Design and produce spreadsheets (Excel 2019)

Supporting BSBITU314 Design and produce spreadsheets in the Business Services Training Package.

Author

Software Publications writing team

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Software Publications Pty Ltd

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Sample pages

BSBITU314 Design and produce spreadsheets

This unit describes the skills and knowledge required to develop spreadsheets through the use of both cloud-based and non-cloud based spreadsheet applications.

It 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	18–19, 194–197
	1.2 Identify task requirements in relation to data entry, storage, output, timeline and presentation format	18–21, 22–23, 194–197
	1.3 Select most appropriate application to produce spreadsheet, in accordance with available resources and organisational policies	26, 34
2. Plan spreadsheet design	2.1 Ensure spreadsheet design suits purpose, audience and information requirements of task	Throughout workbook
	2.2 Ensure spreadsheet design enhances readability and appearance and meets organisational and task requirements for style and layout	19–21, 194–197
	2.3 Use available application functions to ensure consistency of design and layout, adhering to organisational and task requirements	Throughout workbook
3. Create spreadsheet	3.1 Enter data, check and amend to maintain consistency of design and layout, in accordance with organisational and task requirements	Throughout workbook
	3.2 Format spreadsheet using application functions to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements	Throughout workbook
	3.3 Ensure formulae are tested and used to confirm output meets task requirements, in consultation with appropriate personnel as required	Throughout workbook
	3.4 Use relevant help functions to overcome intermediate-level issues with spreadsheet design and production	57

Sample pages

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Element *Elements describe the essential outcomes.*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*	**Page reference**
4. Produce intermediate-level charts	4.1 Select chart type and design that that offers analysis of numerical data, and meets organisational and task requirements	144–148
	4.2 Create charts using appropriate data range in the spreadsheet	149–157
	4.3 Modify chart type and layout using formatting tools, adhering to organisational and task requirements	150–156
5 Finalise and present spreadsheets	5.1 Review and edit final spreadsheet and any accompanying charts, and prepare for delivery in accordance with task requirements	Throughout workbook
	5.2 Deliver document to relevant audience within designated timelines and in accordance with organisational requirements for speed and accuracy	Throughout workbook
	5.3 Name and store spreadsheet appropriately in accordance with organisational requirements and exit application without data loss/damage	Throughout workbook

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 and uses format, layout, style guides and standard naming conventions to organise data according to purpose and audience	Throughout workbook
Oral communication	Participates in exchange of information to determine whether formulae utilised produce result required	20, 102, 171, 194–197
Numeracy	Uses mathematical equations to create simple formulae and validate numerical data	Throughout workbook
Navigate the world of work	Recognises and follows explicit and implicit protocols and meets expectations associated with own role	Throughout workbook
Interact with others	Collaborates with others to achieve joint outcomes	18–19, 102, 171, 194–197
Get the work done	Uses advanced features within applications to address routine and complex work tasks	Throughout workbook

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Assessment for this Unit

This Unit is assessed by:

- recommending spreadsheet applications
- demonstrating correct WHS practices
- creating and amending spreadsheets.

Assessment Requirements

Performance Evidence

Evidence of the ability to:	**Page reference**
• follow correct ergonomic, conservation requirements and relevant organisational and statutory requirements	10–17
• produce spreadsheet documents that align to document purpose and appropriate to target audience	Throughout workbook
• design spreadsheets that address a range of data and organisational requirements	Throughout workbook
• use software functions, graphics and support materials to create spreadsheets that adhere to organisational requirements relating to style and presentation	Throughout workbook
• use relevant help functions to rectify intermediate-level document issues	57
• produce spreadsheet document in appropriate format for review, including ability to create and modify intermediate-level charts that analyse the dataset	Throughout workbook
• adhere to designated timelines and requirements for high accuracy.	Throughout workbook

