

GLOBAL ASSESSMENT CERTIFICATE



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STUDENT MANUAL

**Level II
Module 11: GAC011
Computing II: Data Management
(Windows 7 and Microsoft Office 2010)**

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Table of Contents

INTRODUCTION	I
MODULE OVERVIEW	I
LEARNING OUTCOMES	I
BEFORE YOU BEGIN	I
UNIT DESCRIPTIONS.....	II
SUGGESTED DELIVERY SCHEDULE.....	III
ASSESSMENT EVENTS.....	IV
ICONS.....	V
UNIT 1 INTRODUCTION TO SPREADSHEETS USING MICROSOFT EXCEL.....	1
PART A UNIT INTRODUCTION	1
PART B UNDERSTANDING EXCEL	2
PART C STARTING EXCEL	5
PART D THE EXCEL SCREEN	6
PART E NAVIGATING IN EXCEL.....	12
PART F SELECTING DATA	16
PART G ENTERING DATA.....	17
PART H SAVING, CLOSING AND OPENING SPREADSHEETS.....	22
PART I USING AUTOFILL.....	25
PART J GETTING HELP	28
PART K UNIT REVIEW	30
UNIT 2 USING FORMULAS AND FUNCTIONS	31
PART A UNIT INTRODUCTION	31
PART B OVERVIEW OF FORMULAS	32
PART C FUNCTIONS	39
PART D USING FORMULAS AND FUNCTIONS	45
PART E UNIT REVIEW	55
UNIT 3 EDITING, FORMATTING AND PRINTING SPREADSHEETS.....	57
PART A UNIT INTRODUCTION	57
PART B EDITING SPREADSHEETS.....	58
PART C FORMATTING SPREADSHEETS.....	63
PART D SORTING DATA	74
PART E PRINTING SPREADSHEETS.....	76
PART F PRINTING FORMULAS	84
PART G UNIT REVIEW	87
UNIT 4 USING ADVANCED FORMULAS AND FEATURES.....	89
PART A UNIT INTRODUCTION	89
PART B WORKING WITH MULTIPLE WORKSHEETS	90
PART C ADVANCED FEATURES	100
PART D ADVANCED FORMULAS.....	107
PART E UNIT REVIEW	117
UNIT 5 INSERTING CHARTS AND OBJECTS	119
PART A UNIT INTRODUCTION	119
PART B CREATING CHARTS.....	120
PART C FORMATTING CHARTS	131
PART D INSERTING GRAPHICS	138
PART E UNIT REVIEW	142

UNIT 6 EXCEL INTEGRATION	143
PART A UNIT INTRODUCTION	143
PART B COPYING AND EMBEDDING SPREADSHEETS AND CHARTS INTO WORD.....	144
PART C USING EXCEL FOR MAIL MERGE	150
PART D UNIT REVIEW	163
UNIT 7 INTRODUCTION TO DATABASES	171
PART A UNIT INTRODUCTION	171
PART B UNDERSTANDING MICROSOFT ACCESS	172
PART C OPENING AND CLOSING DATABASES	178
PART D DATABASE TERMINOLOGY	180
PART E THE ACCESS SCREEN	181
PART F NAVIGATING IN ACCESS	183
PART G UNIT REVIEW	188
UNIT 8 CREATING DATABASES.....	189
PART A UNIT INTRODUCTION	189
PART B DATABASE DESIGN	190
PART C CREATING NEW DATABASES	195
PART D CREATING TABLES.....	198
PART E MODIFYING TABLES	203
PART F UNIT REVIEW	207
UNIT 9 ENTERING, EDITING AND PRINTING DATA	209
PART A UNIT INTRODUCTION	209
PART B ADDING AND DELETING DATA.....	210
PART C EDITING DATA	213
PART D FORMATTING TABLES	216
PART E UNIT REVIEW	219
UNIT 10 EXTRACTING DATA.....	221
PART A UNIT INTRODUCTION	221
PART B CREATING RELATIONSHIPS.....	222
PART C FILTERS	227
PART D QUERIES.....	233
PART E UNIT REVIEW	245
UNIT 11 DISPLAYING DATA.....	249
PART A UNIT INTRODUCTION	249
PART B FORMS.....	250
PART C REPORTS	278
PART D UNIT REVIEW	292
UNIT 12 ACCESS INTEGRATION	293
PART A UNIT INTRODUCTION	293
PART B USING ACCESS FOR MAIL MERGE	294
PART C UNIT REVIEW	299
APPENDIX 1 - EXCEL 2010 QUICK REFERENCE	305
APPENDIX 2 - ACCESS 2010 KEYBOARD NAVIGATION QUICK REFERENCE.....	307
APPENDIX 3 - ACCESS 2010 QUICK REFERENCE	309
APPENDIX 4 - MOVING BETWEEN RECORDS IN ACCESS 2010.....	311

Introduction

Module Overview

Welcome to *Computing II: Data Management*.

The purpose of this module is to introduce you to two of the main tools used in data management: spreadsheets and databases. You will learn to create, manage and manipulate spreadsheets and databases for GAC course work; and to generate reports using these applications in order to enhance academic research, writing and presentation skills.

This module is based on Windows 7 operating system and Microsoft Office 2010 software.

Learning Outcomes

By the end of this module you should be able to:

1. Create and operate a spreadsheet package
2. Create and operate a database package
3. Apply knowledge of and skills in using spreadsheet and database packages to solve problems in academic study tasks

Before You Begin

Before you start, it is important that you get ready to study by making sure that you have the following, namely a/an:

- English-English dictionary: *Oxford Advanced Learner's Dictionary*, 8thed, (2010), OUP, Oxford
- Notebook or folder for class work and assignments
- Notebook for recording vocabulary lists
- Portable media storage device, such as a USB, for storing assessments

If you have regular access to a computer, try to improve your typing accuracy and speed, and become a master of speed typing. This will help you become more efficient at data input, and make you a more competent computer user.

This IT course is a ‘communicative English IT course’. You will be asked to contribute to discussion in class - using English, not your mother tongue. It is important that you use this opportunity to communicate in English in class to give you a lot of valuable English practice before you study at university.

For Microsoft terminology, American spelling has been used in this manual.

Unit Descriptions

The following is a list of units to be covered in the module *Computing II: Data Management*.

Unit	Unit Title
1	Introduction to Spreadsheets Using Microsoft Excel
2	Using Formulas and Functions
3	Editing, Formatting and Printing Spreadsheets
4	Using Advanced Formulas and Functions
5	Inserting Charts and Objects
6	Excel Integration
7	Introduction to Databases using Microsoft Access
8	Creating a Database
9	Entering, Editing and Printing Data
10	Extracting Data
11	Displaying Data
12	Access Integration

Suggested Delivery Schedule

Week 1	Unit 1: Introduction to Spreadsheets Using Excel
Week 2	Unit 2: Using Formulas and Functions
Week 3	Unit 3: Editing, Formatting and Printing Spreadsheets
Week 4	Unit 4: Using Advanced Formulas and Functions Assessment Event 1: In-class Test 1
Week 5	Unit 5: Inserting Charts and Objects Unit 6: Excel Integration
Week 6	Unit 6: Excel Integration (continued) Assessment Event 2: Project 1 - Spreadsheets
Week 7	Unit 7: Introduction to Databases using Microsoft Access Unit 8: Creating a Database Unit 9: Entering, Editing and Printing Data
Week 8	Unit 9: Entering, Editing and Printing Data (continued) Unit 10: Extracting Data
Week 9	Unit 10: Extracting Data (continued) Assessment Event 3: In-class Test 2 Unit 11: Displaying Data
Week 10	Unit 11: Displaying Data (continued)
Week 11	Unit 12: Access Integration
Week 12	Unit 12: Access Integration (continued) Assessment Event 4: Project 2 - Database Assessment Event 5: Course Work

Assessment Events

Assessment Number	Assessment Event	Due Date	Weight
1	In-class Test 1	Week 4/at the end of Unit 4	10%
2	Project 1 - Spreadsheets	Week 6/at the end of Unit 6	35%
3	In-class Test 2	Week 9/at the end of Unit 10	10%
4	Project 2 - Database	Week 12/at the end of Unit 12	35%
5	Course Work On-going a) Participation: at least 90% attendance, contribution to class discussions and group activities, and evidence of preparation for class b) Completion of no fewer than 90% of designated tasks	Week 12/at the end of Unit 12	10%

Icons

The following icons will be used as a visual aid throughout the Student Manual:

Icon	Meaning
	Information
	Task
	Hints and Cautions
	Demonstration
	Review
	Independent Study
	Assessment Event

Unit 1 Introduction to Spreadsheets Using Microsoft Excel

Part A	Unit Introduction
Part B	Understanding Excel
Part C	Starting Excel
Part D	The Excel Screen
Part E	Navigating in Excel
Part F	Selecting Data
Part G	Entering Data
Part H	Saving, Closing and Opening Spreadsheets
Part I	Using AutoFill
Part J	Getting Help
Part K	Unit Review
Part L	Assessment Event 2

Part A Unit Introduction

Overview

In this unit, you will be introduced to some of the basic concepts and functions used when working with spreadsheets.

In this unit, you will learn to:

- open Microsoft Excel on your computer
- create and save spreadsheets
- navigate around a spreadsheet
- understand the importance of planning and testing a worksheet

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.



Assessment Event 2

Project 1 - Spreadsheet

Your teacher will distribute the Instructions to Students for Assessment Event 2: Project 1 - Spreadsheets at the end of this unit.

The project is due at the **end Week 6/at the end of Unit 6**.

Part B

Understanding Excel

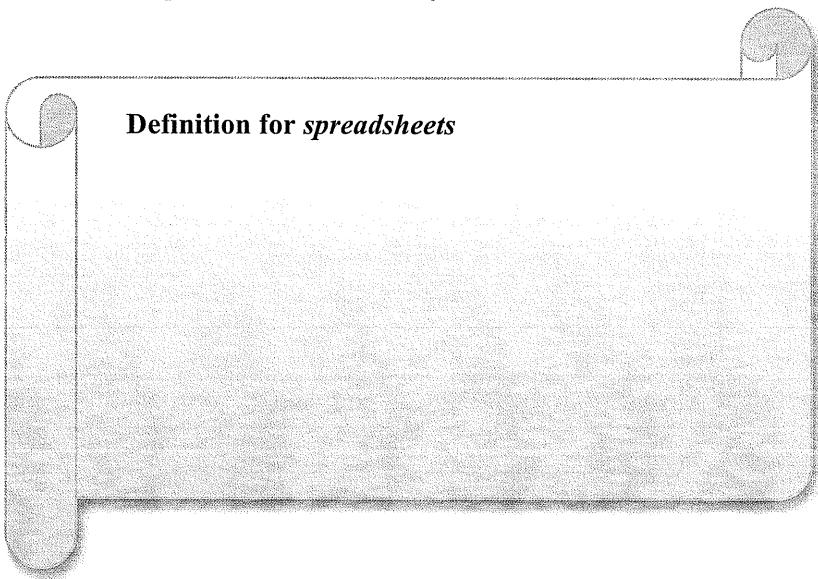


What is a spreadsheet?

EXCEL is a spreadsheet program that allows you to organise data, complete calculations, make decisions, graph data and develop professional looking reports.

What is a definition for spreadsheets?

Work with a partner and then share your definition with the class.



Spreadsheets are the electronic equivalent of a piece of paper which has been ruled into rows and columns. In those rows and columns, **text**, **values** and **formulas** can be entered. The computer then performs calculations based on the values and formulas it finds in the rows and columns. The entire spreadsheet is recalculated if any changes are made to the values or formulas.

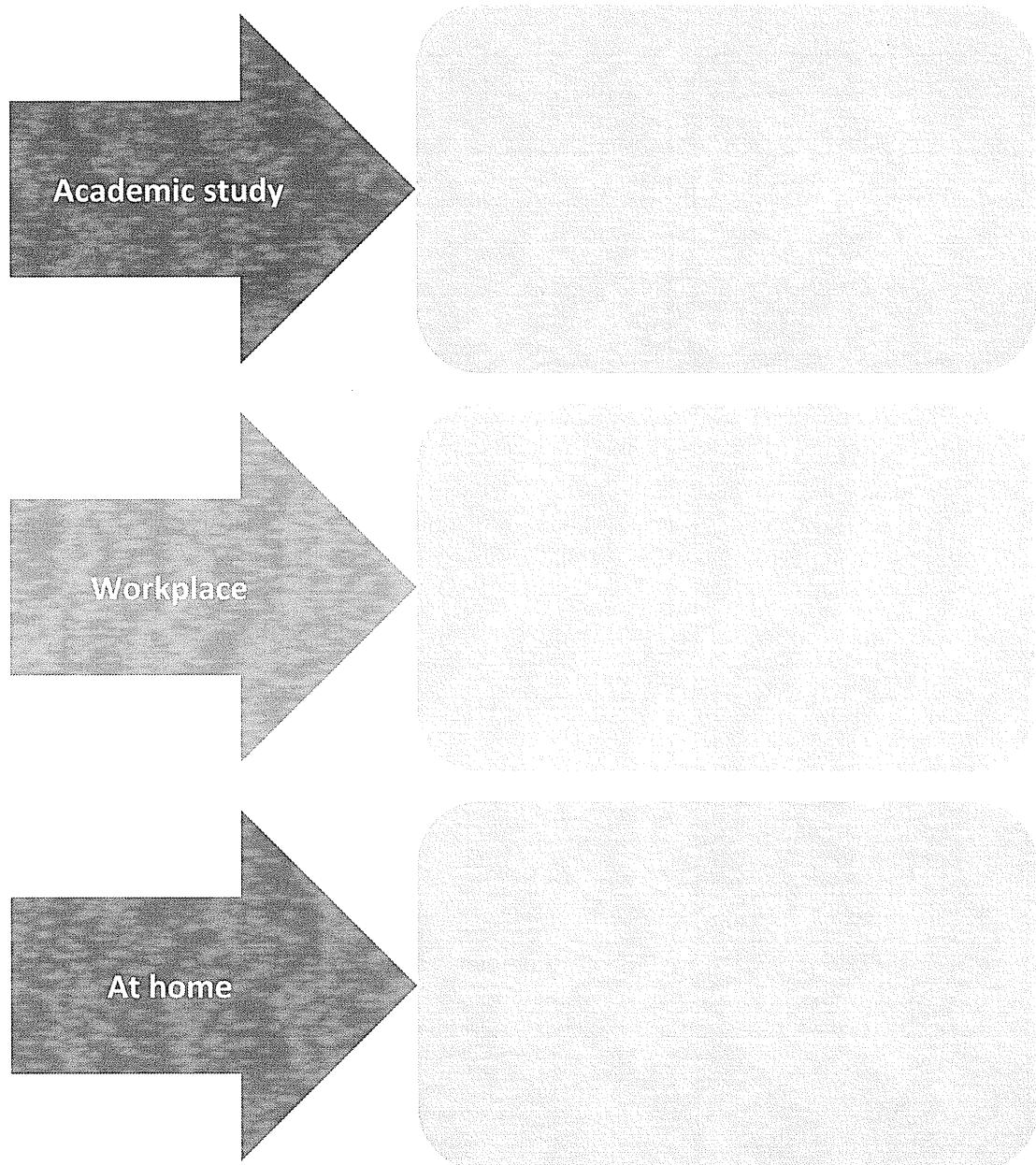
Spreadsheets may be used by businesses for a variety of reasons, including to produce budgets and other financial documents, forecasts, inventory/stock control, payrolls, etc.



Task 1.1

Brainstorming the use of spreadsheets

Work in groups of three. Discuss for which purposes Excel can be useful in academic situations, in the workplace and at home. Provide concrete examples of spreadsheets you might create for your studies and at home. Write your ideas in the space provided below. Then, share your ideas with the rest of the class.



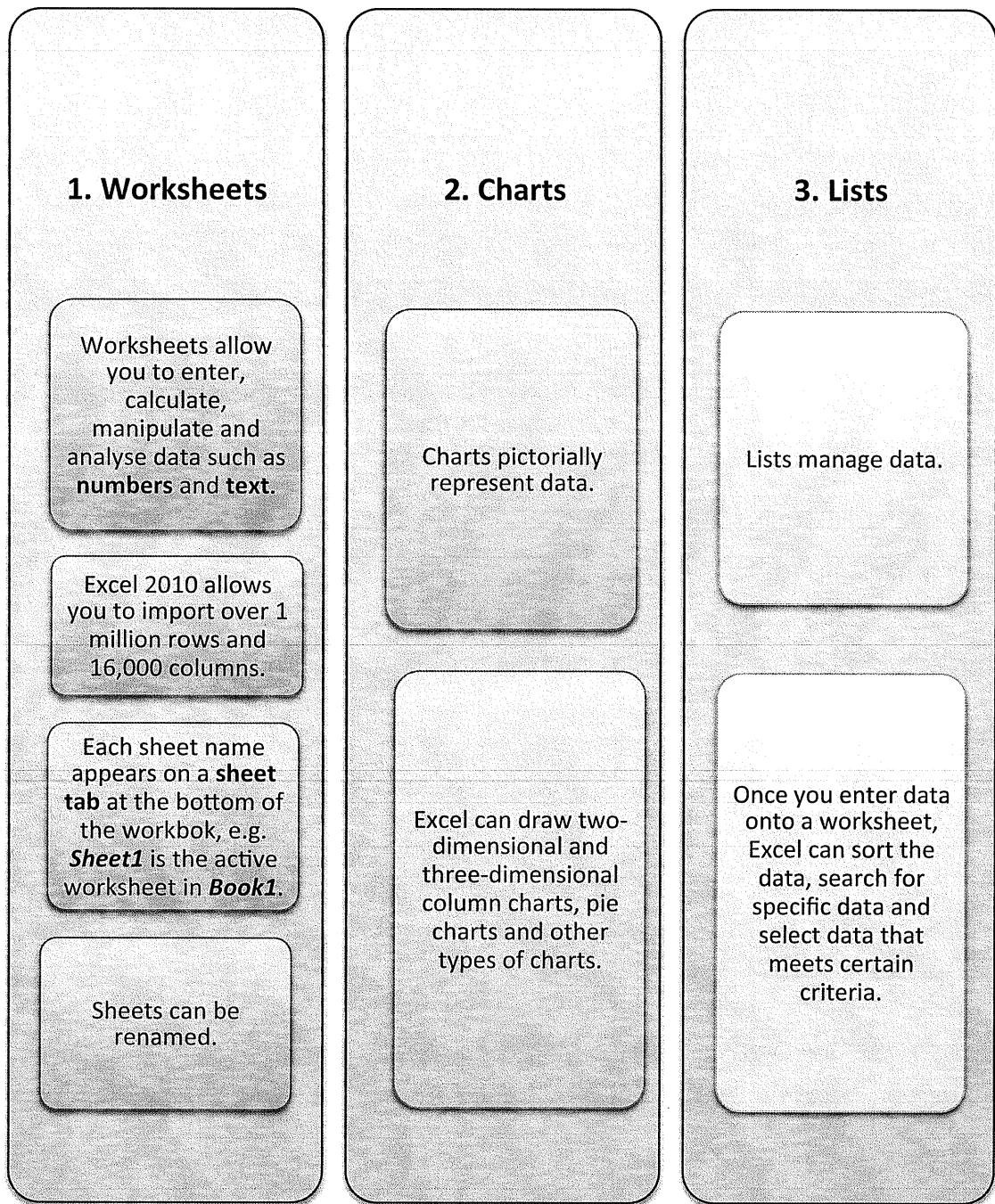


Parts of Excel Workbooks

When Excel starts, it creates a new empty **Workbook** called **Book1**.

There are three major parts of Excel workbooks:

1. Worksheets
2. Charts
3. Lists



Can you think of any situations in your GAC studies where each of these three parts of Excel may be useful?

Part C

Starting Excel



Demonstration Opening Excel

Your teacher will show you how to start Microsoft Excel on your computer. Excel can be started in three ways, namely:

1. Click on the Start menu, then All Programs, then browse to the Microsoft Office program folder, and finally, select Microsoft Office Excel 2010
2. Click on the Excel icon on either the taskbar or the desktop
3. Double-click on the icon of an existing Excel file



Task 1.2

Practising opening Excel

Follow these steps to open Microsoft Excel:

1. Click onto the Start button, select Programs then Microsoft Office and then click on Microsoft Office Excel 2010.



Congratulations! You have now opened Microsoft Excel.

Part D

The Excel Screen



Features

Microsoft Excel has many features to help you manage spreadsheet data. If this is the first time you have seen the Microsoft Excel screen, it may appear confusing. Take some time to familiarise yourself with the functions available.

The main features that you should remember as you work within Excel 2010 are the **Quick Access Toolbar** and the **Ribbon**. The functions of these features will be more fully explored later.

Spreadsheet Terminology

To understand how a spreadsheet program works, it is necessary understand some terms and concepts. Some terms are generic to all spreadsheet programs, while others are specific to Excel.

Note: On the following page you will find a Quick Reference guide that explains each of the features highlighted on this screen.

The screenshot shows a Microsoft Excel spreadsheet titled "Yearly Expenses Sample.xlsx - Microsoft Excel". The spreadsheet contains data for yearly expenses across two columns (A and B) for the years 2007 and 2008. The data includes categories like Other Income, Wages, SubTotal, and various household expenses. The following features are highlighted with numbered callouts:

- 1. Quick Access Toolbar
- 2. The Tab Row
- 3. Title Bar
- 4. Minimize, Restore, Close Buttons
- 5. Minimize the Ribbon
- 6. Microsoft Help
- 7. Groups
- 8. Dialog Box Launcher
- 9. Formula Bar with formula
- 10. The Ribbon
- 11. Cell Reference
- 12. Labels
- 13. Active Cell
- 14. GET
- 15. Value
- 16. Row
- 17. Column
- 18. Sheet Tabs
- 19. Horizontal Scroll bar
- 20. View icons
- 21. Zoom slider
- 22. Vertical Scrollbar

Quick Reference Guide

1. The **Quick Access Toolbar** contains a set of commands that are independent of the Tab currently displayed.
2. The **Tab Row** contains commands that relate to a type of activity, such as formatting a page.
3. **Title Bar** shows the name of the program that is opened and the title of the workbook. A **Workbook** is the file in which you work and store your data.
4. **Minimise, Restore, Close** will reduce, restore and close Excel files.
5. **Minimise the Ribbon** will minimise the Ribbon and only show the Tab names.
6. **Help** opens the Excel Help window.
7. **Groups** contain groupings of commands that relate to specific activities such as the Clipboard, Font and Editing.
8. **Dialog Box launcher** opens a dialog box or task pane.
9. **Formula Bar** displays the contents of the active cell. Contents can be entered or edited from this bar or directly in the cell. Formulas can be written using a **Cell Range** which is the address of a group of cells, e.g. A1:A5.
10. The **Ribbon** is organized into groups, which are collected together under Tabs.
11. **Cell Reference** the column letter and row number that gives the address for that particular cell, e.g. A1. The area where the cell reference is shown is called the **Name Box**.
12. **Label** - A label can be a heading for a row or a column and can be text or numbers.
13. **Active Cell** - The current cell - when you click to select a cell it appears with a black border.
14. **Cell** - The intersection of a row and column.
15. **Values** can be numbers or dates that are entered into a cell.
16. **Row** is horizontal and is labelled with a number. The **Row Heading** is the left grey column of the spreadsheet that uses numbers to identify rows of a spreadsheet.
17. **Column** is vertical and labelled with letters. The **Column Heading** is the top grey row of the spreadsheet that uses letters to identify columns.
18. **Sheet Tabs** display the name of the spreadsheets available in a workbook. The current spreadsheet's Tab is white while the inactive sheets are grey. To move to a different spreadsheet click on the spreadsheet's Tab. A **Worksheet** is a 'page' consisting of cells organised into columns and rows. Excel 2010 initially gives you one worksheet - extras can be inserted.
19. **Horizontal Scroll Bar** allows you to move to the left or right.
20. **View Icons** shows the different views of the worksheet available.
21. **Zoom Slider** allows you to zoom in or zoom out of the worksheet.
22. **Vertical Scroll Bar** allows you to move through your document.



Hint

You can use this list as a quick reference guide throughout this module. You do not have to know every function of Excel right away.

The Quick Access Toolbar

The default icons on the Quick Access Toolbar are the Save and Undo/Redo icons. However, it is easy to customise the toolbar using the dropdown arrow.

You can place the Quick Access Toolbar above or below the ribbon. To change the location of the quick access toolbar, click on the arrow at the end of the toolbar and click on **Show Below the Ribbon**.

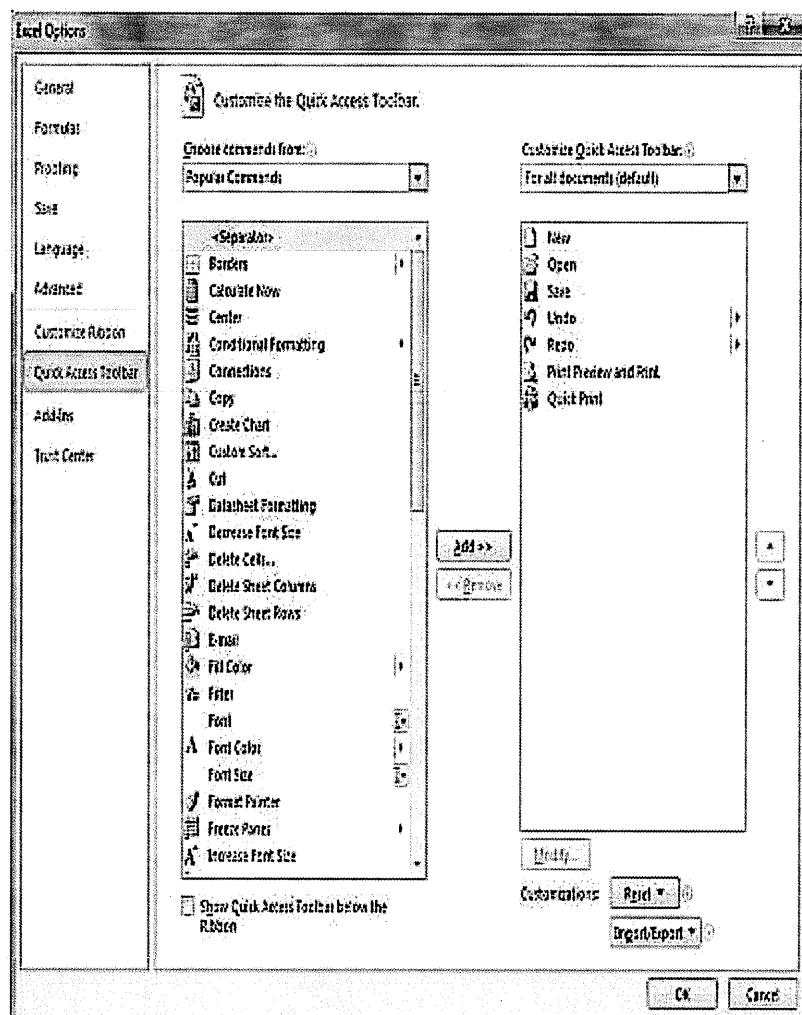
Customising the Quick Access Toolbar

You can add more commands to the Quick Access Toolbar. Click on the dropdown arrow and select **More Commands**.

Click on **Quick Access Toolbar** and from the **Choose Commands From** list box and select a menu title, such as **Popular Commands**.

Select any item and click on **Add** and the shortcut will be added to the Quick Access Toolbar. Example shortcuts include: *New, Open, Quick Print and Print Preview*.

You can order the icons using the **Move Up** and **Move Down** arrows.





Demonstration Explaining the screen

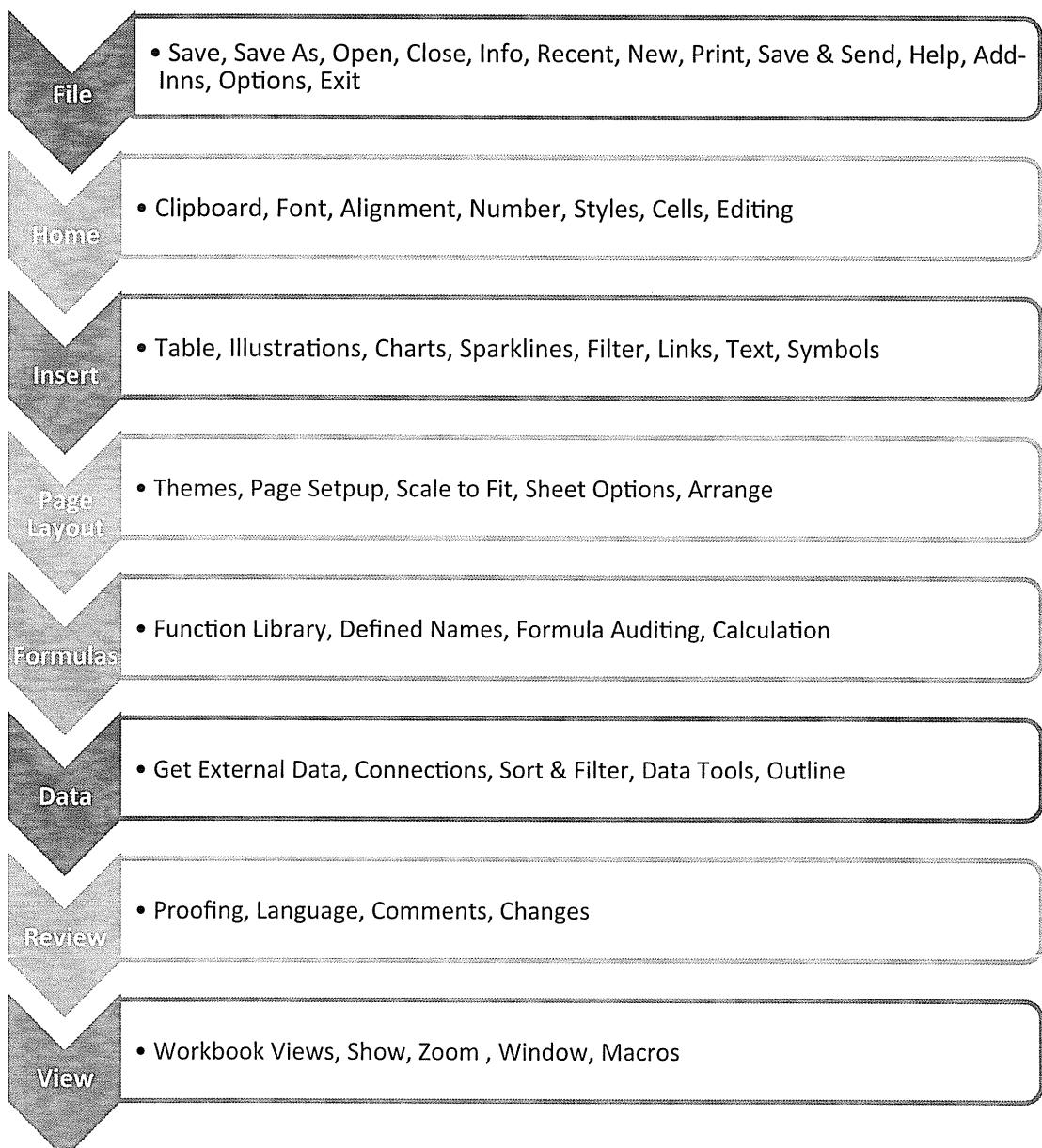
Your teacher will show you how to add the New, Open, Quick Print and Print Preview buttons to the Quick Access Toolbar.



The Ribbon, the Tab Row and Groups

The **Ribbon** is the panel at the top of the document. The Ribbon replaces the menus and toolbars in previous versions of Microsoft Excel.

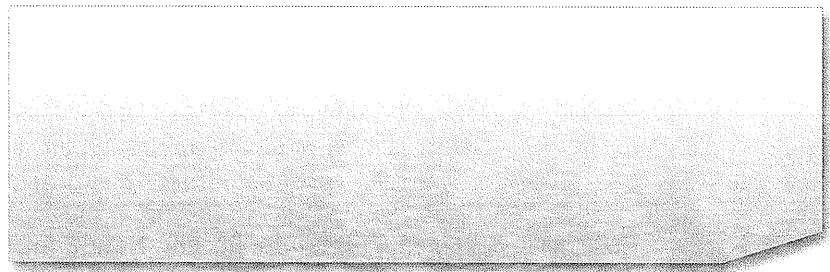
It has eight **Tabs**: File, Home, Insert, Page Layout, Formulas, Data, Review and View. These Tabs contain Word features. Below is a list of the groupings within each Tab.



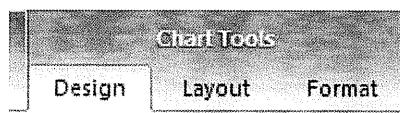
The Ribbon enables you to see and find the required commands to format your spreadsheet. Each Tab (except for the File Tab) is divided into **Groups**, which are collections of features designed to help you to edit, format, and develop your Excel documents.

The most commonly used features are displayed on the Ribbon. Additional features within each group can be viewed by clicking on the arrow at the bottom right of each group.

Think back to Microsoft Office Word. How is this Ribbon similar or different?



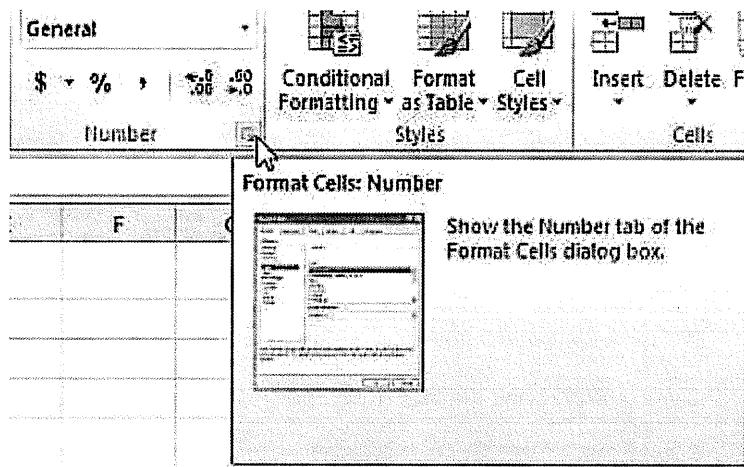
Some Tabs will only appear when you are working on a specific activity. For example if you have created a chart, the following Tabs will appear.



The **File** Tab contains commands for managing the document such as Opening, Saving and Printing. Your most recent documents saved are listed on this menu. You can click on a title to open that document.

Dialog Box Launcher

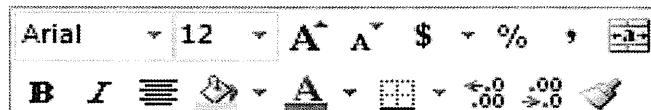
Some of the groups have an arrow in the bottom corner that will open a **dialog box** or **task pane** that contains further options and commands.



Live Preview Live Preview allows you to quickly see how formatting options like **Fonts** and **Size** will look before you apply them. Using **Live Preview** temporarily applies the formats on selected text or objects.

To use the **Live Preview** feature, select the text and point to various formatting options. For example, move your pointer down the **Font List** to see the effect of each font on the text you have selected. When you have chosen the font you want to apply, simply click on that font and your text will be changed permanently.

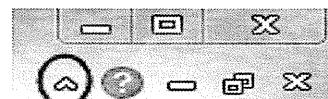
Mini Toolbar Type some text or numbers, select the cell and then right click. The **Mini Toolbar** will appear. You can use this toolbar to quickly format your text - fonts, font styles, font sizing, alignment, text colour, indent levels, and bullet features are all available on the Mini Toolbar.



Hint

To temporarily hide the Ribbon:

- Use **Ctrl + F1**. You can use this shortcut to toggle the Ribbon on and off
- Click on the up arrow found in the top right corner of your window



- Double-click on the active Tab - the groups will disappear. Double-click the active Tab to bring back the groups.

Part E

Navigating in Excel



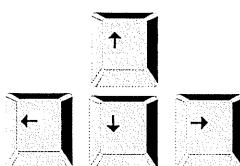
Navigation Methods

As only part of the spreadsheet is displayed on the screen at one time, it is important to understand how to navigate around it.

1. The Keyboard

By pressing certain keys or combination of keys, you can quickly move around a spreadsheet. Navigating via the keyboard is useful if you know the particular cell or area of the spreadsheet you are trying to find.

Arrow Keys move the cursor one **cell** at a time in each direction.



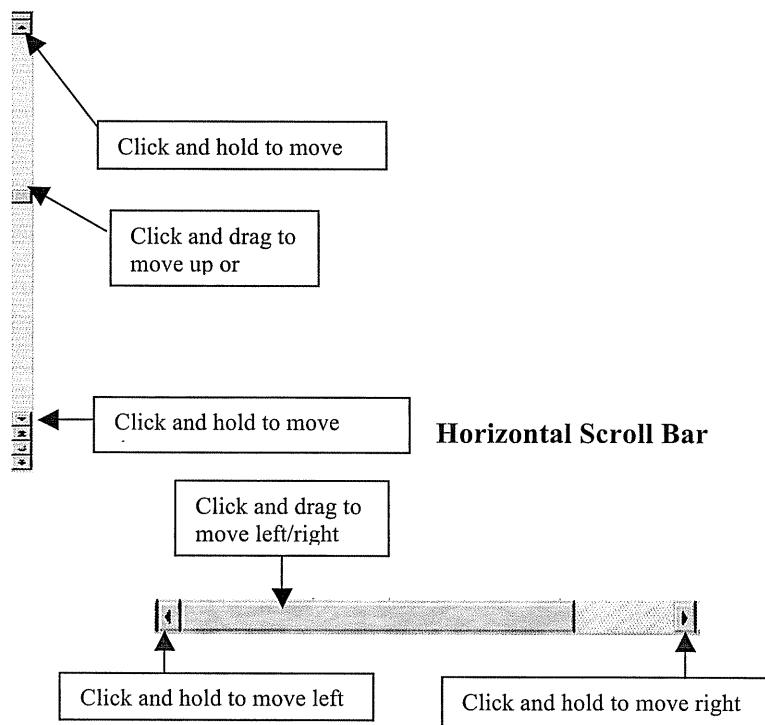
Navigation area	Keyboard combinations
One cell to the right	Tab
Back one cell to the left	Shift + Tab
One cell down	Enter
Move to the beginning of a worksheet	Ctrl + Home
Move to the last used cell in worksheet	Ctrl + End
Move to the beginning of a row	Home
One screen up	Page Up
One screen down	Page Down
Move one screen to the right	Alt + Page Up
Move one screen to the left	Alt + Page Down

2. The Mouse

To select a particular cell with the mouse, simply move the pointer to the desired cell and select that cell with a single click of the mouse button.

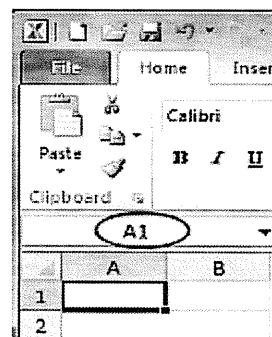
- Use the vertical scroll bar to move the spreadsheet either up or down.
- Use the horizontal scroll bar to move the spreadsheet either left or right.
- Selecting the Tabs at the bottom of the spreadsheet will move you to another worksheet.

Vertical Scroll Bar



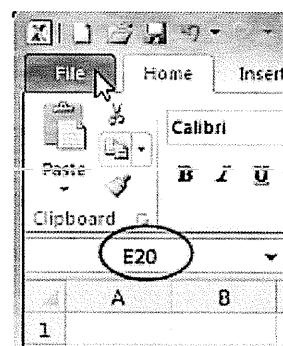
Hint

The **Name Box** displays the **cell reference** of the active cell. (Column letter and Row number).



Hint

To get to a particular cell quickly, click in the **Name Box** and type in the cell reference and then press **Enter**.



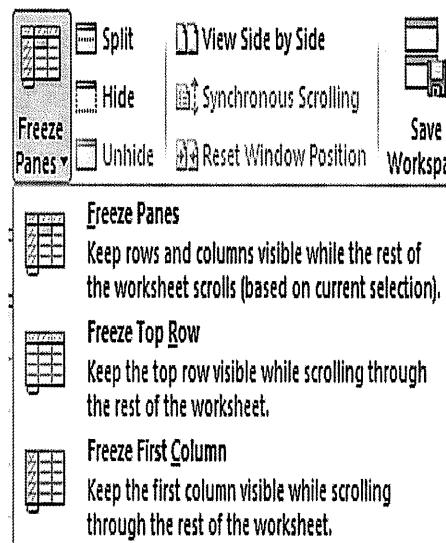


Demonstration Navigating

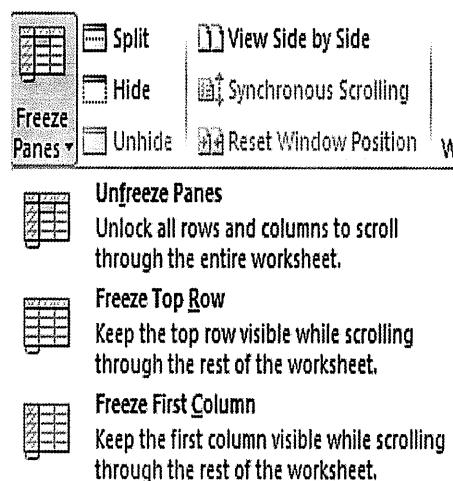
Your teacher will Demonstrate how to navigate around the spreadsheet using both the keyboard commands and the mouse.

Freeze Panes As you scroll down or across the page on large spreadsheets, you may wish to still see the column headings or row headings. To do this, you will need to use the freeze panes feature.

Click on the View Tab and select the **Freeze Panes** button. You have three options. You can freeze the rows and columns based on the current position; you can freeze only the top row or you can freeze only the first column.



To unfreeze your spreadsheet, click on the View Tab and select the Freeze Panes button and click on **Unfreeze Panes**.





Task 1.3

Moving Around a Spreadsheet

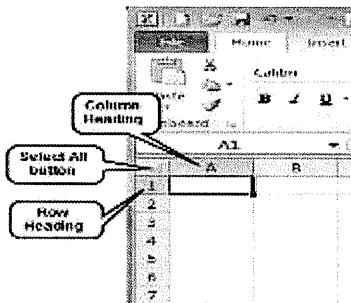
Follow the steps below to record the name of the cell (Column letter and Row number) where the cell pointer is located.

Step	Selected Cell
1. Start a new spreadsheet.	
2. Use the arrow keys to move two columns to the right and one row down.	
3. Use the Page Down key to move down the spreadsheet by one screen. The number of rows moved will depend on the number of rows displayed in one screen.	
4. Use Alt + Page Down to move two screens to the right.	
5. Move around in the spreadsheet by using the scrollbars. Use the mouse to select a cell.	
6. Use the mouse to switch to a new worksheet.	
7. Use the mouse to return to the original work sheet.	

Congratulations! You have now learned the basics for navigating around a spreadsheet. The next part will show you how to enter data into individual cells to create a basic spreadsheet.

Part F**Selecting Data****Selecting a cell, range, row, or column**

The following Table shows you how to select a cell, range, row, or column.



A single cell	Click the cell, or press the arrow keys to move to the cell.
A range of cells	Click the first cell of the range, and then drag to the last cell.
All cells on a worksheet	Click the Select All button.
Non-adjacent cells or cell ranges	Select the first cell or range of cells, and then hold down Ctrl key and select the other cells or ranges.
A large range of cells	Click the first cell in the range, and then hold down Shift key and click the last cell in the range. You can scroll to make the last cell visible.
An entire row	Click the Row heading (the number).
An entire column	Click the Column heading (the letter).
Adjacent rows or columns	Drag across the row or column headings. Or select the first row or column; then hold down Shift key and select the last row or column.
Non-adjacent rows or columns	Select the first row or column, and then hold down Ctrl key and select the other rows or columns.
More or fewer cells than the active selection	Hold down Shift key and click the last cell you want to include in the new selection. The rectangular range between the active cell and the cell you click becomes the new selection.

**Demonstration Selecting data**

Your teacher will Demonstrate how to select data in the spreadsheet using both the keyboard commands and the mouse.

Part G

Entering Data



Developing Worksheets

Before creating a spreadsheet and entering data, it is important to think about its design.

A workbook consists of one or more worksheets. Effective worksheets are well-planned, carefully designed, and clearly identify their overall goal. The information in a worksheet should be in a clear, well-organized format, and include all the data necessary to produce results that address the goal.



Task 1.4

Producing a good worksheet

Work with a partner. The steps to producing a good worksheet have been jumbled. Number them to show the order in which they should appear. Check as a class.

Save and print the completed worksheet

Test the worksheet

Determine the worksheet's purpose,
what it will include, and how the
information will be organised

Edit the worksheet to correct any errors
and make modifications

Improve the appearance of the
worksheet

Document the worksheet

Enter the data and the formulas into the
worksheet

Planning the worksheet

There are a number of questions to ask yourself when planning the worksheet:

- **What is the goal of the worksheet?**
This helps define the problem to be solved.
- **What are the desired results?**
This information describes the output - the information required to help solve the problem.
- **What data is needed to calculate the results you want to see?**
This information is the input - data that must be entered.
- **What calculations are needed to produce the desired output?**
These calculations specify the formulas used in the worksheet.

Testing the Worksheet

Your worksheet must produce accurate results. Even a well-planned and well-designed worksheet can contain errors. It is very important, therefore, that you test it to make sure that you entered the correct formulas.

A simple way to test a worksheet is to work out the numbers ahead of time with a pencil, paper, and calculator, and compare these results with the output from the computer.

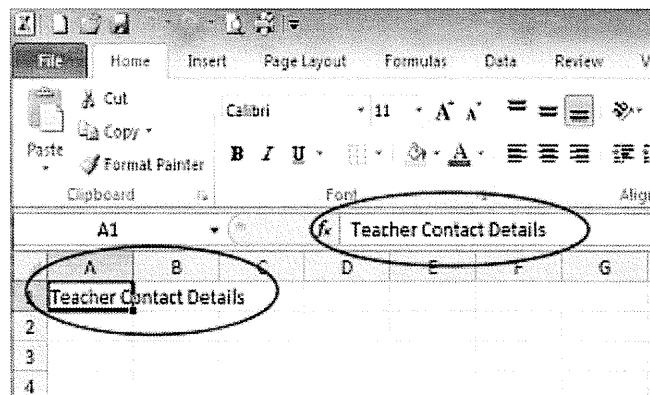


Entering Data

The first step in creating any spreadsheet is to enter the data into the spreadsheet cells. Before entering data, you need to understand how Excel distinguishes the different types of data.

Labels/Text	Headings, Labels, Notes and Explanatory text which can be alpha-numeric (a combination of letters and numbers).
Values	Numbers typed directly into a spreadsheet cell. Values can include numbers, currency, dates or times.
Formulas	Equations that calculate a new value from existing values. Formulas must begin with an equal sign (=).

To enter data into a cell, simply select the cell in which you want to enter data using either the mouse or the keyboard. Then, enter the data. As you type, the data appears in the cell and in the formula bar.



Once completed, press the **Enter** or the **Tab** key to add the data to the spreadsheet. The Tab key will move and select one cell to the right. The Enter key will move and select one cell down.



Task 1.5

Entering Headings

1. Open a new Excel spreadsheet.
2. In cell A1 enter *Teacher Contact Details*.
3. Press **Enter**.

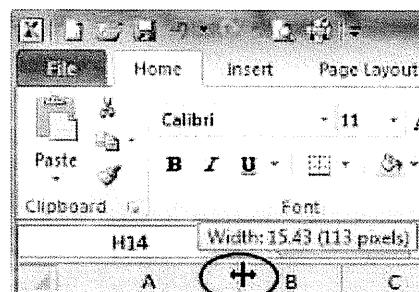
Adding Text

Text can be any combination of letters, symbols, numbers or spaces and is automatically aligned to the **left side** of a cell. Text is generally used to label or provide descriptive information for the values in a spreadsheet.

	A	B	C	D	E	F
1	Teacher Contact Details					
2	Subject	Title	Last Name	First Name	Room #	Email address
3						

If the text does not fit into a cell, it will flow into the next cell if the next cell is empty. If the cell to the right is not empty, then only the text that fits within the cell width will be displayed. This is easily fixed by changing the column width.

You can click and drag the column to the required width or you can double-click between the two column headings and Excel will automatically resize the column.



Task 1.6

Adding Column Headings

1. Click into cell A2 and type *Subject*.
2. Press the Tab key to move to cell B2 and type *Title*.
3. Press the Tab key to move to cell C2 and type *Last Name*.
4. Press the Tab key to move to cell D2 and type *First Name*.
5. Press the Tab key to move to cell E2 and type *Room #*.
6. Press the Tab key to move to cell F2 and type *Email address*.
7. Press **Enter** to return to cell A3.
8. Adjust the column widths so that all the headings are visible.

Adding Numbers

Numbers are the values within a spreadsheet and are the numeric characters 0-9. Numbers are automatically aligned to the **right side** of a cell and can also include characters such as commas (,), percentages (%), dollar signs (\$), or plus (+)/minus (-) signs.

Numbers can be added, subtracted or analysed using formulas and functions. (Using formulas and functions will be discussed in the next unit.)

	A	B	C	D	E	F
1	Teacher Contact Details					
2	Subject	Title	Last Name	First Name	Room #	Email address
3	Listening and Speaking Skills	Mr.	Moore	James	17	jmoore@gmail.com
4	Reading and Writing Skills	Mrs.	Porter	Gwyneth	20	gwypport@ymail.com
5	Maths	Mr.	Stallone	Arnold	10	arnie4math@gmail.com
6	Business Studies	Ms.	Pattinson	Barbara	15	bizbarb@hotmail.com
7	Science	Mr.	Darwin	Alfred	13	adscteach@ymail.com
8	Computing	Miss	Gates	Maria	18	mgates62@gmail.com

If a number does not fit in a cell, Excel will display the number in scientific notation (such as 1.1E+05) or as a series of signs (such as #####). As with text, this can be fixed by increasing the column width.

Adding Dates and Times

Dates and times entered into a spreadsheet are also considered as numbers (values). Excel converts dates into a number, i.e. the number of days that have elapsed since January 1, 1900. Times are converted into a number, i.e. the number of seconds that have elapsed from 12 am. Excel displays the entry as a date or time but uses the number whenever the value is used in a formula or function.

To enter a date, use the format dd/mm/yyyy or dd-mm-yyyy. For example, 5/01/2012 or 5-01-2012. To enter a time, use the format hh:mm am/pm. For example, 02:55 pm.

A2		
	A	B
1	Date	Time
2	5/01/2012	2:55 PM
3		



Remember

When entering time, remember to specify ‘am’ or ‘pm’ as Excel uses a 24-hour clock. Therefore, 8:00 is always assumed to be 8 am unless pm is specified.



Task 1.7

Entering data

Add the following data to your spreadsheet.

Teacher Contact Details					
Subject	Title	Last Name	First Name	Room #	Email address
Listening and Speaking Skills	Mr.	Moore	James	17	jmoore@gmail.com
Reading and Writing Skills	Mrs.	Porter	Gwyneth	20	gwypport@ymail.com
Maths	Mr.	Stallone	Arnold	10	arnie4math@gmail.com
Business Studies	Ms.	Pattinson	Barbara	15	bizbarb@hotmail.com
Science	Mr.	Darwin	Alfred	13	adsciteach@ymail.com
Computing	Miss	Gates	Maria	18	mgates62@gmail.com

Part H

Saving, Closing and Opening Spreadsheets



Demonstration

Naming and Saving an Excel file

Your teacher will Demonstrate the process for naming and saving an Excel file.

There are two options available for saving an Excel spreadsheet:

1. Click the **File Tab** and select **Save**, or hit the save icon to save a file that has already been named and stored on your computer.



2. Click the **File Tab** and select **Save As** to name and to save a new Microsoft Excel spreadsheet.

Your teacher will now Demonstrate how to name and save a newly created spreadsheet.

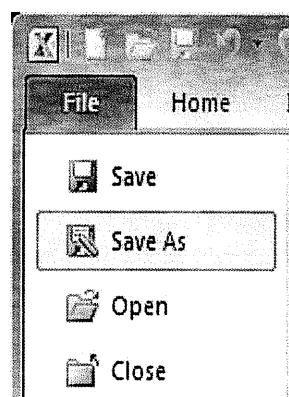


Task 1.8

Naming and Saving your *Teacher Contact Details* file

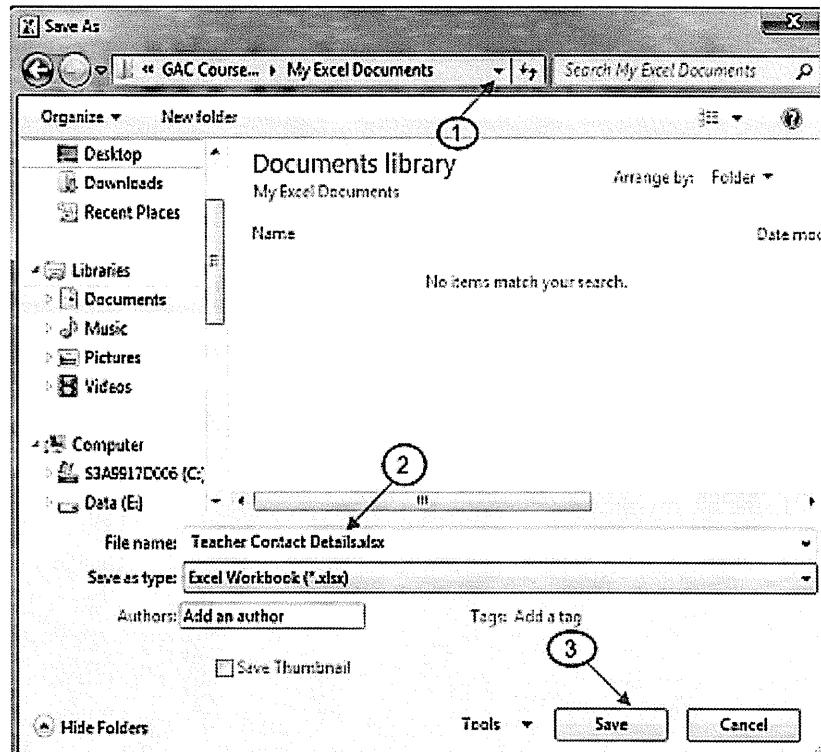
Follow these steps to name and save the Excel document you created in the previous task.

1. Click on the **File Tab** and then select **Save As**.



2. Select the appropriate directory (e.g. C: if you are saving your file to the hard drive - see number 1 in the figure below).
3. Type in the name of the document, *Teacher Contact Details* (see number 2 in the figure below).
4. Click the **Save** button (see number 3 in the figure below).

Save As Window



Caution

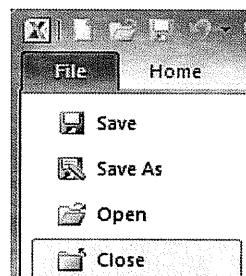
Save your spreadsheet regularly so that you do not lose any additions or changes that you may make.

**Task 1.9****Closing a Spreadsheet**

Once you have saved and finished working on your spreadsheet, you will be ready to close it.

Try these different ways of closing a document and record what happened and what you should remember in the future:

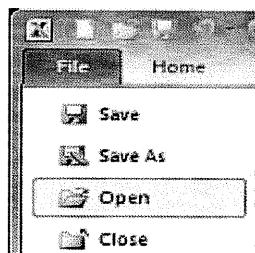
1. Click on the File Tab and select Close.



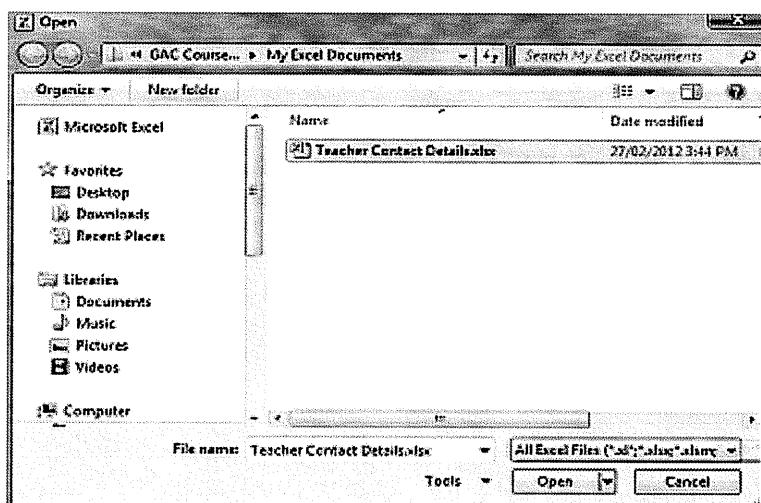
2. Click on the Close window button in the right-hand corner.
3. Use **Ctrl + W** on the keyboard.

**Task 1.10****Opening an Existing Spreadsheet**

1. Click on the File Tab and select Open.



2. Double-click on the name of the document or select the document and click on the Open button.



Congratulations! You have just opened an existing Excel document.

Part I

Using AutoFill



Understanding the AutoFill feature

The AutoFill feature can be used to copy text or automatically create a series. By dragging the fill handle of a cell, you can copy that cell to other cells in the same row or column.

If the cell contains a number, date, or time period that Excel can extend in a series, the values are incremented instead of copied. For example, if the cell contains "January," you can quickly fill in other cells in a row or column with "February," "March," and so on.

The fill handle is a small black square in the corner of the selection. When you point to the fill handle, the pointer changes to a black cross.

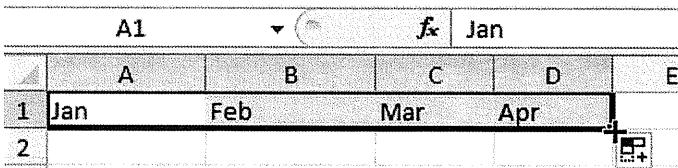
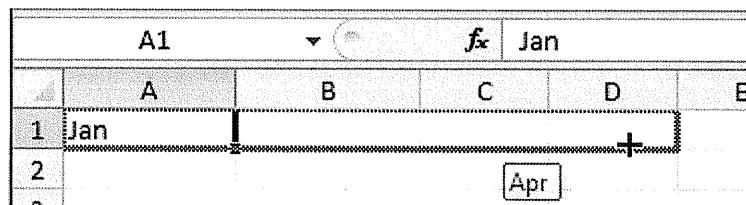
	A1	
	A	B
1	Math	English
2		
3		
4		Math
5		
6		

To Copy data using AutoFill

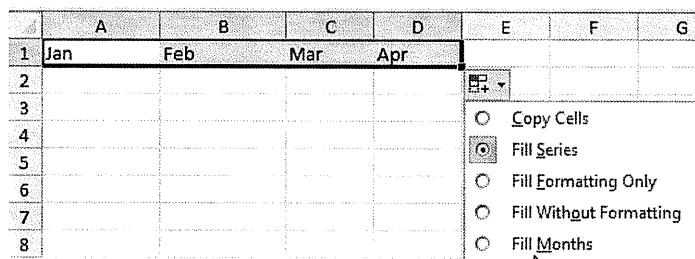
- Type the data in the first cell, e.g. Math.
- Point to the **AutoFill** handle and the mouse turns into a black cross.
- Click and drag across to copy the data horizontally (drag down to copy the data vertically in a column).

To create a series using AutoFill

- Type the data in the first cell, e.g. Jan.
- To create a specific series, for example, odd numbers, type a 1 in the first cell and a 3 in the next cell (the series 1, 3, 5, 7, etc., will be created).
- Point to the **AutoFill** handle and the mouse turns into a black cross.
- Click and drag across to extend the series horizontally (drag down to extend the series vertically in a column).



Note the small icon at the end of the Auto Fill handle. This is the Auto Fill Options. As you point your mouse, you will see a drop down arrow. Click to view the Auto Fill Options.



Example series that AutoFill can complete

Initial selection	Extended series
9:00	10:00, 11:00, 12:00
Mon	Tue, Wed, Thu
Monday	Tuesday, Wednesday, Thursday
Jan	Feb, Mar, Apr
Jan, Apr	Jul, Oct, Jan
Jan-12, Apr-12	Jul-12, Oct-12, Jan-13
15-Jan, 15-Apr	15-Jul, 15-Oct
1994, 1995	1996, 1997, 1998
1-Jan, 1-Mar	1-May, 1-Jul, 1-Sep
Qtr3 (or Q3 or Quarter3)	Qtr4, Qtr1, Qtr2
text1, textA	text2, textA, text3, textA
1st Period	2nd Period, 3rd Period
Product 1	Product 2, Product 3
1, 2	3, 4, 5, 6
1, 3	5, 7, 9
5, 4	3, 2, 1
100, 95	90, 85



Demonstration Adding incremental data into your spreadsheet

Your teacher will Demonstrate how to add incremental data into your spreadsheet.



Task 1.11

Using AutoFill

1. Create a new spreadsheet.
2. Based on the example timetable below and plan **your own** timetable using your subjects and time slots.
3. Enter the data using the AutoFill feature to create the days of the week across the column headings and the time in the first column.
4. Save your spreadsheet as **TimeTable.xlsx**.

Example Timetable:

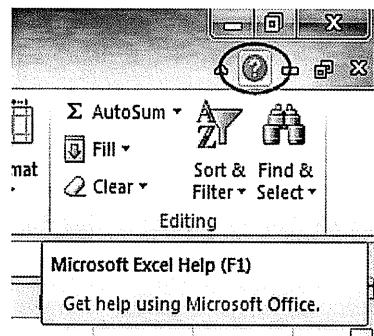
Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 AM	Maths	Listening & Speaking	Reading & Writing	IELTS prep	Listening & Speaking
10:00 AM	Maths	Listening & Speaking	Reading & Writing	IELTS prep	Listening & Speaking
11:00 AM	Reading & Writing	IELTS prep	Maths	Business Studies	Computing
12:00 PM	Reading & Writing	IELTS prep	Maths	Business Studies	Computing
1:00 PM	Business Studies	Computing	Science	Listening & Speaking	Science
2:00 PM	Business Studies	Computing	Science	Listening & Speaking	Science
3:00 PM	Listening & Speaking	Science	Listening & Speaking	Reading & Writing	Reading & Writing
4:00 PM	Listening & Speaking	Science	Listening & Speaking	Reading & Writing	Reading & Writing

Part J**Getting Help****Understanding the Help menu**

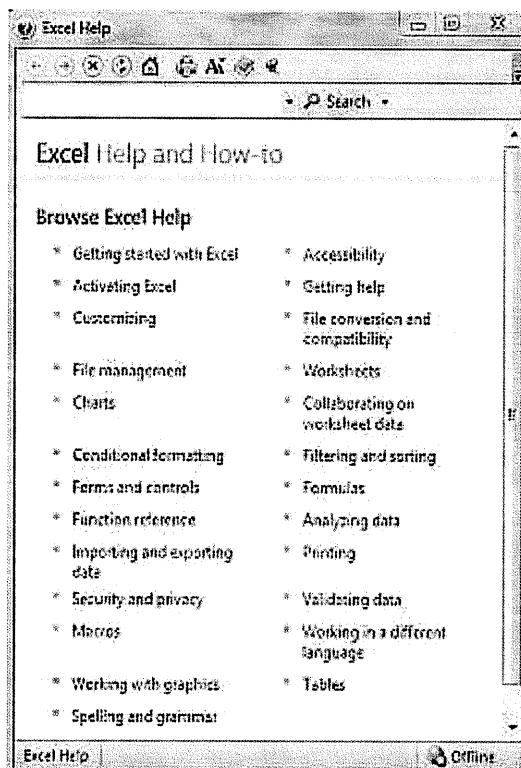
The Help menu in is an excellent source of information on the Excel features for analysing and presenting data.

What are some examples of when you might use the Help menu?

The Help menu can be accessed by clicking on the Help icon.



This will open the main search window which allows you to enter any relevant query or you can select one of the topics from the Browse Excel Help window.



When you type a query in the Search box, a number of topics related to your search will appear. Then, it is up to you to read through them to determine the information you require.



