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INSTITUTE OF TECHNOLOGY

CREATE AND USE SPREADSHEETS
CERTIFICATE II IN BUILDING AND CONSTRUCTION (PATHWAY – PARAPROFESSIONAL)
BSBITU202A

LEARNER'S GUIDE

BUILDING AND CONSTRUCTION

BC1932

Create and use spreadsheets

BSBITU202A

Learner’s guide

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Welcome

This learner's guide will take you through the process of learning how to set up, enter data into and print simple spreadsheets.

Areas of explanation include how to:

- work safely and comfortably
- organise your files and folders
- navigate around a spreadsheet and enter data
- use formulas to carry out calculations
- use formatting to enhance the appearance of spreadsheets
- produce charts from data.

This guide will introduce you to the basic principles of electronic spreadsheets. It has been written for people who have little or no knowledge of how spreadsheets are used or what they can do.

However, it does assume that you know your way around a keyboard, have a basic knowledge of how to use menus in a computer program and have a reasonable knowledge of maths (you'll need this for working out the formulas you'll be using in your work).

There are many software companies that produce spreadsheet programs, from the very sophisticated to relatively simple ones available for free. If there are differences between what's in this guide and the way your spreadsheet program operates, your lecturer will point them out and perhaps get you to make notes.

Qualification overview

This unit of competency, BSBITU202A *Create and use spreadsheets*, forms part of Certificate II in Building and Construction (Pathway – Paraprofessional) and is aimed at those people who are considering a paraprofessional career in the residential building industry (as opposed to the trade sector).

The course consists of 12 units of study and a period of work placement. These two components, study and work, will provide you with an introductory background to the paraprofessional side of the residential building industry.

To progress further in the industry, beyond this introductory level, you will then need to specialise in a particular field of study, such as building, estimating, scheduling, drafting or building design. Courses for these careers usually commence at Certificate IV level and progress through to diploma or even advanced diploma levels at a registered training provider who delivers these programs.

Some areas of study, such as architecture, interior design and construction management, can then be studied further at degree level at a university.

Unit overview

This unit describes the performance outcomes, skills and knowledge required to correctly create and use spreadsheets and charts through the use of spreadsheet software.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Competence in this unit will be demonstrated by:

- designing a minimum of two spreadsheets
- using cell-based formulas
- creating charts using relevant data
- completing assessments that demonstrate your knowledge of the purpose and range of uses of spreadsheet functions.

Unit summary

Some basic information about this unit of competency is provided below. You can find the full unit details at Annex A at the back of this guide.

Unit title	**Create and use spreadsheets**
Descriptor	This unit describes the performance outcomes, skills and knowledge required to correctly create and use spreadsheets and charts through the use of spreadsheet software. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
National code	BSBITU202A
Employability skills	This unit contains employability skills
Prerequisite units	Nil
Application	This unit applies to individuals who perform a range of routine tasks in the workplace using a limited range of practical skills and fundamental knowledge of creating spreadsheets in a defined context under direct supervision or with limited individual responsibility.

Element 1 Select and prepare resources	
1.1	Adjust workspace, furniture and equipment to suit user ***ergonomic***, ***work organisation*** and occupational health and safety (OHS) ***requirements***
1.2	Use energy and resource ***conservation techniques*** to minimise wastage in accordance with organisational and statutory requirements
1.3	Identify ***spreadsheet task requirements*** and clarify with relevant personnel as required
Element 2 Create simple spreadsheets	
2.1	Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout
2.2	***Format*** spreadsheet using ***software functions***, to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements
2.3	Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required
2.4	Use manuals, user documentation and online help to overcome problems with spreadsheet design and production
Element 3 Produce simple charts	
3.1	Select ***chart type*** and design that enables valid representation of numerical data and meets organisational and task requirements
3.2	Create chart using appropriate data range in the spreadsheet
3.3	Modify chart type and layout using formatting ***features***
Element 4 Finalise spreadsheets	
4.1	Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements
4.2	Ensure data input meets ***designated time lines*** and organisational requirements for speed and accuracy
4.3	Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Skills recognition and recognition of prior learning (RPL)

You are encouraged to discuss with your lecturere any previous courses or work experience in which you have participated so that it can be recognised. Evidence of the above must be provided.

Resources

Required

Your lecturer will provide you with:

- access to a classroom with computers and a printer
- access to spreadsheet software.

You will need to provide:

- a USB thumb drive
- an A4 notepad
- an A4 file for notes, handouts and other printed documents
- pens, pencils, eraser and highlighters.

Common abbreviations

Throughout this guide you will come across some abbreviations. Below is a list of the most commonly used ones.

PC	Personal computer
RAM	Random-access memory
Gb	Gigabyte

Self-checklist

As you work through this guide you are advised to return to this checklist and record your progress. Where you understand something and think that you can perform it 'easily', congratulations. Where your response is 'with help', review the material in that section and/or discuss it with your lecturer or with other learners in your group.

BSBITU202A Create and use spreadsheets	**I understand**	
Element 1 Select and prepare resources	**Easily**	**With help**
1.1 Adjust workspace, furniture and equipment to suit user ***ergonomic***, ***work organisation*** and occupational health and safety (OHS) ***requirements***		
1.2 Use energy and resource ***conservation techniques*** to minimise wastage in accordance with organisational and statutory requirements		
1.3 Identify ***spreadsheet task requirements*** and clarify with relevant personnel as required		
Element 2 Create simple spreadsheets	**Easily**	**With help**
2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout		
2.2 ***Format*** spreadsheet using ***software functions***, to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements		
2.3 Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required		
2.4 Use manuals, user documentation and online help to overcome problems with spreadsheet design and production		

Element 3 Produce simple charts	Easily	With help
3.1 Select ***chart type*** and design that enables valid representation of numerical data and meets organisational and task requirements		
3.2 Create chart using appropriate data range in the spreadsheet		
3.3 Modify chart type and layout using formatting ***features***		
Element 4 Finalise spreadsheets	**Easily**	**With help**
4.1 Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements		
4.2 Ensure data input meets ***designated time lines*** and organisational requirements for speed and accuracy		
4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage		

About the icons

Note that not all icons may appear in this guide.

Performance criteria

This icon indicates the performance criteria covered in a section. The performance criteria contribute to the elements of competency that you must demonstrate in your assessment.

Activity

This icon indicates that there is an activity for you to do.

Computer-based activity

This icon indicates that there is an activity for you to do on the computer.

Discussion

This icon indicates that there will be a discussion, which could be with a partner, a group or the whole class.

Research

This icon indicates that you are to do a research activity using the internet, texts, journals or other relevant sources to find out about something.

Case study

This icon indicates that there is a case study or scenario to read.

Think

This icon indicates that you should stop and think for a moment about the point being made or the question being asked.

Assessment task

This icon indicates that an activity or task is part of your assessment.

Section 1 – Introduction to spreadsheets

Introduction

Spreadsheets were originally developed to be used for bookkeeping, but they can also be used for scheduling, timetabling, estimating and costing, and many of the other management and organisational functions you may encounter as a paraprofessional in the residential building industry.

What can spreadsheets do?

Spreadsheets allow you to manipulate data, especially numerical data. They are most useful where a set of calculations needs to be made many times, using different data.

For example, a builder might have all their employees listed on one payroll spreadsheet. Once the format is established, the spreadsheet can be used over and over to calculate wages for varying numbers of hours, employees, rates and so on.

Spreadsheets can also display information graphically. For example, they can be used to create a bar chart that shows the construction program for a project, including what needs to be done, when and by whom.

Spreadsheet programs

Spreadsheet programs display a number of ‘cells’ in a grid of rows and columns. Each cell can contain letters, numbers or formulas. A formula defines how the content of that cell will be calculated each time the data is updated.

Files created in a spreadsheet program are called ‘workbooks’. Workbooks contain ‘worksheets’. The usual number of worksheets in a workbook is three, but some workbooks can contain up to 255 worksheets!

Each worksheet is divided into columns (running top to bottom) and rows (running left to right).

Columns are lettered A, B, C, etc.

Rows are numbered 1, 2, 3, etc.

The intersection of a column and a row is called a ‘cell’. Data can be typed or pasted into cells. Only one cell can be active at any time. The active cell appears to have a dark border around it, and can be selected with either the mouse pointer or the arrow keys.

The Home key makes the active cell the first cell in that row.

Ctrl+Home makes the active cell the first cell in the spreadsheet.

The Formula bar above the worksheet shows you which cell is active.

Part of a typical worksheet is shown in Figure 1.1.

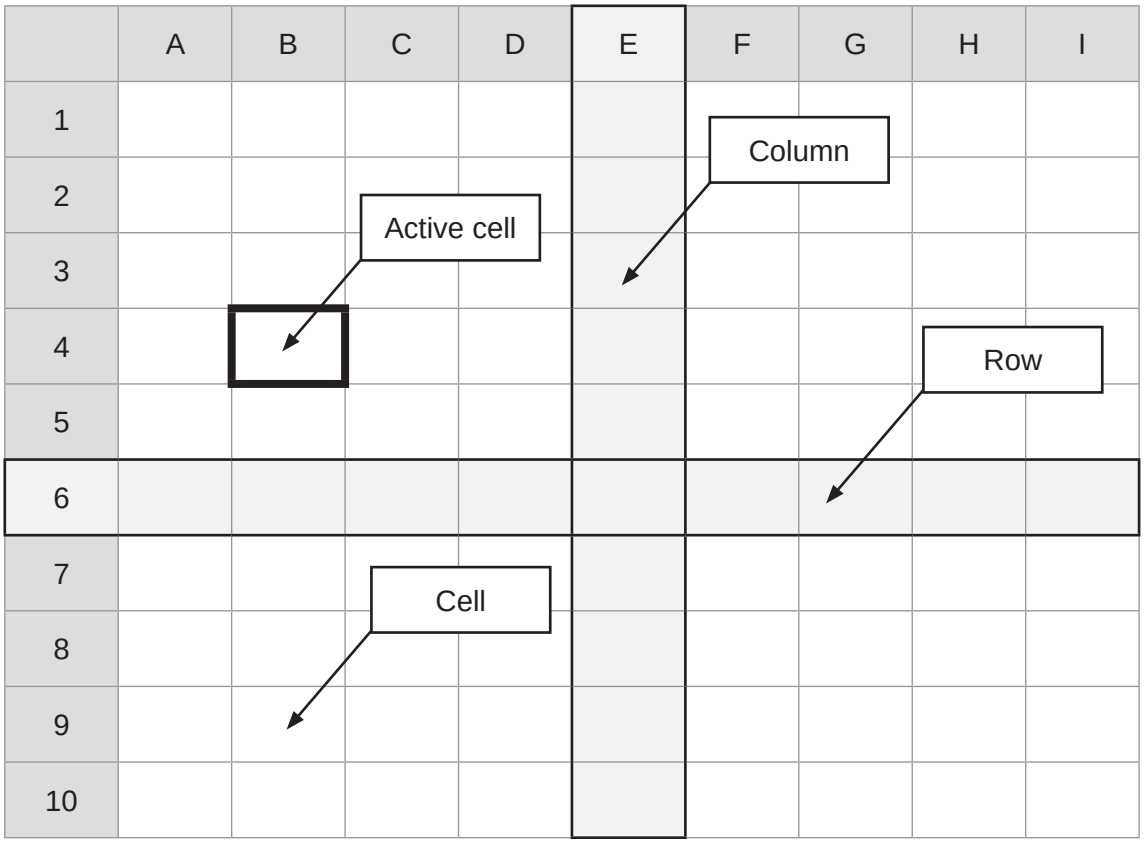


Figure 1.1: An example of a worksheet.

Activity 1.1 Think about it

What kinds of documents are produced using spreadsheet programs in your workplace?

Section 2 – Ergonomics

Introduction

It's very important that you set up your office environment so that you work as safely and efficiently as possible when carrying out work on a computer.

Your computer use up until now may have been for short periods every few days, but if you're going to have a career in the administration side of the construction business, chances are you'll spend considerable time sitting at a computer. In that case, the information in this section could save you from illness or injury.

