

Easy Steps



Unit 2784 (v7)

**Create and use a computer
spreadsheet to solve a problem
with
Microsoft Excel 2010**

- ☒ Easy to follow
- ☒ Step-by-step instructions
- ☒ Covers Unit Standard Criteria

A Cheryl Price Publication

Unit Standard 2784 (Version 7)

Create and use a computer spreadsheet to solve a problem – Excel 2010

This book covers the course outline for the following New Zealand Qualifications Authority Unit Standard:

Unit Standard 2784 - GENERIC COMPUTING (Level 2, Credit 3)
Create and use a computer spreadsheet to solve a problem

All topics in this Unit Standard are included in this book.

Retrievable exercise files are used with this book and listed on page viii. These are available as a free download from our web site at www.cherylprice.co.nz. Instructions for downloading the exercises are included on page ix.

This book has been written using Microsoft Excel 2010 with Windows 7.

Free Resource: A free resource "What is a Spreadsheet" (with manual exercises) is available on our Resources page at www.cherylprice.co.nz. This is an excellent resource for total beginners to spreadsheets or for those students who have difficulty understanding spreadsheet concepts.

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T.Dip.WP, T.Dip.T.

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Introduction

Welcome to Unit Standard 2784 v7 Create and use a computer spreadsheet to solve a problem with Microsoft Word 2010.

This book has been written using Microsoft Excel 2010 with Windows 7. (The Windows 8 operating system can be used. However screen shots will differ slightly from those shown in this book.)

Retrievable Exercise Files

Some exercise files have been created for you to prevent time in keying in many exercises. You can then open these files and use the features of Excel to manipulate and format text.

A list of these files is shown on page viii and instructions for downloading these files from our web site are included on page ix.

What you will learn

In this course you will learn how to –

Create and use a computer spreadsheet to solve a problem:

- Plan a spreadsheet to solve a problem using a supplied brief
- Create a spreadsheet to solve a problem using a supplied brief
- Use the spreadsheet to provide a solution to the problem

How you will learn

This book is divided into sections. Each section page lists the learning outcomes for that section. You will work through each section and do all exercises (or those instructed by your tutor).

Revision theory is included at the end of most sections followed by a Practice Assessment. Our books include accumulation and consolidation of learning which carries across each section.

After you have completed the book your tutor will give you the actual Unit Standard Assessment.

Word meaning boxes

Sometimes you will see a box at the left side of the page of a line that has dotted underlining.

This box will contain information to help you understand the meaning of the underlined word (or how that word is formed). An example is shown below.

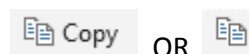
forecast
= to
calculate a
future
result

Data can therefore be altered to re-calculate budgets and to **forecast** results using different sales figures. Worksheets can be saved, opened and printed as required.

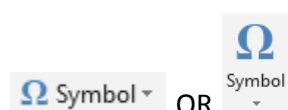
Different Excel buttons

Depending on the size of your Excel screen, buttons on the ribbon may vary to those shown in this book. The icon with the word of that feature may show, or the icon only.

For example, the Copy button in the Clipboard group on the Home tab may be displayed in either of the following ways.



The Symbol button can show as either -



Shortcut keys

Shortcut keys are indicated in the left margin, usually the first time they are used. An example follows.

Ctrl S

- 1 Click on the Save button  on the Quick Access Toolbar .
- 2 Type a file name for your document then click on Save.

Glossary

Generally when a word(s) is first used that is a technical term or a word that you may not know that relates to an exercise, or a particular Excel 2010 feature, a description is given. You will also see that such words are in **bold**.

These terms are listed on each section page, an example is shown below. Explanations are also included in the Glossary at the end of the book.



In this section you will come across the following words highlighted in bold. This indicates that the word is included in the Glossary at the end of the book together with a description of that word.

Arguments
Backstage View
Cell reference
Cells
Charts

Data
Default
Dynamic
Exponential format
Fill handle

Formula
Functions
Gridlines

Icons used in this book

This book contains icons to help guide you in your learning.

The following list shows the icon and its meaning.



Learning Outcomes

Learning Outcomes are displayed on the section page and describe what you will learn in that section.



EXERCISE 1

These are the exercises that you are required to do. Often there will be an introduction sentence to tell you what you will be doing in that exercise.



These are notes for your information.



Revision

This appears at the end of most sections and contains theory revision questions relating to features learnt in that section.



Practice Assessment

Each practice assessment covers consolidation of topics learnt in that section and provides practice for students prior to sitting the actual Unit Standard Assessment.

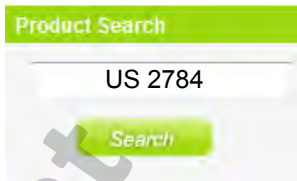

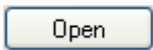

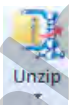


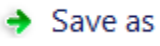
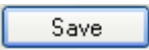
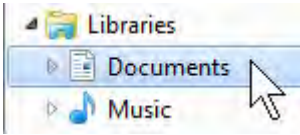
Exercise Files used in this book

(Instructions are included on the previous page for downloading retrievable files from our web site at www.cherylprice.co.nz)

Names of files	
Atrium	Lifestyle Books
Balance Sheet	Peter Hamilton Transport
Brighton Winery	Play Time Daycare
Chatswood	Premier Books
Costello's Product Sales	Quotation
Creative Caps	Retirement Scheme
Delphine's Cooking School	Sales Commission
Eats and Treats	Spreadsheet Plan
Enrolments – 2015	Sunshine Flowers
Fashion House	Tracey's Budget
Fashion Xpress	Trade Supplies
Fiji Landing Apartments	Wilson Markers
Housekeeping Services	

Downloading Exercise Files

The exercise files listed on the previous page can be downloaded from the Cheryl Price web site using the instructions below.