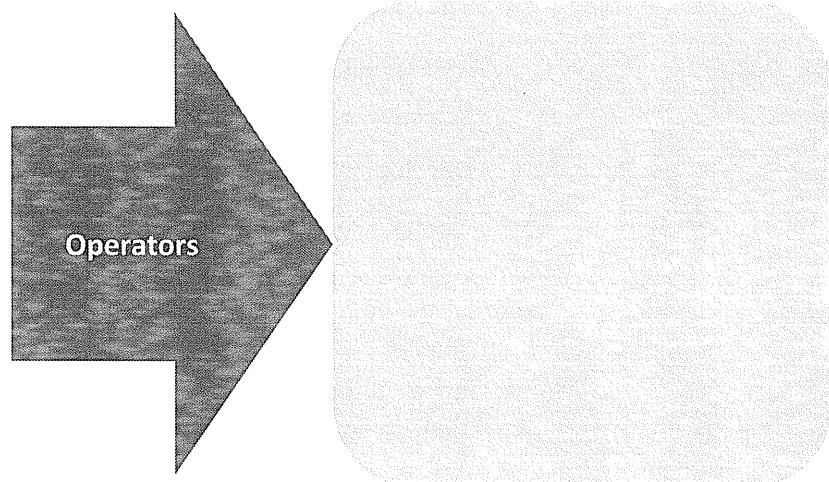
Task 1.12

Using the Microsoft Office Excel Help function

Try these different help queries and analyse the results:

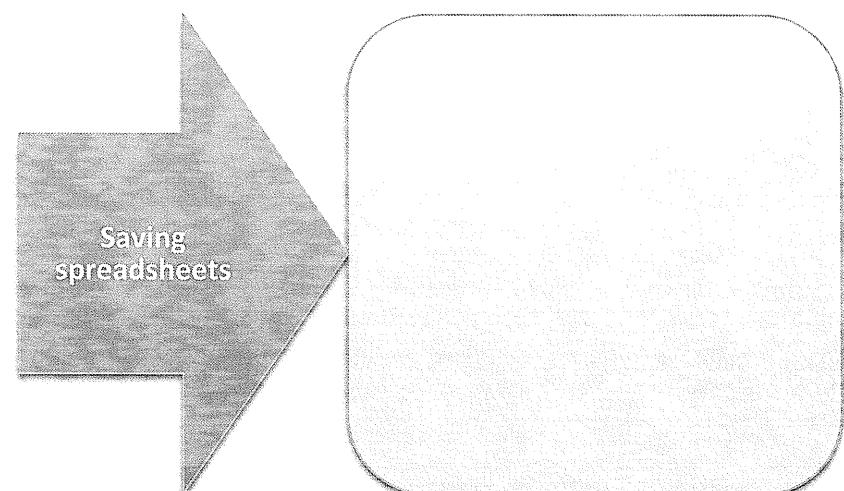
1. Search for topics on formulas, for example “Operators”.

What results did you get?



2. Search for topics on “Saving spreadsheets”.

What results did you get?



3. Find answers to some questions that you have on the unit so far.

Part K

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Understanding Excel
- The Excel Screen
- Navigating in Excel
- Selecting and Entering Data
- Developing and Testing the Spreadsheet
- Saving, Closing and Opening Spreadsheets
- Using AutoFill
- Getting Help

Review all the activities you have completed in this unit and make sure that any questions you noted were answered.



Task 1.13

Creating your own *Teacher Contact Details* spreadsheet

Create a ***Teacher Contact Details*** spreadsheet reflecting your own participation in the *Global Assessment Certificate* program. Upload it to Dropbox and share the link with your Computing teacher.



Assessment Event 2

Project 1: Spreadsheet

Your teacher will now distribute the Instructions to Students for Assessment Event 2: Project 1 - Spreadsheets.

This project has two activities that need to be completed. The project is **due in Week 6, or at the end of Unit 6**. You are required to work on the project at home or as independent study. Each week, you will need to bring in your completed tasks and show your teacher for review and feedback.

Remember to use the Quick Reference Guides and other information provided in Units 1-6 of the *Computing II: Data Management Student Manual*.

Unit 2 Using Formulas and Functions

Part A	Unit Introduction
Part B	Overview of Formulas
Part C	Using Functions
Part D	Using Formulas and Functions
Part E	Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to using formulas and functions to calculate results in spreadsheets.

In this unit, you will learn to:

- use formulas in spreadsheets
- use the built-in set of formulas that provide financial, mathematical and statistical calculations
- document a workbook

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.

Part B

Overview of Formulas



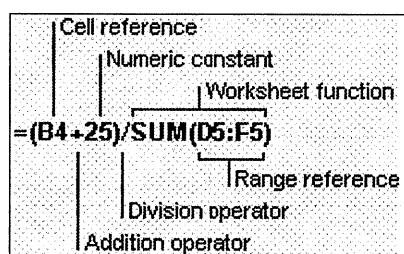
Understanding Formulas

One of the most important features of a spreadsheet is the ability to create your own formulas to perform calculations. Formulas are entered directly into cells and consist of three main components, namely the:

1. **equal sign (=)** which identifies for Excel that the cell contains a formula
2. **mathematical operator**, such as addition (+) or division (/)
3. **cell reference** that contains the values you want to calculate

For example, if you want to add two cells - D4 and F5 - and multiply them by 7, the formula that you enter into the cell would look like this: =(D4+F5)*7

Formulas can refer to other cells on the same worksheet, cells on other sheets in the same workbook, or cells on sheets in other workbooks. The example below adds the value of cell B4 and 25 and then divides the result by the sum of cells D5, E5 and F5.



The result, **not** the formula, is then displayed in the cell.

Can you think of examples in your GAC studies where it could be useful to use formulas?

The following lists some of the mathematical operators that Excel recognises:

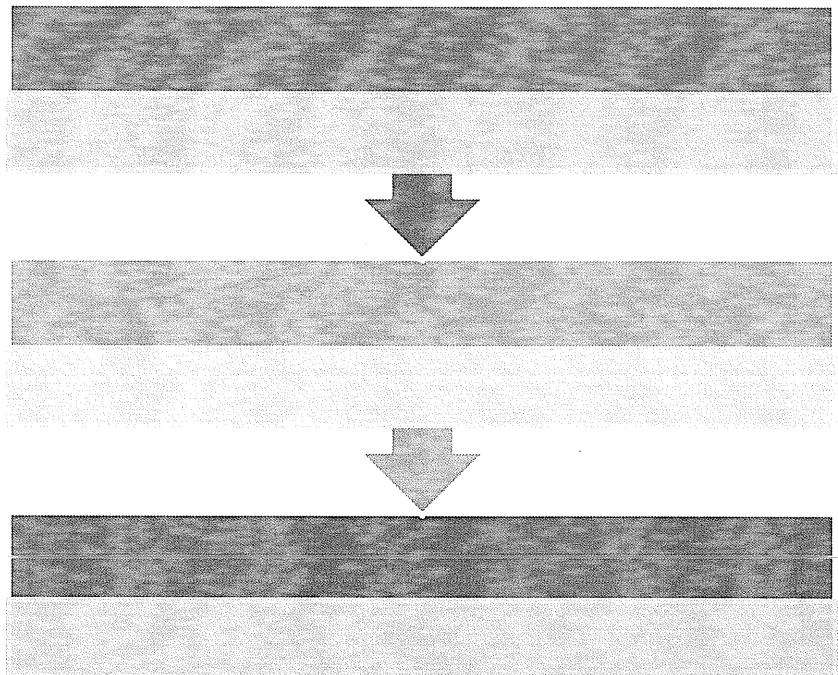
Operator	Name	Sample Formula	Result
+	Add	=A1+B1	Totals the values of cells A1 and B1
-	Subtract	=A1-B1	Subtracts the value of cells A1 from B1
*	Multiplication	=A1*B1	Multiplies the value of cells A1 and B1
/	Division	=A1/B1	Divides the values of cells A1 by B1
^	Power	=A1^B1	Raises A1 to the power of B1



Task 2.1

Writing formulas

First work on your own. Imagine you wish to perform three calculations on your *Timetable* spreadsheet. Write the calculations you require in words. Then, exchange your desired calculations with a partner. Write each other's formulas.

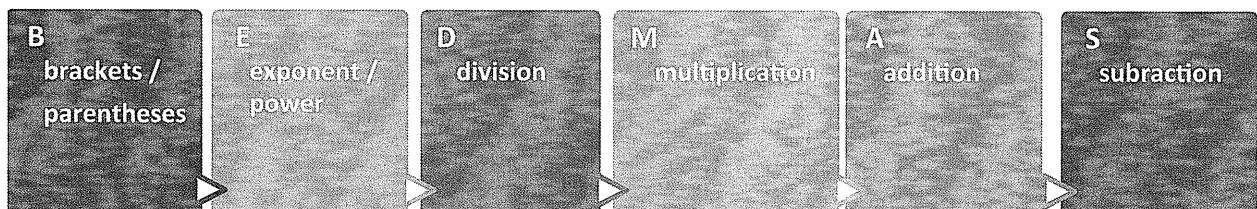


Formula Syntax Formulas calculate values in a specific order that is known as the **Syntax**. The syntax of the formula describes the structure or order of the elements in a formula.

When creating formulas using multiple operators in Excel, it is important to remember the standard rules of mathematical operations. The most important rule is the order in which operations are performed. This means that certain operations will be calculated prior to other operations in the formula. In order to create a formula that calculates the desired result, it must be constructed with the correct order priority.

Priority	Operator	Name
1.	()	Brackets
2.	[^]	Power or exponent
3.	/ or *	Divide or Multiply
4.	+ or -	Addition or Subtraction

This is called **BEDMAS**, that is:



Excel follows the rules of precedence: it evaluates formulas from left to right, first evaluating any operations between parentheses, then any exponentiation, then division and multiplication, followed by addition and subtraction.

For example, the formula:

=3+5*2-3

is calculated within a spreadsheet as:

=3+5*2-3

=3+10-3

=13-3

=10

Whereas the formula:

=(3+5)*2-3

is calculated as:

=(3+5)*2-3

=8*2-3

=16-3

=13



Creating Formulas in Excel

Formulas can be entered into a cell in the same way as text or numbers: either typed directly into the desired cell, or by selecting a cell and typing the formula into the Formula bar.



Remember

Always remember that a formula must start with an equals sign (=) so Excel will recognise it as a formula.

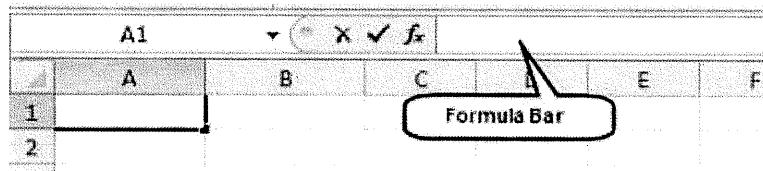
You can create a formula in one of two ways: either by typing the formula, including the cell addresses of the values you wish to calculate, or by typing the formulas and selecting the cells using the mouse or the keyboard.

Examples of basic formulas showing formula instead of result:

	A	B	C	D
1				
2	6	3		=A2+B2
3	10	3		=A3-B3
4	4	3		=A4*B4
5	12	2		=A5/B5
6	100	5		=(A6*B6)*10%
7	50	60	2	=(A7+B7)*C7

To type a formula:

1. Choose a cell for the formula.
2. Type the equals sign (=) to begin the formula and type in the appropriate cell references and mathematical operators. Note that the formula can be entered into either the cell directly or through the formula bar.



3. Press **Enter** and the result is calculated and displayed in the cell.

To enter a formula by choosing the cell addresses:

1. Choose a cell for the formula.
2. Type the equals sign (=) and use the mouse or the keyboard to select the cell that contains the first value for the formula.
3. Type the mathematical operator for the operation you want to perform, i.e. multiplication (*).
4. Select the cell that contains the next value for the formula.
5. Continue to select cells and operators until the formula is complete.
6. Press **Enter** and the result is calculated and displayed in the cell.



Tip

Make sure that you press **Enter** before clicking elsewhere on your worksheet. Otherwise, the cell reference in the formula will change, giving you an incorrect result.



Editing Formulas

Editing a formula is the same as editing any entry in a cell:

1. Select the cell that contains the formula you want to edit.
2. Either click in the formula bar or double-click in the cell to edit the formula.
3. Use the **Backspace** or **Delete** keys to delete any unwanted items and simply retype the corrections.
4. Press **Enter** to accept any changes.

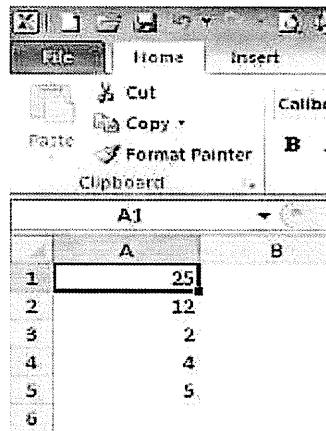


Task 2.2

Entering Formulas

Open a new spreadsheet and enter the following series of numbers: 25, 12, 2, 4, and 5 into one column of the spreadsheet.

When you are finished your numbers should look like this:



	A	B
1	25	
2		12
3		2
4		4
5		5
6		

Follow the activity instructions in the table below, and write the formula you have created in the space provided. See if you can create more than one formula to achieve the desired value.

Once completed, review your answers with your teacher.

Activity	Formula
1. In cell C1 create a formula that will return a value of 100 using the numbers provided.	
2. In cell C2 create a formula that will return a value of 30.	
3. In cell C3 create a formula that will return a value of 48.	
4. In cell C4 use brackets to create a formula that will return a value of 18.	
5. In cell C5 use cells C1 and C2 to create a formula that will return a value of 130.	
6. What other formulas will achieve the same value of 130 using the data provided?	

**Task 2.3****Entering Formulas on a wages spreadsheet**

1. Create a new spreadsheet and enter the following data:

Name	Gross Wage	Tax	Net Wage
Joe	\$500.00		
Mary	\$560.00		
Tom	\$650.00		
Jim	\$680.00		
Terry	\$590.00		

2. Calculate the Tax at 30%.
3. Calculate the Net Wage: Gross Wage less Tax.

Your formulas should look as below:

Name	Gross Wage	Tax	Net Wage
Joe	\$500.00	=B2*30%	=B2-C2
Mary	\$560.00	=B3*30%	=B3-C3
Tom	\$650.00	=B4*30%	=B4-C4
Jim	\$680.00	=B5*30%	=B5-C5
Terry	\$590.00	=B6*30%	=B6-C6

4. Compare your results with another student.
5. Save your spreadsheet as **Formulas.xlsx**.

Part C

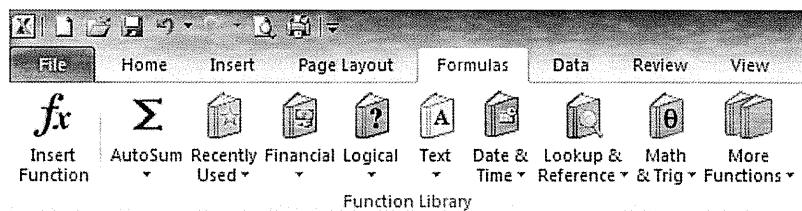
Functions



Understanding Functions

Functions in Excel are built-in formulas that allow you to perform more complex calculations. Functions cover a range of different types of calculations, from standard mathematical and trigonometric functions to financial and statistical functions.

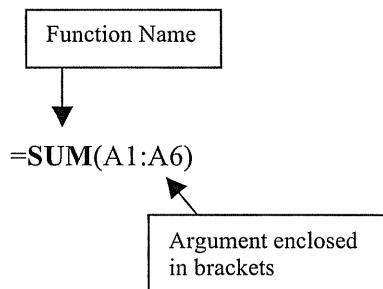
The Functions Library is located within the Formulas Tab on the Ribbon.



Basic functions Excel uses to perform calculations are:

SUM	Adds a range of cells
MAX	Calculates the largest value
MIN	Calculates the smallest value
AVERAGE	Calculates the average of the values
COUNT	Will add up the number of cells in a selected range that contains numbers

The syntax of a function begins with the function name, followed by an opening parenthesis, the argument for the function, and a closing parenthesis.



Functions have much the same format as a formula and consist of the following three elements:

1. The equals sign (=), indicating to Excel that the cell contains a function that needs to be calculated.
2. The name of the function, such as AVERAGE. This name indicates the type of function to be performed.
3. A list of cell addresses which are to be acted on by the function.

With functions, a range of cells or multiple cells can be specified.

For example:

- The function =AVERAGE (A1:A9) calculates the average or mean on the values contained in column A rows 1 to 9.
- The function =AVERAGE (A1, B2, H6, D6) calculates the average of the values contained in the specified cells.



Task 2.4

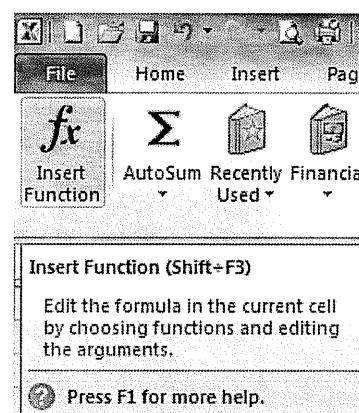
Composing functions

First work on your own. Consider your **Formulas** spreadsheet and imagine that you wish to perform complex calculations using functions. Write three functions to perform these three calculations. Exchange them with a partner and write which complex calculations the functions represent.

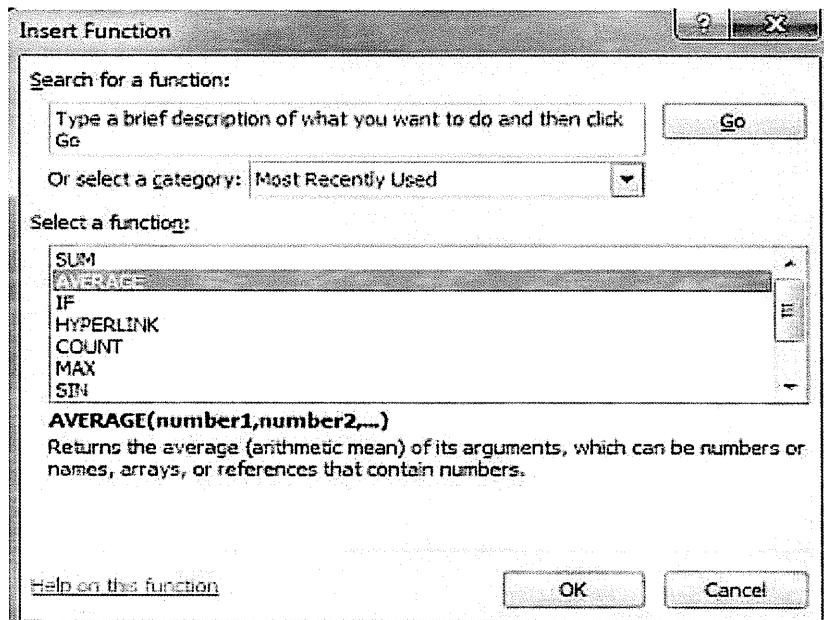


Inserting Functions

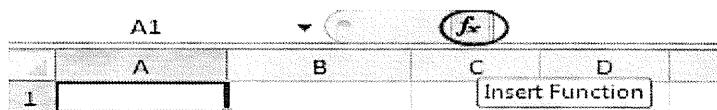
Functions are entered in a similar manner to formulas. The function and cell references can be typed directly into the cell or the formula bar, or you can use the **Insert Function** button located on the Formulas Tab on the Ribbon.



The Insert Function window is displayed:

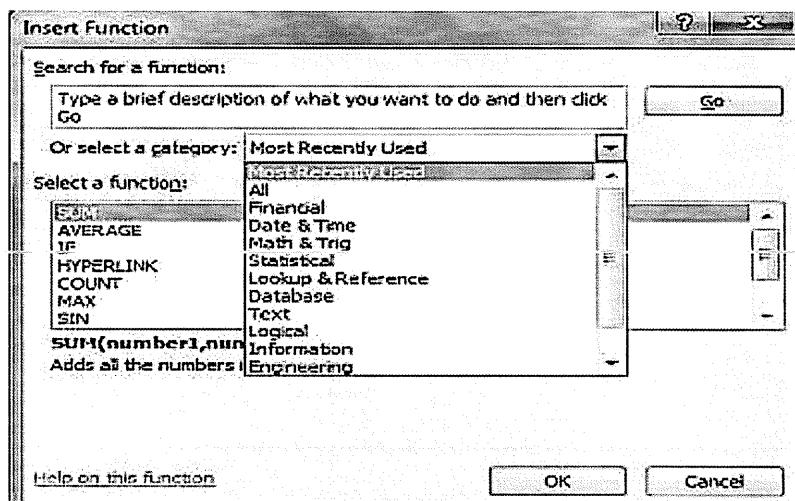


Alternatively, click on the f_x button next to the Formula bar to open the Insert Function window.

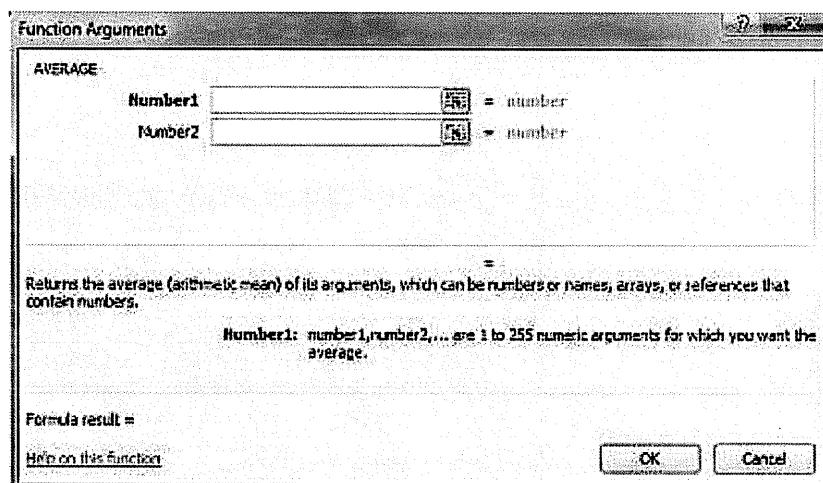


To insert a function, use the following steps:

1. Click in the cell where you want to insert the function.
2. Click on the **Insert Function** button f_x . This will bring up the Insert Function window.
3. To select a function, scroll through the list of available functions that are grouped in broad categories. Excel keeps a list of the **Most Recently Used** functions: by selecting this category the last few functions used are displayed.



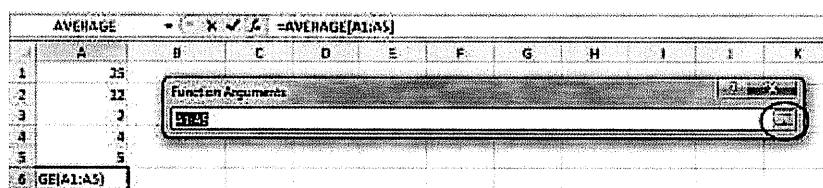
- From the functions list, select the function you wish to insert and click **OK**. This will open the **Function Arguments** dialog box. This box contains a brief description of the function and allows you to specify the cells that the function acts upon.



- Enter the cell addresses of the cells that will be acted on by the function. You can collapse this window by clicking the **Collapse** button to the far right of the Numbers text box. This will allow you to select a range of cells using the mouse.



- Click the **Expand** button to the right of the text box to return to the function dialog box.



- Click **OK** to insert the function into the cell.



Editing Functions

As with formulas, editing a function is fairly straight-forward:

1. Select the cell that contains the formula you want to edit.
2. Either click in the formula bar or double-click in the cell to edit the formula. To change the cell references, click the function button to open the function dialog box.
3. Use the **Backspace** or **Delete** key to delete any unwanted items and simply retype the corrections.
4. Press **Enter** to accept any changes.



Hint

Selecting the Help link [Help on this function](#) in the lower left of the **Insert Function** window and the **Excel Help** window will provide information on the selected function (see the figure below).

The screenshot shows the Microsoft Excel Help window for the 'AVERAGE' function. The title bar says 'Excel Help'. The main content area is titled 'AVERAGE function'. It includes a brief description: 'This article describes the formula syntax and usage of the AVERAGE function in Microsoft Excel.' Below that is a 'Description' section with the text: '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.' At the bottom, there is a syntax section with the formula: '=AVERAGE(number1, [number2], ...)'. The status bar at the bottom left says 'Excel Help' and 'Offline'.

**Task 2.5****Using Functions in Excel**

Think about what you have just learned about Excel functions. List three cases in which you would use a function in your Excel spreadsheet.

1.

2.

3.

For each scenario identified above, write down the function you could use to achieve the desired result.

1.

2.

3.

Now practise applying these functions in Excel and record what happened. If you do not receive the expected result, check the function with your teacher.

What happened?

1.

2.

3.

Part D

Using Formulas and Functions



Common Functions

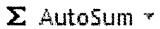
Which Excel functions you use most when creating your spreadsheets will depend on the reasons for creating your spreadsheets.

The Table below lists some of the more commonly applicable functions.

Function	Example	Description
SUM	=SUM(A1:A11)	Calculates the total of the values in the cell range A1 to A11
AVERAGE	=AVERAGE(B14,B19,C15)	Calculates the average of the values in cells B14, B19 and C15
MAX	=MAX(C3:C45)	Returns the maximum value within the cell range C3 to C45
MIN	=MIN(A3:A15)	Returns the minimum value within the cell range A3 to A15
COUNT	=COUNT(A1:A10)	Counts the total number of cells within the range A1:A10 that contains numbers
SQRT	=SQRT(A2)	Returns the square root of the value in cell A2



Hint

Selecting the **AutoSum** button  automatically inserts the **SUM** function into the selected cell. Next, Excel selects the cell addresses it thinks you are trying to add up. For example, if you insert the function at the bottom of a column of cells, Excel automatically selects that column.

To change the selection, use the mouse to simply drag and select the correct group of cells.

**Task 2.6****Using common Functions**

Work in groups of three. For each common function, brainstorm ideas for where the function may be used. Share your ideas with the class.





Copying Formulas and Functions

In creating a spreadsheet you will most need to enter your formula more than once. The simplest way to do this is by copying and pasting as you would with text or numbers (Copying, Cutting and Pasting will be discussed in more detail in the next Unit 3).

Alternatively, you can use the Excel **AutoFill** feature (discussed in Unit 1). This allows you to drag the contents of one cell to another cell or to ‘fill’ a series of cells that are next to each other.

Relative Referencing

Excel makes it easy to copy formulas from one cell to another: it uses a method of referencing cells called **relative referencing**. For example, if you created a formula in cell C4 that added the values of cells A4 and B4, the formula would be =A4+B4. Excel will look at the cell references relative to the location of the cell containing the formula. Therefore, Excel determines that the entry A4 is the cell two spaces to the left of C4 and the entry B4 is the cell one space to the left of C4.

Relative referencing is used by Excel by default and is useful when copying a formula to a series of cells in the same column. For example, if you were to copy the formula =A4+B4 from cell C4 to cell C6 the formula would change to reference the cells A6 and B6 and would now be =A6+B6.

C11			
	A	B	C
1	25	1	=A1+B1
2	12	2	=A2+B2
3	2	3	=A3+B3
4	4	4	=A4+B4
5	5	5	=A5+B5
6	26	15	=A6+B6

Absolute Referencing There will be cases where you will not want the cell referenced in a formula to change when you copy the formula to a new location. In this case you will need to use an **absolute reference** to ensure that the cell address is not changed when copied.

You designate a cell reference in a formula as absolute by adding the dollar sign (\$) in front of both the column letter and the row number.

A formula with an absolute cell reference looks like this:

=A2+\$B\$2

The cell reference \$B\$2 remains locked when the formula is copied to another cell.

Creating a formula with an absolute reference is the same as creating any standard formula. The dollar sign can be simply added when typing in the cell references or after selecting a cell with the mouse. Hit the F4 key to add the dollar sign (\$) to the cell address.

Example of using absolute referencing

To create the Net Wage, the formula uses the tax rate in cell B2. When the formula is copied to the next cell, the cell reference will remain as B2 if an absolute reference is used.

	A	B	C	D	E
1					
2	Tax	30%			
3					
4					
5	Name	Gross Wage	Net Wage (showing value)	Net Wage (showing Formula)	
6	Joe	\$500.00	\$350.00	=B6-(B6*\$B\$2)	
7	Mary	\$560.00	\$392.00	=B7-(B7*\$B\$2)	
8	Tom	\$650.00	\$455.00	=B8-(B8*\$B\$2)	
9					



AutoFill Feature with Formulas and Functions

Because Excel uses relative referencing by default, an alternative method to using the Copy and Paste commands for filling adjacent cells is to use the **AutoFill** feature. To do this use the following steps:

1. Enter the formula into the first cell.
2. Use the mouse to click the lower right-hand corner of the cell pointer and ‘drag’ the cell pointer to select the adjacent cells that you want to copy the formula into.
3. Release the mouse button and the formula will be copied to the adjacent cells.

Any cells designated as ‘absolute’ in the formulas will remain unchanged, while relatively referenced cells will change.



Common Error Messages

If you have made an error in the formula, or typed incorrect values in a cell referenced by the formula, Excel will be unable to calculate a result and display an error message.



Task 2.7

Figuring out what error messages mean

Work with a partner. The following Table displays some of the more common error messages encountered in Excel. Match the causes to the error message. You may refer to the Help window in Excel.

Error	Cause	Fix
#VALUE!		Ensure that the cells referenced in the formula contain valid values.
#DIV/0!		Ensure that the cell referenced as the divisor in a function is not zero or blank.
#NAME?		Correct the spelling of the name of the function.
#REF!		Undo the changes made to the cell or update the formula.

1.

Occurs when Excel fails to recognise text in a formula. For example, when a function's name is spelled incorrectly.

2.

Occurs when a cell reference is used that references to a blank cell, or a cell that contains a zero, so that Excel is attempting to divide by zero.

3.

Occurs if a cell referenced by a formula or function has been deleted or changed.

4.

Occurs when one cell referenced in the formula contains text when the formula requires a number.

**Hint**

In a detailed spreadsheet, it is sometimes hard to find the cells referenced in a formula. If you select the cell containing the formula and then double-click on the formula, Excel highlights the cells in different colours. This can help you in finding a cell reference that is causing an error in your formula.

AVERAGE		
	A	B
1		
2	Tax	30%
3		
4		
5	Name	Gross Wage (showing value)
6	Joe	\$500.00 =B6-(B6*\$B\$2)
7	Mary	\$560.00 \$392.00
8	Tom	\$650.00 \$455.00

**Demonstration****Copying formulas and functions in Excel**

Your teacher will now demonstrate how to copy formulas and functions in Excel.

**Task 2.8****Using Functions**

1. Open the *Formulas.xlsx* spreadsheet you created in Task 2.2.
2. Add the headings Total, Average, Minimum and Maximum to the spreadsheet.

Name	Gross Wage	Tax	Net Wage
Joe	\$500.00	\$150.00	\$350.00
Mary	\$560.00	\$168.00	\$392.00
Tom	\$650.00	\$195.00	\$455.00
Jim	\$680.00	\$204.00	\$476.00
Terry	\$590.00	\$177.00	\$413.00
Total			
Average			
Minimum			
Maximum			

3. Use the AutoSum function to insert the formula for the Totals row. Use the AutoFill function to fill the formula.
4. Enter the correct formulas to calculate the Average, Minimum and Maximum for all columns.

Your formulas should look as follows:

Name	Gross Wage	Tax	Net Wage
Joe	500	=B2*30%	=B2-C2
Mary	560	=B3*30%	=B3-C3
Tom	650	=B4*30%	=B4-C4
Jim	680	=B5*30%	=B5-C5
Terry	590	=B6*30%	=B6-C6
Total	=SUM(B2:B6)	=SUM(C2:C6)	=SUM(D2:D6)
Average	=AVERAGE(B2:B6)	=AVERAGE(C2:C6)	=AVERAGE(D2:D6)
Minimum	=MIN(B2:B6)	=MIN(C2:C6)	=MIN(D2:D6)
Maximum	=MAX(B2:B6)	=MAX(C2:C6)	=MAX(D2:D6)

5. Compare your results with a classmate.
6. Save your spreadsheet.



Documenting workbooks

Documenting the workbook provides valuable information to anyone using the workbook. Documentation includes external documentation as well as notes and instructions within the workbook.

The information could be as basic as who created the worksheet and the date it was created, or it could be more detailed, including formulas, summaries, and layout information.

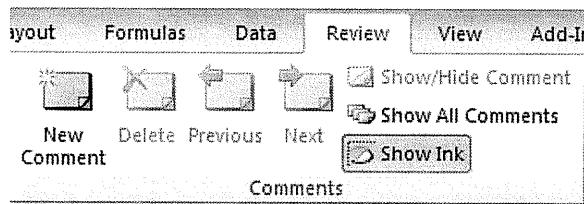
Documentation can also be included on each sheet of the workbook. One way to document the worksheet is to attach notes to cells by using the **Comments** command.

The **Comments** command explains complex formulas, list assumptions, and enters reminders.



Demonstration Inserting Comments

1. Select the cell in which you want to add the comment.
2. On the Review Tab on the Comments group select New Comment.



3. Type your comment in the text box. In the example below, the comment specifies what formula has been used to calculate the Profit: Total Sales (Selling Price) – Total Sales (Cost Price). This will enable a person using the worksheet to understand the types of formulas used.

	A	B	C	D	E	F	G	H	I
1	Appliance Future Shop								
2	December ending Sales for 2009								
3									
4			Selling Price		Total Sales (Cost Price)	Total Sales (Selling Price)			
5	Refrigerators	\$1,700.00	\$2,000.00	125,000			Profit		
6	Stoves	\$1,200.00	\$1,500.00	141,256					
7	Microwaves	\$460.00	\$800.00	156,000					
8	Dishwashers	\$1,250.00	\$1,500.00	85,450					
9	Washing Machines	\$2,645.00	\$3,000.00	98,654					
10	Total								

4. Click any cell outside the box to store the comment.



Task 2.9

Checking your understanding

Work on your own. Explain the meaning of the following functions or error messages you might encounter in Excel.

Note: Try to complete this activity without looking back through your Student Manual.

Function/Message	Description
MAX	
SQRT	
MIN	
AVERAGE	
COUNT	
#NAME?	
#DIV/0!	

**Task 2.10****Creating a Formulas and Functions spreadsheet**

Work on your own. Complete the following steps to create a spreadsheet using the data given in **Table I** below:

1. Calculate the **Commission** that is 50% of sales.
2. Calculate the **Gross Pay**, which is Base Salary + Bonus + Commission.
3. Calculate the **Tax** (don't forget to use an Absolute Reference).
4. Insert a cell comment that states that Tax is 30% of Gross Pay.
5. Calculate the **Net Pay**, which is Gross Pay – Tax.
6. Create a documentation sheet and make it the first sheet on the workbook.
7. Save your work as *formulas and functions*.
8. Check with your teacher to ensure that you have mastered this task.

Note: Try to complete this activity without looking back through your Student Manual.

Table I

Advanced Computer Accessories							
Employee Payroll							
Tax Rate:	30%						
Employee Name	Sales	Base Salary	Bonus	Commission	Gross Pay	Tax	Net Pay
Tom	1500	\$35,000	\$350.00				
Susan	2300	\$46,000	\$500.00				
James	4700	\$42,500	\$550.00				
William	3200	\$29,600	\$348.00				
Fraser	2600	\$34,900	\$290.00				
Mary	1750	\$39,420	\$360.00				
Kim	3800	\$37,750	\$520.00				

Part E

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Overview of Formulas
- Using Functions
- Using Formulas and Functions
- Documenting the Workbook

Review all the activities completed in this unit and make sure that any questions you noted were answered.



Task 2.11

Creating a Glogster poster of useful Formulas and Functions

Work with a partner. Review this unit and the Excel *Help* menu. Select ten formulas and functions which you think will be useful to remember, and create a Glogster poster for them. Share your poster with your classmates.

Unit 3 Editing, Formatting and Printing Spreadsheets

Part A	Unit Introduction
Part B	Editing Spreadsheets
Part C	Formatting Spreadsheets
Part D	Sorting Data
Part E	Printing Spreadsheets
Part F	Printing Formulas
Part G	Unit Review

Unit Introduction

Overview

In this unit, you will be introduced to creating customised Excel spreadsheets.

In this unit, you will learn to:

- understand editing functions
- apply editing functions to your own spreadsheets
- understand formatting functions
- apply formatting functions to your own work

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.

Part B

Editing Spreadsheets



Copying Data

When creating your spreadsheet, there you may need to copy or move data. In the previous unit, you saw that it easier to copy a formula to a new location rather than re-entering the formula each time.

The **Copy** feature allows you to create a duplicate of data contained in a selected cell or cells. Excel places this data in a temporary storage area called the **Clipboard**. You can then Paste the data anywhere in your spreadsheet.

The following steps are used to copy data using the **Copy** command:

1. Select the cell or cells you want to copy.
2. On the Home Tab, in the Clipboard group click the **Copy** button this will copy your selection to the Clipboard, or use the keyboard by pressing **Ctrl + C**. The cell pointer will change from a solid black line to moving dashes, indicating the data has been copied.
3. Select the first cell where you want to copy the selected data to. Remember to be careful when copying a number of cells that you do not copy over existing data.
4. To **Paste** the data into the selected location use the mouse to

select the **Paste** button on the Clipboard group, or use the keyboard by pressing **Ctrl + V**.

Copy data in a number of places by repeating the Paste command.



Moving Data

Moving data is used when you need to change the location of data in your spreadsheet. This is very similar to copying.

To move data using the **Cut** command use the following steps:

1. Select the cell or cells you want to move.
2. To move the data either use the mouse to select the **Cut** button on the standard toolbar or use the keyboard by pressing **Ctrl + X**.
3. Select the first cell where you want to copy the selected data to. Remember to be careful when moving a number of cells that you do not paste over existing data.
4. Paste the data as you did for copying.



Demonstration Moving or Coping Columns or Rows

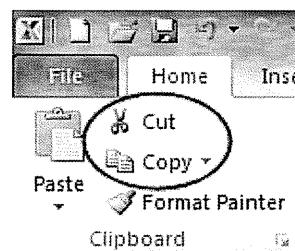
When you move or copy rows and columns, Excel moves or copies all of the data that they contain, including formulas and their resulting values, comments, cell formats, and hidden cells.

You can use the **Cut** command or **Copy** command to move or copy selected rows and columns as needed.

1. Select the row or column that you want to move or copy by clicking on either the Row heading or the Column heading. This will select the entire row or column.

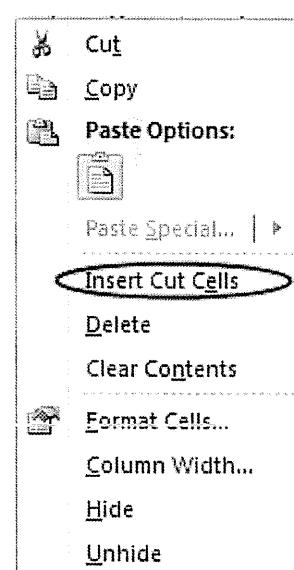
A5					
	A	B	C	D	E
1					
2					
3					
4					
5					
6					

2. Click on either the **Cut** or **Copy** buttons located on the **Clipboard**. For example, to cut Row 4, click on row heading 4 to select the entire row and then click on the **Cut** button.



3. Right-click a row below or column to the right of where you want to move or copy your selection, and then do one of the following:

- When you are **moving** rows or columns, click **Insert Cut Cells** on the shortcut menu.
- When you are **copying** rows or columns, click **Insert Copied Cells** on the shortcut menu.



Note

You cannot use the Paste command as this will replace the contents of the current row or column.

**Remember**

As with Microsoft Word, you can use the **Undo** button in Excel to reverse any changes that you have made when editing data. Use either the **Undo** button  on the Quick Access toolbar or the **Ctrl + Z** key combination on the keyboard.

**Clearing Data**

In creating your spreadsheets for the previous units, you have probably already encountered a number of situations where you needed to delete data from a cell.

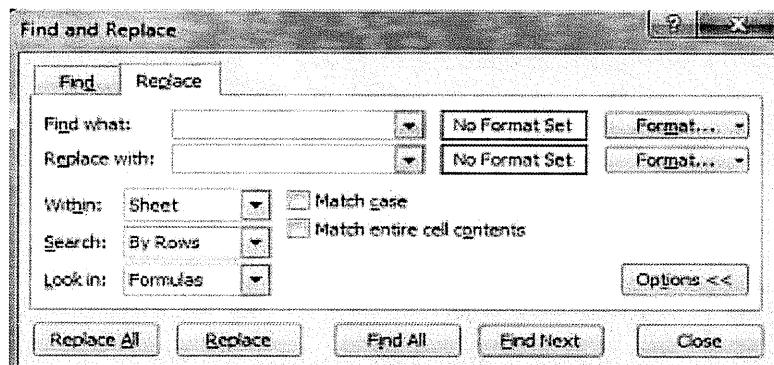
With Excel you can either choose to delete the cell or delete its contents. This is known as clearing. To clear the contents of a cell, simply select it and press the **Delete** key.

**Using Find and Replace**

The **Find** and **Replace** functions allow you to search for specific data in a spreadsheet and replace it with new data. You can access the **Find** and **Select** function by clicking on the **Editing** group on the Home Tab and selecting **Replace** from the dropdown menu.



You can also use the shortcut **Ctrl + F** for Find and **Ctrl + H** for Find and Replace. Click on the **Options** button and you will see this window.



From this window, you can enter the data you want to find in your document and the data you want to replace it with. The Find and Replace function is very useful if you need to update a cell reference in a series of copied formulas.

To start the search, click the **Find Next** button and then the **Replace** button. To replace all of the data simply choose the **Replace All** button.

You can specify whether Excel should search By Row or By Columns; however, this is only required for large spreadsheets containing a lot of data.

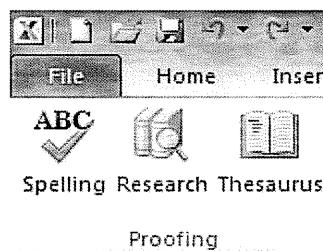
Can you think of situations where this feature may be useful?



Using Spell Check

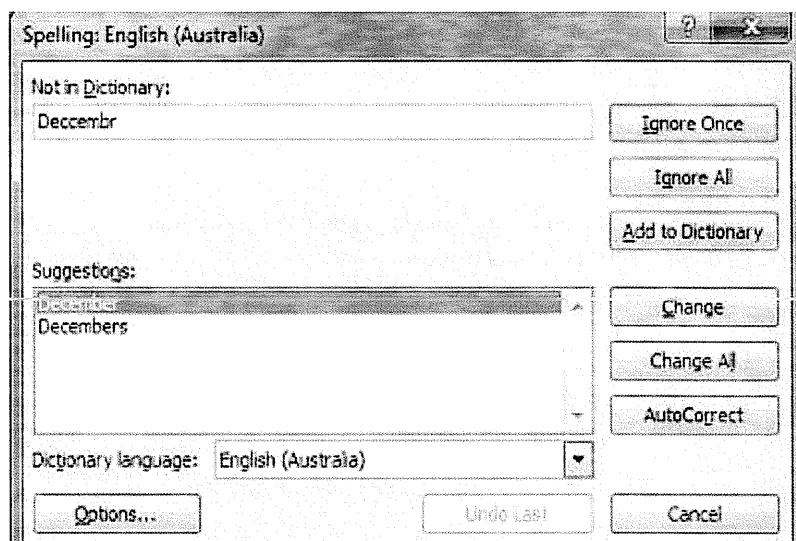
To ensure that your spreadsheet does not contain any spelling errors, it is important to check the spreadsheet once you have completed it.

To access the spell check function in Microsoft Excel, click on the **Review Tab** and select **Spelling** from the Proofing group.



How do you activate a Spell Check in Microsoft Office Word? Turn to a partner and explain how Spell Check works.

Once an incorrect word is found, the following dialog box will be displayed:



In this case, you will see that the misspelled word appears at the top.

The computer will automatically suggest alternatives. To accept the alternative provided, click on the Change button. To ignore the suggested spelling for a particular word, click on the Ignore Once button.



Task 3.1

Editing Spreadsheets

First work on your own. Using a spreadsheet created in a previous unit, and adding data where necessary, perform the tasks listed below and record any difficulties you encounter.

Then, turn to a partner and discuss and work through the difficulties you experienced.

Task	Difficulties
1. Copy data from one cell to another.	
2. Copy data from one cell to five other cells.	
3. Copy data from three consecutive cells in a column to three empty cells using the drag and drop method.	
4. Copy data from three consecutive cells in a row to three empty cells using the drag and drop method.	
5. Move a column ahead by three columns in the spreadsheet.	
6. Move a row to a new position at the top of the spreadsheet.	
7. Perform a spell check on the content of your spreadsheet.	

Part C

Formatting Spreadsheets



Understanding Formatting

Producing professional-looking spreadsheets in Excel is made easy using formatting features which allow you to:

- increase column widths and row heights
- change fonts, sizes and styles
- add borders and colours
- vertically and horizontally align cells
- introduce different number formats

	A	B	C	D	E	F	G
1	Sales as at June 2011						
2	Product Name	Inventory	Quantity Sold	Wholesale Cost	Retail Price	Total Cost of Sales	
3	Black Ink	550	52	\$32.50	\$40.63	\$3,951.35	
4	Colour Ink	363	83	\$38.96	\$48.70	\$4,139.50	
5	Black Refill Ink	483	150	\$15.23	\$19.04	\$2,835.63	
6	Colour Refill Ink	396	133	\$25.36	\$31.70	\$4,279.50	
7	Calculator	256	50	\$47.74	\$59.68	\$2,955.75	
8	Shredder	198	10	\$58.12	\$72.78	\$727.75	
9	Glue Stick	655	230	\$1.35	\$1.69	\$388.15	
10	Binder	150	15	\$21.77	\$34.03	\$230.35	
11	Whiteboard Markers	950	250	\$5.45	\$8.31	\$1,078.15	
12	Totals	4028	1023			\$20,644.00	
13	Averages	448	114			\$2,393.75	
14	Number formatting						

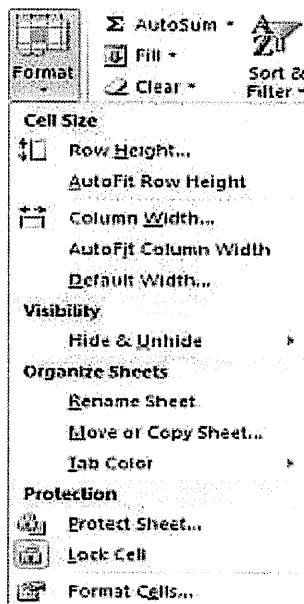
Which of these features do you think would be useful in your GAC studies? Why?

Can you think of any concrete examples?

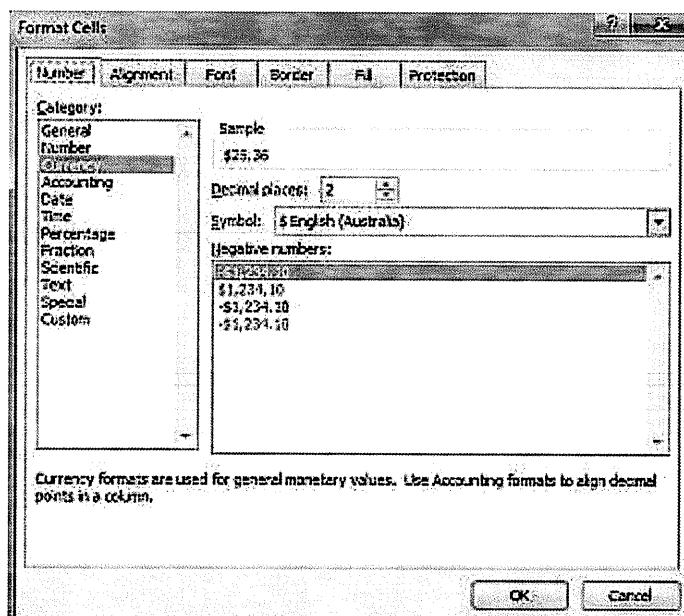


Demonstration Formatting Cells

To customise the look and feel of the data in your spreadsheet, use the **Format** option located on the Cells group on the Home Tab.



The main tool for formatting a cell is the **Format Cells** dialog box.



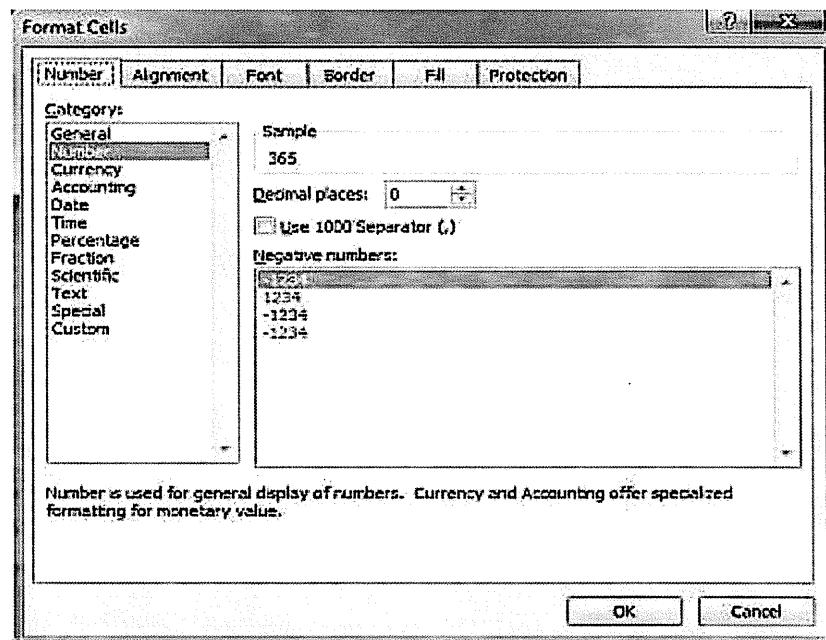
To format your data:

1. Select the cell or cells you want to format.
2. Right click and from the shortcut menu select **Format Cells**.
3. From the Format Cells dialog window, select the formatting you require.
4. Click on **OK** to apply the formatting.



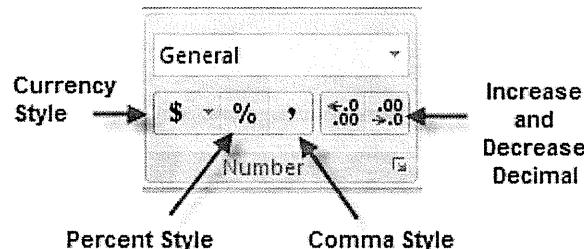
Formatting Numbers

To format the numeric data in your spreadsheet, use the **Number Tab** of the Format Cells dialog box.



The Category window provides a list of numeric formatting styles that can be applied. General is the default format for numbers entered into Excel. Numbers can also be formatted for different currency types, percentages, or date formats.

You can also use the formatting buttons on the Number group on the Home Tab.



**Task 3.2****Formatting Numbers in Excel**

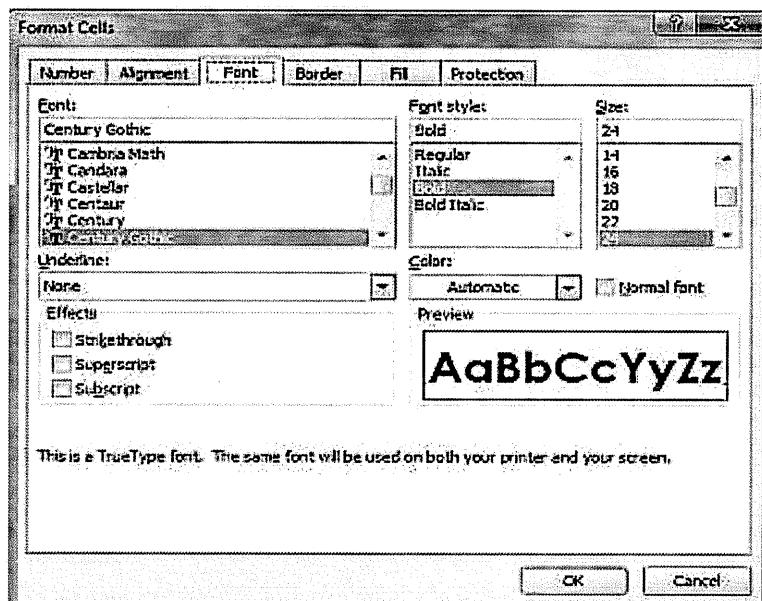
Working on your own:

1. Open the spreadsheet ***formulas and functions.xlsx*** created in Task 2.5 and format the numbers appropriately. Your spreadsheet should look like the one below.
2. ***Save*** your spreadsheet.

Advanced Computer Accessories							
Employee Payroll							
Tax Rate:	30.00 %						
Employee Name	Sales	Base Salary	Bonus	Commission	Gross Pay	Tax	Net Pay
Tom	1500	\$35,000.00	\$350.00	\$750.00	\$36,100.00	\$10,830.00	\$25,270.00
Susan	2300	\$46,000.00	\$500.00	\$1,150.00	\$47,650.00	\$14,295.00	\$33,355.00
James	4700	\$42,500.00	\$550.00	\$2,350.00	\$45,400.00	\$13,620.00	\$31,780.00
William	3200	\$29,600.00	\$348.00	\$1,600.00	\$31,548.00	\$9,464.40	\$22,083.60
Fraser	2600	\$34,900.00	\$290.00	\$1,300.00	\$36,490.00	\$10,947.00	\$25,543.00
Mary	1750	\$39,420.00	\$360.00	\$875.00	\$40,655.00	\$12,196.50	\$28,458.50
Kim	3800	\$37,750.00	\$520.00	\$1,900.00	\$40,170.00	\$12,051.00	\$28,119.00

**Formatting Font**

To format fonts within your spreadsheet, use the **Font** Tab within the Format Cells dialog box. Follow the above procedure to access the Format Cells dialog box, then select the **Font** Tab to display the following:



The Tab displays a number of formatting options available for formatting fonts. It allows you to change the size, colour and look of the text.



Demonstration Getting to Know Formatting Features

Your teacher will now demonstrate the following formatting features in Excel:

- Bold
- Italics
- Strikethrough text
- Changing Font style (i.e. Times New Roman to Arial, etc.)



Task 3.3

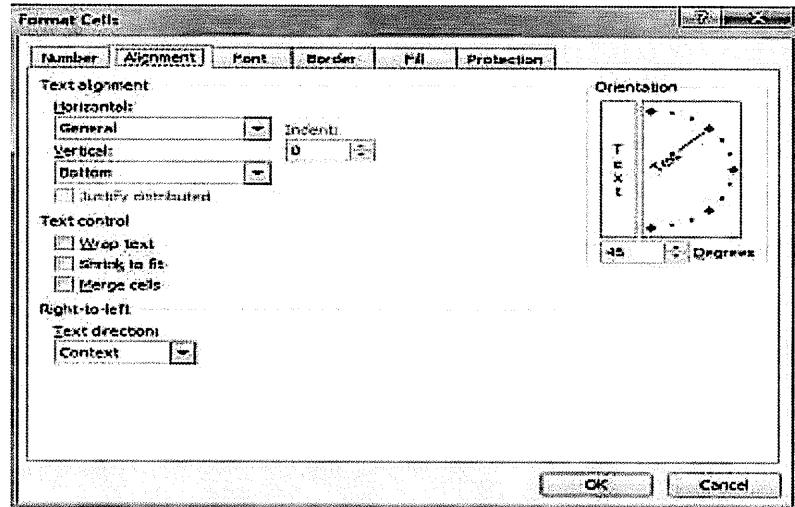
Formatting Font in Excel

1. Open your *formulas and functions.xlsx* spreadsheet.
2. Change the font for the entire spreadsheet to Arial, 11pt.
3. Change the heading to 14pt, bold.
4. Change the second heading to 12pt, bold.
5. Change the Tax Rate and the cell containing the tax amount of 30% to 12pt, bold.
6. Change the column headings all to 12pt, bold.
7. Save your spreadsheet.



Aligning Text

Excel automatically positions data at the bottom of a cell, right aligning text and left aligning numbers. To alter the position of your data within a cell, use the **Alignment Tab**. To access this Tab, open the Format Cells Dialog box and click on the Alignment Tab to display the following:



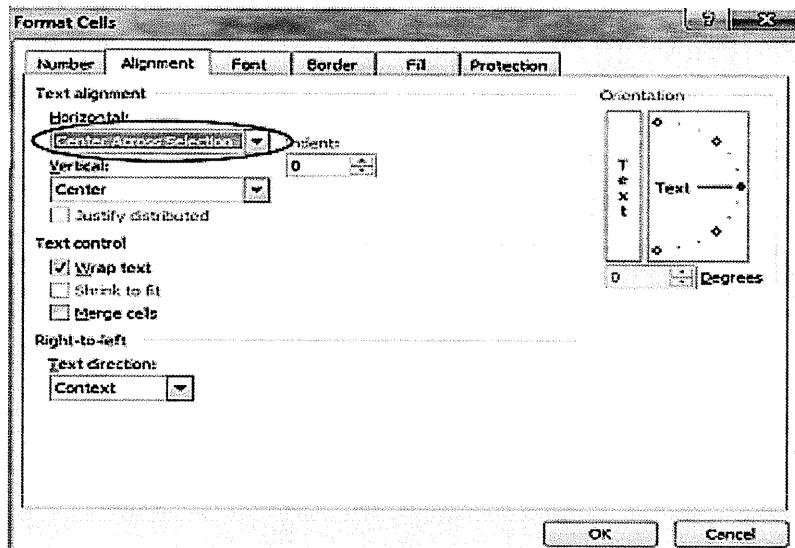
The Alignment Tab allows you to position the data within a cell(s) both horizontally and vertically.

You can also tick the Wrap text option to wrap long text to ensure it fits within a cell's width or alternatively use the Shrink to fit to size the text to fit within a set cell size.



Demonstration Centering Headings across Columns

If you wish to center a heading across your table or across several columns, you can use the **Center Across Selection** feature found on the Alignment Tab in the Format Cells dialog box.



Click in the cell in which you wish to center the heading, select the cells, and then set the Center Across Selection. Your heading will now be centered across those columns.

A	B	C	D	E	F	G	H
1	Advanced Computer Accessories						
2	Employee Payroll						
3	Tax Rate:	30.00%					
4	Employee Name	Sales	Base Salary	Bonus	Commission	Gross Pay	Tax
							Net Pay

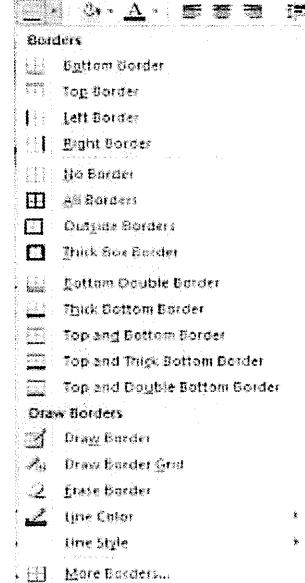


Demonstration Applying Borders and Colours

Borders and colours can be used to add interest and make your spreadsheet easier to read.

1. Select the cell(s) you would like to put a border on.

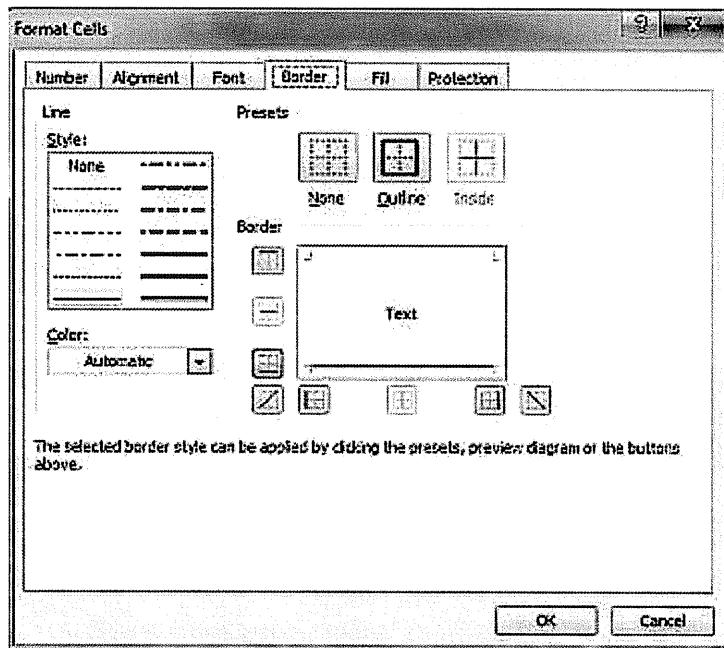
2. Click on the **Border** button on the Font group on the Home Tab and select the required border style.



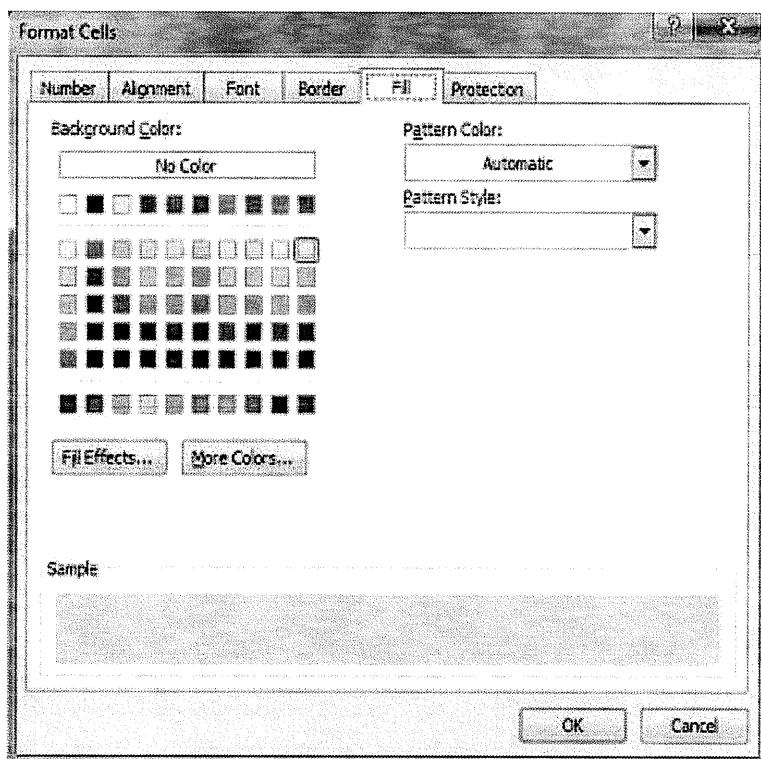
3. Click on the **Fill Color** button to add a background colour to your cell(s).

OR

4. Right mouse click on the cell(s), and select Format Cells, the Format Cell dialog box will appear.



5. Click on the **Border** Tab and select the required borders.
6. Click on the **Fill** Tab and select the required colour and pattern style.





Demonstration Copying Formatting

As you add new data to your spreadsheet, you may find that you need to format the new data. You can easily copy the formatting options from one group of cells to another using the **Format Painter**.

To copy a format from one cell to another follow these steps:

1. Select the cells that contain the formatting that you want to copy.
2. Use the mouse to click the **Format Painter** button  on the clipboard group.
3. Click and drag the mouse over the cells you wish to apply the copied formats.
4. Release the mouse button and the formatting will be copied.



Task 3.4

Formatting your Spreadsheet

1. Open your *formulas and functions.xlsx* spreadsheet.
2. Format your spreadsheet appropriately using some of the features you learned in this section. Add borders and shading, change the text alignment, and center your headings.
3. Save your spreadsheet.

Example spreadsheet format:

Advanced Computer Accessories							
Employee Payroll							
Tax Rate: 30.00%							
Employee Name	Sales	Base Salary	Bonus	Commission	Gross Pay	Tax	Net Pay
Tom	1500	\$35,000.00	\$350.00	\$750.00	\$36,100.00	\$10,830.00	\$25,270.00
Susan	2300	\$46,000.00	\$500.00	\$1,150.00	\$47,650.00	\$14,295.00	\$33,355.00
James	4700	\$42,500.00	\$550.00	\$2,350.00	\$45,400.00	\$13,620.00	\$31,780.00
William	3200	\$29,600.00	\$348.00	\$1,600.00	\$31,548.00	\$9,464.40	\$22,083.60
Fraser	2600	\$34,900.00	\$290.00	\$1,300.00	\$36,490.00	\$10,947.00	\$25,543.00
Mary	1750	\$39,420.00	\$360.00	\$875.00	\$40,655.00	\$12,196.50	\$28,458.50
Kim	3800	\$37,750.00	\$520.00	\$1,900.00	\$40,170.00	\$12,051.00	\$28,119.00

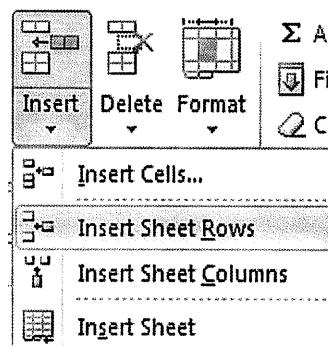


Demonstration Adding or Removing Columns and Rows

As you format and enhance your spreadsheet, it may be necessary to add or remove columns and rows to add more data, or to simply enhance the presentation of your information.

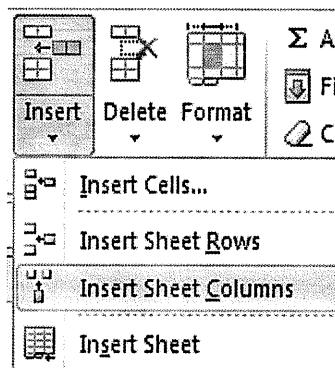
To insert rows:

1. Select the row or a cell in the row below where you want to insert the new row. For example, to insert a new row above row 5, click in a cell in row 5.
2. On the Home Tab, in the Cells group, click the arrow next to **Insert**, and then click **Insert Sheet Rows**.



The new row will be inserted above the current row.

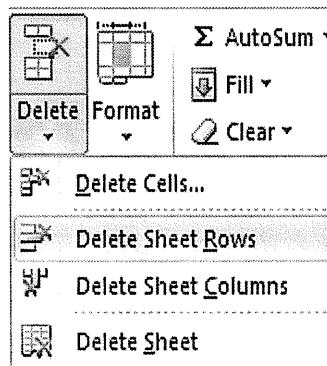
1. *To insert columns:* Select the column or a cell in the column immediately to the right of where you want to insert the new column. For example, to insert a new column to the left of column B, click in a cell in column B.
2. On the Home Tab, in the Cells group, click the arrow next to **Insert**, and then click **Insert Sheet Columns**.



