Design and use spreadsheets (Excel)

This workbook supports BSBTEC302 Design and produce spreadsheets in the Business Services Training Package

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ISBN 978-1-921971-67-9

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Head Office - Sydney
Unit 3
25 Gibbes Street
Chatswood NSW 2067
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Published and printed in Australia

BSBTEC302 Design and produce spreadsheets

Application

This unit describes the skills and knowledge required to develop spreadsheets through the use of spreadsheet applications.

The unit applies to individuals employed in a range of environments who tend to be personally responsible for designing and working with spreadsheets under minimal supervision. These individuals are generally required to have intermediate knowledge and understanding of a number of spreadsheet applications.

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

Elements and Performance Criteria

Element *Elements describe the essential outcomes.*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*	**Page reference**
1. Select and prepare resources	1.1 Identify spreadsheet task purpose and audience	26
	1.2 Identify task requirements in relation to data entry, storage, output, timeline and presentation format	15–18, 76–77
	1.3 Select most appropriate application to produce spreadsheet, according to available resources and organisational policies and procedures	27
2. Plan spreadsheet design	2.1 Design spreadsheet design to suit purpose, audience and information requirements of task	22–26
	2.2 Confirm spreadsheet is designed to enhance readability and appearance, and is in accordance with organisational and task requirements	22–26
	2.3 Use available application functions and confirm consistency of design and layout, adhering to organisational and task requirements	140–141
3. Create spreadsheet	3.1 Enter data, check and amend to maintain consistency of design and layout, in accordance with organisational and task requirements	40–50, 53–69, 81–99, 101–110
	3.2 Format spreadsheet using application functions, according to organisational policies and procedures and presentation requirements	18, 53–66
	3.3 Consult with relevant stakeholders and confirm formulae are tested and output meets task requirements	65–66, 76–77, 101–107
	3.4 Use required help functions and action issues as required	50

Element *Elements describe the essential outcomes.*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*	**Page reference**
4. Produce charts	4.1 Select chart type and design that offers analysis of numerical data, and meets organisational and task requirements	122–126
	4.2 Create charts using required data range in spreadsheet	126–134
	4.3 Modify chart type and layout using formatting features, adhering to organisational and task requirements	128–134
5 Finalise and present spreadsheets	5.1 Review and edit final spreadsheet and accompanying charts, and prepare for delivery according to task requirements	101–107, 126–134
	5.2 Deliver document to required stakeholders according to organisational requirements, policies and procedures	76–77
	5.3 Name and store spreadsheet according to organisational requirements and exit application	15, 31–35

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**	**Page reference**
Reading	• Recognises and interprets numerical and textual information to determine organisational and task requirements	Throughout workbook
Writing	• Inputs numerical and key reporting information when creating and finalising spreadsheets	40–164
	• Uses format, layout, style guides and standard naming conventions to organise data according to purpose and audience	15, 18, 35
Numeracy	• Uses mathematical equations to create simple formulae and validate numerical data	80–91, 142–143
Teamwork	• Collaborates with others to achieve joint outcomes	18

Assessment for this Unit

This Unit is assessed by:

- observation of safe computer use
- creating and using a template
- creating spreadsheets
- modifying spreadsheets
- creating charts
- performing financial calculations.

Assessment Requirements

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, design, produce and finalise a spreadsheet on at least four occasions.

Performance Evidence

In the course of the above, the candidate must:	**Page reference**
• produce spreadsheet documents that align to document purpose and appropriate to target audience	6–10
• design spreadsheets using:	22–26
• formulas and functions with:	80–91, 142–143
• addition	54, 80
• subtraction	80, 85
• division	80, 93
• multiplication	80, 84
• brackets	80, 98
• design spreadsheets that address a range of data and organisational requirements	Throughout workbook
• use software functions to create spreadsheets that adhere to organisational requirements relating to style and presentation	Throughout workbook
• use relevant help functions to rectify document issues	50

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:	**Page reference**
• key elements of formatting of spreadsheets appropriate to workplace documents, including the ability to calculate:	18, 53–66
• sum totals	81
• averages	88
• counts of values	158
• key features of spreadsheet applications, both cloud-based and non-cloud based	Throughout workbook
• key features of organisational guidelines on spreadsheet design and use	15, 17–19
• organisational requirements for ergonomics, work periods and breaks, and sustainability in relation to spreadsheet production.	8–15

Spelling and grammar in this workbook

At times different spellings of one word are used in this workbook.

References to buttons, groups, tabs and other features are used in the same way as they appear in the application so instructions resemble the application as closely as possible.

In all other instances Australian spelling is followed, e.g.:

> The Font Color button is used to change the colour of selected text.
>
> The Percent Style button is used to apply per cent format.

Images used in this book

Your monitor size and resolution will determine how your version of Excel will display. There will be variation in the number of buttons shown on the Ribbon and the format of some buttons, e.g.:

- on a bigger screen the Copy button has text on it 

- on a smaller screen it displays as  .