Knowledge Evidence

The candidate must be able to demonstrate the following knowledge to effectively complete the tasks outlined in the elements and performance criteria of this unit and to manage tasks and reasonably foreseeable contingencies in the context of the work role.	**Page reference**
• Key elements of intermediate-level formatting styles appropriate to workplace documents	Throughout workbook
• Key functions of spreadsheet applications, both cloud-based and non-cloud based	Throughout workbook
• Key features of organisational guidelines on spreadsheet design and use	21, 194–197
• Key features of organisational requirements for ergonomic standards, work periods and breaks, and conservation techniques.	10–17

Sample pages

BSBTEC302 Design and produce spreadsheets

At the time of writing this workbook BSBITU314 Design and produce spreadsheets was under review and a draft BSBTEC302 Design and produce spreadsheets was circulated for industry feedback. This workbook has been written to include additional requirements in that draft.

Using this workbook

Exercises

Completing the exercises in this workbook will practise specific spreadsheet skills.

Consolidation exercises are marked with the icon.

Revision exercises are marked with the icon.

Keyboard instructions

Keyboard shortcuts can increase overall productivity when working on a device. This workbook includes many keyboard shortcuts available in Excel.

When pressed, the command keys Ctrl, Alt and Shift do not do anything on their own; however, these keys activate a range of commands or functions when used together with other keys, e.g. Ctrl C is used to copy selected cells. To use these commands hold down the command key then press the keyboard key once. To use the shortcut key combination press and hold down the keys in the order given, i.e. hold down the Ctrl key then press the C key.

Mouse instructions

Throughout this workbook you will be using the mouse to edit, navigate around a spreadsheet and input instructions by clicking on various buttons and commands.

The following instructions are to be interpreted as:

Click	Press and release the left mouse button.
Right click	Press and release the right mouse button.
Double click	Press and release the left mouse button twice in quick succession.
Click and drag	Press and hold the left mouse button while dragging.
Scroll button	The scroll button allows you to scroll through documents quickly. Roll the button forward to scroll upwards (move up the page) and roll backward to scroll in a downward direction (down the page).
Ctrl Scroll	Zoom tool: Hold the Ctrl button on the keyboard and scroll forward to Zoom In on a document and scroll backward to zoom out.

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 tools 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.

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Organisational policies for WHS

Some organisations have policies and/or procedures designed to protect your health while using digital devices, including:

- You are required to attend an induction where safe working practices are instructed.
- Do not work through your lunch break – take your allocated breaks.
- Use applications to remind you to take short breaks from typing.
- Do not check work emails outside work hours.
- If you are in the office, connect your portable device to a monitor and keyboard.
- Report any safety issues in the workplace promptly to your supervisor or designated WHS officer.

Ergonomics

Ergonomics is the study of the efficiency, comfort and safety of people in their working environment. In the office environment the field of ergonomics plays an important role in the production of well-designed device equipment and furniture.

Learning how to use your digital device in an ergonomically sound manner will reduce the risk of health problems and keep you comfortable in your working environment.

In a traditional workplace setting ergonomic design relates to the **workstation** which is the device or digital device, desk, surrounding furniture and equipment. The increase in the number of people working on portable devices (notebooks, tablets, smartphones) and the associated increase in people working away from the traditional office has meant that ergonomic advice has had to evolve.

Sample pages

Setting up a workstation

Screen

- The monitor should be positioned so that it is straight in front of you.
- The screen should be an arm's length (40–90 cm) away from your eyes.
- The top of the viewing area of the screen should be just below eye level.
- The height of the monitor should be adjustable; this may require using a monitor stand to adjust it to the correct height for you.

