusts. A relative reference takes the form A1.

Remote reference
A reference to data stored in a document from another program.

Report template
An Excel template (.xlt file) that includes one or more queries or PivotTable reports that are based on external data. When you save a report template, Excel saves the query definition but does not store the queried data in the template.

Result set
The set of records returned when you run a query. You can see the result set of a query in Query, or you can return a result set to an Excel worksheet for further analysis.

Row heading
The numbered gray area to the left of each row. Click the row heading to select an entire row. To increase or decrease the height of a row, drag the line below the row heading.

Row label
A field that is assigned a row orientation in a PivotTable report.

Scenario
A named set of input values that you can substitute in a worksheet model.

Scroll lock
With scroll lock turned on, the arrow keys scroll the active sheet rather than make a different cell active. To turn scroll lock off or on, press the SCROLL LOCK key.

Section
Any combination of a worksheet, view, and scenario that you choose when you create a report. A report can contain several sections.

Select
To highlight a cell or range of cells on a worksheet. The selected cells will be affected by the next command or action.

Select All button
The gray rectangle in the upper-left corner of a datasheet where the row and column headings meet. Click this button to select all cells on a datasheet.

Series axis
A chart axis that represents the depth dimension in a true 3-D chart. It displays the series names as arbitrary text values; it cannot display scaled numerical values.

Series field
A field that is displayed in the series area of a PivotChart report. Items in a series field are listed in the legend and provide the names of the individual data series.

Series lines

In 2-D stacked bar and column charts, lines that connect the data markers in each data series that are used to emphasise the difference in measurement between each series.

Shared workbook

A workbook set up to allow multiple users on a network to view and make changes at the same time. Each user who saves the workbook sees the changes made by other users.

Sort order

A way to arrange data based on value or data type. You can sort data alphabetically, numerically, or by date. Sort orders use an ascending (1 to 9, A to Z) or descending (9 to 1, Z to A) order.

Source areas

The cell ranges that you consolidate in the destination area you specify. Source areas can be on any worksheet in a workbook, in other open or closed workbooks, or on Lotus 1-2-3 worksheets.

Source data

The list or table that is used to create a PivotTable or PivotChart report. Source data can be taken from an Excel table or range, an external database or cube, or another PivotTable report.

SQL

A language used to retrieve, update, and manage data. When you create a query, Query uses SQL to build the corresponding SQL SELECT statement. If you know SQL, you can view or change the SQL SELECT statement.

Standard font

The default text font for worksheets. The standard font determines the default font for the Normal cell style.

Summary data

For automatic subtotals and worksheet outlines, all rows or columns that summarise detail data. Summary data usually is adjacent to and below the detail data.

Summary function

A type of calculation that combines source data in a PivotTable report or a consolidation table, or when you are inserting automatic subtotals in a list or database. Examples of summary functions include Sum, Count, and Average.

System channel

Used in a DDE conversation between applications to get information about the system, such as the current connections, open queries, and the status of the destination application.

Table pane

The area of the Query window that displays the tables in a query. Each table displays the fields from which you can retrieve data.

Template

A workbook that you create and use as the basis for other similar workbooks. You can create templates for workbooks and worksheets. The default template for workbooks is called Book.xlt. The default template for worksheets is called Sheet.xlt.

Text box
A rectangular object on a worksheet or chart, in which you can type text.

Tick marks and tick-mark labels
Tick marks are small lines of measurement, similar to divisions on a ruler, that intersect an axis. Tick-mark labels identify the categories, values, or series in the chart.

Titles in charts
Descriptive text that is automatically aligned to an axis or centred at the top of a chart.

Total row
A special row in an Excel table that provides a selection of aggregate functions useful for working with numerical data.

Totals
One of the five calculation types Query defines for you: Sum, Avg, Count, Min, and Max.

Trend line
A graphic representation of trends in data series, such as a line sloping upward to represent increased sales over a period of months. Trendlines are used for the study of problems of prediction, also called regression analysis.

