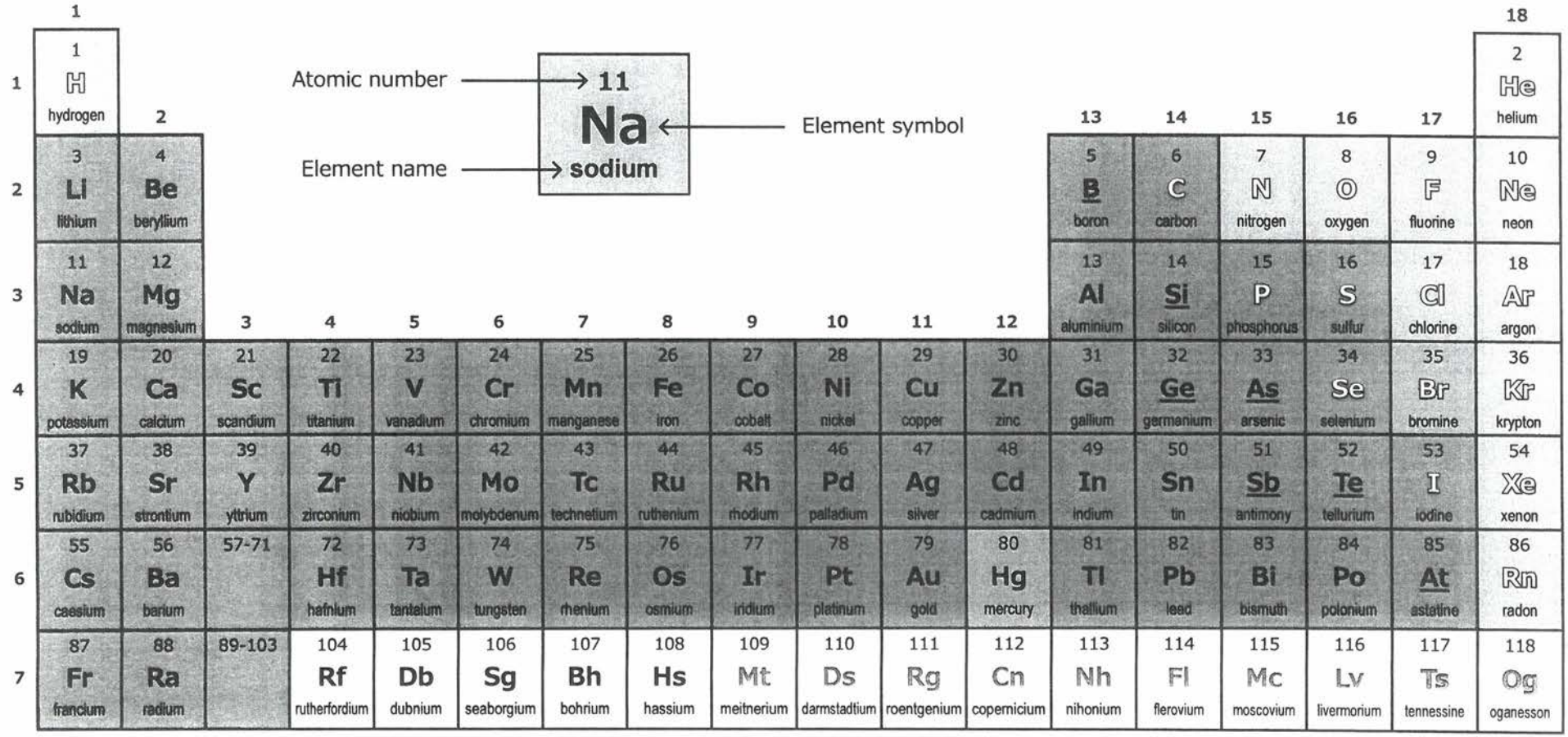
The Periodic Table of the Elements



Valency of Common Monatomic and Polyatomic Ions

	Positive Ions				Negative Ions		
	+1	+2	+3	+4	−1	−2	−3
Monatomic Ions	H^+ hydrogen	Be^{2+} beryllium	Al^{3+} aluminium	Pb^{4+} lead (IV)	F^- fluoride	O^{2-} oxide	N^{3-} nitride
	Li^+ lithium	Mg^{2+} magnesium	Co^{3+} cobalt (III)	Sn^{4+} tin (IV)	Cl^- chloride	S^{2-} sulfide	P^{3-} phosphide
	Na^+ sodium	Ca^{2+} calcium	Cr^{3+} chromium (III)		Br^- bromide		
	K^+ potassium	Sr^{2+} strontium	Fe^{3+} iron (III)		I^- iodide		
	Ag^+ silver	Ba^{2+} barium	Au^{3+} gold (III)				
	Cu^+ copper (I)	Ni^{2+} nickel	Mn^{3+} manganese (III)				
	Au^+ gold (I)	Cd^{2+} cadmium					
		Zn^{2+} zinc					
		Cr^{2+} chromium (II)					
		Co^{2+} cobalt (II)					
		Cu^{2+} copper (II)					
		Fe^{2+} iron (II)					
		Mn^{2+} manganese (II)					
		Pb^{2+} lead (II)					
		Sn^{2+} tin (II)					
Polyatomic Ions	NH_4^+ ammonium				CH_3COO^- acetate	CO_3^{2-} carbonate	PO_4^{3-} phosphate
					HCO_3^- hydrogen carbonate	SO_4^{2-} sulfate	
					OH^- hydroxide		
					NO_3^- nitrate		

1.1 Atoms, Elements and Compounds

Theme
■ Revision of Year 9 content: Atoms are the basic building blocks of matter.