1	In your web browser, type: www.cherylprice.co.nz	
2	Press Enter on the keyboard to display the Cheryl Price website.	
3	Click in the Product Search box and type the number of this unit standard, as shown at the right.	
4	Click on  .	
5	Click on US 2784	
6	Under the Exercise Files heading click on the underlined blue hyperlink, ie Book Exercise Files – V7 Excel 2010 Free Download The File Download dialog box will display.	
7	If you have Winzip use the following instructions otherwise move to step 8.	
	a Click on  .	
	b Click on the  of the  button.	
	c If My Documents folder is not displayed click on Set default unzip folder at the bottom of the list. Ensure My Documents is selected then click on Select Folder.	
	d Click on the  of the  button and click on the My Documents folder. The files will be unzipped.	
8	Click on  Save as then click on the Documents folder shown at the right. Click on  .	
9	Click on Open Folder which will display My Documents folder. Right click on the zipped exercise file and select Extract All. Click on Extract. A folder will be created containing the exercise files.	

NZQA Outcomes and Evidence Requirements

Unit Standard 2784 (Version 7)

Title	Create and use a computer spreadsheet to solve a problem		
Level	2	Credits	3

Purpose	People credited with this unit standard are able to: plan and create a spreadsheet to solve a problem using a supplied brief; and use the spreadsheet to provide a solution to the problem.
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Classification	Computing > Generic Computing
-----------------------	-------------------------------

Available grade	Achieved
------------------------	----------

Explanatory notes

- 1 The supplied brief must clearly identify the problem and the outcomes required from the solution. The brief must contain requirements against which the success or otherwise of the spreadsheet can be evaluated.
- 2 A *plan* outlines how the requirements of the brief will be realised. For this unit standard, the plan may be informal, and may be modified during the task and changes justified. It may be appropriate to produce some evidence of it during task completion rather than prior to starting the task or project. Evidence of planning may be oral, written, and/or graphic.
- 3 Legislation relevant to this unit standard includes but is not limited to the:
Copyright Act 1994;
Copyright (New Technologies) Amendment Act 2008
and any subsequent amendments.
- 4 An assessment resource to support computing unit standards (levels 1 to 4) can be found on the NZQA website at www.nzqa.govt.nz/asm. '*The Computing Process - a clarification document*' contains further information and can be found on the NZQA website.

Outcomes and evidence requirements

Outcome 1

Plan a spreadsheet to solve a problem using a supplied brief.

Evidence requirements

- 1.1 The plan identifies the purpose, specifications and features required for the spreadsheet in accordance with the brief.

Outcome 2

Create a spreadsheet to solve a problem using a supplied brief.

Evidence requirements

- 2.1 Data is entered and formatted to create the spreadsheet required by the brief.
- Range formatting may include but is not limited to – column width, alignment, text, number formats.
- 2.2 Spreadsheet cell functions and formulae are entered and accuracy and data integrity against original sources is confirmed.
- Range includes but is not limited to – add, subtract, multiply, divide, sum, average, maximum.
- 2.3 The spreadsheet is saved according to the requirements of the brief.
- Range may include but is not limited to – file type, file name, location.

Outcome 3

Use the spreadsheet to provide a solution to the problem.

Evidence requirements

- 3.1 Entered data is manipulated to provide the solution required by the brief.
- Range may include but is not limited to – new data added, formulae amended.
- 3.2 Graph appropriate to the solution is created in accordance with the brief.
- Range two different types of graphs.
- 3.3 The completed spreadsheet and graph are printed out in hard copy in a format specified by the brief and are readable.

Planned review date	31 December 2016
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30 September 1994	31 December 2013
Review	2	24 September 1997	31 December 2013
Revision	3	28 July 1998	31 December 2013
Review	4	30 July 2002	31 December 2013
Revision	5	16 July 2004	31 December 2013
Review	6	22 May 2009	31 December 2015
Rollover and Revision	7	19 September 2013	N/A

Consent and Moderation Requirements (CMR) reference	0226
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Spreadsheet Theory

The Excel Screen

Opening and Exploring a Workbook

Creating a New Workbook



Learning Outcomes

At the end of this section you should be able to -

- ☐ Understand what a spreadsheet is
- ☐ Start and exit Excel 2010
- ☐ Understand the Excel 2010 screen
- ☐ Open and explore an existing workbook
- ☐ Create and save a new workbook
- ☐ Enter text, numbers and formulas into a worksheet
- ☐ Apply basic formatting to a worksheet
- ☐ Print a worksheet



In this section you will come across the following words highlighted in bold. This indicates that the word is included in the Glossary at the end of the book together with a description of that word.