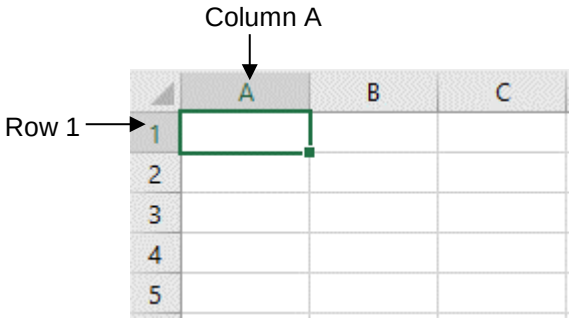
Keyboard position

To correctly position the keyboard on the workstation, place your hands over the centre of the keyboard and check:

- forearms are parallel with the ground
- elbows are at a 90° angle (forming an L shape between the upper and lower arms)
- fingers rest over the 'ASDF' row and all keys can be reached without stretching the fingers or forearms
- wrists are not raised or bent in an unnatural angle
- elbows are tucked in neatly by your sides
- fingers are curved in a natural position.

Structure of spreadsheets

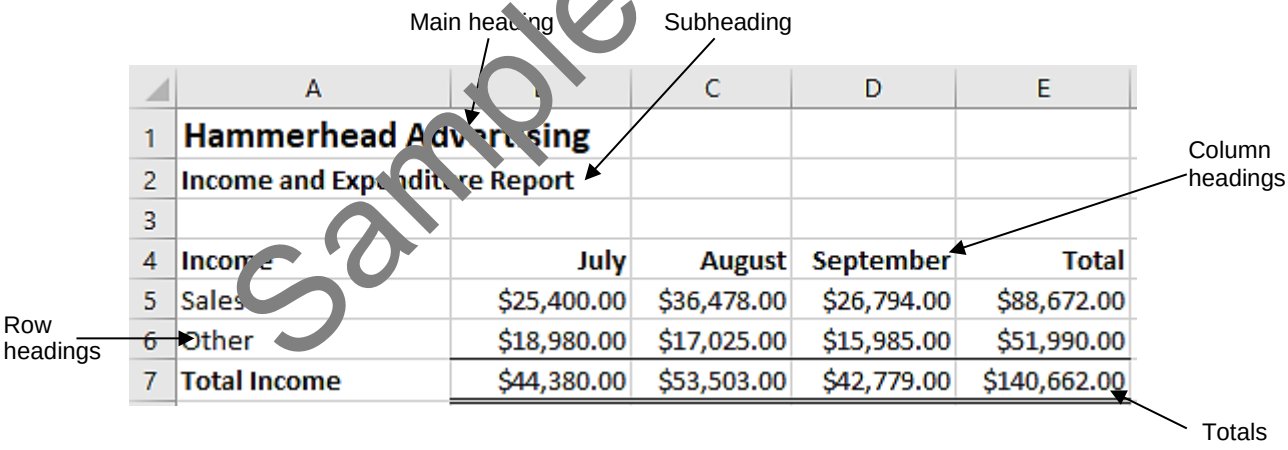
A spreadsheet is made up of columns and rows that intersect to form cells. The columns are identified with letters and the rows with numbers, creating a cell reference known as the **cell address**. In this illustration the active (selected) cell is A1 (column A, row 1) and displays with a dark outline.



Spreadsheet layout

A spreadsheet must be built so that it can be read and understood by other people. To achieve this it usually has:

- main heading
- subheading
- column headings
- row headings
- totals.