Key Learning Ideas
➤ Pure substances have fixed physical and chemical properties.
➤ Pure substances are made up of one type of chemical subunit.
➤ Atoms are made up of three main subatomic particles: protons, neutrons and electrons.
➤ The number of protons defines the type of atom, but the number of neutrons can vary.
➤ Electrons are arranged in shells surrounding the nucleus, according to a set of 'rules'.

Content	
Matter • Pure substances • Elements • Compounds • Mixtures Chemical Subunits • Atoms • Chemical bonds • Molecules • Lattices	Atomic Structure • Protons • Neutrons • Electrons • Atomic number • Mass number • Isotopes Electron Configuration • Shell-filling rules • Valence shell and valence electrons

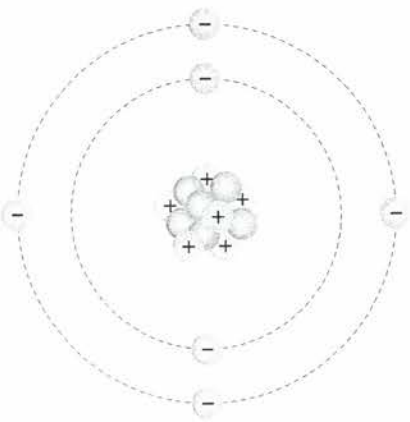
1.1 Atoms, Elements and Compounds

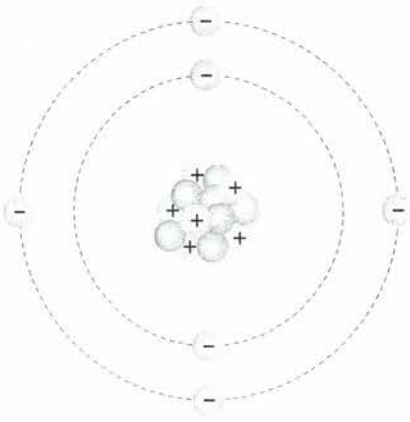
Learning Checklist

By the end of this worksheet students will be able to:

- ✓ Explain what an atom is.
- ✓ Describe the subatomic structure of atoms, including protons, neutrons, electrons, nucleus and electron shells.
- ✓ Define 'atomic number' and 'mass number'.
- ✓ Explain what isotopes are.
- ✓ Describe the distribution of mass and electric charge within an atom.
- ✓ Explain how electrons shells are filled.
- ✓ Write the electron configuration of the first 20 elements.
- ✓ Define 'valence shell' and 'valence electron'.
- ✓ Describe a molecule and a lattice.
- ✓ Compare an atom and an ion.
- ✓ Define 'element' and 'compound'.
- ✓ Describe the arrangement of atoms in elements and compounds.
- ✓ Identify the type and ratio of atoms in a compound, based on its formula.