The new column will be inserted to the left of the current column.

To remove rows or columns:

1. Select the row or column you want to delete.
2. On the Home Tab in the Cells group select **Delete** and then click on **Delete Sheet Rows** or **Delete Sheet Columns**.



Excel will then delete the selected column or row and update all functions and formulas. The rows below a deleted row will move up and columns to the right of a deleted column will move to the left.



Task 3.5

1. Open your **Teacher Contact Details.xlsx** spreadsheet.
2. Move the Subject column to the right of the First Name column.
3. Insert a column after First Name and add the heading **Mobile Phone**.
4. Enter the data as shown below.
5. Format your spreadsheet adding shading, borders and centring the main heading.
6. Save your spreadsheet.

Teacher Contact Details						
Title	Last Name	First Name	Mobile Phone	Subject	Room #	Email address
Mr	Moore	James	0413 624 806	Listening and Speaking Skills	17	jmoore@gmail.com
Mrs	Porter	Gwyneth	0468 613 196	Reading and Writing Skills	20	gwyport@ymail.com
Mr	Stallone	Arnold	0435 266 303	Maths	10	arnie4math@gmail.com
Ms	Pattinson	Barbara	0413 766 799	Business Studies	15	bizbarb@hotmail.com
Mr	Darwin	Alfred	0423 308 455	Science	13	adsciteach@ymail.com
Miss	Gates	Maria	0413 891 198	Computing	18	mgates62@gmail.com

Part D**Sorting Data****Understanding Data Sorting**

As with Word, data in rows or columns of a list can be sorted. When you sort data, Excel rearranges rows, columns, or individual cells by using the specified sort order. You can sort lists in ascending (1 to 9, A to Z) or descending (9 to 1, Z to A) order, and also sort based on the contents of one or more columns.

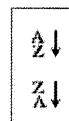
Can you think of situations where it could be useful to sort data?

**Demonstration**

Your teacher will now demonstrate how to sort data in Excel.

If your spreadsheet has no total row, click in a cell in the column you wish to sort:

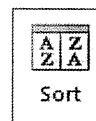
1. On the Data Tab in the Sort & Filter group click on either **Sort A to Z** (ascending) or **Sort Z to A** (descending) buttons.



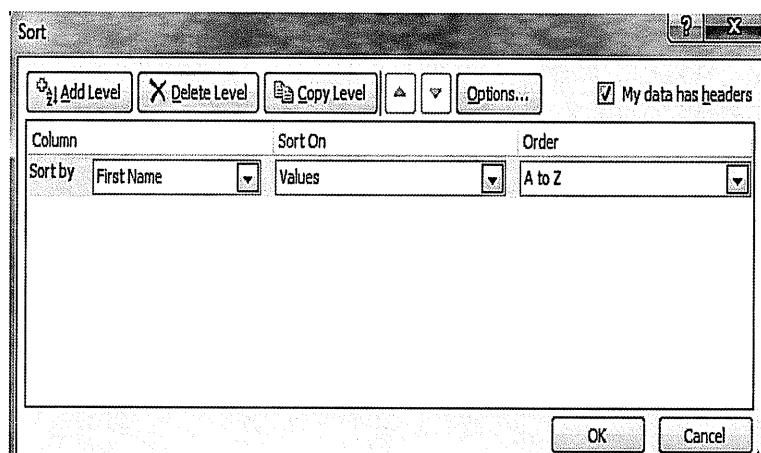
2. Your list will be alphabetically sorted.

If your spreadsheet has a total row or your heading row is being sorted with the data:

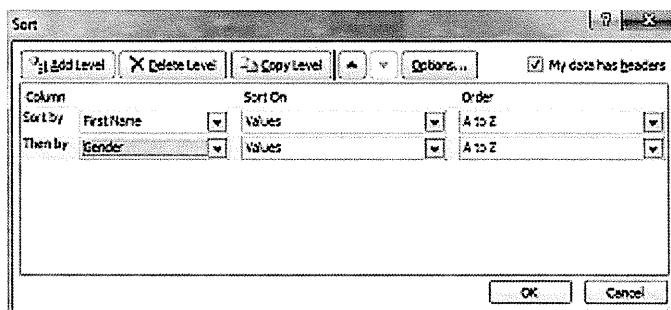
1. Select the data to be sorted.
2. On the Data Tab in the Sort & Filter group click the **Sort** button.



3. The **Sort** dialog box will appear.



4. In the **Sort by** field, select the column to be sorted.
5. You can sort by multiple columns - click on the **Add Level** to add a second column to be sorted.



6. Select whether to sort by **A to Z** or **Z to A**.
7. Click **OK**.

Note: If your data has column headings, Excel will automatically tick the **My data has headers**. If this is ticked and your data does not have any column headings, ensure that you untick this option.



Caution

Be careful not to select only the cells in the column you wish to sort. If you do, Excel will sort that column only and the data in the other columns will not be sorted. The data in your list will no longer be correct.

If your list has Headings or Total rows, be careful that they are not sorted with your data. Only select the data that needs to be sorted.



Task 3.6

1. Open your **Teacher Contact Details.xlsx** spreadsheet.
2. Sort your spreadsheet by Last Name.
3. Save your spreadsheet.

Teacher Contact Details						
Title	Last Name	First Name	Mobile Phone	Subject	Room #	Email address
Mr	Darwin	Alfred	0423 308 455	Science	13	adsciteach@ymail.com
Miss	Gates	Maria	0413 891 198	Computing	18	mgates62@gmail.com
Mr	Moore	James	0413 624 806	Listening and Speaking Skills	17	jmoore@gmail.com
Ms	Pattinson	Barbara	0413 766 799	Business Studies	15	bizbarb@hotmail.com
Mrs	Porter	Gwyneth	0468 613 196	Reading and Writing Skills	20	gwypport@ymail.com
Mr	Stallone	Arnold	0435 266 303	Maths	10	arnie4math@gmail.com

Part E

Printing Spreadsheets



Understanding Printing Spreadsheets

Printing spreadsheets is not as simple as printing documents created in Word. Documents are generally produced to fit on a standard piece of paper, whereas spreadsheets can contain a number of columns and rows that may not fit on a standard piece of paper.

As spreadsheets can extend over a number of pages, Excel provides tools to allow you to preview your spreadsheet before it is printed, to add headers and footers to the page, and to ensure your column or row labels are reprinted on each page.

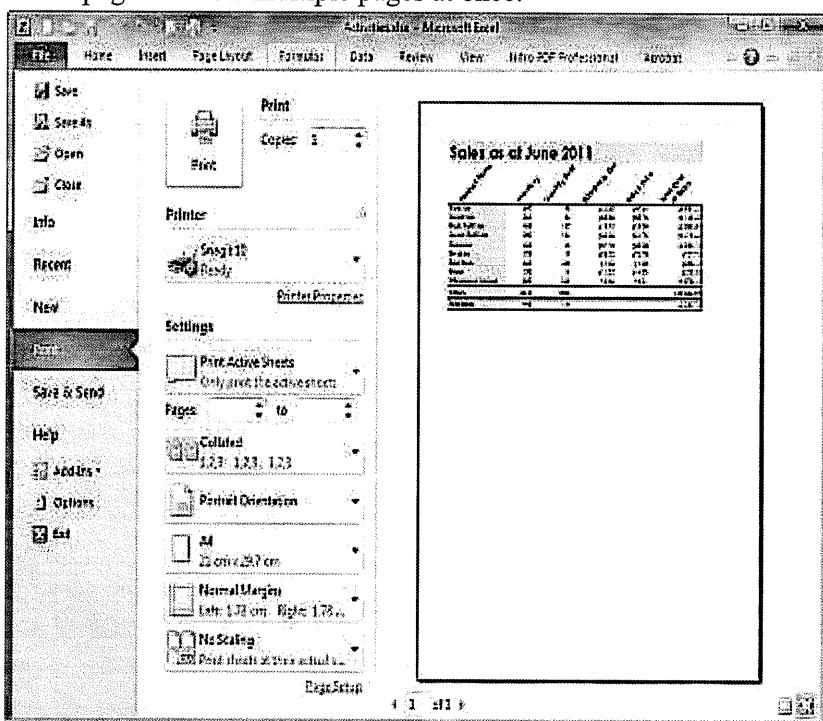
The following sections cover the most common tools you will use to format your spreadsheet for printing.

Print Preview

To preview a print job click on the **File Tab** and choose **Print**.

You will see the **Print** window which includes a preview of your spreadsheet. Your spreadsheet will be displayed in the same format that it will be printed.

You can browse through your spreadsheet using the navigation arrows at the bottom of the window. You can also zoom in and out of the pages to view multiple pages at once.

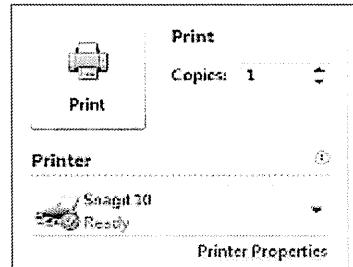


You can also click on the **Print Preview** button on the **Quick Access Toolbar** (if it has been added).

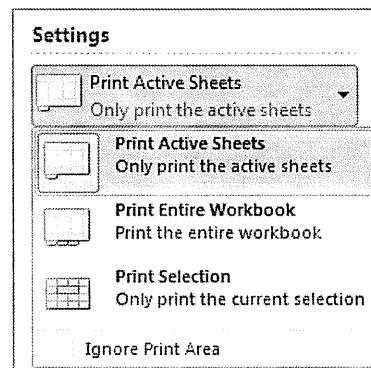
Print Options

The Print screen also allows you to select a number of options in printing your document, including:

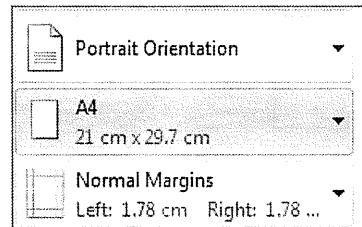
- printing more than one copy
- selecting a printer



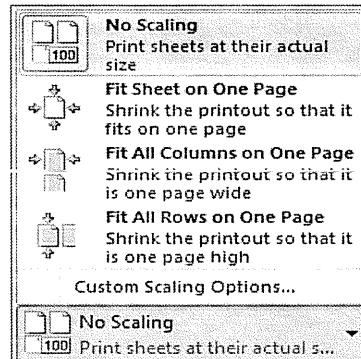
- printing a selection of the spreadsheet, only the active sheet, or the entire workbook



- changing the page orientation, paper size, and setting margins

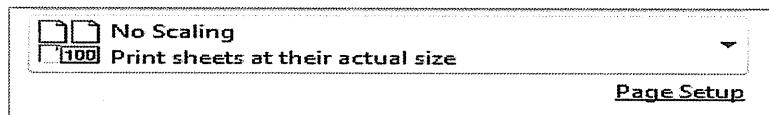


- setting the scaling method - either printing the worksheet to fit on one page or setting custom scaling

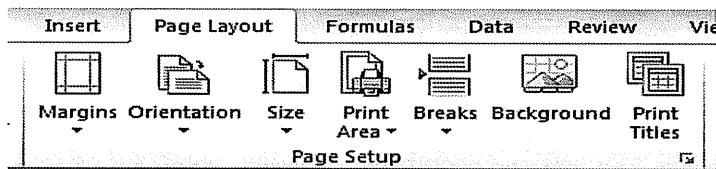


**Page
Setup**

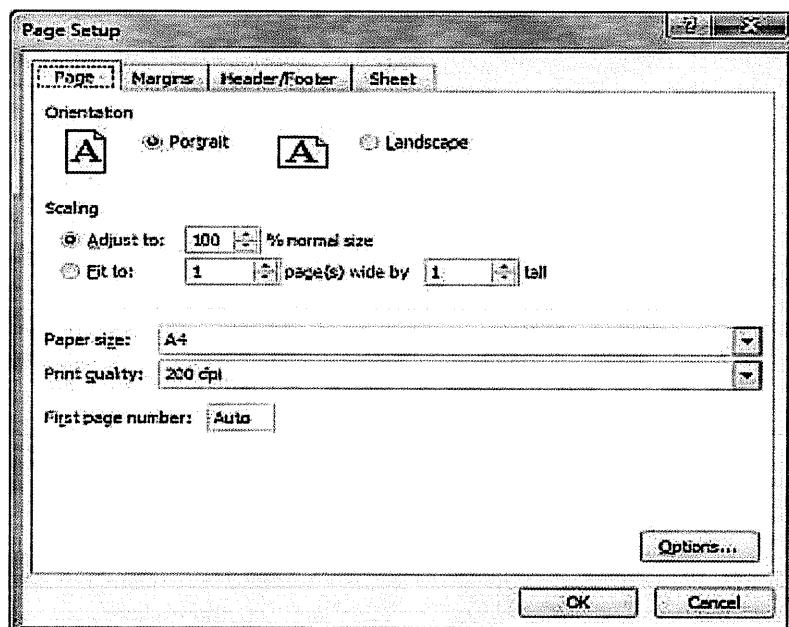
Most of these options, and more, are found on the Page Setup dialog box. You can access this box by clicking on the **Page Setup** link on the Print page.



You can also click on the **Page Layout** Tab and click on the Page Setup dialog box launcher.



Excel will display the following screen:



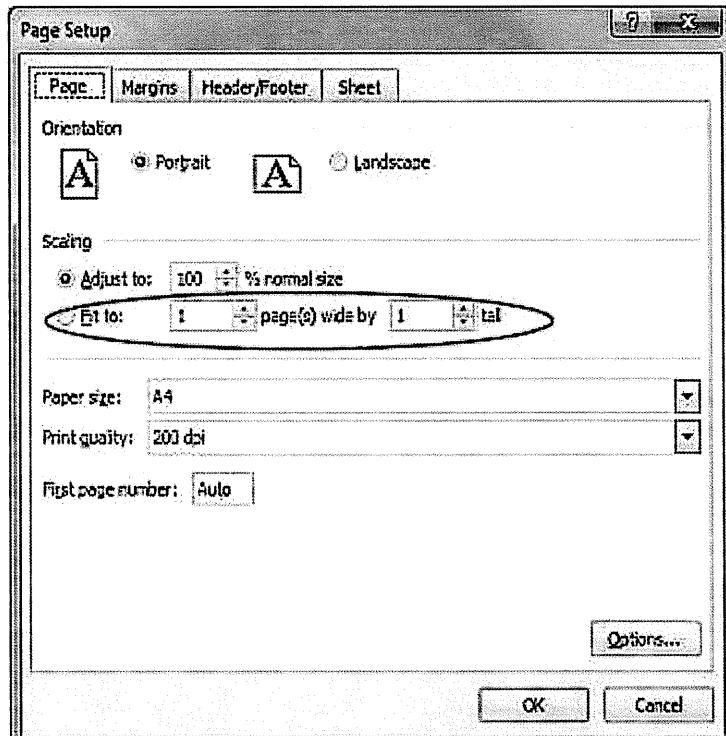
Using the Page Setup dialog box you can manage the orientation of the spreadsheet, print columns and rows, or add headers and footers to your page.

You can also adjust the way your spreadsheet is setup through the Page Setup group on the **Page Layout** Tab.



Hint

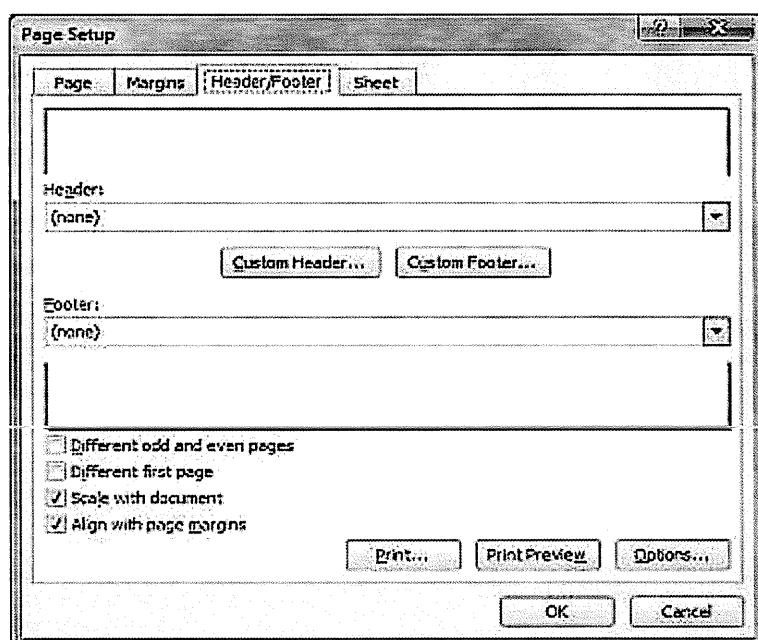
If you want your spreadsheet to fit on one page, you can tick the Fit to: feature under the **Scaling** option. This is particularly handy when you wish to print out the formulas - see Part F - Printing Formulas.



Adding Headers and Footers

Excel enables you to add headers and footers to your worksheets. These appear at the top and bottom of each page of your print out.

You access this feature through the **Header/Footer** Tab in the Page Setup dialog box.



**Task 3.7****Brainstorming Useful Applications for Headers and Footers**

Work in groups of three. Brainstorm ideas in response to the following questions:

1. *How can Headers and Footers add clarity to spreadsheets?*
2. *Can you think of situations where Headers and Footers can be useful?*
3. *What kind of useful text could be added to Headers and Footers?*

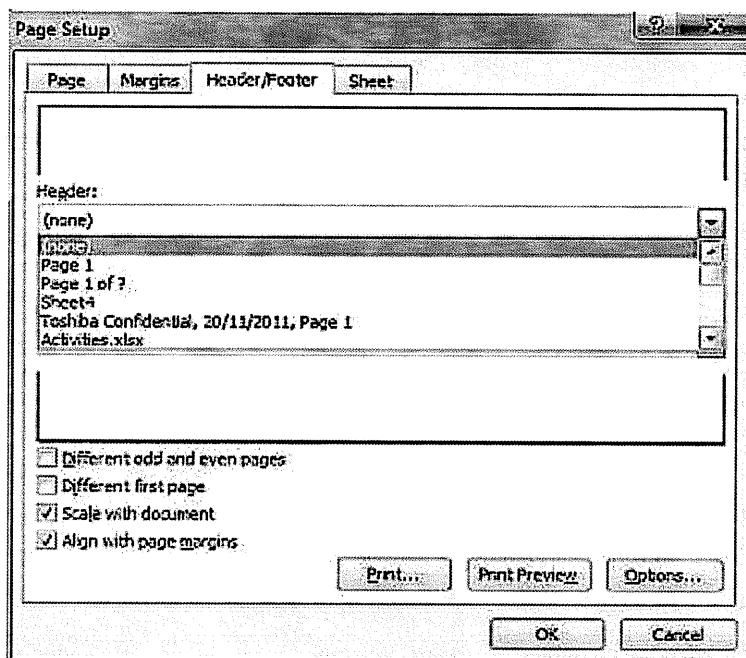
1.

2.

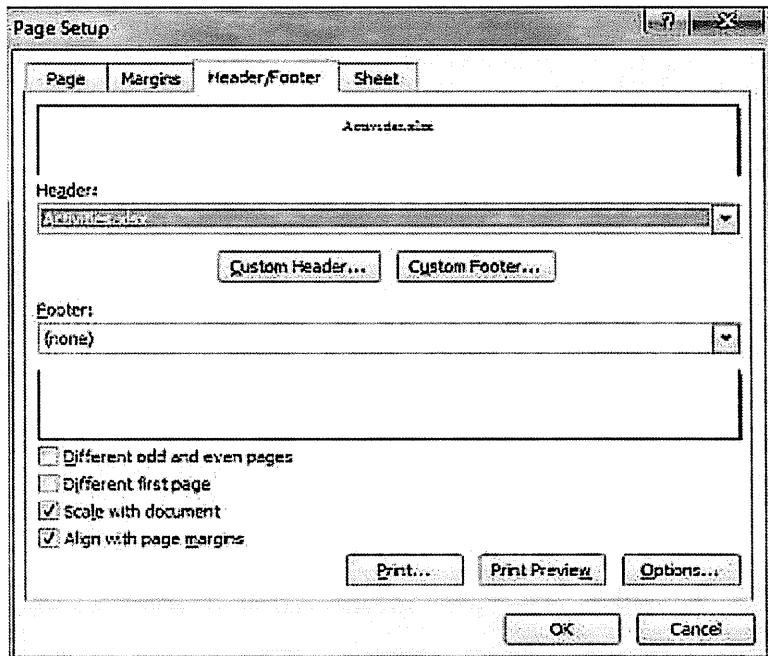
3.



Demonstration Excel provides a number of standard Headers and Footers such as: filename, current date and time, and page numbers. These can be accessed via the drop down boxes.



Standard Headers and Footers To enter a standard Header or Footer, choose one from the drop down box. The result will be displayed in the header box at the top of the Header/Footer Tab.



Custom Headers and Footers With Excel you can insert custom Headers and Footers with the **Insert** Tab. Click on the **Header & Footer** button on the Text group.

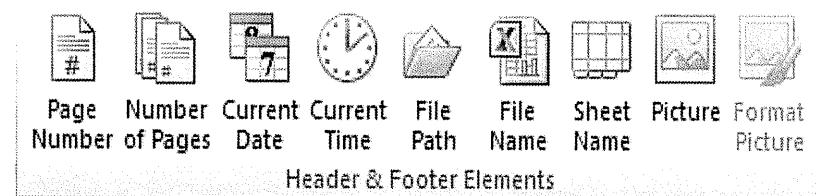


When you click on the Header & Footer button, you will see the **Page Layout View**. The cursor will be positioned in the Header area in the center (note the header and footer areas have three placeholders - left, center and right). Type the header text and format as required.

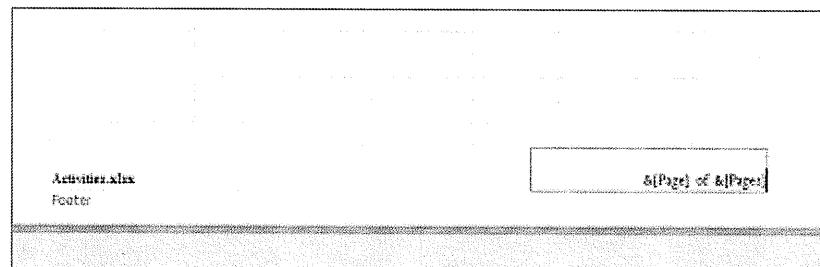
The screenshot shows a Microsoft Word document in Page Layout View. The ribbon at the top has 'Page Layout' selected. In the center of the screen, there is a header placeholder with the text 'June Sales 2011'. Below the header, the main content area contains the text 'Sales as at June 2011'. On the right side of the page, there is a footer placeholder with the text 'Click'. The status bar at the bottom indicates 'Page 1'.



Click on the **Go To Footer** button to move to the footer area. Type in the footer text or add one of Excel's footer elements as shown on the Header & Footer Elements group.



Below the **File Name** and the **Page Number** and **Number of Pages** elements were added.



Use the Normal view button (at the bottom right of the screen) to return back to your normal spreadsheet view.



Task 3.8

Creating Headers and Footers for your *Teacher Contact Details* Spreadsheet

1. Open your *Teacher Contact Details.xlsx* spreadsheet.
2. Create a Header with the text “Teacher Details”.
3. Create a Footer with your name in the center.
4. Format the Header and footer appropriately.
5. Change the Page Orientation to Landscape.
6. Print a copy of your spreadsheet.
7. Save your spreadsheet.

Teacher Details

Teacher Contact Details							
Title	Last Name	First Name	Mobile Phone	Subject	Room #	Room Location	Email address
Mr	Darwin	Alfred	0423 308 455	Science	13	Workshop Lab A	adsciteach@ymail.com
Miss	Gates	Maria	0413 891 198	Computing	18	Library - Room 3	mgates62@gmail.com
Mr	Moore	James	0413 624 806	Listening and Speaking Skills	17	Building B	jmoore@gmail.com
Ms	Pattinson	Barbara	0413 766 799	Business Studies	15	Library - Room 2	bizbarb@hotmail.com
Mrs	Porter	Gwyneth	0468 613 196	Reading and Writing Skills	20	Building C	gwypor@ymail.com
Mr	Stallone	Arnold	0435 266 303	Maths	10	Science Lab 1	arnie4math@gmail.com

Student Name

Part F**Printing Formulas**

Demonstration Part of documenting your spreadsheet is to print out the formulas. This is so that you have a reference if the formula is overwritten.

To display formulas instead of the value:

1. Open your spreadsheet.
2. Make sure you have saved your spreadsheet before switching to showing formulas.
3. Press **Ctrl + ~** (grave accent). This will toggle between Normal view and Show Formulas view.
4. The formulas will now be displayed instead of the values.

Appareance Future Shop December Ending Sales for 2016						
	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10	Total				=SUM(E5:E9)	=SUM(F5:F9)

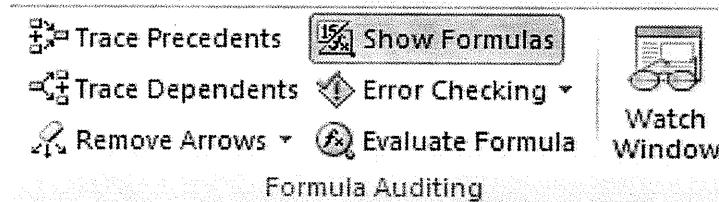
5. The spreadsheet will have spread out and the headings disappeared. To print the spreadsheet on your page, you will need to resize and perhaps even change the font size, or use the **Fit to** option.
6. Print a copy of your spreadsheet showing the formulas.
7. Close the spreadsheet without saving (when you re-open it, it will once again be showing the values).

**Caution**

Make sure that you **DO NOT** save the spreadsheet. Otherwise, when you switch back to displaying values, your previous formats will be lost.

**Hint**

You can also switch to view formulas mode by clicking on the Formulas Tab on the Ribbon and selecting the **Show Formulas** button on the Formula Auditing group.





Task 3.9

Printing your *formulas and functions* Spreadsheet

1. Open your *formulas and functions.xlsx* spreadsheet.
2. Print a copy of your spreadsheet showing formulas.

Note: you will need to print the spreadsheet to fit onto one page. Do not save your spreadsheet.

Advanced Computer Accessories								
	A	B	C	D	E	F	G	H
1								
2								
3	Tax Rate:	0.3						
4	Employee Name	Sales	Base Salary	Bonus	Commission	Gross Pay	Tax	Net Pay
5	Tom	1500	35000	350	=B5*50%	=C5+D5+E5	=F5*\$B\$3	=F5-G5
6	Susan	2300	46000	500	=B6*50%	=C6+D6+E6	=F6*\$B\$3	=F6-G6
7	James	4700	42500	550	=B7*50%	=C7+D7+E7	=F7*\$B\$3	=F7-G7
8	William	3200	29600	348	=B8*50%	=C8+D8+E8	=F8*\$B\$3	=F8-G8
9	Fraser	2600	34900	290	=B9*50%	=C9+D9+E9	=F9*\$B\$3	=F9-G9
10	Mary	1750	39420	360	=B10*50%	=C10+D10+E10	=F10*\$B\$3	=F10-G10
11	Kim	3800	37750	520	=B11*50%	=C11+D11+E11	=F11*\$B\$3	=F11-G11



Task 3.10

Printing your *format practical ex* Worksheet

Follow the instructions below to format and print your spreadsheet.

- Use the following data in the table to create a spreadsheet.

Global Assessment Certificate							
Level I Assessment Results							
	Student Name	Assessment Event 1 (25%)	Assessment Event 2 (15%)	Assessment Event 3 (35%)	Assessment Event 4 (25%)	Total (100%)	Average
1.	Peter	15	10	27	17		
2.	Sam	18	12	30	19		
3.	Sera	10	12	25	17		
4.	Jon	23	14	32	24		
5.	Rod	21	13	26	19		
6.	Polly	19	8	20	23		
7.	Greg	12	12	28	20		
8.	Karen	24	9	18	20		

- Calculate the Total marks for each student.
- Calculate the Average marks for each student.
- Insert a row after ‘Rod’ and add the following information:

Student Name:	Jack
Assessment Event 1:	20
Assessment Event 2:	11
Assessment Event 3:	33
Assessment Event 4:	18

- Calculate the ‘Total’ and ‘Average’ marks.
- Delete the row containing information on ‘Sam’.
- Type your Name and Student ID number in the header and the Date and Sheet Tab Name in the footer.
- Save your work as *format practical ex.*
- Print the spreadsheet in ‘landscape’.
- Print a copy showing formulas (do not save your spreadsheet).
- Show your completed work to your teacher to ensure that you have mastered the task.

Part G

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Editing Spreadsheets
- Formatting Spreadsheets
- Sorting Data
- Printing Spreadsheets
- Printing Formulas

Review all the activities you completed in this unit and make sure that any questions you noted were answered.



Unit Consolidation

Complete the following exercise to revise some of the functions covered in Unit 1, 2 and 3.

See your teacher if you have any problems or questions.

You work in the Sales department of an Appliance company. You have been asked to prepare a spreadsheet showing the sales figures below for the financial year ending December, 2011.

Appliance	Unit Price	Sales Price	Units Sold
Refrigerators	670.00	1,500.00	125,000
Freezers	640.00	1,150.00	112,800
Air-Conditioners	970.00	1,670.00	76,780
Stoves	770.00	1,500.00	141,256
Range Hoods	350.00	770.00	57,600
Microwaves	330.00	630.00	156,000

Task 1: Design and Create a Spreadsheet

1. Design and create the spreadsheet so that all information can be easily seen. After entering all data, save your spreadsheet as **Appliance Warehouse**.
2. Add as a main heading - **Appliance Warehouse**.
3. Add as a sub-heading - **Sales figures as at December 2011**
4. Resize and format the columns (including the headings) so that the spreadsheet is well-balanced on one page only.
5. Center title, Font 16, Font type Arial, bold.
6. Center sub-heading, Font 12, Font type Arial, bold.
7. Use Font 11 and Font style Arial for the data in the spreadsheet.
8. Left align numbers in spreadsheet.
9. After Units Sold, add the following headings - **Total Sales (Unit Price)**, **Total Sales (Sales Price)** and **Profit**.
10. Under the bottom line, add a row called **Total**.
11. Format the appropriate columns to currency.
12. Create a Header with your name and Footer with 'Print 1'.

Task 2: Calculations to be done:

1. Add the following formulas to the appropriate columns:

Total Sales (Unit Price) = Unit Price * Units Sold

Total Sales (Sales Price) = Sales Price * Units Sold

Profit = Total Sales (Sales Price) – Total Sales (Unit Price)

2. Enter an appropriate formula to calculate the **Total** for the Total Sales (Unit Price), Total Sales (Sales Price) and Profit columns.
3. Save and Print a copy of your spreadsheet.

Task 3: Amend the Spreadsheet

Carry out the following amendments and additions to your spreadsheet:

1. Move the **Units Sold** column so that it comes before the **Unit Price** column.
2. Sort in alphabetical order by the **Appliance** column.
3. Apply shading to the top two rows and the column headings.
4. Add a border line above and below the column headings as well as above and below the **Total** row.
5. Increase the height of the heading rows as well as the **Total** row.
6. Add the following two appliances, entering the data in the correct columns (make sure the formulas for the remaining columns are correct).

	Units Sold	Unit Price	Sales Price
Dishwashers	85,450	590.00	980.00
Washing Machines	98,654	570.00	1,200.00

7. Sort again in alphabetical order by the **Appliance** column.
8. Change the Footer to Print 2, **Save** and print a copy of your spreadsheet.
9. Change the Footer to Print 3 and print your spreadsheet showing formulas (on one page).
10. Close your spreadsheet **without** saving.

Hand in: Three printouts.

Your final spreadsheet should look similar to the following:

A	B	C	D	E	F	G
Appliance Warehouse						
Sales figures as at June, 2011						
Appliance	Units Sold	Unit Price	Sales Price	Total Sales (Unit Price)	Total Sales (Sales Price)	Profit
Air-Conditioners	76,780	\$970.00	\$1,670.00	\$74,476,600.00	\$128,222,600.00	\$53,746,000.00
Dishwashers	85,450	\$590.00	\$980.00	\$50,415,500.00	\$83,741,000.00	\$33,325,500.00
Freezers	112,800	\$640.00	\$1,150.00	\$72,192,000.00	\$129,720,000.00	\$57,528,000.00
Microwaves	156,000	\$330.00	\$630.00	\$51,480,000.00	\$98,280,000.00	\$46,800,000.00
Range Hoods	57,600	\$350.00	\$770.00	\$20,160,000.00	\$44,352,000.00	\$24,192,000.00
Refrigerators	125,000	\$670.00	\$1,500.00	\$83,750,000.00	\$187,500,000.00	\$103,750,000.00
Stoves	141,256	\$770.00	\$1,500.00	\$108,767,120.00	\$211,884,000.00	\$103,116,880.00
Washing Machines	98,654	\$570.00	\$1,200.00	\$56,232,780.00	\$118,384,800.00	\$62,152,020.00
Total				\$517,474,000.00	\$1,002,084,400.00	\$484,610,400.00

Unit 4 Using Advanced Formulas and Features

Part A	Unit Introduction
Part B	Working with Multiple Worksheets
Part C	Advanced Features
Part D	Advanced Formulas
Part E	Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to using some of the more advanced formulas and features that Excel provides.

In this unit, you will learn to:

- create and format multiple worksheets
- insert formulas to link the worksheets
- use features such as removing duplicate entries, filtering data and conditional formatting
- use some additional advanced formulas

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.



Assessment Event 1

In-class Test 1

Assessment Event 1: In-class Test 1 will take place **at the end of this unit.**

This is a theory test which includes short answer, multiple choice and true/false questions. It will be done in class under test conditions.

Part B**Working with Multiple Worksheets****Understanding Multiple Worksheets**

There are many times when you need to create a spreadsheet which contains a lot of data. In such cases it is easier to split the data over multiple worksheets. You may also need to link data from the different sheets.

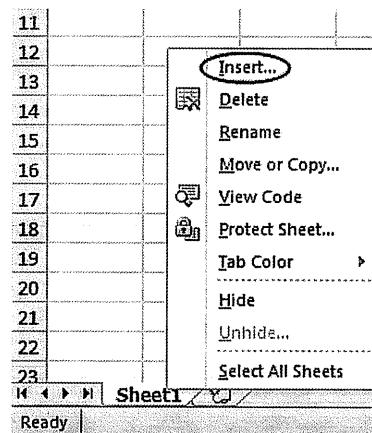
For example, a company may keep the budgets for each of their departments on a separate worksheet and have a final worksheet that shows the total budget for the entire company.

Can you think of situations in the GAC where it would be useful to split data over multiple worksheets?

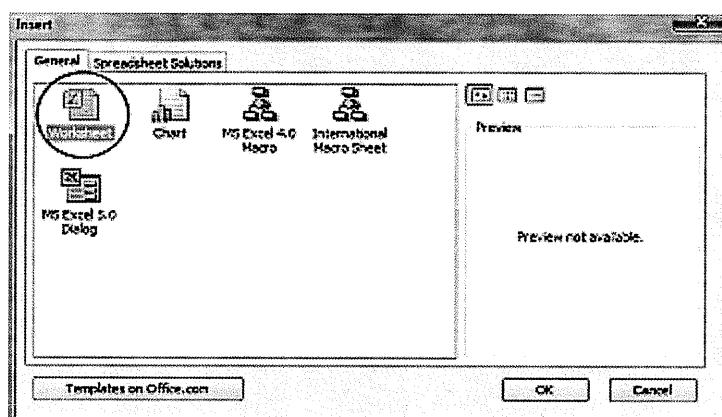
In this section, we will create several worksheets and use formulas to link the data to show an overall total.

**Demonstration Inserting New Worksheets**

To insert a worksheet, right click on the sheet name and select **Insert**.



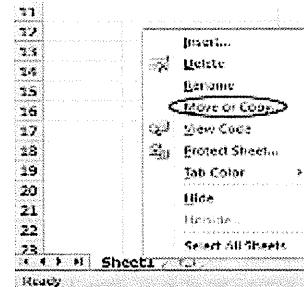
The Insert window appears. Select **Worksheet** and click **OK**.





Demonstration Copying or Moving Worksheets

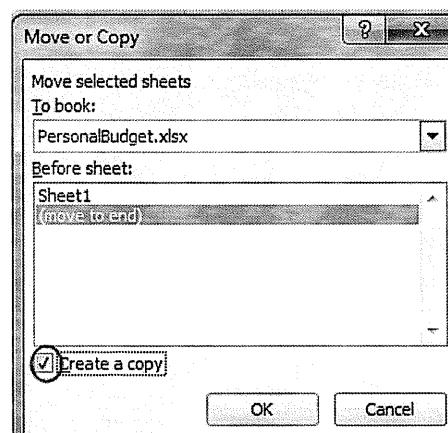
You can also create a worksheet by copying an existing sheet. Right click on the sheet you wish to copy and select **Move or Copy**.



The Move or Copy window will appear. You can move the selected sheet to another file or within the existing file.

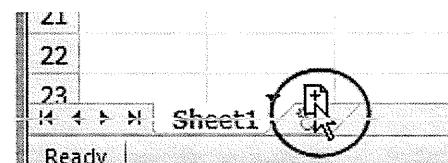
You can also define where to move or copy the worksheet – to before the existing sheet, or to the end.

If you want to create a copy of the existing sheet, make sure that you tick **Create a copy**. Click **OK**.



Tip

You can quickly create a copy of an existing sheet by holding the **Ctrl** key and dragging the sheet name to a new position. As you click and drag your cursor will have a sheet with a plus sign indicating that you are creating a copy.

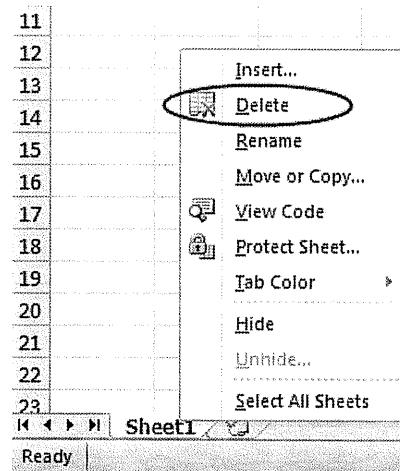


Note: If you simply click and drag a worksheet, it will move the position of the worksheet.



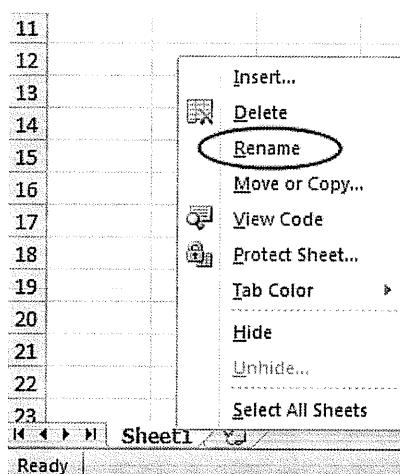
Demonstration Deleting Worksheets

To delete an existing sheet, right click the sheet name and select Delete.



Demonstration Renaming Worksheets

You can rename your worksheets by right clicking on the sheet name and select Rename.



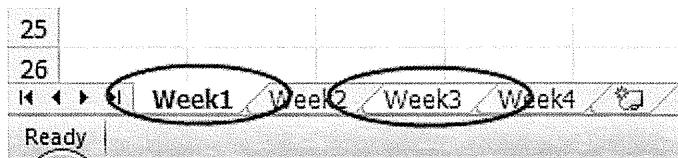
The sheet name will be highlighted. Type in the new name.





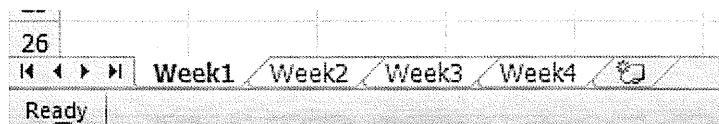
Demonstration Selecting Multiple Worksheets

To select multiple worksheets, click on the first sheet. Holding the **Ctrl** key, click on the next sheet you wish to select. As can be seen below, the selected sheets will be highlighted.



To deselect the sheets, click on another sheet which is not selected.

To select a range of worksheets, click on the first sheet and hold the **SHIFT** key and click on the last sheet you wish to select. All the sheets will become highlighted.



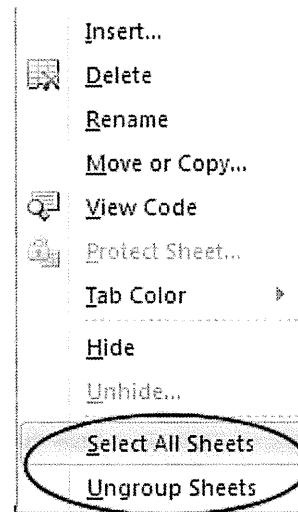
To deselect the sheets, just click on one of the sheets.



Tip

You can also right click on any sheet and select the **Select All Sheets** option to select all the worksheets in your spreadsheet.

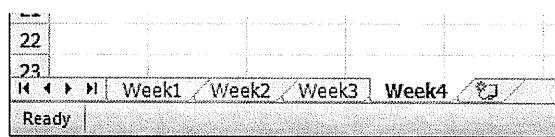
You can also use the **Ungroup Sheets** option to deselect your worksheets.



**Task 4.1****Creating Multiple Worksheets**

For this task, we will create a personal budget spreadsheet that will include a different worksheet for each week of the month. We will then create a monthly worksheet that will link the totals from each week.

1. Create a new spreadsheet and save it as ***Personal Budget.xlsx***.
2. Rename the current sheet to *Week1*.
3. Create a new worksheet after *Week1* and name it *Week2*.
4. Create a new worksheet after *Week2* and name it *Week3*.
5. Create a new worksheet after *Week3* and name it *Week4*.



6. Save your spreadsheet.

**Task 4.2****Entering Data on Multiple Worksheets**

For this task, we are going to enter the headings which will be the same for each sheet. We could enter and format the data on the Week 1 sheet and then copy the data to each sheet. However, it is quicker to select all the worksheets and enter and format the data on one sheet. The data and formats will automatically be copied to the selected sheets.

1. Open your ***Personal Budget.xlsx*** spreadsheet.
2. Select all four worksheets. **Ensure that all four sheets are selected.**
3. Enter the data on the following page.
4. Format the data as below:
 - centre the main heading across the columns
 - add shading to the main heading
 - bold the column headings
 - add borders
 - bold the Total row
5. In the Total row, add the formula required to add up the amount column (=SUM(B3:B15)).
6. Save your spreadsheet.

Personal Weekly Budget - Week	
Description	Amount
Mobile Phone	
Home Phone	
Water	
Electricity	
Gas	
Rent	
Internet	
House Insurance	
Car Insurance	
Food	
Dining Out	
Movies	
Other Expenses	
Total	\$0.00

**Task 4.3****Entering Data on Each Individual Sheet**

For this task we are going to enter the data on each individual sheet.

1. Open your *Personal Budget.xlsx* spreadsheet.
2. Click on the Week 1 sheet (Make sure that the sheets are **ungrouped**).
3. In the main heading add a 1 after the word *week*.
4. Repeat this for each worksheet adding the appropriate week number (week 2, 3 and 4).
5. Enter the data below for each week. (The Total figure should automatically be calculated using your formula.)
6. Save your spreadsheet.

Personal Weekly Budget - Week 1	
Description	Amount
Mobile Phone	\$45.00
Home Phone	\$30.00
Water	\$65.00
Electricity	\$85.00
Gas	\$38.00
Rent	\$250.00
Internet	\$39.99
House Insurance	\$65.00
Car Insurance	\$58.00
Food	\$120.00
Dining Out	\$100.00
Movies	\$50.00
Other Expenses	\$130.00
Total	\$1,075.99

Personal Weekly Budget - Week 2	
Description	Amount
Mobile Phone	\$45.00
Home Phone	\$30.00
Water	\$56.00
Electricity	\$80.00
Gas	\$42.00
Rent	\$250.00
Internet	\$39.99
House Insurance	\$65.00
Car Insurance	\$58.00
Food	\$135.00
Dining Out	\$65.00
Movies	\$0.00
Other Expenses	\$100.00
Total	\$965.99

Personal Weekly Budget - Week 3	
Description	Amount
Mobile Phone	\$45.00
Home Phone	\$30.00
Water	\$70.00
Electricity	\$76.00
Gas	\$45.00
Rent	\$250.00
Internet	\$39.99
House Insurance	\$65.00
Car Insurance	\$58.00
Food	\$156.00
Dining Out	\$0.00
Movies	\$0.00
Other Expenses	\$160.00
Total	\$994.99

Personal Weekly Budget - Week 4	
Description	Amount
Mobile Phone	\$45.00
Home Phone	\$30.00
Water	\$67.00
Electricity	\$90.00
Gas	\$35.00
Rent	\$250.00
Internet	\$39.99
House Insurance	\$65.00
Car Insurance	\$58.00
Food	\$135.00
Dining Out	\$95.00
Movies	\$45.00
Other Expenses	\$180.00
Total	\$1,134.99



Task 4.4 Linking Worksheets to Show Monthly Totals and Averages

For this task, we are going to create a Monthly worksheet that will link all four worksheets and show the totals and averages for the month.

1. Open your **Personal Budget.xlsx** spreadsheet.
 2. Create a new sheet at the end of Week 4 and name the sheet *Month Total*.

3. Copy the cells on Week 4 to the Month Total sheet.
 4. Edit the main heading to *Personal Weekly Budget - Monthly Totals*.
 5. Delete the data in the *Amount* column (do not delete the total formula) and change the heading to *Monthly Total*.
 6. Add a new column heading *Monthly Average*.
 7. Reformat your spreadsheet as below.
 8. Save your spreadsheet.

Personal Weekly Budget - Monthly Totals		
Description	Monthly Total	Monthly Average
Mobile Phone		
Home Phone		
Water		
Electricity		
Gas		
Rent		
Internet		
House Insurance		
Car Insurance		
Food		
Dining Out		
Movies		
Other Expenses		
Total	\$0.00	

**Task 4.5****Linking Worksheets with Formulas**

For this task, we are going to add the formulas that will link all four worksheets and show the totals and averages for the month.

1. Open your **Personal Budget.xlsx** spreadsheet.
2. Click on the sheet called *Month Total*.
3. Click in the cell for the Monthly Total of Mobile Phone.

	A	B	C
1	Personal Weekly Budget - Monthly Totals		
2	Description	Monthly Total	Monthly Average
3	Mobile Phone	=sum(
4	Home Phone	SUM(number1, [number2], ...)	

4. Begin typing the sum formula: =sum(
5. Click on the *Week 1* sheet and click into the cell containing the Mobile Phone amount. (Note the formula now contains the name of the sheet and the cell reference B3.)

	A	B	C
1	Personal Weekly Budget - Week 1		
2	Description	Amount	
3	Mobile Phone	\$45.00	
4	Home Phone	SUM(number1, [number2], ...)	\$45.00

6. Hold the **Shift** key and click on the *Week 4* sheet. (Note the formula now contains the range Week1:Week4 and the cell B3 - this is called a **3D Reference**.)

	A	B	C
1	Personal Weekly Budget - Week 1		
2	Description	Amount	
3	Mobile Phone	\$45.00	
4	Home Phone	SUM(number1, [number2], ...)	\$45.00

7. Press the **Enter** key to accept the formula. The result should be the total of all four weeks.

	A	B	C
1	Personal Weekly Budget - Monthly Totals		
2	Description	Monthly Total	Monthly Average
3	Mobile Phone	\$180.00	
4	Home Phone		
5	Water		

8. AutoFill your formula.
9. We will now create the formula to calculate the Monthly Average. Ensure you are on the sheet called ‘Month Total’.
10. Click into the cell for the Monthly Average for Mobile Phone.
11. Begin typing the sum formula: =average(
12. Click on the *Week 1* sheet and click into the cell containing the Mobile Phone amount.
13. Hold the **Shift** key and click on the *Week 4* sheet.
14. Press the **Enter** key to accept the formula. The result should be the average of all four weeks.

Personal Weekly Budget - Monthly Totals		
Description	Monthly Total	Monthly Average
Mobile Phone	\$180.00	45
Home Phone	\$120.00	
Water	\$258.00	

15. AutoFill your formula down to the Total row so that you now have an average of your totals.
16. Your spreadsheet should look as below.
17. Save your spreadsheet.

Personal Weekly Budget - Monthly Totals		
Description	Monthly Total	Monthly Average
Mobile Phone	\$180.00	\$45.00
Home Phone	\$120.00	\$30.00
Water	\$258.00	\$64.50
Electricity	\$331.00	\$82.75
Gas	\$160.00	\$40.00
Rent	\$1,000.00	\$250.00
Internet	\$159.96	\$39.99
House Insurance	\$260.00	\$65.00
Car Insurance	\$232.00	\$58.00
Food	\$546.00	\$136.50
Dining Out	\$260.00	\$65.00
Movies	\$95.00	\$23.75
Other Expenses	\$570.00	\$142.50
Total	\$4,171.96	\$1,042.99

Part C

Advanced Features

Excel has many advanced features that can help you work with your data. In this section, we will look at how to remove duplicate data, filter your data, and format data in your spreadsheet based on specific conditions.



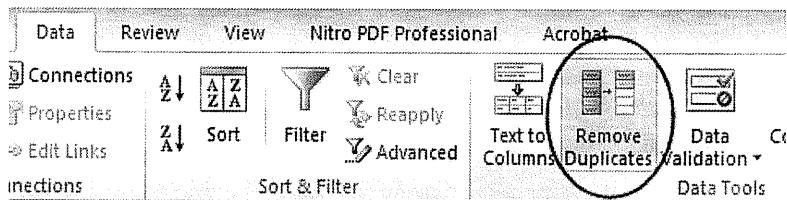
Demonstration

Removing Duplicates

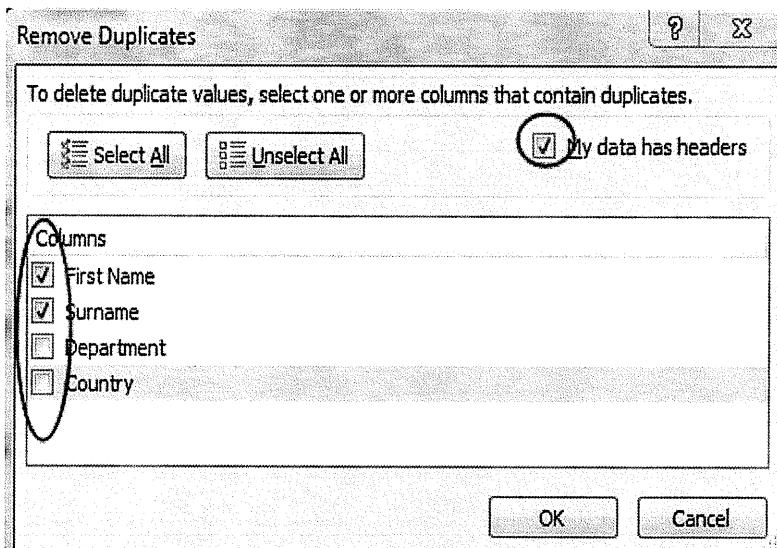
There may be times when you need to delete duplicate information in your spreadsheet. When you remove the duplicate values, you will permanently be deleting the data so it is a good idea to make a copy of your spreadsheet first.

To remove duplicates:

1. Select the range of data.
2. Click on the Data Tab and click on the **Remove Duplicates** button.



3. The Remove Duplicates window appears. Tick only those columns that you wish Excel to search for duplicates. (If your Table has a heading row, ensure that you tick the My data has headers.)



4. Click **OK**. Excel will remove any duplicate entries based on your criteria.



Task 4.6

Removing Duplicates on a New Spreadsheet

First work on your own. Then, compare your results with a partner.

1. Create a new spreadsheet and save it as **Duplicates**.
2. Enter the data as in the table below.
3. Rename this sheet as **Duplicate**.
4. Insert a new sheet and call this sheet **Filter**.
5. Copy the data onto the Filter sheet. (We will use this data for the next task.)
6. Save your spreadsheet.
7. Click into the data on your **Duplicate** sheet.
8. Click on the Data Tab and click on the **Remove Duplicates** button.
9. Untick Department and Country. We only want to remove duplicates if the First Name and Surname are the same. Click OK.

How many duplicates were removed?

Compare the results with your partner.

First Name	Surname	Department	Country
Jane	Haspen	Sales	USA
Nina	Carlos	Advertising	Italy
Graham	Dromana	Marketing	Australia
Mary	James	Marketing	New Zealand
Jason	Smith	Marketing	Australia
Kirk	Marcus	Sales	Australia
Maria	Giovanni	Marketing	Italy
Nina	Valerie	Advertising	USA
Timothy	Freith	Advertising	New Zealand
Leon	Messi	Sales	Spain
Melissa	Pietri	Advertising	Australia
Aaron	Lucas	Sales	Australia
Ronaldo	Carlos	Sales	Spain
Jason	Smith	Advertising	New Zealand

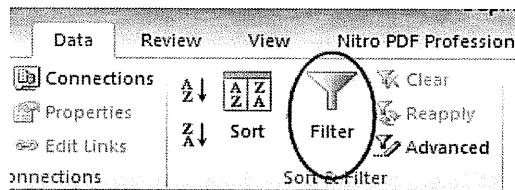


Demonstration Filtering Data

You can quickly filter the data in a spreadsheet by using the AutoFilter feature. This feature allows you to find and work with a subset of data in a range of cells.

To filter your data:

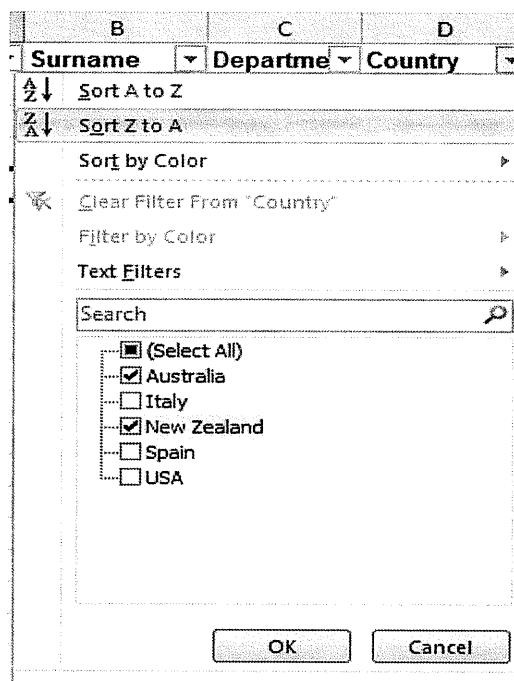
1. Select the range of data.
2. Click on the Data Tab and click on the Filter button.



3. A drop-down arrow appears next to your headings indicating that filtering is enabled but no filtering has been applied.

	A	B	C	D
1	First Name	Surname	Department	Country
2	Jane	Haspen	Sales	USA
3	Mina	Carlo	Advertising	Italy

4. To filter data on a specific column, click on the drop down arrow and you will be presented with unique values in that column, you can untick the (Select All) and then tick only the value required. In this example, only Australia and New Zealand have been selected.



- Click **OK** to view the results.

	A	B	C	D
1	First Name	Surname	Department	Country
4	Graham	Dromana	Marketing	Australia
5	Mary	James	Marketing	New Zealand
6	Jason	Smith	Marketing	Australia
7	Kirk	Marcus	Sales	Australia
10	Timothy	Freith	Advertising	New Zealand
12	Melissa	Pietri	Advertising	Australia
13	Aaron	Lucas	Sales	Australia
15	Jason	Smith	Advertising	New Zealand

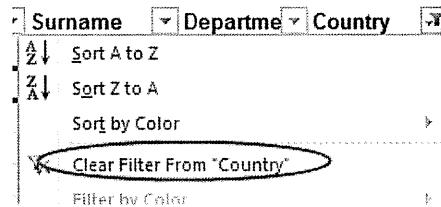
- Note that the Filter button  now shows that a filter has been applied.

You can also apply multiple filters for different columns of data.



Tip

To clear the filter, click on the Filter button for Country and select **Clear Filter From “Country”**.



To clear all filters, click on the **Filter** button on the Data Tab.



Task 4.7

Filtering Data

First work on your own. Then, compare your results with a partner.

- Open the spreadsheet called **Duplicates**, created in Task 4.7.
- Click on the sheet ‘Filter’.
- Filter the *Country* column to view only Italy and Spain.
How many records in your result?
- Clear your filter.
- Filter the *Country* column to view only Australia and New Zealand and also filter for the Department column to view only Marketing.
How many records in your result?

Compare the results with your partner.

- Clear your filter.

With your partner, try some different filters and compare your results.



Demonstration Conditional Formatting

Excel has an advanced feature called Conditional Formatting that allows you to control how a cell is formatted. For example, you may wish to change the colour of a cell. This feature can be used to quickly identify specific data in a long list of records.

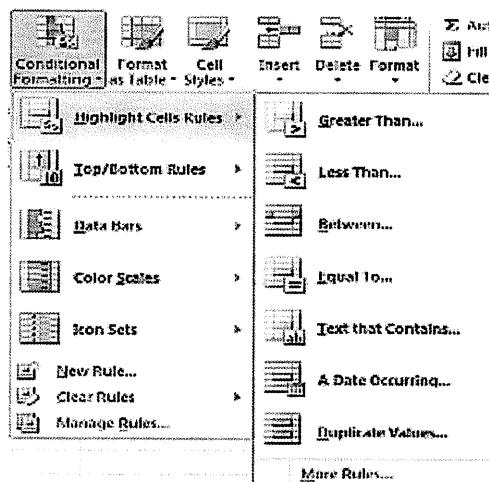
Can you think of situations in your GAC studies where this feature might be useful?

To apply Conditional Formatting:

1. Select the column or range of data in your spreadsheet.
2. Click on the Home Tab and click on the **Conditional Formatting** button.

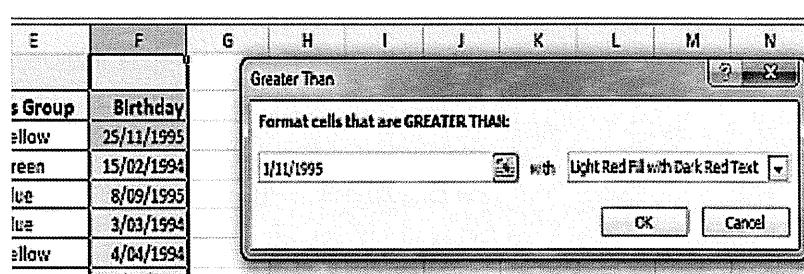


3. Select the specific Rule type. In the example below, we have selected **Highlight Cells Rules**. This will show you further conditional rules that you can select.



4. Click on the required rule and enter the criteria. In the example below, we have selected the Country column and selected the rule **Text That Contains** and entered 'Australia'. All the cells containing the text 'Australia' have now been highlighted in the selected format.

5. You can also create rules that look at numbers. In the example below, we have selected the rule **Greater Than** and entered the date of 1/11/1995. All cells that match these criteria are highlighted.



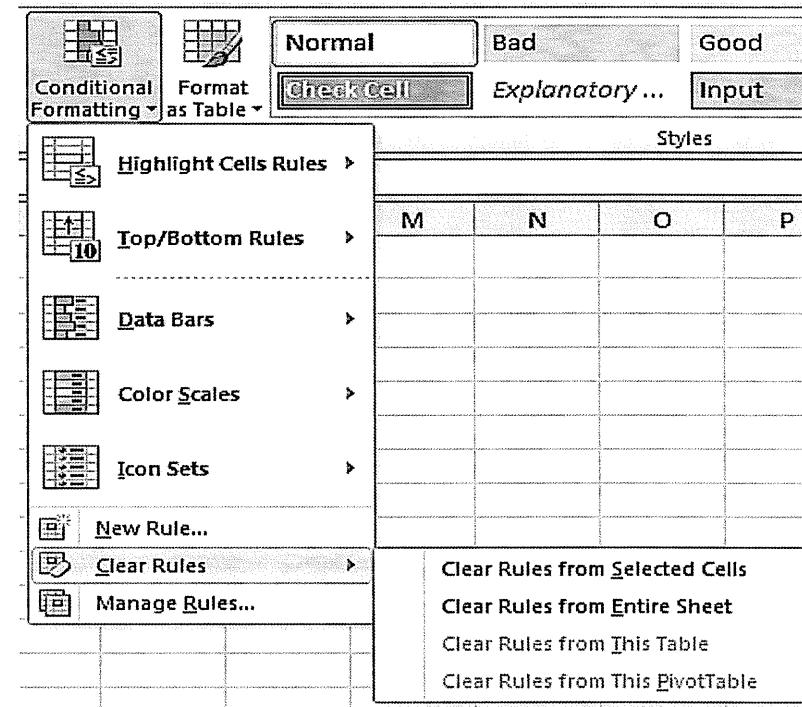
Tip

You can apply more than one rule to a column. You apply the first rule and then create the second rule with different formats.

Clear Conditional Formatting

To clear any conditional formatting rules applied to a spreadsheet, click on the Home Tab and then click on the **Conditional Formatting** button.

Click on **Clear Rules** and select either **Clear Rules from Selected Cells** or **Clear Rules from Entire Sheet**.



**Task 4.8****Conditional Formatting on the *Duplicates* Spreadsheet**

First work on your own. Then, compare results with a partner.

1. Open the spreadsheet called ***Duplicates*** created in Task 4.7.
2. Click on the sheet *Filter*.
3. Select the column Department and apply Conditional Formatting to highlight those cells that contain the text *Marketing*.
4. Select the column Country and apply Conditional Formatting to highlight those cells that contain the text *Italy*.
5. Select the column Country and apply Conditional Formatting to highlight those cells that contain the text *Australia*. Use a different format to the previous rule.
6. Save your spreadsheet.

With your partner, try some different filters and compare your results.

**Task 4.9****Conditional Formatting on the *Teacher Contact Details* Spreadsheet**

1. Open the spreadsheet called ***Teacher Contact Details***.
2. Select the column *Room* and apply Conditional Formatting to highlight those cells that are greater than 15.
How many records in your result?
3. Clear any conditional formatting rules from your spreadsheet.
4. Close the spreadsheet without saving.

Part D Advanced Formulas

Excel has many advanced formulas and functions that can help you work with your data. In this section, we will be using the IF and VLOOKUP functions.



Understanding the IF Function

The IF function introduces decision making into Excel spreadsheets and is a very useful tool. It is used to test a value based on a condition, and determines whether it is true or false.

The IF function syntax has 3 parts, namely:

1. the **logical test**, which is a value or expression that can be evaluated to return TRUE or FALSE
2. the value that you want to be returned if the logical test is TRUE
3. the value that you want to be returned if the logical test is FALSE

In the example below, we are using an IF function to determine whether the students have passed or failed.

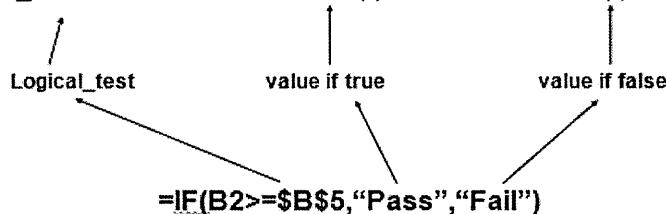
The logical test asks the question is the test result equal to or greater than 70 ($b2 \geq \$B\5).

The second part will return the text PASS if true and the third part will return the text FAIL if false.

Note: Text must be contained within double quotes “ ”.

Can you think of situations in your GAC studies where it might be useful to use the IF function?

=IF(logical_test for IF statement, what happens if true, what happens if not true)



Formula in cells C2 and C3

	A	B	C
1	Student	Test Results	Pass/Fail
2	Mary	85	Pass
3	Jane	66	Fail
4			
5	Pass Mark	70	



Task 4.10 Using the IF Function on a New Spreadsheet

1. Create a new spreadsheet and save it as *Student Marks*.
2. Enter the data as below:

	A	B	C
1	Student Name	Test Result	Pass/Fail
2	John	85	
3	Mary	63	
4	Trevor	55	
5	Julie	48	
6	James	82	
7	Lotus	71	
8	Lauren	93	
9	David	76	
10	Nicole	78	
11	Aaron	96	
12			
13	Pass	50	
14			

3. Click into cell C2 and enter the following formula:

=IF(B2>=\$B\$13,"Pass","Fail")

Note the use of the Absolute Referencing in \$B\$13.

4. AutoFill your formula down.

	C2	f_x =IF(B2>=\$B\$13,"Pass","Fail")			
	A	B	C	D	E
1	Student Name	Test Result	Pass/Fail		
2	John	85	Pass		
3	Mary	63	Pass		
4	Trevor	55	Pass		
5	Julie	48	Fail		
6	James	82	Pass		
7	Lotus	71	Pass		
8	Lauren	93	Pass		
9	David	76	Pass		
10	Nicole	78	Pass		
11	Aaron	96	Pass		
12					
13	Pass	50			
14					



Task 4.11

Using the IF Function on the *Personal Budget* Spreadsheet

1. Open the spreadsheet titled *Personal Budget* which you created in Task 4.1.
2. Click on Week 1 sheet and at the end of the spreadsheet enter the row heading *Monthly Allowance* and in the next cell enter the amount of \$1,000.00 (see figure below).
3. In the next cell, enter an IF formula that will look at the Total amount and compare it to the Monthly Allowance. If it is equal to or greater, than the text “Over Budget” should appear. If it is lower, then the text “Excellent” should appear.
4. Repeat these steps for Week 2, Week 3 and Week 4 worksheets.
5. Save your spreadsheet.