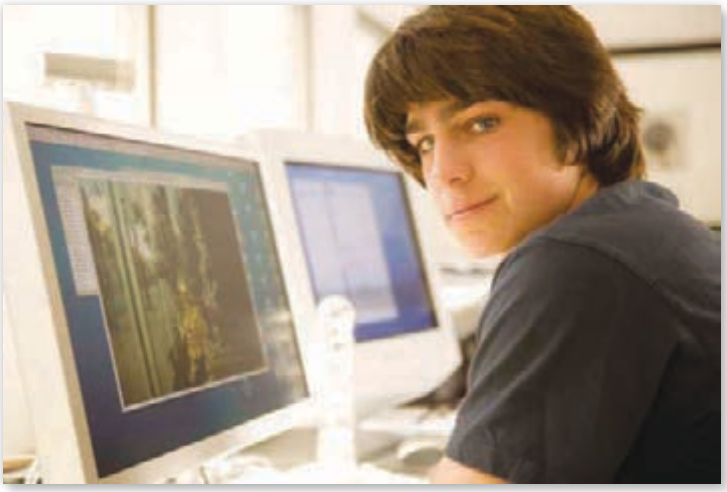
Performance criterion

1.1 Adjust workspace, furniture and equipment to suit user ***ergonomic***, ***work organisation*** and occupational health and safety (OHS) ***requirements***

Setting up your workstation

When you first start working in an office environment, you will need to adjust your desk, chair and computer to meet occupational health and safety requirements. It only takes a few minutes to do this.

There are some simple precautions you can take to minimise the risk of injury when using a computer. Let's start by looking at your workstation and find out how to make it healthier and more comfortable for you.



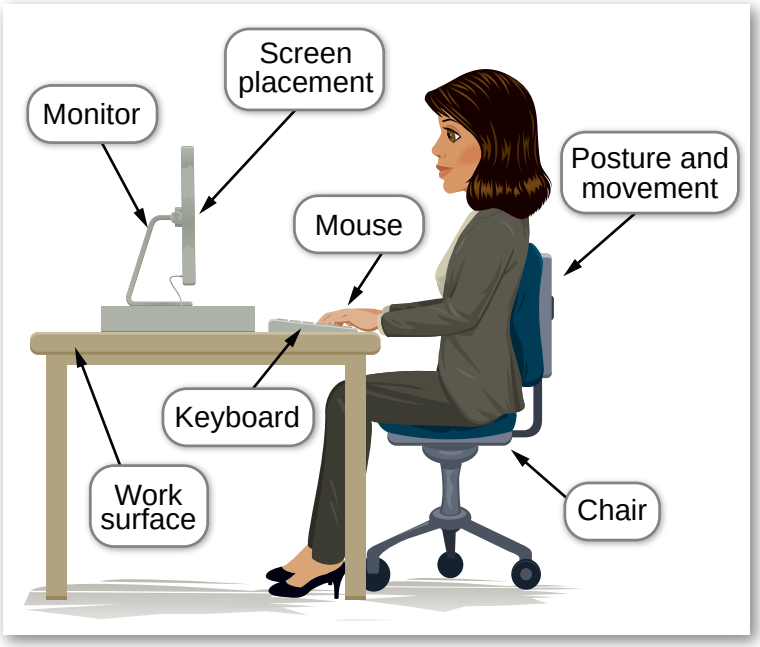


Figure 2.1: A person sitting correctly at a workstation.

Chair

Adjustable chairs improve your body position and blood circulation, reduce the strain on your muscles and decrease pressure on your back.

The height of your chair should be adjustable, and ideally you should be able to raise and lower your back rest and adjust the tilt of your seat. Some chairs have a forward tilt control that allows you to sit slightly forward. This can help reduce muscle fatigue in your forearms, neck and shoulders. When you are working, keep your back straight and your feet flat on the floor or on a footrest.

In addition to height and tilt adjustment, work chairs should:

- swivel
- have five wheels for stability
- use breathable fabric on the seat.

Work surface

The first step is to look at your desk or work surface. As you work, your elbows should be level with your desk height and in line with your keyboard. Your elbows should be at a 90-degree angle so that your forearms are parallel to the floor or sloping slightly downwards. You should have enough room under your desk for your legs to move freely.

Monitor

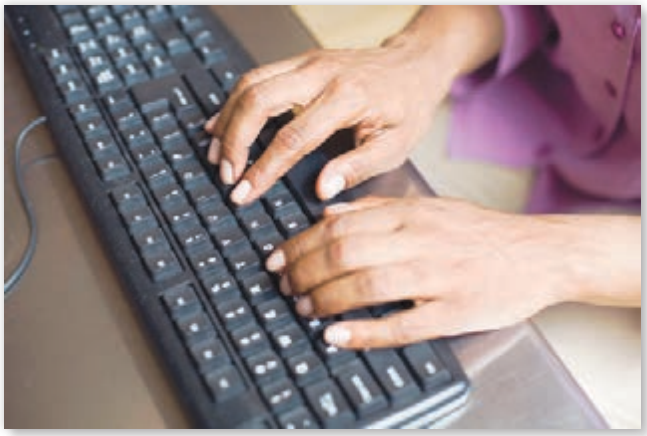
Your computer monitor should be approximately 50 cm away from of your face, or at arm's length. As you work, you should be able to focus on your screen easily. Set the height of the monitor so that the top of the screen is below your eye level and the bottom of the screen can be read without having to bend your head down. The centre of your screen should be roughly at shoulder height.

Documents

Place any documents you are using in a document holder close to the monitor so that you don't have to twist your neck or bend your head down to read as you type. The document holder should be approximately 50 cm away from your face.

Keyboard

When you are typing on a keyboard, you should keep your forearms and wrists straight. Have your elbows bent at approximately 90-degrees so that your forearms are close to horizontal, and each hand should be in line with the forearm. If this causes your elbows to stick out away from the side of your body, you should re-adjust the height of your work surface.



Mouse

Place your mouse as close to the edge of your keyboard as you can, so you can reach it without stretching.

Activity 2.1 Check your workstation

Look at your workstation. Does it have the features mentioned here?

Are all the workstations in the room the same?

Lighting

The lighting surrounding your computer monitor can affect your eyes and the visibility of the work on your screen.

Figure 2.2: A person using correct lighting at a workstation.

Poor lighting can create reflections on the monitor, which increase eyestrain. The following tips will help you to correctly light your workstation.

- Avoid reflections and shadows by placing the monitor to the side of the light source(s), not directly underneath or between rows of lights. If the lighting is fluorescent strip lighting, make the sides of the desks parallel with the lights.
- Try not to put the monitor near a window. If this is unavoidable, make sure the monitor and the operator don't face the window.
- If the monitor is well away from windows, there are no other sources of bright light and you will be doing prolonged desk work, use a low level service light of 300 lux (lux is a unit of measurement for light). Your OHS representative will be able to measure this for you.
- If there are strongly contrasting light levels in the area then a moderate level of lighting (400 to 500 lux) may be desirable. High-quality, anti-glare screens may be necessary.

Activity 2.2 Check your environment

Look around you and see if the training room you're in meets the requirements listed on the previous page.

In the space below, note any issues you find.

Eyes and body

Eyestrain

Staring at a computer screen for long periods can produce tired and sore eyes and eyestrain.

Take short rests and look into the middle distance (at a colourful poster, at a plant or out the window) to give your eyes a break. If necessary, close your eyes and lightly cover them with your hands, then breathe deeply several times.

Figure 2.3: A person looking away from the screen.

Activity 2.3 Eye exercises

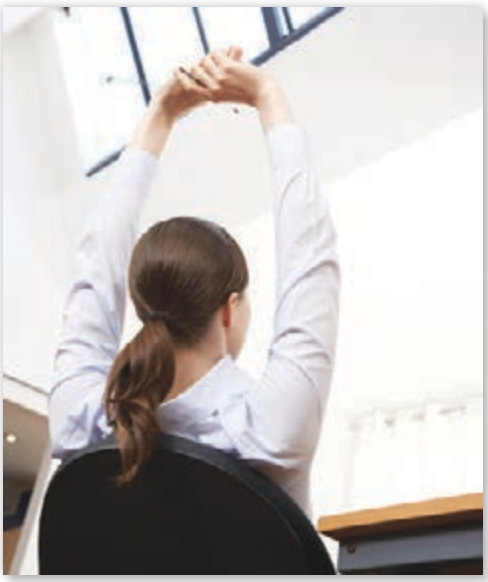
Practise doing simple eye exercises while you're sitting at your workstation.

Note: One simple eye exercise is to sit upright and face forward, look left, then right, then up, then down. Repeat this several times without moving your head.

Posture and movement

When you work at a computer for long periods of time, you may find that your muscles become tired and sore. This happens when you sit in the same position for long periods or use your fingers to make the same quick and repetitive movements.

This can even develop into occupational overuse syndrome if you don't manage your work and workspace carefully.



You should sit correctly as discussed earlier, but even this can make your muscles tired. It's a good idea to move around occasionally and change your position for short periods to give yourself a rest.

Section 3 – Conservation of resources

Introduction

This section explains how you can work in an office setting in an environmentally friendly way.

Performance criterion

1.2 Use energy and resource ***conservation techniques*** to minimise wastage in accordance with organisational and statutory requirements

Conservation techniques

We all need to care for our environment, and there are many ways you can help, including the following.

- Switch off lights in storerooms, stationery rooms and toilets when they're not in use.
- Make sure your computer switches to standby when not in use.
- Make sure the photocopier switches to standby when not in use.
- Re label cardboard files and folders so you can use them again.
- Organise your desk so you can find pens and stationery easily and don't have to keep getting replacements.

Saving paper is one of the most effective ways to conserve resources. You should:

- reduce paper use by using alternative ways to communicate (such as email)
- reuse paper (such as by turning it over and printing on the other side)
- recycle used paper so it can be turned into new products.

Case study – Christa

Christa works for Alana in the office of a small construction company. She'd heard about conserving resources and wanted to try it in their own office.

She set up a meeting with Alana to talk to her about it, and Alana thought it was a great idea. 'Good for the environment and good for our budget!' she said.

They looked at the different things that would be practical to do in their small office, and decided to increase the amount of recycling they did and to reuse their old paper to print draft documents. They also changed the settings on their computers so that documents were printed on both sides of the page.

After three months, Alana started to notice a reduction in the money she was spending buying paper, and Christa felt great!

Here are 10 tips that don't take much effort to follow but can make a big difference.

1. Only print a document when it's really necessary.
2. Only use good quality paper when it's really necessary.
3. Reuse paper that has only been used once (unless it contains confidential information).
4. Put paper that can be used again ready for use by the printer, or save it for rough notes.
5. Print on recycled paper whenever possible.
6. Where possible, print two pages side by side.
7. Use a circulation slip and send a single document around to everyone, rather than printing one copy each.

8. Use the Print Preview function to avoid making printing mistakes.
9. Carefully proofread your work, correcting it and only reprinting the page(s) necessary.
10. Put waste paper in a separate bin or bag so that it can be collected by a recycling company.

Activity 3.1 10 Tips

Which of the 10 tips can you put to use in your own workplace?

Section 4 – Drives, files and folders

Introduction

Just as in any other part of your life, to work efficiently and quickly on a computer you need to be organised.

This section introduces you to the storage and organisational aspects of spreadsheets.

There is a brief explanation of what drives, files and folders are, and then your lecturer will get you to put what you've learned into practice.

Performance criterion

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Getting organised

Drives

While a computer is turned on, data is held in its *random-access memory* (RAM). The more RAM a computer has, the more 'powerful' it is.

Any data in the RAM (such as a document you are working on) is lost when the computer is turned off. Data must be stored on a drive if it is to be retrieved at a later date.

Your computer has at least one drive – a device called a *hard drive* that stores data.

The hard drive is a spinning disc that's usually given the label 'C', and is therefore known as the *C drive*. (The system you're using now may have lots of drives; each one will have a different letter of the alphabet to distinguish it).

The storage capacity of the drive usually depends on how old the computer is – most modern desktop computers have a capacity of tens or even hundreds of gigabytes (Gb).

There are also a number of portable storage drives available to enable data to be stored and transferred from one computer to another. Probably the most common are USB thumb drives. They are typically about 5 cm long, are inexpensive and can store a large amount of data.

One gigabyte of storage can hold over 1000 novels (uncompressed, at 100 000 words per novel). This is more than enough storage space for the type and amount of data you're likely to work with in an office environment.

The training provider you're studying with will have a data storage system. Your lecturer will show you how to access this and advise you whether you'll need a USB thumb drive while you're taking part in this unit.

Files

When you save data to a drive, it is stored in a *file*. You can name a file just about anything you like, but it's best to give it a logical name that indicates what it is, such as 'Johnson project quote'.

Most programs automatically add a three-letter *file extension* to the file name. For example, if the above file was a spreadsheet, the program it was created in would add an extension such as *.xls* to the file name.