$^{12}_{6}C$
carbon-12





$^{13}_{6}C$
carbon-13

1.1 Atoms, Elements and Compounds

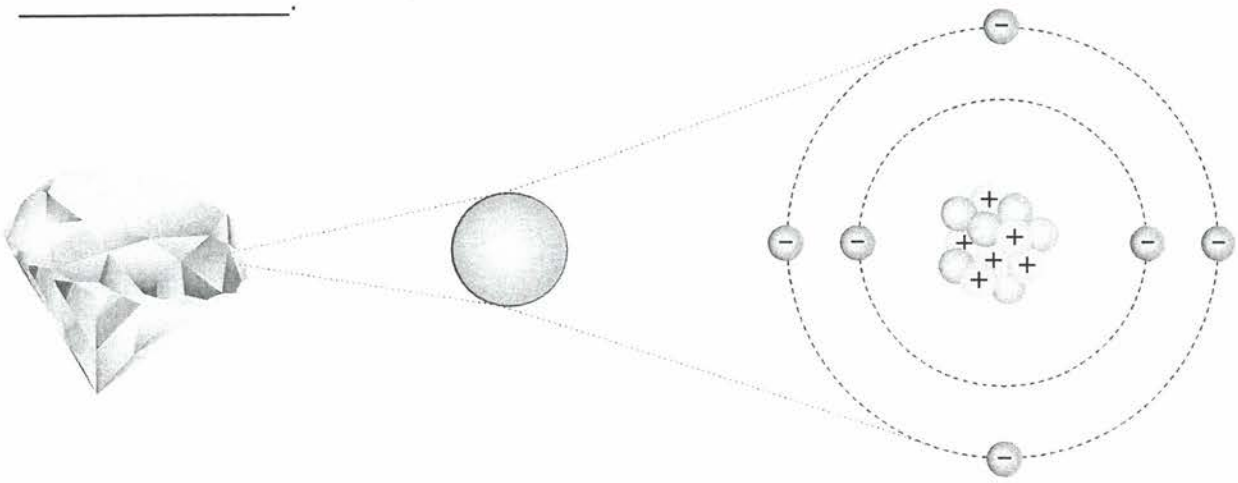
Atoms

- Chemistry is the study of the physical and chemical properties of _____.
- All matter is made up of subunits called _____.
- Atoms are made up of _____, _____ and _____.
  - The protons and neutrons form a cluster at the centre of the atom, called the _____.
  - The electrons orbit the nucleus, in electron _____.
- The number of _____ determines the type of atom.
  - This is also known as the _____ number.
- _____ and _____ both have a mass of 1 atomic mass unit, whereas _____ have a mass of 1/1840 of an atomic mass unit.
  - This means that almost all of the mass of an atom is in the _____.
  - The _____ number of an atom is the number of particles in the nucleus, in other words, the number of protons plus the number of neutrons.
  - Atoms with the same number of protons but a different number of neutrons are known as _____.
- Protons have a positive charge / a negative charge / no charge.

  Neutrons have a positive charge / a negative charge / no charge.

  Electrons have a positive charge / a negative charge / no charge.

  Therefore, the nucleus of an atom is _____, but overall, an atom is _____.



atomic	atoms	electrons	electrons	isotopes	mass	matter	neutral	neutrons
neutrons	nucleus	nucleus	positive	protons	protons	protons	shells	

1.1 Atoms, Elements and Compounds

Electron Configuration

- The arrangement of electrons in shells around the nucleus of an atom is referred to as the _____.
- The maximum number of electrons that can exist in a shell depends on the shell number, which is also known as the _____, n.
  - It is given by the formula: maximum number of electrons = _____
- Electron shells fill up from the inner shell / outer shell first.
  - However, except for _____, shells do not fill up completely before the next shell begins to fill.
  - For example, even though _____ can hold a maximum of _____ electrons, _____ has the electron configuration 2,8,8,1.
- The outer electron shell is known as the _____.
  - It can hold a maximum of _____ electrons.
  - The number of _____ largely determines the chemical properties of an atom.

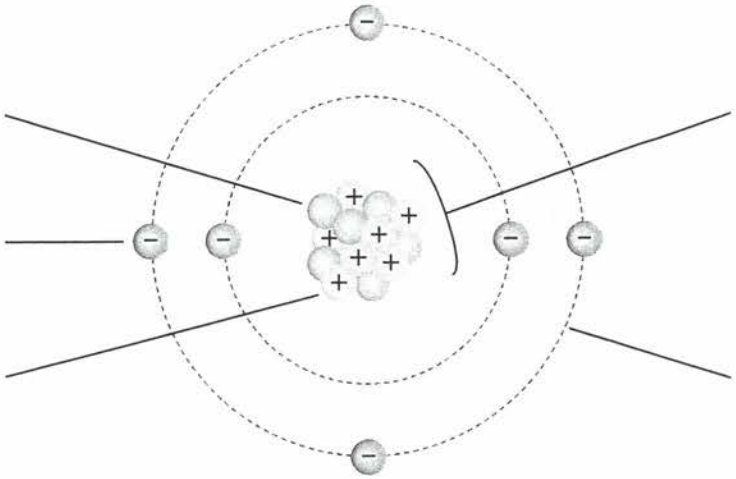
Elements and Compounds

- Atoms can be joined together by _____, to form _____ or _____.
- _____ are substances composed of one type of atom.
- _____ are substances composed of two or more types of atoms, in fixed arrangements.
  - Compounds are formed from _____.
  - They have similar / different properties to the elements they are formed from.
- All other substances are _____.

$2n^2$	8	18	chemical bonds	chemical reactions	compounds
electron configuration	elements	energy level	lattices	mixtures	molecules
potassium	shell 3	shells 1 and 2	valence electrons	valence shell	

Atoms, Elements and Compounds

1. Label the following diagram of an atom.



2. Complete the following table.

Particle	Charge	Mass (atomic mass units)
Proton		
Neutron		
Electron		
Helium-4 nucleus		
Helium-4 atom		