C19		
	B	C
	$=IF(B16>=B19, "Over Budget", "Excellent")$	
1	Personal Weekly Budget - Week 1	
2	Description	Amount
3	Mobile Phone	\$45.00
4	Home Phone	\$30.00
5	Water	\$65.00
6	Electricity	\$85.00
7	Gas	\$18.00
8	Rent	\$250.00
9	Internet	\$39.99
10	House Insurance	\$65.00
11	Car Insurance	\$58.00
12	Food	\$120.00
13	Dining Out	\$100.00
14	Movies	\$50.00
15	Other Expenses	\$130.00
16	Total	\$1,075.99
17		
18		
19	Monthly Allowance	\$1,000 Over Budget
1	Personal Weekly Budget - Week 2	
2	Description	Amount
3	Mobile Phone	\$45.00
4	Home Phone	\$30.00
5	Water	\$66.00
6	Electricity	\$80.00
7	Gas	\$42.00
8	Rent	\$250.00
9	Internet	\$39.99
10	House Insurance	\$65.00
11	Car Insurance	\$58.00
12	Food	\$135.00
13	Dining Out	\$65.00
14	Movies	\$0.00
15	Other Expenses	\$100.00
16	Total	\$965.99
17		
18		
19	Monthly Allowance	\$1,000 Excellent
1	Personal Weekly Budget - Week 3	
2	Description	Amount
3	Mobile Phone	\$45.00
4	Home Phone	\$30.00
5	Water	\$70.00
6	Electricity	\$76.00
7	Gas	\$45.00
8	Rent	\$250.00
9	Internet	\$39.99
10	House Insurance	\$65.00
11	Car Insurance	\$58.00
12	Food	\$156.00
13	Dining Out	\$0.00
14	Movies	\$0.00
15	Other Expenses	\$160.00
16	Total	\$994.99
17		
18		
19	Monthly Allowance	\$1,000 Excellent
1	Personal Weekly Budget - Week 4	
2	Description	Amount
3	Mobile Phone	\$45.00
4	Home Phone	\$30.00
5	Water	\$67.00
6	Electricity	\$90.00
7	Gas	\$35.00
8	Rent	\$250.00
9	Internet	\$39.99
10	House Insurance	\$65.00
11	Car Insurance	\$58.00
12	Food	\$135.00
13	Dining Out	\$95.00
14	Movies	\$45.00
15	Other Expenses	\$180.00
16	Total	\$1,134.99
17		
18		
19	Monthly Allowance	\$1,000 Over Budget

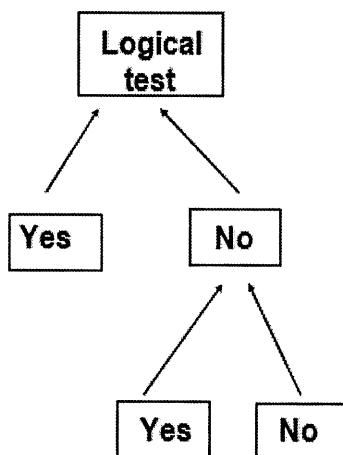


Understanding the Nest IF Function

The IF function can be extended by using one or more **Nested IF** functions. A nested function in Excel refers to one function being placed inside another.

A nested IF function increases the number of possible results that can be tested and increases the number of actions that can be taken to deal with these results.

For the following example, the first logical test checks whether the Test Results equals 100. The **true** answer will result in the text “Excellent”. The **false** answer is another logical test which checks whether the Test Result is less than 70. The true answer will result in the text “Re-Sit” and the false answer results in “” being nothing or no text.



=IF(B2=100,“Excellent”,IF(B2<\$B\$6,“Re-sit”,“”))

Formula in cells C2 and C3 and C4

	A	B	C	D
1	Student	Test Results	Pass/Fail	Action
2	Mary	85	Pass	
3	Jane	66	Fail	Re-sit
4	Mary	100	Pass	Excellent
5				
6	Pass Mark	70		

“” means nothing

When using a nested IF formula, it is key to ensure that the results of the second logical test do not also answer the first logical test.

Look at the example below. The first logical test checks if the Test Result is greater than 70. The **true** answer will result in the text “Pass”. The **false** answer is another logical test which checks whether the Test Results is greater than 80. The true answer will result in the text “Excellent” and the false answer results in the text “Re-Sit”.

However, this formula is incorrect as Mary’s result of 85 passed the first logical test and resulted in a “Pass”.

D2				
	A	B	C	D
1	Student	Test Result	Pass/Fail	Action
2	Mary	85	Pass	Pass
3	Jane	66	Fail	Re-Sit
4	Mary	75	Pass	Pass
5				
6	Pass Mark	70		

How should this formula have been written?

With a partner, decide how you would have written this formula correctly.

**Task 4.12****Using the IF Function on the *Student Marks* Spreadsheet**

1. Open the spreadsheet *Student Marks* created in Task 4.11.
2. Enter the heading *Action* in column D.
3. Create a nested IF Formula that will check the student's Test Result and if their result is greater than 80 then the text "Excellent" will appear. If their result is less than 55, then the text "Re-Sit" will appear and for all other results, the text "Pass" will appear.
4. Save your spreadsheet.

Your spreadsheet should look as below.

	A	B	C	D
1	Student Name	Test Result	Pass/Fail	Action
2	John	85	Pass	Excellent
3	Mary	63	Pass	Pass
4	Trevor	55	Pass	Pass
5	Julie	48	Fail	Re-Sit
6	James	82	Pass	Excellent
7	Lotus	71	Pass	Pass
8	Lauren	93	Pass	Excellent
9	David	76	Pass	Pass
10	Nicole	78	Pass	Pass
11	Aaron	96	Pass	Excellent
12				
13	Pass	55		

**Understanding the Vlookup Function**

The Vlookup function searches for a value in the first column of a Table of data, and returns the value in the same row from another column in the Table.

The V in Vlookup stands for Vertical. Excel also has a Hlookup function which searches horizontally.

In order to use the lookup functions, you need to prepare the data in your Table by making sure that:

1. the first column of your **lookup Table** is in alphabetical (A-Z) or numerical order (1-100).
2. the data range of your lookup Table is named, as this will make writing your formula easier.



Demonstration Naming a Range of Cells

Defining a name for a range of cells makes your formulas easier to understand and maintain. When you name your cells, you are creating an absolute reference to that range.

For example, if you wanted to add up the values in A1:A10, your formula would be =sum(A1:A10). If you named this range as Sales, your formula would be =sum(sales).

There are two ways of defining a name:

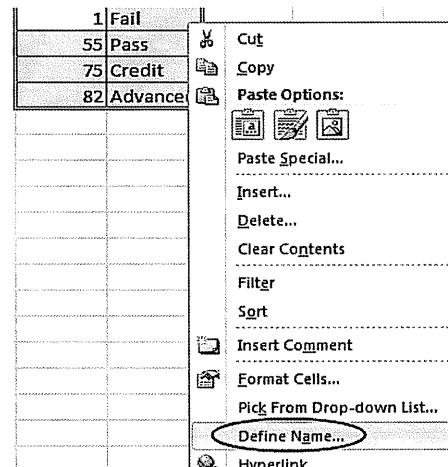
1. Use the **Name** box on the formula bar.

Select the range of cells, click into the **Name** box, and type in the name.

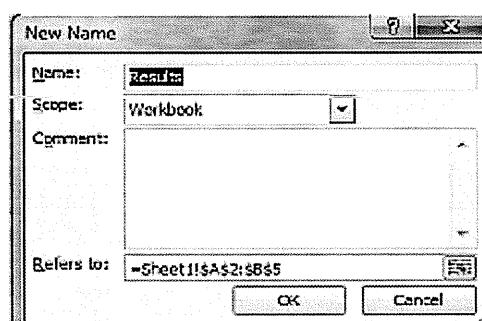
Results	
	A B
1	Results
2	49 Fail
3	55 Pass
4	75 Credit
5	82 Advanced

2. Using the **Define Name** feature.

Select the range of cells and right click and select **Define Name**.



The New Name dialog box will appear. Enter an appropriate name.





Understanding the Vlookup Syntax

The Vlookup formula has four parts:

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

Match each part with its description. Compare as a class.

1. Range_lookup

- a. This is the column number in the lookup Table for which a value is returned when a match is found. Using a col_index_num of 1 will return values from column 1. Using a col_index_num of 2, will return values from column 2, etc.

2. Lookup_value

- b. This is the lookup Table which consists of two or more columns. The first column will contain the value that the lookup_value searches for. This column must be sorted.

3. Col_index_num

- c. This is a logical value of TRUE or FALSE. If you enter TRUE (or leave this blank), an approximate match is returned or if an exact match is not found then the next largest value that is less than the lookup_value is returned. If you enter FALSE, an exact match is found and if no exact match is found an error value of #N/A is returned.

4. Table_array

- d. This is the value that you want Excel to search for in the first column of your lookup Table.



Task 4.13

Creating a Vlookup Formula to Obtain Student Grades

For this task, we will create a formula to look up the student's results and return their grades.

1. Open the spreadsheet **Student Marks**.
2. Copy columns A and B to a new worksheet.
3. In column C, add a column heading of *Grade*.
4. In column F, add a small Table to your spreadsheet as follows:

Grades	
1	Fail
55	Pass
75	Credit
82	Advanced

5. Select the cells F2:G5 and in the Name Box enter the name **Grade**.

6. Click into cell C2 and enter the following formula:

=VLOOKUP(B2,Grade,2,TRUE)

7. AutoFill your formula down.

8. Save your spreadsheet.

Your spreadsheet should look as below.



Note

The result of your formula is taken from column 2 of your lookup Table. Since we used TRUE in our formula, Excel will search for the Test Result. If it does not find an exact match, it will return a value less than the next highest figure. In our example, the Test Result of 48 had no exact match, however, it is greater than 1 but less than 50, therefore the result is Fail.

	Grade	A	B	C	D	E	F	G
1	Student Name	Test Result	Grade				Grades	
2	John		85	Advanced			1	Fail
3	Mary		63	Pass			55	Pass
4	Trevor		55	Pass			75	Credit
5	Julie		48	Fail			82	Advanced
6	James		82	Advanced				
7	Lotus		71	Pass				
8	Lauren		93	Advanced				
9	David		76	Credit				
10	Nicole		78	Credit				
11	Aaron		96	Advanced				



Task 4.14

Creating a Vlookup Formula to Obtain Student Postcodes

For this task, we will create a formula to look up the student's postcode.

1. Open the spreadsheet **Teacher Contact Details**.
2. Insert a column after 'Room #' and add a column heading of 'Room Location'.
3. In Column K create the following Table:

Room Location	
10	Science Lab 1
13	Workshop Lab A
15	Library - Room 2
17	Building B
18	Library - Room 3
20	Building C

4. Ensure that the list is sorted in alphabetical order.
5. Select the cells in your Room Location list (K2:L7) and in the Name Box enter the name **Location**.

6. Click into cell G3 and enter the following formula:
 $=VLOOKUP(F3,Location,2,TRUE)$
7. AutoFill your formula down.
8. Save your spreadsheet.

Your spreadsheet should look as below.

Teacher Contact Details												Room Location	
1	Title	Last Name	First Name	Mobile Phone	Subject	Room #	Room Location	Email address	10	Science Lab 1			
2	Mr	Darwin	Alfred	0423 308 455	Science	13	Workshop Lab A	adsciteach@ymail.com	13	Workshop Lab A			
3	Miss	Gates	Maria	0413 891 198	Computing	18	Library - Room 3	mgates82@gmail.com	15	Library - Room 2			
4	Mr	Moore	James	0413 624 806	Listening and Speaking Skills	17	Building B	jmoore@gmail.com	17	Building B			
5	Ms	Pattinson	Barbara	0413 766 799	Business Studies	15	Library - Room 2	bizbarb@hotmail.com	18	Library - Room 3			
6	Mrs	Porter	Gwyneth	0468 813 186	Reading and Writing Skills	20	Building C	gwyport@ymail.com	20	Building C			
7	Mr	Stallone	Arnold	0435 266 303	Maths	10	Science Lab 1	arnie4math@gmail.com					



Note

For this formula we used FALSE so that we would return an exact match.



Tip

Although lookup Tables can have many columns, the first column is always the one to which the lookup value is compared.

In Task 4.14, if our Room Location Table had had three columns, our formula would have been as follows:

$=VLOOKUP(F3,Location,3,TRUE)$

Room Location		
10	Building A	Workshop Lab A
15	Building D	Library - Room 2

Part E

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Working with Multiple Worksheets
- Advanced Features
- Advanced Formulas

Review all the activities you completed in this unit and make sure that any questions you noted were answered.



Task 4.15

Summarising the Unit

Work with a partner. You have one minute to skim the contents of Unit 4. Then:

Partner A: summarise the main points to Partner B in two minutes

Partner B: ask questions to check for understanding

Switch roles and repeat.



Assessment Event 1

In-class Test 1

Assessment Event 1: In-class Test 1 will now take place.

This is a theory test which includes short answer, multiple choice and true/false questions. It will be done in class under test conditions.

Unit 5 Inserting Charts and Objects

Part A	Unit Introduction
Part B	Creating Charts
Part C	Formatting Charts
Part D	Inserting Graphics
Part E	Unit Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to creating charts from your spreadsheet data and inserting objects to enhance the look of your presentation.

In this unit, you will learn to:

- create a chart from spreadsheet data
- create different types of charts to present data
- format charts to achieve the desired presentation
- insert graphics into spreadsheets

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.

Part B

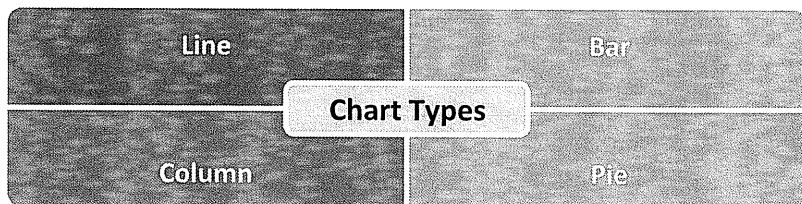
Creating Charts



Understanding Charts

Charts allow a graphical representation of the data in spreadsheets. Excel provides a number of standard chart types to present data. Which type of chart you choose depends on the data you are trying to chart, and how you want to present that data.

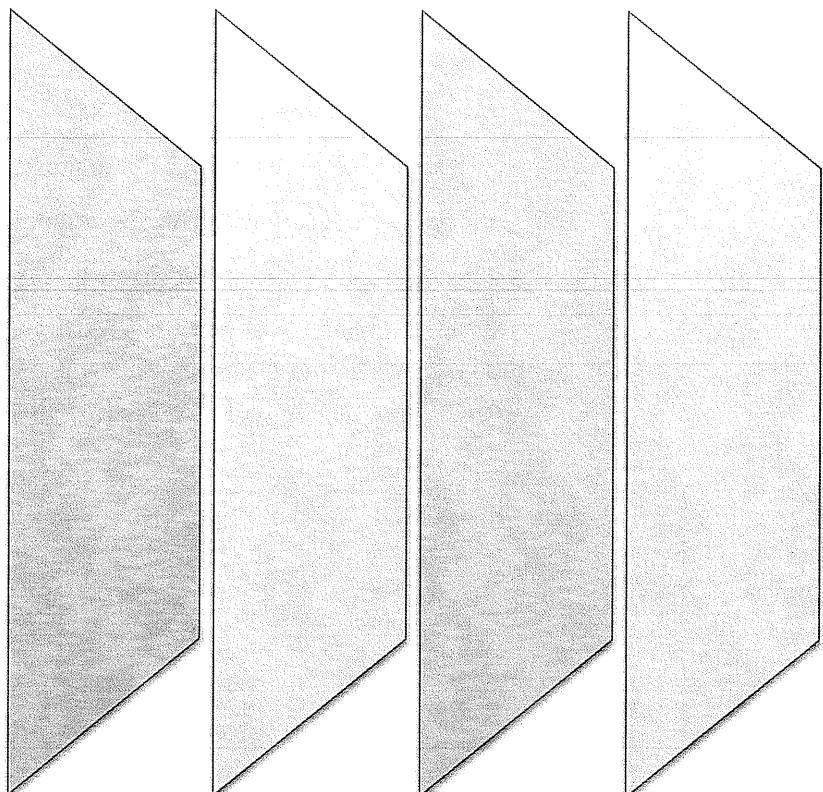
The common Excel chart types are:



Task 5.1

Brainstorming the uses of different chart types

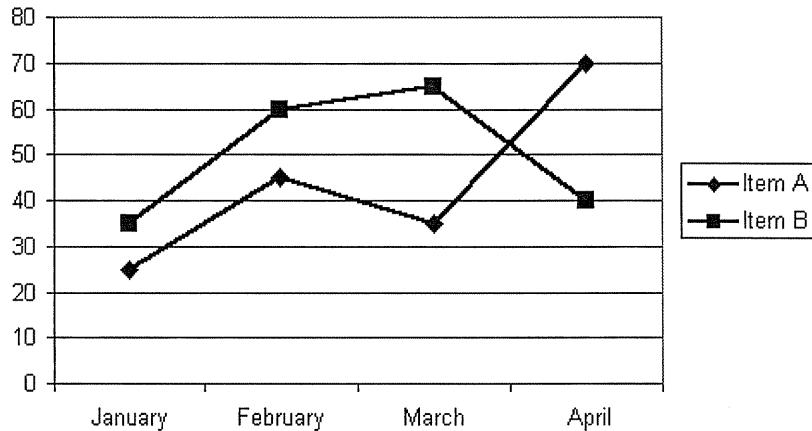
Work with a partner. Brainstorm the uses for one chart type. Write your answers in a box. Then, get together with three other pairs who have different chart types and share. Write in the boxes. Share as a class.



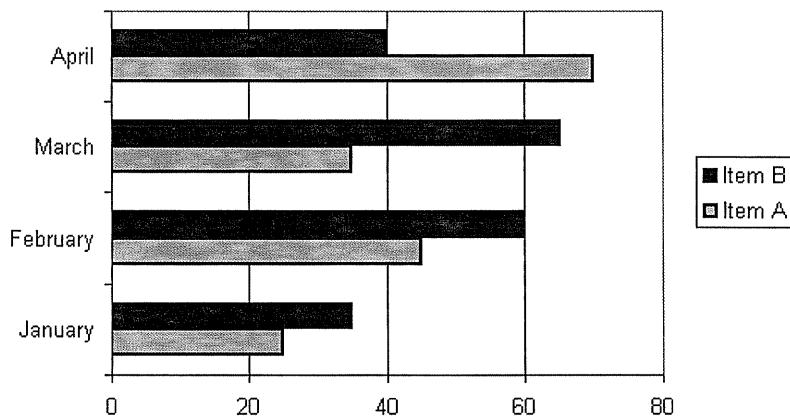
Uses for Different Chart Types

As you read through this section, underline the ideas your class listed in Task 5.1

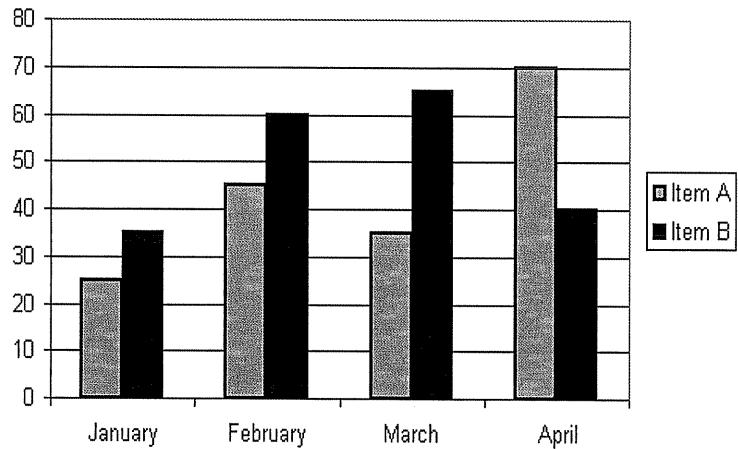
1. **Line charts** are used to show trends in data over time. Line charts can be used to show the trend of a single item or multiple items. In the chart below, two items are compared over a period of four months, January to April. Both item A and item B rose in February. However, in March Item A declined whilst Item B rose. The inverse trend of these two items continued in April, where Item A increased and Item B decreased.



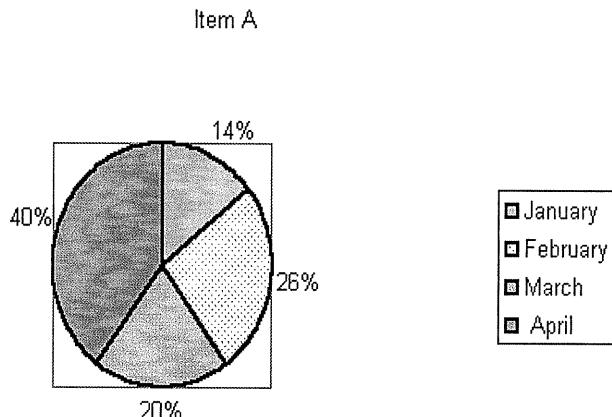
2. **Bar charts** are used to illustrate comparisons between different items over time. In the example below, it is easy to see which item has better results in which month.



3. **Column charts** are used for showing comparisons over time. They are similar to bar charts.



4. Pie charts are used to show the proportion (or percentage) of a data series compared to the total. Pie charts are good for looking at parts of a whole.



As you can see, you can use charts to either emphasise different aspects of a data series, or to compare data series.

Graphs are an excellent medium for showing data quickly. However, it is important to provide the whole story. In other words, it is imperative to add titles to the chart as well as to the X and Y axes. Adding meaningful titles will help the audience to understand the graph.



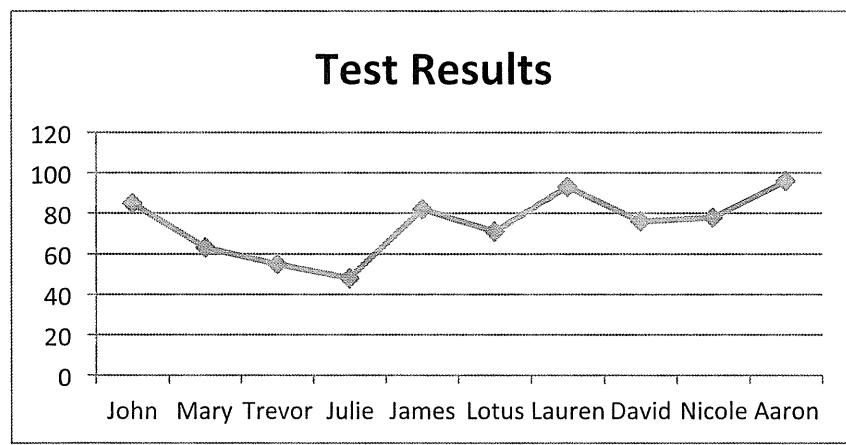
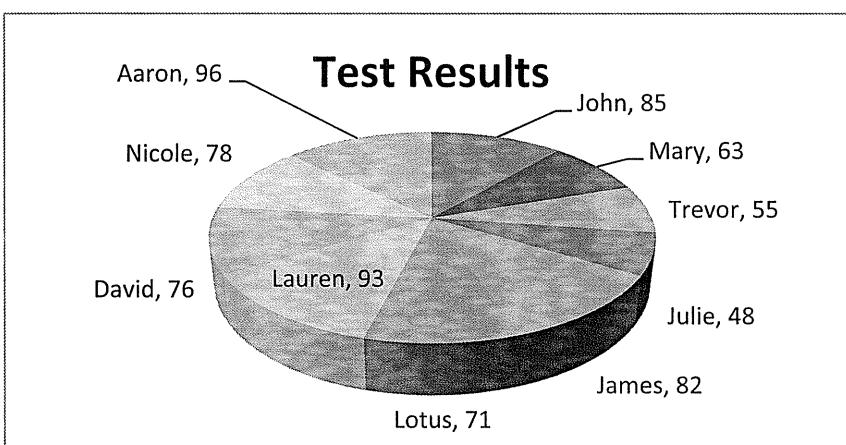
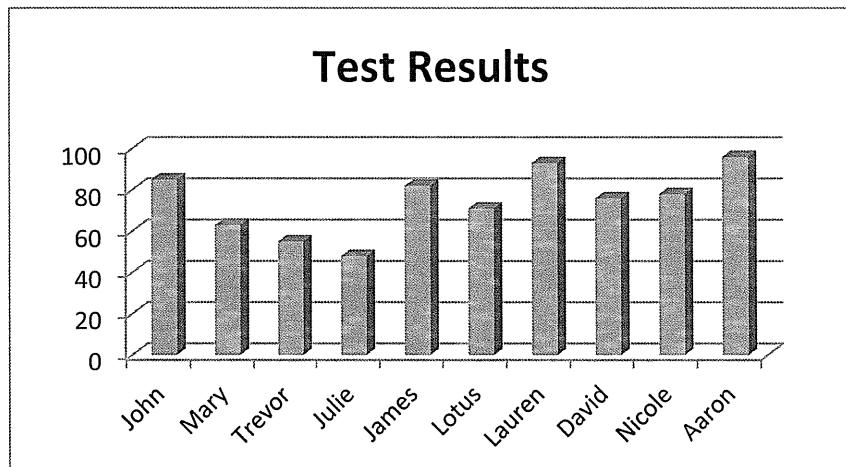
Task 5.2

Reading Charts - Test Results

Work in pairs. Use the charts to answer the questions. State which chart you used to answer each question and why. Compare your results as a class.

1. *Which student achieved the highest result?*
2. *What is the average range for the test results?*
3. *How many students received a result higher than 75?*

4. Which student achieved the lowest result?



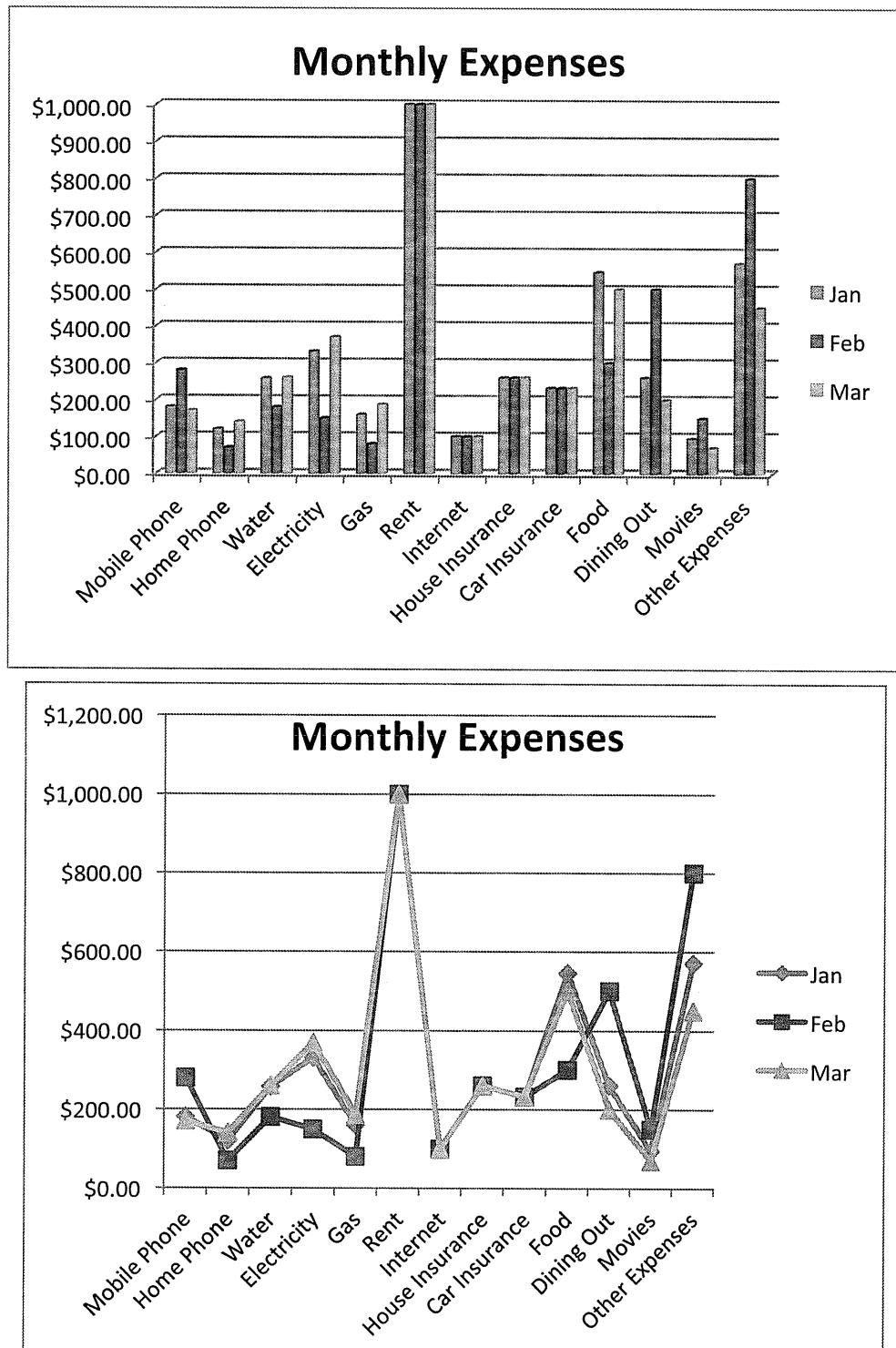
Task 5.3

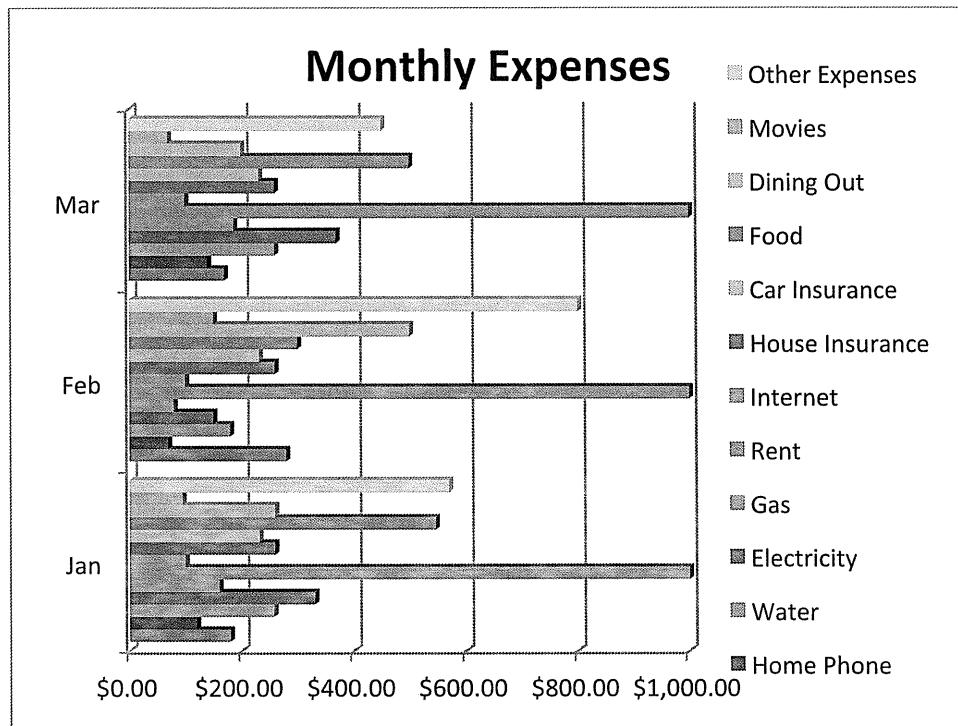
Reading Charts - Monthly Expenses

Work in pairs. Consider the charts, and then answer the questions. State which chart you used to answer each question and why. Compare your results as a class.

1. Overall which month had the highest expenses?
2. Overall which month had the lowest expenses?
3. Which is the next biggest expense after rent?

4. What is the average monthly expense?
5. There was one month in which the person went on holidays. Which month do you think this was? Justify your response.





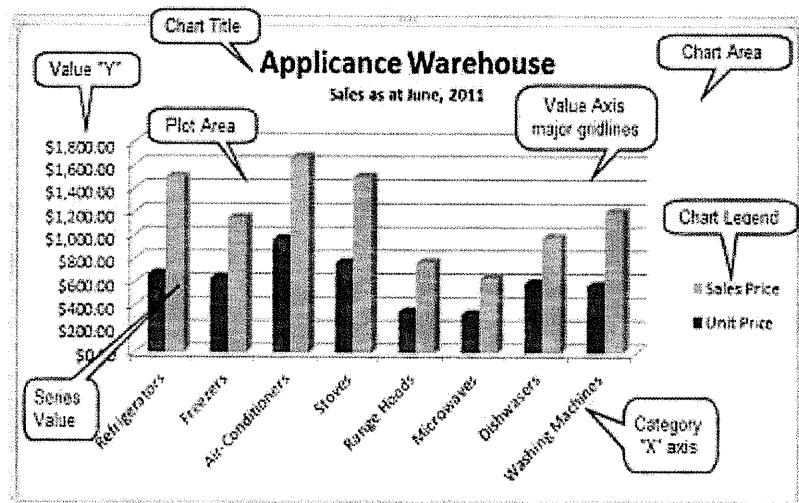


Understanding Chart Creation

Creating charts in Microsoft Office Excel 2010 is quick and easy since a variety of chart types is provided.

For most charts, such as column and bar charts, you can plot the data that you arrange in rows or columns on a worksheet in a chart. However, some chart types require specific data arrangement.

The figure below shows the different parts of a chart.



Demonstration

Your teacher will Demonstrate how to create a number of different charts using the Charts group of the Insert Tab.



Task 5.4

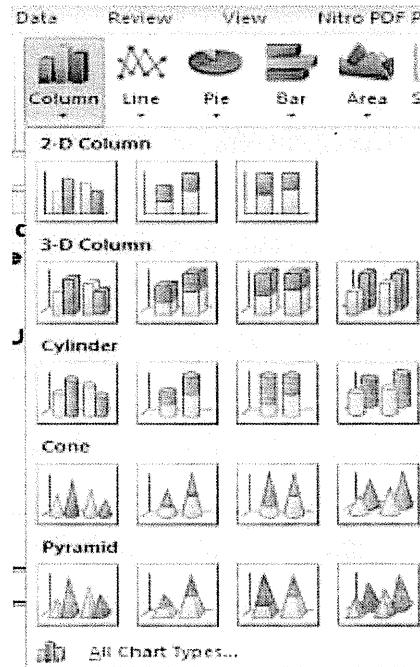
Creating Simple Charts

In this particular case, we will insert a Column 3D chart.

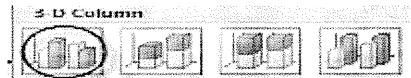
1. Open the spreadsheet called *Appliance Warehouse* created in Unit 3: Part G.
2. Select the cells that contain the data that you want to use. In this example, we are selecting the range A3:A11 and C3:D11.

A	B	C	D	E	F	G
1	Appliance Warehouse					
2	Sales figures as at June, 2011					
3	Appliance	Units Sold	Unit Price	Sales Price	Total Sales (Unit Price)	Total Sales (Sales Price)
4	Air-Conditioners	76,780	\$970.00	\$1,570.00	\$14,476,600.00	\$53,746,000.00
5	Dishwashers	65,450	\$590.00	\$580.00	\$50,415,500.00	\$33,325,500.00
6	Freezers	112,610	\$640.00	\$1,160.00	\$12,192,000.00	\$57,528,000.00
7	Microwaves	156,000	\$330.00	\$630.00	\$51,480,000.00	\$36,280,000.00
8	Range Hoods	57,600	\$350.00	\$770.00	\$20,160,000.00	\$44,352,000.00
9	Refrigerators	125,000	\$670.00	\$1,500.00	\$83,750,000.00	\$103,750,000.00
10	Stoves	141,256	\$770.00	\$1,500.00	\$108,767,120.00	\$211,884,000.00
11	Washing Machines	93,654	\$570.00	\$1,200.00	\$56,232,780.00	\$116,384,600.00
12	Total				\$517,474,000.00	\$1,012,084,400.00
						\$484,610,400.00

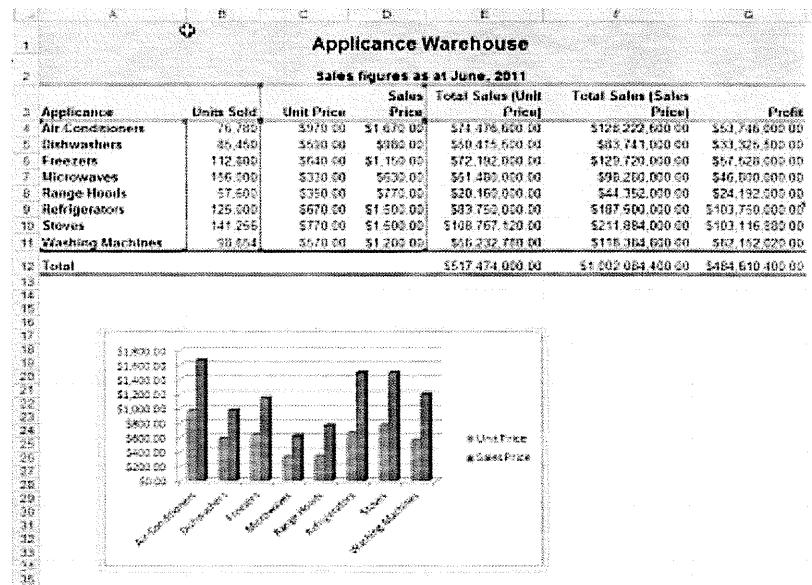
3. On the **Insert** Tab, in the Charts group, click on the **Column** button. This will drop down a menu with the different chart types available.



4. Let's select the 3D Clustered Column chart type.



5. Now Excel has inserted the chart on your spreadsheet.



6. Save your spreadsheet.

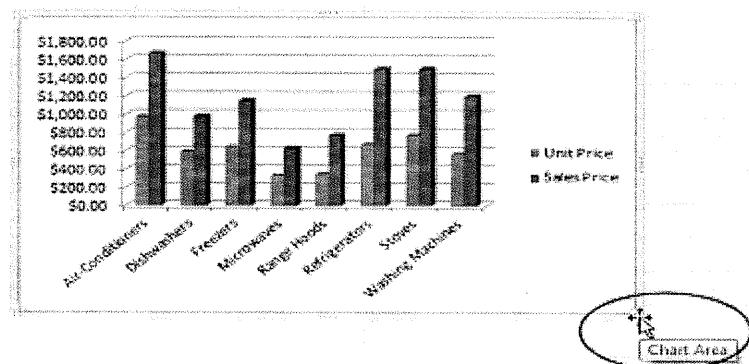
Note: The chart is placed on the worksheet as an embedded chart (i.e. it is placed on the worksheet rather than created as a separate chart).

**Task 5.5****Moving Charts**

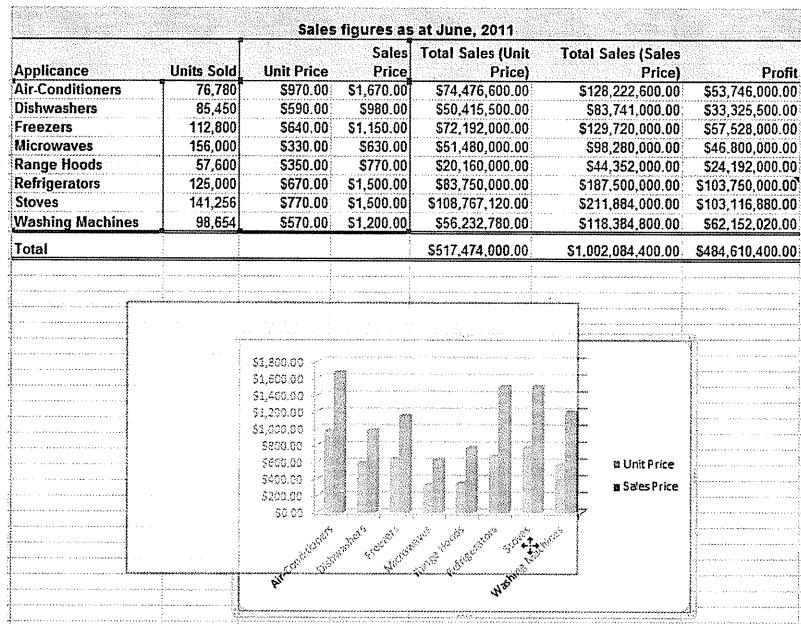
It is possible to move a chart within the same sheet area, or into a new sheet within the same workbook, by performing a drag and drop action. In this case we will be moving the chart created in the 'Appliance Warehouse' exercise.

Moving a Chart within the Same Worksheet

1. Open the *Appliance Warehouse* spreadsheet.
2. Select the chart by clicking once anywhere on the Chart Area. Hold down the left mouse button.



3. To reposition the chart, drag the chart to the right of the work area and drop it in the new location.



As you drag the chart to a new position, notice how an outline of the chart moves across the sheet, allowing you to see the new position that the chart will occupy.

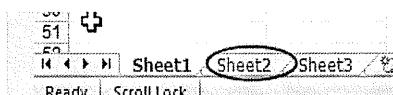
4. Save your spreadsheet.



Task 5.6

Moving Charts to a Different Worksheet

1. Open the *Appliance Warehouse* spreadsheet.
2. Select the chart by right clicking once anywhere on the Chart Area.
3. A drop down menu will be displayed.
4. Select **Cut** from the list. This will place the chart on the Clipboard.
5. Click on **Sheet 2** at the bottom of the screen. If there is no Sheet2, create a new worksheet.



6. A new empty worksheet area will be displayed.
7. Select the new position for your chart by clicking on an empty cell.
8. Right click the cell and from the dropdown menu select **Paste**. The Chart will be moved to the insertion point.
9. Save your spreadsheet.

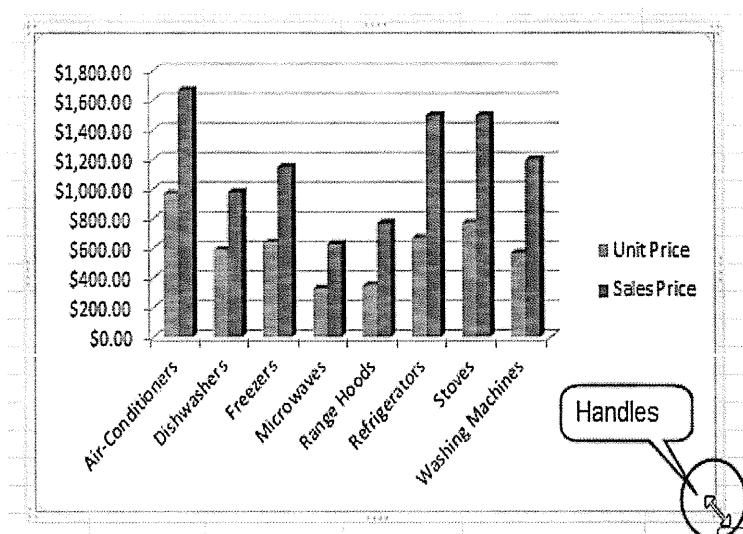


Task 5.7

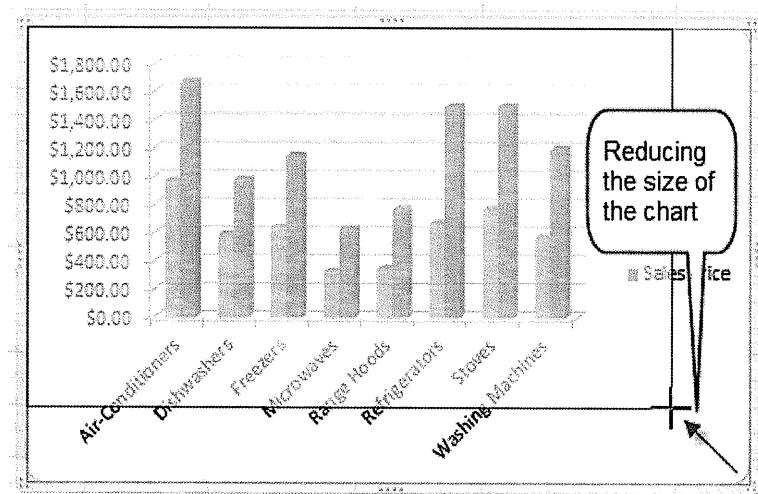
Resizing Charts

It is possible to resize charts by increasing or decreasing the chart area. To demonstrate this process, the *Appliance Warehouse* spreadsheet will again be used.

1. Left click on the **Chart Area**. Remember to click close to the border of the area.
2. This will display the handles on the chart.



3. Left click one of the corner handles and drag it in to decrease the size of the chart, or drag it out to increase the size of the chart.



4. Once you have completed this task, the chart will be resized to suit your needs.
5. Save your spreadsheet.



Task 5.8

Checking your Understanding

Answer the following questions about charts in the space provided.

1. *Which type of chart is best suited to displaying the trend of the components of an ecosystem over time? Why?*
2. *Which type of chart is best suited to showing the financial contributions of different brands to a portfolio of company products at fiscal year end? Why?*
3. *Which type of chart is best suited to comparing the use of different digital devices over time? Why?*
4. *After you have created a chart in Excel, which modifications are possible?*

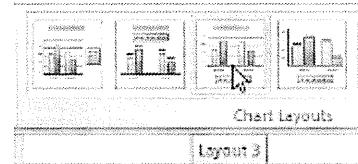
Part C Formatting Charts

In addition to the useful predefined layouts and styles provided by Excel, it is possible to further customize layouts or styles by manually changing chart elements.



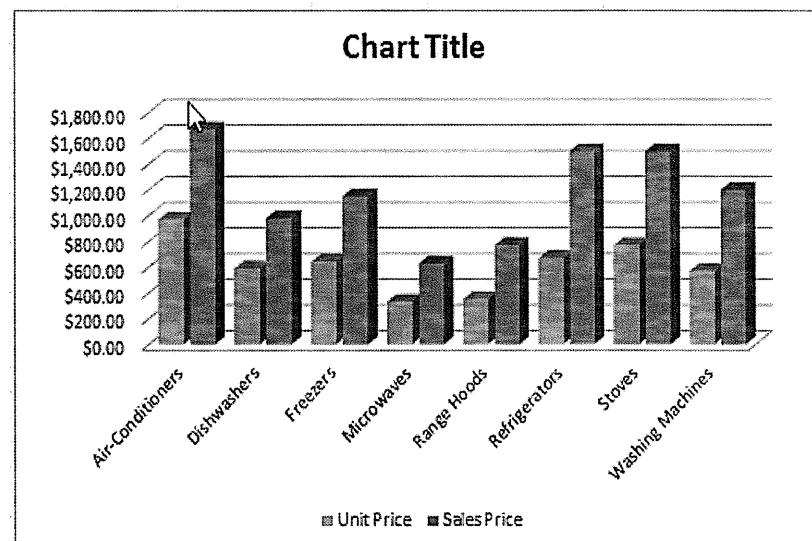
Demonstration Selecting a Predefined Chart Layout

1. Open the *Appliance Warehouse* spreadsheet.
2. Click on the chart.
3. On the Design Tab, in the Chart Layouts group, click the chart layout that you want to use. Select **Layout 3**.



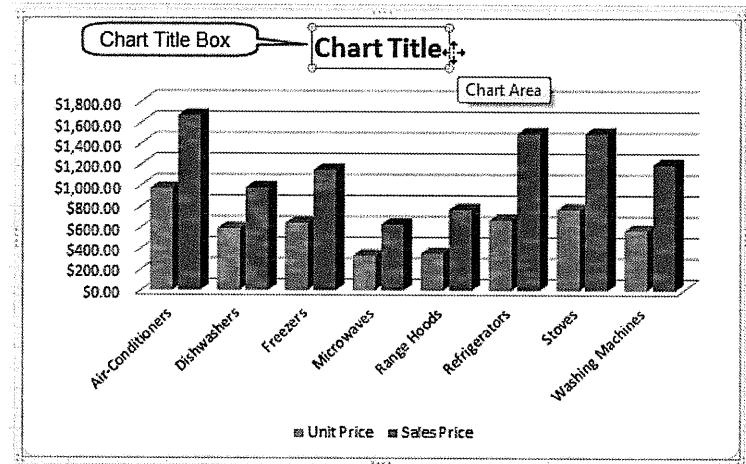
Note: To see all available layouts, click **More**.

Now your chart should look like this:



**Demonstration Inserting a Chart Title**

1. Click once inside the **Chart Title** box.
2. Delete the current title and type the following: *Appliance Warehouse*.

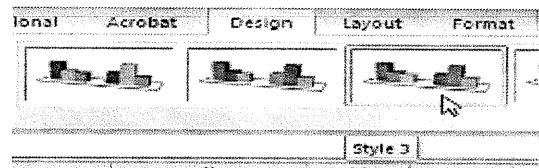


3. Save your spreadsheet.

**Demonstration Selecting A Predefined Chart Style**

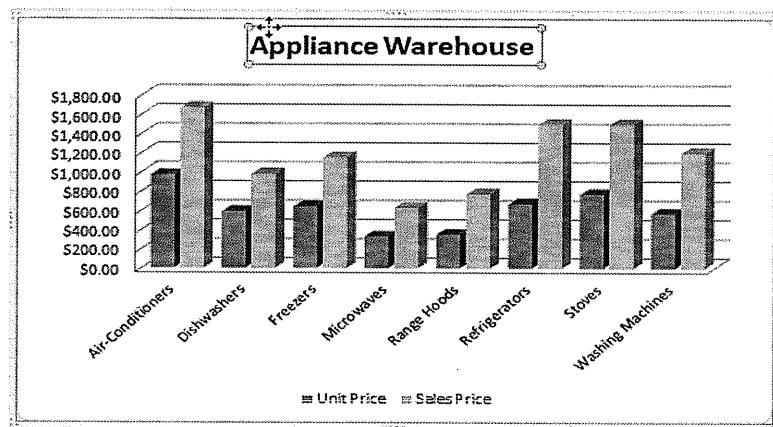
Excel has a number of predefined chart styles that you can further customise if needed.

1. Select the *Appliance Warehouse* chart by clicking on it.
2. On the Design Tab, in the Chart Styles group, click **Style 3**.



To see all predefined chart styles, click **More**

Now your chart should look like this:

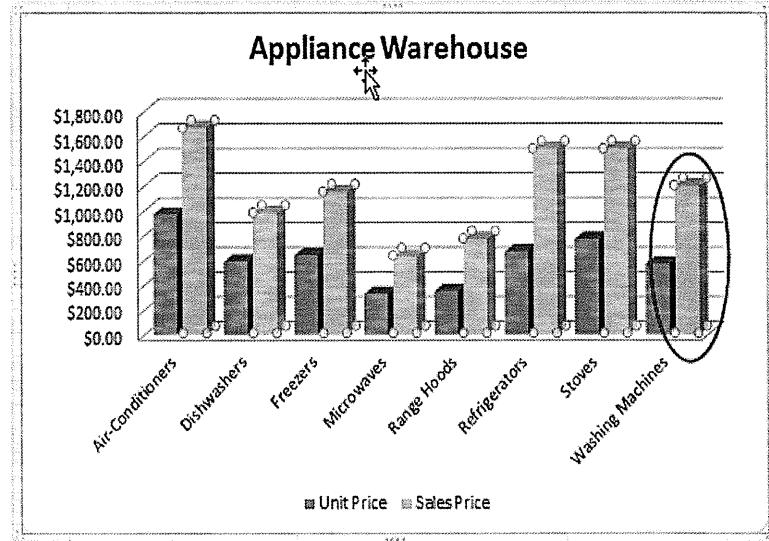




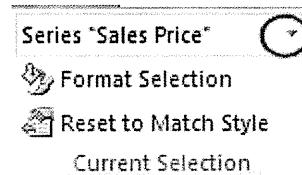
Demonstration Manually Changing The Style of Chart Elements

We can further customise the layout of the chart by manually modifying elements of the chart.

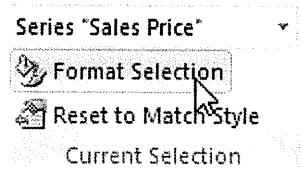
1. Select the element that you wish to customise. In this case let's select the *Sales Price* column on the *Washing Machines* series.



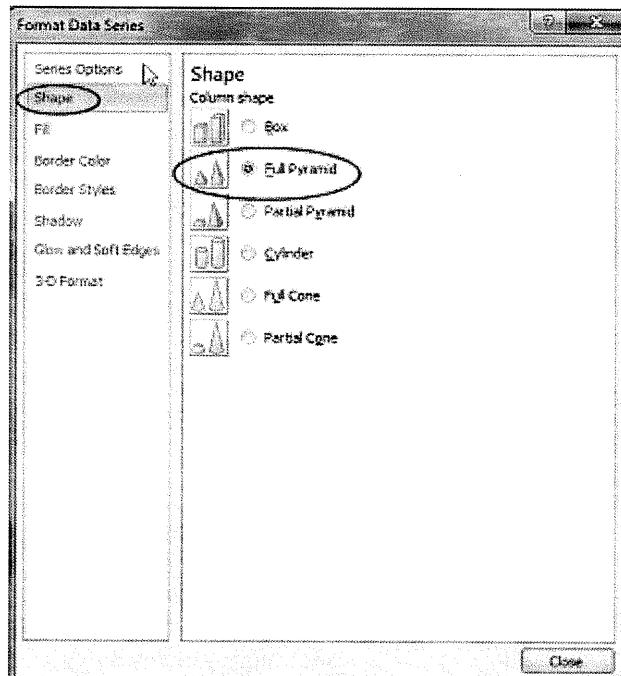
2. On the Format Tab, in the Current Selection group, click the arrow in the **Chart Elements** box. Then, select the chart element that you want to format. As we have already selected the element on the chart, the *Sales Price* is the default selection. However, you can select any other option from the list.



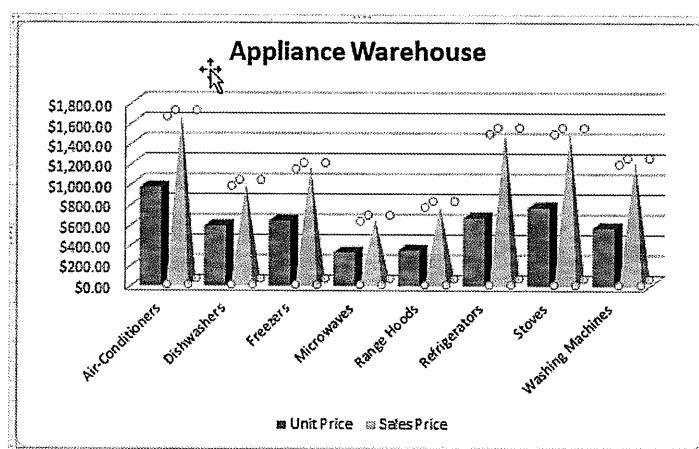
- In the Current Selection group, click **Format Selection**, and then select the formatting options that you want.



- The **Format Data Series** box will appear.
- Select **Shape**.



- Now, let's apply the **Full Pyramid** style to the elements. Your chart should look like this:



You can also apply a quick style to individual elements. Click Shape Fill/Shape Outline/Shape Effects in the Shape Quick Styles group on the Format Tab, and then select the desired formatting options.



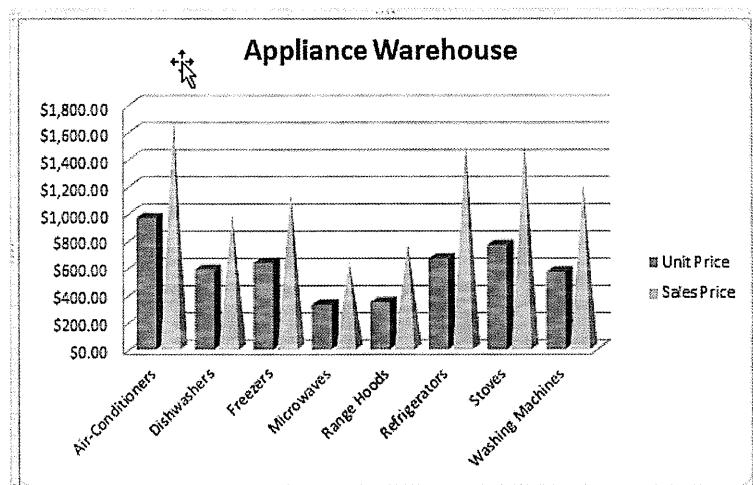
Demonstration Changing the Legend

You can change the position of the Legend or hide the Legend from the Chart.

1. Click on the Chart.
2. On the Layout Tab, in the Labels group, click the arrow in the Legend box, and select **Show Legend at Right**.



3. Your Legend should now have moved to the right of the chart and look as below:



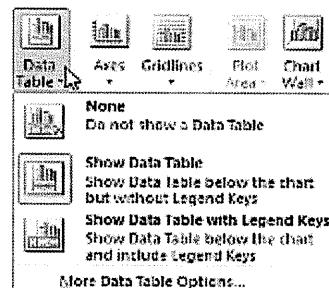
4. Save your spreadsheet.

**Demonstration Showing Data Tables**

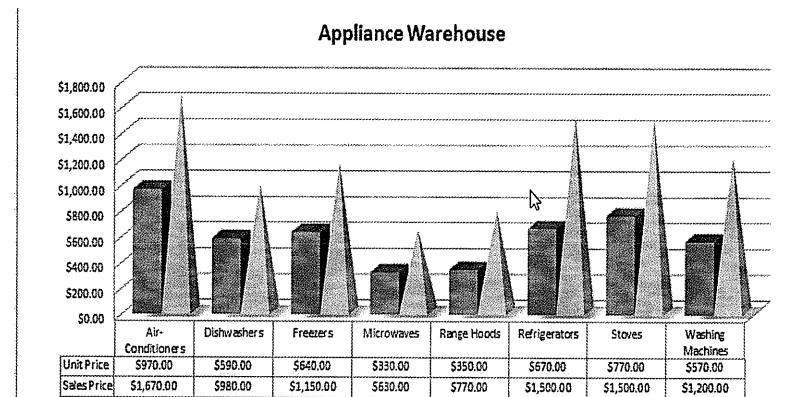
You may wish to display the chart values in a grid beneath the chart.

To show the data Tables:

1. Click on the Chart.
2. On the Layout Tab, in the Labels group, click the arrow in the **Data Table** box, and select **Show**.



3. The Data Table will appear beneath your chart.



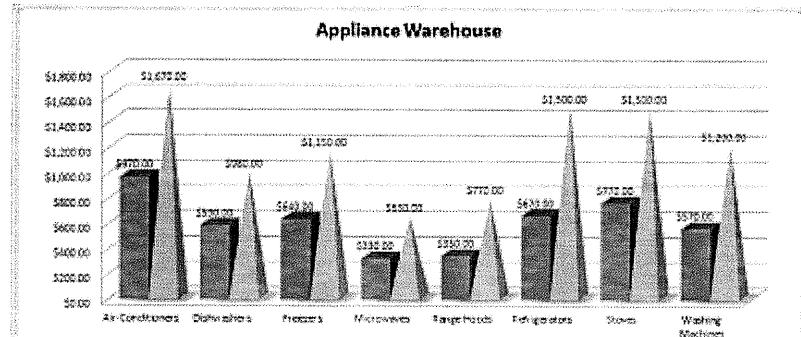
4. Save your spreadsheet.

**Tip**

You can also add labels to the elements with their actual data value.

1. Click on the Chart.
2. On the Layout Tab, in the Labels group, click the arrow in the **Data Label** box, and select **Show**.

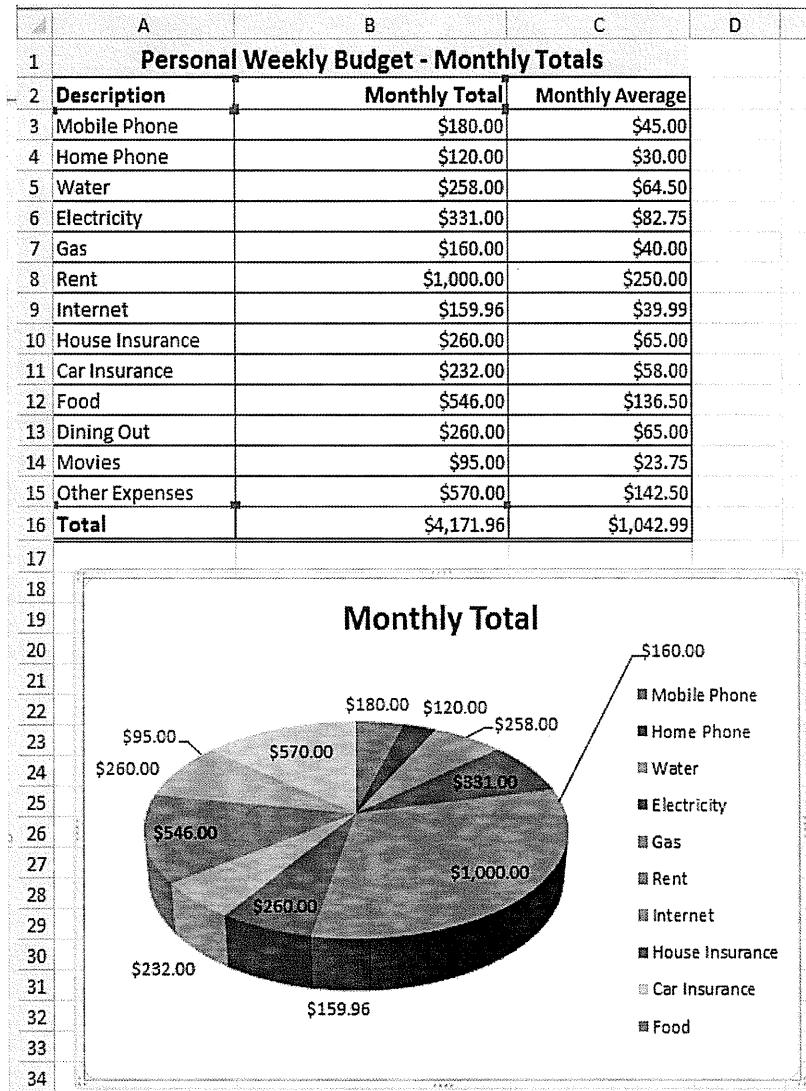
This is especially useful for pie charts.





Demonstration Creating Pie Charts

1. Open the spreadsheet called **Personal Budget** created in Task 4.1.
2. Click on the Month Total worksheet and create a 3-D Pie chart for the Description and Monthly Total columns. Do not include the Total row.
3. Format your chart appropriately and add Data Labels. Your chart should look similar to the one below.



4. Save your spreadsheet.

Part D

Inserting Graphics

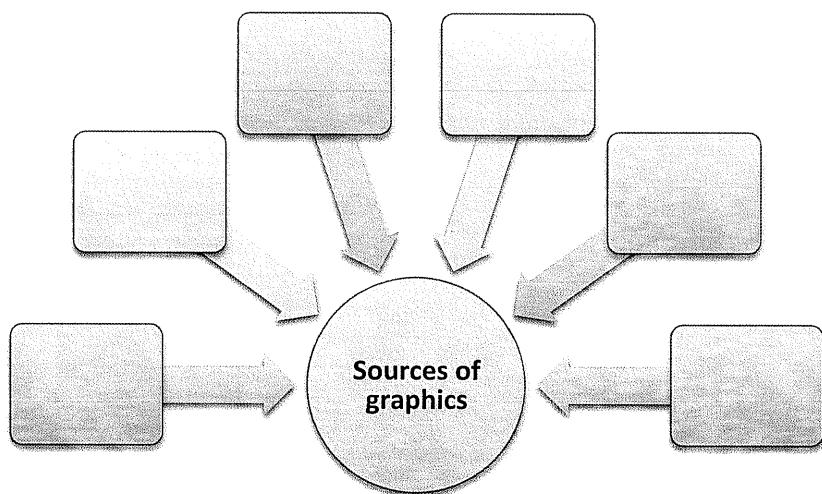


Task 5.9

Brainstorming Sources of Graphics

You can add graphics to enhance your spreadsheet.

Based on your knowledge of Microsoft Office Word, brainstorm sources of graphics. Share your ideas as a class.