Note: When naming files, there are some characters that you **can't** use. They are:	
Character	**Name**
\	backslash
/	forward slash
:	colon
*	asterisk
?	question mark
!	exclamation mark
<	less than symbol
>	greater than symbol

Note: The full stop before a file extension is usually called ‘dot’, just as it is in an internet address.

Don’t change file extensions. If you do, the program may not recognise the file next time you want to open it, so you could lose your data.

Folders

When you have just a few files on a drive, it’s easy to keep track of them. However, it doesn’t take long to get so many files that things become confusing and files become hard to find. This is when you need to create *folders*. The concept of keeping files in folders on a computer is just the same as keeping paper files in manila folders in a filing cabinet.

You should give folders logical names too. For instance, you might have folders called ‘Quotes’, ‘Letters’, ‘Invoices’, ‘Wages’, ‘Personal’ and so on.

Folders can also contain sub-folders. For example, your ‘Letters’ folder could contain sub-folders called ‘January’, ‘February’ and so on.

File management

Any workplace you find yourself in will have a file management system or folder structure in place so that you and others can locate files and folders quickly and easily.

If you don’t follow the system and you lose files, work will need to be redone, and this can cost the company time and money.

Case study – Jeremy

Jeremy had been in his new job in a drafting office for three weeks. His supervisor Olaf had taken him through the folder structure for the business a couple of times, but he still didn’t really understand it.

Rather than ask Olaf to show him again, Jeremy decided to save his documents on his own C drive rather than use the folder structure. ‘I can move them later when I get the hang of it,’ he thought.

Then one morning there was an electrical storm and Jeremy’s PC completely shorted out. No-one could get it working again, and finally the IT guy said, ‘It’s completely fried – we’ll need to get a new PC for you, my friend.’

‘Great!’ thought Jeremy – until he remembered the files he had been saving on his C drive. They hadn’t been backed up by the system, so were now lost – forever.

It's important to:

- use correct file and folder names, as specified by your company
- use logical, descriptive and consistent file names
- save files in the correct folder
- back up files.

File directories

A *file directory* is another term for a folder. It is a location on a hard drive or portable storage drive used for storing files. You may have sub-directories within a directory to better organise your files.

This system can be compared to an actual filing cabinet (the computer's hard drive), with a drawer in the cabinet (a directory, or folder), a manila folder in the drawer (a sub-directory) and a piece of paper in the manila folder (a file).

Look at the example shown here.

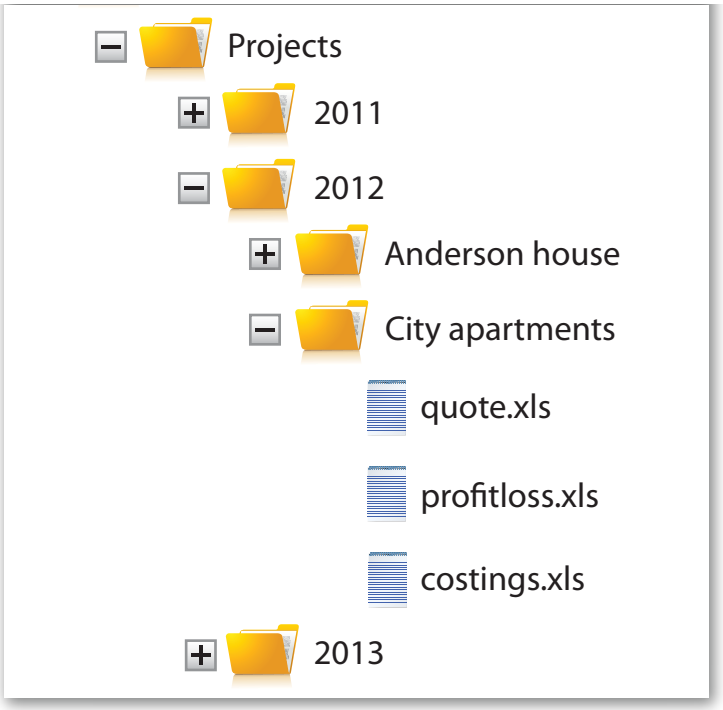


Figure 4.1: An example of a file directory.

File directories are created using the file management system in a computer's operating system. Your lecturer will discuss the operating system you'll be using to manage files for this unit.

File paths

A *file path* gives you directions to the file you're looking for. For example, the path to the 'quote' file in the file directory shown in Figure 4.1 (if it was on the C drive) would be written as:

C:\Projects\2012\City apartments\quote.xls

Activity 4.1 File management

With your lecturer's help, locate the folder where you'll store your files while doing this unit. Carry out the following file management tasks as instructed by your lecturer.

1. Create file directories on the hard drive.
2. Open files.
3. Save and rename files.
4. Retrieve files.
5. Make copies of your directories and files to your temporary storage area.

Section 5 – Getting help

Introduction

It may be a long time (if ever!) before you know everything there is to know about the computer programs you use.

You'll need help, especially in the early stages, with the many functions, choices and combinations of effects and formats that modern programs offer.

Try not to bother your workmates for this. There are other ways of getting help, and your colleagues won't thank you if you keep interrupting them with questions.

Performance criterion

2.4 Use manuals, user documentation and online help to overcome problems with spreadsheet design and production

How to get help

There are several ways to get help with a computer program you're using.

Manuals

In the past, all computer programs were supplied with an operator's *manual*. This was usually a fairly thick book with step-by-step instructions and an index at the back.

Manuals are less common now, because the complexity of modern programs means they would have to be very thick, and software companies are rightly conscious of conserving the resources needed to print such thick books.

Also, the speed at which new versions of programs are released means that a manual is likely to become out of date in a very short time.

The Help function

All computer programs have a Help function.

There is usually a help button on the menu bar at the top of the screen. The **F1** key is assigned by nearly all software programs as the shortcut way to get help.

Depending on the program, its age and whether the computer has access to the internet, the help screen may be supplied by the program on the hard drive or by connecting to the software supplier's website.

Most programs' help screens have a choice of an index, a table of contents and a search function.

Other ways of getting help

If you can't find the answer to your problem using the Help function, try asking a question in your favourite search engine.

Try something like 'How do I do such and such in [insert your program]?' You may be surprised at the results!

Note: We mentioned above that the **F1** key is a shortcut way to access the Help function. From now on throughout this guide we will tell you which menu to access for the particular action being discussed, plus the shortcut way to get there, in bold.

Activity 5.1 Getting help

1. Press F1 now and experiment with the Help function on your computer.
2. Type 'getting help' into the Search box and see what happens.

Section 6 – Toolbars, tool buttons and shortcuts

Introduction

As we saw in the previous section, most programs have more than one way to carry out an action. For example, you can:

- use the menu bar at the top of the screen to select an action from a menu or sub-menu
- use shortcut keys
- click on the appropriate tool button.

In this section we'll look at toolbars, tool buttons and shortcuts, and how using them can speed up your work.

Performance criteria

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Toolbars and tool buttons

The conventional way of selecting an action (for example, to open an existing file) is to use the menu bar at the top of the screen (in this case, to click File/Open).

Using the tool buttons is faster. These are the little buttons with symbols on them that are lined up on a toolbar. They may look confusing at first, but are great once you learn what they do. Some programs can have as many as 20 toolbars that display a variety of tools. Usually the default toolbars are the Standard and Formatting toolbars. These have the tools you'll use most at first.

- To display another toolbar, go to View/Toolbars. This will display a list of the toolbars available in the program. The toolbars already displayed will have a tick against them.
- To display another toolbar, just click on it in that list (ie 'select' it).
- To make a toolbar invisible again, click on it again in the list.

Toolbars can usually be placed anywhere on the screen ('floating' toolbars) or 'docked' at the top, bottom or side of the screen. The program will 'remember' which toolbars you had displayed and where they were next time you start it.

Note: Don't have too many toolbars displayed at any one time. It can be very confusing and will reduce the size of your on-screen workspace.

Some programs let you create a personal toolbar containing all the tools you use most, by going to View/Toolbars/Customize. This will allow you to create a new toolbar and put your most-used tools on it.

Right-click on any visible toolbar to see the list of available toolbars. This allows you to bypass the menus.

Let's start by familiarising ourselves with toolbars.

Activity 6.1 Using toolbars

1. Open your spreadsheet program.
2. Try turning the toolbars in your spreadsheet program on and off.
3. Try moving them about and docking them.

Case study – Justin

Justin works at a drafting office, and he's used to tight deadlines. Before he starts using his spreadsheet program he always sets up his toolbars so that he can find what he needs quickly. He also uses keyboard shortcuts to streamline his work. Justin has a reputation in the office for being a fast worker!

This came in handy the week before last, when Eric needed the profit-and-loss spreadsheet done for a shareholders' meeting at short notice. Justin was able to produce the spreadsheet using the standard design and layout for the company, which he knew was important if the stakeholders were going to get a copy.

Eric was amazed at how fast Justin was able to get everything together. Maybe there will be a promotion on the way!

Keyboard shortcuts

We saw in the previous section that some actions can be carried out using shortcut keys. These are a combination of two or more key strokes that perform an action. Over the years, software developers have assigned the same shortcut keys to most programs, so that if you know what Ctrl+A does in one program, you can use it to perform the same action in many others.

Listed below are some keyboard shortcuts for some of the more frequently used spreadsheet program commands.

To use one of these combinations, hold down the Ctrl key and press the letter key shown.

Those actions marked 'toggle' will switch that formatting either on or off, depending on its current state.

Shortcut	Action
Ctrl+A	Selects all data on the active worksheet.
Ctrl+B	Toggle. Formats selected data in bold.
Ctrl+C	Copies the selection to the clipboard.
Ctrl+F	Allows you to find specified data (numbers or text) in the active document.
Ctrl+I	Toggle. Formats selected data in italics.
Ctrl+N	Opens a new workbook.
Ctrl+O	Allows you to open a previously saved workbook.
Ctrl+P	Prints the active worksheet.
Ctrl+S	Saves the active workbook.
Ctrl+U	Toggle. Formats selected data as underlined.
Ctrl+V	Pastes the contents of the clipboard into the active cell.
Ctrl+W	Closes the active window, but does not exit the program.
Ctrl+X	Cuts the selected data and places it on the clipboard.
Ctrl+Y	Redoes the previous action.
Ctrl+Z	Undoes the last action.
Alt+F4	Closes the program.

Activity 6.2 Keyboard shortcuts

1. Open your spreadsheet program.
2. Use the keyboard shortcut in the list on the previous page to open a new workbook.
3. Select a cell in the worksheet by clicking on it with your mouse or using the up and down arrow keys.
4. Type the word ‘test’ into the cell.
5. Use the keyboard shortcuts in the list on the previous page to:
   a) copy and paste the word ‘test’ into another cell
   b) undo and redo the action.
6. Experiment with the other keyboard shortcuts listed.
7. Close the file **without saving it**.

Section 7 – Navigating around a spreadsheet

Introduction

In this section we'll look at the basics of moving around in a spreadsheet document.

As data is entered into the cells of a spreadsheet, being able to move your cursor to a particular cell quickly will help you speed up your data entry and meet deadlines.

Performance criterion

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

Navigating around a spreadsheet

The following actions will move your cursor to a particular cell and make that cell active.

To move to a cell	Click on it or use the arrow keys
To move to cell A1	**Ctrl+Home**
To move down a screen	**PgDn**
To move up a screen	**PgUp**
To move one screen to the right	**Alt+PgDn**
To move one screen to the left	**Alt+PgUp**
To move to the top row	**Ctrl+up arrow**
To move to the bottom row	**Ctrl+down arrow**
To move to the next worksheet	**Ctrl+PgDn**
To move to the previous worksheet	**Ctrl+PgUp**

The following actions move the worksheet around the screen, while the active cell remains active. You may have to zoom out (use the View menu), put some data in cells further afield and then zoom back in before this will work.

To move the worksheet up or down, drag the vertical scroll bar handle up or down.

To move the worksheet left or right, drag the horizontal scroll bar handle left or right.

Clicking the up, down, left or right arrow on the scroll bars moves the worksheet up, down, left or right one row at a time or one column at a time.

The F5 key will open the Go To dialogue box. Type in a cell address (eg W234) and press Enter. Cell W234 will now be the active cell.

Note: When you move the worksheet around the screen in the above way, the active cell stays active. To enter data into a cell in the new screen view, you must click on the cell.

Activity 7.1 Experimenting with navigation

1. Open a new spreadsheet.
2. Type some data (letters or numbers) into different cells, and then try out some of the shortcuts listed in this section.
3. Don't be afraid to experiment – you can't break anything!