3. What is the maximum number of electrons that can occupy the following electron shells?

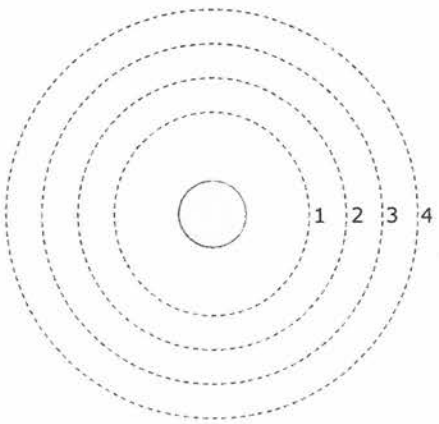
(a) First shell _____

(b) Second shell _____

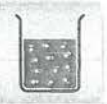
(c) Third shell _____

(d) Fourth shell _____

(e) Valence shell _____



Maximum number of electrons = $2n^2$



4. Distinguish between the following.

   (a) Atom and molecule

   (b) Element and compound

   (c) Atom and ion

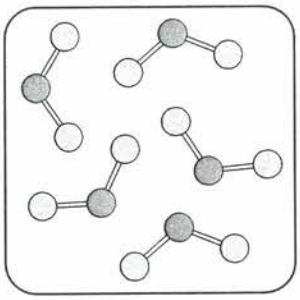
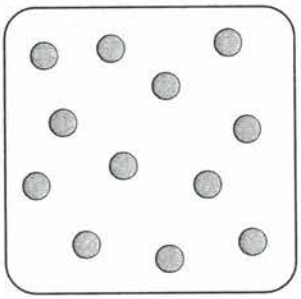
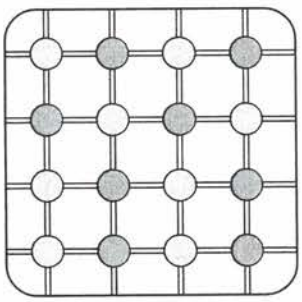
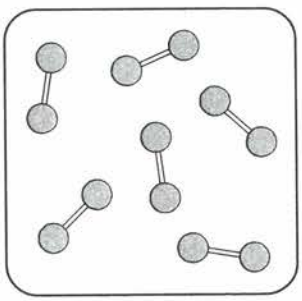
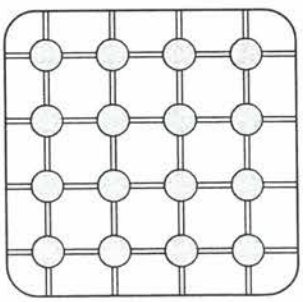
5. Define the following terms.

   (a) Atomic number

   (b) Mass number

   (c) Isotope

6. Match the substances in the left column with the diagrams in the middle column, then match the diagrams with the types of atom arrangement in the right column.

Helium		Molecular element
Carbon		Lattice compound
Nitrogen		Molecular compound
Sodium chloride		Lattice element
Water		Monatomic element

7. Complete the following table.

Name of Compound	Formula	Ratio of Atoms in the Compound					
sodium oxide	Na_2O	type	Na	O			Total
		number	2	1			3
barium chloride	$BaCl_2$	type					Total
		number					
ammonium hydroxide	NH_4OH	type					Total
		number					
iron (III) nitrate	$Fe(NO_3)_3$	type					Total
		number					
calcium hydroxide	$Ca(OH)_2$	type					Total
		number					
ammonium carbonate	$(NH_4)_3CO_3$	type					Total
		quantity					
magnesium acetate	$Mg(CH_3COO)_2$	type					Total
		number					
chromium (III) dichromate	$Cr_2(Cr_2O_7)_3$	type					Total
		number					

8. Name these common laboratory chemicals.

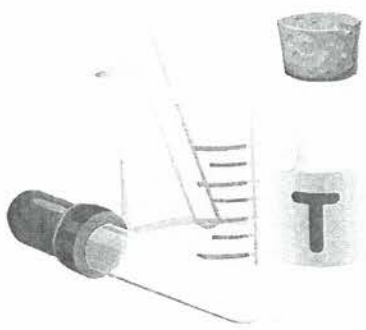
(a) HCl _____

(b) NaOH _____

(c) $MgCl_2$ _____

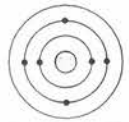
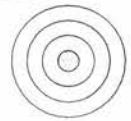
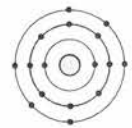
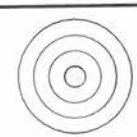
(d) $CuSO_4$ _____

(e) CH_3COOH _____

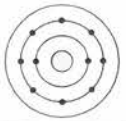
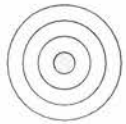
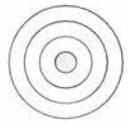
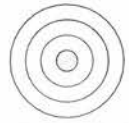
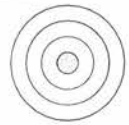
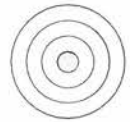