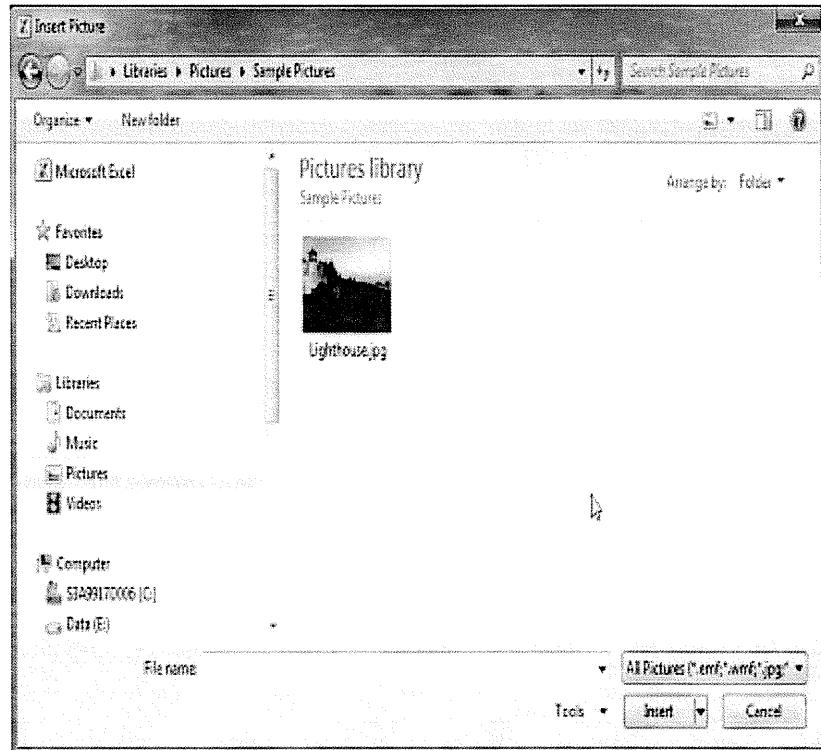


Can you think of situations in your GAC studies where it would be useful to insert graphics? List specific examples below.



Inserting Graphics Files

To insert a graphics file, first ensure that you have the graphic saved to your hard disk or a portable storage device. On the Insert Tab, select **Picture** on the Illustrations group. A similar window to the following should be displayed:

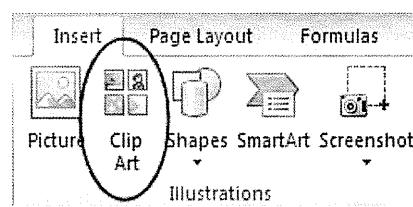


Use this window to browse to the location of the file you wish to insert. Select the graphic and click the **Insert** button.



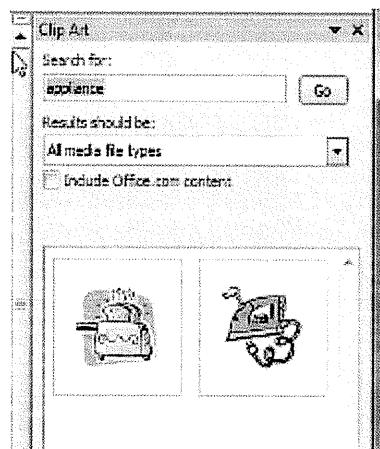
Demonstration Inserting Clip Art

1. To insert Clip Art into a spreadsheet, first select the insertion point on your spreadsheet.
2. On the **Insert** Tab on the Illustrations group click on the **Clip Art** button.



3. The sidebar will appear. To search for a range of Clip Art, type the name of the Clip Art item, for example *appliance* and click **Go**.

4. Select one of the images from the list. Simply click on the image and it will be inserted into your spreadsheet.

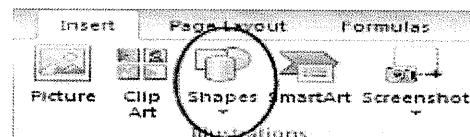


Demonstration Inserting Shapes

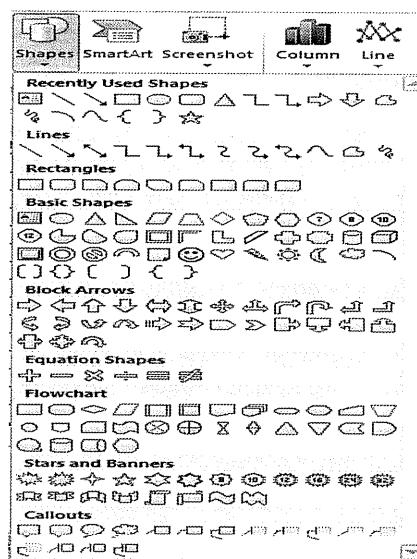
In Excel 2010, you can add shapes to your documents, or combine multiple shapes to make a drawing or a more complex shape. Available shapes include lines, basic geometric shapes, arrows, equation shapes, flowchart shapes, stars, banners, and callouts.

After you add one or more shapes, you can add text, effects and apply different styles to them.

Shapes are located on the **Insert Tab** on the Illustrations group.



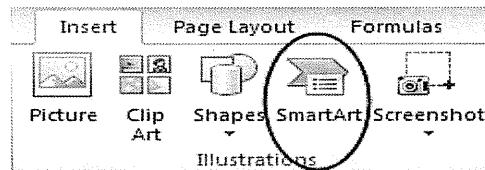
Click on the down arrow of the **Shapes** button to view the large range of shapes that can be inserted.



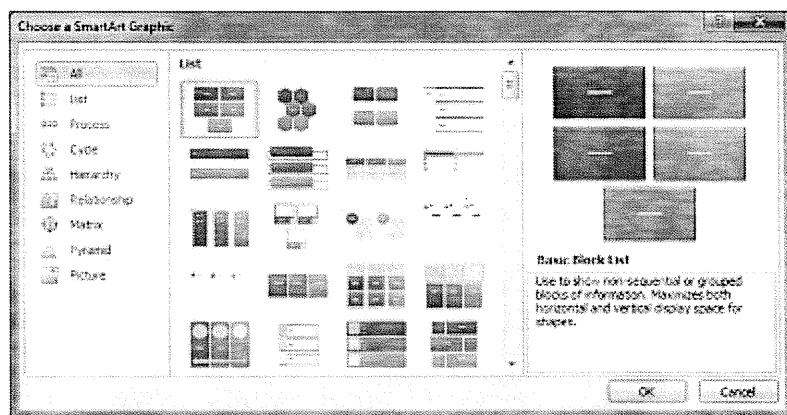


Demonstration Inserting SmartArt

SmartArt graphics are visual representations of information and ideas. To insert SmartArt graphics, select the Insert Tab and then choose SmartArt from the Illustrations group.



Then, you can select from a great variety of SmartArt graphics.



You can also customise each of the elements of the graphics such as colour, text, or shape.

Part E

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Creating charts
- Formatting charts
- Inserting graphics

Review all the activities you have completed in this unit and make sure that any questions you noted were answered.



Task 5.10

Creating Charts and Inserting Objects - Review

Work with a partner. In Task 5.1 you brainstormed *GAC* situations where it may be useful to include charts. Select one of these situations and undertake minimal research to obtain relevant data. Create a chart using this data, and insert two types of objects.

When you have finished, upload your chart to Google docs and share the link with your teacher and classmates. Then, using the ‘Comments’ application, provide feedback to two of the other pairs’ charts.

Unit 6 Excel Integration

Part A	Unit Introduction
Part B	Copying and Embedding Spreadsheets and Charts into Word
Part C	Using Excel for Mail Merge
Part D	Unit Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to copying and pasting data and charts from spreadsheets into Word documents.

In this unit, you will learn to:

- understand the difference between regular copy and paste, and copy and embedding objects
- use the Mail Merge function in Word
- use spreadsheet Tables as data sources

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.



Assessment Event 2

Project 1 - Spreadsheets

Assessment Event 2: Project 1- Spreadsheets is due at the **end of this unit**.

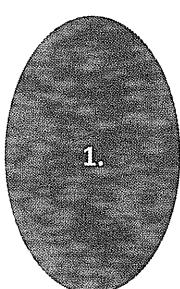
Part B

Copying and Embedding Spreadsheets and Charts into Word

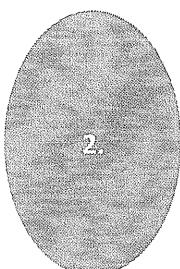


Methods for Inserting Spreadsheet Data or Charts in Word

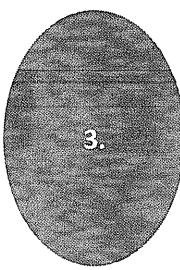
There may be times when you need to publish your Excel worksheet data, or a chart that you created, as part of a larger report in Microsoft Word. There are three methods by which to insert your spreadsheet data or chart into a Word document.



- You can simply copy the selected data or chart in Excel and then use the **Paste** command in Word to insert the data or chart into your report.



- You can copy the data then, using the **Paste Special** command, *embed* the data into your Word document. When you double click on the data in Word, you can edit the spreadsheet using Excel features within Word.
Note: Changes made in Word are not updated in the Excel spreadsheet file.



- You can copy the data, then, using the **Paste Special** command, *link* the spreadsheet into your Word document. If you regularly update your report, instead of manually re-typing or copying and pasting the data between programs, it is best to link the values. This will enable your Word report to automatically update itself and incorporate any changes made to the Excel spreadsheet.



Task 6.1

Brainstorming Situations for the Different Methods of Inserting Data or Charts in Word

Work with a partner. Brainstorm academic situations where each of the three methods of inserting data or charts in Word would be most relevant, and list your ideas below. Share with the class.

Copy and Paste

Paste Special + Embed

Paste Special + Link



Demonstration

1. Copying and pasting spreadsheet data or charts

Use the following steps to copy and paste data or charts from Microsoft Excel to Microsoft Word:

1. Open the Word document in which you want to copy the data or chart.
2. In Excel, select the data or chart you want to copy and click the **Copy** button on the Clipboard group located in the Home Tab.
3. Switch to your Word document and select where you want to paste your data or chart.
4. Click on the **Paste** button on the Clipboard group located in the Home Tab.
5. Your data is inserted as a normal Word Table which you can format using Word's formatting functions.

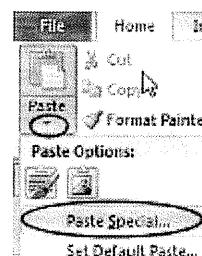
6. If you copy and paste an Excel chart, it will be pasted as an Excel Chart and you will have many of the Excel chart tools available.

Note: if you need to edit the data in any way, you will need to go back to your spreadsheet, edit the data and then copy and paste your data back again in your report.

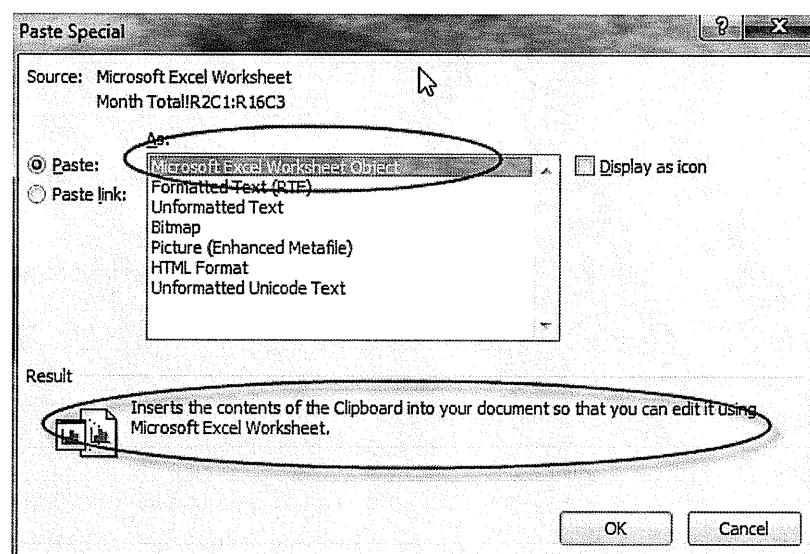
2. Copying and embedding spreadsheet data or charts

Use the following steps to copy and embed data or charts from Microsoft Excel to Microsoft Word:

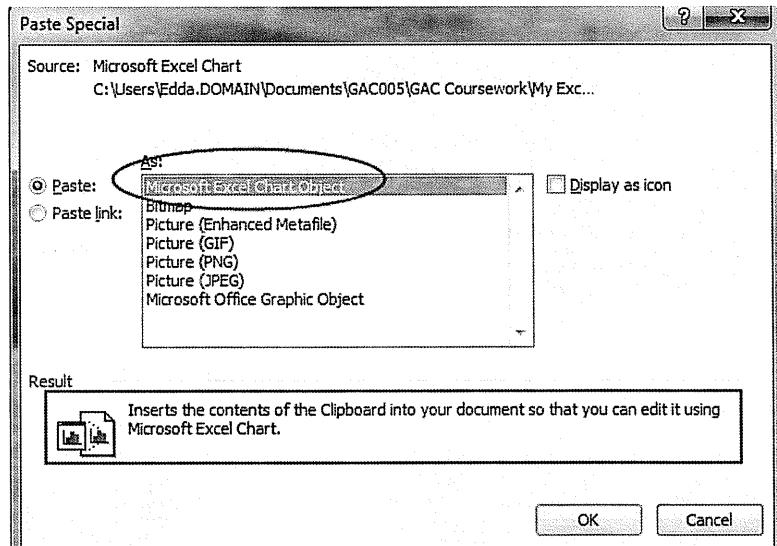
1. Open the Word document in which you want to copy the data or chart.
2. In Excel, select the data or chart you want to copy and click the **Copy** button on the Clipboard group located in the Home Tab.
3. Switch to your Word document and select where you want to paste your data or chart.
4. Click on the expanding arrow on the **Paste** button and select **Paste Special** from the drop down menu.



5. If you are copying spreadsheet data, you must select **Paste as Microsoft Office Excel Worksheet Object**. Click **OK** and the spreadsheet will be pasted into your Word document.



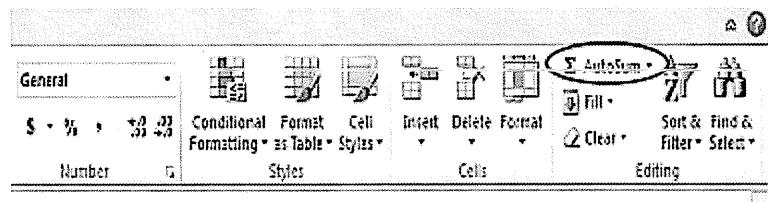
6. If you are copying a chart, you must select **Paste as Microsoft Office Excel Chart Object**. Click **OK** and the chart will be pasted into your word document.



The chart or data is pasted as an embedded object into the Word document. This means that by double-clicking on the object, you can edit and format the spreadsheet or chart as you would in the original spreadsheet. However, the original spreadsheet data is **NOT** updated.

	A	B	C	D
4		Cost Price	Selling Price	Units Sold
5	Refrigerators	\$1,700.00	\$2,000.00	125
6	Stoves	\$1,200.00	\$1,500.00	141256
7	Microwaves	\$460.00	\$800.00	156
8	Dishwashers	\$1,250.00	\$1,500.00	85450
9	Washing Machines	\$2,645.00	\$3,000.00	98654

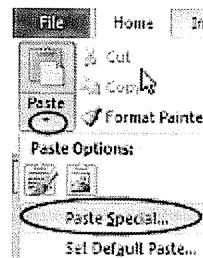
Note that the Ribbon in Word now appears with the same Excel groups. This allows you to edit and work on your embedded spreadsheet as if you were working in Excel.



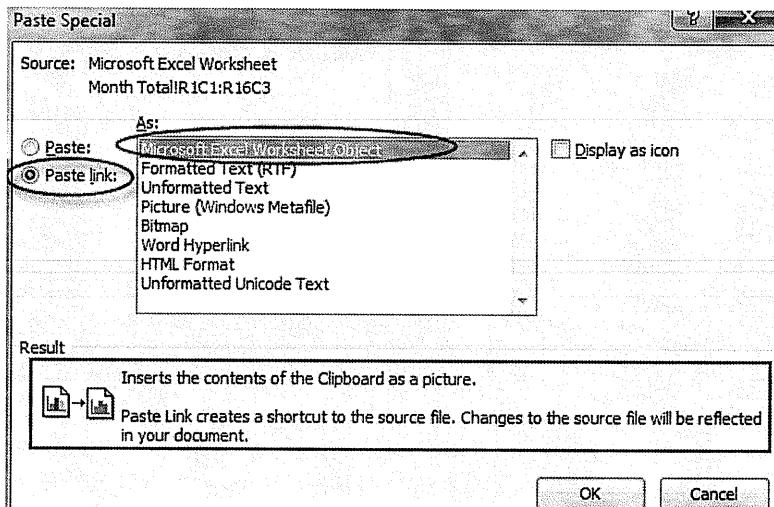
3. Copying and linking spreadsheet data or charts

Use the following steps to copy and link data or charts from Microsoft Excel to Microsoft Word:

1. Open the Word document in which you want to copy the data or chart.
2. In Excel, select the data or chart you want to copy and click the **Copy**  button on the Clipboard group in the Home Tab.
3. Switch to your Word document and select where you want to paste your data or chart.
4. Click on the expanding arrow on the **Paste** button and select **Paste Special** from the drop down menu.



5. Select **Paste Link** and then choose either as **Microsoft Office Excel Worksheet Object** or as **Microsoft Office Excel Chart Object** depending on the object you are pasting.



This will paste, embed and link the object into your Word document.

When you double-click on the object in your Word document, the linked spreadsheet will automatically open with the object ready for editing.

When you make a change to the data in your spreadsheet, the data in your Word document will automatically be updated.



Task 6.2

Practising Copying, Pasting, Embedding, and Linking Data

Open a new Word document and save it as *Integration Practice*.

Then, open your **Personal Budget** spreadsheet and perform the tasks listed below. Record the steps and the outcome.

Task	Steps	Outcome
1. Copy and paste data from your Week 1 worksheet into the Word document.		
2. Copy and embed the data on your Week 2 worksheet into the Word document. Double-click on the data.		
3. Copy and embed the chart from your Month Total worksheet into the Word document.		
4. Copy and link the data from your Week 3 worksheet into your Word document. Save your document.		
5. Edit the data in your spreadsheet.		

Part C

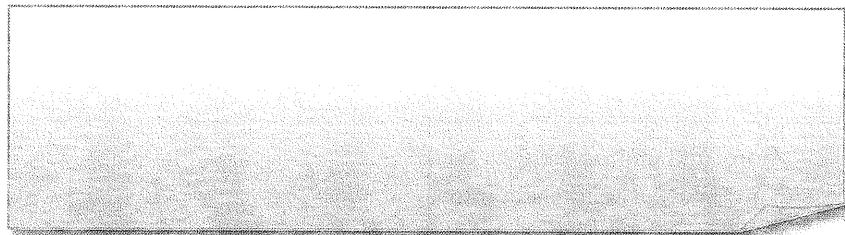
Using Excel for Mail Merge



Mail Merge

Mail merge is a powerful function that is used a great deal by businesses. It facilitates the rapid creation of a large number of similar documents. For example, mail merge can be used to send the same letter to a large number of different people, and the letter will be personalised for each individual.

Can you think of situations in your GAC studies where it would be useful to use mail merge?



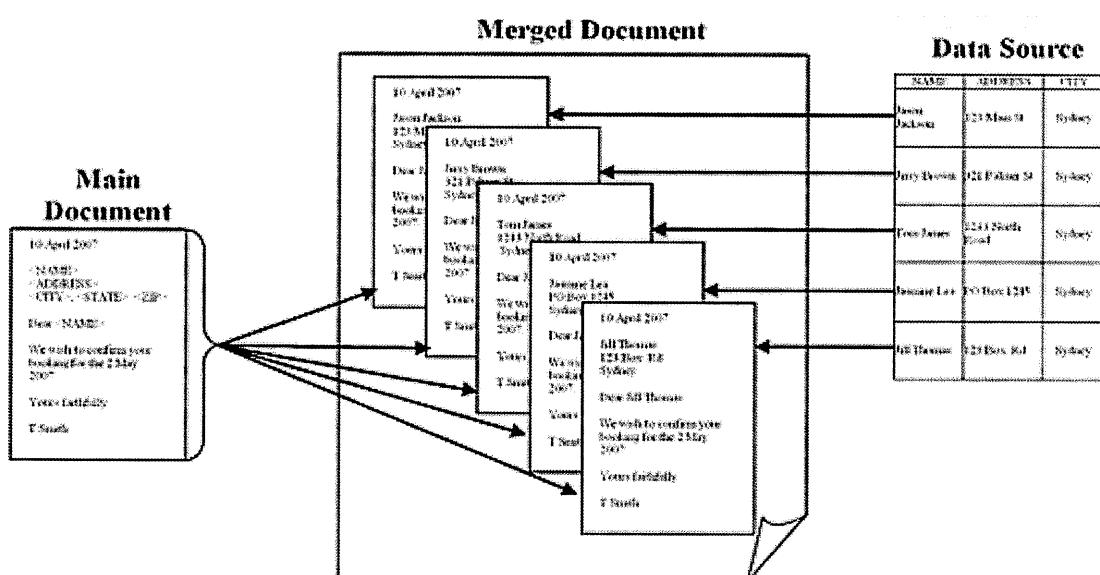
Mail merge requires two documents:

1. a document that contains a Table listing information
2. a form with special fields

The file that contains all the data is called the **Data Source**. This document can be a Word Table, an Excel spreadsheet, or an Access database Table.

The document that the data is inserted into is called the **Main Document**.

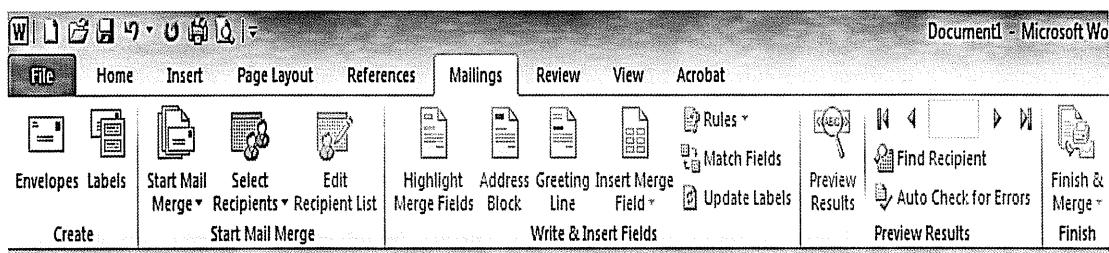
Merged Documents are the new documents which are a combination of the Data Source and the Main Document.



**Mailings
Tab**

The **Mailings Tab** on the Ribbon can be used to perform all the necessary actions in order to create merged documents. The Mailings Tab contains the following groups:

1. **Create** - enables you to create envelopes and labels.
2. **Start Mail Merge** - enables you to start a mail merge to create a form letter to different recipients. You can then select specific recipients and edit and make changes to the recipients.
3. **Write & Insert Fields** - enables you to add field names and other merge features to the document that is being created.
4. **Preview Results** - this group is used to preview the results of your merge.
5. **Finish** - enables you to complete the merge.



Merge Data

In order to create merged documents, you need a 'Source' document which has information listed in a Table that can be inserted into your 'Main' document.

For this section, the merge data will come from an Excel spreadsheet.

When creating the merge data, it is important to remember that the:

- first row must contain the headings
- headings must not contain any spaces

**Task 6.3****Creating Merge Data Files**

1. Create a new Excel spreadsheet and save it as ***Customer List***.
2. Enter the data below. Ensure that your headings do not have any spaces.
3. Save your spreadsheet.

Fname	Lname	Street	Suburb	Pcode	Month
Jane	Sartor	12 Hopkins Street	Burwood	2134	April
Tom	Smith	57 Eden Road	Annandale	2038	May
Trevor	Wallis	189 Jorge Crescent	Lilyfield	2040	January
Lotus	Nyguen	34 Marion Street	Summer Hill	2130	April
Paul	Marsh	153 Lyons Road	Drummoyne	2047	December
Mike	Williams	87 High Street	Kingsford	2032	December
Anna	Scanlon	56 Avoca Road	Randwick	2031	April
Thuy	Hung	345 Maroubra Road	Maroubra	2035	February
Dave	Hanley	98 Carillon Avenue	Enmore	2042	June
Kate	Martin	75 King Street	Canterbury	2193	December

Main Document

Now we need to create the Main Document. This is the document that the data will be imported into. In other words, the information that you have in the Source Document will be transferred to the Main Document.

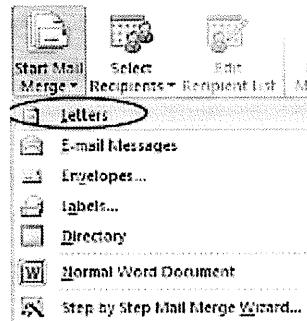
For each **row** in your Table Mail Merge will create a new document with the information from the **columns** that you select.



Task 6.4

Creating the Main Document

1. Start a new Word document and save with the name *Customer Letter*.
2. Click on the **Mailings** Tab on the ribbon and click on the **Start Mail Merge** button.
3. You need to determine what type of document to create - select **Letters**.



4. Enter the text from the box below into your document.

Dear _,

Happy Birthday!

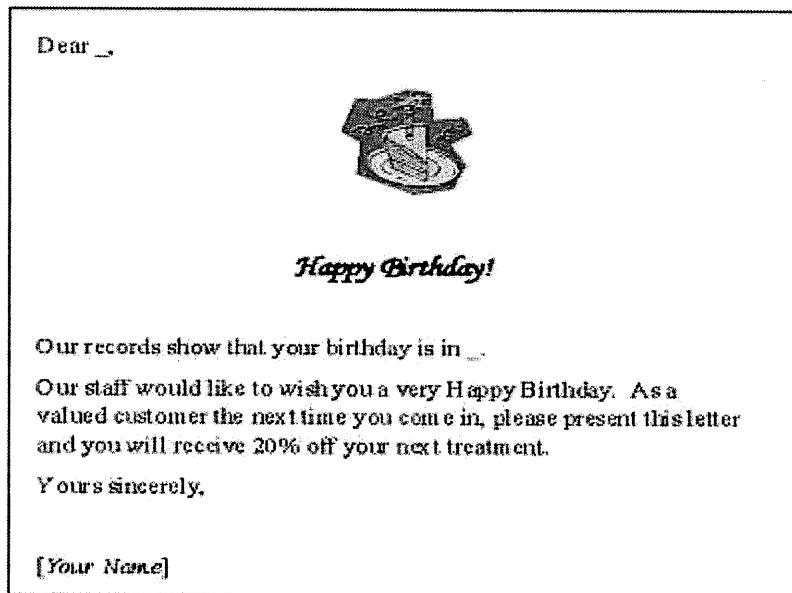
Our records show that your birthday is in _.

Our staff would like to wish you a very Happy Birthday. As a valued customer the next time you come in, please present this letter and you will receive 20% off your next treatment.

Yours sincerely,

[*Your Name*]

5. Format your letter appropriately and insert an image.
6. Go to the top of your document and press the **Enter** key several times to leave space for the name and address details.
7. Save the document.



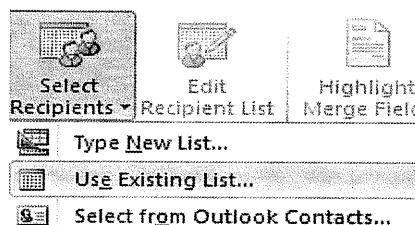
This is your Main Document. Now you need to connect the Data Source and insert fields into your Main Document.



Task 6.5

Selecting the Data Source (Recipient List)

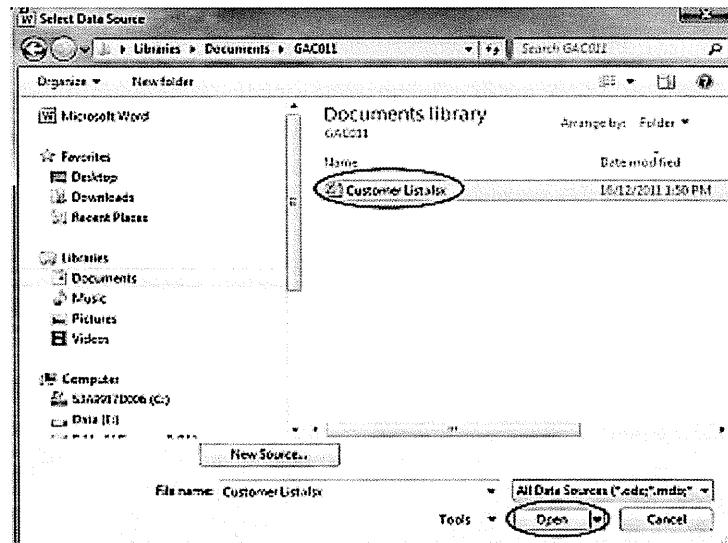
1. If your *Customer Letter* document is not open, open it now.
2. Click on the **Mailings** Tab on the ribbon and click on the **Select Recipients** button.



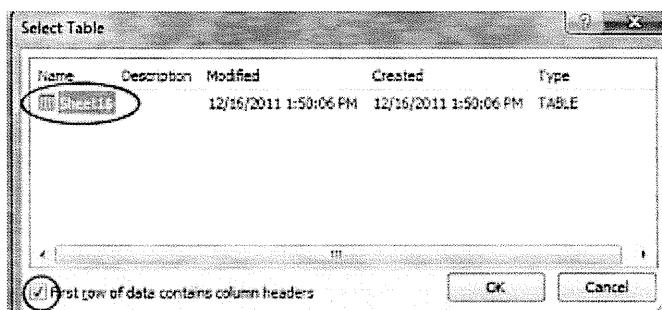
Note: The **Select Recipient** buttons on the **Mailings** Tab enables you to create a new list, use an existing list or select from Outlook contacts.

3. Click on **Use Existing List** to select a previously created Recipient List. This list could also be a Word document or an Access database.

4. When this option is chosen, the **Select Data Source** dialog box will appear.



5. Locate your previously saved **Customer List** spreadsheet and click **Open**.
6. As our file is an Excel spreadsheet the Select Table dialog box will appear. Ensure that the correct Sheet is selected and the **First row of data contains column headers** is ticked.



7. Your Recipient List is now attached to your document.
8. Save your Word document.

Now you need to insert the fields into the correct places in your Main Document.

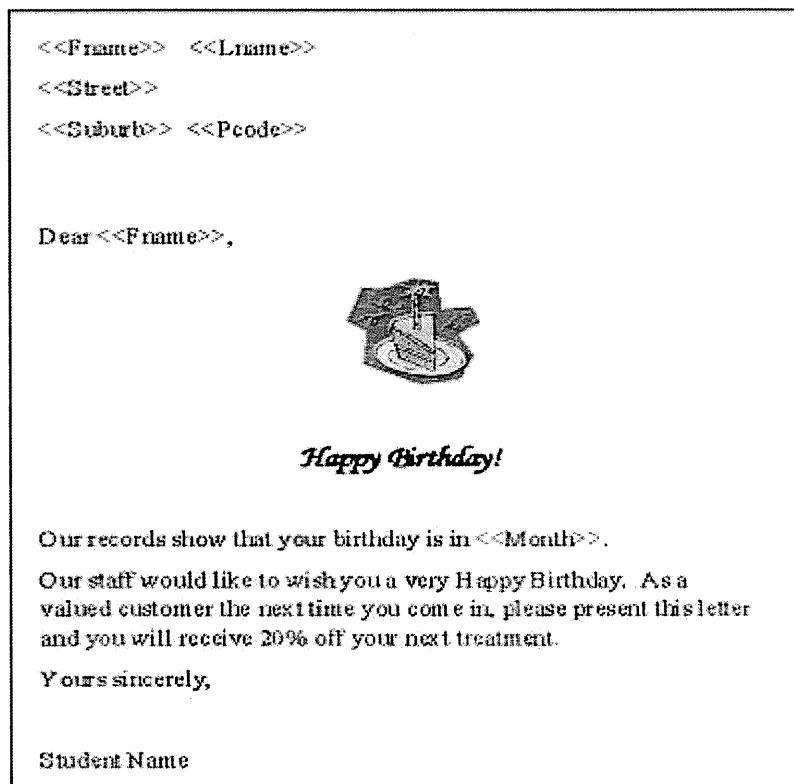
**Task 6.6****Inserting Merge Data fields**

1. Click at the top of your document to insert the name and address details.
2. Click on the **Insert Merge Field** button on the **Mailings Tab**.
3. Select ‘FName’ from the list of fields.



4. You should now see something like ‘«Fname»’ in your document.
5. Press the spacebar once and again click on the **Insert Merge Field** button and Select ‘Lname’ from the list of fields. Press the **Enter** key once.
6. Click on the **Insert Merge Field** button and select ‘Street’ from the list of fields. Press the **Enter** key once.
7. Click on the **Insert Merge Field** button and select ‘Suburb’ from the list of fields. Press the spacebar once and then insert ‘Pcode’ from the list of fields.
8. Select the underline after ‘Dear _,’. Make sure that the underscore ‘_’ is highlighted and select ‘FName’ from the list of fields.
9. Making sure that the underscore ‘_’ is highlighted at the end of the first sentence and select ‘Month’ from the list of fields.
10. Check with other students and your teacher to see if your document is correct.
11. Save your document.

Do not delete any part of the inserted field! Your document should look as follows:



You now have a Main Document that includes information from your Data Source.

To view the Merged Documents follow the instruction ‘View Merged Documents’.

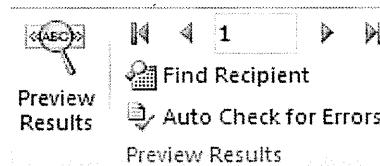


Task 6.7

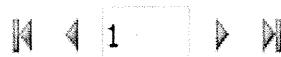
Viewing Merged Documents

Once all the fields have been inserted, preview the results of the merge before you print your letters.

1. Click on the **Preview Results** button on the **Mailings Tab**.



2. Your document should now show the details from the Recipient List (or Data Source document).
3. To view the other Merged Documents use the record selectors:



4. Each time you click, you will see another document with different information taken from your Recipient List.
5. Click on the **Preview Results** button again and your document will now show only the field names.

With a partner, practise using the record selectors.

What does each button do?

How many Merged Documents are there?



Task 6.8

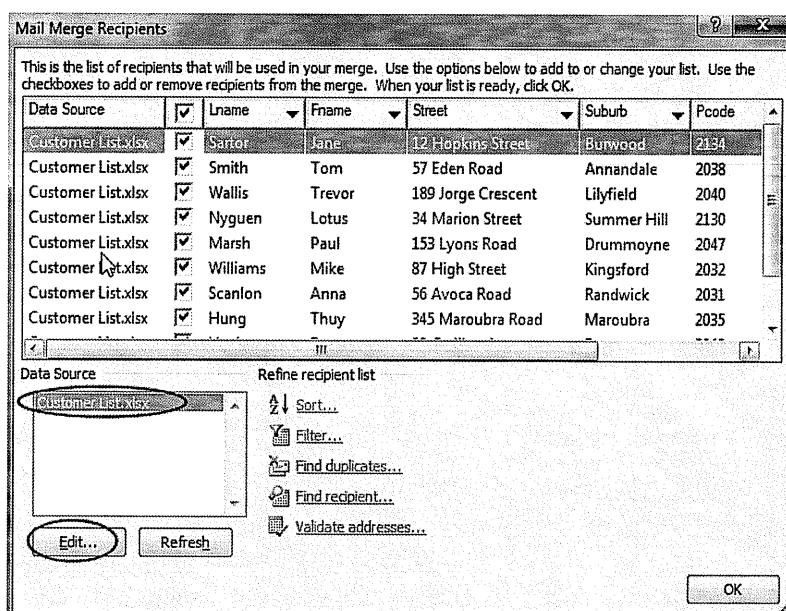
Editing your Recipient List

There are times when you will need to make changes to your Recipient List. Using the **Edit Recipient List** button, you can also sort and filter your list.

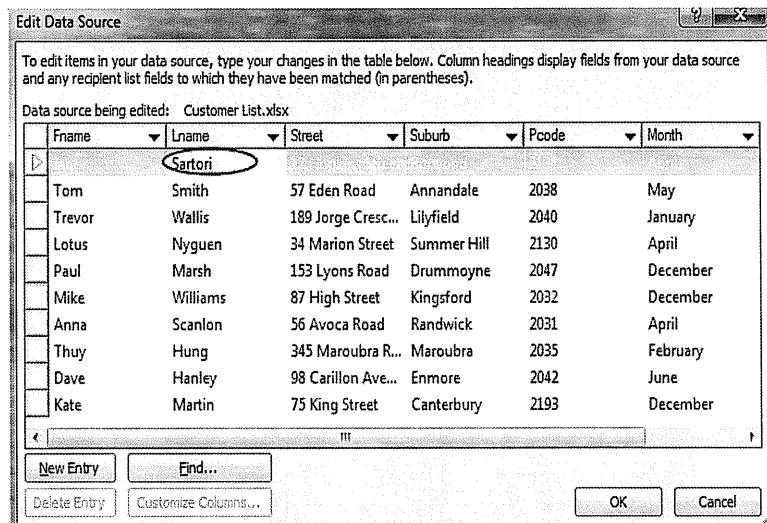
1. Click on the **Edit Recipient List** button on the Mailings Tab.



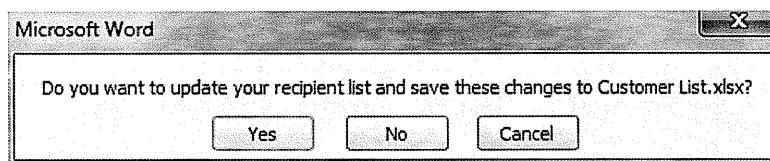
2. The **Mail Merge Recipients** dialog box will appear.



3. In the **Data Source** section, click on your file, and click on the Edit button.
4. The **Edit Data Source** window will appear. You can edit the data directly in the cell required. This window will also allow you to add new records by clicking on the New Entry button. When you do this, a new line appears at the end of your rows.
5. Change the Lname for the first record to *Sartori*.



6. When you have completed editing your data, click on the **OK** button and you will see the following message asking to confirm whether to update the recipient list and save the changes to the Excel file.



7. Click **Yes** to accept the changes.
8. Save your Word document.
9. Open your spreadsheet. You should see the changes you made.



Saving your Files

When you exit your main document, you will be prompted to save it. Click **Yes** to save the main document. If you have made any changes to the Data Source document, you will also be prompted to save it. Ensure that you click **Yes** to save the Data Source as well.

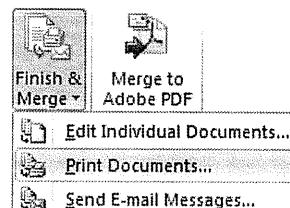


Task 6.9

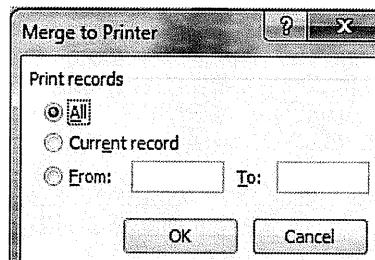
Printing Merged Documents

To print your merged documents directly to a printer:

1. Click on the **Finish & Merge** button on the **Mailings** Tab.
2. Select **Print Documents...**



3. You will see the following dialog box.



4. If you wish to print all the Merged Documents (records) then just click **OK**. Otherwise, choose which records you wish to print.

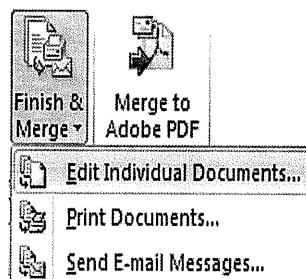


Task 6.10

Merging to Individual Documents

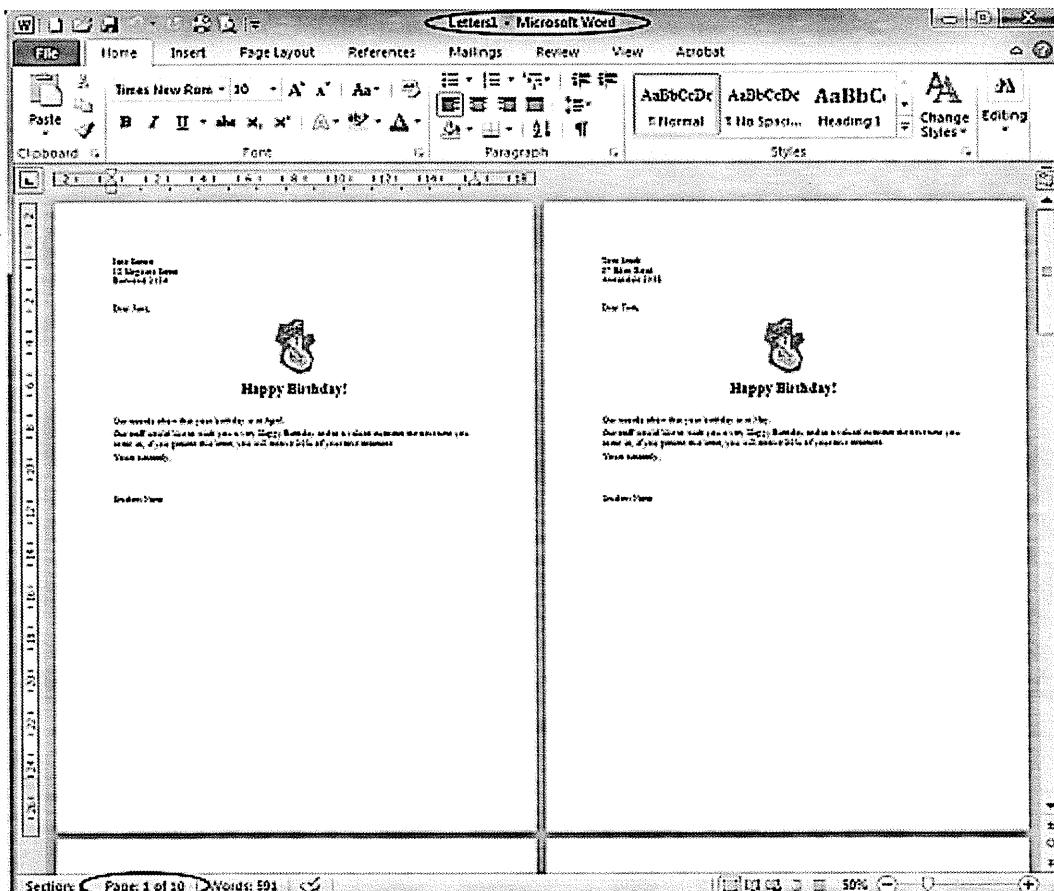
You may wish to merge your letters to a new document.

1. Click on the **Finish & Merge** button on the **Mailings** Tab.
2. Select **Edit Individual Documents...**.



3. Your merged letters will now be merged to a new document.
Notice the Title Bar of the document is called ‘Letters1’.

Note: You do not need to save these documents as they are easily merged again.



In this part, you have learnt how to use Excel to create a Data Source to be merged with a Word document. You should now practise the tasks in this section.

The steps are the same if using a Word Table for the Data Source. There is just one extra step which is to select on which worksheet onto put the data. Remember that your Data Source must be set up correctly for Mail Merge to work properly.



Task 6.11

Checking your Understanding

First work on your own. Try to answer the following questions without referring to your manual. When you have finished, switch with a partner and check each other's work using the manual.

1. *What are the advantages of automatic mail merge?*
 2. *To create a mail merge, which two documents are required?*
 3. *Which button do you use to view the merged data?*
 4. *How do you insert your merge fields in the main document?*

Part D

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Copying and Embedding Spreadsheets and Charts into Word
- Using Excel for Mail Merge

Review all the activities you completed in this unit and make sure that any questions you noted were answered.



Task 6.12

Creating a Mail Merge For a Social Science Project

Work with a partner. Imagine you are going to be interviewing people for a Social Science primary research project. Create a mail merge letter for the interviewees. Use the Main Document below, and create a list of eight interviewees for your Data Source. Print and share the documents with your teacher.

Thank you and
see you soon!

Dear ___,

Many thanks for accepting the invitation to be interviewed for my Social Science research project regarding [your project topic].

I will be in touch with you shortly to make an appointment. To this end, please could you email me your preferred days and times for an approximately one-hour long meeting.

My email address is: [your email address].

Your help is much appreciated.

Best regards,

[your name]



Unit Consolidation

This Unit Consolidation will revise all the functions covered Units 1-6. It will also require you to apply your knowledge and skills in using a spreadsheet package to solve problems.

See your teacher if have any problems or questions.

Scenario

You have been asked by the Manager of **Prestige Stationers** to produce a report showing the Inventory levels and sales for the month of June. This report should include a spreadsheet with all the figures as well as charts to graphically show the inventory levels and the total cost of sales. There are several tasks required:

Task 1: Design the Spreadsheet

Design a spreadsheet on paper, using the information below. Remember to write your name on the paper.

- Headings to be used in the spreadsheet:
 - Product Name
 - Inventory
 - Quantity Sold
 - Wholesale Cost
 - Retail Price
 - Total Cost of Sales
- **Markup** - this should be a separate heading on its own. The value for markup is 20%. This value will be used in the formula for **Retail Price**.
- Titles for spreadsheet:
 - Prestige Stationers
 - Sales as at June 2007
- Write down the formulas to be used for:
 - **Retail price** - don't forget you need to use the markup value and it will be an absolute value
 - **Total Cost of Sales**
- The products are:
 - Black Ink
 - Colour Ink
 - Black Refill Ink
 - Colour Refill Ink
 - Calculator
 - Shredder
 - Glue Stick
 - Binder
 - Whiteboard Markers
- Choose which type of graph would best suit the following data, e.g. column or pie:
 - Inventory levels
 - Percentage of products sold

When you have completed this task, submit your design to your teacher.

Task 2: Create the Spreadsheet

Create the following spreadsheet, in Excel, using the information given in the Table below.

Prestige Stationers					
Sales as at June 2011					
Markup	20%				
Product Name	Inventory	Quantity Sold	Wholesale Cost	Retail Price	Total Cost of Sales
Black Ink	590	98	32.50		
Colour Ink	365	85	38.96		
Black Refill Ink	488	150	15.23		
Colour Refill Ink	396	135	25.36		
Calculator	256	50	47.74		
Shredder	198	10	58.22		
Glue Stick	655	230	1.35		
Binder	130	15	11.22		
Whiteboard Markers	950	250	3.45		
Totals					
Averages					

- Fill in the correct formula for **Retail Price** and **Total Cost of Sales** (see Hints for Formulas).
- Add a **Totals** and **Averages** formula for only these columns:
 - Inventory
 - Quantity Sold
 - Gross Profit
- Format your spreadsheet to look professional (see report sample).
- Include a border around the outside.
- Add a Header to your spreadsheet in the center - 'Prestige Stationery - June Sales 2011'.
- Add a Footer to your spreadsheet - your name on the left and the date on the right.
- Format the Header and Footer appropriately.
- Save your spreadsheet as **PrestigeSales**.
- Print a copy of your spreadsheet and submit it to your teacher.

Hints for Formulas

- **Retail Price** is the **Wholesale Cost** plus (**Wholesale Cost** times the **Markup** percentage). Remember you will need to use an absolute formula when making these calculations.
- **Total Cost of Sales** is the **Retail Price** times the **Quantity Sold**.
- **Totals** are the sum of the specific column.
- **Averages** are the average of the specific column.

Task 3: Create Graphs

The Manager would like to see the inventory levels in a graph form (see report sample):

- Using the **Product** and **Inventory** columns (include Headings but without Totals) create a 3-D column graph.
- Format the graph appropriately.
- Add as a Title to the graph - ‘Prestige Stationers - Inventory’.
- Add as an axis - ‘Products’.
- Remove the Legend.

The Manager would like to see the Total Cost of Sales in a graph form (see report sample):

- Using the **Product** and **Total Cost of Sales** columns (without Headings and Totals) create a 3-D column graph.
- Format the graph appropriately.
- Add as a Title to the graph - ‘Total Cost of Sales’.
- Remove the Legend.
- Show the Percentages and the Category labels.

Print a copy of your spreadsheet with the spreadsheet and charts, and submit them to your teacher.

Task 4: Create a Word Report

The Manager would like you to present your data in a Word report.

- Open Word and save the report as **Prestige Sales Report**.
- Create a report as per the sample on the next two pages.
- Format the headings appropriately.
- Copy and paste link the spreadsheet and charts into your report.
- Add a Footer to your report with your name on the left and the page number on the right.
- Print a copy of the report and submit it to your teacher.

Prestige Sales Report

Introduction

This report outlines sales over the month of June 2007. The following spreadsheet shows the Inventory on hand as well as the Quantity sold for the month.

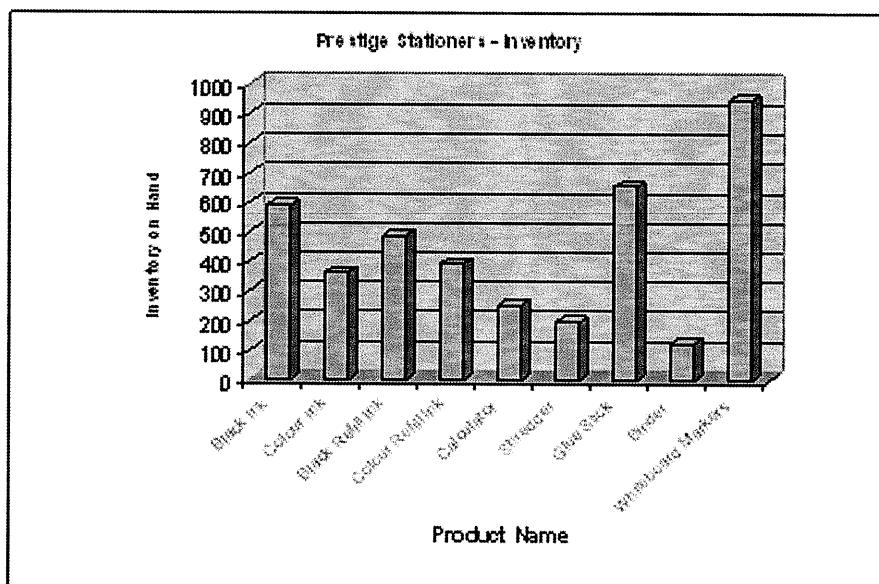
Total Sales

Sales have been improving since the beginning of the year. As can be seen, the total amount of sales for June was \$19,818.24.

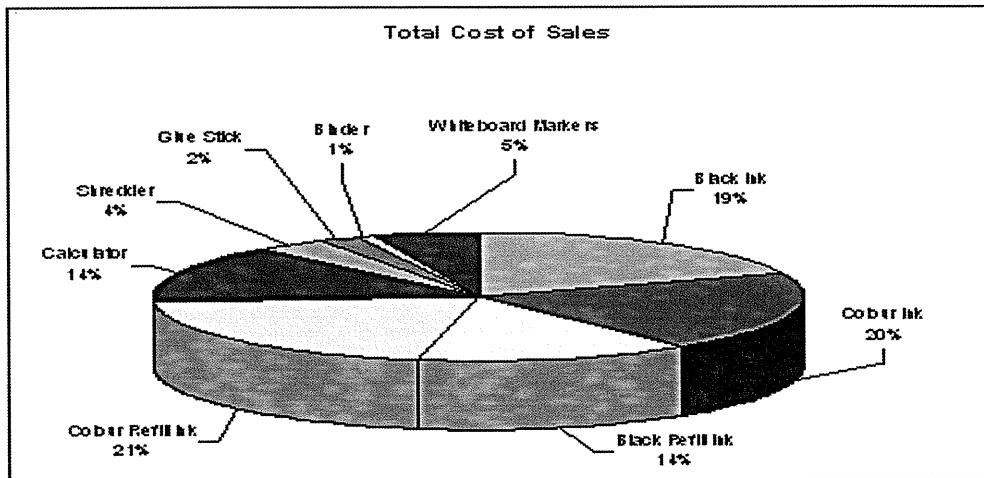
Prestige Stationers					
Sales as at June 2007					
Markup:	20%				
Product Name	Inventory	Quantity Sold	Wholesale Cost	Retail Price	Total Cost of Sales
Black Ink	590	98	\$32.50	\$39.00	\$3,822.00
Colour Ink	365	85	\$38.96	\$46.75	\$3,973.92
Black Refill Ink	488	150	\$15.23	\$18.28	\$2,741.40
Colour Refill Ink	396	135	\$25.36	\$30.43	\$4,108.32
Calculator	256	50	\$47.74	\$57.29	\$2,864.40
Shredder	198	10	\$58.22	\$69.86	\$698.64
Glue Stick	655	230	\$1.35	\$1.62	\$372.60
Binder	130	15	\$11.22	\$13.46	\$201.96
Whiteboard Markers	950	250	\$3.45	\$4.14	\$1,035.00
Totals	4028	1023			\$19,818.24
Averages	448	114			\$2,202.03

Breakdown of Sales by Product

The following chart indicates which products are the best selling products.



The following chart shows the Total Cost of Sales for the month of June. Whilst the previous chart showed that Whiteboard Markers sold the most quantity. The following chart shows that Colour Refill Ink, in fact, provides the highest dollar value.



Conclusion

The results for the month of June show that we need to build up the sales for several of our product lines in order to increase the profitability of sales overall.

Page 2



Assessment Event 2

Project 1 - Spreadsheets

Assessment Event 2: Project 1 Spreadsheets is **now due** and should be submitted to your teacher for marking.

Unit 7 Introduction to Databases

Part A	Unit Introduction
Part B	Understanding Microsoft Access
Part C	Opening and Closing Databases
Part D	Database Terminology
Part E	The Access Screen
Part F	Navigating Access
Part G	Unit Review

Unit Introduction

Overview

In this unit, you be introduced to using Microsoft Access Database.

In this unit, you will learn to:

- understand the fundamentals of databases
- use different sorts of database applications
- open and close Microsoft Access Database

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.



Assessment Event 4

Project 2 - Database

Your teacher will distribute the Instructions to Students for Assessment Event 4: Project 2 - Database at the end of this unit.

This project has a Design component as well as a Practical component. Both activities must be completed.

This project is due at the **end of Week 12, or at the end of Unit 12**.

Part B**Understanding Microsoft Access****Understanding Microsoft Access**

When you create a list of names, addresses, product orders etc, you are in fact creating a database. Databases are simply a collection of data that has been placed in some sort of order allowing users to efficiently locate desired information.

With Excel you learned how to create a simple list for data analysis. In this section, you will learn how to use Microsoft Access to manage complex data. For example, Access allows you to manage large amounts of data, create complex searches for specific pieces of data, and produce reports to present specific information.

Microsoft Access is a relational database management system, which is simply an organised collection of related data.

For example, a store's customer orders could be managed in an Access database. The database could include all the necessary data relating to customers' orders, namely the:

- customers' names
- customers' phone numbers
- products ordered
- quantities ordered
- amounts paid

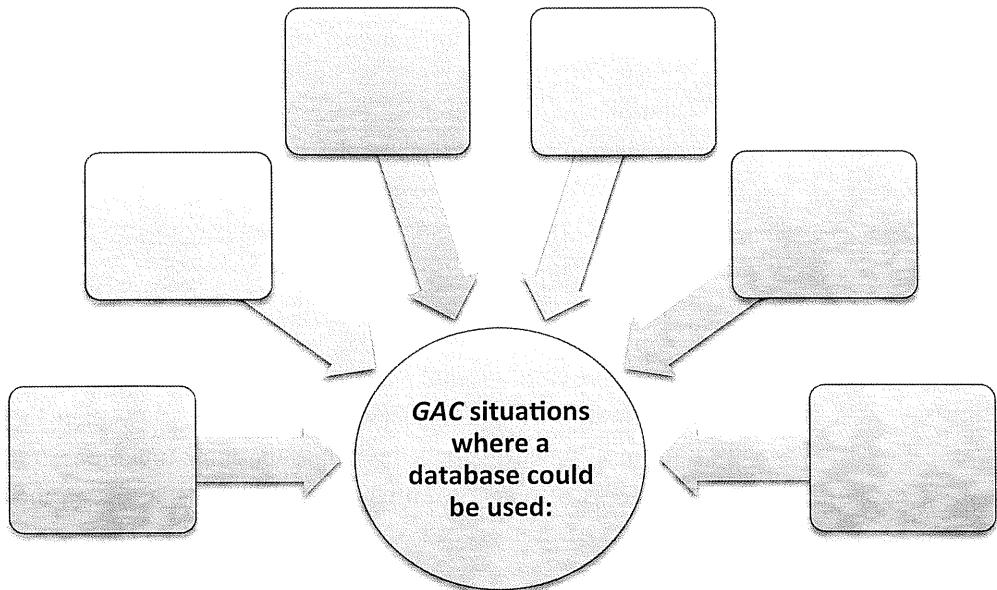
Using Access, you can create, maintain and extract the data.



Task 7.1

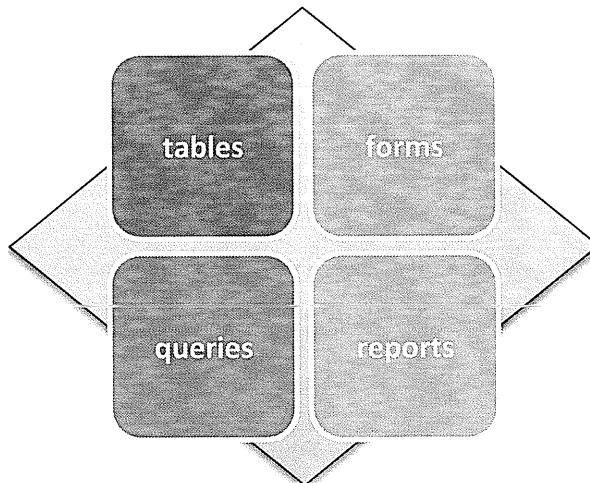
Brainstorming how Databases Could Be Used in GAC Studies

Work with a partner. On the previous page you saw how databases might be used to manage the data relating to a store's customer orders. Brainstorm one situation where a database could be used in your *GAC* studies, including examples of necessary data. Share your ideas as a class.



Understanding the Elements of a Database

Access utilises four key objects to store, manage and display the data within the database. These are:



1. Tables

Tables look similar to spreadsheets and are used to store the raw data of the database. Tables are made up of **fields** and **records**.

- Fields are columns in a Table that contain a single type of data. An example would be the phone number of a customer.
- Records are rows in a Table that contains all the data about a single item. An example would be the name and address of a customer. Records contain one or more fields and each record can be uniquely identified.

2. Queries

Queries are a method of extracting specific data from databases. Data in databases can be stored in a number of different Tables, fields and records. Queries are a method of asking questions of the database to extract specific data. Using a query, you can extract data from specific fields in multiple Tables.

3. Forms

Forms provide a quick and easy way to view, modify and insert records into your databases. Forms can be formatted to display the data in a logical format, making data entry much easier. Forms can also be used to act as a menu, with buttons that open other forms and reports.

4. Reports

Reports are based on the Tables and queries that have been created in the database. As these elements contain only raw data, reports allow you the organisation of information in an understandable way. Rather than applying specific formatting to the raw data in a Table, as you would in a spreadsheet, you can use a report to apply specific formatting and structure to your data to easily display it in a meaningful manner.



Task 7.2

Summarising the Elements of a Database

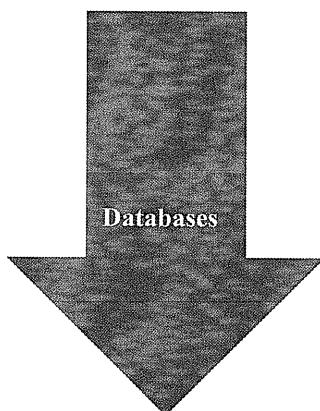
Work with a partner. Write a 140-character (including spaces and punctuation) ‘tweet’ summarising your learning regarding the elements of a Database. Upload your ‘tweet’ to Google docs and share with your teacher and classmates.

**Task 7.3****Deciding When Is It Best to Use Databases or Spreadsheets**

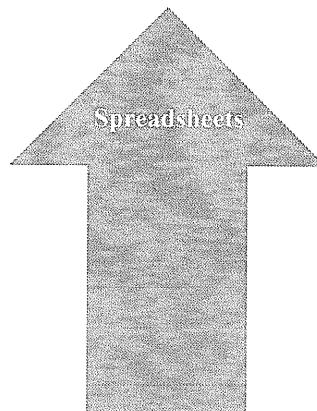
Work with a partner. Consider each of the situations below. Categorise them into whether they are *best* suited to working with databases or spreadsheets. Check your answers as a class.

1. Have a large or complex list of data to manage	2. Need to do complex calculations on the data	3. Want to easily create charts and graphs from data	4. Frequently need to make changes to the data	5. Want to ensure the integrity of your data
6. Want to analyse your data, e.g. to create a number of 'what if' scenarios	7. Need to query the data and produce reports on that data	8. Have a simple list of data	9. Want more than one person to use the data at the same time	10. Want to track your grades in a subject over time

Use **databases** when you:



Use **spreadsheets** when you:





Task 7.4

Checking your understanding of databases

Based on the information you have just covered, answer the following questions on Microsoft Access:

1. *What is a database?*

2. *What is Microsoft Access?*

3. *What is a Table?*

4. *What is a query?*

5. *What is a report?*

6. *In Task 7.1 you thought of an example situation in your GAC studies where it may be useful to use a data base to manage information. Do you still think it best to use a database rather than a spreadsheet? Why?*

Part C

Opening and Closing Databases

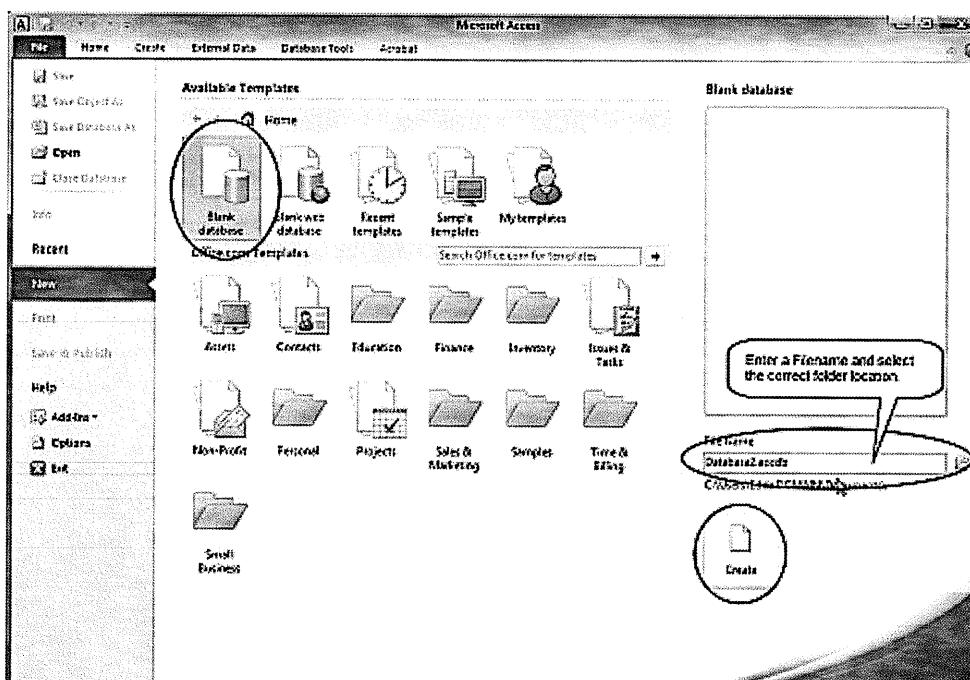


Opening Access

1. Click on the **Start** button in the taskbar. Microsoft Access is generally located in the **All Programs** submenu but this can vary depending on the setup of the computer.

When you first open Access you will see the **File** menu where you can select to create a new **Blank Database**.

2. Click on the **Blank Database** icon.



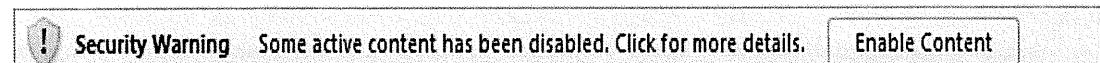
3. Click on the **Folder** icon to select the appropriate folder in which to save your database. Access requires you to save your database before you can do any work.
4. In the **File Name** text box, type in a name for your database.
5. Click on the **Create** button. A new database is created.

Note: The file extension for Access 2010 is **.accdb**



Caution

When you first open a database, a Security Warning will appear advising you that certain content within the database has been disabled. This relates to macros within the application.



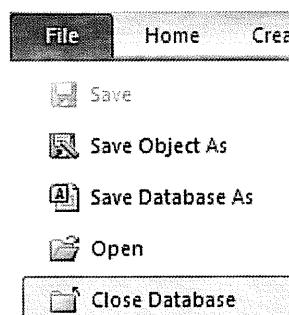
If you know the content of your database, click on the **Enable Content** button.



Closing Access

Microsoft Access can be closed using a number of methods:

- click the **Close** button
- click on the **File** menu and select **Close Database**.



Unlike many Microsoft applications, you will find that Access shuts down without asking you if you want to save the latest changes. This is because since one of the main benefits of using a database is maintaining data integrity, any changes will have automatically been saved.



Demonstration **Opening and Closing Microsoft Access**

Your teacher will now demonstrate how to open and close Microsoft Access.



Task 7.5

Practising Opening and Closing Microsoft Access

1. Open Microsoft Access using the Start menu.
2. Close Microsoft Access.

Part D**Database Terminology****Understanding Databases**

Databases are a collection of associated information, i.e. associated **Tables**. Access databases are **relational databases**, in which more than one Table can share information.