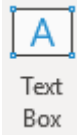
To avoid eyestrain Microsoft applications use soft images for components such as buttons, Ribbons and dialog boxes. Screenshots have been enhanced in this workbook as much as possible, however sometimes they may still appear out of focus.

Microsoft 365 and Office Professional

Microsoft applications (apps) come in two versions:

- Microsoft 365 subscription
- one-time purchase Office Professional.

The images for this workbook have been taken from Excel 365. The workbook is fully compliant with Professional, however some images will display differently, e.g.:

- in Excel 365 the Text Box button displays as 

- in Excel Professional the button displays as 
.

Where the two versions differ significantly, instructions are provided for both.

Designing a spreadsheet

A well-designed spreadsheet contains figures that are easy to read and charts that are easy to understand. They are also set out in a logical manner which makes it easy for the audience to find the information it needs.

Design by areas

The idea of identification – input – data – output is a good basis for spreadsheet layout. Every spreadsheet should have distinct areas containing different information:

Identification area	The identification area could include the company name along with the title or purpose of the spreadsheet. It could also include the author's name and the spreadsheet creation date. Some of this data could be included in the header or footer.
Input area	This is where any constants such as pay rate, bonus rate should be entered.
Data	This area stores the main data.
Output area	This area displays the results.

Areas of design example

Identification

Input

Data

Output

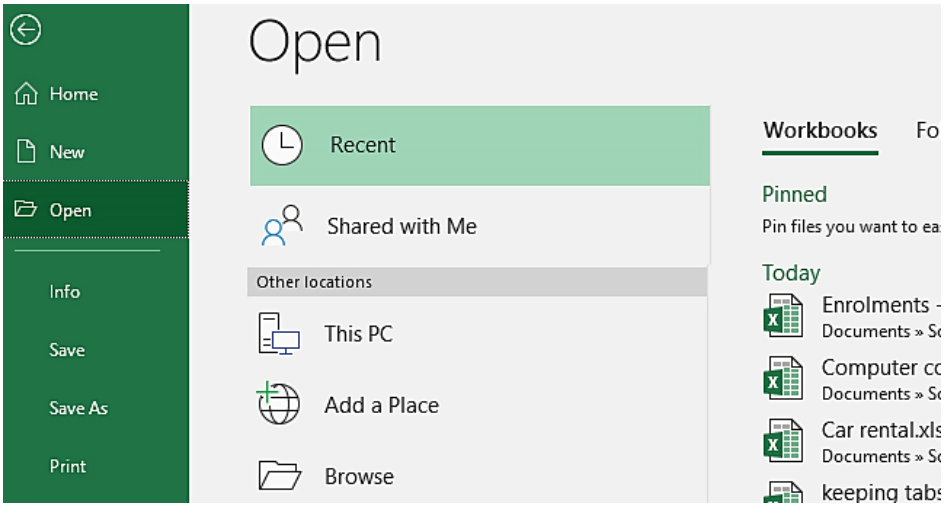
	A	B	C	D	E
1	**RSM Manufacturing Ltd**				
2	*Wages week ending:*	10/11/21			
3					
4	***Rates***				
5	*Machinist*	$21.50			
6	*Packer*	$19.00			
7	*Office*	$25.00			
8					
9	**Employee**	**Position**	**Hours**	**Rate**	**Pay**
10					
11	Clarkson, Julie	Machinist	20	$21.50	$430.00
12	Craig, Janine	Packer	30	$19.00	$570.00
13	Hirst, Wayne	Machinist	40	$21.50	$860.00
14	James, Susan	Office	30	$21.50	$645.00
15	Peale, Irene	Packer	20	$19.00	$380.00
16	Pearce, John	Packer	30	$19.00	$570.00
17					
18	**Totals**		**170**		**$3,455.00**
19					
20	*Average hours worked*	28			