Section 8 – Entering and editing data

Introduction

Another way to describe entering information (or 'data') into a spreadsheet is 'data entry'.

In spreadsheets, data is entered into cells. The information in these cells can then be changed, or 'edited', in a range of ways. Let's find out how.

Performance criterion

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

Entering and editing data

When you enter data into a spreadsheet, you type it into the active cell. This is the cell you have selected with your mouse or by using the arrow keys.

As you type, you will notice that:

- numeric data (numbers) is right aligned by default
- alphabetic data (letters) is left aligned by default
- mixed data (words and numbers) is treated as alphabetic data.

Note: To make the program treat numbers as alphabetic data (such as for model numbers, staff IDs, etc), put a single quotation mark before the number.

As you type, the data in the cells will behave in the following ways.

- If the data you enter is wider than the cell, it will display across the next cell to the right.
- If you type data into that next cell, the data in the previous cell will be hidden.

To see all the data that's in a cell, click on the cell and look at the Formula bar.

To delete data in a cell	Select the cell (or a range of cells) and press the Delete key.
To replace data in a cell	Click on the cell and retype the data. This overwrites the original data.
To edit data in a cell	• Click on the cell and press **F2** or • click on the cell and edit the data in the Formula bar or • double-click on the cell. Each of these puts the cell into 'edit' mode. When editing is complete, press Enter.

Activity 8.1 Entering and editing data

1. Open a new workbook (File/New/Blank workbook).
2. Type some letters or numbers into the active cell, then press the Enter key or any arrow key.
3. Enter more data in some other cells.
4. Practise deleting, replacing and editing data in the cells.
5. Close the file **without saving it**.

Selecting cells and ranges of cells

To ‘do’ something in a spreadsheet program you must first select a cell or a range of cells before you can tell the program to do the action you want.

Open the file *Ranges* that your lecturer has put in your folder.

Click and drag across some cells, and you’ll see that they all become highlighted. You’ve selected a range of cells.

A ‘contiguous range’ of cells is a series of connected cells that forms a square or a rectangle, like the one shown here.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Tuesday	21,412	25,942	24,944	53,624	35,241	25,635
Wednesday	20,824	31,288	37,456	48,569	45,214	45,258
Thursday	20,722	29,782	35,963	25,126	75,963	12,896
Friday	49,254	64,750	125,811	75,863	15,429	45,369
Subtotal	**112,212**	**151,762**	**224,174**	**203,182**	**171,847**	**129,158**

Figure 8.1: An example of a contiguous range of cells.

Another way to select a contiguous range of cells is to click in the first cell you want to select, hold down the Shift key and then click in the last cell you want to select.

A ‘non-contiguous range’ of cells is a series of selected cells that aren’t connected, as shown on the following page.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Tuesday	21,412	25,942	24,944	53,624	35,241	25,635
Wednesday	20,824	31,288	37,456	48,569	45,214	45,258
Thursday	20,722	29,782	35,963	25,126	75,963	12,896
Friday	49,254	64,750	125,811	75,863	15,429	45,369
Subtotal	**112,212**	**151,762**	**224,174**	**203,182**	**171,847**	**129,158**

Figure 8.2: An example of a non-contiguous range of cells.

They are selected by holding down the Ctrl key and then clicking on the desired range of cells.

Activity 8.2 Selecting ranges of cells

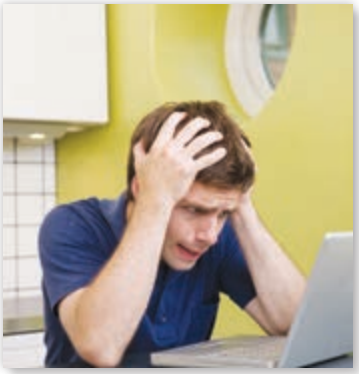
1. Open a new workbook.
2. Practise selecting a contiguous and a non-contiguous range of cells.
3. Selecting cells like this would be necessary if you wanted to change the formatting of all those cells at once.
4. When you've finished, close the file **without saving it** (File/Close or **Alt+F+C**).

The undo and redo commands

Undo

One of the most useful commands in computing is 'undo'.

This will undo the last action you performed on the spreadsheet. You can progressively undo a number of actions by repeating the 'undo' command.



Note: Once you've saved a spreadsheet, you can't undo things you did before saving it.

To use the undo command you can:

- press Edit/Undo

  or
- click the Undo button on the Standard toolbar

  or
- press **Ctrl+Z**.

Redo

The 'redo' command repeats the last action you performed on the spreadsheet. You can repeat the action over and over to perform the same action on a number of cells.

To use the redo command:

- press Edit/Redo

  or
- click the Redo button on the Standard toolbar

  or
- press **Ctrl+Y**.

Activity 8.3 Using undo and redo

1. Open a new workbook.
2. Type the word 'invoice' into a number of cells.
3. Practise using the undo and redo commands.
4. Close the file **without saving it**.

Section 9 – Filling, copying, cutting and pasting

Introduction

One of the great advantages of entering data into a computer rather than writing things out by hand is that you never have to write the same thing more than once.

This section will show you how spreadsheet programs can help you with this.

Performance criterion

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

The Fill function

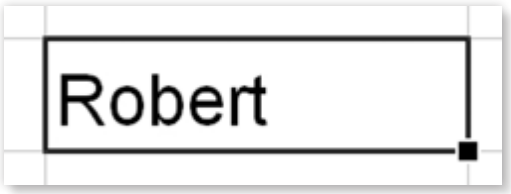
The Fill function allows data from one cell to be quickly copied to other cells. Let's give it a try.

Activity 9.1 The Fill function

In a blank worksheet (or the one you've been using if it's still open), do the following.

1. Type your name into a cell and hit Enter.

2. Now click on the cell to make it active. Notice that the border of the cell has a 'handle' at the bottom right-hand corner.



3. Hover the cursor over this handle and it will change to a small black cross.

4. Click and drag the handle to the right across several cells, then let go.

   Your name will have been filled into each cell you dragged across. The Fill function works when the handle is dragged up, down, left or right.

5. Now type the word ‘January’ into a blank cell.

6. Drag the fill handle across the page, and hey presto!

7. Now try it with the words ‘Jan’, ‘Monday’ and ‘Mon’.

8. Now try it with the number ‘1’. Disappointed?

9. Type ‘1’ into a cell then ‘2’ into the cell below it. Select both cells (a two-cell range), then drag downwards.

10. Type ‘5’ into a cell then ‘10’ into the cell below it. Select both cells (a two-cell range), then drag downwards. Aren’t spreadsheet programs clever!

11. Type ‘5/7’ into a cell. The spreadsheet program will assume you are entering a date (the 5th of July) and change it to ‘5-Jul’.

12. Drag the fill handle down to see what the program does.

13. In a blank cell, type ‘5/7’. In the cell below it, type ‘12/7’. Select the two cells and drag downwards. This is handy if, for example, you’re doing a roster and you want to show each Monday.

Week commencing	
1-Jul	Anne
8-Jul	Brendan
15-Jul	Cathie
22-Jul	David

14. Close the file **without saving it**.

Note: In the above example, if you really want to enter 5/7 and not 5-Jul, type a single quote mark first. This will make the program treat the data as text.

Copying and pasting

Copying and pasting means taking (copying) data from a cell (or a range of cells) and placing (pasting) it somewhere else.

To do this, there are two steps. The first step is to *copy* the data you want to paste. Select the cell(s), then:

- go to Edit/Copy

  or

- click the Copy button on the Standard toolbar

  or

- press **Ctrl+C**.

Note the ‘marching ants’ around the cell(s) you’re copying from.

The second step is to *paste* the data to the destination cell. Select the cell, then:

- go to Edit/Paste

  or

- click the Paste button on the Standard toolbar

  or

- press **Ctrl+V**.

Note that the ‘marching ants’ remain until you hit the Escape key or perform another action.

Case study – Ali

Ali was new to Jemma's office. She had often heard him make frustrated sounds as he was working, and she wondered what was wrong but was a bit afraid to ask.

Yesterday she heard the manager, Brice, asking Ali why the spreadsheet was late again. Ali had shaken his head and apologised, but this morning he was looking really down. 'Now's the time', she thought, and went over to Ali to ask him if there was anything she could help with.

'It's just that I keep accidentally copying over work I've done!' he said. 'Yesterday I was doing really well, and then I copied over half of a spreadsheet and couldn't get it to Brice on time. I think he's going to sack me.'

Ali was miserable, but Jemma knew just how to help! She showed him how to undo and redo actions, and how to use the copy and paste functions. Ali was so relieved, and by the afternoon Brice was remarking about how much better he was doing.

Cutting and pasting

Cutting and pasting is similar to copying and pasting, but instead of copying the data it deletes (cuts) it from the original cell. **Ctrl+X** is the shortcut for the cut function, but you can also go to Edit/Cut or click the Cut icon on the Standard toolbar.

Activity 9.2 Speeding up your work

Think about the documents you produce in your own workplace. How could using the copy and paste functions speed up your own work?

Section 10 – Working with workbooks and worksheets

Introduction

In this section you'll learn how to open a new workbook, add a worksheet to it and rename worksheets.

Then you'll name and save your new workbook.

Performance criteria

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Setting up worksheets

As we learnt earlier, a file in a spreadsheet program is called a workbook. Each workbook is made up of a number of worksheets. Lets find out how to use these.

Activity 10.1 Workbooks and worksheets

1. Open your spreadsheet program.
2. Go to File/New, then in the dialogue box select ‘Blank workbook’.
3. The bottom of the screen shows three tabs for the three worksheets this blank workbook contains. (By default, a new workbook usually has three worksheets, but you can add more or delete some.)
4. Right-click on the Sheet1 tab and select ‘Rename’ from the pop-up menu. Type ‘January’ and press Enter.
5. The first sheet should now be named *January*.
6. Right-click on the Sheet2 tab and select ‘Insert’ from the pop-up menu. Select ‘Worksheet’ from the dialogue box and press OK.
7. An extra worksheet should have been added to the workbook.
8. Rename the second sheet ‘Feb’, the third ‘Mar’ and the fourth ‘Apr’.
9. Save the workbook by selecting File/Save As and giving it the filename ‘Wages’. Make sure you save the file to your ‘Projects’ folder on your USB thumb drive.
10. Close the file (File/Close).

Section 11 – Formatting

Introduction

To format data in a program means to change the way it looks. The default format in a spreadsheet is a font size of about 10 points, in plain text, with all the columns of equal width and all the rows of equal height.

A spreadsheet printed like this would be OK, but it would be like a room in a house with nothing painted, no carpet and just a milk crate to sit on!

This section will introduce you to the basics of formatting your spreadsheet so that it looks more attractive and presents its information in a more readable way.

Performance criteria

2.2 ***Format*** spreadsheet using ***software functions***, to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements

4.1 Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements

Basic formatting

Many businesses have a standard way of presenting any company documents, called an 'organisational style'. You will need to understand basic formatting so that you can create documents that match the organisational style in your workplace.

The two main ways that spreadsheet data can be formatted are:

- **font** formatting, which includes bold, italics, underline, font size, font colour, etc
- **cell** formatting, which includes alignment, numbering, borders, etc.

Case study – Mark

Mark was new to paraprofessional work – he'd been a carpenter, but felt like he wanted a change. Alf had agreed to give him a chance to work in the office while he studied, so he could get some experience. Things were going well, until one day Jolene was away sick and Alf asked Mark to get an invoice ready for a client.

'I know you're new to it all,' said Alf, 'but I really need this – I think you can do it, mate.'

Mark sat at his desk – he didn't know where to start! He couldn't find a template to use, so he decided to find a copy of an invoice and format his invoice spreadsheet so that it looked the same. He knew that the way business documents look is important. After all, this invoice was going to be telling the client what kind of business Alf was running. It had to look professional.

Luckily, he knew the basics of formatting and was able to get the invoice looking right in time for the client.

'Hey mate, you're not bad!' said Alf. 'I wish I'd brought you into the office sooner!'

Complete Activity 11.1 to learn the basics of formatting. And remember this page number – you might want to refer back to it when doing later activities.