Access **Tables** are a collection of records on a single topic, presented in a column/row format.

Each **row** in a Table is referred to as a **Record**. A record is a group of related fields.

Each **column** in a Table is a category of information referred to as a **field**. In a telephone book, the column of phone numbers would be considered the Phone Number field. A field, or category of information, is the smallest piece of information.

One item of data, such as a single phone number, is called a **Data Value**.

A **Primary Key Field** is a field that contains unique information for each record.

CourseCode	CourseTitle	Faculty	DurationYrs	CreditPointsRequired	StudentName
5115	Bachelor of Economics	Arts and Social Sciences	3	144	Victoria
5164	Bachelor of Arts	Arts and Social Sciences	3	144	Sebastian
5239	Bachelor of Medicine	Medical School	4	192	Matthew
5325	Bachelor of Commerce	Business School	3	144	Sasha
5578	Bachelor of Arts and Bachelor of Laws	Arts and Social Sciences	5	240	Tim
5581	Bachelor of Design in Architecture	Architecture, Design, and Planning	3	144	Shirley

Part E The Access Screen



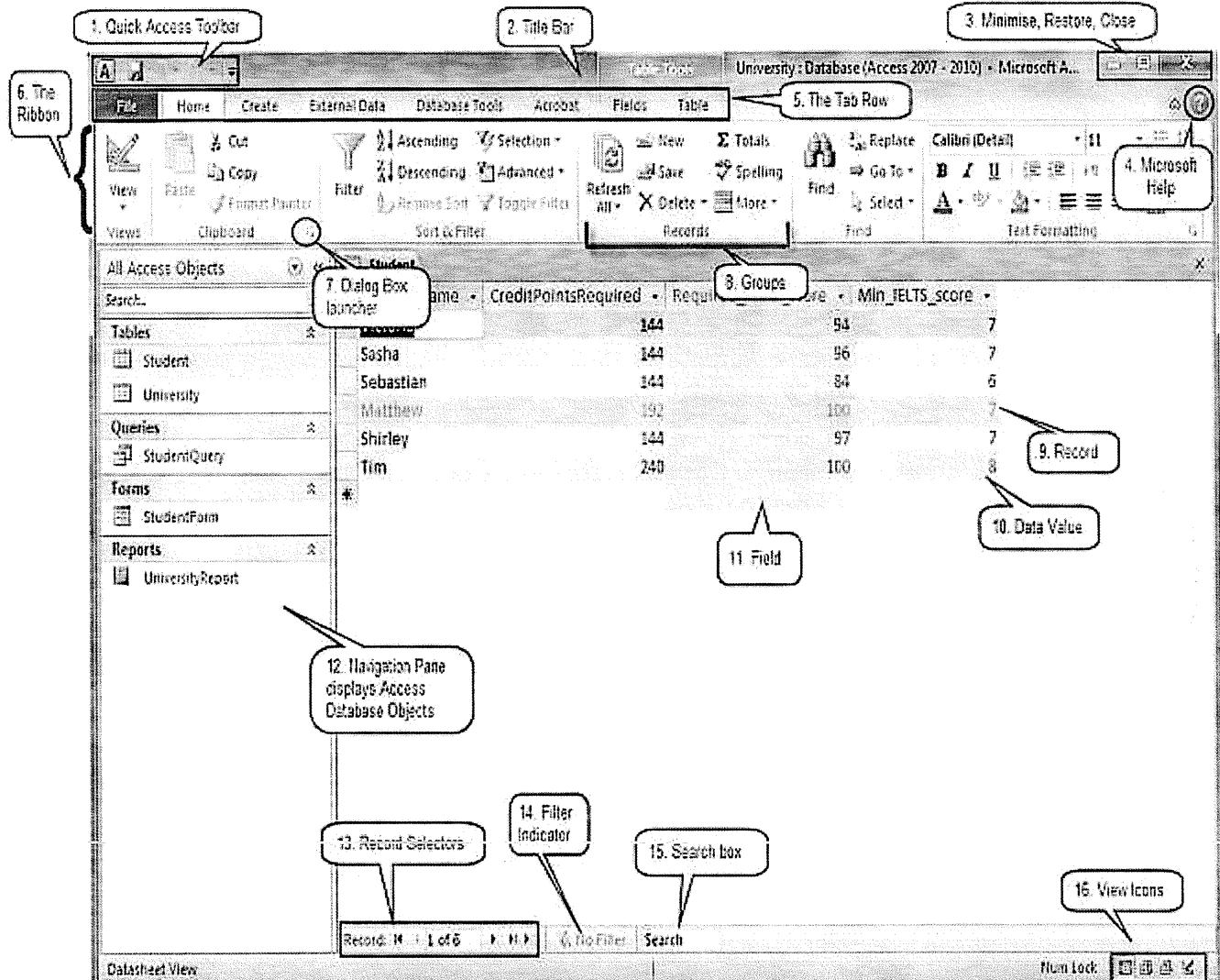
Understanding the Features of the Access Screen

Microsoft Access 2010 has many features to help you manage your database. If you have not seen the Microsoft Access screen before, it may appear confusing. Take some time to get used to the functions available.

The main features that you should remember as you work within Access are the **Quick Access Toolbar** and the **Ribbon**.

The functions of these features are similar to those explained in Unit 1 - Part C: The Excel Screen.

Note: On the following page you will find a quick reference guide that explains each of the features highlighted on this screen.





Access Quick Reference Guide

1. The **Quick Access Toolbar** contains a set of commands that are independent of the Tab currently displayed.
2. **Title Bar** shows the name of the program that is opened and the title of the database.
3. **Minimise, Restore, Close** will reduce, restore and close Access files.
4. **Help** opens the Access Help window.
5. The **Tab Row** contains commands that relate to a type of activity, such as formatting data.
6. The **Ribbon** is organized into groups, which are collected together under Tabs.
7. The **Dialog Box launcher** opens a dialog box or task pane.
8. **Groups** contain groupings of commands that relate to specific activities such as the Views, Clipboard, Font and Records.
9. A **Record** (row) is a group of related fields.
10. A **Data Value** is one item of data, such as a single phone number.
11. A **field** (column), or category of information, is the smallest piece of information.
12. **The Navigation Pane** - The area on the left side of the window. It displays the database objects, e.g. Tables, Forms, Reports, etc. The Navigation Pane replaces the Database window found in some earlier versions of Access.
13. **Record Selectors** enable you to move through one record at a time to locate a specific record or go to a specific record or to the first or last record.
14. **Filter Indicator** displays whether the records have been filtered or not.
15. **Search box** enables you to quickly search for a record with a matching value.
16. **View Icons** enables you to switch between the different Access views, for example, **Datasheet View** and **Design View**.



Hint

You can use this list as a quick reference guide throughout this module. It is not necessary know every function of Access right away.

Part F

Navigating in Access



Understanding the Ribbon, the Tab Row and Groups

The **Ribbon** is the panel at the top of the document. The Ribbon replaces the menus and toolbars in previous versions of Microsoft Access.

It has five **Tabs**: Home, Create, External Data and Database Tools. These Tabs contain the new and existing features of Access. Below is a list of the groupings within each Tab.

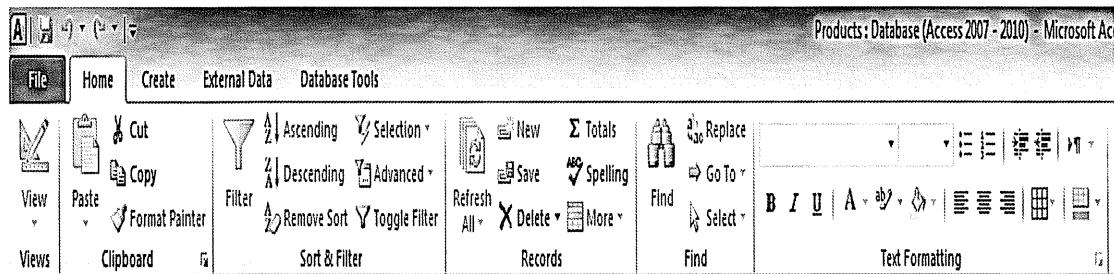
File: Save, Save Object As, Save Database As, Open, Close Database, Info, Recent, New, Print, Save & Publish, Help, Add-Ins, Options and Exit.

Home: Views, Clipboard, Sort & Filter Font, Records, Find and Text Formatting.

Create: Templates, Tables, Queries, Forms, Reports and Macros & Code.

External Data: Import & Link, Export, Collect Data and Web Linked Lists.

Database Tools: Tools, Macro, Relationships, Analyze, Move Data and Add-Ins.

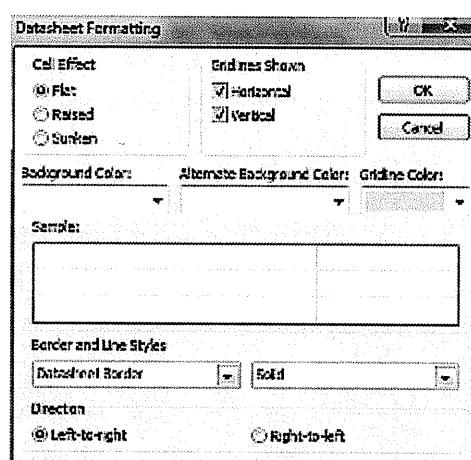


The Ribbon enables you to see and find the required commands to work with your database.

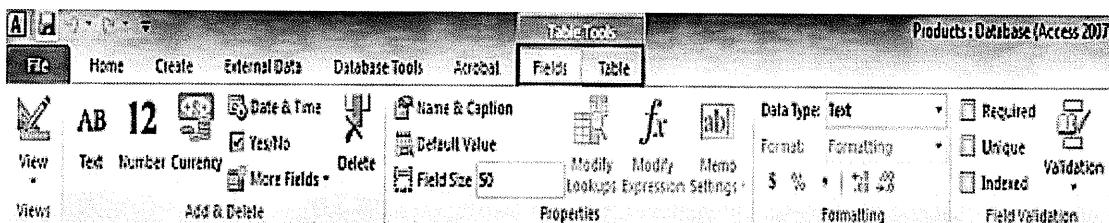
Each Tab is divided into **Groups**, which are collections of features designed to perform related functions that you can use to design, edit and query your Access database.

The most commonly used features are displayed on the Ribbon. Additional features within each group can be viewed by clicking on the arrow at the bottom right of each group.

For example, clicking on the Text Formatting dialog box launcher will open the Datasheet Formatting dialog box that contains further commands.



Some Tabs only appear specific to the activity at that time. For example, when you open a Table, the **Fields** and **Table** Tabs will appear displaying commands that will enable you to configure and design your Table.



Understanding the Navigation Pane

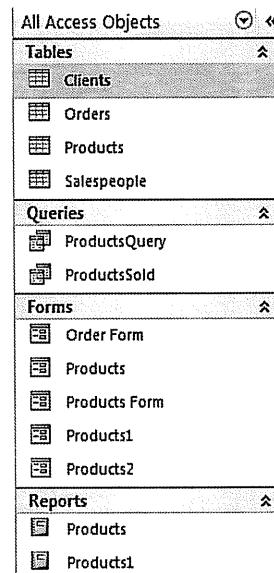
The Navigation Pane contains all your database objects. It allows you to access and view your Tables, create queries, run reports or enter data directly in Tables.

By default, the Navigation Pane appears as a rectangular box with a title, a down-pointing arrow enabling you to make selections and a **Shutter Bar Open/Close** button . If you want to minimize the Navigation button, you can click the Shutter Bar Open/Close button . If you click it, the Shutter Bar Open/Close Button changes and the Navigation Pane becomes a vertical bar:

If you click on the Navigation Pane, which Database objects can you find? Write your responses below.

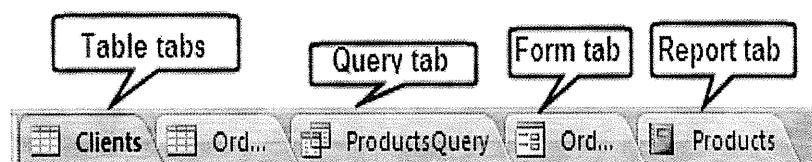
•	•	•	•
•	•	•	

In the Navigation Pane, all objects that are in the database are displayed as categories. The **All Access Objects** is a category and is organized into groups - Tables, Queries, Forms, and Reports, etc. Group names change based on the category view, and a group can contain one or more database objects. In the image below, for example, Tables is a category and holds the objects Clients, Orders, Products and Salespeople.



Demonstration Using Object Tabs

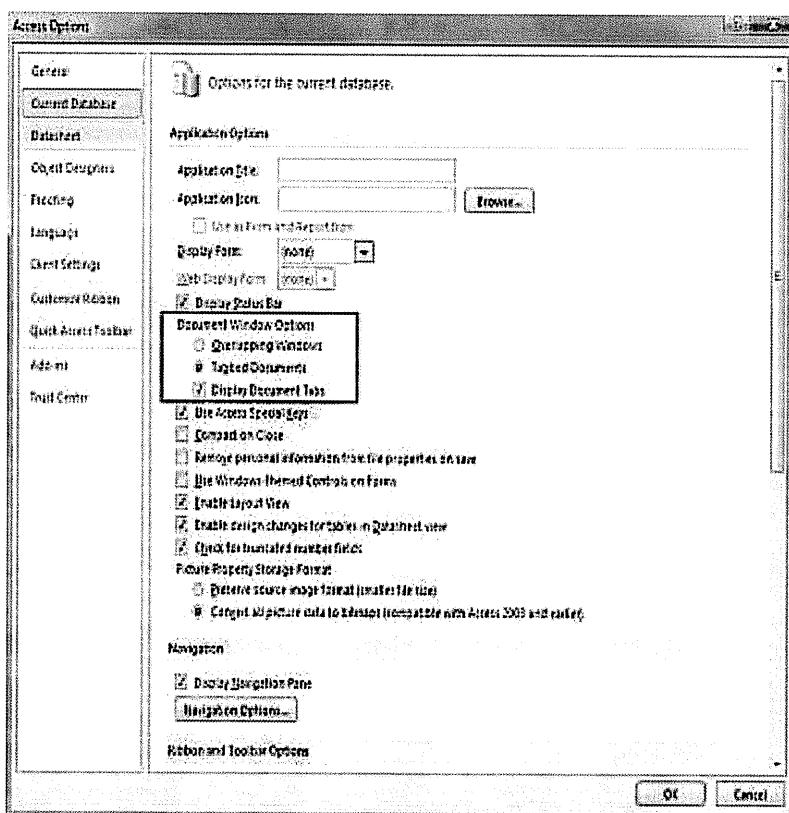
Access puts objects in a single pane and separates them with Tabs instead of opening each object in a separate window.



To show or hide the Object Tabs:

1. Click the **File Tab** and select **Options**. The Access Options dialog box appears.
2. Click on **Current Database**.

3. In the Application Options section, click the **Display Document Tabs** check box.



Understanding Views

Objects such as Tables, Forms, Queries and Reports in an Access Database will have several main views - Datasheet View, Layout View and Design View, Report View. The view available depends on which object is selected.

Datasheet View displays the data in normal (default) view. It will show you the content of your object, for example, the records in a Table.

Layout View is used to make design changes while you can still browse your data. Fields can be added, rearranged, columns resized, labels formatted and headings created.

Design View is used to configure the properties of the object. In other words, design the structure for your data. This could be adding new fields, changing the field size, etc.

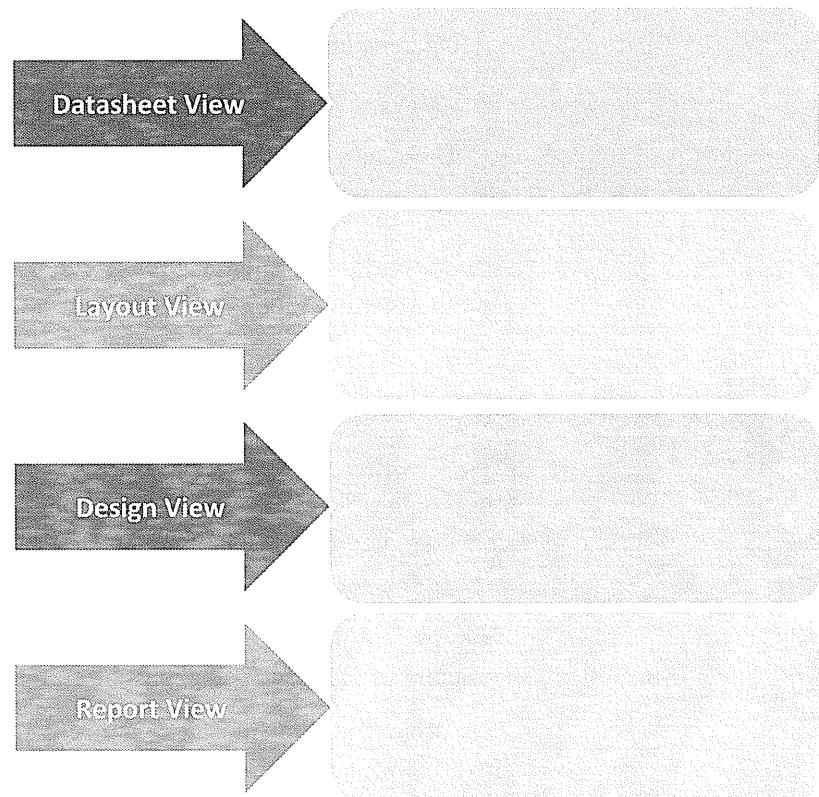
Report View displays how your report will look when printed. This view is the same as your Print Preview view.



Task 7.6

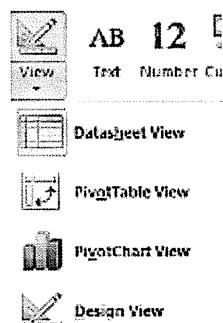
Brainstorming the best uses for views

Work with a partner. Consider the four different views available in databases. For each view, brainstorm where each could be best used.

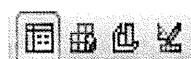


Demonstration Changing views

To change the view, click on the **View** button on the **Home Tab** of the **Ribbon**.



You can also click on the View icons at the bottom right of the window.



Part G

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Understanding Microsoft Access
- Opening and Closing Databases
- Database Terminology
- The Access Screen
- Navigating Access

Review all the activities you have completed in this unit and make sure that any questions you noted were answered.



Assessment Event 4

Project 2 - Database

Your teacher will distribute the Instructions to Students for Assessment Event 4: Project 2 - Database. In this project, you will demonstrate the skills and knowledge that you have gained in Units 7-12 of this module.

This project has a Design component as well as a Practical component. Both activities must be completed.

This project is **due in Week 12 or at the end of Unit 12**. You should work on the project at home or as independent study. Each week, you will need to bring in your completed tasks and show your teacher for review and feedback.

Unit 8 Creating Databases

Part A	Unit Introduction
Part B	Database Design
Part C	Creating New Databases
Part D	Creating Tables
Part E	Modifying Tables
Part F	Unit Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to the fundamentals of database design.

In this unit, you will learn to:

- plan the building of a database
- apply the practical steps to creating a new database
- create and modify Tables in Microsoft Access

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.

Part B

Database Design



Understanding Databases

When developing databases, an important step is the development of the overall design. This involves some preliminary work to determine the Tables and fields required, as well as to define the relationship between Tables.

Questions that you need to consider when designing a database are:

1. What is the purpose of your database?

Identify how you will use the database. Identify what output is needed, e.g. using data in a mail merge to send out letters. Sketch out the reports and queries you would like it to produce. Decide on the forms you need to use to record your data.

2. What Tables do you need in your database?

Based on your findings, decide on the required Tables. This can be done with pencil and paper and refined later.

3. What fields are required and what are the names of the fields?

For each Table, determine the necessary field. Make the name of each field as descriptive as possible, e.g. First Name or Last Name.

4. Which field will have *unique values* in each record?

The unique field is called the **primary key**.

5. What is the relationship between the Tables?

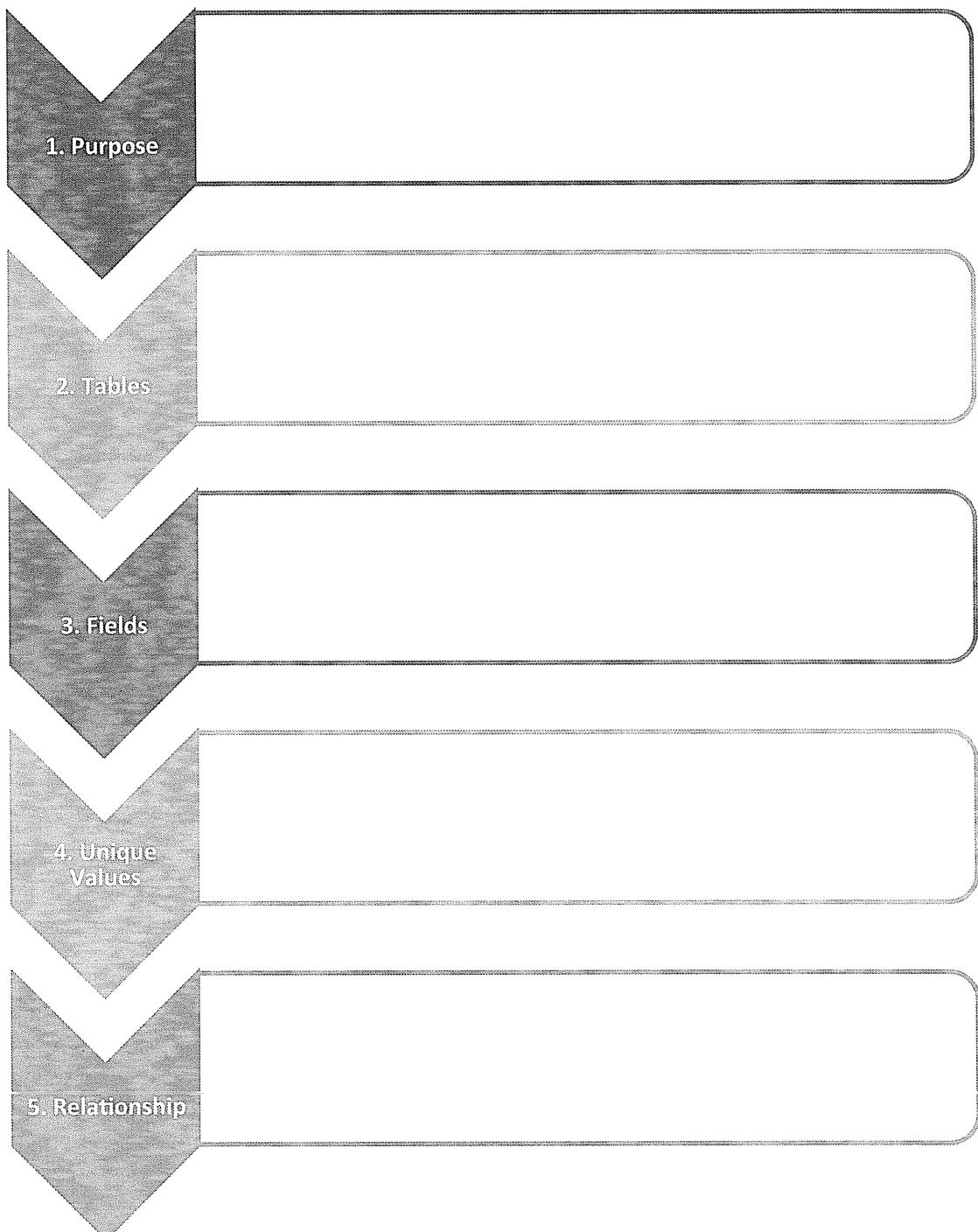
After you have divided your information into Tables and identified the primary key fields, you need to tell your databases how they relate to each other. To do this, you define the relationship between Tables.



Task 8.1

Brainstorming Possible Solutions for Database Design Questions

Work with a partner. Imagine that you want to create a database for the reference materials for a research project that you downloaded from the Web. Go through the previously outlined database design steps, brainstorming possible solutions. Write your ideas in the space provided and share them with the class.



**Task 8.2****Identifying the Tables Required**

Work on your own. Identify the Tables you require. Each subject will most likely form a separate Table in your database.

For example, about which subjects might a hospital want to record information?

**Task 8.3****Identifying the Fields Required**

Identify the data that you will want to store in each Table.

Using the above hospital database example, which data would you most likely want to record about patients?

name	address		

These will be the fields in the Patients Table.

**Understanding Primary Keys**

For a database to work effectively, each record in a Table must be uniquely identified. This is generally achieved by making the data in one field in a Table unique. This type of field is known as the **Primary Key**.

For example, the primary key for a Table containing data about Teachers at a University would most likely be a field called *TeacherID*. This would be a unique id number assigned to a Teacher and is a field in the Table. A primary key can be as simple as a number that increases by one for each record (autonumber).

The Primary Key for a Teachers Table may look like the following:

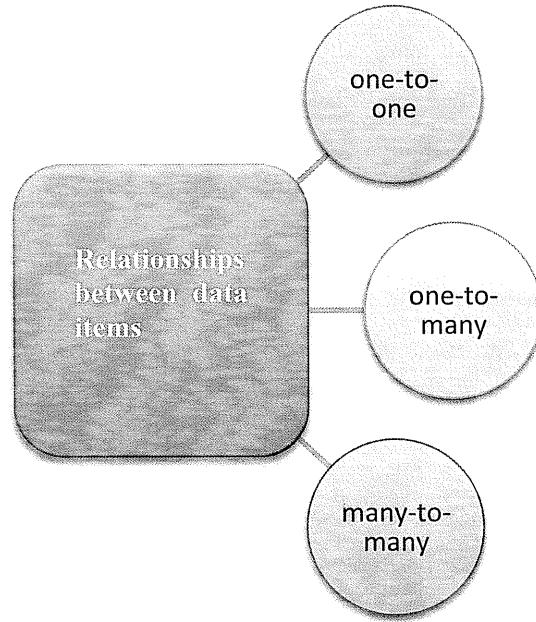
TearcherID	Title	Last Name	First Name
1001	Mr	Moore	James
1002	Mrs	Porter	Gwyneth
1003	Mr	Stallone	Arnold

The TeacherID is simply a four-digit number that increases by one number for each teacher



Relating Data

There are three types of relationships that exist between data items, namely:



Can you think of possible examples for each type of relationship between data items?

Write your example next to the relevant relationship in the above diagram.

1. One-to-One

An example of a one-to-one relationship is the relationship between a patient and their address. Every patient has one home address and every address has only one patient.

Where a one-to-one relationship exists between data items they should be stored in one Table.

2. One-to-Many

An example of a one-to-many relationship is the relationship between a patient and a room. A room can hold many patients, whereas a patient will only be assigned to one room.

Where a one-to-many relationship exists, the data items should be stored in separate Tables.

3. Many-to-Many

An example of a many-to-many relationship in the hospital example would be a relationship between medication and doctors. A doctor can prescribe many different medications, and a medication can be prescribed by many different doctors.

As many-to-many relationships require special treatment in databases to convert them to one-to-one or one-to-many, they will not be covered in this module.



Task 8.4

Designing Databases

Work with a partner. Design a *Teachers* database that holds details about your teachers such as the subjects they teach, the rooms in which they teach, when they are available for consultation, contact details etc. Think about the output, for example:

1. *What kind of data would you keep?*
2. *What would you want to do with the database?*
3. *What kind of information would you like to find or query?*
4. *List the fields that you would use.*

Write the list of fields on paper and hang your work on the wall for a group discussion.

Part C

Creating New Databases



Understanding the Creation of New Databases

There are two ways of creating a database, namely by:

1. starting from a Blank Database and creating the necessary Tables, forms, queries, and reports

OR

2. using a template

Access has several Local Templates containing all the Tables, queries, forms and reports needed to perform a specific task. For example, there are templates that can be used to track issues, manage contacts or keep a record of expenses. The Templates can be customised to suit your needs.



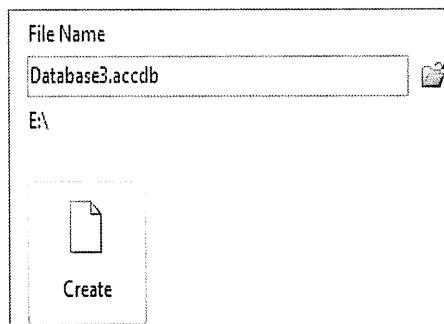
Demonstration Creating New Databases

To create a new database:

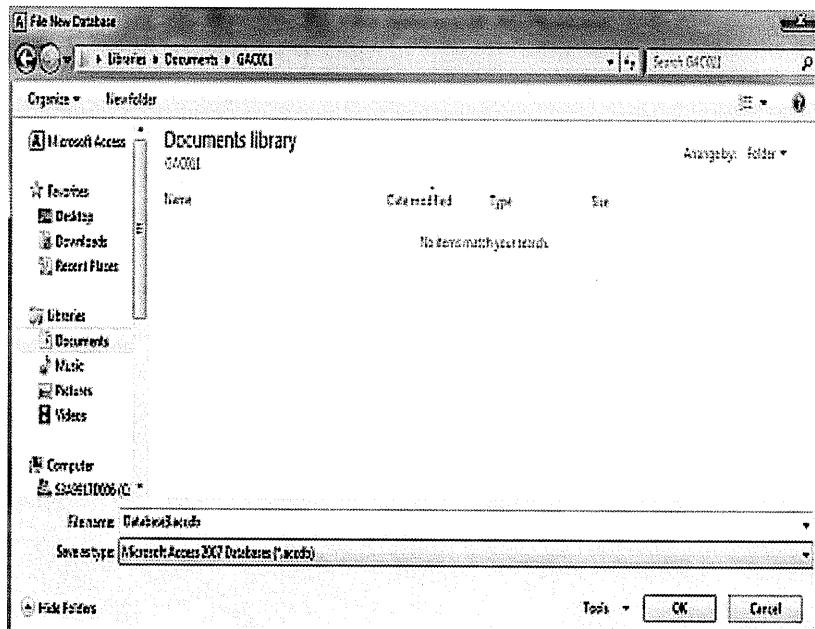
- Open Access and click on the **Blank Database** button.

Or if Access is already open:

- Click on the File Tab and select **New** and then click on the **Blank Database** button; or
- Click the **New** database button on the Quick Access Toolbar (if it has been added).
- In the **File Name** text box, type in a filename for your new database.

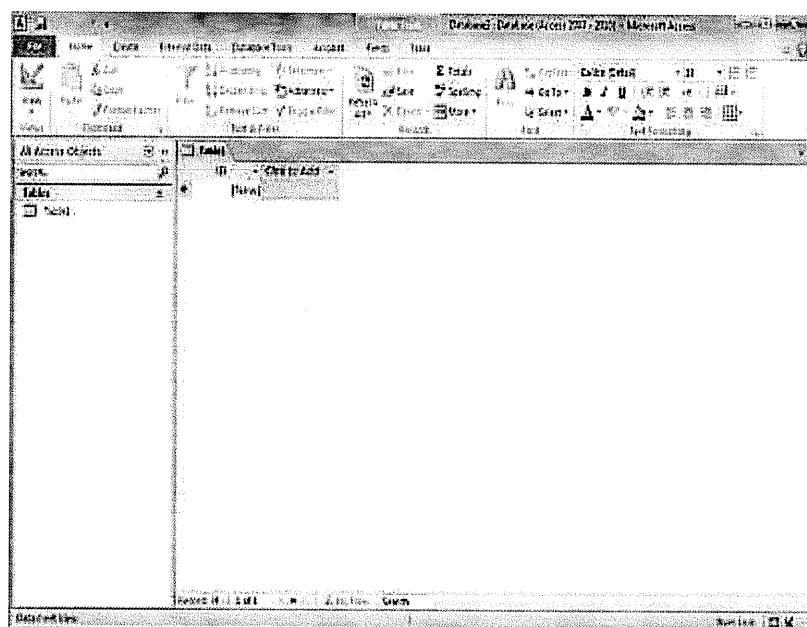


- Click on the Folder icon  and select the appropriate location to save your database.



Once you have selected a location and a name, click on the **Create** button and Access will create your new database.

Access will then display the following new database:



The Navigation Pane consists of the objects available in your database. When you first create your new database, you will see a new Table1: Table. A new Table called *Table1* is open waiting to be designed and data entered.

In this module we will only be using Tables, Queries, Forms and Reports objects.



Task 8.5

Creating a *Teachers* Database

For this task, you will create a *Teachers* database that will allow you to keep data about Teachers and the subjects that they teach.

1. Open Microsoft Access using the Start menu.
2. Click on Blank database.
3. Browse to the location where you will save your database.
4. Enter the File Name *Teachers* and click on the **Create** button.

Part D**Creating Tables****Designing a New Table**

Tables are the basis of relational databases and are made up of Records and Fields. Databases can have one or more related Tables. Each Table stores data about an individual subject.

- **Fields** - are columns in a Table that contain a single type of data. An example would be a customer's phone number.
- **Records** - are rows in a Table that contain all the data about a single item. An example would be a customer's name and address. A record contains one or more fields and each record can be uniquely identified.

**Task 8.6****Identifying fields and records**

Consider the Table below. It contains six fields and three records. Identify them by writing an 'F' or 'R' next to each.

Title	First Name	Last Name	Street Number	Street	Suburb	State
Mr	Fred	Davis	23	Wilson	Newtown	NSW
Mr	Reg	Simpson	14	Cook	Sydney	NSW
Ms	Sandra	Chan	147	Bridge	St Kilda	VIC

When designing Tables, you need to know how you are going to use the data to output information, e.g. to use the data in a Mail Merge to send out letters. Therefore, it is best to break down the data into the smallest components. A person's name could be divided into three separate fields: Title, First Name and Last Name.

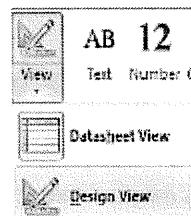
This allows for greater flexibility in how you use, sort, or display the available data in your database. For example, if you wish to use the data in a mail merge and send out personal invitations addressed to the person using their first name, now you can. However, if there were only one field called 'Name' which held all three pieces of data, then you would not be able to split the data and the invitation would be formally addressed as 'Mr Fred Davis'.



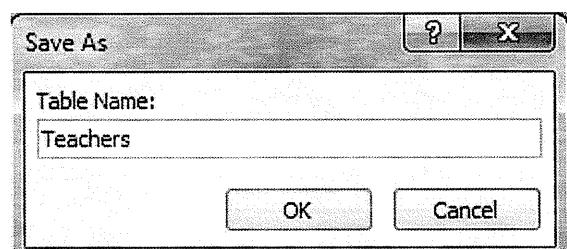
Demonstration Creating a new Table

Tables are designed using **Design view**.

1. Click on the down arrow of the **View** button and select **Design View**.



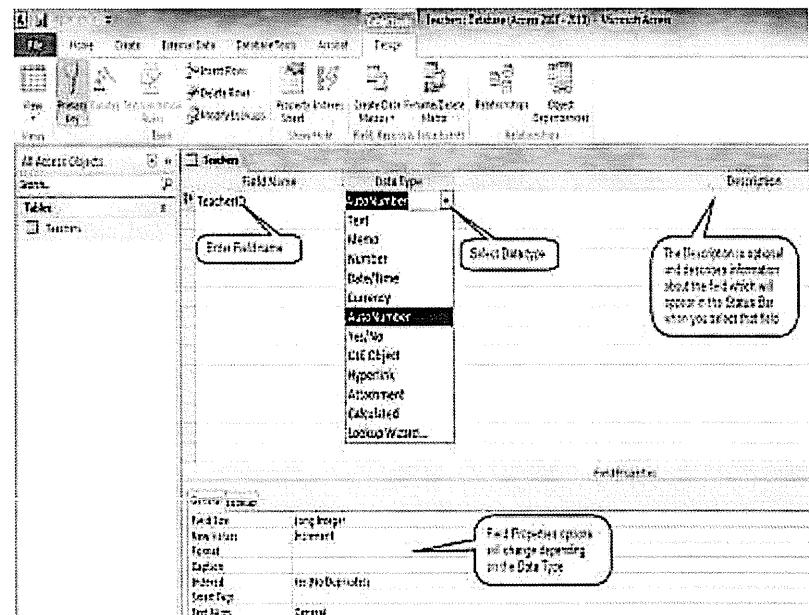
2. You will be asked to save your Table. The Save As dialog box will appear. Type in an appropriate name for your Table and click **OK**.



Hint

You can save your Table design at any time by either clicking on the **Save** button on the Quick Access toolbar, or by using the **Ctrl + S** shortcut key combination.

3. The Table design screen will appear.



4. Type in the field name and press the **Tab** key.

5. Click on the drop down arrow to select the correct Data Type.
 An explanation of the different data types follows:

Data Type	Description
Text	Accepts up to 255 characters of text, and number fields such as postcodes
Memo	Accepts up to 65,536 characters of text
Number	Accepts numbers for calculations
Date/Time	Accepts dates and times
Currency	Accepts monetary values
AutoNumber	Automatically numbers each record when you create a new record. May not be manually updated
Yes/No	Accepts only either Yes/No, True/False
OLE Object	Accepts OLE objects such as photos, spreadsheets, etc.
Hyperlink	Accepts hyperlinks to another document or web page

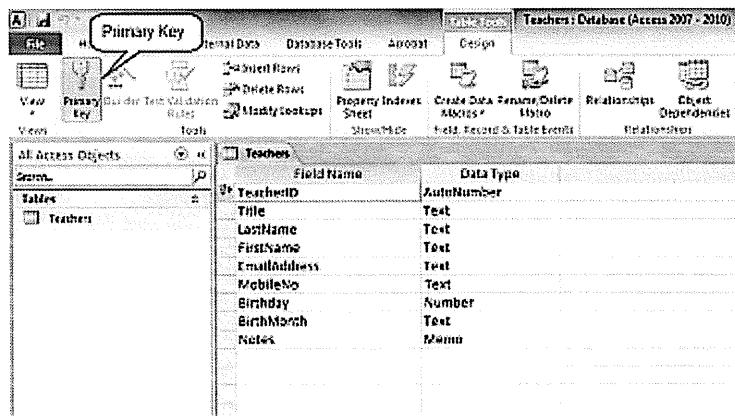
6. Type in a description, if required. The description is optional and should be used as a hint about the field.
7. Change the **Field Properties** so that they are appropriate to the data type. The field properties are the attributes of the field and give you more control over them.

For example:

- You can limit the size of the data stored in a field
- You can change the format for the currency data
- You can make a field compulsory

These properties help you to enhance the capability of your database. Most of the objects in Access have their own properties. This gives you more flexibility in controlling the database objects.

8. When the Table is first created, the first field is automatically set as the Primary Key. This can be turned on or off by clicking on the **Primary Key** button.



Field Name	Data Type
TeacherID	AutoNumber
Title	Text
LastName	Text
FirstName	Text
EmailAddress	Text
MobileNo	Text
Birthday	Number
BirthMonth	Text
Notes	Memo

9. Click on the  to close and save the Table.



Demonstration

Creating and Saving a Table in Access

Your teacher will now demonstrate how to create and save a Table in Access.

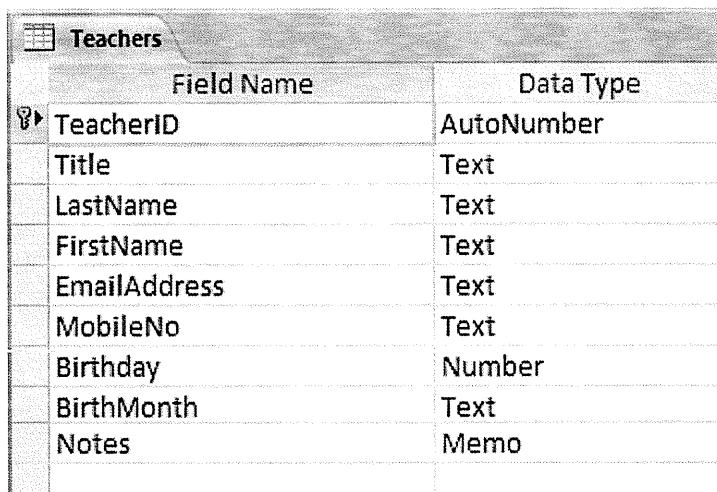


Task 8.7

Creating a *Teachers* Table

For this task we will create the *Teachers* Table.

1. With your Teachers database open, click on the **View** button and select **Design View**.
2. Name your Table *Teachers*.
3. Change the first field to *TeacherID* and use the Data Type AutoNumber.
4. Enter the following fields and use the Data Types as shown.



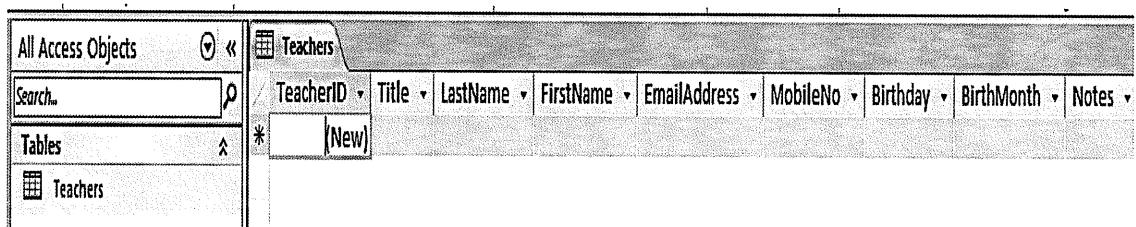
Field Name	Data Type
TeacherID	AutoNumber
Title	Text
LastName	Text
FirstName	Text
EmailAddress	Text
MobileNo	Text
Birthday	Number
BirthMonth	Text
Notes	Memo

**Note**

We have used Text as the Data Type for the field *MobileNo* so that the zero will appear. If Number had been chosen, Access would have dropped the zero from the front of all mobile numbers entered.

5. Click on the **View** button and you will be prompted to save your Table. Click **Yes**.
6. You will be presented with the Datasheet View (as seen below) ready to enter data.

Were the fields you came up with in Task 8.1 similar to the fields provided here?



Part E

Modifying Tables



Understanding Modifying Tables

Why might a user wish to change the design of their table?

Once you have created your Table, you may find that there are additional fields required, or that there are fields that need to be removed or modified. It should be noted that some changes to the design of the Table may affect any data already entered.



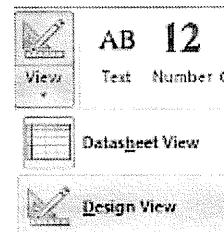
Demonstration

Opening Tables in the Design view

To change the design of your Table, you need to first open the Table in the **Design** view.

To open a Table in the Design view:

1. Select the Table from the Tables objects in the Navigation Pane.
2. Click on the down arrow of the **View** button and select **Design View**.



Task 8.8

Adding Fields

To add a new field to the Table:

1. Select the last empty cell in the **Field Name** column.
2. Enter a new field name.
3. Choose a new data type.
4. Modify any of the Field Properties for the data type selected.
5. Save the changes to your Table.

To insert a new field into a Table:

1. Select the field **below** where the new field will be inserted.
2. Click on the **Insert Rows** button from the **Design** Tab. A blank row will be created.
3. Type the field name in the Field Name column in the new row.
4. Choose the data type and modify the field properties as required.
5. Save the changes to your Table.

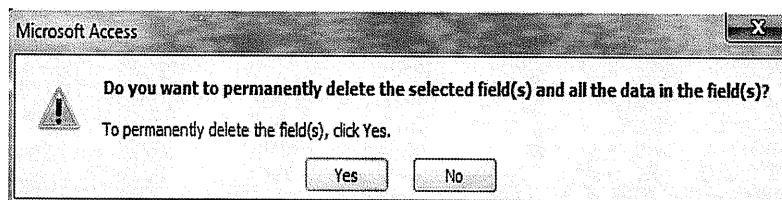
**Task 8.9****Practising adding a Field**

- With your Teachers database open, click on the **View** button and select **Design View**.
- Add a new field called *ConsultationDays* and use the data type **Text**.
- Add another new field called *ConsultationTimes* and use the data type **Text**.

**Task 8.10****Deleting Fields**

To delete a field from a Table:

- Select the field that you want to delete.
- Click the **Delete Rows** button on the **Design** Tab.
- The following message will appear asking you to verify the delete. If any data has been added for that field, it will be deleted when you delete the field.



- The field will be deleted from the Table.
- Save the changes to your Table.

**Task 8.11****Changing the order of fields in Tables**

To change the order of the fields in your Table:

- Click to the left of the field name of the field you want to move. Your mouse will turn into a black arrow . This will highlight the entire row. (You can also select more than one row to move.)

	Field Name	Data Type
1	TeacherID	AutoNumber
2	Title	Text
3	LastName	Text
4	FirstName	Text
5	EmailAddress	Text
6	MobileNo	Text
7	Birthday	Number
8	BirthMonth	Text
9	Notes	Memo
10	ConsultationDays	Text
11	ConsultationTimes	Text

Click and drag the row(s) to the new position.



Task 8.12 Moving Fields

1. With your *Teachers* database open, click on the **View** button and select **Design View**.
2. Move the *ConsultationDays* and *ConsultationTimes* fields to above the field called *Notes*.
3. Click on the **View** button and you will be prompted to save your Table. Click **Yes**.



Task 8.13 Modifying field properties

After creating your Table, you may find that the field properties you have defined for your Table need to be modified. For example, you may find that you will need to increase the number of characters allowed in a text field when you are adding data to your Table.

To modify the field properties:

1. In the Design view, select the field that you need to modify.
2. Click in the field property you want to modify.

Save the changes to the design of your Table.



Task 8.14 Modifying your *Teachers* Table

1. With your *Teachers* database open, click on the **View** button and select **Design View**.
2. Click into the field *FirstName* and go to the **Field Size** property and decrease the amount to 50.

Teachers		Field Name	Data Type
V	TeacherID	AutoNumber	
	Title	Text	
	LastName	Text	
	FirstName	Text	
	EmailAddress	Text	
	MobileNo	Text	
	Birthday	Number	
	BirthMonth	Text	
	ConsultationDays	Text	
	ConsultationTimes	Text	
	Notes	Memo	

General Lookup

Field Size 50

3. Click into the field *LastName* and decrease the Field Size to 60.
4. Click into the field *BirthMonth* and decrease the Field Size to 9.
5. Click on the **View** button and you will be prompted to save your Table. Click **Yes**.
6. You will enter data in the next Unit.
7. Your teacher will provide additional guidance and Demonstrate individual steps along the way.

**Note**

Setting specific field properties can help data entry. For example, we have decreased the *BirthMonth* field to 9 which means that if someone tried to enter 10 characters into this field, they would receive an error message. September, the month with the longest word, has only 9 characters so anything over that would be an error.

Part F

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Database Design
- Creating New Databases
- Creating Tables
- Modifying Tables

Review all the activities you completed in this unit and make sure that any questions you noted were answered.

Unit 9 Entering, Editing and Printing Data

Part A	Unit Introduction
Part B	Adding and Deleting Data
Part C	Editing Data
Part D	Formatting Tables
Part E	Unit Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to adding information to a database.

In this unit, you will learn to:

- apply the procedure for populating a Table
- access and open records
- add, delete and edit data
- format the information in a Table

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.

Part B

Adding and Deleting Data



Demonstration Adding Data

Once you have created your Table in Access, you are ready to enter the data. To do this, you need to select your Table in the Tables objects and double-click the Table to open. Your Table will automatically appear in the Datasheet view.

To enter data into your Table:

1. Use your mouse to select the first cell in the row then enter the data or you can click the New button found in the Records group on the Home Tab. Note that the pencil icon appears next to the row you are editing.

Teachers						
TeacherID	Title	LastName	FirstName	EmailAddress	MobileNo	
1	Mr	Moore	James	jmoore@gmail.com	0413624806	
2	Mrs	Porter	Gwyneth	gwyport@ymail.com	0468613196	
3	Mr	Stallone	Arnold	arnie4math@gmail.com	0435266303	
4	Ms	Pattinson	Barbara	bizbarb@hotmail.com	0413766799	
5	Miss	Taylor	Alison	alitaylor12@gmail.com	0423308455	
	M					

2. To move to the next field use the **Tab** or **Enter** key and type in the data.
3. Continue entering data until you reach the end of the row. Pressing the **Tab** or **Enter** key will move the cursor to the first field of the next row.

Access automatically saves your data once you move to the next record. The pencil icon will disappear from next to your record, indicating that it has been added to your database.



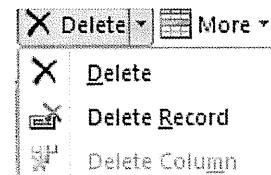
Demonstration Deleting Data

If you make a mistake entering your data, or if a record needs to be removed, you will need to delete the data from your Table. To do this, you will need to open your Table in the Datasheet view.

To delete the data within a particular cell simply highlight the contents of the cell and press the **Delete** key.

To delete an entire record:

1. Highlight the record to be deleted.
2. Click on the down arrow of the **Delete** button found in the Records group on the Home Tab and select **Delete Record**.



Click **Yes** in the confirmation box that appears. **Once you have confirmed the deletion, you cannot UNDO the deletion.**



Task 9.1

Populating a Table

In this task, you will enter data, or *populate* a Table.

1. Open your **Teachers** database.
2. Open the *Teachers Table* and enter the seven records on the following page.
3. Create another record using your name as the Teacher's name.



Tip

To copy text from the cell in the row above, hold the **Ctrl** key and press the apostrophe (') key.

Title	Mr	Mrs	Mr
Last Name	Moore	Porter	Stallone
First Name	James	Gwyneth	Arnold
Email address	jmoore@gmail.com	gwyport@ymail.com	arnie4math@gmail.com
MobileNo	0413 624 806	0468613196	0435266303
BirthDay	26	4	14
BirthMonth	January	July	July
ConsultationDays	Monday & Wednesday afternoons	Tuesday & Thursday afternoons	Wednesday afternoon
Consultationtimes	4-5pm	4-5pm	4-6pm
Notes	Likes the Foo Fighters		

Title	Ms	Miss
Last Name	Pattinson	Taylor
First Name	Barbara	Alison
Email address	bizbarb@hotmail.com	alitaylor12@gmail.com
MobileNo	0413766799	0423308455
BirthDay	21	28
BirthMonth	April	May
ConsultationDays	Thursday morning	Monday afternoon
Consultationtimes	7-8pm	4-5pm
Notes	Subscribes to and loans out <i>the Economist</i>	Has a great blog: alitaylor on weebly.com

Title	Mr	Ms
Last Name	Jones	McAdams
First Name	Indiana	Martha
Email address	indyj47@ymail.com	mcmartha@gmail.com
MobileNo	0413891198	0403231526
BirthDay	11	3
BirthMonth	February	November
ConsultationDays	Tuesday & Thursday afternoons	Tuesday afternoon
Consultationtimes	4-6pm	4-5pm
Notes	Likes Michael Buble	

Part C

Editing Data



Understanding Data Editing in Access

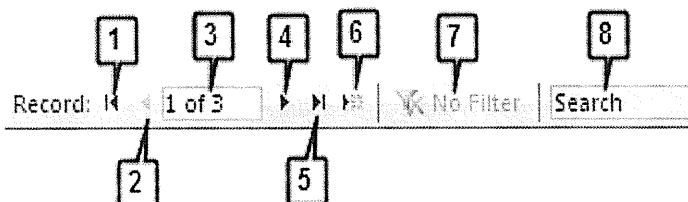
The Access features you will use to edit the data in the Tables are very similar to the features used in Excel. Within Access you can Cut, Copy and Paste data, as well as search for particular pieces of information.

This section will provide an overview of the features available in Access, and some of the differences from Excel.

Record Selectors

When editing your data, you can use either the mouse or the keyboard to navigate in your database.

Access has an extra feature known as the **Record Selectors** bar that appears at the bottom of the window. You can use the Record Selectors to quickly go to a certain record or to scroll through a list of records.



Task 9.2

Matching the Button Explanations to their Number

Work with a partner. Below is an explanation of each of the buttons. Match each explanation to its button number.

Button Number	Explanation
	Current Record displays the number of the current record and the total number of records.
	Search box is used to quickly search for a record.
	New (Blank) Record adds a new record to the end of the Table.
	First Record moves you to the first record of a Table.
	Filter indicator will display No Filter if no filter has been applied and all records are showing. When the Filter indicator displays Filtered , you can click this button to remove the filter.
	Last Record moves you to the last record of a Table.
	Next Record moves you down one record.
	Previous Record moves you one record up.

If you click in the **Current Record** box and type a record number and then press **Enter**, you will navigate to that record.

The **Filter indicator** will display **No Filter**, if no filter has been applied and all records are showing. However, when the Filter indicator displays **Filtered**, you can click this button to remove the filter. When it displays **Unfiltered**, you can also click this button to apply the last filter that you used.

Use the **Search box** to quickly search for a record. When you enter text in the Search box, the first matching value is highlighted as you enter each character.



Navigating Data

To navigate data, you can use either the mouse or the keyboard.

The Mouse

The simplest navigation method is using the mouse as you did when moving between cells in an Excel spreadsheet. Both the Horizontal and Vertical scrollbars are accessible in the Datasheet View of a Table.

The Keyboard

When using the keyboard, the same keys you used when navigating in Excel can be applied to moving around an Access Datasheet. The standard keys are:

- Selecting the Arrow keys $\leftarrow \rightarrow \uparrow \downarrow$ will move one cell in the given direction.
- Selecting the **Page Up** key will move one screen up and selecting the **Page Down** key will move one screen down.
- Selecting **Alt + Page Up** moves one screen to the right and selecting **Alt + Page Down** moves one screen to the left.
- Selecting **Ctrl + Home** will return to the beginning of the first field of the first record.



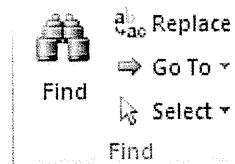
Editing Records

You can use the same methods for editing data in Access that you used in Excel. The following are the basic functions that can be used for editing your records or data in particular cells.

- **Cut** removes the highlighted data from a cell and stores it on the clipboard for pasting.
- **Copy** copies the highlighted cell to the clipboard for pasting.



- **Paste** pastes data from the clipboard to the selected cell.
- **Undo** cancels the last action. Note that this feature is more limited in Access. You can only use the Undo feature to undo the previous action, not a series of actions. Once a record has been saved, you cannot undo the changes and will need to re-enter the data.
- **Find and Replace** can be used in the same way that it is used in Excel. You can access this feature by clicking the **Find** or the **Replace** buttons found on the Find group on the Home Tab.



- **Spell Check** can be accessed by clicking the **Spelling** button found on the Records group on the Home Tab.



Task 9.3

Editing the *Teachers* Table in Microsoft Access

Use your *Teachers* Table to practise the following tasks in Microsoft Access:

1. Move between records in a database using the navigation bar.
2. Move between records in a database using the mouse.
3. Move between records in a database using the keyboard.
4. Copy data from one field to another field within a record.
5. Copy data from one field to another field in a different record.

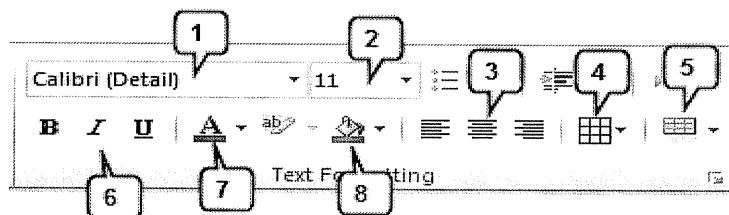
Part D**Formatting Tables****Understanding Formatting Features**

To apply specific formatting to your datasheet, you can use the formatting features found on the Text Formatting group on the Home Tab. Some of the basic formatting features that you can apply are: changing the background colour, applying different fonts, and applying special effects to your Table.

While you can apply formatting to a Table, it is often better to apply the formatting to the data when it has been extracted into a report. This will provide you with more flexibility in how your data is displayed and presented.

**Task 9.4****Explaining the formatting features in Access**

Work with a partner. Think back to your work in Microsoft Office Word. Propose explanations for the formatting features below. Compare your answers with those of another pair.



Number	Explanation
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	



Demonstration Formatting Features in Access

Your teacher will now demonstrate the formatting functions and how to format a table.



Task 9.5

Designing a Simple Database

This is an open-ended task that requires you to apply some of the computing skills that you have learned so far in units 7 to 9.

1. On paper, plan and design a simple database for *GAC* students. Use the following fields:
 - StudentID
 - First Name
 - LastName
 - Age
 - StreetAddress
 - Suburb
 - State
 - PhoneNo
2. Write down the following attributes for each field:
 - Data type
 - Field property, e.g. text size, etc.
 - Which field will be the primary key
3. Check with your teacher to ensure that your design is correct.
4. Create the database and save it as *College*.
5. Create the Table design, set the Primary Key and save the Table as ‘Students’.



Task 9.6

Modifying your Table

1. Open your *College* database and open the design of your *Students* Table. Add the following fields:
 - *DateOfBirth* (as the last row)
 - *Postcode* (add field before *PhoneNo*)
2. Delete the field *Age*.
3. Modify the field properties for *LastName* to increase the field size to 30 characters.
4. Make sure that you use the correct data types for the new fields.

5. Save the *Students* Table.
6. Enter at least ten records into the *Students* Table.
7. Your teacher will provide additional guidance and demonstrate individual steps along the way.

Part E

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Adding and Deleting data
- Editing Data
- Formatting Tables

Review all the activities you have completed in this unit and make sure that any questions you noted were answered.

Unit 10 Extracting Data

Part A	Unit Introduction
Part B	Creating Relationships
Part C	Filters
Part D	Queries
Part E	Unit Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to extracting data from the information collected in a Microsoft Access Database.

In this unit, you will learn to:

- create a relationship between Tables by creating a link
- use filters and queries to extract data
- apply your Microsoft Access skills

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.



Assessment Event 3

In-class Test 2

Assessment Event 3: In-class Test 2 will take place **at the end of this unit**.

This is a theory test which includes short answer, multiple choice and true/false questions. It will be undertaken in class under test conditions.

Part B**Creating Relationships****Understanding Relationships**

As you build your database and create a number of separate Tables to hold your data, you will encounter the problem of how to combine or integrate the data from separate Tables.

Using Microsoft Access, you can create Queries and Reports (you will learn more about these later) that will extract and display the data from a number of different Tables. To do this, however, you first need to set up the links between the Tables to ensure that Access understands the relationships between the Tables.

This relationship is established by linking the Primary key that is set up in one Table of your database to a Foreign key in another Table.

Foreign Keys

Earlier you learned about Primary keys and why they are important to the structure of your data Tables. A Foreign Key is a field in a Table that is related to the Primary key of another Table.

For example, in the Tables below, the Patients Table will contain a Room Number field as the Foreign Key for that Table. The Room Number field is the Primary Key for the Room Table.

Patient ID	First Name	Last Name	Room Number
0001	Dave	Smith	541
0002	Stuart	Simpson	541
0003	Ralph	Smith	432
004	Kevin	Mathers	897

In the Room Table, the Room Number field is the primary key:

Room Number	Number of Beds	Ward Number
541	2	5
432	1	4
897	1	8

**Note**

A Table can contain more than one Foreign key and therefore can have links with a number of different Tables.



Demonstration Setting Links

You establish the links between your Tables in Microsoft Access through the **Relationship** window. However, before you establish the links, you need to ensure that the appropriate Primary and Foreign key fields have been established in the Tables you want to link.

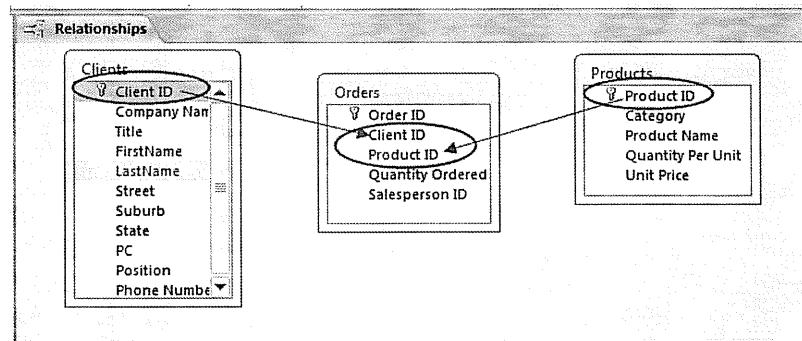
To create a relationship:

1. Click on the Database Tools Tab and click on the **Relationships** button.

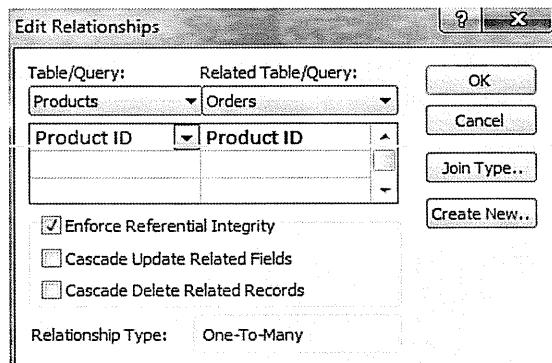
Relationships
2. Click the **Show Table** button on the Design Tab to display the **Show Table** dialog box and select the Tables that you want to establish a link. Double-clicking the Table name will add the Tables to the Relationship window.

Show Table
3. Click the **Close** button to close the **Show Table** dialog box.
4. To establish the relationship, click and drag the Primary key to its related Foreign key. In the picture below, the Client ID in the Clients Table is the Primary key and the Client ID in the Orders Table is the Foreign key.

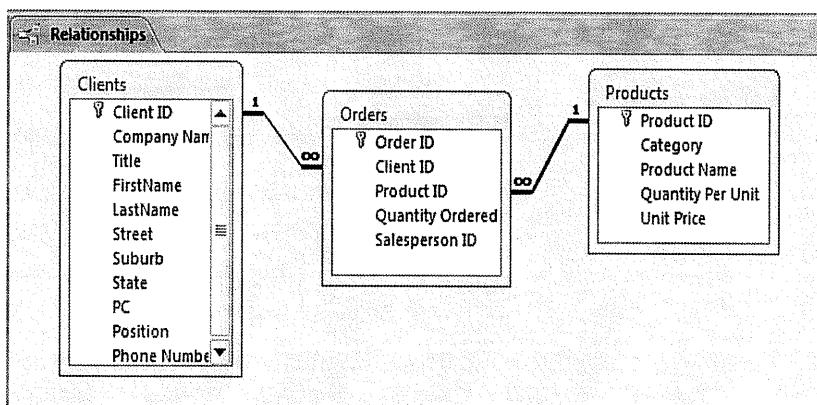
The same relationship exists between the Product ID being the Primary key in the Products Table and the Product ID being the Foreign key in the Orders Table.



5. To create the relationship, click on the Primary Key and drag to the Foreign Key. Microsoft Access will then display the **Edit Relationships** dialog box similar to the example below.



6. Access will automatically establish the Relationship Type and display it in the box at the bottom of the screen. To change it click on the **Join Type** button.
7. Check the **Enforce Referential Integrity** box and click the **Create** button. By enforcing referential integrity, Microsoft Access will ensure that the records in related Tables remain valid and that you don't accidentally delete or change related data.
8. The dialog box will disappear and the Relationship window will now display a line connecting the two Tables similar to the picture below. The '1' and the '∞' indicate a one-to-many relationship.



9. Click the **Close** button to save the changes.

Deleting Links

If you should make a mistake or need to remove a link established between two Tables, click on the link with the mouse then press the **Delete** key.



Hint

An important point to remember when linking Primary Keys to Foreign keys is that the data type of each field must be identical, i.e. both must be text or both must be number. However, if the Primary Key data type is **autonumber**, then you must set the Foreign key data type as **number**.



Demonstration

Your teacher will now demonstrate linking a number of Tables together.

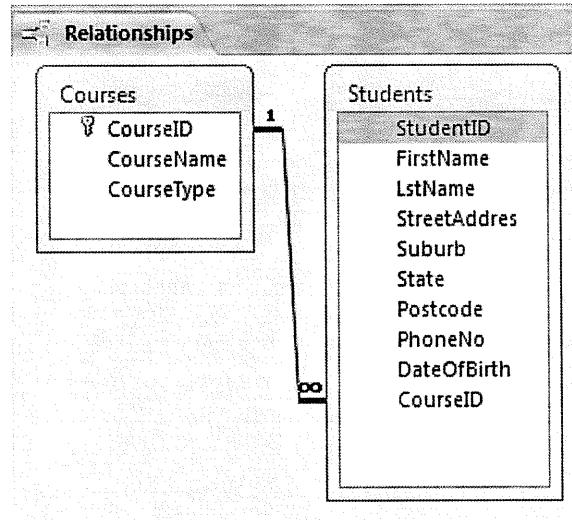


Task 10.1

Creating an Additional Table

For this task, you will create an additional Table and populate it with data. Then, using the Relationship window, create the link between the two Tables.