Sample pages

Opening Excel

Exercise 3

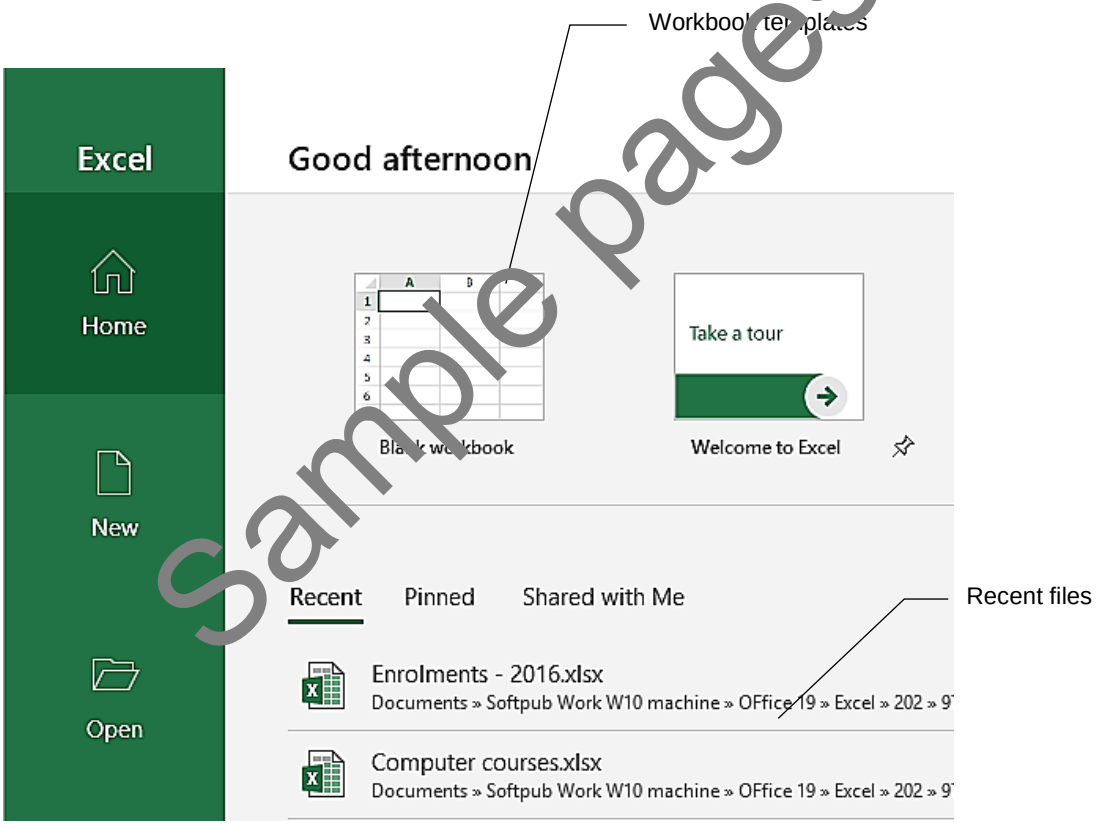
1. Click on the Start button .
2. Scroll down the list of installed applications.
3. Click on

to open Excel.

Startup screen

Excel refers to individual spreadsheets as **worksheets**. Worksheets are combined into a file called a **workbook**. The terms worksheet and workbook will be used when referring specifically to Excel files.

When Excel is opened, the Startup screen displays. This includes a list of recently accessed workbooks on the left along with a range of templates which you can choose from when creating a new workbook.



One of the templates is called Blank workbook. This is the template used when creating a new workbook.

Creating a new workbook

Exercise 4

With the Excel startup screen displayed click on **Blank workbook**. A blank worksheet will display.

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Working with formulas

Formulas are mathematical functions used to perform calculations in a worksheet.

An equals sign (**=**) is used in front of every formula. This is a good way to tell the difference between formulas and entered values (numbers) in cells.

	A	B	C	D	E
1	**Hammerhead**				
2	**Income and Expen**				
3					
4	**Income**	**July**	**August**	**September**	**Total**
5	Sales	25400	36478	26794	=SUM(B5:D5)
6	Other	18980	17025	15985	=SUM(B6:D6)
7	**Total Income**	=SUM(B5:B6)	=SUM(C5:C6)	=SUM(D5:D6)	=SUM(B7:D7)

All of the formulas shown in this worksheet begin with =SUM. SUM is an example of a function, which is explained further later in this workbook.

What is in a formula?