Opening a workbook

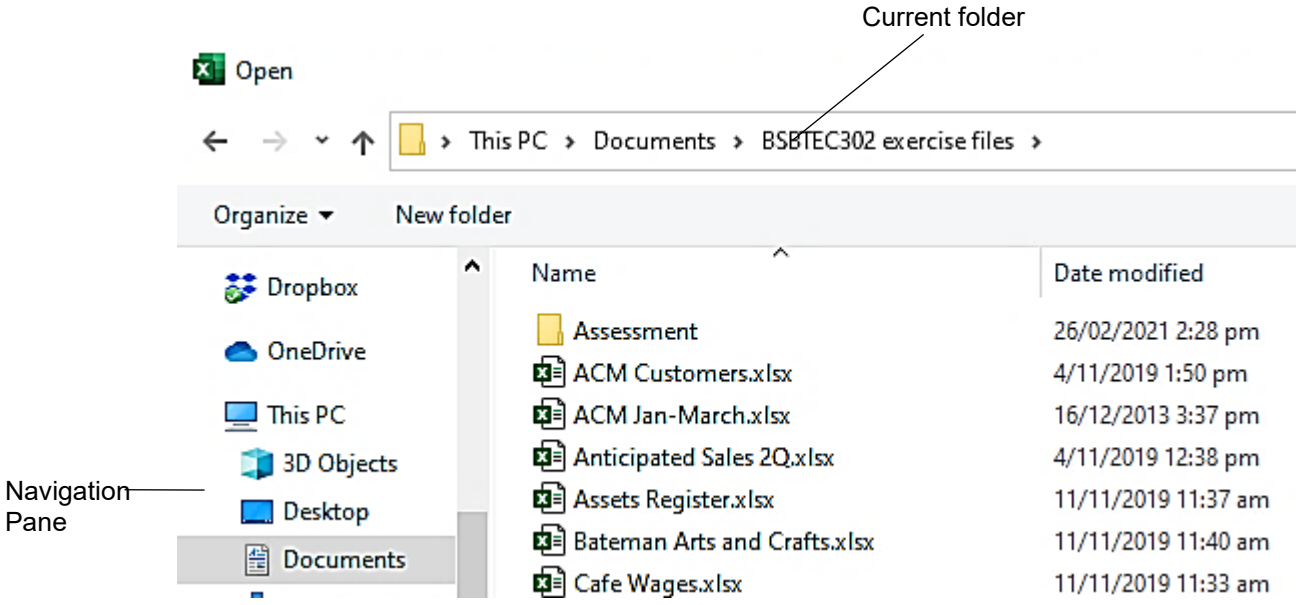
Exercise 5

1. With Excel open click on File.

Ctrl O 2. Click on Open. Backstage view will open with the Open screen displayed. The locations shown may vary depending on what cloud-based saving locations you have access to.



3. Click on Browse Browse. The Open dialog box will display.



Current folder	Displays the currently selected folder.
Navigation Pane	Lists all drives (including portable USB drives connected to the computer) and main folders.

Status Bar

Positioned on the bottom of the screen this customisable bar keeps you updated with information about your worksheet.

The Ready button shows the status of the cell (ready to have a value entered) and any selected cells will display information such as the Average and Sum of the cells, as well as how many cells are selected (Count).

Selecting cells

Exercise 10

1. With the **Exercise 9…** workbook still open practise selecting using the methods described below.

Selecting	Action
Single cell	Click in the centre of the cell.
Range of cells	Click in the first cell in the range and drag to the last cell in the range. Alternatively, click in the first cell, hold down the Shift key and click on the last cell.
Non-adjacent cells	Select the first range of cells then hold down the Ctrl key on the keyboard and select the second range of cells and so on.
An entire column(s)	Click on the column header C OR with the cursor in the column press Ctrl Spacebar. **Adjacent columns** Click and drag on the column headers. **Non-adjacent columns** Hold down the Ctrl key and click on each column header.
An entire row(s)	Click on the row header 7 OR with the cursor in the row press Shift Spacebar. **Adjacent rows** Click and drag on the row headers. **Non-adjacent rows** Hold down the Ctrl key and click on each row header.
Entire worksheet	Click on the Select All button OR click within the worksheet data and press Ctrl A. 
Deselecting selected cells	Click in a blank cell outside the selected cells.

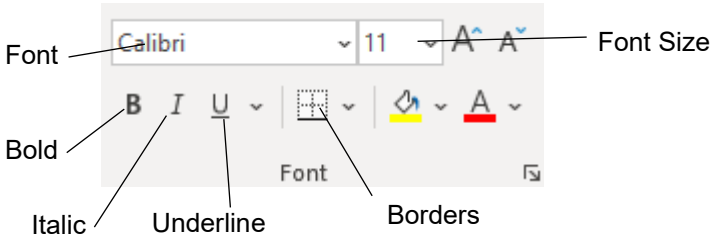
Tip

You can hold down the Shift key and use the arrow keys on the keyboard to select cells. Pressing an arrow key (with the Shift key released) will deselect cells.

2. Click on File and click on Close. If asked to save changes, click on Don't Save.

Formatting fonts

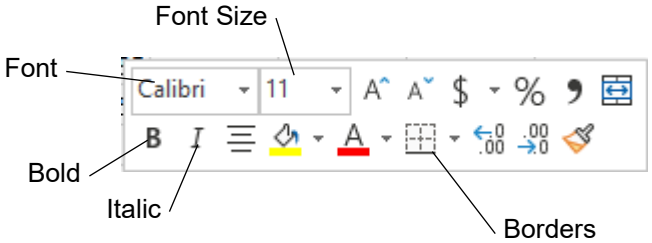
A font is a style of type. Different fonts can be selected using the Font Group on the Home Ribbon.