Atoms, Elements and Compounds

9. Complete the following table of atoms.

Atom	Chemical Symbol	Number of Protons	Number of Neutrons	Number of Electrons	Atomic Number	Mass Number	Electron Diagram	Electron Configuration
carbon	$^{14}_{6}C$	6	8	6	6	14		2,4
silicon						29		
	$^{23}_{11}Na$							
		13				27		
					18	40		
			18					
						33		2,8,5

10. Complete the following table of ions.

Ion	Chemical Symbol	Number of Protons	Number of Neutrons	Number of Electrons	Atomic Number	Mass Number	Electron Diagram	Electron Configuration
aluminium	$^{27}_{13}Al^{3+}$	13	14	10	13	27		2,8
	$^{40}_{20}Ca^{2+}$		20					
chloride						37		
		1				1		
		12	12					
					3	7		
	$^{16}_{8}O^{2-}$							

YEAR 10 ENGLISH

Remote Learning

Work Pack

Term 3 2021

1

Utopia Vs Dystopia

Comparative analysis of The Truman Show and the Hunger Games

1

LESSON 1: WHAT ARE UTOPIAS AND DYSTOPIAS?

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

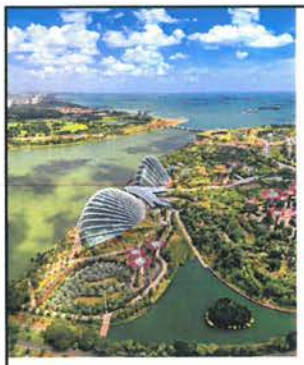
Success Criteria:

I can...

- Identify how the concepts of utopian and dystopian worlds apply to my texts
- Discuss similarities and differences between different images or texts
- Use comparative and connective language in my discussion
- Use the metalanguage from each text-type to assist my explanations.

2

2



Lesson 1: Utopia

- **Observe:** a simple Google search of "utopia" show the images to the left. Write down features you notice in the images on the table on page 5.

- **Read:** A **Utopia** is a society in which everything is perfect for its citizens. Utopias feature:
  - Peaceful government
  - Equality for citizens
  - Access to education, healthcare, employment etc.
  - A safe environment
  - "A world too good to be true"

However, in fiction human shortcomings inevitably get in the way of a Utopia's success. Traits like greed, a want for power and jealousy can all topple a Utopian world.

Write: Think about the artificial world Truman lives within in *The Truman Show*. From Truman's perspective, is this world a Utopia? Give reasons for your response:

3

3

Lesson 1: Dystopia

Observe: Look at the images of a 'Dystopia'. Compare these to the previous images you saw by using the table provided on page 5.

Read: A **Dystopia** is a society in which there is great suffering or injustice, typically one that is totalitarian or post-apocalyptic. Features of a Dystopia can include:
- a controlling, oppressive government OR no government
- Either extreme poverty or a huge income gap
- Propaganda used to control people's thoughts and feelings
- Free thinking and freedom of speech is banned/illegal/limited
- Citizens live in fear and may be under surveillance
- Individuality is not rewarded
- Many people live in a dehumanized state

A dystopian world takes the uglier aspects of the real world and shows them at their worst. They are often a reflection of human shortcomings: greed, jealousy, a want for power or control, disrespect for the environment, classism.

Write: Think about Panem, from *The Hunger Games*. What features make this a dystopian society? Give examples to support your response. (e.g. wealth, resources, work and education, laws)

4

4

Lesson 1: Comparing images

Write: Look at the the images provided in the previous pages and write down the things you notice about each type of society:
Some things you may comment on include: colours used, buildings, nature, people represented, the sky, evidence of technology use

Utopia	Dystopia

Write: Using the comparisons above, write a complete paragraph explaining the difference between Utopias and Dystopias in your own words.

5

5

Lesson 2: Comparative Writing

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

Success Criteria:

I can...

- Identify how the concepts of utopian and dystopian worlds apply to my texts
- Discuss similarities and differences between different images or texts
- Use comparative and connective language in my discussion
- Use the metalanguage from each text-type to assist my explanations.

6

6

Lesson 2: Comparative Writing – An Introduction

Write: Using the images provided on the next two pages, write a comparison of the worlds inhabited by Truman and Katniss. Consider this question: ***Do both Katniss and Truman inhabit dystopian worlds?***
Use examples to support your answer – these may comes from the films and not just the images provided. A guide has been provided, or you may write independently.
Your response should include:
- ❑ A clear introductory paragraph
- ❑ At least 1 paragraph comparing the texts.