Activity 11.1 Text formatting

1. Open the file *Formatting.*

2. Select cells A4 to D4. Click the Bold button on the Formatting toolbar.

3. Repeat for cells A19 to D19 and cells C27 to D27.
4. Select cells C17 to D17. Click the Italics button on the Formatting toolbar.
5. Repeat for cells C25 to D25 and cells C27 to D27.
6. Select cells A1 to D1. Click the Merge and Center alignment button on the Formatting toolbar.
7. Select cells B4 to D4. Click the Centre alignment button on the Formatting toolbar. Repeat for cells B19 to D19.
8. Select cell C17. Click the Align Right button on the Formatting toolbar. Repeat for cells C25 and C27.
9. Select cells A5 to A15. On the menu bar, go to Format/Cells (shortcut **Ctrl+1**).
10. When the Format Cells dialogue box appears, click on the Alignment tab (if it's not already selected).
11. Use the up arrow key to increase the indent to 2.
12. Repeat for cells A20 to A23.
13. Select cell A1. Click the Font Size drop-down menu on the Formatting toolbar, and choose 14 point.
14. Select cell A1 again. Click the Font Colour drop-down on the Formatting toolbar, and choose a dark colour.
15. Repeat for row 4 and row 19. (Clicking on a row number on the left-hand side of the screen will select the whole row).
16. Select cells A4 to D4. Click the Fill colour button on the Formatting toolbar, and select a pale colour. Repeat for cells A19 to D19 and for cell A1.
17. Select cell A1. Click the Borders drop-down menu on the Formatting toolbar, and choose the Outside borders button.
18. Repeat for Cells C27 to D27.
19. Select cell D17. On the menu bar, go to Format/Cells.
20. When the Format Cells dialogue box appears, click on the Number tab.
21. Select Currency. Check that the Decimal places window is showing '2', and click OK.
22. Repeat for cells D25 and D27.
23. Save your file.

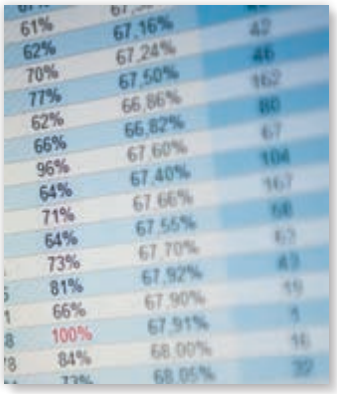
Your worksheet should now look something like this.

Small renovation job			
Material	**Quantity**	**Unit price**	**Total**
Plywood	12	12.25	147
Chipboard	2	14.8	29.6
Dowel	5	6.55	32.75
Paint	28	39.9	1,117.20
Spray paint	2	8.1	16.2
Nails	2	1.4	2.8
Screws	4	1.75	7
Glue	5	10.45	52.25
Wallpaper	16	8.99	143.84
Sundries	1	20	20
Thinners	1	5.6	5.6
		Materials total:	*$1,574.24*
Labour	**Hours**	**Hourly rate**	**Total**
Carpenter	56	42.5	2,380.00
Painter	32.5	41	1,332.50
Apprentice	9	26	234
Assistant	44	29	1,276.00
		Labour total:	*$5,222.50*
		GRAND TOTAL:	***$6,796.74***

To preview what your spreadsheet will look like when printed, go to File/Print Preview.

To print your spreadsheet, go to File/Print, then OK.

Section 12 – Formulas



Introduction

Spreadsheets were first developed to perform calculations.

In this section you'll learn how to enter a formula into a cell, so that the spreadsheet will do the calculating for you.

Performance criteria

2.3 Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Basic formulas

Probably the most useful feature of a spreadsheet program is its ability to perform calculations on the data that you enter.

A *formula* represents a mathematical calculation that you want to be performed.

Once a formula has been entered – for example, to add a column of figures – it will automatically update the total if any of the data in the column is changed.

As you type a formula into a cell, the text will appear in both the cell and the formula bar at the top of the window.

Operators

Basic formulas contain mathematical *operators*, which are just symbols used to repeat the mathematical calculations (or 'operations'). These are the operators used in a spreadsheet program.

Operation	Operator
Add	+
Subtract	–
Multiply	*

Operation	Operator
Percentage	%
Exponential	^
Less than	<

Operation	Operator
Divide	/
Equal to	=

Operation	Operator
Greater than	>
Not equal to	<>

Note

To successfully use formulas in a spreadsheet, you must follow the correct order for formulas that you probably learned at school.

Remember BIMDAS?

- **B**rackets
- **I**ndices
- **M**ultiply
- **D**ivide
- **A**dd
- **S**ubtract

It means that in a complex formula, things *must* be done in order.

For example: 3 + 6 × 4 = ?

It could be (3 + 6) × 4 = 36

or 3 + (6 × 4) = 27

Both of these could be correct, but where the brackets are placed makes a lot of difference! BIMDAS specifies that what's in the brackets should be done *first*.

When entering a formula into a cell, you must think carefully about exactly what you want the program to calculate. If you are not sure about the order of operations, then use brackets to define the order.

Using brackets in formulas is a good habit to get into, even when they're not strictly needed, because they help to clarify the order and make the formula easier to understand.

Activity 12.1 Basic formulas

1. Open a new workbook (go to File/New/Workbook).

2. Save the workbook by going to File/Save as and giving it the file name 'Formulas 1'.

3. In cell B5, type 12. In cell C5, type 6.

   Note: Before entering a formula, you must select the cell where you want the result of the calculation to appear.

   All formulas in a spreadsheet must start with an equals sign (=). When you type an equals sign into a cell, the program knows to treat whatever follows as a formula.

4. In cell D5, type =b5+c5 and press Enter.

   Cell D5 should now contain the sum of cells B5 and C5.

   With cell D5 selected, look at the formula bar. It should show the formula in that cell.

   Note: Capital and lower-case letters don't matter in formulas. Whether you type 'b5' or 'B5' in a formula, the program will treat them the same.

5. Select cells B5 and C5 and drag downwards to fill the next four rows (down to row 9).

6. Select cell D6. Type = (the equals sign) and then click on cell B6. Type + (the plus sign) and then click on cell C6. Press Enter.

   Cell D6 should now contain the sum of cells B6 and C6.

   Note that when you were entering the formula, clicking on a cell resulted in the same thing as typing the cell's address – it was entered into the formula. That's the easy way to do it.

7. Select cell D7. Type = and then click on cell B7. Type - (the minus sign) and then click on cell C7. Press Enter.

8. Do the same thing in cells D8 and D9, but make the formula multiply (*) and divide (/) the two preceding cells.

   You should end up with this.

B	C	D
12	6	18
12	6	18
12	6	6
12	6	72
12	6	2

9. Now select cell F9. Type = and then click on cell D8. Type * and then click on cell D9, and then press Enter.

   You will have multiplied the contents of cell D8 by the contents of cell D9 and shown the result in cell F9. This shows that:

   - a formula can operate on cells containing formulas

     and

   - the cell containing a formula does not need to be next to the cells it's operating on.

   So far you could have done all that with a calculator. But now we'll look at the *real* advantage of spreadsheets.

10. Type a different number into cell B8, and press Enter.

    The result in cell D8 will have changed, and so will the result in cell F9.

    This shows that once you've set up a spreadsheet with formulas, you can use it over and over again to do the calculations on different sets of figures.

11. Save the workbook.

Thinking about formulas

What kinds of documents use formulas in your workplace?

Section 13 – Working with rows and columns

Introduction

In this section we'll learn how to insert extra rows and columns into an existing spreadsheet. Then we'll learn to adjust column widths and row heights.

Performance criteria

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Working with rows and columns

Information in a spreadsheet is organised into rows and columns. You will need to understand how to change the way these are displayed so that you can make your worksheet fit your organisational style. It's also very useful during the printing process.

Activity 13.1 Rows and columns

1. Open the file *Rows and columns.*

   We're going to amend this worksheet to include the figures for June.

2. Right-click anywhere in column G. From the pop-up menu, select Insert.

3. From the choices available, select Entire column, then click OK.

   The data that was in column G is now in column H, and we have a new, empty column G.

4. Select cells E4 and F4, and fill their contents across to G4 (the heading should be 'Jun').

5. Click on H5 to see the formula in that cell – at the moment it's =SUM(B5:F5).

6. In cell G5, type 1234567 (Perth's revenue for the month of June). Then press Enter.

   The total for row 5 has updated. If you click on cell H5, you'll see that the formula has automatically updated to include our new column.

7. Put some data in the rest of column G's cells. Make them seven-digit figures so that the data remains meaningful.

8. Select cell F12 and fill the formula across to cell G12 (ie drag the cell's handle).

9. Right-click anywhere in row 8. From the pop-up menu, select Insert.

10. From the choices available, select Entire row, then click OK.

    The spreadsheet program has moved all the data below down one row, so we now have an empty row 8.

11. Type the word 'Canberra' in cell A8.

12. Type 1234567 into cell B8.

13. To save time, rather than type figures into the rest of Canberra's Feb to Jun cells, just use the Fill function to fill January's figures across to June (very steady sales in Canberra!).

14. Select cell H7, and fill its formula into cell H8. Notice that grand total in cell H13 is automatically updating each time you add data to the worksheet.

Setting column widths

1. Right-click on the letter ‘F’ at the top of column F.

2. From the pop-up menu, choose Column width and change the width from 11 to 8, then click OK.

   Notice how some of the data in column F has turned to hash symbols (######). This is because the program can’t fit the data in those cells into the narrower column width.

   We could fix the width of the column by entering a different width (as we did above), but we’ll do it differently.

3. Hover the cursor over the border between the ‘F’ and the ‘G’ at the top of column F. Notice that the cursor changes to a double-headed arrow.

4. Left-click and hold. A box appears showing the width of column F. Drag the cursor to the right until the box shows 15.00, then let go. The column is now wider than it was to start with.

5. Double-click on the border between the ‘F’ and the ‘G’ at the top of column F. The column is *automatically* resized to suit the widest data in it.

6. To test this, click on cell D20 and type some characters so that they spill well to the right of the cell.

7. Go to the top of column D and double-click its right-hand border. The column will resize itself to fit the data in cell D20.

8. Delete the data in cell D20 and resize the column width using the double-click method.

Setting row heights

You probably won't be surprised to learn that row heights can be adjusted too.

1. Select row 13 by right-clicking on the '13' at the left-hand edge of the worksheet. From the pop-up menu, select Row height and change the value to 20, then click OK.

   Row 13 is now higher than it was.

2. Hover the cursor between the '13' and the '14' on the left-hand side of the worksheet. Click and drag downwards, then let go. You've manually changed the row height.

3. Select an empty cell in row 20. Type a small number into it (such as 23).

4. With the cell still selected, change the font size to 24 point.

   Notice that the row height has automatically increased to fit the larger font size.

   Compare this to column widths, which may need to be manually increased after a large number has had its font size increased.

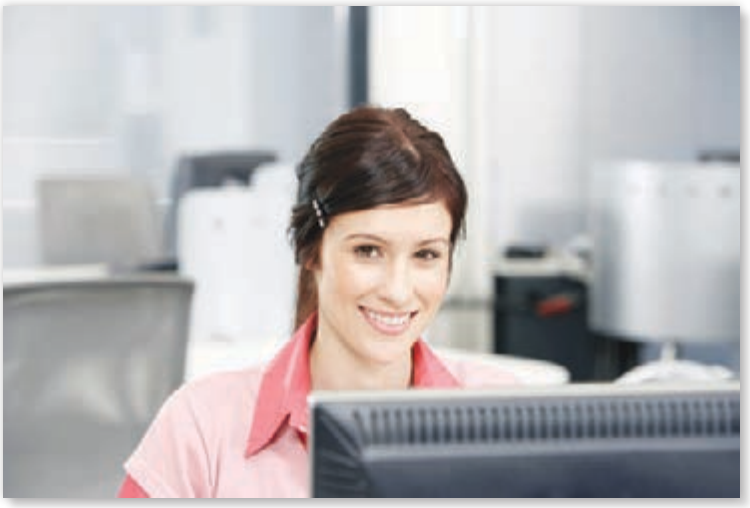
5. Save the file, then close it.

Section 14 – Preparing to print

Introduction

There will be many occasions when you'll want to print a spreadsheet or chart.

In this section we'll see how to prepare for printing by setting up the page the way you want it – fitting the data onto the page so that it reads well, adding headers and footers so that a reader will understand what the data represents, and selecting from the print options that are available.



Performance criteria

4.1 Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements

4.2 Ensure data input meets ***designated time lines*** and organisational requirements for speed and accuracy

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Page setup

It's important to set the page up properly before you print. Like most things to do with computer programs, it's not hard – it just takes some practice.

Activity 14.1 Page setup – Part A

1. Open the file *Ranges.*

2. Press Alt+PgDn a couple of times until you've moved to the far right of the data. There are 53 columns containing data on this worksheet.