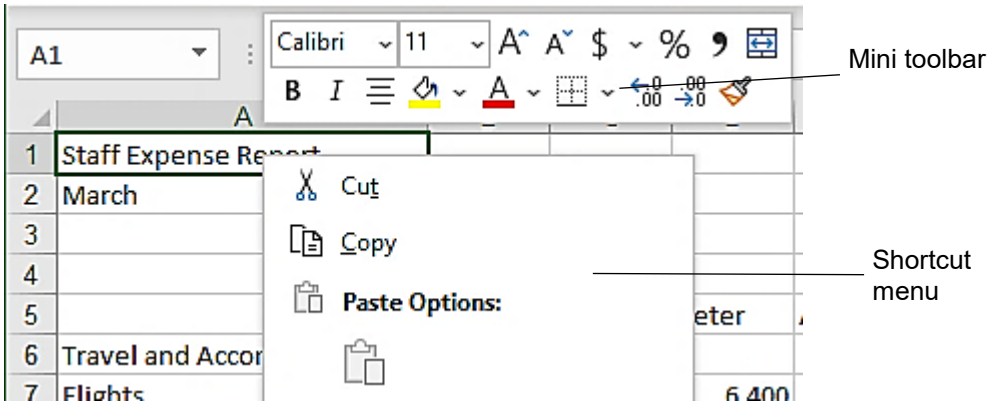
Excel offers **Live Preview** which displays the formatting before it is applied. This can be useful when selecting fonts for your worksheet. Remember to use fonts that fit the purpose and style of the worksheet in line with your workplace style guide.

Mini toolbar

A floating mini toolbar provides access to some of the tools commonly used to format a worksheet. It is activated using the right mouse button.



To display the mini toolbar select the cell(s) to be formatted and click the right mouse button. The mini toolbar and the shortcut menu will display.



Button	Description	Example
Font	Style of type.	**Gill Sans Ultra Bold** Berlin Sans FB
Font Size	The size of the type. The higher the number, the larger the type size.	10 pt, 12 pt, 14 pt, 16 pt
Bold	Applies a thicker and darker attribute to data.	**Excel**
Italic	Formats data on an angle.	*Excel*
Borders	Select from a range of borders and styles from the ▾ of the Borders button.	Australia | America

Borders

Borders (lines) can be inserted into a worksheet using the Borders button in the Font Group. Click on the and select the style of border required.

When an option is selected from the Borders button, that option then becomes the default. To apply that same border to other selected cells just click on the button again.

Exercise 38

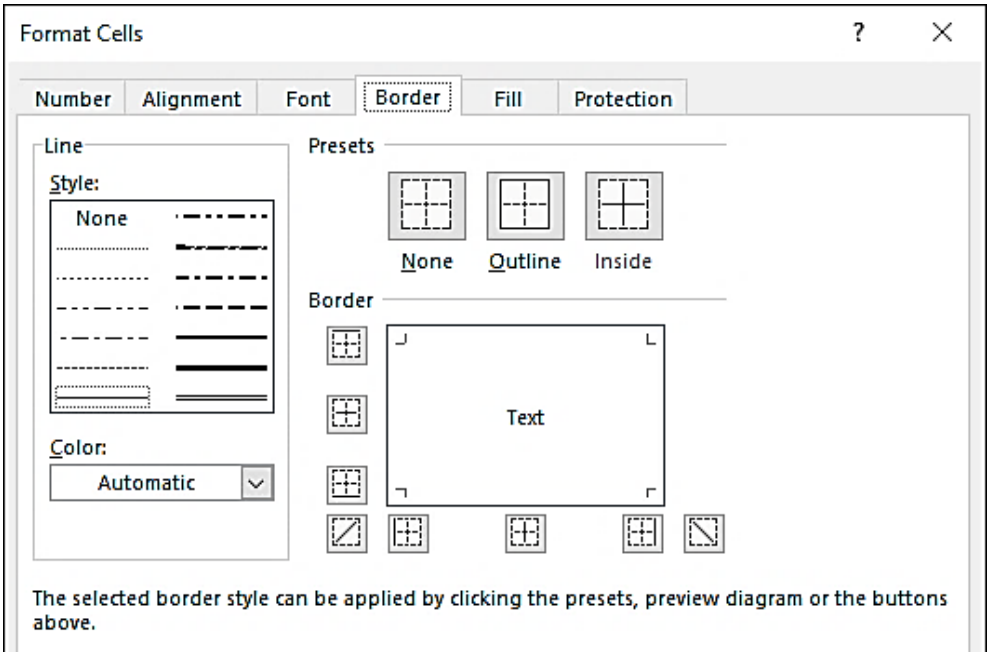
1. Using **Exercise 37...** select cells A13 to D13.
2. Click on the of the Borders button .
3. Select Outside Borders.
4. Select cells A26 to D26.
5. Click on the of the Borders button and select Top and Double Bottom Border.
6. Click on any cell to see the borders in your worksheet.
7. Save the workbook and leave it open for the next exercise.

Customising borders

Selecting More Borders provides options to customise borders.

Exercise 39

1. Using **Exercise 37...** select cells A1 to D2.
2. Click on the of the Borders button.
3. Select More Borders More Borders... from the bottom of the menu to display the Format Cells dialog box.