Active Cell	Formula Bar	Row Headings
AutoCalculate	Function	Rows
AutoFit	Horizontal Scroll Bar	Screen Tip
AutoSum	Increment	Scroll Box
Backstage View	Insertion Point	Sheet Tabs
Cell Reference	Key Tips	Shortcut Key
Charts	Labels	Shortcut Menu
Column Header Boundary	Mouse Pointer	Spreadsheet
Column Headings	Name Box	Status Bar
Columns	Navigation Pane	Tabs
Default	Non-Adjacent Cells	Title
Dialog Box	Operator Symbols	Values
Dialog Box Launcher	Protected View	Vertical Scroll Bar
Editing	Quick Access Toolbar	Workbook
Fill Handle	Range	Worksheet
Formatting	Ribbon	
Formula	Ribbon Groups	

Spreadsheets

A **spreadsheet** is essentially a large working area composed of **rows** and **columns** (see next page). The intersection of a row and column is called a cell ie where the row and column meet (Day Trippers on the next page is cell A1). Text and numbers are entered into these cells and formulas are used to calculate the data to provide information required.

Microsoft Excel 2010 (or any spreadsheet program) makes calculations easy - it replaces your pencil, paper and calculator. If you change data in a **worksheet**, every **formula** used with that data will automatically recalculate.

forecast
= to
calculate a
future
result

Data can therefore be altered to re-calculate budgets and to forecast results using different sales figures. Worksheets can be saved, opened and printed as required.



In this book Microsoft Excel 2010 will be referred to as Excel 2010.

Spreadsheets are widely used -

- 1 **In industry and commerce for**
 - financial accounts
 - forecasting and projection results
 - recording and comparing data
 - personnel details
- 2 **At home for**
 - budgeting
 - calculations for quantities, eg when painting, wallpapering
 - savings and travelling expenses
- 3 **At schools for**
 - test and examination results
 - timetables
 - school rolls
- 4 **At clubs for**
 - membership fees
 - sports results
 - sponsorship details

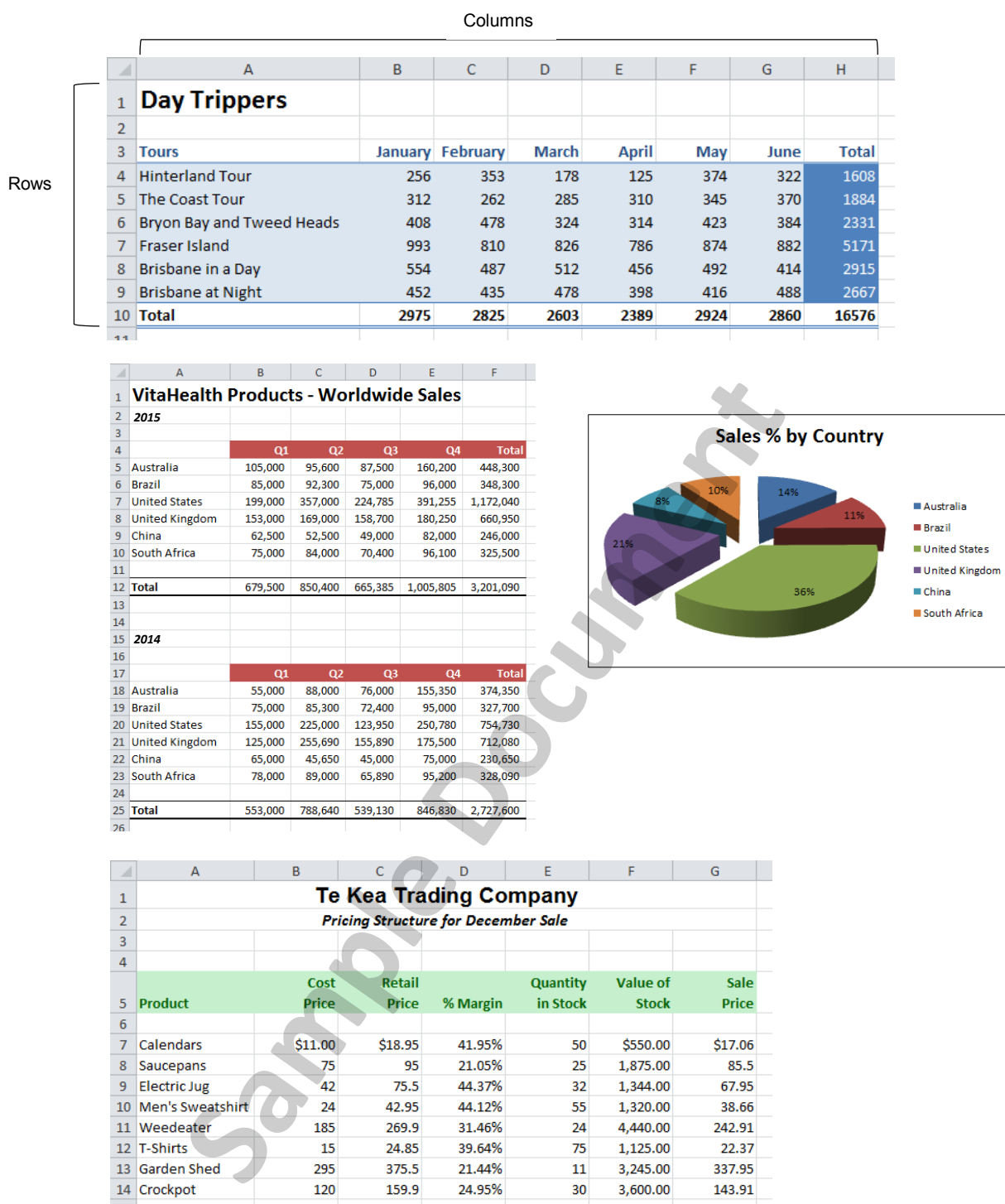
Examples of other spreadsheet programs include Corel Quattro Pro and OpenOffice Calc (the last of which can be freely downloaded from the Internet).