*(IF you choose to use a block approach, you should write more than one body paragraph. The sample below shows you how to write an integrated paragraph)

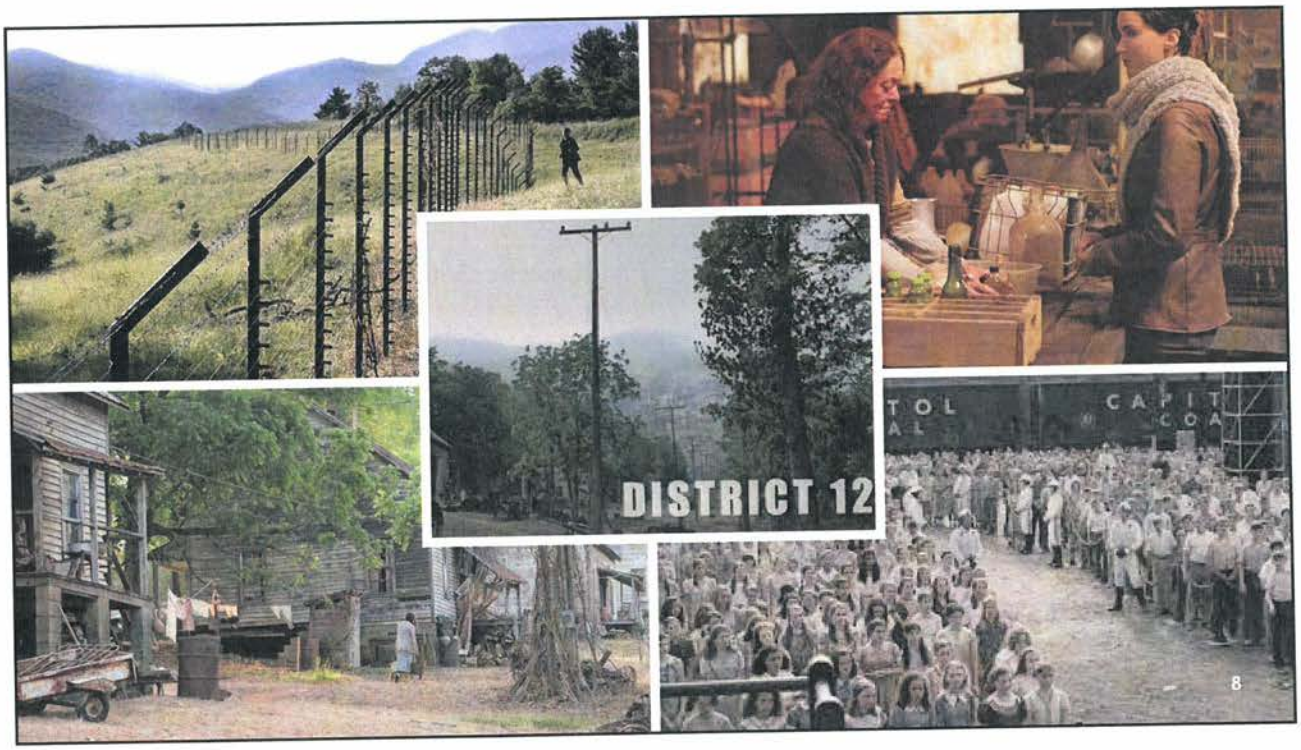
Do both Katniss and Truman inhabit dystopian worlds?

Introduction guide:
The films *The Truman Show* directed by Andrew Niccol and *The Hunger Games* directed by Gary Ross suggest that central characters Truman and Katniss inhabit/do not inhabit dystopian worlds.
A dystopian world is...
The world Truman inhabits is dystopian/utopian from his own perspective as...
Similarly/By contrast, the world Katniss inhabits is dystopian/utopian as it is a world in which...
Despite the differences in their experiences, both worlds present common challenges for their central characters including... which are not exclusive to dystopian worlds.

Complete your response on the lined pages provided. You can work on your introduction today, and the body paragraph in your next lesson.