4. From the Line section in the *Style:* box click on .
5. From the *Color:* drop-down list click on and select Dark Blue from the Standard Colors.
6. Click on the Outline button . This will apply the line style chosen to the outside of the selected cells.

Data sensitivity

Spreadsheets can potentially contain personal or commercially sensitive information, e.g. profit figures. Organisations should have procedures to keep spreadsheets secure, such as:

- restricting access to servers where spreadsheets are stored
- restricting how spreadsheets are distributed
- protecting spreadsheets with passwords.

When working on spreadsheets do not leave the file open and source documents accessible when leaving your desk.

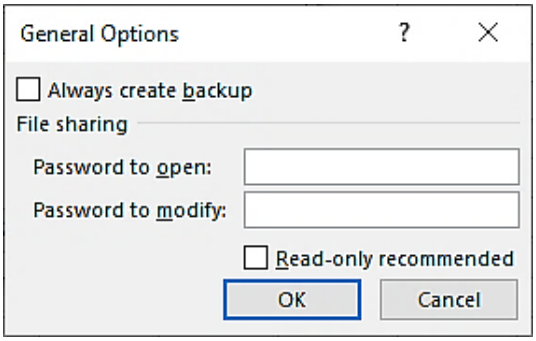
Password protecting a spreadsheet

Passwords can be used to prevent others from opening a file and must be entered each time a file is opened. Passwords are case sensitive requiring uppercase and lowercase letters to be typed **exactly** as was done when the password was set. If you lose the password, you will not be able to access the file again.

Password protecting a workbook

Exercise 56

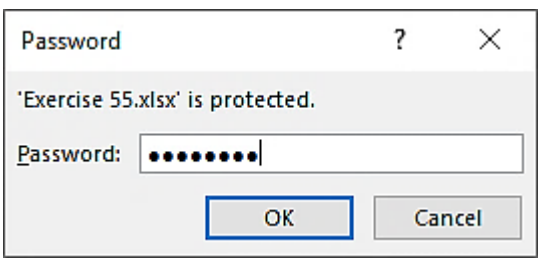
1. Open the file **December sales and chart** from the *978-1-921971-67-9 BSBTEC302 exercise files* folder.
2. Press the F12 key to display the Save As dialog box.
3. Click on Tools Tools and select General Options... .



4. Click in the *Password to open:* box and type: **password**
5. Click on OK.
6. Retype the password in the Confirm Password box and click on OK.
7. Navigate to your working folder. Enter a file name following workbook procedures and click Save to save the password protected file.

Ctrl W 8. Close the file.

9. Open the file **Exercise 56…** typing the password in the Password: box.



Functions

A function is a built-in formula provided by Excel.

Functions perform tasks such as adding, calculating the average of a group of values, inserting the date, calculating angles calculating the value of an investment over a period. AutoSum is an example of a function.

The AutoSum button provides access to a number of other functions.

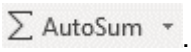
It is also possible to type the function name directly into the Formula Bar.

Average

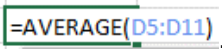
The AVERAGE function returns the average value in a selected range of cells, i.e.

=AVERAGE(number1,number2,...)

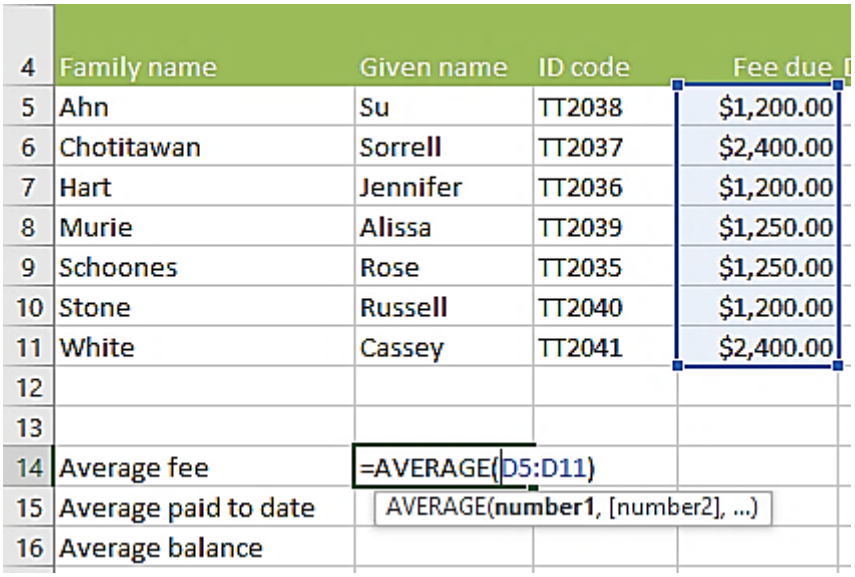
Exercise 72

1. Open the file **Course average** from the *978-1-921971-67-9 BSBTEC302 exercise files* folder.
2. Save As the file in your working folder following workbook procedures.
3. Click on cell B14 and click the down arrow next to the AutoSum button 

.
4. Click on 

to insert the Average formula into the cell.
5. Select cells D5 to D11 so that the formula reads 

.