3. Press Ctrl+Home to return to cell A1.

4. Hold down the Ctrl key and roll your mouse wheel back and forth. This makes the view zoom out and in. You may want to zoom out to see the whole of a spreadsheet, and then zoom in to enter data.

5. Click on the View menu. A sub-menu will appear, giving various options.

6. Read the following, and experiment with some of the options available.
   - **Normal** is the default view we've been using.
   - **Page Break Preview** lets you drag the blue lines around to specify where the breaks between pages will occur when you print the worksheet.
   - **Full screen** hides all active toolbars and shows only the menu bar and the worksheet.
   - **Zoom** gives various zoom choices (but rolling the mouse wheel is quicker!).

7. Close the file **without saving it**.

Activity 14.2 Page setup – Part B

1. Open the file *Page setup.*

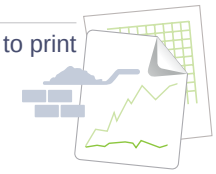
2. There are 14 columns of data on this worksheet. Click on the Print Preview button. Not all of the columns are visible.

3. Click on the Next button at the top of the page, and the other columns can be seen on page 2. Rolling the mouse wheel back and forth while you're in Print Preview mode will let you jump from page to page.

   Clearly this page setup is unsatisfactory for printing the worksheet.

4. Press the Escape key to return to Normal view.

5. Click on the Print Preview button again, and then click on the Setup button.



6. On the Page tab, select Landscape, then click OK.

   This has improved the document for printing, but there are still some columns on page 2 – not good enough!

7. Still in Print Preview mode, click on the Margins button.

8. Hover the cursor over the left-hand margin line until it turns into a double-ended arrow, then drag the margin to the left.

9. Now drag the right-hand margin to the right. Better, but some columns are still on page 2.

10. Press the Escape key to return to Normal view.

11. Drag the divider between column A and column B to the left until it almost touches the 'Gross Income' label in row 20.

12. Right-click on the heading of column B and select Column Width. You will see that column B (and the rest of the columns to column N) has a width of 10.

13. Select columns B to N by dragging the cursor along the headings, then right-click and change the column width to 9, then click OK.

14. Click on Print Preview again – now all 14 columns should be on the one page. However, we have some hashes (#########) in some cells. That's because the data in those cells is too wide to fit.

15. Go back to Normal view.

16. Select rows 4 to 24 by dragging the cursor down the row labels on the left-hand side.

17. Go to the Font size drop-down menu in the Format toolbar, and change the font size to 9 point. The spreadsheet should now fit on one page in Print Preview.

18. Close the file **without saving it**.

Activity 14.3 Page setup – Part C

1. Open the file *Page setup* again (it should be at the top of the recently opened files list in the File menu).

2. Click on Print Preview. There's the data, spread across two portrait-orientated pages.

3. Click on the Setup button, and on the Page tab, under Scaling, select 'Fit to'. Then click OK.

   The program has automatically resized the data to fit on one page, but it's probably too small to read when printed. Also, it doesn't 'look right', with all that white space below.

4. Click the Setup button again, and in the 'Orientation' section, select 'Landscape'. Click OK.

   The spreadsheet program has changed the page orientation and resized the data.

   So why didn't we just do that before? Because sometimes you may want to make the adjustments we made on the previous page in order to improve the look of a spreadsheet rather than just to get it onto one page.

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5. Close the file **without saving it**.

Headers and footers

Headers and footers allow you to put useful information, such as the date and page number, on each page of your spreadsheet.

Activity 14.4 Headers and footers

1. Open the file *Page setup* again.

2. Click on Print Preview. The data should be fitting nicely on one page (from the last activity you did), but there's no information to tell us what it is, what year it represents, when it was printed and so on.

3. Click on the Setup button, and then on the Header/Footer tab.

   A *header* is something that automatically appears at the top of every page in a document, and a *footer* is similar but at the bottom of the page.

4. Click the Custom Header button and do the following.
   - In the left-hand window, type, Branch forecasts'.
   - In the centre window, type 'National sales figures'.
   - In the right-hand window, type 'Year 2013'.

5. Click OK until you can see your header in the Print Preview window.

   It looks OK, but it lacks impact, doesn't it?

6. Go to the Custom Header dialogue box again, and format your header by following the 'To format text' instructions. Try some bold, italics, change the font and font colour and so on.

7. When you're finished, press OK. Your header should now look much more interesting.

   Now we'll jazz up the bottom of the page.

8. In the Custom footer dialogue box, do the following.
   - In the left-hand window, type 'Version 1'.
   - In the centre window, type 'Page of'.
   - In the right-hand window, type 'Date printed'.

9. Click OK until you can see your footer in the Print Preview window.

   The centre and right-hand footers don't make much sense, do they?

10. Go back to the Custom Footer dialogue box, and do the following.
    - In the centre window, click after 'Page', and then find and click on the 'Page number' button (your lecturer will help you to find it).
    - Then after the word 'of' that you typed, click on the 'Number of pages' button.
    - Click after the 'Date printed' in the right-hand window, then click on the 'Date' button.
    - Click OK. The 'pages' and 'date' footers should now make more sense.

11. Save and close the file.

Printing

As we've already seen, clicking the Print Preview button lets you to see what your printed spreadsheet will look like. This allows you to check and adjust the format, etc, without wasting paper.

Once you're ready to select the Print function (shortcut Ctrl+P), you'll be presented with a dialogue box that allows you to choose various options, including:

- which printer to use (if there is more than one available printer)
- how much of the document to print (all of it or just certain pages)
- how many copies to print.

The Properties button opens another dialogue box with options for the printer you selected.

Activity 14.5 Print preview

1. Open the file *Print preview*.
2. Press Ctrl+Home to move to cell A1, and then zoom out. This will give you an idea of how big the spreadsheet is.
3. Click Print Preview. You'll see that this spreadsheet would actually run across several pages if it was printed (but don't worry about that for now).
4. Press Escape to get back to the edit screen.
5. Go to the View menu. This will give you some choices in a drop-down box.
6. Select Page Break Preview. This will show you where the page breaks are (the way you saw in Print Preview).
7. Click and drag the blue lines around a bit (don't worry – you can't break anything!), then click on Print Preview again. You'll see that the data on the spreadsheet will be spread around the various pages differently. In other words, you can tell the program how much data to put on each page.
8. Close the file **without saving it**.

Activity 14.6 Page setup

1. Open the file *Print preview* again.

2. Go to File/Page Setup.

3. Select the Landscape option, then click OK.

4. Click on Print Preview. The spreadsheet is still spread across more than one page, but the landscape orientation would probably make it easier to read if you were to print it.

   You'll notice when you're looking at some of the pages that the column headings have gone (they're back on page 1). This makes it very hard to interpret the data. But it's easily fixed!

5. Go to File/Page Setup again, but this time click on the Sheet tab of the dialogue box.

6. In the Print titles section, click on the 'Range selector' icon at the right-hand end of the 'Rows to repeat at top' window.

   You should get a small dialogue box.

7. Click anywhere in row 4. Now the little window has $4:$4 in it.

8. Click on the icon at its right-hand end. Now you should have the Page Setup dialogue box back. Click OK.

9. The spreadsheet looks the same, but click on the Print Preview button and you'll see that row 4 repeats as the header row on each page, making the spreadsheet much easier to interpret.

10. Close the file **without saving it**.

Activity 14.7 Printing a selection

You can choose to print only part of a worksheet (called a 'Selection').

1. Open the file *Page setup.*
2. Press Ctrl+Home to move to cell A1.
3. Select the cells containing sales from January to March (cells A4 to D10).
4. Press Ctrl+P, and in the 'Print what' section, click Selection.
5. Press the Preview button, and you'll see that the program is set to print just those cells you selected.

   In a large spreadsheet with a lot of data, this could save lots of paper.
6. Close the file **without saving it**.

Activity 14.8 Setting page margins

1. Open the file *Page setup.*
2. Click the Print Preview button. You'll see that some columns spill onto page 2.
3. Click the Previous button until you can see the first page.
4. Still in Print Preview mode, click on the Margins button (if the margins indicators aren't visible).
5. Move the curser to the left-hand margin line, and drag to the left a little bit.
6. Drag the right-hand margin line to the right.
7. While still in Print Preview mode, experiment by dragging the column separators (the little squares at the very top of the page) to the left and right to change the column widths.
8. Close the file **without saving it**.

Activity 14.9 Centring data on a page

1. Open the file *Formatting.*

2. Press Print Preview. You can see that by default, the program will print data in the top left-hand corner of the page.

3. Still in Print Preview mode, press the Setup button, then the Margins tab on the dialogue box.

4. In the ‘Center on page’ section, select (tick) both ‘Horizontally’ and ‘Vertically’. Press OK.

   The data is now centred for printing.

5. Close the file **without saving it**.

Section 15 – Functions

Introduction

The functions feature in a spreadsheet program will let you throw away your calculator for good!

Performance criteria

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

2.3 Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required

Functions

Earlier we saw how formulas can be entered in a spreadsheet so that we can, for example, multiply the data in one cell with the data in another.

Some spreadsheet programs come with more than 250 pre-programmed formulas. These are called *functions*. They cover a wide range of categories, including date and time, financial data, statistics, mathematical data, etc.

The cells containing data that you want the function to work on are called *arguments*.

To enter a function into a formula, you can type it in (eg AVERAGE) or you can click on the Paste button and select it from the function list in the dialogue box. You can also activate the dialogue box from the drop-down menu on the Formula bar.

The AutoSum button on the Standard toolbar will automatically enter a formula to add a column or row of cells. It will 'suggest' what to add. If this is not what you want, just override it by selecting the cells you want summed and pressing Enter.

A range of cells can be shown by inserting a colon between the first and last cell in the range. For example, A3:A9 indicates all the cells from A3 to A9 inclusive.

Note: All functions must follow the structure **=functionname(arguments)**

Activity 15.1 Functions

1. Open the file *Rows and columns*.

   This should be the version you saved with the extra month (June) and extra city (Canberra) inserted.

2. Select cell B15.

3. Click on the Functions button.

4. From the 'Or select a category' list, select All. In the 'Select a function' box, select Average, then click OK.

   The spreadsheet program assumes you want to find the average of cells B5 to B14. This includes the total in B13, which would skew the average.

5. Override this by changing the B14 in the dialogue box to B12, then click OK.

6. The spreadsheet program has found the average revenue for all branches for January. Find the averages for the other months by grabbing the handle of cell B15 and filling its contents across to the right.

7. Select cell H18.

8. Click on the Functions button and, from the Statistical category, select Max.

9. Change the suggested function arguments in the dialogue box by clicking and dragging so that you select the cells from B5 to G12. Click OK.

   The spreadsheet program has found the cell in that range that holds the largest number.

10. Repeat the exercise to find the lowest revenue figure.

11. Save and close the file.

Section 16 – Formula exercises

Introduction

In this section you'll use the knowledge you've gained about spreadsheets and formulas to carry out some simple calculations.

Performance criteria

2.1 Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout

2.3 Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required

Activity 16.1 Formulas exercise 1

1. Open the file *Formulas*.

   This spreadsheet shows a list of items, their unit cost, a discount rate for each and a unit cost for freight.

   Follow the steps below to calculate the grand total cost of the items.

2. In cell E6, type an equals sign to tell the program that it will contain a formula.

3. Click on cell C6, and then type * (the multiplication operator), then click on cell D6 and press Enter.

4. Cell E6 should now contain the cost of the 10 items.

5. With cell E6 still selected, look at the Formula bar. It shows the formula in that cell. If we wanted to edit the formula, we could do it there.

   We could have typed =C6*D6 directly into the cell or into the formula bar, but the program's 'point and shoot' way of letting you identify the cells you want the formula to work on is much quicker.

6. In cell G6, enter the formula =E6*0.9. This will find the cost of the item with the 10% discount applied.

7. In cell I6, enter the formula =C6*H6. This will find the cost of freight for the 10 items.

8. In cell J6, enter the formula =G6+I6. This will find the cost of the 10 items including freight.

9. Now for the program's clever bit again! Instead of having to repeat the formula entries for the next five rows, select cell E6 and drag the cell's handle down to cell E11 to fill those cells with E6's formula.

10. Repeat for cells G6, I6 and J6.

11. The next step is to find the total number of items. Select cell C12. We could enter a formula here to add the contents of cells C6, C7, C8 and so on, but instead we'll use one of the spreadsheet program's inbuilt functions.