Spreadsheet/Worksheet

The word spreadsheet is a general term for any document created by a spreadsheet program; a spreadsheet is referred to in Excel 2010 as a worksheet. Both of these terms are used throughout this book but they refer to the same thing.

Unit Standard 2784 uses the term spreadsheet, so this word is used to refer to learning points that are directly relevant to the 2784 assessment.

Samples of Spreadsheets



Advantages of Spreadsheets

- Calculations can be performed quickly and easily.
- If data is altered, the calculations automatically adjust.
- **Charts** can be used to visually display data, eg bar, column, pie, line.
- Data can be calculated, grouped and sorted into a specific order for lists, databases, etc. Data within a spreadsheet can then be quickly located.

The Workbook

A **workbook** is a single Excel file. Each new workbook contains three worksheets, which are named as *Sheet1*, *Sheet2*, etc. Worksheets are designed to display different data, eg a company might use a worksheet for each sales branch, then a final worksheet which totals all sales figures from each branch and displays a summary (eg the totals from each worksheet).

Sheet tabs are displayed at the bottom of the screen. You can move from worksheet to worksheet by clicking on a sheet tab, as shown below. (The Insert Worksheet tab is used to add a new worksheet to the workbook.)

Active worksheet (displayed on screen)

Sheet tabs

Insert Worksheet tab

Sydney

Auckland

Christchurch

Each sheet tab can contain different areas/costings, etc within a workbook. A summary of the sheet tabs is often displayed on the first or last sheet tab.

	January	February	March	TOTAL
Coogee	1,080	2,156	3,265	6,501
Mossman	2,387	2,555	2,896	7,838
Lane Cove	1,050	1,195	1,300	
Padstow	1,457	1,895	2,300	
TOTAL	5,974	7,801	9,761	

	January	February	March	TOTAL
Avondale	1,200	1,350	1,475	4,025
St Lukes	1,245	1,145	1,330	3,720
Shore City	1,345	1,435	1,545	4,325
Central	1,600	1,550	1,890	4,990
TOTAL	5,390	5,480	6,240	


	January	February	March	TOTAL
Avonhead	1,500	1,350	1,295	4,145
Papanui	1,455	2,300	1,655	5,410
Woodend	1,267	1,500	1,676	4,443
Lyttleion	1,056	1,875	1,555	4,486
TOTAL	5,278	7,025	6,181	18,484

	January	February	March	TOTAL
Sydney	5,974	7,801	9,761	23,536
Auckland	5,390	5,480	6,240	17,110
Christchurch	5,278	7,025	6,181	18,484
TOTAL	16,642	20,306	22,182	59,130


Starting Excel 2010

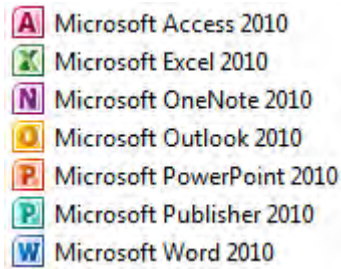



EXERCISE 1

1 Click on the Start button  at the bottom left corner of the screen.

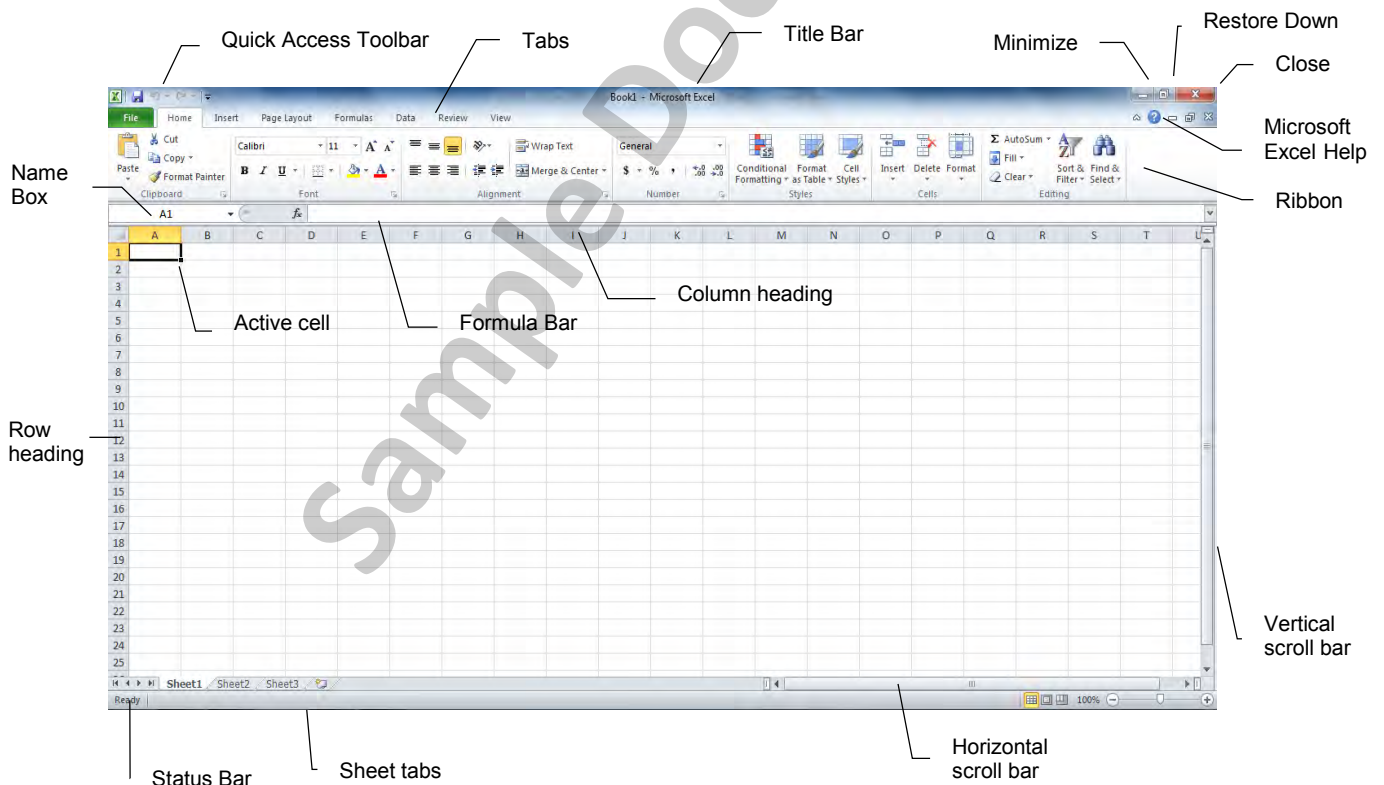
2 Select  All Programs from the Start Menu.