4	Family name	Given name	ID code	Fee due
5	Ahn	Su	TT2038	$1,200.00
6	Chotitawan	Sorrell	TT2037	$2,400.00
7	Hart	Jennifer	TT2036	$1,200.00
8	Murie	Alissa	TT2039	$1,250.00
9	Schoones	Rose	TT2035	$1,250.00
10	Stone	Russell	TT2040	$1,200.00
11	White	Cassey	TT2041	$2,400.00
12				
13				
14	Average fee	=AVERAGE(D5:D11)		
15	Average paid to date	AVERAGE(**number1**, [number2], ...)		
16	Average balance			

6. Press Enter.
7. With cell B15 selected calculate the average amount paid to date including cells G5 to G11.
8. With cell B16 selected calculate the average balance using cells H5 to H11.

   Note

   The function will automatically try to calculate the amounts above the active cell. Just continue to select the appropriate range.

Data accuracy

Accounting, financial and business information must be valid, reliable and accurate. This is known as **data integrity**.

It is important that all text, numbers and formulas entered into a worksheet are checked carefully. Make sure all data entered matches the source data.

Use the Spelling tool to check for spelling errors, but also read the text for errors not recognised as a spelling error.

There are several methods which can be used to check formulas manually:

- Double click in a cell and look at the coloured references.
- Double click in a cell and check the formula and range on the Formula Bar.
- Use a calculator to check calculations are correct.

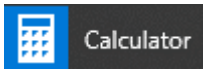
Checking formulas using a calculator

Windows has a built-in calculator. If you do not have a calculator at your desk, this handy application will help you to check that your formulas are accurate.

The buttons on the calculator are:

÷	Divide
×	Multiply
−	Subtract
+	Add
⌫	Deletes the most recent entered digit
CE	Clears the most recent number
C	Clears all

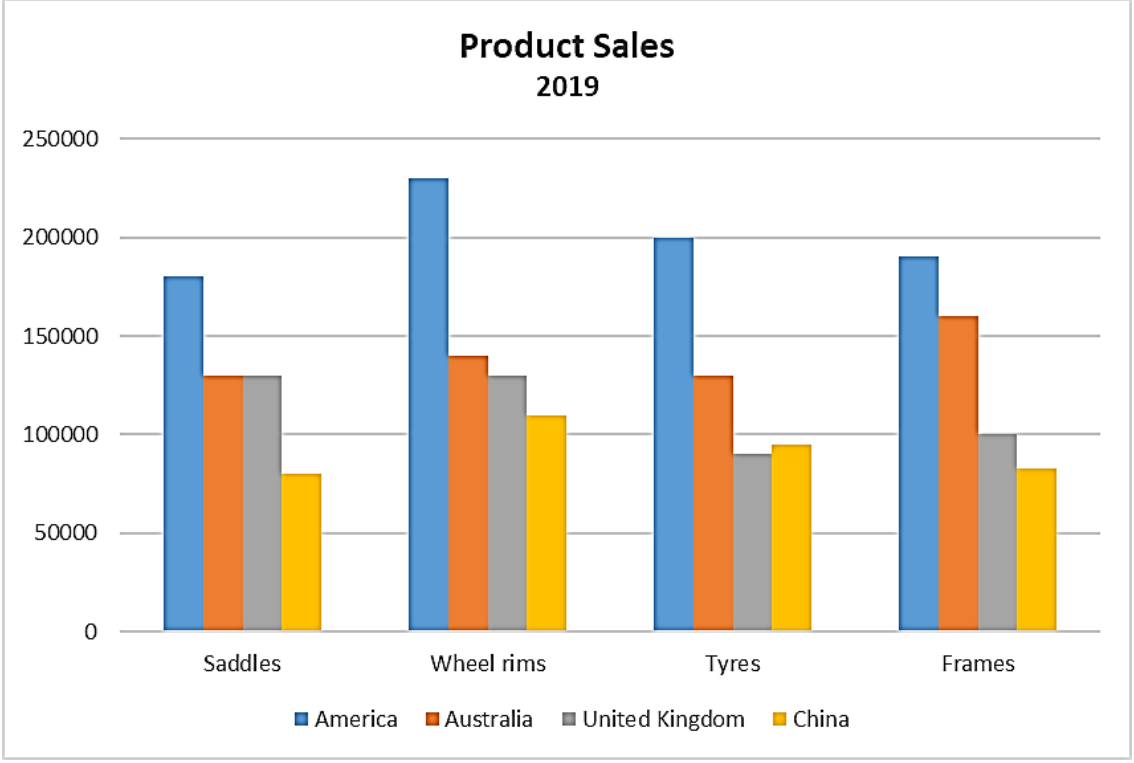
Exercise 88

1. Open **Exercise 84...** from your working folder.
2. Click on the Start button  in the bottom left corner of the screen.
3. Scroll down the list of applications and click on 

to open the calculator app.
4. Type the time out number: **12.5** (the 0.5 is for ½ an hour).
5. Click on subtract.
6. Type the time: **8.5**
7. Click on  equals or press Enter. The result will display 4 which is the same as the 4 hours shown as the *Total Time* on your worksheet.
8. Click on  to clear the current calculation.
9. Save and close the workbook.
10. Click  to close Calculator.