Formulas are split into parts and the following definitions and explanations will help you to better understand how to create a formula:

- A formula always starts with an **=**.
- **Reference** is the name of the cell, e.g. B7.
- A **range** is a group or block of cells shown with a colon between the cell references (A3:B5 is the range of all cells between cell A3 and B5). The selected values in the range are shown in parentheses (brackets).
- An **argument** is the values in the range
- A **constant** is the value entered in the formula, e.g. =B5 + 10, the number 10 does not change if you copy or move the formula, it remains constant.
- An **operator** to perform the calculation (**+** add, **–** subtract, ***** multiply, **/** divide, **>** greater than, **<** less than).

The formula is always calculated from left to right, except that multiply and divide are calculated first, before add and subtract.

Sample pages

	A	B
1		
2	20	
3	50	
4	70	
5	60	
6	=AVERAGE(A2:A5)	

=Average(A2:A5)

= is the function

A2:A5 is the range

3	Sold	2000
4	Costs	1200
5	Profit	=B3-B4

=B3-B4

= is the function

B3 and B4 are references

The minus sign is the operator

Relative and absolute cell references

In the previous exercises you copied a formula down to fill a range.

Relative cell references

When you copy a formula from one cell to another, cell references in the formula will change. Excel attempts to help you by automatically updating cell formulas as they are moved or copied from one location to another. This is known as a **relative cell reference**.

Exercise 38

1. Open the file **Exercise 14…** from your working folder.
2. Click in cell **H5**. Look in the Formula Bar and you should see the formula **=SUM(B5:G5)**
3. Click in cell **H6**. This is the first cell you copied this formula to. You should see that this formula is **= SUM(B6:G6)**.
4. Look at all the remaining formulas in column **H**. You will see that Excel automatically changed the row letter in each formula to relate to the row you copied it to.
5. Close the workbook.

Absolute cell references

Most of the time these automatic changes to a copied formula are exactly what you want, but sometimes you do not want to have the cell references changed.

If you need a formula to remain constant, you need to make it an **absolute** cell reference. To change a cell reference to absolute click on the cell reference (either in the Formula Bar or in the cell while editing) then press the F4 function key. A $ symbol is inserted before the column and row references, e.g. $C$3.

Rate	60		
Hours	Labour Cost	Parts	Sub-Total
19.5	=$C$3*B5	125	=C5+D5
27	=$C$3*B6	385	=C6+D6
28	=$C$3*B7	124.95	=C7+D7
19	=$C$3*B8	602.8	=C8+D8
4.5	=$C$3*B9	302.1	=C9+D9
32.5	=$C$3*B10	251.1	=C10+D10

Absolute references
($C$3 in each formula)

Relative references
Each cell reference different

Exercise 39

1. Open the supplied file **Seaview Job Sheet** and Save As (F12) the file in your working folder following workbook procedures.
2. Calculate the labour cost using the rate value in **C3** as an **absolute reference** using the instructions provided.
3. In cell **C5** start the formula with **=** then click on cell **C3** and press the **F4** key once. The cell reference should change to **$C$3.**

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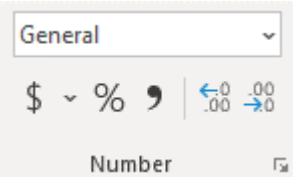
Entering and calculating numbers

The **Number** Group on the **Home** Ribbon has the formatting buttons to change how values such as Date, Time, Text and Percentages display in a cell.

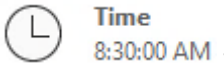


Calculating time

When entering a time value into a cell, use a colon (:) between the hours and minutes, e.g. 8:30 (half past eight). It is also preferable to use a 24-hour clock (military and airline style time) so that one o'clock in the afternoon is entered as 13:00 hours.

Exercise 48

1. Open the supplied file **Wages - Staff Hours** and Save As the file in your working folder following workbook procedures.
2. Select cells **C5:D10**.
3. Click on the next to

in the **Number** Group.
4. Click 

from the gallery. The format shows hours, minutes and seconds.
5. Save and leave the workbook open.