1. Open your *College* database and create a second Table called *Courses*.
2. Add the following fields:
 - *CourseID* - autonumber
 - *CourseName* - text
 - *CourseType* - text
3. Add the field *CourseID* to the *Students* Table. Remember the data type should be number.
4. Add at least three records to your *Courses* Table. *CourseType* should be either *full-time* or *part-time*.
5. Add the appropriate *CourseID* to each student in your *Students* Table.
6. Create a relationship between the *Students* and the *Courses* Table as shown below:



7. Save the relationship.



Task 10.2 Creating a *Swanson General Hospital* Database

1. Create a database using Microsoft Access and name it ***Swanson General Hospital***.
2. Create 2 Tables in the database and populate the Tables with the data given below.
3. Name the first Table as *Patients Table* and Table 2 as *Illness Table*.
4. Create the Relationship between the two Tables.

Provide evidence of the following in your database:

- The use of suitable primary keys
- Database design considerations
- The use of appropriate Field Types
- Modification of the Field Properties
- Specification of a Primary Key

PatientID	LastName	FirstName	Address	City	Age	Gender	IllnessType
P001	Abel	Brian	345 Fraser Street	Sydney	75	M	TB
P002	Louise	Sera	552 Winch Street	Sydney	62	F	KF
P003	Lane	Hal	75 Clark Road	Melbourne	55	M	DB
P004	Smith	Dane	6 North East Drive	Brisbane	82	M	HBP
P005	Chang	Nigel	Quay West Avenue	Sydney	77	M	DB
P006	Donald	Peter	18 West Street	Sydney	38	M	AIDS
P007	Underwood	Alice	8 East Lake Avenue	Melbourne	45	F	DB
P008	Siame	Curt	45 Granville Villa	Melbourne	66	M	AR
P009	Chung	Chang	22 Mapleridge Drive	Brisbane	39	M	TB
P010	Olivier	James	6 Harbour Place	Sydney	92	M	HBP
P011	Lee	Douglas	34 Minster Place	Melbourne	63	M	AIDS

Part C

Filters



Understanding the Filtering of Records

The Filter feature in Microsoft Access allows you to temporarily display records that meet a certain criteria. You can use this feature to quickly display and print certain records in a Table. For example, if you had a Table that listed all the orders for your company and you only wanted to view the orders that contain one particular product, you would apply the Filter to the Table.

There are several methods for applying a filter:

- apply a single filter
- filter by selection
- filter by form



The filter functions are found within the Sort & Filter group on the Home Tab.

You will now take a closer look at each of these methods.

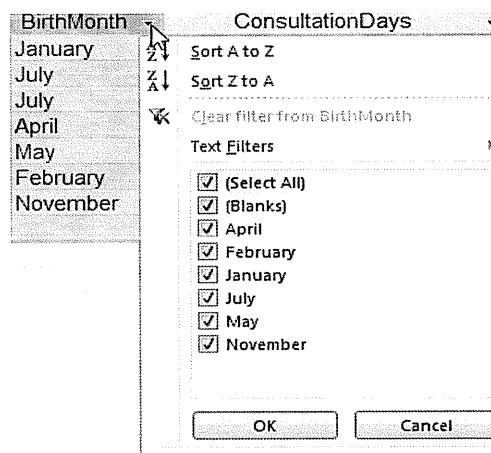


Demonstration Applying single filters

A single filter is one that is applied to a single field using the quick filter option in Access.

To apply a single filter:

1. Open the Table you wish to filter the records.
2. Place your cursor in any row in the column you wish to filter or click on the field name at the top of the column to highlight the entire column.
3. Click on the **Filter** button from the Sort & Filter group on the Home Tab.
4. A Filter dialog box appears.



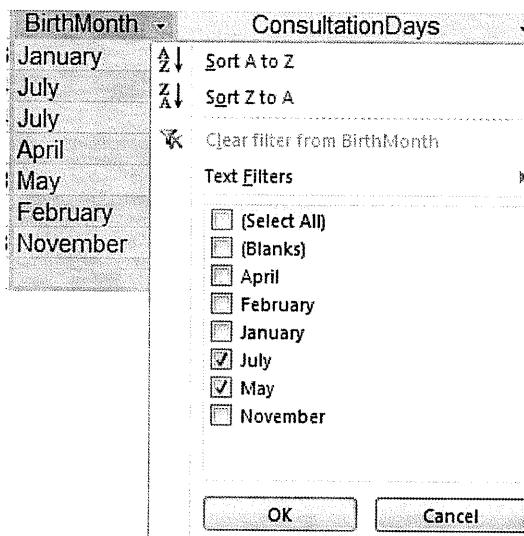
This dialog box is divided into three sections. The second and third sections only apply to filtering.

The tick boxes represent all the available (unique) values found within the highlighted field. In this example, the *BirthMonth* field.

At the top of the list is a tick box called (**Select All**).

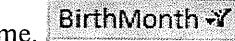
Untick this box and all the ticks will disappear. Now you can tick the values that you wish to filter on.

For this example, we have ticked only ‘July’ and ‘May’ values.

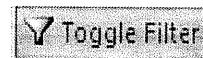


When you click **OK**, you will notice that the Record Selector bar now indicates that the records are Filtered.

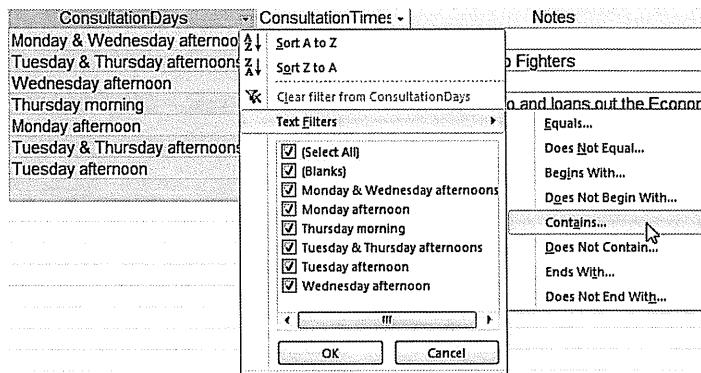


You should also notice the Filter icon next to the field name. 

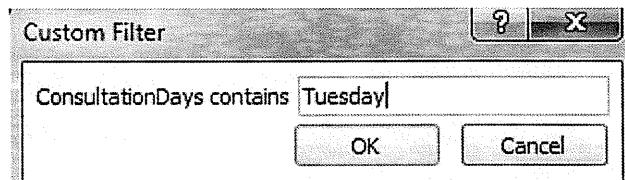
5. To remove the filter, click on the **Toggle Filter** button on the Sort & Filter group on the Home Tab.



6. You can also apply custom filters using the **Text Filters** options.



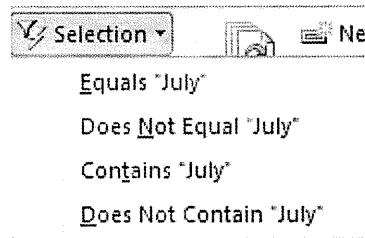
In this example, we can filter the *ConsultationDays* field for days that contain the text ‘Tuesday’.



Demonstration Filtering by Selection

Filtering by selection is the easiest and simplest way to apply a filter. To apply the filter by Selection:

1. Select the data in the Table that you want to use to filter the records.
2. Click on the down arrow of the **Selection** button found on the Sort & Filter group on the Home Tab.

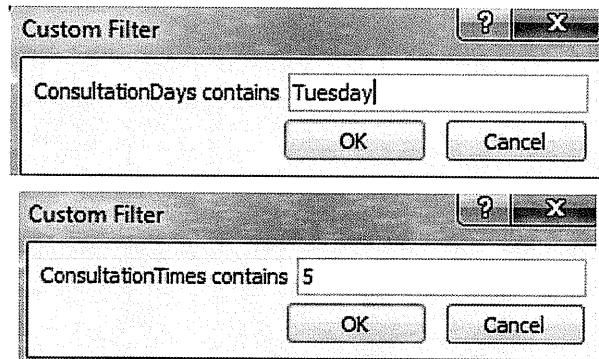


3. Click on the appropriate criteria.
4. Access will now only display the records which match the selected data.

For example, by selecting **Equals “July”** Access will display only those records with ‘July’ in the *BirthMonth* field.

EmailAddress	MobileNo	Birthday	BirthMonth	ConsultationDay
gwyport@ymail.com	0468613196	4	July	Tuesday & Thursday afternoon
annie4math@gmail.com	0435266303	14	July	Wednesday afternoon

You can apply filters to multiple fields. In the following example, we have filtered the *ConsultationDays* field that contains *Tuesday* and the *ConsultationTime* field to contain 5.



Access will display the filtered records:

EmailAddress	MobileNo	Birthday	BirthMonth	ConsultationDays	ConsultationTimes
gwyport@ymail.com	0468613196	4 July		Tuesday & Thursday afternoons	4-5pm
mcmartha@gmail.com	0403231526	3 November		Tuesday afternoon	4-5pm

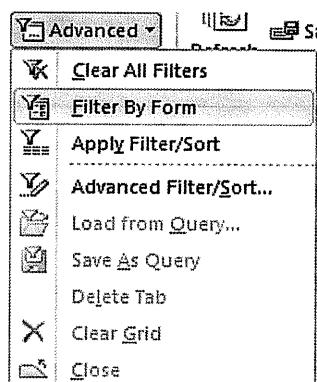


Demonstration Filtering by Form

Applying the Filter by Form allows you to define one or more criteria to your Table.

To apply the Filter by Form:

1. Click on the down arrow of the **Advanced** button found on the Filter & Sort group on the Home Tab.
2. Select **Filter By Form**.



3. Access will then display a blank Table with drop-down lists for each field.

4. Choose or type in the criteria (s) for your filter.

MobileNo	Birthday	BirthMonth	Cor
		"July"	<input type="button" value="▼"/>

5. Right click on any cell and select **Apply Filter/Sort** from the pop-up menu.



Access will then apply the filter to the Table.

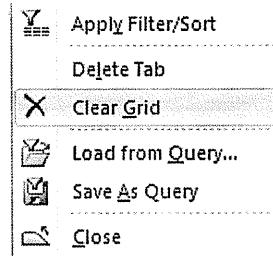


Demonstration

Clearing criteria on the Grid

The next time you use the Filter by Form function, Access may remember the last criteria used.

Right click in one of the cells and select **Clear Grid** from the pop-up menu.



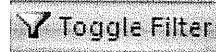
Tip

When using Filter by Form (or even in Queries later) and you wish to search for data contained within a field you need to use the word “Like” and the * wildcard. For example, entering the following will return any records that contain the text “Tuesday”. Note that text is surrounded by “-” quote symbols. The * wildcard means the text you are looking for could contain other text before or after.

BirthMonth	ConsultationDays
	Like "-*Tuesday*"

**Demonstration Removing Filters**

To remove the filter, click on the **Toggle Filter** button on the Sort & Filter group on the Home Tab.

**Task 10.3****Applying Filters**

Work with a partner. Select different pieces of data in one of the Tables in your database and apply the Filter by Selection. Observe the results.

Part D

Queries



Understanding Queries

Queries are similar to filters in that you can specify criteria for selecting and displaying data from your Tables. However, queries are more powerful than filters as you can:

- save queries for future use
- combine data from two or more related Tables
- sort records
- display only certain records
- display only certain fields

As queries are linked directly to the underlying Table, any changes made to the data in the Table will be displayed in the query.

After a query is saved, you can create a form based on the query, as well as create a report based on that query.

Comparison Operators

In addition to selecting records in which a field value is equal to a specific value, you can also select records by using other types of comparison operators.



Task 10.4

Matching the Operator to its Meaning

Consider the symbols for the comparison operators. Draw a line to match them with their meaning. Compare your answers with a classmate.

Comparison Operators	
Symbol	Meaning
=	greater than or equal to
>	less than
<	greater than or equal to the first value and less than or equal to the second value
>=	equal to
<=	not equal to
<>	less than or equal to
Between ...and...	greater than

You will use comparison operators in designing queries. For example, if you need to list in your query all the customers with a bank balance greater than \$2000, you will use the '>' sign.

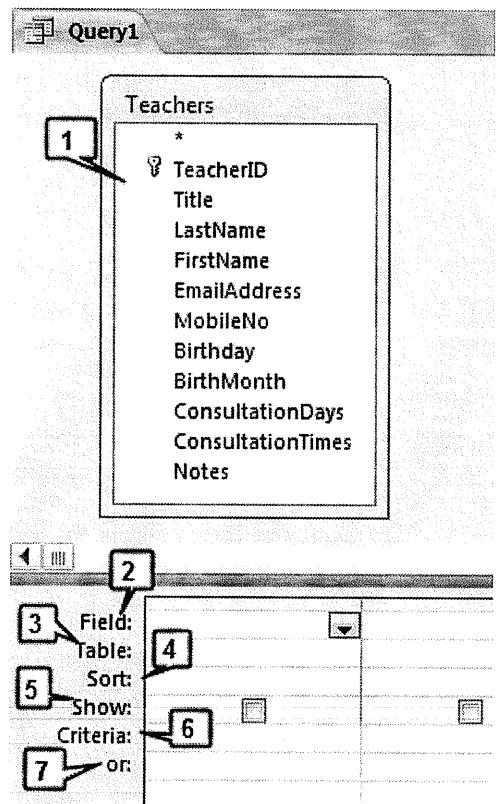
Your teacher will provide you with more examples.



Understanding Query Design View

Queries, like Tables, have different views: the Design view and the Datasheet view. In the Design view, you can create and modify the structure of your query. In the Datasheet view, the results of your query are displayed.

Below is an overview of the Design view of a query.





Task 10.5 Matching the Query Design Views to their Meaning

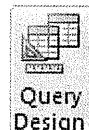
Consider the names for the Query design views. Match each one with its meaning. Compare your answers with a classmate.

Query design view	Meaning
1. List of Fields	The name of the Table from which the field was chosen. Access will fill in this field automatically for each chosen field (more important when multiple Tables are used for a query).
2. Field	Displays alternative criteria in the same field.
3. Table	Allows you to determine which fields are displayed in the query's datasheet view. By default Access will display all fields chosen. To exclude a field, clear the check box.
4. Sort	This box displays the fields in the Table selected to be the source data for your query. You use this box to select the fields that you will use in your query.
5. Show	Allows you to choose the fields that determine the order in which your records are sorted. This can be set to either Ascending or Descending.
6. Criteria	The criteria for the query are specified in this row.
7. or	Field names of selected fields will appear on this row automatically once they have been chosen from the list of available fields.



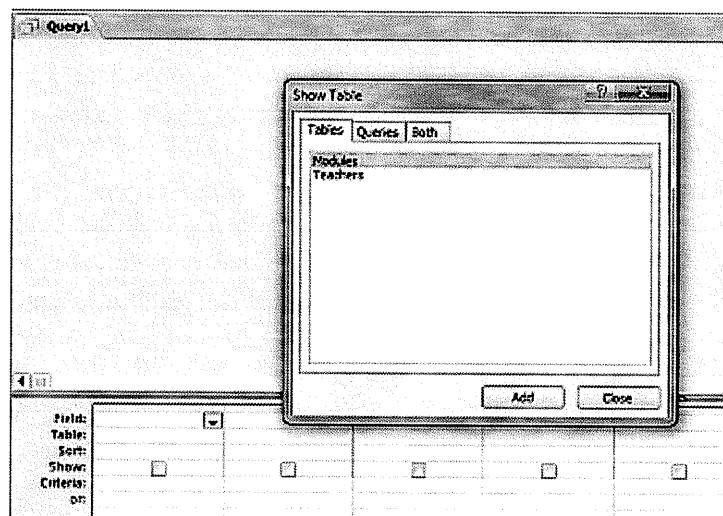
Demonstration Creating New Queries

The following steps show you how to build new queries. You can also use the Query Wizard provided in Microsoft Access to create a query.

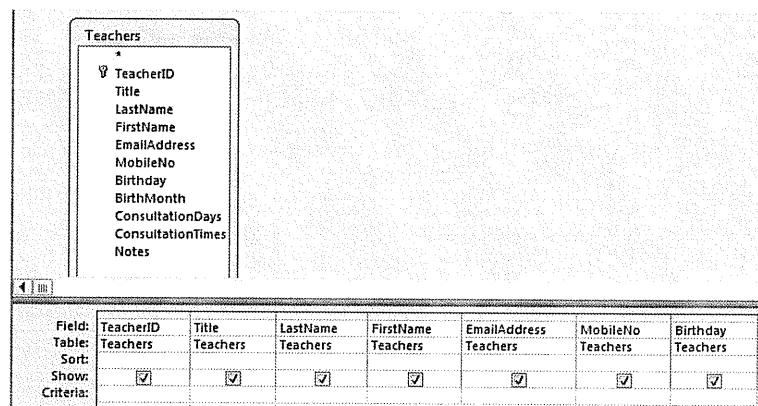


To start a new query:

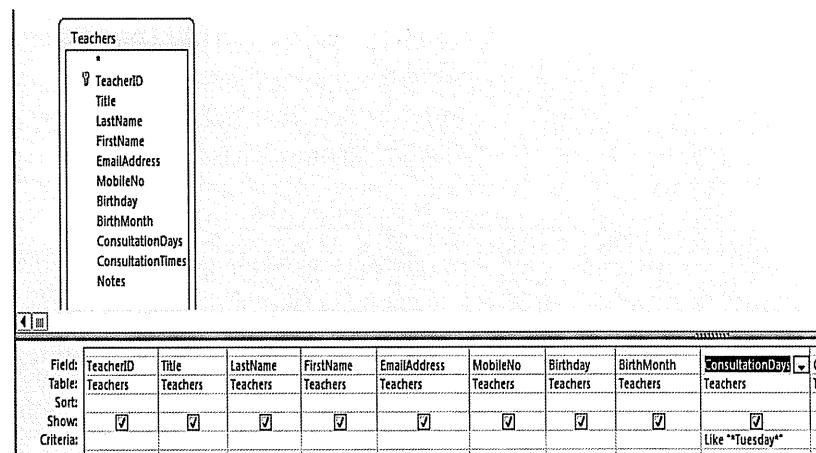
1. Click on the Create Tab and click on the **Query Design** button.
2. The **Show Table** dialog box will be displayed. This box lists all the Tables in your database. It is from this list that you need to choose one or more Tables that contain the source data for your query.



3. Select a Table from the Show Table dialog box and click **Add**. Click on the **Close** button when you have selected all the Tables for your query. The Query Design view will then be displayed.
4. From the list of fields, choose the fields to be included in your query. To do this, simply double-click on the field name. Access will automatically populate the cells in the lower window.

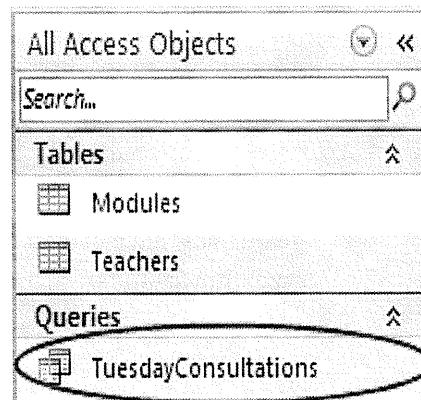


- Enter the criteria for your Query under the appropriate fields.



- Deselect any fields you do not want to display and choose which fields to use to sort your records.
- Save your query using either **Ctrl + S** or the **Save** button. Access will prompt you for a name for the new query.
- Enter a name and click **OK** to save the Query.

The query will now appear under the **Queries** category in the Navigation Pane.





Running Queries

Once you have created your query in the Design view, you will need to view the results. To view the results, you must first **Run** the query. When you Run the query, Access extracts the data from the source data based on the criteria you have specified and displays the results as a Table in the Datasheet view.

To run your query:

- From the Navigation Pane either double-click on the query name, or right click and select the **Open** button.
- From the Design view, click on the **Run**  button found on the Results group on the Design Tab.
- The results of your query will be displayed.

TeacherID	Title	LastName	FirstName	EmailAddress	MobileNo	Birthday	BirthMonth	ConsultationDays	ConsultationTime	Notes
1	Mrs.	Porter	Gwyneth	gwperton@gmail.com	0468613196	4 July		Tuesday & Thursday afternoons	4:5pm	Likes the Foo Fighters
6	Mr.	Jones	Indiana	indj47@gmail.com	0413891196	11 February		Tuesday & Thursday afternoons	4:0pm	Likes the Michael Bubble
7	Ms.	McAdams	Martha	mcmartha@gmail.com	0403231526	3 November		Tuesday afternoon	4:5pm	



Hint

It is always a good idea to run your query before adding any criteria, especially when using multiple Tables in your query. This way, if there is a problem with your query, you can fix the problem before complicating it with any criteria. For example, you may have linked your Tables incorrectly and this will cause your query to fail.

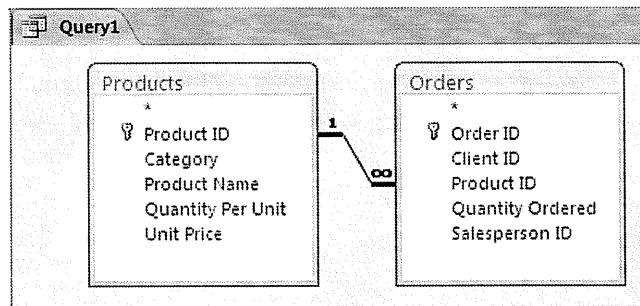


Demonstration Querying Related Tables

Because a database can use a number of different Tables to store related data, your queries may need to extract data from a number of different Tables. To do this, you will need to specify multiple Tables when you are creating your query and these Tables will need to be related as defined earlier in Unit 9 Part B: Creating a Relationship.

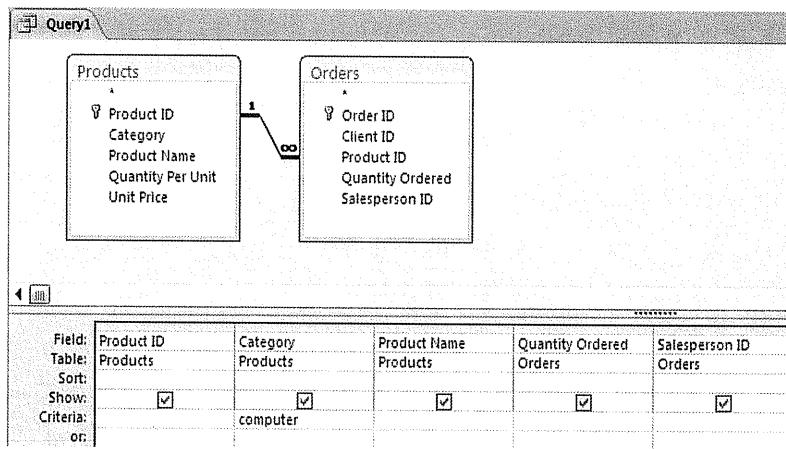
To specify multiple Tables in a Query:

1. Begin a new query by clicking on the Create Tab and selecting the **Query Design** button. Select the first Table for your source data in the Show Table window.
2. Click the **Add** button to add the Table into your query, then select the next Table you want to query and click **Add**.
3. Once you have added all the required Tables for your query, click the **Close** button. The upper window of the design should look similar to the picture below. (Note that only two Tables have been specified in the picture below.)



4. Select the field for your query by double-clicking the fields in the Tables. These fields can come from both the selected Tables.
5. Define the criteria for your query and specify the fields you want to display.

The end result of your query should look similar to the example below. Note how the fields selected are from both of the selected Tables.



Running the query in the previous example produces the following results:

Product ID	Category	Product Name	Quantity Or	Salesperson
C100	Computer	Black Ink	10	Linda
C102	Computer	Black Refill Ink	10	Leanne
C103	Computer	Colour Refill Ink	10	Leanne
C104	Computer	3-1/2" HDD Disks	20	Linda
C105	Computer	Mouse Pad	5	Nisha
*				

The Product data has been extracted from the Products Table while the Quantity and Salesperson data has been taken from the Orders Table.



Task 10.6

Creating Queries

For this task you will create a second Table in your *Teachers* database called *Modules*. This Table will hold the information about modules that are taught by the Teachers.

1. Create a new Table called *Modules*. Enter the Field Names and Data Types as seen below.

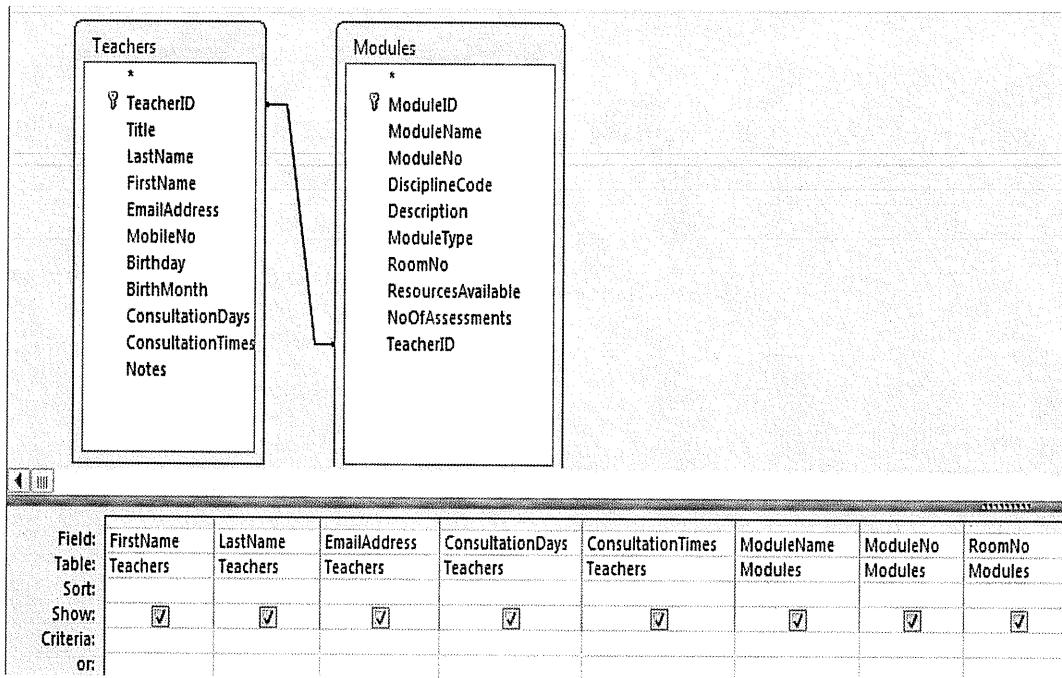
Field Name	Data Type
ModuleID	AutoNumber
ModuleName	Text
ModuleNo	Text
DisciplineCode	Number
Description	Memo
ModuleType	Text
RoomNo	Number
ResourcesAvailable	Yes/No
NoOfAssessments	Number
TeacherID	Number

2. Populate the Tables with the data provided on the next two pages.

ModuleID	1	2
ModuleName	Academic English Listening and Speaking Skills	Academic English Reading and Writing Skills
ModuleNo	GAC007	GAC008
DisciplineCode	1302205	1302205
Description	Develop academic listening and speaking skills	Develop academic reading and writing skills
ModuleType	core	core
RoomNo	20	20
ResourcesAvailable	yes	no
NoOfAssessments	4	5
TeacherID	1	2
ModuleID	3	4
ModuleName	Maths	Computing II: Data Management
ModuleNo	GAC010	GAC011
DisciplineCode	501101	502120
Description	Probability and statistics for solving common financial problems	The use of spreadsheets and databases in academic situations
ModuleType	elective	elective
RoomNo	10	18
ResourcesAvailable	no	yes
NoOfAssessments	4	4
TeacherID	3	6
ModuleID	5	6
ModuleName	Business Studies	Science II: Scientific Principles
ModuleNo	GAC012	GAC013
DisciplineCode	904105	499401
Description	Understand the theory, process and practice of contemporary business	Understanding of the basic laws , theories and principles of contemporary science
ModuleType	elective	elective
RoomNo	15	13
ResourcesAvailable	no	no
NoOfAssessments	3	5
TeacherID	4	5

ModuleID	7	8
ModuleName	Social Science	IELTS Preparation Skills
ModuleNo	GAC027	GAC019
DisciplineCode	1301999	1302301
Description	Understanding of the inter-relationship between personal, community and national identity in the global context	Develop the skills and strategies to earn a score of 6 or greater on the IELTS test
ModuleType	elective	elective
RoomNo	15	20
ResourcesAvailable	no	no
NoOfAssessments	4	4
TeacherID	5	7

3. Create the Relationship between the *Teachers* and *Modules* Tables.
4. Create a new query adding both the *Teachers* and *Modules* Tables.
5. Add the following fields to the query line from the *Teachers* Table: First Name, LastName, EmailAddress, ConsultationDays, and ConsultationTimes.
6. Add the following fields to the query line from the *Modules* Table: ModuleName, ModuleNo, and RoomNo.



7. Run your query to view the results.

FirstName	LastName	EmailAddress	ConsultationDays	ConsultationTimes	ModuleName	ModuleNo	RoomNo
James	Moore	jmoore@gmail.com	Monday & Wednesday afternoons	4-5pm	Academic English Listening and Speaking Skills	GAC007	20
Gwyneth	Porter	gwypor@gmail.com	Tuesday & Thursday afternoons	4-5pm	Academic English Reading and Writing Skills	GAC008	20
Arnold	Stallone	arnie4math@gmail.com	Wednesday afternoon	4-6pm	Maths	GAC010	10
Barbara	Pattinson	bbarbar@hotmail.com	Thursday morning	7-8pm	Business Studies	GAC012	15
Alison	Taylor	alitaylor12@gmail.com	Monday afternoon	4-5pm	Science II: Scientific Principles	GAC013	13
Alison	Taylor	alitaylor12@gmail.com	Monday afternoon	4-5pm	Social Science	GAC027	15
Indiana	Jones	indiy47@gmail.com	Tuesday & Thursday afternoons	4-6pm	Computing II: Data Management	GAC011	18
Martha	McAdams	mcmartha@gmail.com	Tuesday afternoon	4-5pm	IELTS preparation skills	GAC019	20
Martha	McAdams	mcmartha@gmail.com	Tuesday afternoon	4-5pm	TOEFL preparation skills	GAC025	10
Martha	McAdams	mcmartha@gmail.com	Tuesday afternoon	4-5pm	ACT Assessment Preparation Skills	GAC026	20

8. Close your query and save the query as *Modules Query*.
9. Open the query *Modules Query* in Design View to edit the query.
10. Click into *ConsultationDays* criteria and type “*Monday*”.
(Remember adding the * wildcard around the word will result in records that have the word “Monday” within the field.)

Field:	FirstName	LastName	EmailAddress	ConsultationDays	ConsultationTimes	ModuleName	ModuleNo	RoomNo
Table:	Teachers	Teachers	Teachers	Teachers	Teachers	Modules	Modules	Modules
Sort:								
Show:	<input checked="" type="checkbox"/>							
Criteria:					*Monday*			
or:								

11. Run the query. How many results did you receive?

Modules Query								
Field:	FirstName	LastName	EmailAddress	ConsultationDays	ConsultationTimes	ModuleName	ModuleNo	RoomNo
Table:	Teachers	Teachers	Teachers	Teachers	Teachers	Modules	Modules	Modules
Show:	<input checked="" type="checkbox"/>							
Criteria:					Like *Monday*			
or:								

12. Edit the query and change the criteria to search for only *Tuesday* Consultations in Room 20.

Field:	FirstName	LastName	EmailAddress	ConsultationDays	ConsultationTimes	ModuleName	ModuleNo	RoomNo
Table:	Teachers	Teachers	Teachers	Teachers	Teachers	Modules	Modules	Modules
Sort:								
Show:	<input checked="" type="checkbox"/>							
Criteria:					Like *Tuesday*			20
or:								

How many results did you receive?

13. With a partner, create two additional queries that will allow you to view different information.

**Task 10.7 Creating and Running a *Swanson General Hospital* Query**

Open the *Swanson General Hospital* database.

Create the following queries:

- List all patients living in Melbourne who are suffering from Diabetes.
- List all the male patients who are more than 50 years old.
- List all female patients who are less than 50 years old.
- Find out how many male patients are suffering from high blood pressure.

Part E

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Creating Relationships
- Filters
- Queries

Review all the activities you completed in this unit and make sure that any questions you noted were answered.



Task 10.8

Planning, Designing and Creating a Database

Complete the following exercise to revise some of the functions covered in Units 7, 8, 9 and 10.

See your teacher if have any problems or questions.

Scenario:

The Manager of **Campus Bank** has requested that you create a simple database that will manage their customers' data. Using the customer details below, plan and design a simple database for the bank. The bank has many customers who open and maintain one or more accounts.

Customer details:

Mr. Tom Edwards' identification number is 1001. He lives at 123 Winch Street, in the city of Fairfield, the state of NSW and the postcode 2164. He opened his bank account on 10/11/2000. His Cheque account number is 4485 and his balance is \$9,000. He also has a Savings account, which he opened on 10/12/2000 and his account number is 4550. His balance is \$3,000 for this account.

Mrs. Jan Brian's identification number is 1002. She lives at 12 Davey Street, in the city of Parramatta, the state of NSW and the postcode 2150. She opened her bank account on 01/05/1999. Her Savings account number is 8922 and her balance is \$7,000.

Mr. Mark Jones' identification number is 1003. He lives at 569 North Road, in the city of Smithville, the state of VIC and the postcode 3156. He opened his bank account on 12/01/1997. His Cheque account number is 6633 and his balance is \$2,000. He also has a Savings account, which he opened on 12/01/1995. His savings account number is 8585, and his balance for this account is \$9,000.

Ms. Karen Williams' identification number is 1004. She lives at 661 Parker Road, in the city of Georgia, the state of QLD and the postcode 4454. She opened her bank account on 08/02/1998. Her Savings account number is 9944 and her balance is \$8,000. She also has a Cheque account, which she opened on 11/03/2006 and her account number is 8586. Her balance is \$900 for this account.

Task 1: Planning and designing the Tables

On paper design your database:

- Identify the Tables you require for the information
- Identify the data (fields and records) that you want to store in each Table
- Determine the appropriate field data types and sizes
- Identify the primary key(s)
- Establish the relationship that may exist between the Tables

Submit the design of your database to your teacher.

Task 2: Creating the Database

- Create a database called **CampusBank**.
- Create a **Customers** Table with the following fields:
 - CustomerID
 - Title
 - First Name
 - LastName
 - Street
 - City
 - State
 - Postcode
- Create a **Accounts** Table with the following fields:
 - AccountNo
 - AccountType
 - DateOpened
 - AccountBalance
 - CustomerID
- Ensure you set the appropriate data types and field sizes.
- Create the relationship between the Tables.

Task 3: Add Data

- Enter the details for two more customers in your **Customers** Table. Your name should be one of the customers.
- Enter relevant data in the **Accounts** Table for your new Customers.

Task 4: Create Filters

- Create a Filter on the Customers Table to show only those customers who live in NSW and print a copy of the filtered Table.
- Create a Filter on the Accounts Table and show only those Savings accounts that have a balance over \$5,000 and print a copy of the filtered Table.

Task 5: Create Queries

- Create a query that will list the account number, type, date opened and balance as well as the customer's name. Save the query as **CustomerAccount**.
- Create query that will list the customer's name and address and their balance. Only show those customers who live in NSW. Save the query as **CustomerByState**.
- Create a query that will list the customer's name, account type and balance. Only show those customers whose balance is \$3,000 and over and less than or equal to \$8,000. Save the query as **AccountBalance**.

Submit the database to your teacher.



Assessment Event 3

In-class Test 2

Your teacher will now distribute Assessment Event 3: In-class Test 2.

This is a theory test which includes short answer, multiple choice and true/false questions. It will be undertaken in class under test conditions.

Unit 11 Displaying Data

Part A	Unit Introduction
Part B	Forms
Part C	Reports
Part D	Unit Review

Part A Unit Introduction

Overview

In this unit, you will be introduced to presenting the information collected in a Microsoft Access Database.

In this unit, you will learn to:

- create Forms
- create Reports
- apply Microsoft Access skills

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.

Part B Forms



Understanding Forms

Forms provide an effective way to display and enter data. You can also use forms to open other forms and reports in the database, i.e. use them as a Main Menu to the database.

Forms can be based on Tables or queries. On Forms, the **record source** refers to the fields in the underlying Table or query. Forms do not have to contain all the fields from each of the Tables or queries on which they are based.

The Tables in which data is stored on databases can be very large. Whilst it is possible to enter or read the data directly in the Tables, this process may be cumbersome. Forms help you to focus on relevant data.

Forms display data from their underlying record source, i.e. the Tables or queries on which they are based. Other information or elements on the form, such as titles, graphics, date and page number, are stored in the form's design.

When you enter data in a form, you are actually updating the Table on which the form is based. Therefore, you need to think of a form as being a view or window over your data (Table).



Note

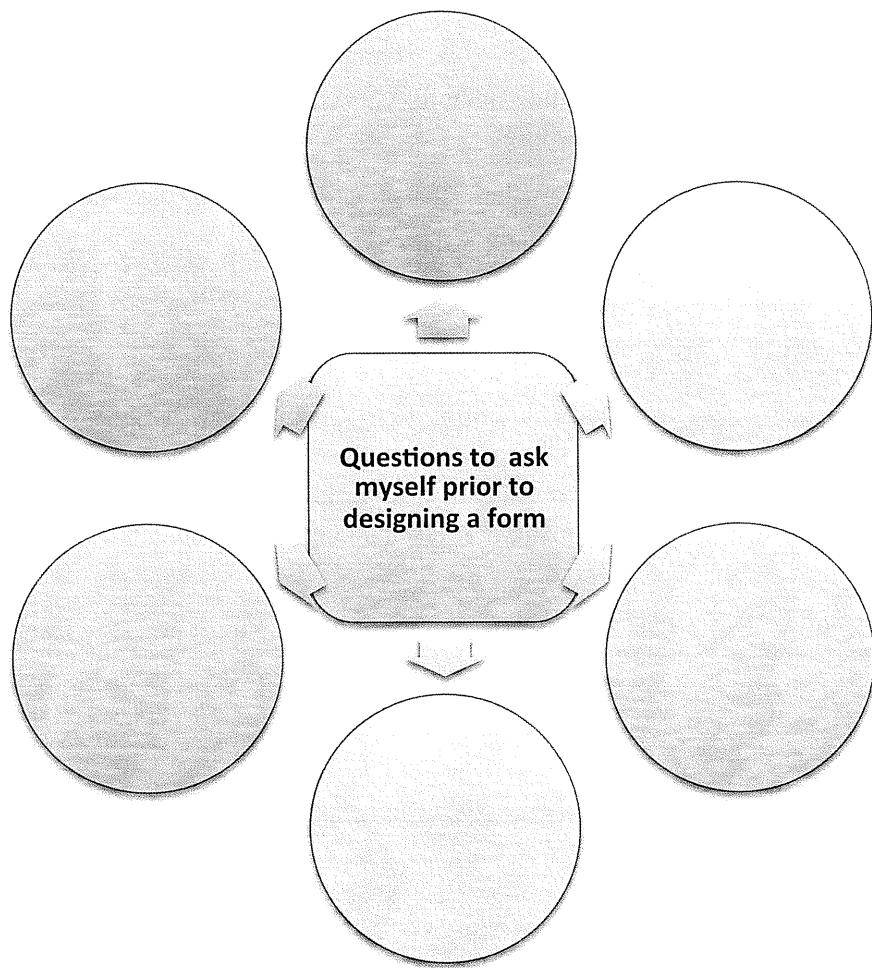
If you delete the form, you do not delete the data.



Task 11.1 Designing Forms

Forms should be designed to suit the way people will enter or view the data.

Can you think of some questions you should be asking yourself prior to designing a form?





Demonstration Creating Forms

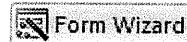
There are several ways of creating forms in Access, as follows:

- Form tool - automatically creates simple form that can be modified later
- Form Wizard - steps you through the form design process
- Design view - enables you to create forms from scratch

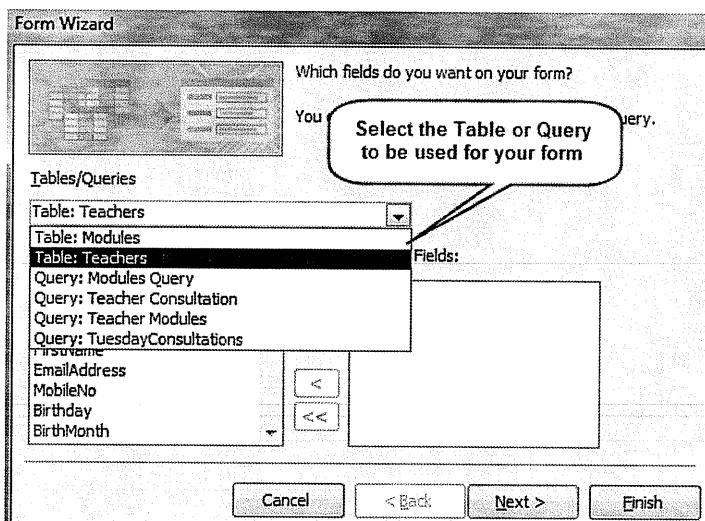
For this module, you will be using the Form Wizard to create your forms.

Follow these steps to create a Form using the Form Wizard:

1. Click on the Create Tab and from the Forms group click on the **Form Wizard** button.

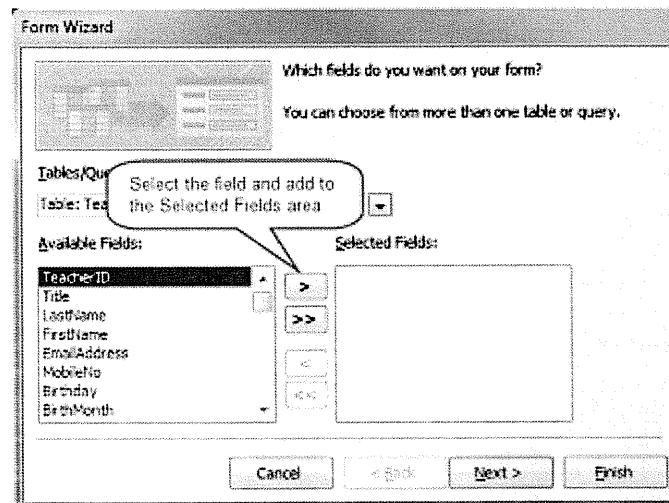


2. The Form Wizard window will appear as shown below. Choose the Table or query that will serve as the source data for the Form from the drop-down box. Access will display a list of Tables and queries available in the database.

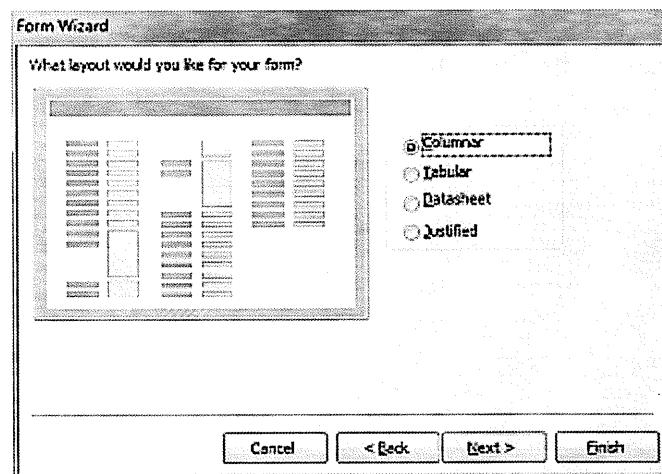


3. Select the fields you want to display on your form. Click on the field in the left column and click on the single arrow to move one field at a time, or click on the double arrow to move all records to the right column. If you make a mistake, click on the field(s) in the right column and select the appropriate arrows to remove the fields.

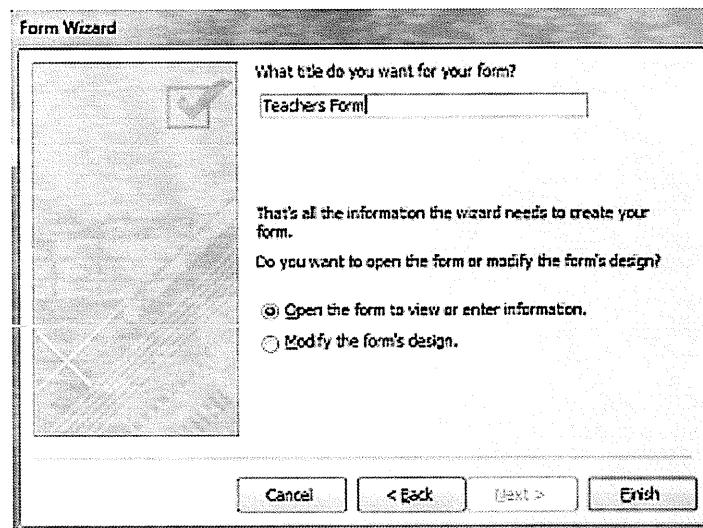




4. Click Next.
5. Select the appropriate format for your form. Click Next.



6. Type in an appropriate name for your form. Select whether you wish to open the form ready to enter data or in design view.



7. Click **Finish** and your form will appear:

The screenshot shows a Microsoft Access form titled "Teachers". The form contains the following data in its respective fields:

TeacherID	1
Title	Mr
LastName	Moore
FirstName	James
EmailAddress	jmoore@gmail.com
MobileNo	0413624806
Birthday	26
BirthMonth	January
ConsultationDays	Monday & Wednesday afternoons
ConsultationTimes	4-5pm
Notes	



Task 11.2

Creating Forms - *Teachers*

1. Open the *Teachers* database.
2. Using the Forms Wizard, create a form based on the Teachers Table using all the fields.
3. Save the form as ***Teachers Form***.



Task 11.3

Creating Forms - *Swanson General Hospital*

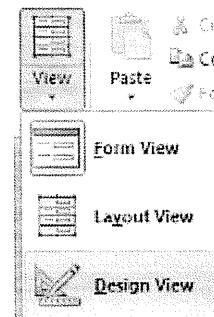
1. Open the *Swanson General Hospital* database.
2. Using the Forms Wizard, create a form based on the Patients Table using all the fields.
3. Save the form as ***Patients***.



Demonstration Modifying the Design of the Form

To modify the design of your form, change the font, re-arrange the fields, add titles, etc., Access provides two views that can be used: **Layout View** and **Design View**.

1. Double-click the Forms object in the Navigation Pane, to open the form.
2. Click on the down arrow of the **View** button on the Home Tab and select either **Layout View** or **Design View**.



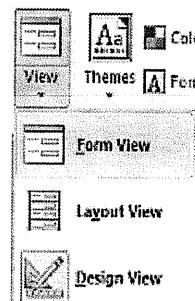
3. This is how your form will appear in **Layout View**.

The screenshot shows the Microsoft Access application window in Layout View. The ribbon tabs are visible at the top, with the 'Form Layout Tools' tab selected. The 'Format' tab is highlighted. On the left, the 'Navigation pane' displays 'All Access Objects' with 'Tables' (Modules, Teachers), 'Queries' (Modules Query, TuesdayConsultations), and 'Forms' (Teachers Form). The main area shows a form titled 'Teachers' with fields: TeacherID, Title, LastName, FirstName, EmailAddress, MobileNo, Birthday, BirthMonth, ConsultationDays, ConsultationTimes, and Notes. A callout bubble points to the text boxes with the text: 'Text boxes showing the data from the table'. Another callout bubble points to the 'Format' tab with the text: 'Format tab becomes available in Layout View with tools for formatting Labels and Text boxes and form background'.

4. This is how your form will appear in Design View.

The screenshot shows the Microsoft Access 'Design View' for a 'Teachers Form'. The form consists of a header section labeled 'Teachers Form' and a main 'Detail' section containing several text boxes. The fields in the Detail section are: TeacherID, Title, LastName, FirstName, EmailAddress, MobileNo, Birthday, BirthMonth, ConsultationDays, ConsultationTimes, and Notes. A callout bubble points to the 'Teachers Form' header area with the text 'Form heading in the Form Header area'. Another callout bubble points to the 'LastName' field in the Detail section with the text 'Text boxes showing the Field Name from the table'.

5. To return back to your form, click on the View button and select the **Form View**.



Layout View

Understanding Layout View

Layout View can be used for nearly all the changes you would want to make to a form. In Layout View, you can see how your data will appear in Form view as you are making your changes. This is a very useful view for changing the size of your labels or text boxes, or performing almost any other task that affects the appearance and usability of the form.

In Layout View, you can add a form title and the date and time field to the form's header. You can add another field control, re-arrange the fields and labels and re-adjust the Tab order.

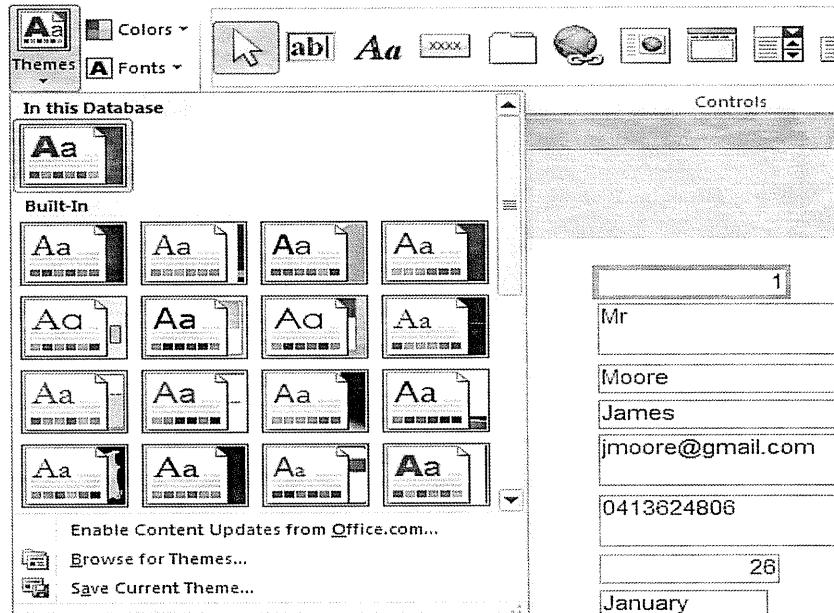
Certain tasks cannot be performed in Layout View. In certain situations, Access will display a message telling you that you must switch to Design view to make a particular change.

You can also use the **Themes** function found on the Design Tab.



Demonstration Using Layout View

Click on the down arrow to view the available Themes. Select the appropriate format for your form.



Your form will automatically be updated with the new format.

Teachers

TeacherID	1
Title	Mr
LastName	Moore
FirstName	James
EmailAddress	jmoore@gmail.com
MobileNo	0413624806
Birthday	26
BirthMonth	January
ConsultationDays	Monday & Wednesday afternoons
ConsultationTimes	4-5pm
Notes	



Demonstration Formatting Labels and Text Boxes

You can format the labels and text boxes in Layout View. To select all the labels, hold down the **Shift** key and click on each of the labels.

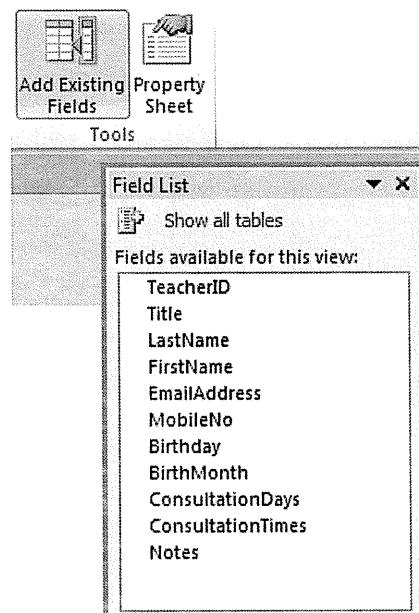
You can now change the font, font size and apply styles such as bold, italics, etc. These formats are found on the **Font** group on the Format Tab.

When you select the text boxes, the **Control Formatting** options become available. You can apply number formats such as \$ or %.

TeacherID	1
Title	Mr
LastName	Moore
FirstName	James
EmailAddress	jmoore@gmail.com
MobileNo	0413624806
Birthday	26
BirthMonth	January
ConsultationDays	Monday & Wednesday afternoons
ConsultationTimes	4-5pm
Notes	

You can also add an existing field to your form by clicking on the **Add Existing Fields** button found on the Tools group on the Design Tab.

Click and drag the field from the **Field List** window onto your form.



Demonstration Rearranging Labels and Text boxes

When Access creates a form, it automatically puts all the Labels and Text boxes in a layout based on the Layout selected during the Form Wizard process.

You can move your labels and textboxes into different positions:

1. Click on a label and **Shift** click to select its associated text box. With your mouse as a double headed arrow, click and drag the label and text box into its new position.



2. Repeat this action, until all your labels and fields are positioned as required.



Demonstration Resizing Labels and Text Boxes

You can resize labels and text boxes individually or as a group.

1. To resize the label or text box, click on the object (or **Shift** click each of the objects).
2. Move your mouse to the end of the box and your mouse will turn into a double headed arrow. Click and drag to resize the box.



Your formatted form will look as below:

Teacher Details	
Teacher ID	1
Title	Mr
First Name	James
Last Name	Moore
EmailAddress	jmoore@gmail.com
MobileNo	0413624806
Birthday	26
BirthMonth	January
ConsultationDays	Monday & Wednesday afternoons
ConsultationTimes	4-5pm
Notes	



Understanding Design view

Design view shows you the structure of your form. You can see the Header, Detail, and Footer sections of the form. You do not see the underlying data while you are making your design changes.

Some tasks are performed more easily in Design View rather than in Layout View.

Brainstorm tasks which are performed more easily in Design View rather than in Layout View. List these below.

Tasks performed more easily in Design View
than Layout View

Some of the tasks which are more easily performed in Design View rather than Layout View include:

- Adding a wider variety of controls to the form, such as labels, images, lines and rectangles
- Changing your field control type, e.g., use a combo box or list box instead of a text box
- Editing the text box control sources without using the property sheet
- Resizing the form sections, such as the Form Header or the Detail section
- Aligning and adjusting your Field Labels and Text boxes

Place a check next to those you listed on the previous page.



Demonstration Resizing Forms in Design View

1. Open your form in **Design View**.
2. To resize your form, click and drag on the lower corner of the form. Your mouse will turn into a double-headed arrow.

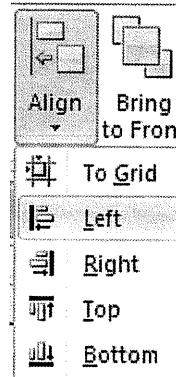
Changing the size of your labels and text boxes is the same as in Layout View by clicking and dragging them into the required position.



Demonstration Aligning Fields

You can quickly align your Field Labels and Text Boxes by using the Align options found in the Sizing & Ordering group on the Arrange Tab.

Select the Field Labels or the Text Boxes you wish to align and click on the Align down arrow and select the required alignment.



Demonstration Editing Label Text

To edit the field label, click once on the box and then click inside the box to edit the data. **DO NOT** edit the field text box - remember this is the record source linked to your Table. Any changes to this will give you an error.



Demonstration Formatting Form Headings and Labels

1. To format your form heading or any label, select the label.
2. Click on the Format Tab and format the font appropriately using the formats found on the **Font** group.
3. The border line can be formatted using the **Shape Outline** options found on the **Control Formatting** group.

The background colour can be changed using the Shape Fill

option .

Format Font, size, style and text alignment, Change Font colour and background colour.

Format border line thickness, style and colour.



Demonstration Formatting the Form Background

1. You can change the colour of the background of your form. The Form Header and Footer background areas are independent of the Detail background. To change the colour, you will need to click into each area and change individually.
2. Click anywhere on the background of the area you wish to change.
3. Click on the Format Tab and click on the Background Color button found on the **Font** group. Select an appropriate colour.



Demonstration Inserting Images



1. To insert graphics, click on the **Image** button found on the Controls group on the Design Tab.
2. Click and drag to draw a square on your form. The **Insert Picture** window will appear. Locate the graphic you wish to insert and click **OK**. Move the graphic to the correct position.

The screenshot shows the Microsoft Access 'TeachersForm' in design view. The form has a header section labeled 'Teacher Details'. The main body is a 'Detail' section containing a grid of fields. On the right side of the grid, there is a placeholder for an image. A teacher illustration is currently placed in this area. The fields in the grid include 'Teacher ID', 'Teacher', 'Title', 'First Name', 'FirstName', 'Last Name', 'LastName', 'EmailAddress', 'MobileNb', 'MobileNo', 'Birthday', 'BirthMonth', 'ConsultationDays', 'ConsultationTimes', 'Notes', and 'Notes'.



Demonstration Inserting Logos



1. You can insert a Logo into your Form Header quickly and easily by clicking on the **Logo** button | **Logo** found on the Design Tab on the Controls group.
2. When you click on the Logo button the Insert Picture window will open. Locate your picture. The picture is automatically inserted into the Report Header area.
3. Resize and format the picture as required.

- To view your completed form, click on the **View** button and select **Form View**.

The screenshot shows a Microsoft Word document titled "Teachers Form". A sub-form titled "Teacher Details" is displayed. It contains the following fields with their respective values:
Teacher ID: 1
Title: Mr
First Name: James
Last Name: Moore
EmailAddress: jmoore@gmail.com
MobileNo: 0413624806
Birthday: 26 BirthMonth: January
ConsultationDays: Monday & Wednesday afternoons
ConsultationTimes: 4-5pm
Notes: (empty)



Tip

You can also insert ClipArt into a Word document and then copy and paste the graphic into your form design.



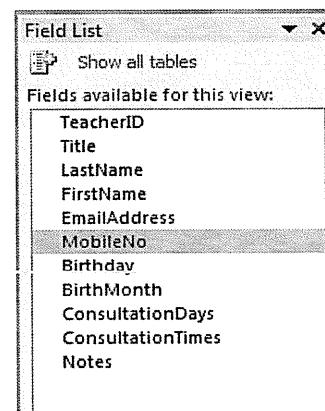
Demonstration

Adding or Deleting Fields

There may be times when you need to add another field to your form, or delete a field to the form.

To add a field:

- Open your form in Design or Layout view.
- Click on the **Add Existing Fields** button on the Design Tab found on the Tools group.
- The **Field List** will appear.



- Click and drag the required field onto the **Detail** area of your form.

To delete a field:

1. Open your form in Design or Layout View.
2. Click on the field you wish to delete. Make sure you click on the Field text box (not the label). Click the **Delete** button on your keyboard.

**Demonstration Changing the Tab Order**

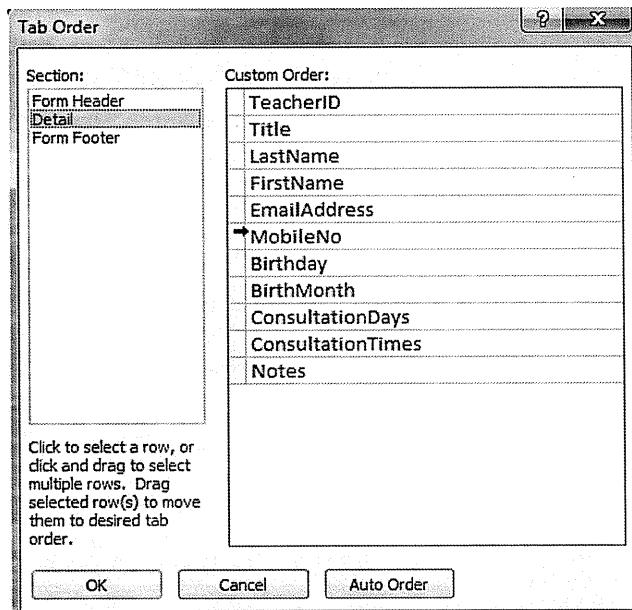
Sometimes, it will be necessary to change the **Tab Order** of your fields to make navigating the form easier and more efficient.

1. Open your form in Design or Layout View.
2. Click on the Design Tab and click on the **Tab Order** button found in the Tools group.
3. The Tab Order dialog box will appear. Click on the Section you wish to order, in this example the Detail section.

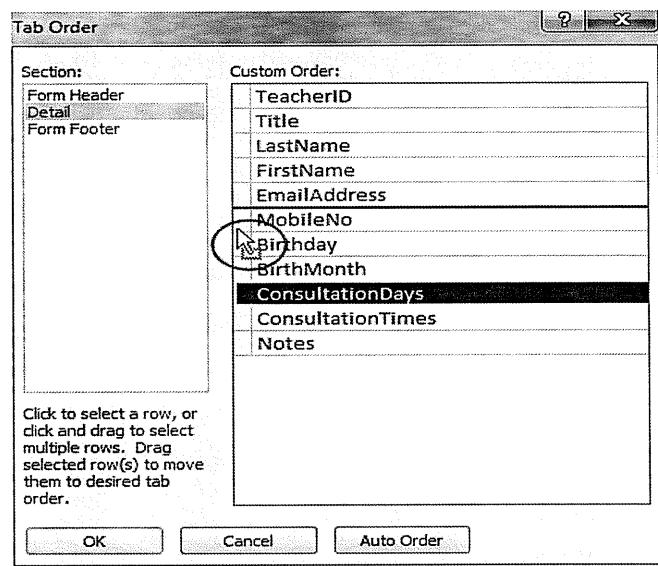


Tab Order

4. Click on the field you wish to move.



5. Click and drag the field up or down to the new position.

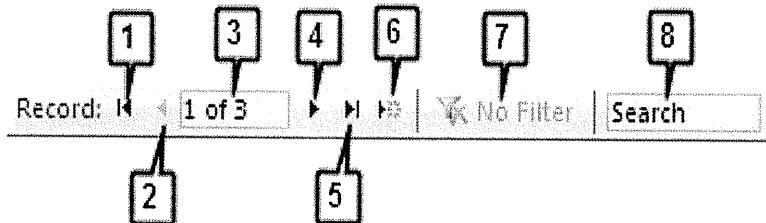


6. Click on the View button to return back to Form View and using the Tab key, test your new Tab order.



Moving Between Records

The buttons at the bottom of a form enable you to move back and forth among the records quickly and easily. Remember that you are always looking at one record at a time.



Below is an explanation of each of the buttons:

1. **First Record** moves you to the first record of the form.
2. **Previous Record** moves you one record up.
3. **Current Record** displays the number of the current record and the total number of records.
4. **Next Record** moves you down one record.
5. **Last Record** moves you to the last record of the form.
6. **New (Blank) Record** adds a new record to the end.
7. **Filter indicator**
8. **Search box**

If you click in the **Current Record** box and type a record number and then press **Enter**, you will navigate to that record.

The **Filter indicator** will display **No Filter**, if no filter has been applied and all records are showing. However, when the Filter indicator displays **Filtered**, you can click this button to remove the filter. When it displays **Unfiltered**, you can also click this button to apply the last filter that you used.

Use the **Search box** to quickly search for a record. When you enter text in the Search box, the first matching value is highlighted as you enter each character.



Demonstration Entering Data

To enter data:

1. Click on the **New (Blank) Record**  button.
2. Enter the text in the same way you would enter the text in the Table. Click **Tab** to move to the next field.
3. When you have entered all the details for the record, press **Enter** to move to the next record **OR** click on the **Next Record**  button.

Closing the Form

To close the Form, click on the **Close**  button.



Task 11.4

Modifying the *Teachers* form

1. Open the *Teachers* database.
2. Open the *Teachers Form* created in Task 11.1.
3. Modify the form as follows:
 - Add as a title *Teacher Details*.
 - Format the title.
 - Format the Field Labels.
 - Move the fields around so that First Name comes before Last Name.
 - Change the Tab order of your fields so that First Name comes before Last Name.
 - Change the background colour of your form appropriately.
 - Insert an appropriate graphic.
4. Save the form.



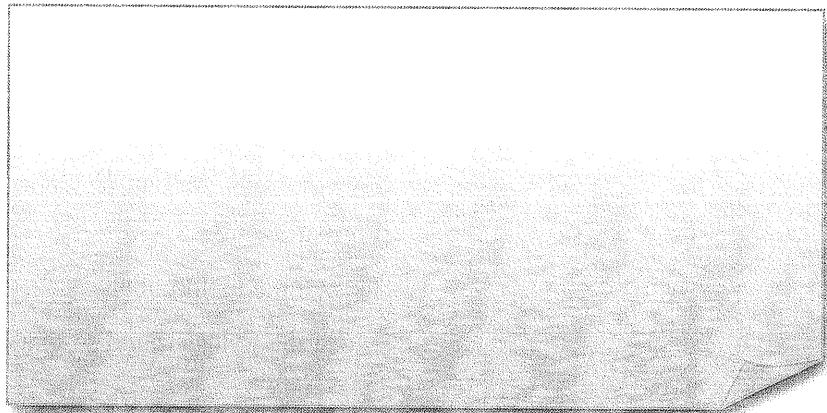
Subforms

Subforms are forms within a form. They are used to display the data from multiple Tables where there is a one-to-many relationship. When you create a form based on a query that uses two linked Tables, Access will create a Main form with an embedded subform.

When you open the Main form, you will also see the subform showing data that is related to the main form. Access automatically links the two forms based on the Primary and Foreign keys in the Tables.

An example would be to create a form to display the orders for each customer. The customer details would be shown on the main form and the embedded subform would show the order details.

In which GAC-specific situations where could it be useful to create subforms?