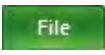
3 Select  Microsoft Office from the Programs menu.



4 Select  Microsoft Excel 2010 from the list to start Excel 2010.

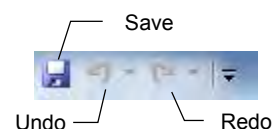
The Excel Screen



The  File tab contains all basic tasks such as opening, saving and printing a spreadsheet.

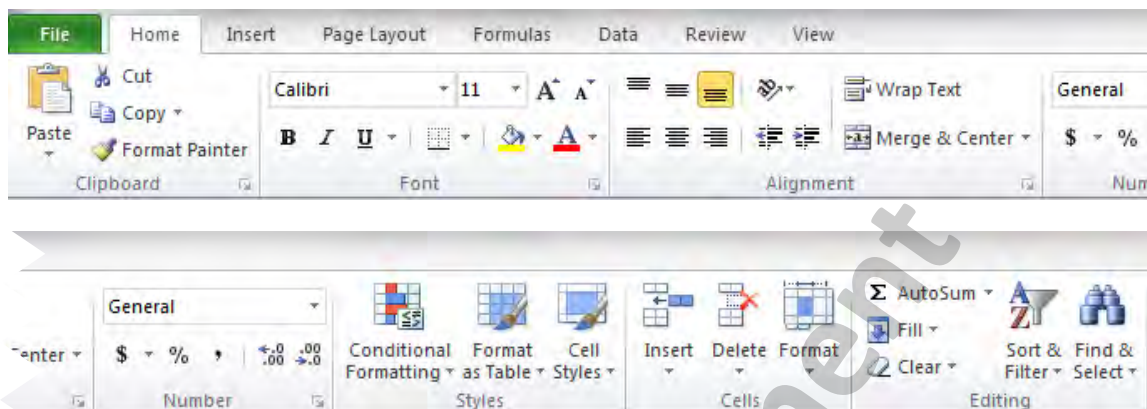
Quick Access Toolbar

The **Quick Access Toolbar** contains commands to Save, Undo and Redo. Frequently used commands can be added to this menu.



The Ribbon

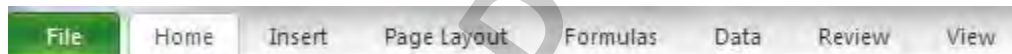
The **ribbon** provides access to all the tools required for working with a spreadsheet.



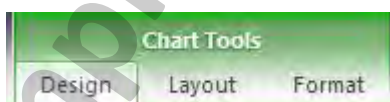
Tabs

Tabs are displayed above the ribbon. The File tab displays a menu but the other tabs are specific to the ribbon; click on the tab to display the ribbon required.

There are seven **default tabs**:



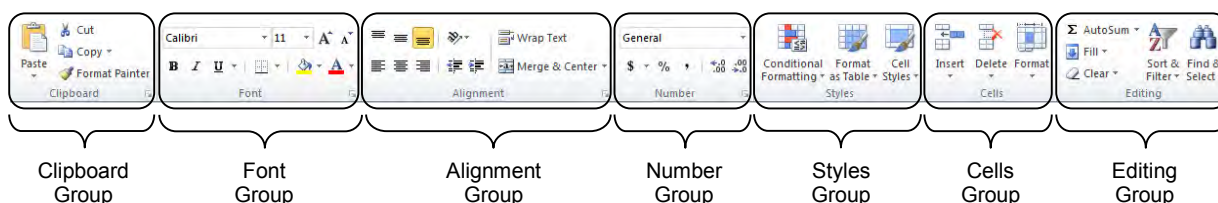
There are also hidden tabs that appear when appropriate, such as the Chart Tools. These are displayed when you are working on a chart and disappear again when you have finished.