Customising time values

Exercise 49

1. Using **Exercise 48…** check cells **C5:D10** are still selected.
2. Click on the **Number Group** Dialog Box Launcher .
3. Click on **Custom** in the Category: list on the left of the dialog box.
4. Scroll up the Type: list and select the option

for hours and minutes only.
5. Click OK.

5	Starr	Kayla	8:30	12:30
6	Fuller	Lina	12:30	17:30
7	Wall	Rhys	9:15	13:15
8	Capella	Frank	8:30	14:00
9	Lopez	Jack	14:00	18:30
10	Crane	Keith	7:30	14:00

6. Save and leave the workbook open.

Sample pages

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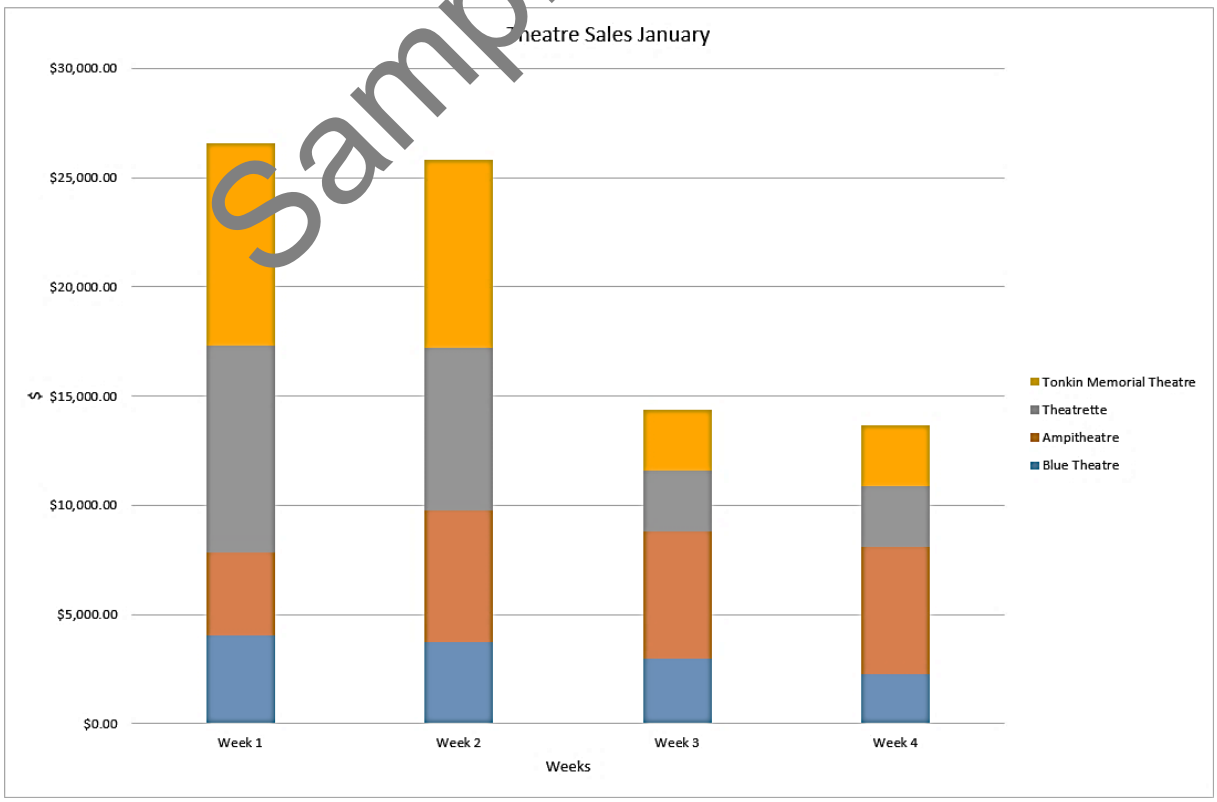
Column chart

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.