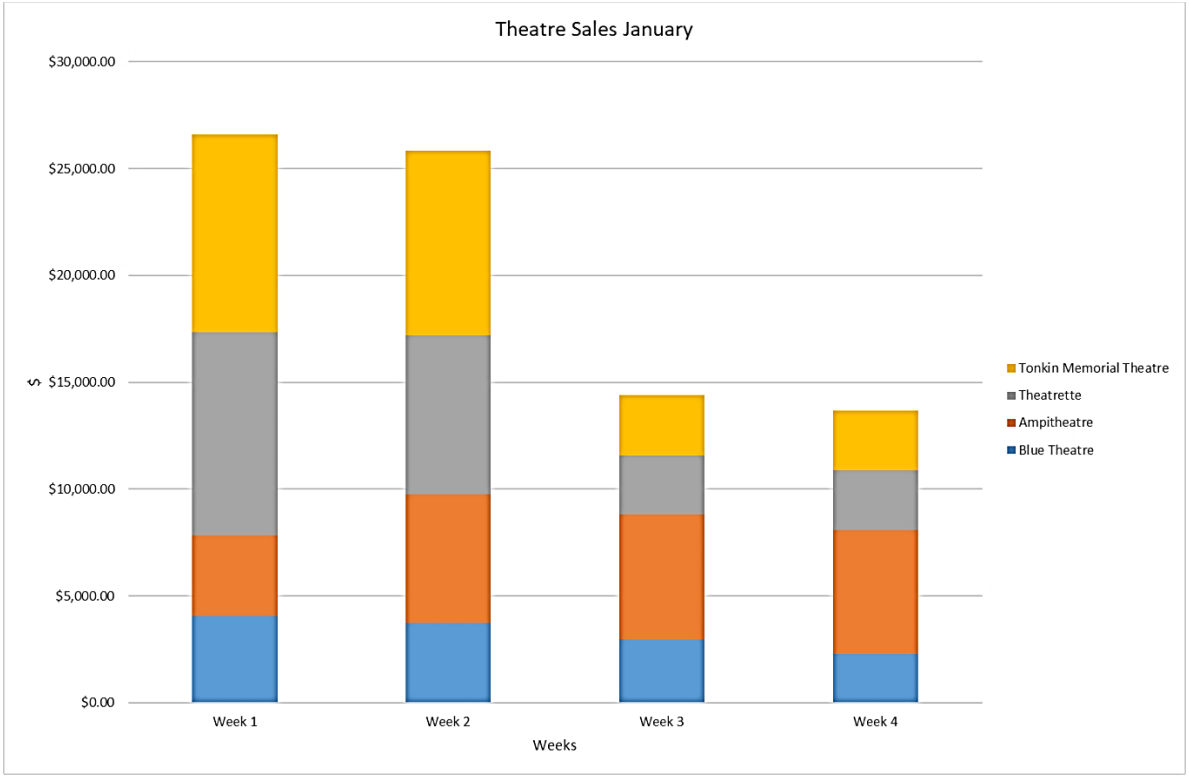
Column chart

The column chart below is being used to compare theatre sales for each week as well as giving a graphical overview of the theatre sales for the month.



Stacked column chart

A stacked column chart places the data variables on top of one another.



Templates

A template is a master file used as a basis to create spreadsheets that have a similar layout, formatting and function. Once the template is created and saved it can be used with updated information for each new situation. This is especially useful for spreadsheet designs that are used regularly. Time sheets, petty cash and invoices/statements are examples of spreadsheet-based documents that can be created as templates and updated as needed.

Saving templates

Templates are saved differently from normal workbooks and a different file format is used. They are usually saved to a templates folder specified in the Microsoft Office applications, but you should check with your supervisor or organisational policies in case there is a preferred location to save to.

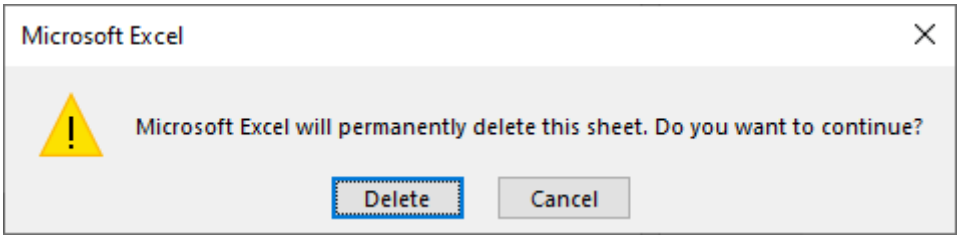
Exercise 125

1. Open the file **Exercise 100…** from your working folder.
2. Click on File and click on Save As.
3. Click on the Browse button.
4. In the Save As dialog box click on the *Save as type:* .
5. Select Excel Template. The default template storing folder will open. Do not change the folder location.