Trend line label
Optional text for a trendline, including either the regression equation or the R-squared value, or both. A trendline label can be formatted and moved; it cannot be sized.

Up-down bars
In line charts with multiple data series, bars that indicate the difference between data points in the first and last series.

Value
The text, date, number, or logical input that completes a condition that a field must meet for searching or filtering. For example, the field Author with the condition equals must include a value, such as John, to be complete.

Value axis
A chart axis that displays scaled numerical values.

Value field
A field from a source list, table, or database that contains data that is summarised in a PivotTable report or PivotChart report. A value field usually contains numeric data, such as statistics or sales amounts.

Values area
The part of a PivotTable report that contains summary data. Values in each cell of the values area represent a summary of data from the source records or rows.

Vertexes
Black, square, drag gable points that appear at the ends and intersections of lines or curves in certain AutoShapes (such as free forms, scribbles, and curves) when you edit points on the AutoShape.

View

A set of display and print settings that you can name and apply to a workbook. You can create more than one view of the same workbook without saving separate copies of the workbook.

Web query

A query that retrieves data stored on your intranet or the Internet.

What-if analysis

A process of changing the values in cells to see how those changes affect the outcome of formulas on the worksheet. For example, varying the interest rate that is used in an amortisation table to determine the amount of the payments.

Workbook

A Spreadsheet program file that you create in Excel. A workbook contains worksheets of rows and columns in which you can enter and calculate data.

Worksheet

The primary document that you use in Excel to store and work with data. Also called a spreadsheet. A worksheet consists of cells that are organised into columns and rows; a worksheet is always stored in a workbook.

Workspace file

A file that saves display information about open workbooks, so that you can later resume work with the same window sizes, print areas, screen magnification, and display settings. A workspace file does not contain the workbooks themselves.

World Wide Web

A system for navigating the Internet or through a collection of workbooks and other Office documents connected by hyperlinks and located on a network share, a company intranet or the Internet. When you use a Web browser, the Web appears as a collection of text, pictures, sounds, and digital movies.

Wrap

In text, to break a line of text automatically on reaching a margin or object and continue the text on a new line.

XML

Extensible Markup Language (XML): A condensed form of Standard Generalised Markup Language (SGML) that enables developers to create customised tags that offer flexibility in organising and presenting information.

FODE SUBJECTS AND COURSE PROGRAMMES

GRADE LEVELS	SUBJECTS/COURSES
Grades 7 and 8	1. English
	2. Mathematics
	3. Personal Development
	4. Social Science
	5. Science
	6. Making a Living
Grades 9 and 10	1. English
	2. Mathematics
	3. Personal Development
	4. Science
	5. Social Science
	6. Business Studies
	7. Design and Technology- Computing
Grades 11 and 12	1. English – Applied English/Language& Literature
	2. Mathematics - Mathematics A / Mathematics B
	3. Science – Biology/Chemistry/Physics
	4. Social Science – History/Geography/Economics
	5. Personal Development
	6. Business Studies
	7. Information & Communication Technology

REMEMBER:
- For Grades 7 and 8, you are required to do all six (6) subjects.
- For Grades 9 and 10, you must complete five (5) subjects and one (1) optional to be certified. Business Studies and Design & Technology – Computing are optional.
- For Grades 11 and 12, you are required to complete seven (7) out of thirteen (13) subjects to be certified.
Your Provincial Coordinator or Supervisor will give you more information regarding each subject and course.