Ribbon Groups

Ribbons are split into **ribbon groups**, (eg the Font Group).

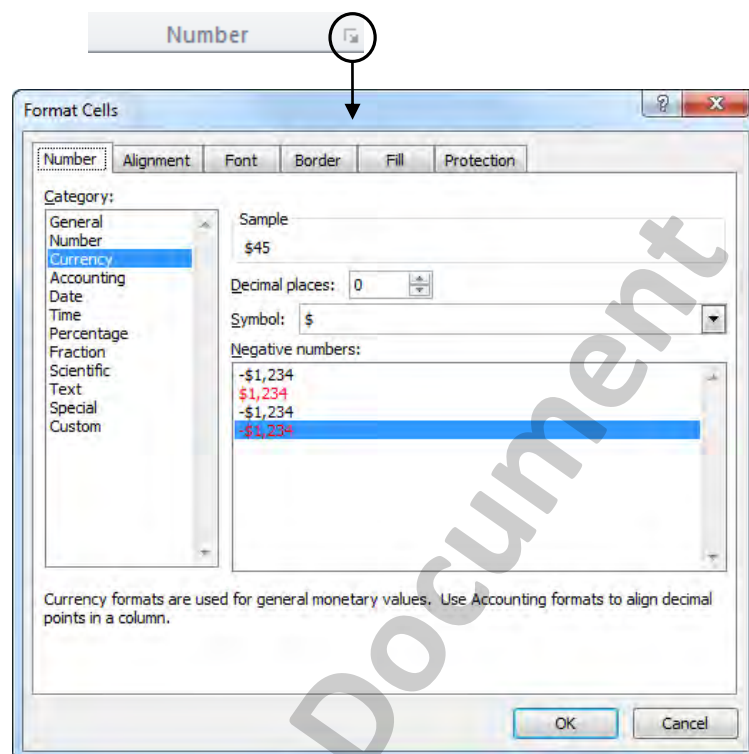
Each group contains command buttons appropriate to a particular action; the font **formatting** tools are located in the Font Group.



Dialog Box Launcher

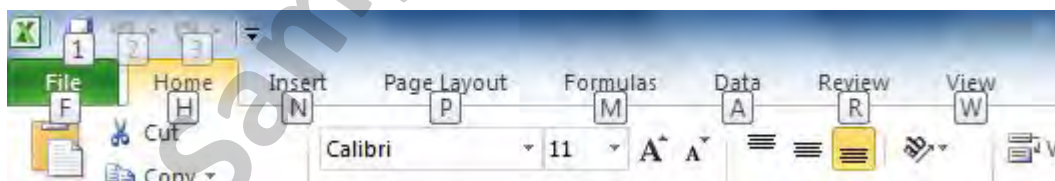
The **Dialog Box Launcher** is the small diagonal arrow in the bottom right corner of some groups. When you click on this button, it displays an associated dialog box.

A **dialog box** usually contains more settings or advanced features. For example, the Number dialog box allows you to make formatting changes to the contents of the current cell ie to change figures to two decimal places.



Key Tips

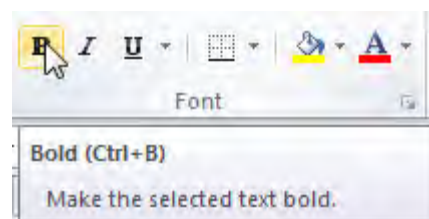
The keyboard can be used to select tabs on the Ribbon and buttons on the Quick Access Toolbar. If you press Alt, **Key Tips** become active.



These small badges (ie Key Tips are labelled with various letters and numbers, that when pressed on the keyboard, will trigger the associated command or function). For example, to save the workbook press Alt and then 1.

ScreenTips

When you rest the **mouse pointer** over a button or command, a **screen tip** appears. This is a small window with a description of that command and any **shortcut key** it may have, eg Ctrl B is a quick way of applying the Bold command.



Opening a Workbook



EXERCISE 2

In this exercise you will open a workbook and look at cell contents which can include labels, values and formulas.

- 1 Click on the **File** tab at the far left of the Ribbon. **Backstage view** will appear which allows you to create, open, print and save a workbook. Excel options, accessing help along with exiting Excel are also available.

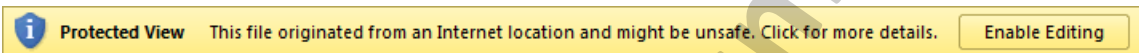
Ctrl O 2 Click on **Open** to display the Open dialog box.

- 3 Double click on the *US2784 v7 Excel 2010 Book Exercise Files* folder, ie **US2784 v7 Excel 2010 Book Exercise Files**.

- 4 Select **Fashion House**. Click on **Open**.



If **Protected View** is turned on the following may appear. Click on **Enable Editing**.



Cell Contents

Microsoft Excel allows you to enter data into any cell in a worksheet. Data may consist of text, numbers or a formula based on selected cells.

Various parts of a worksheet are shown below.