   Note

   If you are working on your OneDrive or a USB memory stick, when you change the file type to Word Template the storage location will change to the default template location.
6. Click in the *File name:* text box and select the existing text.
7. Type in the new file name: **Spartacus template**
8. Click on Save.
9. Display the *Brisbane* worksheet.
10. Right click on the *Sydney* sheet tab and select Delete. The following dialog box will display:

11. Click on Delete.
12. Repeat this process to delete the *Auckland* and *Melbourne* worksheets.
13. Delete the branch name from cell C4.
14. Delete the numbers from cells B9 to D9.
15. Delete the numbers from cells B12 to D16.
16. Save and close the template leaving Excel open.

Evidence guide

Elements and Performance Criteria

Element *Elements describe the essential outcomes.*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*	**Assessment task**
1. Select and prepare resources	1.1 Identify spreadsheet task purpose and audience	Task 2, Task 3
	1.2 Identify task requirements in relation to data entry, storage, output, timeline and presentation format	Task 2, Task 3
	1.3 Select most appropriate application to produce spreadsheet, according to available resources and organisational policies and procedures	Task 2, Task 3, Task 4, Task 5, Task 6
2. Plan spreadsheet design	2.1 Design spreadsheet design to suit purpose, audience and information requirements of task	Task 2, Task 3, Task 4, Task 5, Task 6
	2.2 Confirm spreadsheet is designed to enhance readability and appearance, and is in accordance with organisational and task requirements	Task 2, Task 3, Task 4, Task 5, Task 6
	2.3 Use available application functions and confirm consistency of design and layout, adhering to organisational and task requirements	Task 2, Task 3, Task 4, Task 5, Task 6
3. Create spreadsheet	3.1 Enter data, check and amend to maintain consistency of design and layout, in accordance with organisational and task requirements	Task 2, Task 3, Task 4, Task 5, Task 6
	3.2 Format spreadsheet using application functions, according to organisational policies and procedures and presentation requirements	Task 2, Task 3, Task 4, Task 5, Task 6
	3.3 Consult with relevant stakeholders and confirm formulae are tested and output meets task requirements	Task 2, Task 3, Task 4, Task 6
	3.4 Use required help functions and action issues as required	All tasks
4. Produce charts	4.1 Select chart type and design that offers analysis of numerical data, and meets organisational and task requirements	Task 4
	4.2 Create charts using required data range in spreadsheet	Task 4
	4.3 Modify chart type and layout using formatting features, adhering to organisational and task requirements	Task 5
5 Finalise and present spreadsheets	5.1 Review and edit final spreadsheet and accompanying charts, and prepare for delivery according to task requirements	Task 2, Task 3, Task 4, Task 5, Task 6
	5.2 Deliver document to required stakeholders according to organisational requirements, policies and procedures	Task 2, Task 3, Task 4, Task 5, Task 6
	5.3 Name and store spreadsheet according to organisational requirements and exit application	Task 2, Task 3, Task 4, Task 5, Task 6

Assessment Requirements

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, design, produce and finalise a spreadsheet on at least four occasions.

Performance Evidence

In the course of the above, the candidate must:	**Assessment task**
• produce spreadsheet documents that align to document purpose and appropriate to target audience	Task 2, Task 3, Task 4, Task 5, Task 6
• design spreadsheets using:	Task 2, Task 3, Task 4, Task 5, Task 6
• formulas and functions with:	
• addition	Task 3
• subtraction	Task 2, Task 3
• division	Task 4, Task 5
• multiplication	Task 2, Task 3
• brackets	Task 2, Task 3, Task 6
• design spreadsheets that address a range of data and organisational requirements	Task 2, Task 3, Task 4, Task 5, Task 6
• use software functions to create spreadsheets that adhere to organisational requirements relating to style and presentation	Task 2, Task 3, Task 4, Task 5, Task 6
• use relevant help functions to rectify document issues	All tasks

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:	**Assessment task**
• key elements of formatting of spreadsheets appropriate to workplace documents, including the ability to calculate:	Task 2, Task 3, Task 4, Task 5, Task 6
• sum totals	Task 2, Task 3, Task 4, Task 5
• averages	Task 2
• counts of values	Task 3
• key features of spreadsheet applications, both cloud-based and non-cloud based	Task 2, Task 3, Task 4, Task 5, Task 6
• key features of organisational guidelines on spreadsheet design and use	Task 2, Task 3, Task 4, Task 5, Task 6
• organisational requirements for ergonomics, work periods and breaks, and sustainability in relation to spreadsheet production.	Task 1