GRADES 11 & 12 COURSE PROGRAMMES

No	Science	Humanities	Business
1	Applied English	Language & Literature	Language & Literature/Applied English
2	Mathematics A/B	Mathematics A/B	Mathematics A/B
3	Personal Development	Personal Development	Personal Development
4	Biology	Biology/Physics/Chemistry	Biology/Physics/Chemistry
5	Chemistry/ Physics	Geography	Economics/Geography/History
6	Geography/History/Economics	History / Economics	Business Studies
7	ICT	ICT	ICT

Notes: You must seek advice from your Provincial Coordinator regarding the recommended courses in each stream. Options should be discussed carefully before choosing the stream when enrolling into Grade 11. FODE will certify for the successful completion of seven subjects in Grade 12.

CERTIFICATE IN MATRICULATION STUDIES		
No	Compulsory Courses	Optional Courses
1	English 1	**Science Stream:** Biology, Chemistry, Physics
2	English 2	**Social Science Stream:** Geography, Intro to Economics and Asia and the Modern World
3	Mathematics 1	
4	Mathematics 2	
5	History of Science & Technology	

REMEMBER: You must successfully complete 8 courses: 5 compulsory and 3 optional.

FODE PROVINCIAL CENTRES CONTACTS

PC NO.	FODE PROVINCIAL CENTRE	ADDRESS	PHONE/FAX	CUG PHONES	CONTACT PERSON		CUG PHONE
1	DARU	P. O. Box 68, Daru	6459033	72228146	The Coordinator	Senior Clerk	72229047
2	KEREMA	P. O. Box 86, Kerema	6481303	72228124	The Coordinator	Senior Clerk	72229049
3	CENTRAL	C/- FODE HQ	3419228	72228110	The Coordinator	Senior Clerk	72229050
4	ALOTAU	P. O. Box 822, Alotau	6411343 / 6419195	72228130	The Coordinator	Senior Clerk	72229051
5	POPONDETTA	P. O. Box 71, Popondetta	6297160 / 6297678	72228138	The Coordinator	Senior Clerk	72229052
6	MENDI	P. O. Box 237, Mendi	5491264 / 72895095	72228142	The Coordinator	Senior Clerk	72229053
7	GOROKA	P. O. Box 990, Goroka	5322085 / 5322321	72228116	The Coordinator	Senior Clerk	72229054
8	KUNDIAWA	P. O. Box 95, Kundiawa	5351612	72228144	The Coordinator	Senior Clerk	72229056
9	MT HAGEN	P. O. Box 418, Mt. Hagen	5421194 / 5423332	72228148	The Coordinator	Senior Clerk	72229057
10	VANIMO	P. O. Box 38, Vanimo	4571175 / 4571438	72228140	The Coordinator	Senior Clerk	72229060
11	WEWAK	P. O. Box 583, Wewak	4562231/ 4561114	72228122	The Coordinator	Senior Clerk	72229062
12	MADANG	P. O. Box 2071, Madang	4222418	72228126	The Coordinator	Senior Clerk	72229063
13	LAE	P. O. Box 4969, Lae	4725508 / 4721162	72228132	The Coordinator	Senior Clerk	72229064
14	KIMBE	P. O. Box 328, Kimbe	9835110	72228150	The Coordinator	Senior Clerk	72229065
15	RABAUL	P. O. Box 83, Kokopo	9400314	72228118	The Coordinator	Senior Clerk	72229067
16	KAVIENG	P. O. Box 284, Kavieng	9842183	72228136	The Coordinator	Senior Clerk	72229069
17	BUKA	P. O. Box 154, Buka	9739838	72228108	The Coordinator	Senior Clerk	72229073
18	MANUS	P. O. Box 41, Lorengau	9709251	72228128	The Coordinator	Senior Clerk	72229080
19	NCD	C/- FODE HQ	3230299 Ext 26	72228134	The Coordinator	Senior Clerk	72229081
20	WABAG	P. O. Box 259, Wabag	5471114	72228120	The Coordinator	Senior Clerk	72229082
21	HELA	P. O. Box 63, Tari	73197115	72228141	The Coordinator	Senior Clerk	72229083
22	JIWAKA	c/- FODE Hagen		72228143	The Coordinator	Senior Clerk	72229085