	A	B	C	D
1	The Fashion House - Conference Budget			
2				
3		Australia	America	Britain
4	Air Fares	897.00	1,586.95	2,425.28
5	Accommodation	1,200.00	1,800.50	2,000.00
6	Meals	950.00	1,060.96	1,250.25
7	Car Rental	660.50	501.23	680.25
8	Travel Insurance	80.00	100.00	95.00
9	Total	\$3,787.50	\$5,049.64	\$6,450.78

Labels — points to row 2 and column A

Values — points to row 4 and column B

Formula — points to cell C9 containing `=SUM(C4:C8)`

Cell Reference (D3) — points to cell D3 containing **Britain**

(ie adds the values in cells C4 to C8)

Cell Reference

The intersection of each column and row (ie where they meet) eg cell D3, is referred to as the **cell reference** and shows Britain in the spreadsheet above.

Labels

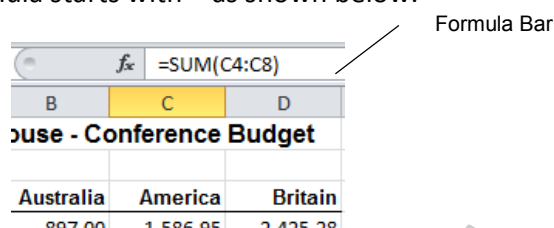
Text/numbers that are not used in a mathematical formula or equation are called **labels**. They help the reader understand different parts of a worksheet, ie **column headings**, **row headings**, **title** of a worksheet, etc.

Values

Values refer to data that is used to calculate results or the end result of a calculation.

Formulas

A **formula** is a mathematical equation using cell references/constraints to produce a result. The result of a formula is seen in the worksheet; clicking on a cell will display the formula itself in the **Formula Bar**. A formula starts with = as shown below.



	Australia	America	Britain
	897.00	1,586.95	2,425.28

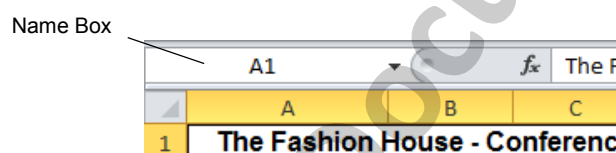
When values change, the result of the formula will be updated automatically in the worksheet.



EXERCISE 3

In the following exercise you will move to a specific cell in the worksheet using the **Name Box** (which currently displays the active cell) and display the data range.

- 1 Click in the Name Box at the top left of the worksheet.



	A	B	C
1	The Fashion House - Conference Budget		

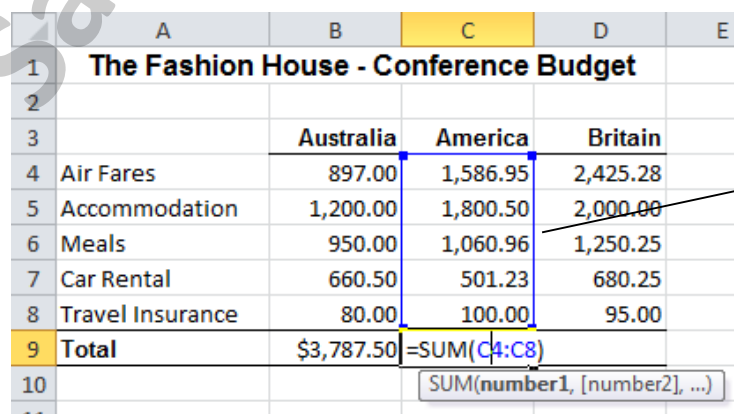
- 2 Type: **C9**
- 3 Press Enter.

The cursor will move to cell C9 within the current worksheet.

The Formula Bar displays the formula that has been used to calculate the total for the America column.

- 4 Double click on the selected cell (C9) to display the data range.

The data range displays cells that are included in the formula.



	A	B	C	D	E
1	The Fashion House - Conference Budget				
2					
3		Australia	America	Britain	
4	Air Fares	897.00	1,586.95	2,425.28	
5	Accommodation	1,200.00	1,800.50	2,000.00	
6	Meals	950.00	1,060.96	1,250.25	
7	Car Rental	660.50	501.23	680.25	
8	Travel Insurance	80.00	100.00	95.00	
9	Total	\$3,787.50	=SUM(C4:C8)		
10			SUM(number1, [number2], ...)		
11					

Data Range

- 5 Press Esc to turn off.

Ctrl W

- 6 Click on **File** and click on **Close**.

- 7 If asked to save changes click on Don't Save.

The formula used to add the total for the America column can be broken down as follows.

$$= \text{SUM}(\text{C4:C8})$$

Equal to Function Range

Equal to

= (equal to) is placed at the beginning of a *formula* (equation).

Function

A **function** is a built-in formula designed for ease of use. The SUM function will add together the contents of selected cells, ie cells C4 to C8.

Functions can perform tasks such as addition, calculating the average of a group of values, inserting the date, calculating angles, calculating the value of an investment over a period, etc.

Range

The term **range** refers to a group of cells containing values, C4:C8 (ie from cell C4 to cell C8). The range is used instead of typing =C4+C5+C6+C7+C8. The SUM function is used to add these cells together.



EXERCISE 4

- 1 In this exercise indicate in the boxes which is a label, a value and a formula.