12. With cell C12 selected, click the AutoSum tool button. The program assumes we want to add up the cells directly above C6, so a line of 'marching ants' appears around those cells. Press Enter (we could have made other cells the target for the addition if we'd wanted to).

13. Repeat that step for the 'Freight cost' and 'Total cost' columns.

14. The final step is to find the grand total, after deducting some existing credit from total cost.

15. In cell J14, enter the formula =J12-J13 using the 'point and shoot' method.

16. You should end up with $896.99.

17. Save the file with the 'Save as' command, and give it the name 'Formulas WORKED', then close the file.

Activity 16.2 Formulas exercise 2

1. Open the file *Profitloss stats,* and carry out the following steps to produce an income and expenditure report similar to the sample.
2. Enter the months January to December in column A.
3. Type ‘Total’ in cell A17, and ‘Average’ in cell A18.
4. Enter the formula =B5-C5 in cell D5.
5. Enter the formula =D5/C5*100 in cell E5.
6. Copy the formula in cell D5 to each cell down to D16.
7. Copy the formula in cell E5 to each cell down to E16.
8. Find the total of column B by using SUM in a formula.
9. Do the same to columns C and D.
10. Enter a formula in cell B18 to find the average for column B.
11. Copy the formula in cell B18 to cells C18 and D18 to find the averages of those columns.
12. In cell E18, find the average of cells E5 to E16.
13. Format the Totals and Average rows to show the dollar sign (go to Format/Cells/ Number/Currency).
14. Put the title ‘Annual income and expenditure report’ in rows 1 and 2 and format it.
15. Look at your spreadsheet in Print Preview to see if it needs modifying.
16. Save the file with the ‘Save as’ command, and give it the name ‘Profitloss stats WORKED’, then close the file.

Activity 16.3 Formulas exercise 3

1. Open the file *Pergola quote,* and type the information shown below into the appropriate cells. Ask your lecturer for help if you get stuck.

Item	Quantity	Rate $
Grn swn jarrah 100 × 100	7 /2.4	18.58
Grn swn jarrah 200 × 50	2 /3.6	15.80
Ditto	4 /4.5	15.80
Grn swn jarrah 100 × 38	3 /4.5	5.33
Grn swn jarrah 150 × 50	24 /2.7	10.64
Post shoes	7	6.50
100 × 10 ch bolts	16	0.95
Dynabolts	14	1.10
Sundries	Item	25.00
Labour	22 hours	35.50

2. Enter formulas into the Item, Quantity and Rate $ columns so that the program calculates these values.

3. Add up the Cost column to find the total cost of the job.

4. If you have time, apply some formatting to your quote to improve the presentation. Remember to keep saving your work.

5. Compare your final spreadsheet with your lecturer's to see if the calculations are the same.

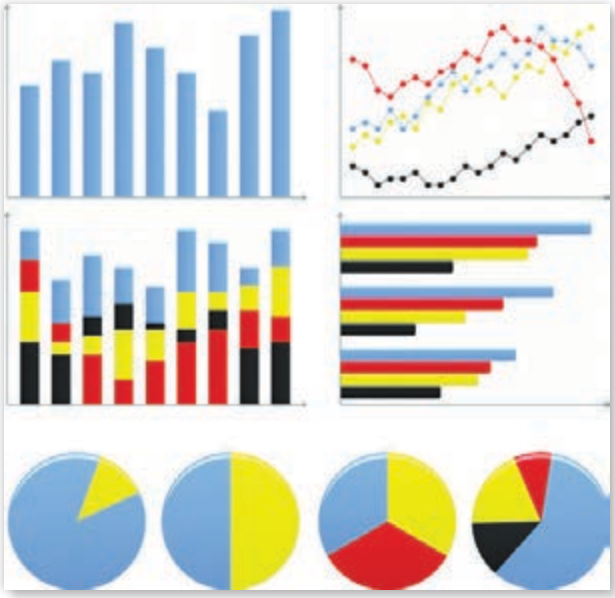
6. Save the file with the 'Save as' command, and give it the name 'Pergola quote WORKED', then close the file.

Section 17 – Charts and other inserts

Introduction

In this section we'll look at how to insert a chart into a spreadsheet so that information can be shown graphically.

We'll also find out how to insert a new worksheet, comments and pictures.



Performance criteria

3.1 Select ***chart type*** and design that enables valid representation of numerical data and meets organisational and task requirements

3.2 Create chart using appropriate data range in the spreadsheet

3.3 Modify chart type and layout using formatting ***features***

4.1 Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements

4.3 Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Charts

Charts are used to summarise data, and to show proportions, trends, exceptions and so on.

Most spreadsheet programs have a Chart Wizard that will guide you through the steps of choosing and setting up a chart.

Activity 17.1 Charts

1. Open the file *Rows and columns.*

2. Select cells A4 to G11. This range includes the branch names, the months, the sales figures and the branch totals (a deliberate mistake which we'll fix later).

3. Click the Chart Wizard button (on the Standard toolbar). (The Chart Wizard button might be in a different place in your spreadsheet program. If you can't find it, ask your lecturer for help.)

   A dialogue box will appear, showing a range of chart types. Clicking on one of these reveals several sub-types. The first sub-type will already be highlighted.

4. Press the 'Press and hold to view sample' button, and a preview of what the chart would look like using that sub-type appears.

5. Experiment with various chart types and sub-types. Some chart types will be inappropriate for the type of data to be used. For our current spreadsheet, the 'Clustered Column' sub-type will be best. Select this, then press the Next button.

6. Press the Next button again, then Next again, then the Finish button.

   The chart should appear, superimposed on the spreadsheet.

7. Save the file with the ‘Save as’ command, and give it the name ‘Rows and columns with chart’, but **don’t** close the file.

   Note the following.

   - The cell range you selected is highlighted with three coloured boxes (if you look carefully).
   - The Value axis at the left-hand side of the chart shows dollar amounts.
   - The Category axis at the bottom shows the branches.
   - The legend shows the colour-coded months.
   - You can move the chart around or resize it, just like any other graphic.

   You can edit the chart, which we’ll do now.

   Because we selected data in column G (the branch totals), the chart is skewed (the Totals data is forcing the monthly data to appear too small).

   Note: You may need to shift the chart if it’s in the way of the spreadsheet data.

8. On the spreadsheet, ‘grab’ the bottom right-hand handle on the blue box and move it to the left so that only columns A to F are selected.

   The chart automatically updates, and now shows the data more meaningfully.

   You can now see how useful charts can be. We can see at a glance which branch had the most sales, and in which month, etc. We can also see that some branches’ January figure was their highest, while for some it was their lowest. Very interesting to the general manager!

9. Try right-clicking on various parts of the chart – pop-up menus for those parts will appear.

10. Right-click on the Legend at the right-hand side. Choose Format Legend and, from the choices available, change the border colour and line weight and the font size and font. Click OK. The legend now looks different.

11. Do something similar to the Category axis (across the bottom of the chart).

12. Right-click and select Format Axis for the Value axis at the right-hand side of the chart.

13. Select the Number tab, then Currency from the category. Choose the $ symbol and reduce the decimal places to zero. Change the font, font colour and alignment if you want. Then click OK.

14. Right-click in a blank area just inside the chart border, and select Format Chart Area.

15. Change the border of the chart, and select a pale colour in the Area options section. Click OK. Now our chart's looking quite good, but it still lacks a title!

16. Click in a clear area, and choose Chart Options.

17. Give the chart a title (perhaps 'Sales figures') and try other options, including selecting the two options on the data table tag.

18. Move the chart across so that it's under the data in the spreadsheet, then resize it so it fits on the page.

19. Click anywhere in row 1 and click Print Preview. Your chart would be printed on top of your spreadsheet.

20. Press the Escape key, then select the chart. Press Print Preview and you will see that just your chart would be printed.

21. Save and close the file.

Other inserts

We used the Chart Wizard button for the previous activity, but we could also have done it through the Insert menu (Insert/Chart). What else is on the Insert menu? Let's find out.

Activity 17.2 Other inserts

1. Open the file *Rows and columns.*

2. Click on the Insert menu, and you'll get several choices.

   Note: Some of these Insert options can be accessed by right-clicking on your spreadsheet, then using the pop-up menu. However, we are going to use the Insert menu method.

3. From the Insert menu, select Worksheet. A new worksheet has been inserted in your spreadsheet, and its tab (at the bottom of the screen) is labelled Sheet 4.

4. Right-click on that tab and select Rename. Type 'Next year', and press Enter. The tab should now have a new label.

5. Right-click on the tab again and select Tab Color. Choose a new colour, and click OK. The tab label appears to be underlined, but click on another tab and you'll see that the label has the new colour. Repeat for the other tabs. Note that the active sheet always has a white tab.

6. Click on a tab and drag it sideways. You can arrange the sheets in the order you want.

7. Select Sheet 1 (the one with the data).

8. Select cell B9.

9. From the Insert menu, select Comment.

10. A small text box (called a 'callout' because it has an arrow pointing to the active cell) appears with your name in it (if you've logged in as you). You can drag the handles to size this box.

11. Type something in the box, and then click outside it. A small red marker is in the top right-hand corner of the cell to show that it contains a comment.

12. Move the cursor over the cell and your comment box will reappear.

13. Right-click on the cell, and the pop-up menu allows you to edit or delete the comment.

14. Experiment with the Show Comment option on the pop-up menu. Comments are useful for adding information about the contents of a cell without cluttering up the spreadsheet or affecting its appearance.

15. From the Insert menu, select Picture/From File.

16. In the dialogue box, find your way to some graphics files (your lecturer will show you where.

17. Select one of the graphics, and click Insert.

18. The graphic will appear on your spreadsheet.

19. Click on it and resize it to an appropriate size (with the corner handles), then experiment with the settings available from the Picture toolbar that should appear when you select the graphic.

20. Save the file with the name 'Rows and columns INSERTS' and then close it.

Annex A – Unit details

Unit title	**Create and use spreadsheets**
Descriptor	This unit describes the performance outcomes, skills and knowledge required to correctly create and use spreadsheets and charts through the use of spreadsheet software. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
National code	BSBITU202A
Employability skills	This unit contains employability skills
Prerequisite units	Nil
Application	This unit applies to individuals who perform a range of routine tasks in the workplace using a limited range of practical skills and fundamental knowledge of creating spreadsheets in a defined context under direct supervision or with limited individual responsibility.

Element 1 Select and prepare resources	
1.1	Adjust workspace, furniture and equipment to suit user ***ergonomic***, ***work organisation*** and occupational health and safety (OHS) ***requirements***
1.2	Use energy and resource ***conservation techniques*** to minimise wastage in accordance with organisational and statutory requirements
1.3	Identify ***spreadsheet task requirements*** and clarify with relevant personnel as required
Element 2 Create simple spreadsheets	
2.1	Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout
2.2	***Format*** spreadsheet using ***software functions***, to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements
2.3	Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required
2.4	Use manuals, user documentation and online help to overcome problems with spreadsheet design and production
Element 3 Produce simple charts	
3.1	Select ***chart type*** and design that enables valid representation of numerical data and meets organisational and task requirements
3.2	Create chart using appropriate data range in the spreadsheet
3.3	Modify chart type and layout using formatting ***features***
Element 4 Finalise spreadsheets	
4.1	Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements
4.2	Ensure data input meets ***designated time lines*** and organisational requirements for speed and accuracy
4.3	Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

Required skills and knowledge

Required skills

- communication skills to clarify requirements of spreadsheet
- editing and proofreading skills to check own work for accuracy
- keyboarding skills to enter text and numerical data
- literacy skills to read and understand organisation's procedures, and to use basic models to produce a range of spreadsheets
- numeracy skills to create and use spreadsheet formulae.

Required knowledge

- formatting of workplace documents
- organisational requirements for ergonomic standards, work periods and breaks, and conservation techniques
- organisational guidelines on spreadsheet manipulation and processing
- purpose and range of use of spreadsheet functions.

Evidence guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • designing a minimum of two spreadsheets • using cell-based formulae • creating charts using relevant data • knowledge of purpose and range of use of spreadsheet functions.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • access to examples of spreadsheets and simple formulae.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of final spreadsheets • analysis of responses to case studies and scenarios • demonstration of techniques • oral or written questioning to assess knowledge of spreadsheet software functions.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • general administration units • other IT use units.