7

7



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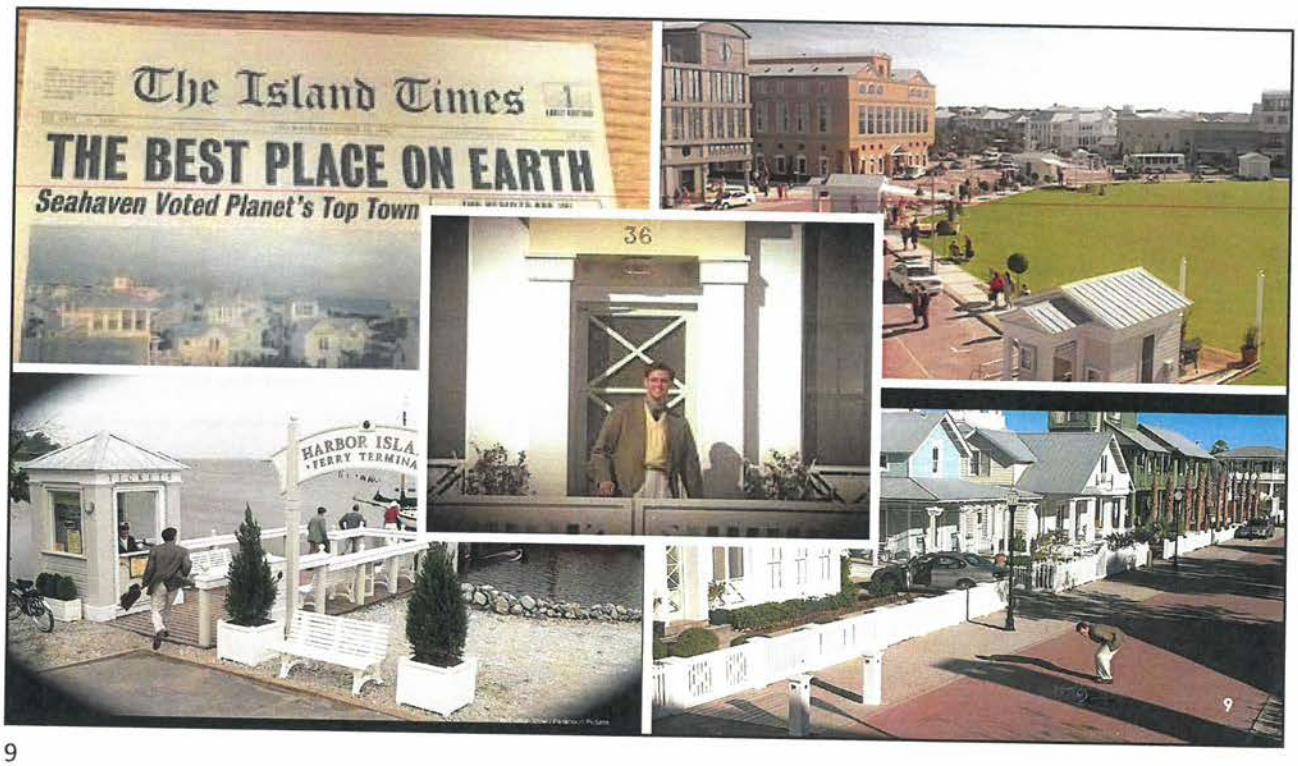

9

Lesson 2: Comparative Writing

Check your own writing. Have you included:

- ☐ A clear introductory paragraph following a TEEL structure
- ☐ Key details from both texts: year, director, title.
- ☐ A clear response to the question

10

10

Lesson 3: Comparative Writing Continued...

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

Success Criteria:

I can...

- Identify how the concepts of utopian and dystopian worlds apply to my texts
- Discuss similarities and differences between different images or texts
- Use comparative and connective language in my discussion
- Use the metalanguage from each text-type to assist my explanations.

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11

Lesson 3: Comparative Writing – Body Paragraph

Write: Using the images provided in the last lesson, write a comparison of the worlds inhabited by Truman and Katniss. Consider this question: ***Do both Katniss and Truman inhabit dystopian worlds?***

Use examples to support your answer – these may comes from the films and not just the images provided. A guide has been provided, or you may write independently.

Your response should include:

- ❑ A clear introductory paragraph
- ❑ At least 1 paragraph comparing the texts.

*(IF you choose to use a block approach, you should write more than one body paragraph. The sample below shows you how to write an integrated paragraph)

Do both Katniss and Truman inhabit dystopian worlds?

Body Paragraph guide:

Truman's world is restricted to Seahaven, a town which is... (refer to the images and describe the town). Although the town is idyllic (pleasant), Truman becomes unhappy with his life there because...

Truman's discomfort and suspicion of his world suggest that... (comment on what is lacking for Truman. What are his challenges? Who has real power over his life? Does he know?). This supports the idea that Truman's world is in fact utopian/dystopian because...

By comparison, Katniss lives in a community where... (describe District 12). For Katniss, life is... (describe it – refer to the features of a dystopian world on page 4 if you need help). Katniss is more aware of the imbalance of power within her world, however like Truman she struggles to... (what are her challenges? Who has power over her life?)

Ultimately, both characters face barriers to their personal freedoms. They are at the mercy of... which suggests that... (they both inhabit dystopian worlds/ Truman's world appears utopian but is in fact deeply flawed/what is your interpretation? Add a final thought).

Complete your response on the lined pages provided. Reread your introduction from the previous lesson and ensure your paragraphs connect.

12

12

Lesson 3: Comparative Writing

Check your own writing. Have you included:

- ☐ A complete paragraph following a TEEL structure
- ☐ References to both texts, including examples
- ☐ A clear response to the question
- ☐ Comparative language

13

13

Lesson 4: Creating a True Utopia

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

Success Criteria:

I can...

- Use my understanding of a Utopia to assess causes and effects
- Consider the elements of a Utopia to create my own ideas
- Reflect critically on my own ideas

14

14

Lesson 4: What is a True Utopia to you?

- **Brainstorm:** What do you think a true Utopia would look like? Use the image on the next page to brainstorm the features of a true Utopia.

Draw an image in the centre of something that represents your Utopia: is it nature? Technology? A futuristic world? Something simple?