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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 3 Task 4
	1.2 Identify task requirements in relation to data entry, storage, output, timeline and presentation format	Task 3 Task 4
	1.3 Select most appropriate application to produce spreadsheet, in accordance with available resources and organisational policies	Task 1
2. Plan spreadsheet design	2.1 Ensure spreadsheet design suits purpose, audience and information requirements of task	Task 3 Task 4 Task 5 Task 6
	2.2 Ensure spreadsheet design enhances readability and appearance, and meets organisational and task requirements for style and layout	Task 3 Task 4 Task 5 Task 6
	2.3 Use available application functions to ensure consistency of design and layout, adhering to organisational and task requirements	Task 3 Task 4 Task 5 Task 6 Task 7
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 3 Task 4 Task 5 Task 6 Task 7
	3.2 Format spreadsheet using application functions to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements	Task 3 Task 4 Task 5 Task 6
	3.3 Ensure formulae are tested and used to confirm output meets task requirements, in consultation with appropriate personnel as required	Task 3 Task 4 Task 5 Task 6 Task 7
	3.4 Use relevant help functions to overcome intermediate-level issues with spreadsheet design and production	Task 7

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Element *Elements describe the essential outcomes.*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*	**Assessment task**
4. Produce intermediate-level charts	4.1 Select chart type and design that that offers analysis of numerical data, and meets organisational and task requirements	Task 5
	4.2 Create charts using appropriate data range in the spreadsheet	Task 5
	4.3 Modify chart type and layout using formatting tools, adhering to organisational and task requirements	Task 6
5 Finalise and present spreadsheets	5.1 Review and edit final spreadsheet and any accompanying charts, and prepare for delivery in accordance with task requirements	Task 3 Task 4 Task 5 Task 6 Task 7
	5.2 Deliver document to relevant audience within designated timelines and in accordance with organisational requirements for speed and accuracy	Task 3 Task 4 Task 5 Task 6 Task 7
	5.3 Name and store spreadsheet appropriately in accordance with organisational requirements and exit application without data loss/damage	Task 3 Task 4 Task 5 Task 6 Task 7

Assessment Requirements

Performance Evidence

Evidence of the ability to:	**Assessment task**
• follow correct ergonomic, conservation requirements and relevant organisational and statutory requirements	Task 2
• produce spreadsheet documents that align to document purpose and appropriate to target audience	Task 3 Task 4 Task 5 Task 6 Task 7
• design spreadsheets that address a range of data and organisational requirements	Task 3 Task 4 Task 5 Task 6 Task 7
• use software functions, graphics and support materials to create spreadsheets that adhere to organisational requirements relating to style and presentation	Task 3 Task 4 Task 5 Task 6 Task 7

Sample pages

Evidence of the ability to:	**Assessment task**
• use relevant help functions to rectify intermediate-level document issues	Task 7
• produce spreadsheet document in appropriate format for review, including ability to create and modify intermediate-level charts that analyse the dataset	Task 3 Task 4 Task 5 Task 6 Task 7
• adhere to designated timelines and requirements for high accuracy.	Task 3 Task 4 Task 5 Task 6 Task 7

Knowledge Evidence

The candidate must be able to demonstrate the following knowledge to effectively complete the tasks outlined in the elements and performance criteria of this unit, and to manage tasks and reasonably foreseeable contingencies in the context of the work role.	**Assessment task**
• Key elements of intermediate-level formatting styles appropriate to workplace documents	Task 3 Task 4 Task 5 Task 6 Task 7
• Key functions of spreadsheet applications, both cloud based and non-cloud based	Task 3 Task 4 Task 5 Task 6 Task 7
• Key tools of organisational guidelines on spreadsheet design and use	Task 3 Task 4 Task 5 Task 6
• Key tools of organisational requirements for ergonomic standards, work periods and breaks, and conservation techniques.	Task 2

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