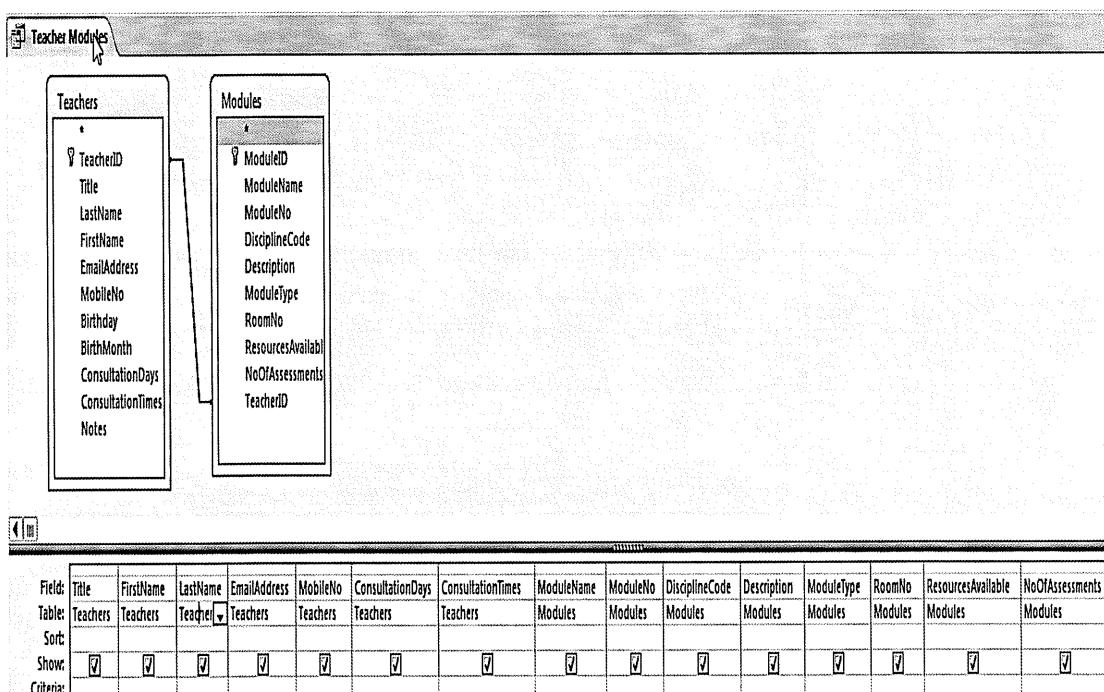


Task 11.5

Creating Forms Based on Queries Using Multiple Tables

In this task, create a form showing the Teacher details in the main form and the modules they teach in the subform.

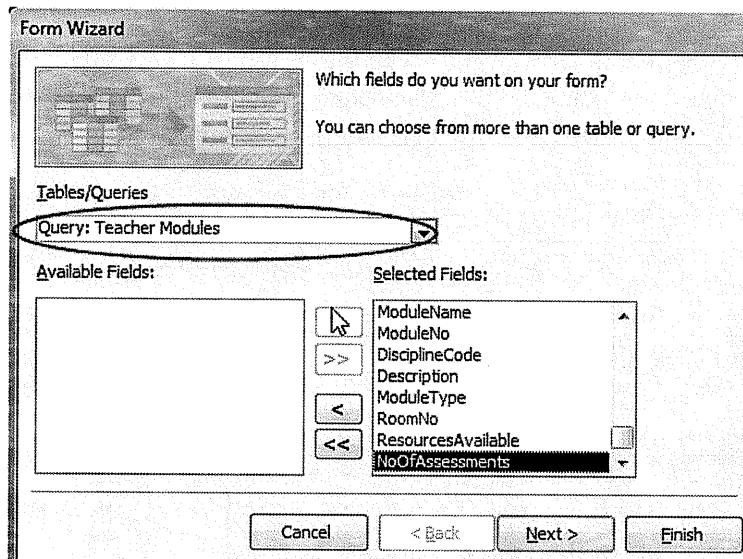
1. Open the *Teachers* database.
2. Create a new query using Query Design.
3. Add both the Teachers Table and the Modules Table.
4. From the Teachers Table add the fields: Title, FirstName, LastName, EmailAddress, MobileNo, ConsultationDays, and ConsultationTimes.
5. From the Modules Table add the fields: ModuleName, ModuleNo, DisciplineCode, Description, ModuleType, RoomNo, ResourcesAvailable, and NoOfAssessments.
6. Run the query to ensure that it returns all the correct results.
7. Save the Query as *Teacher Modules* and close.



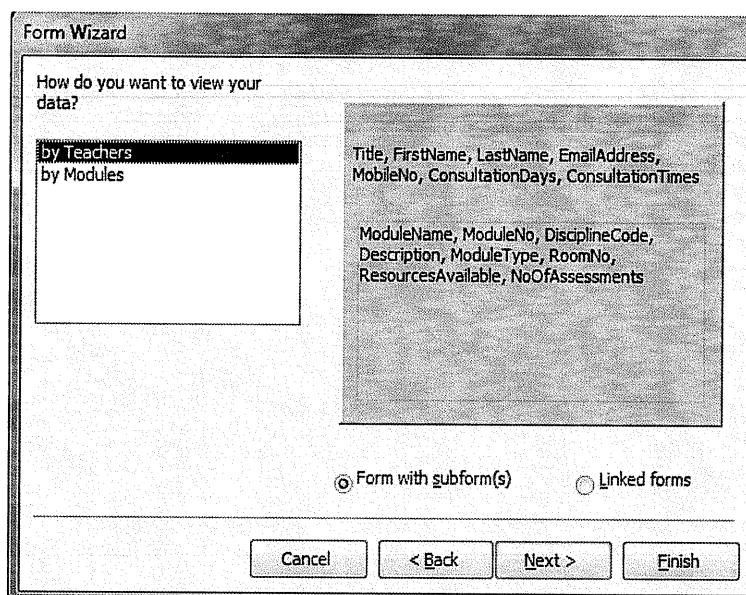
The screenshot shows the Microsoft Access Query Design View. At the top, there's a toolbar with icons for New, Open, Save, Print, and others. Below the toolbar, the title bar says "Teacher Modules". The main area is divided into two sections: "Tables" and "Fields". In the "Tables" section, there are two tables: "Teachers" and "Modules". The "Teachers" table has fields: TeacherID, Title, LastName, FirstName, EmailAddress, MobileNo, Birthday, BirthMonth, ConsultationDays, ConsultationTimes, and Notes. The "Modules" table has fields: ModuleID, ModuleName, ModuleNo, DisciplineCode, Description, ModuleType, RoomNo, ResourcesAvailable, and NoOfAssessments. A join line connects the TeacherID field in the Teachers table to the TeacherID field in the Modules table. Below the tables, the "Fields" section shows a grid where each table's fields are listed. The "Table" column indicates which table each field belongs to. The "Field" column lists the field names. The "Show" column contains checkboxes, all of which are checked for every field in both tables. The "Sort" row has a dropdown menu set to "TeacherID". The "Criteria" row is empty.

Field:	Title	FirstName	LastName	EmailAddress	MobileNo	ConsultationDays	ConsultationTimes	ModuleName	ModuleNo	DisciplineCode	Description	ModuleType	RoomNo	ResourcesAvailable	NoOfAssessments
Table:	Teachers	Modules													
Sort:															
Show:	<input checked="" type="checkbox"/>														
Criteria:															

8. Click on the query **Teacher Modules** in the navigation pane and select the Create Tab and click on the **Form Wizard** button.
9. The Form Wizard window will appear with the **Query:Teacher Modules** selected. (You can also select this using the drop down arrow.)
10. Add all the fields to the **Selected Fields**.

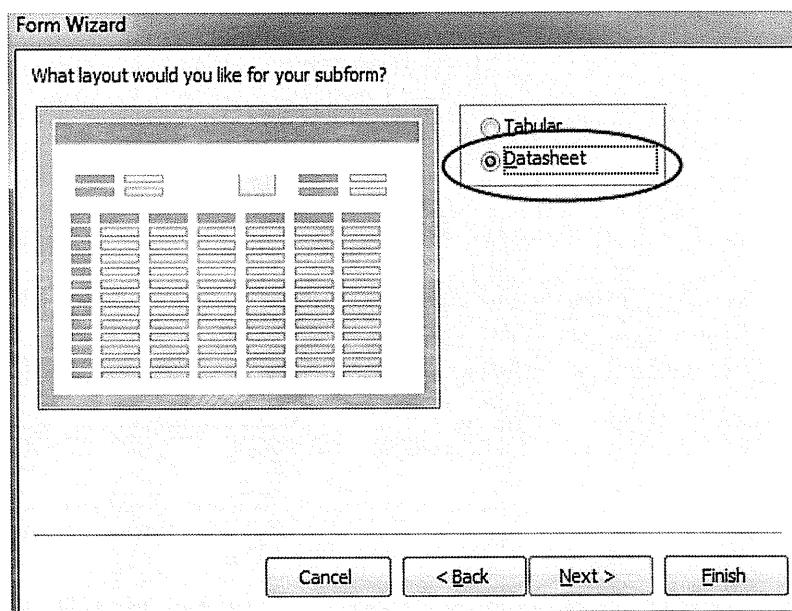


11. Click **Next**.
12. We now have to select how we want to view the data. In this case, we want the Teachers Table to be the main form with the data at the top and the Modules Table to be inserted as a subform.
13. Ensure that **by Teachers** is selected and the **Form with subform(s)** is also selected.



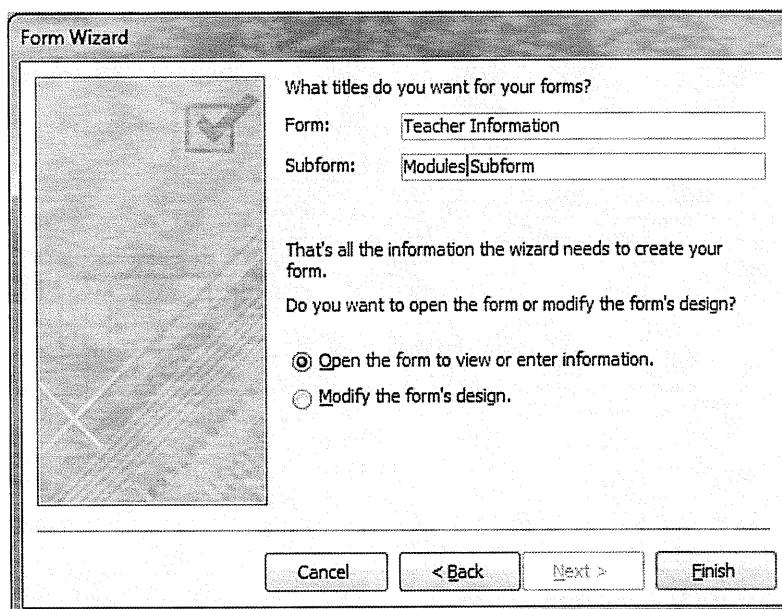
14. Click **Next**.

15. Select **Datasheet** as the layout for the subform.



16. Click **Next**.

17. The next screen allows you to enter a name for each of the forms.
Change the title to *Teacher Information* for the main form.



18. Click **Finish**. The completed form will appear.

Module	ModuleName	ModuleNo
*	Academic English Listening ar	GAC007

19. As you can see, the forms need to be formatted and the subform needs to be resized to view all the available fields.

20. Save your form.



Task 11.6 Formatting the Main Form and Subform

1. Go to the Layout View of your form. As can be seen below, the subform is a form embedded in the main form and has its own controls.

ModuleName	ModuleNo
Academic English Listening	GAC007
*	

2. Resize the subform so that you can see all the fields.
3. Delete the 'Modules' label as it is not required.

ModuleName	ModuleNo
Academic English Listening	GAC007
*	

4. Resize the columns in the subform so that you can see all the data. (Scroll through to a record that contains data in the subform.)
5. Format the form appropriately, aligning the fields correctly.
6. Insert an appropriate image.
7. Your form should look similar to the image below.

Note: The record selectors can be found on both the main form (Teachers Table) and the subform (Modules Table). In the example below, two modules are taught by the same teacher.

This form allows you to quickly view all the modules that are taught by which teacher.

ModuleName	ModuleNo	DisciplineCode	Description	ModuleType	RoomNo	ResourcesAvailable	NoOfAssessments
Science & Scientific Principles	GAC010	499401	Understanding of the basic laws, theories and principles of	elective	13		5
Social Science	GAC027	1301999	Understanding of the inter-relationship between personal,	elective	15		4

Enter data into your form

8. You can now use your form to enter data.
9. Go to record 7 of the main form and enter the following two records into the subform.

ModuleName	TOEFL Preparation Skills	ACT Assessment Preparation Skills
ModuleNo	GAC025	GAC026
DisciplineCode	1302301	1302301
Description	Recognise and recall TOEFL test question types	Recognise and recall ACT test question types
ModuleType	elective	elective
RoomNo	10	20
ResourcesAvailable	no	no
NoOfAssessments	5	5

 Teachers Information

Teachers Information

Title	Ms	First Name	Martha	Last Name	McAdams
Email Address	mcmartha@gmail.com				
Mobile No	0403231526				
Consultation Days	Tuesday afternoon				
Consultation Times	4-5pm				

ModuleName	ModuleNo	DisciplineCode	Description	ModuleType	RoomNo	Resources	NoOfAssessment
IELTS preparation skills	GAC019	1302301	Develop the skills and strategies to earn a score of 6 or greater on the IELTS test.	elective	20	<input type="checkbox"/>	4
TOEFL preparation skills	GAC025	1302301	Recognise and recall TOEFL test question types	elective	10	<input type="checkbox"/>	5
ACT Assessment Preparation Skills	GAC026	1302301	Recognise and recall ACT test question types	elective	20	<input type="checkbox"/>	5
*						<input type="checkbox"/>	

Record: M - 1 of 3 | < | > |  No Filter | Search | 

10. Open the Modules Table to see the records that you have just added in your form.

 Modules

ModuleID	ModuleName	ModuleNo	DisciplineC	Description	ModuleTyp	RoomNo	Resources	NoOfAsses	TeacherID
1	Academic English Listening and Speaking Skills	GAC007	1302205	Develop academic listening and speaking skills.	core	20	<input checked="" type="checkbox"/>	4	1
2	Academic English Reading and Writing Skills	GAC008	1302205	Develop academic reading and writing skills.	core	20	<input type="checkbox"/>	5	2
3	Maths	GAC010	501101	Probability and statistics.	elective	10	<input type="checkbox"/>	4	3
4	Computing II: Data Management	GAC011	502120	The use of spreadsheets in data management.	elective	18	<input checked="" type="checkbox"/>	4	6
5	Business Studies	GAC012	904105	Understand business concepts and principles.	elective	15	<input type="checkbox"/>	3	4
6	Science II: Scientific Principles	GAC013	499401	Understanding scientific principles.	elective	13	<input type="checkbox"/>	5	5
7	Social Science	GAC027	1301999	Understanding social science concepts.	elective	15	<input type="checkbox"/>	4	5
8	IELTS preparation skills	GAC019	1302301	Develop the skills and strategies to earn a score of 6 or greater on the IELTS test.	elective	20	<input type="checkbox"/>	4	7
9	TOEFL preparation skills	GAC025	1302301	Recognise and recall TOEFL test question types	elective	10	<input type="checkbox"/>	5	7
10	ACT Assessment Preparation Skills	GAC026	1302301	Recognise and recall ACT test question types	elective	20	<input type="checkbox"/>	5	7
*	(New)						<input type="checkbox"/>		

Part C Reports



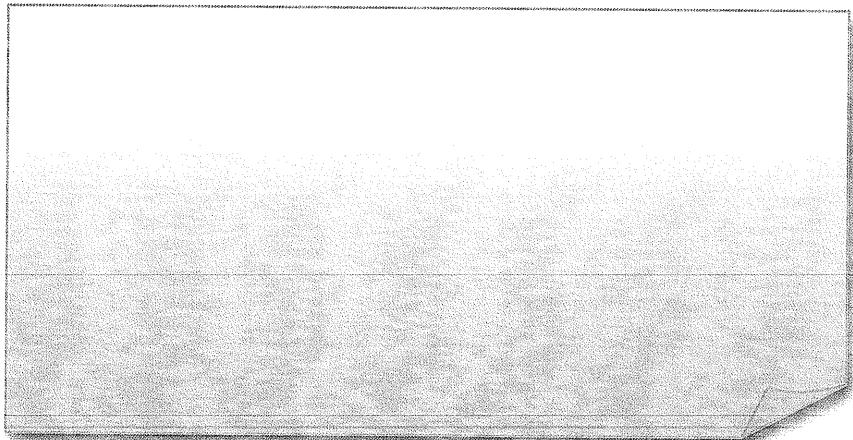
Understanding Reports

Reports provide an effective way of printing your data. While it is possible to print Table or query datasheets, reports offer a more flexible way to format data for display and printing.

Reports are simply a method for formatting and laying out your data for display. The data used for display comes from Tables or queries. Reports are saved and can be accessed through the Database window in the same way as queries and Tables.

Access provides a number of methods for creating reports. The Report Tool or Report Wizard are the simplest methods for creating reports. However, reports may also be designed from scratch in the Design View. In this unit, you will learn how to create a report using the Report Tool and the Report Wizard.

Where in your GAC studies do you think it would be useful to print data reports?



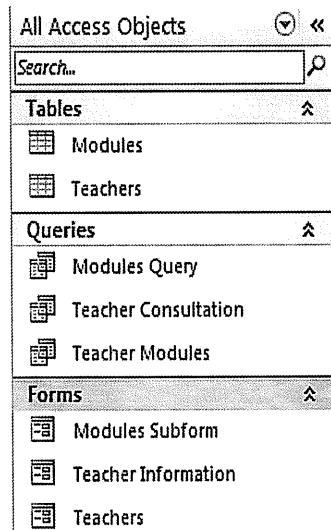


Demonstration Creating a Simple Report Using the Report Tool

Microsoft Access **Report Tool** is the simplest and fastest way to create a simple report but it is also the least flexible. This feature automatically includes all of the fields available from the source data. You can then save the report and modify it in Layout View or Design view.

Follow these steps to create a simple report:

1. In the **Navigation Pane**, click on the Table or query on which you want to base your report.



2. Click on the **Report** button in the Reports group on the Create Tab.



3. Access will automatically build the report and display it in Layout View as seen in the example below.

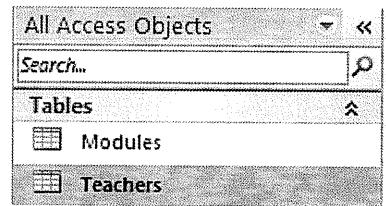
Teachers							Wednesday, 16 May 2012		2:52:13 PM	
TeacherID	Title	LastName	FirstName	EmailAddress	MobileNo	Birthday	BirthMonth			
1	Mr	Moore	James	jmoore@gmail.com	0413624806	26	January			
2	Mrs	Porter	Gwyneth	gwyport@ymail.com	0468613196	4	July			
3	Mr	Stallone	Arnold	arnie4math@gmail.com	0435266303	14	July			
4	Ms	Pattinson	Barbara	bizbad@hotmail.com	0413766799	21	April			
5	Miss	Taylor	Alison	alitaylor12@gmail.com	0423309455	28	May			
6	Mr	Jones	Indiana	indy47@ymail.com	0413891198	11	February			
7	Ms	McAdams	Martha	mcmartha@gmail.com	0403231526	3	November			
7										

**Demonstration****Creating a Simple Report Using the Report Wizard**

The Report Wizard offers you more flexibility when creating your report. When using the wizard to create your report you can choose which fields to include in your report.

To create a report using the Report Wizard:

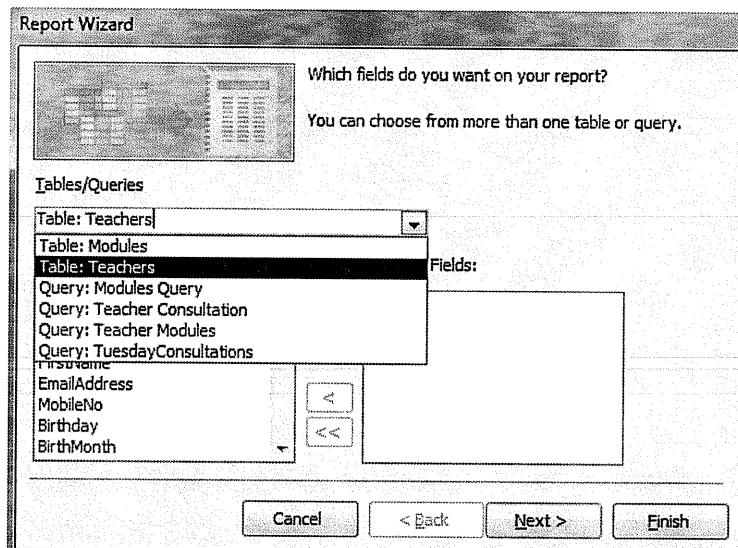
1. In the **Navigation Pane**, click on the Table or query on which you want to base your report.



2. Click on the **Report Wizard** button in the Reports group on the Create Tab.

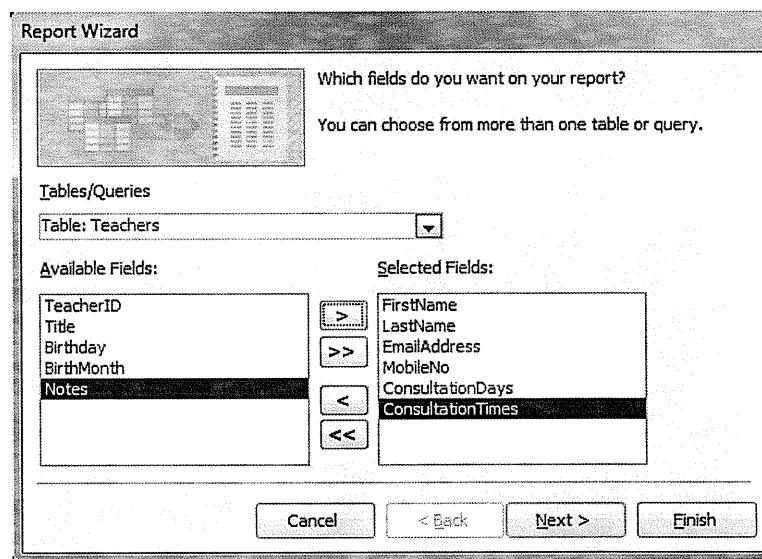


3. The **Report Wizard** window will appear as shown below.

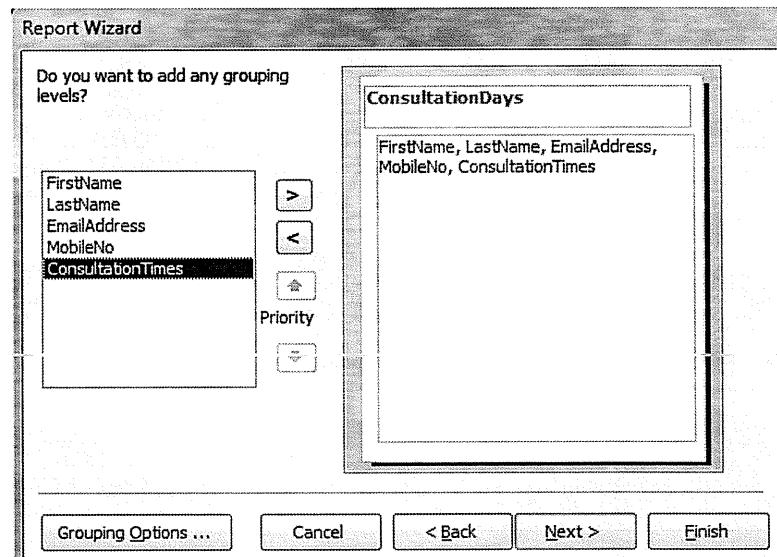


4. In this window, you can choose the Table or query that will serve as the source data for the report from the **Tables/Queries** drop-down box. Access will display a list of Tables and queries available in the database.

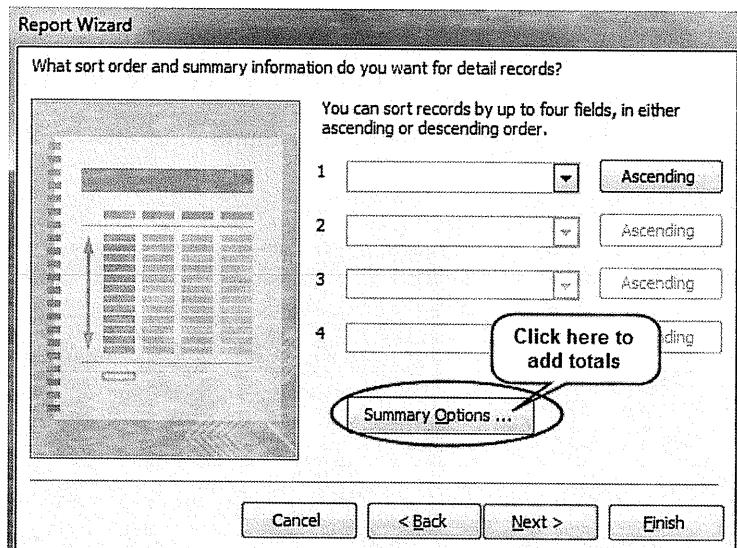
5. Select the fields you want to display in your report. Click on the field in the left column and click on the single arrow to move one field at a time, or click on the double arrow to move all records to the right column. If you make a mistake, click on the field(s) in the right column and select the appropriate arrows to remove the fields.



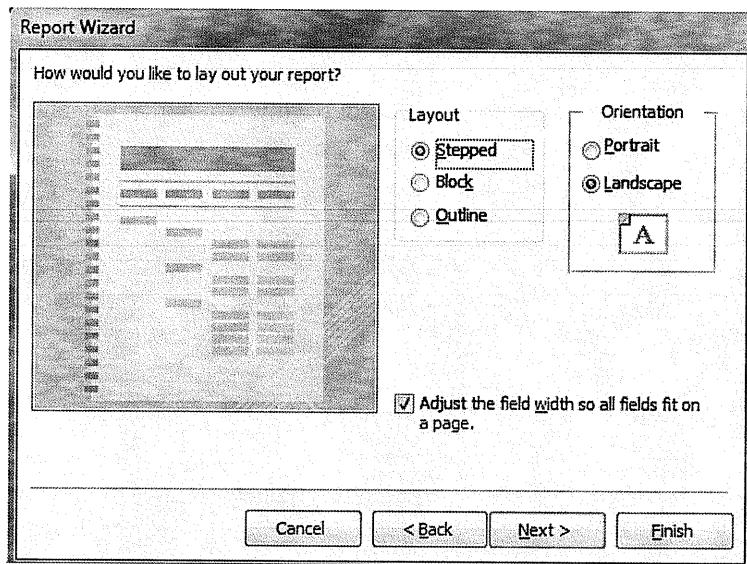
6. Click **Next**.
7. If you wish to group your report by a particular field, select the field name from the list and click on the arrow to move that field. Access will display on the right how your report will be grouped. Click **Next**.



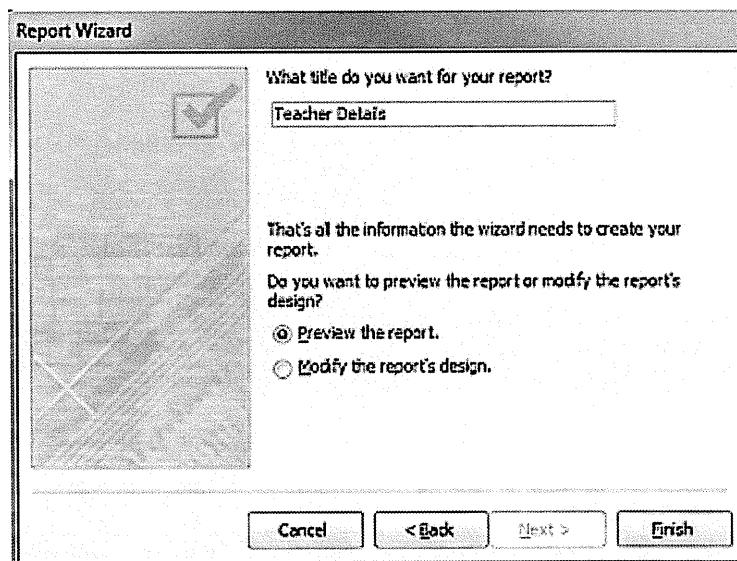
8. If you wish to sort the records, select the field from the drop down list and whether you wish to display in Ascending or Descending order.



9. This screen also allows you to add **Summary Options**. Click on this button to add a calculation (Sum, Avg, Min, Max). This option will only be available if there is a number field that can be used in a calculation.
10. Select the layout for your report. On this screen you can also select the Orientation of the page. Click Next.



11. Type in an appropriate name for your report. Select whether you wish to preview the report or to modify the report in design view.



12. Click **Finish** and your report will appear in Print Preview. Click **Close Print Preview** to return to Report View.

Consultation Day	FirstName	LastName	EmailAddress	MobileNo	ConsultationTimes
Monday & Wed	James	Moore	jmoore@gmail.com	0413624606	4-5pm
Monday afterno	Alison	Taylor	ataylor12@gmail.com	0422308455	4-5pm
Thursday, morn	Barbara	Patterson	bbarb@hotmail.com	0413756799	7-8pm
Tuesday & Thu	Indiana	Jones	IndyJ17@gmail.com	0413891198	4-5pm
	Gwyneth	Porter	gwporter@gmail.com	0468013106	4-5pm
Tuesday aftern	Marta	McAdam	marta.m@outlook.com	0402231526	4-5pm
Wednesday, all	Arnold	Stalone	arnie1math@gmail.com	0435256303	4-5pm

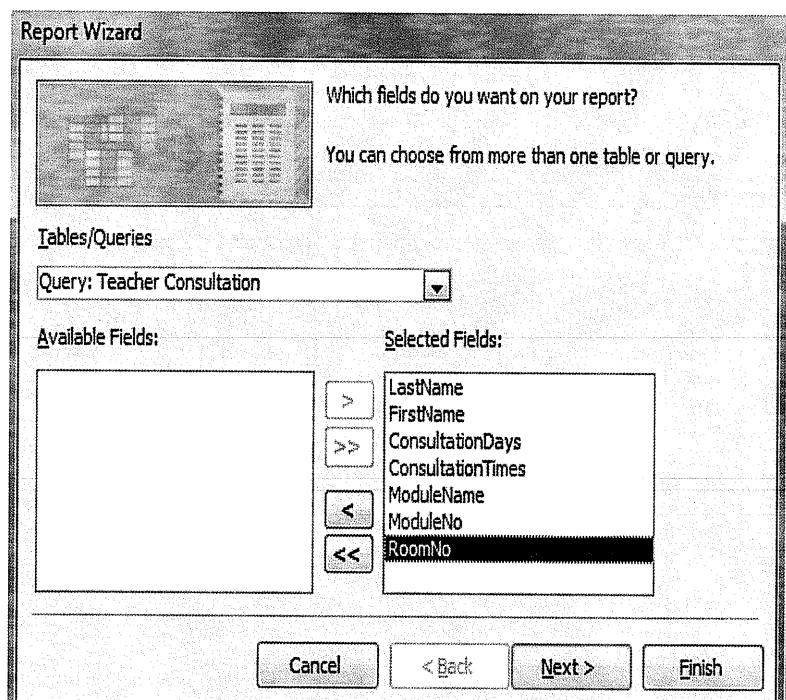


Task 11.7

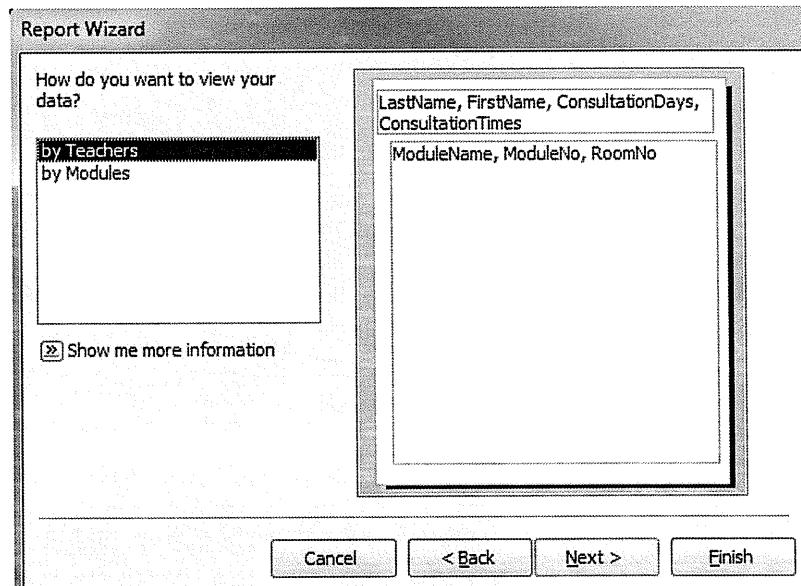
Creating a Report from a Query

For this task you will create a new query and then using the Report Wizard create the report based on that query.

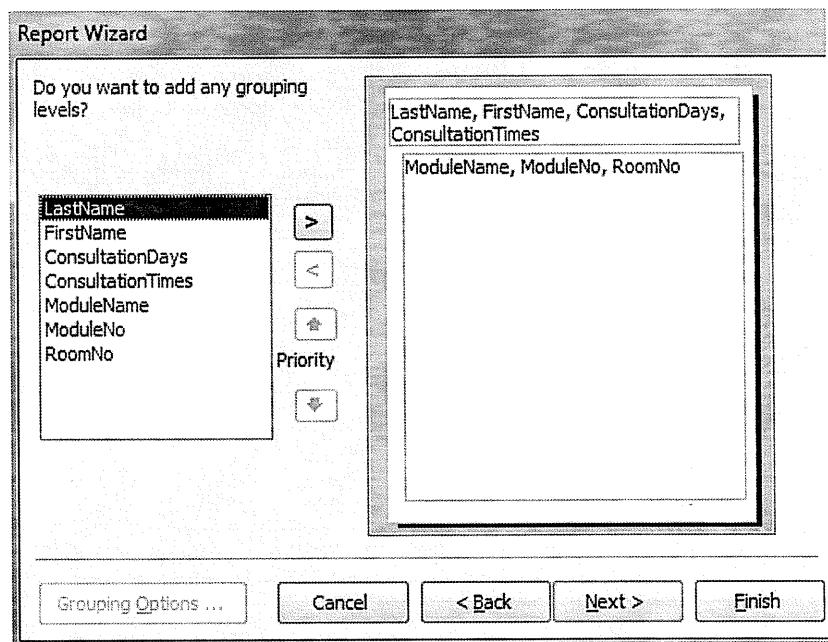
1. Open the *Teachers* database.
2. Create a new query using Query Design.
3. Add both the *Teachers* Table and the *Modules* Table.
4. From the *Teachers* Table add the fields: *First Name*, *LastName*, *ConsultationDays*, and *ConsultationTimes*.
5. From the *Modules* Table add the fields: *ModuleName*, *ModuleNo*, and *RoomNo*.
6. Run the query to ensure that it returns all the correct results.
7. Save the Query as *Teacher Consultation* and close.
8. Select the query *Teacher Consultation* and go to the Create Tab and select the **Report Wizard** button.
9. Add all the fields to the Selected Fields list. Click **Next**.



10. As we are using a query that is based on two Tables, you can select how to view the data. Make no changes and click Next.

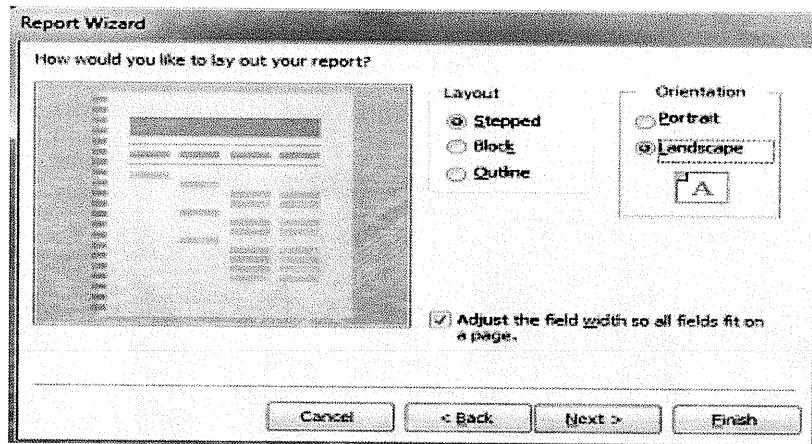


11. Select how you would like to group your report. Again make no changes and click Next.

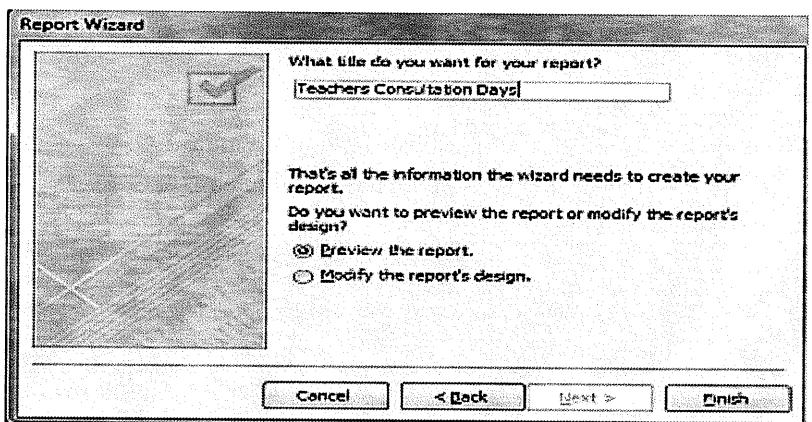


12. Click Next on the Sort screen (make no changes).

13. Change the Page Orientation to Landscape.



14. Name your report *Teacher Consultation Days* and click Finish.



15. Your report will appear in Print Preview. As you can see on the next page, not all of the data is visible.

TeachersConsultationDays

Teachers Consultation Days

LastName	FirstName	ConsultationDays	ConsultationTimes	ModuleName	ModuleNo
Jones	Indiana	Tuesday & Thursday after	4-6pm	Computing II: Data Manag	GAC011
McAdams	Martha	Tuesday afternoon	4-6pm	ACT Assessment Preparati	GAC028
				TOEFL preparation skills	GAC025
				IELTS preparation skills	GAC019
Moore	James	Monday & Wednesday after	4-6pm	Academic English Listening	GAC007
Pattinson	Barbara	Thursday morning	7-8pm	Business Studies	GAC012
Porter	Gwyneth	Tuesday & Thursday after	4-6pm	Academic English Reading	GAC008
Stallone	Arnold	Wednesday afternoon	4-6pm	Maths	GAC010
Taylor	Alison	Monday afternoon	4-6pm	Social Science	GAC027
				Science II: Scientific Princi	GAC013

Thursday, 8 March 2012

Page 1 of 1



Demonstration Modifying the Design of a Report

Modifying the report is not as simple as modifying the design of your form. This section will give a brief overview of modifying the design of your report.

Your teacher will further Demonstrate how to modify the design of your report.

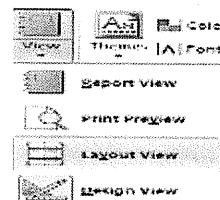
1. Modifying the design of a report using Layout View

To modify the design of your report, change the font, re-arrange the fields, add titles, etc., you will need to access either Layout View or Design View of your report.

Follow these steps to modify a report using Layout View:

1. In the **Navigation Pane**, double-click on the Report which you want to modify the design. The report will open in Report View.

2. Click the down arrow of the View button on the Home Tab and select Layout View.

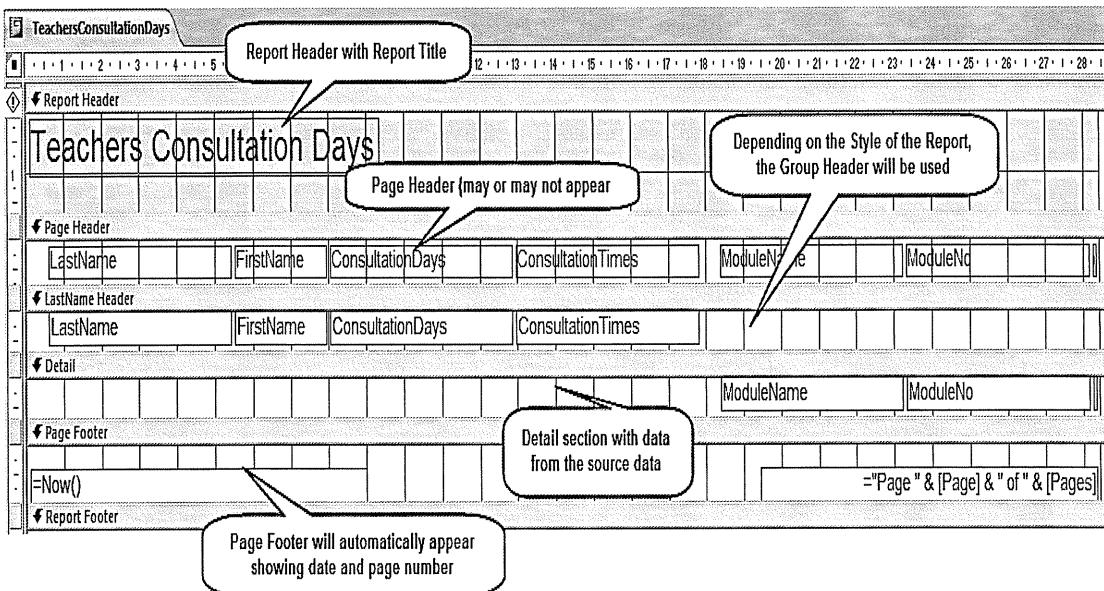


3. This is how your report will appear in **Layout View**. Using Layout View, you can modify your report in a similar way to modifying forms. Labels and Text boxes can be resized using the mouse to click and drag the size of the columns. You can edit the data in the labels; however, the data in the text boxes cannot be edited.

	FirstName	ConsultationDays	ConsultationTimes	ModuleName
Jones	Indiana	Tuesday & Thursday afternoon	4pm	Computing I
McAdam	Martha	Tuesday afternoon	4pm	ACT Assessment

2. Modifying the design of a report using Design View:

1. In the **Navigation Pane**, double-click on the Report which you want to modify the design. The report will open in Report View.
2. Click the down arrow of the **View** button on the Home Tab and select **Design View**.
3. This is how your report will appear in **Design View**. Reports have three different sections:



- **Header Sections:** Report Header appears only on the first page, whilst the Page Header appears on every page. The Group Header will appear above each group. The Field titles (labels) will appear in either the Page Header or the Group Header sections depending on the report style used. In the above example, the headings appear in the Page Header section with the Title Header (group) display the source data.
- **Detail Section:** The detail section contains most of the information in the report. This is where your data will appear.
- **Footer Sections:** The **page footer** appears on every page and will automatically contain the date and the page number. The **report footer** appears once, at the end of a report and will contain information such as a grand total.

The information in the Header and Footer sections can be changed, re-organised and formatted as required.

The Detail Section fields can be re-organised and formatted, however, **DO NOT** edit the fields. If you do, this will result in an error.



Demonstration Formatting Reports

In Layout View, you can edit the Field Labels and format the different parts of your report.

Follow these steps to format a report using Layout View:

1. Open your Report in **Layout View**.
2. To re-arrange your fields, click on one of the cells in the column and hold the **Shift** key and select the field label. Drag the field to the required position. Your mouse will turn into a double headed arrow.

Teachers Consultation Days				
LastName	FirstName	ConsultationDays	ConsultationTimes	ModuleName
Jones	Indiana	Tuesday & Thursday afternoons	4:5pm	Computing I: Data Management
McAdams	Martha	Tuesday afternoon	4:5pm	ACT Assessment Preparation TOEFL preparation skills

3. There may be times when you need to resize the columns of the report to ensure that all the data is visible. To resize the field text box or label, click on the object and click and drag to resize.

Teachers Consultation Days				
LastName	FirstName	Consu		
Jones	Indiana	Tuesd		
McAdams	Martha	Tuesd		

4. To edit the field label, click once on the box and then click inside the box to edit the data. **DO NOT** edit the field text box - remember this is the record source linked to your Table. Any changes to this will give you an error.

Teachers Consultation Days				
LastName	FirstName	ConsultationDays	ConsultationTimes	ModuleName
Jones	Indiana	Tuesday & Thursday afternoons	4:5pm	Computing I: Data Management
McAdams	Martha	Tuesday afternoon	4:5pm	ACT Assessment Preparation TOEFL preparation skills



Task 11.8 Modifying the Design of a Report

1. Modify the design of the report you created in Task 11.6.
2. Ensure that all the labels and text boxes are visible.
3. Print a copy of your report.

Teacher Consultation Days						
Last Name	First Name	Consultation Days	Consultation Times	Module Name	Module No	Room No
Jones	Indiana	Tuesday & Thursday afternoons	4-6pm	Computing II: Data Management	GAC011	18
McAdams	Martha	Tuesday afternoon	4-5pm	ACT Assessment Preparation Skills	GAC026	20
				TOEFL preparation skills	GAC025	10
				IELTS preparation skills	GAC019	20
Moore	James	Monday & Wednesday afternoons	4-5pm	Academic English Listening and Speaking Skills	GAC007	20
Pattinson	Barbara	Thursday morning	7-8pm	Business Studies	GAC012	15
Porter	Gwyneth	Tuesday & Thursday afternoons	4-5pm	Academic English Reading and Writing Skills	GAC008	20
Stallone	Arnold	Wednesday afternoon	4-6pm	Maths	GAC010	10
Taylor	Alison	Monday afternoon	4-5pm			

Thursday, 8 March 2012

Page 1 of 2

Part D

Unit Review



Unit Review

In your own time, review the following topics covered in this unit:

- Forms
- Reports

Review all the activities you have completed in this unit and make sure that any questions you noted were answered.

Unit 12 Access Integration

Part A	Unit Introduction
Part B	Using Access for Mail Merge
Part C	Unit Review

Part A Unit Introduction

Overview

In this unit, you will learn to:

- use a database Table or query as the Data Source

This unit includes a series of tasks through which you will work to practise the course material. You will be expected to complete some work in your own time. Your teacher will guide you through the unit.



Assessment Event 4

Project 2 - Database

Assessment Event 4: Project 2 - Database is due **at the end of this unit**.



Assessment Event 5

Course Work

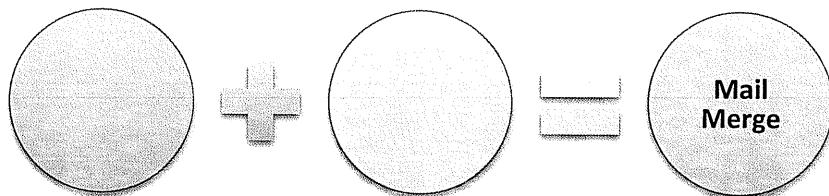
Assessment Event 5: Course Work is due **at the end of this unit**.

Part B**Using Access for Mail Merge**

In Unit 6 Part C, you learnt about a feature of Word called 'Mail Merge'.

Think back to this unit.

Which two documents does mail merge require?



In this unit, you will learn to use an Access query as the Data Source document.

**Task 12.1****Creating a Merge Data Document**

1. Open your *CampusBank* database.
2. Create a query called *CustomerBalance* using the following fields from both the **Customers** Table and the **Accounts** Table:

Customers Table:	Accounts Table:
<ul style="list-style-type: none"> • CustomerID • Title • First Name • Last Name • Street • City • State • Postcode 	<ul style="list-style-type: none"> • AccountType • DateOpened • AccountBalance

3. Set the criteria to view only customers who have a **Savings** account.

Your teacher will check that you have created the query correctly.

The screenshot shows the Microsoft Access interface. At the top, there are two windows: 'Tables' on the left and 'CustomerBalance' query design grid on the right. The 'Tables' window lists the 'Customers' and 'Accounts' tables. The 'CustomerBalance' query grid has the following structure:

Field:	CustomerID	Title	FirstName	LastName	Street	City	State	Postcode	AccountType	DateOpened	AccountBalance
Table:	Customers	Accounts	Accounts	Accounts							
Show:	<input checked="" type="checkbox"/>										
Criteria:									"Savings"		
or:											



Task 12.2

Creating the Main Document

1. Start a new Word document and save with the name *Customer Balance Letter*.
2. Enter the text from the box below into your document:

Our Reference: _

[Insert the Name and address details here]

Dear _,

Our records show that you currently have a _ account with us.

Your account was opened on the _, and the balance for this account is _.

Yours sincerely,

[Your Name]

3. Save the document.

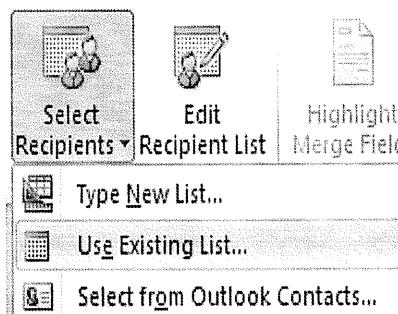
This is your Main Document, now you need to select the Recipient List (Data Source) and insert fields into your Main Document.



Task 12.3

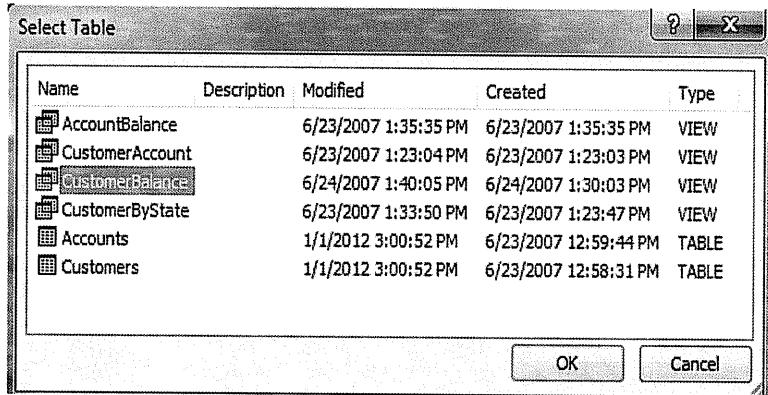
Selecting the Recipient List (Data Source)

1. If your *Customer Balance Letter* document is not open, open it now.
2. Click on the **Mailings** Tab on the ribbon and click on the **Select Recipients** button.



3. Click on **Use Existing List** to select a previously created Recipient List. When this option is chosen, the **Select Data Source** dialog box will appear.
4. From the dialog box select your database entitled *CampusBank* and click **Open**.

5. You will be presented with the following screen asking which Table or query to select. Select the *CustomerBalance* query and click **OK**. Note that both Tables and queries are automatically listed in this screen.



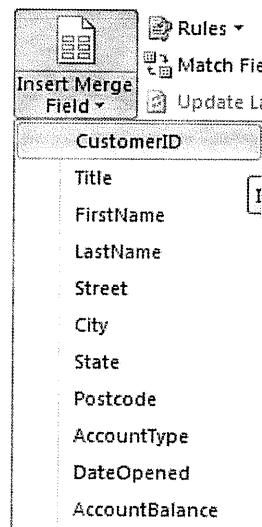
Now you need to insert the fields into the correct places in your Main Document.



Task 12.4

Inserting Merge Data Fields

1. Select the underline in the first sentence ‘Our Reference: _’. Make sure that the underscore ‘_’ is highlighted.
2. Click on the **Insert Merge Field** button on the **Mailings** Tab.
3. Select *CustomerID* from the list of fields.



4. You should now see something like ‘Our Reference: «CustomerID»,’ in your document.
5. Insert the other fields into the appropriate locations in your Main Document.

6. Check with other students and your teacher to see if your document is correct.
7. Save your document.

Do not delete any part of the inserted field! Your document should look as follows:

Our Reference: «CustomerID»

«Title» «FirstName» «LastName»
«Street»
«City» «State» «Postcode»

Dear «Title» «LastName»,

Our records show that you currently have a «AccountType» account with us.

Your account was opened on the «DateOpened», and the balance for this account is «AccountBalance».

Yours sincerely,

Student Name

You now have a Main Document that includes information from your Access Data Source.

To view the Merged Documents follow the instruction ‘View Merged Documents’.

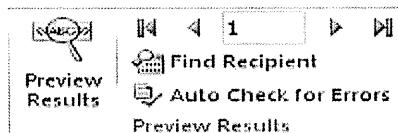


Task 12.5

Viewing Merged Documents

Once all the fields have been inserted, preview the results of the merge before you print your letters.

1. Click on the **Preview Results** button on the **Mailings Tab**.



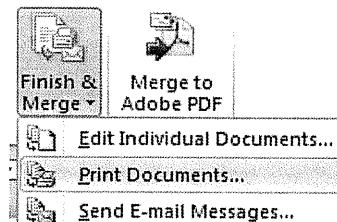
2. Your document should now show the details from the Recipient List (or Data Source document).
3. To view the other Merged Documents use the record selectors:



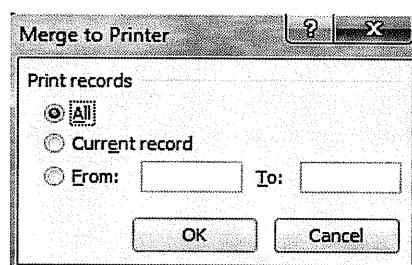
4. Each time you click you will see another document with different information taken from your Recipient List.
5. Click on the **Preview Results** button again and your document will now show only the field names.

**Task 12.6****Printing Merged Documents**

1. Click on the **Finish & Merge** button on the **Mailings Tab**.
2. Select **Print Documents**.



3. You will see the following dialog box.



4. If you wish to print all the Merged Documents (records) then just click **OK**. Otherwise choose which records you wish to print.

You have now learnt how to use Access to create a Data Source to be merged with a Word document. You should now practise the tasks in this section.

Remember, the steps are the same as using a Word Table for the Data Source. There is just one extra step, that of selecting which database Table or query your data is on.

Part C

Unit Review



Unit Review

In your own time, review the following topic covered in this unit:

- Using Access for Mail Merge

Review all the activities you have completed in this unit and make sure that any questions you noted were answered.



Task 12.7

Creating a Database for Snappies Pet Shop

Complete the following exercise to revise some of the functions covered in Units 7-12.

See your teacher if you have any problems or questions.

Scenario

You have been asked by the Manager of **Snappies Pet Shop** to create a Database that will hold information about their customers and pets. Using the customer details below, plan and design a simple database for the Pet shop. Snappies has many customers who may have more than one pet.

Customer details:

Mrs Mary Andrews' client id is 1001. Her address is 34 Sandy Rd, Sydney, NSW, 2000. Her phone number is 97257896. She has two dogs as follows:

- Lassie, Male, born 1/5/1998 – microchip number 123456
- Zachary, Male, born 1/12/1999 – microchip number 458963

Mr Bill Smithers' client id is 1002. His address is 2 Hunter St, Montrose, TAS, 7010. His phone number is 92733987. He has a cat and bird as follows:

- Cat, Matthew, Male, born 1/05/1997 - microchip number 478569
- Bird, Jennifer, Female, born 3/12/2000 - microchip number 895632

Mr John Robbins' client id is 1003. His address is 255 Elizabeth St, Melbourne, VIC, 3000. His phone number is 62348941. He has a rabbit called Mus which is a male. Mus was born on the 2/03/2001 and his microchip number is 587596.

Ms Jane Haig's client id is 1004. Her address is 27 William St, Sydney, NSW, 2000. Her phone number is 97856963. She has a cat called Tippy, which is a Female who was born on 12/04/2000. Tippy's microchip number is 895624.

Task 1: Planning and designing the Tables

Design the database on paper, using the information above. Remember to write your name on the paper.

- Identify the Tables you require for the information.
- Identify the data (fields and records) that you want to store in each Table.
- Determine the appropriate field data types and sizes.
- Identify the primary key(s).
- Establish the relationship that may exist between the Tables.

When you have completed this task, submit your design to your teacher.

Task 2: Creating the Database

- Create a database called **VET**.
- Create a **Owners** Table with the following fields:
 - ClientID
 - Title
 - First Name
 - LastName
 - Address
 - Suburb
 - State
 - Postcode
 - Phone
- Create a **Pets** Table with the following fields:
 - MicrochipID
 - PetName
 - PetType
 - PetGender
 - PetBirthDate
 - ClientID
- Ensure you set the appropriate data types and field sizes.
- Create the relationship between the Tables.

Task 3: Create Queries

- Create a query that will include the ClientID, Names and Suburb from Owners Table and select MicrochipID, PetName, PetType and PetGender from the Pets Table. Save the query as *PetDetails*.
- Create a query that will be used to send out a Mail Merge letter. Include from the Owners Table all the name and address fields. Include also the pet's name, type and birthdate. Only show those clients that have a pet which is a 'cat'. Save the query as *PetType*.

Task 4: Create a Form

Create a form for the Owners Table using all the fields. Save the form as 'Owners'.

Modify the form as follows (see sample below):

- Add as a title *Snappies Pet Shop*.
- Format the title.
- Format the Field Labels.
- Move the fields around so that Phone comes before Address.
- Change the Tab order of your fields so that Phone comes before Address.
- Change the background colour of your form.
- Insert an appropriate graphic.

Screenshot of an Microsoft Access form titled "Owners". The form displays data for a client named Mary Andrews. The fields and their values are:

Client ID	1001	Phone	97257896
Title	Mrs		
First Name	Mary		
Last Name	Andrews		
Address	34 Sandy Rd		
Suburb	SYDNEY		
State	NSW		
Post Code	2000		

A small graphic of a woman holding a child is displayed on the right side of the form. The status bar at the bottom shows "Record: 1 of 3" and various navigation buttons.

Task 5: Create Reports

Create a report based on the PetDetails query. The report should be viewed by Owners and grouped by ClientID. Create the reports using Landscape orientation. Modify the reports to:

- Include an appropriate title.
- Ensure that the headings and data are visible.

Task 6: Create a Mail Merge

The manager has requested that you send out a letter to the owners of cats advising them that there will be a Cat Show and that the shop would love to invite them to attend.

- Use the PetType query as your data source and type the following letter to be used as your main document. Save the letter as *PetLetter*.

[Name and address details to be added]

Dear _,

On the 20 July we will be holding a Cat Show at **Snappies Pet Shop**.

Our records indicate that you are the owner of a cat, and that your pet's name is _, who was born on the _.

It is our pleasure to invite you to attend the Cat Show with your pet. If you are able to attend, please call us on 9786-4433.

Regards,

[Student Name]

Manager

- Insert the merge fields in the appropriate positions.

The mail merge letter with the fields should look as follows:

```
«Title» «FirstName» «LastName»  
«Address»  
«Suburb» «State» «PostCode»
```

Dear «FirstName»,

On the 20 July we will be holding a Cat Show at **Snappies Pet Shop**.

Our records indicate that you are the owner of a cat, and that your pet's name is «PetName», who was born on the «PetBirthdate».

It is our pleasure to invite you to attend the Cat Show with your pet.

If you are able to attend, please call us on 9786-4433.

Regards,

[Student Name]
Manager

- Print a copy of your merged letters.

Task 7: Create Documentation

Create user documentation for the database. Some details that can be mentioned in the user documentation are: the date and author of the database, the purpose of the database, the target users, any constraints, and any other information that you think may be necessary to include in the user document.



Assessment Project 2 - Database

Event 4

This project is **now due** and should be submitted to your teacher for marking.



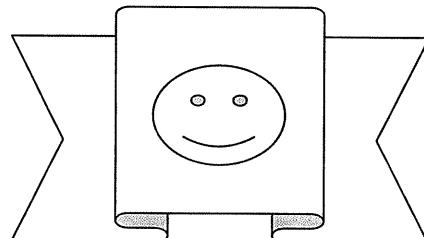
Assessment Course Work

Event 5

Assessment Event 5: Course Work is **now due**.

Congratulations!

You have completed **GAC011 Computing II: Data Management**.



Appendix 1 - Excel 2010 Quick Reference

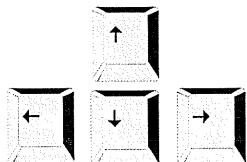
1. The **Quick Access Toolbar** contains a set of commands that are independent of the Tab currently displayed.
2. The **Tab Row** contains commands that relate to a type of activity, such as formatting a page.
3. **Title Bar** shows the name of the program that is opened and the title of the workbook. A **Workbook** is the file in which you work and store your data.
4. **Minimise, Restore, Close** will reduce, restore and close Excel files.
5. **Minimise the Ribbon** will minimise the Ribbon and only show the Tab names.
6. **Help** opens the Excel Help window.
7. **Groups** contain groupings of commands that relate to specific activities such as the Clipboard, Font and Editing.
8. **Dialog Box launcher** opens a dialog box or task pane.
9. **Formula Bar** displays the contents of the active cell. Contents can be entered or edited from this bar or directly in the cell. Formulas can be written using a **Cell Range** which is the address of a group of cells, e.g. A1:A5.
10. The **Ribbon** is organized into groups, which are collected together under Tabs.
11. **Cell Reference** the column letter and row number that gives the address for that particular cell, e.g. A1. The area where the cell reference is shown is called the **Name Box**.
12. **Label** - A label can be a heading for a row or a column and can be text or numbers.
13. **Active Cell** - The current cell - when you click to select a cell it appears with a black border.
14. **Cell** - The intersection of a row and column.
15. **Values** can be numbers or dates that are entered into a cell.
16. **Row** is horizontal and is labelled with a number. The **Row Heading** is the left grey column of the spreadsheet that uses numbers to identify rows of a spreadsheet.
17. **Column** is vertical and labelled with letters. The **Column Heading** is the top grey row of the spreadsheet that uses letters to identify columns.
18. **Sheet Tabs** display the name of the spreadsheets available in a workbook. The current spreadsheet's Tab is white while the inactive sheets are grey. To move to a different spreadsheet click on the spreadsheet's Tab. A **Worksheet** is a 'page' consisting of cells organised into columns and rows. Excel 2010 initially gives you one worksheet - extras can be inserted.
19. **Horizontal Scroll Bar** allows you to move to the left or right.
20. **View Icons** shows the different views of the worksheet available.
21. **Zoom Slider** allows you to zoom in or zoom out of the worksheet.
22. **Vertical Scroll Bar** allows you to move through your document.

Appendix 2 - Access 2010 Keyboard Navigation Quick Reference

The Keyboard

By pressing certain keys or combination of keys, you can quickly move around a spreadsheet. Navigating via the keyboard is useful if you know the particular cell or area of the spreadsheet you are trying to find.

Arrow Keys move the cursor one **cell** at a time in each direction.



Navigation area	Keyboard combinations
One cell to the right	Tab
Back one cell to the left	Shift + Tab
One cell down	Enter
Move to the beginning of a worksheet	Ctrl + Home
Move to the last used cell in worksheet	Ctrl + End
Move to the beginning of a row	Home
One screen up	Page Up
One screen down	Page Down
Move one screen to the right	Alt + Page Up
Move one screen to the left	Alt + Page Down

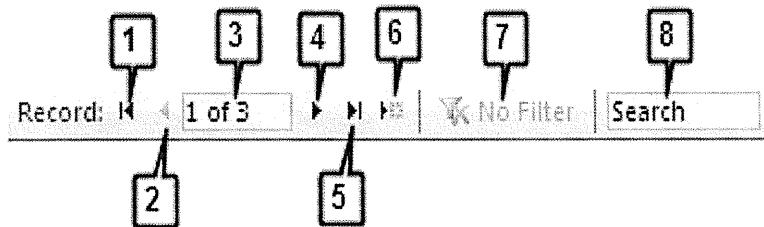
Appendix 3 - Access 2010 Quick Reference

1. The **Quick Access Toolbar** contains a set of commands that are independent of the Tab currently displayed.
2. **Title Bar** shows the name of the program that is opened and the title of the database.
3. **Minimise, Restore, Close** will reduce, restore and close Access files.
4. **Help** opens the Access Help window.
5. The **Tab Row** contains commands that relate to a type of activity, such as formatting data.
6. The **Ribbon** is organized into groups, which are collected together under Tabs.
7. **Dialog Box launcher** opens a dialog box or task pane.
8. **Groups** contain groupings of commands that relate to specific activities such as the Views, Clipboard, Font and Records.
9. A **Record** (row) is a group of related fields.
10. A **Data Value** is one item of data, such as a single phone number.
11. A **field** (column), or category of information, is the smallest piece of information.
12. **The Navigation Pane** - The area on the left side of the window. It displays the database objects, e.g. Tables, Forms, Reports, etc. The Navigation Pane replaces the Database window found in some earlier versions of Access.
13. **Record Selectors** enable you to move through one record at a time to locate a specific record or go to a specific record or to the first or last record.
14. **Filter Indicator** displays whether the records have been filtered or not.
15. **Search box** enables you to quickly search for a record with a matching value.
16. **View Icons** enables you to switch between the different Access views, for example, Datasheet View and Design View.

Appendix 4 – Moving between Records in Access 2010

Moving Between Records

The buttons at the bottom of a form enable you to move back and forth among the records quickly and easily. Remember that you are always looking at one record at a time.



1. **First Record** moves you to the first record.
2. **Previous Record** moves you one record up.
3. **Current Record** displays the number of the current record and the total number of records.
4. **Next Record** moves you down one record.
5. **Last Record** moves you to the last record of the form.
6. **New (Blank) Record** adds a new record to the end.
7. **Filter indicator**
8. **Search box**