	A	B	C	D	E	F
1	The Music Box					
2						
3		January	February	March	April	Total
4	Nelson	18,750	19,250	16,000	16,750	70,750
5	Douglas	12,580	11,500	11,250	12,750	48,080
6	Bayswater	15,800	16,200	17,750	15,200	64,950
7	Gisborne	19,750	18,250	19,000	17,750	74,750
8		66,880	65,200	64,000	62,450	258,530
9						

- 2 Which other cell contains a *label*?
- 3 Which other cell contains a *value*?
- 4 Which other cell contains a *formula*?
- 5 Which *range* of cells is used to total cell F8?
- 6 Complete the following sentence.


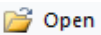
=SUM(C4:C8) is the used in cell F8. SUM is the that will add cells.....

Moving around a Worksheet



EXERCISE 5



In this exercise you will learn how to move the cursor around a worksheet, select cells, total columns/rows and create basic formulas.

- Ctrl O 1 Click on  then click on .
- 2 Click on the file called **Wilson Markers** found in the *US2784 v7 Excel 2010 Book Exercise Files* folder. Click on Open.
- 3 Practise cursor movements as described below.

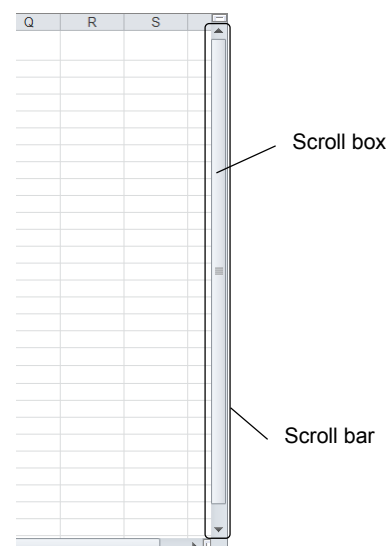
Cursor Movements

	Keyboard	Mouse
A column at a time	→ or ←	Move mouse and click
A row at a time	↑ or ↓	Move mouse and click
Beginning of a row	Home	Move mouse and click
End of a row of data	End →	Move mouse and click
Beginning of a row of data	End ←	Move mouse and click
Down one window	Page Down	Click below vertical scroll box
Up one window	Page Up	Click above vertical scroll box
Cell A1	Ctrl Home	Drag vertical scroll box up
Bottom right corner cell of data	Ctrl End	Drag vertical scroll box down
Next worksheet	Ctrl Page Down	Move mouse and click
Previous worksheet	Ctrl Page Up	Move mouse and click
Beginning and end of a row of data	Ctrl → or ←	Move mouse and click
Beginning and end of a column of data	Ctrl ↑ or ↓	Move mouse and click
Across one window to the right	Alt Page Down	Drag the horizontal scroll box right
Across one window to the left	Alt Page Up	Drag the horizontal scroll box left

Scroll Bars

The **vertical scroll bar** at the right of the screen and **horizontal scroll bar** at the bottom of the screen will move you around the worksheet area, beyond what you can initially see on your screen. Click on the  at the bottom right of your screen, on the vertical scroll bar, to move down the worksheet. Click on the  to move up the worksheet. Click in the required cell to make that cell the **active cell**, ie the current selected cell.

Dragging the **scroll box** on the vertical scroll bar will move quickly up or down the worksheet. Use the horizontal scroll box at the bottom of the screen to move to the left or right of a worksheet.



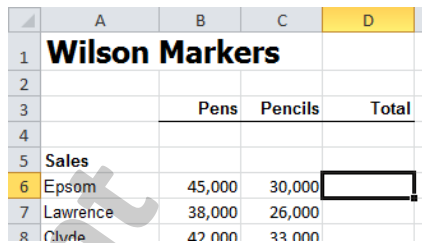
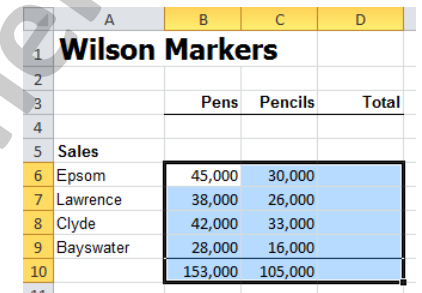
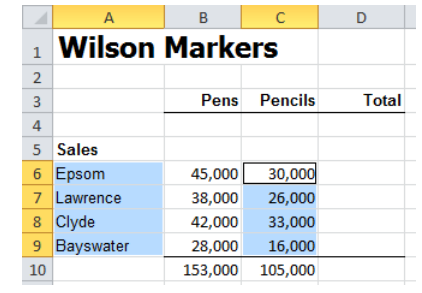
Selecting Cells



EXERCISE 6

Cells within a worksheet are selected to enter, edit or format data.

➤ Practise *selecting* using the various options shown below.

Selecting	Mouse
Single cell	<p>Click in the centre of the cell.</p> 
Range of cells	<p>Click in the first cell in the range and drag to the last cell in the range.</p> <p>OR, click in the first cell, hold down the Shift key and click on the last cell.</p> 
Non-adjacent cells (ie cells not directly next to each other)	<p>Select the first range of cells then hold down the Ctrl key on the keyboard and select the second range of cells and so on.</p> 
An entire column(s)	<p>Click on the column header B OR with the cursor in the column press Ctrl Spacebar.</p> <p><i>Adjacent columns</i> (ie next to each other) Click and drag on the column headers.</p> <p><i>Non-adjacent columns</i> Hold down the Ctrl key and click on each column header.</p> 