Range statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Ergonomic requirements may include:	• avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organisation requirements may include:	• exercise breaks • mix of repetitive and other activities • rest periods

Conservation techniques may include:	• double-sided paper use • recycling used and shredded paper • re-using paper for rough drafts (observing confidentiality requirements) • utilising power-save options for equipment
Spreadsheet task requirements may include:	• data entry • output • presentation • storage
Data may include:	• numbers • text
Checking may include:	• accuracy of data • accuracy of formulae with calculator • ensuring instructions with regard to content and format have been followed • proofreading • spelling, electronically and manually
Formatting may include:	• alignment on page • efficiency of formulae • enhancements to format - borders, patterns and colours • enhancements to text • headers/footers • use of absolute and relative cell addresses • use of cell addresses in formulae
Formulae may include:	• absolute cell referencing and/or mixed references • average • division • maximum • minimum • multiplication • subtraction • sum • combinations of above

Chart types may include:	• area • bar • column • exploded pie • line • pie and 3-D pie • scatter/bubble • stacked/multiple bar • stacked, 3-D column
Features may include:	• axes • axis title • borders • chart title • colours • data labels • data tables • fills • gridlines • legend • lines • patterns
Printing may include:	• fit on one page • fit specific number of pages • with formulae • with values
Designated time lines may include:	• organisational time line e.g. financial requirements • time line agreed with internal/external client • time line agreed with supervisor/person requiring spreadsheet
Storing data may include:	• authorised access • filing locations • organisational policy for backing up files • organisational policy for filing hard copies of spreadsheets • security • storage in electronic folders/sub-folders • storage on CD-ROM, zip drives, USB memory

Annex B – Learning plan

Note: Sessions are nominally two hours.

Session	Performance criteria	Guide	Resources
1	1.1, 1.2	Section 1 – Introduction to spreadsheets Section 2 – Ergonomics Section 3 – Conservation of resources	Learner's guide
2	2.1, 2.4 4.3	Section 4 – Drives, files and folders Section 5 – Getting help Section 6 – Toolbars, tool buttons and shortcuts	Learner's guide
3	2.1	Section 7 – Navigating around a spreadsheet Section 8 – Entering and editing data	Learner's guide
4	2.1, 2.2 4.1, 4.3	Section 9 – Filling, copying, cutting and pasting Section 10 – Working with workbooks and worksheets Section 11 – Formatting	Learner's guide
5	2.1, 2.3 4.3	Section 12 – Formulas Section 13 – Working with rows and columns	Learner's guide
6	4.1, 4.2, 4.3	Section 14 – Preparing to print	Learner's guide
7	1.1, 1.2, 1.3 2.1, 2.2, 2.3, 2.4 4.1, 4.2, 4.3	**Assessment 1 due**	
8	2.1, 2.3	Section 15 – Functions Section 16 – Formula exercises	Learner's guide
9	3.1, 3.2, 3.3	Section 17 – Charts and other inserts	Learner's guide
10	All	**Assessment 2 due**	

Annex C – Assessment plan

The two assessments in this unit are designed to assess your competency in the elements of BSBITU202A *Create and use spreadsheets,* as listed in the unit details at Annex A to this guide. They each require you to create and print a spreadsheet from given data.

Due	Assessment	Elements
Session 7	**Assessment 1 – Create and print a spreadsheet** You are required to create a spreadsheet that calculates wages for a small business.	1, 2, and 4
Session 10	**Assessment 2 – Create and print a spreadsheet with a chart** You are required to create and format a spreadsheet containing some data, enter formulas to perform calculations, and then create a chart so that the data is represented graphically.	1, 2, 3 and 4

Individual learning and assessment needs

Everyone has different learning styles and needs. Please let your lecturer know if there is anything that may have an effect on your learning.

Results and appeals

There is a process to be followed should you wish to appeal the result of your assessment. Please ask your lecturer for more information about this.

Annex D – Assessments

Assessment 1 – Create and print a spreadsheet

Introduction

This is an open-book assessment. You may look at your learner's guide to remind you how to carry out the steps involved.

You may not work with other learners. However, you may ask your lecturer for help.

- Read the requirements of the assessment carefully.
- Create the spreadsheet.
- Remember to put your name on your spreadsheet.
- Print your spreadsheet and hand it to your lecturer with the Assessment 1 cover sheet attached.

You may use manuals, user documentation and online help to overcome problems with spreadsheet design and production.

Materials and equipment

To complete this assessment, you will need:

- the assessment paper
- a computer with spreadsheet software
- a location to which you can save your file.
- connection to a printer.

Outline

In this assessment you are required to set up a spreadsheet that calculates wages for a small business called A1 Constructions.

You are given the names of six employees, the hours they each worked in a given week (normal and overtime), their hourly pay rate and the deductions that are taken from their pay each week.

Following that is some information on the penalty rates and the tax to be deducted.

BSBITU202A

Create and use spreadsheets

Assessment 1 – Create and print a spreadsheet

Name _____ Date _____

I have received feedback on this assessment.

Signature _____ Date _____

Assessor's initials

Assessment 1 – Instructions

1.1 Adjust your workstation to suit OHS requirements and energy and resource conservation techniques.

1.2 Open a new workbook, and create a spreadsheet that will calculate the weekly wages for A1 Constructions.

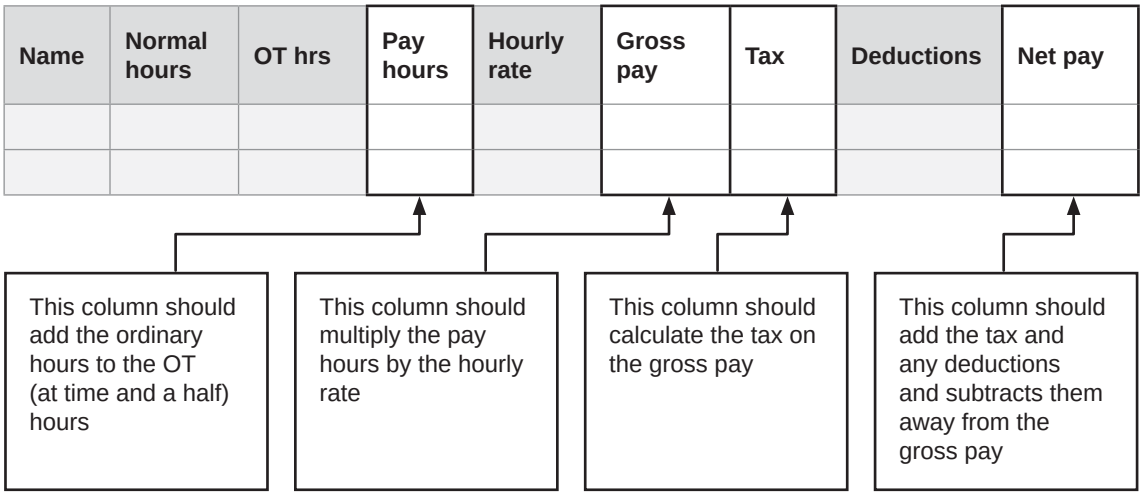
Below is the information for their six employees for the week ending 19 April.

Name	Ordinary hours	Overtime (OT) hours	Hourly rate ($)	Miscellaneous deductions ($)
Andrews	38	10	25.36	38.20
Brown	38	10	28.50	–
Carter	38	8	18.75	26.50
Davis	30		22.90	–
Edwards	38		28.50	20.00
Fletcher	38	4	24.60	10.00

The overtime (OT) rate is 1.5 times the ordinary rate. Tax is calculated at 32 cents in the dollar, after the $104 tax-free deduction.

Layout

1.3 Your spreadsheet columns should be laid out something like this example.



Your spreadsheet should have the nine columns shown above, and formulas should calculate amounts for the Pay hours, Gross pay, Tax and Net pay columns.

Note: You may find it helpful to draft your formulas on a piece of paper first.

Formatting

1.4 Finally, give your spreadsheet a heading, and apply some formatting to enhance the appearance of your worksheet, such as bold, text colour, text size, borders, etc – be imaginative!

Before printing your spreadsheet, put your name in cell J3.

Printing

1.5 When your worksheet is complete, preview, adjust, save and print it and give the printout to your lecturer, with your Assessment 1 cover sheet attached.

Assessment 2 – Create and print a spreadsheet with a chart

Introduction

This assessment involves:

- creating a spreadsheet containing some given data
- entering some formulas to perform calculations
- applying some formatting to the spreadsheet
- creating a chart so that data is shown graphically.

This is an open-book assessment. You may look at your learner's guide to remind you how to carry out the steps involved.

You may not work with other learners. However, you may ask your lecturer for help.

- Read the requirements of the assessment carefully.
- Create the spreadsheet.
- Remember to put your name on your spreadsheet.
- Print your spreadsheet and hand it to your lecturer with the Assessment 2 cover sheet attached.

Materials and equipment

To complete this assessment, you will need:

- the assessment paper
- a computer with spreadsheet software
- a location to which you can save your file
- connection to a printer.

BSBITU202A

Create and use spreadsheets

Assessment 2 – Create and print a spreadsheet with a chart

Name _____ Date _____

I have received feedback on this assessment.

Signature _____ Date _____

Assessor's initials

Assessment 2 – Create and print a spreadsheet with a chart

	Estimate			Job cost		
Contract	**Estimated cost**	**Profit**	**Contract price**	**Actual cost**	**Actual profit**	**Profit %**
Allan	345 000			342 000		
Baird	376 800			375 000		
Carter	425 600			470 000		
Dennis	297 800			333 000		
Edwards	612 900			651 000		
Ford	321 000			321 000		
Green	236 500			250 000		
Harris	299 700			328 000		
Irwin	378 500			435 000		
Jenkins	879 000			841 000		
Total						
Average						

1.1 Shown here is some data for the 10 house contracts your company has carried out this year. Create a spreadsheet containing the headings, names and figures shown.

1.2 In the appropriate cells, enter formulas to calculate the following missing information for each contract:

- profit of 11% on the estimated cost
- contract price (estimated cost + profit)
- actual profit (contract price – actual cost)
- profit % made (actual profit ÷ actual cost)
- totals (four cells only)
- averages (five cells only).

1.3 Save your spreadsheet with the name ‘Assessment 2’.

1.4 Apply the following formatting:

- figures are to show a space as a ‘thousands separator’, but no cents and no dollar sign
- profit % to show two decimal places
- column headings to be in bold
- negative numbers to be in red (go to Format/Cells/Number/Number)
- enough borders should be shown to make the spreadsheet look clear
- ‘Total’ row to have bold green text
- ‘Average’ row to have bold plum text
- header to have your company name in 18pt bold italics and ‘2009 Profits’ in 14pt bold
- footer to have your name and today’s date.

1.5 Preview, adjust, print and save your spreadsheet.

Chart

1.6 Select the ‘Contract’ data (including the heading), the ‘Contract price’ data and the ‘Actual profit’ data (use the Ctrl key to select the additional data).

- Using the Chart Wizard, create a ‘Line with markers’ chart.
- Add the chart title ‘By actual profit’, and your name.
- Apply some formatting to the chart to make it look more professional.

1.7 Print, review, adjust, print and save the chart only. (Tip: Select the chart first.)

Give both printouts to your lecturer, with your Assessment 2 cover sheet attached.

1.8 Repeat actions of 1.6–1.7 and modify your existing chart to be a bar graph.

CREATE AND USE SPREADSHEETS
CERTIFICATE II IN BUILDING AND CONSTRUCTION (PATHWAY – PARAPROFESSIONAL)
BSBITU202A

LEARNER'S GUIDE

DESCRIPTION

This learner's guide will take you through the skills and knowledge required to correctly create and use spreadsheets and charts through the use of spreadsheet software. It contains a mix of content and hands-on activities that support the unit BSBITU202A *Create and use spreadsheets* from Certificate II in Building and Construction (Pathway – Paraprofessional). The course, and this guide, focus on the skills and knowledge required to get your career started as a paraprofessional in the residential building industry.

The topics covered in this guide include:

- working comfortably and safely in an office
- organising and managing files
- navigating around a spreadsheet and entering data
- using formulas to carry out calculations
- using formatting to enhance the appearance of spreadsheets
- producing charts from data.

You will also learn the various uses of spreadsheets in the building and construction industry. Assessment activities are also included.

EDITION

Edition 1, 2012

TRAINING PACKAGE

Construction, Plumbing and Services – CPC08
Business Services – BSB07

COURSE/QUALIFICATION

Certificate II in Building and Construction (Pathway – Paraprofessional)

UNIT

BSBITU202A *Create and use spreadsheets*

RELATED PRODUCTS

This resource is one of a series that covers all 12 units of the Certificate II in Building and Construction (Pathway – Paraprofessional) qualification. Please refer to our product catalogue for more information.

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