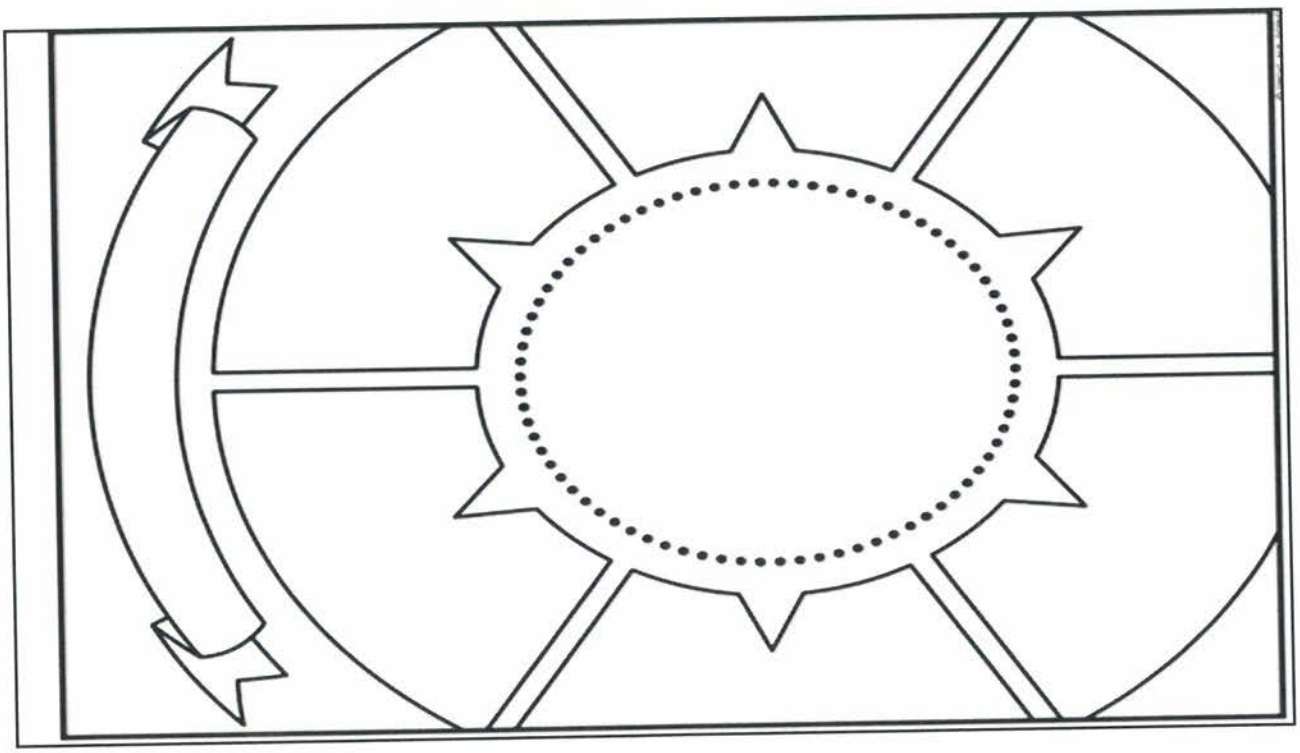
In the 6 boxes around the sides take notes on the following ideas:

1. **PROBLEMS:** What social problems would need to be dealt with? E.g. poverty, food security, climate change.
2. **RIGHTS:** What rights would it need to ensure for its citizens?
3. **FLAWS:** What human traits might stand in the way? What are the flaws in your plan?
4. **TECHNOLOGY:** What technology needs to be available? Does any need to be available at all? What might it look like?
5. **POWER:** How is power distributed? Who is in charge? Is anyone in charge? How would they be selected?
6. **RULES:** What rules do you think are key to a successful, truly peaceful society?

Reflection: After completing your brainstorm reflect on your Utopia. Do you think this world is possible? Why or why not?

15

15



16

Lesson 5: Future Dystopias

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

Success Criteria:

I can...

- Use my understanding of a Dystopia to assess causes and effects
- Reflect critically on my own ideas
- Write a persuasive response

17

17

Lesson 5: Future Dystopias

- **Consider:** many games, films and texts explore the future as a dystopia. Post-apocalyptic worlds are common, and technology often plays a significant role. In films like *Wall-E*, artificial intelligence becomes our saviour after we leave our world choked with garbage and uninhabitable. On the other hand, films like *I, Robot* and *Terminator* suggest that Artificial Intelligence will have much more sinister plans for humanity. What role do you think Artificial Intelligence might play in a future world?
- **Assess:** Use the table below to weigh up the potential benefits and consequences of Artificial Intelligence.

Is Artificial Intelligence an enabler for a better future, or a great risk to humanity?	
Enabler: List "pros" here	**Risk: list "cons" here**

18

18

Lesson 5 Reflection: Based on your lists on the previous page, what conclusion can you draw about Artificial Intelligence?
Answer the question: ***Is Artificial Intelligence an enabler for a better future, or a great risk to humanity?***

19

19

Lesson 6: Dystopian Control

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

Success Criteria:

I can...

- Identify the theme of control in a text I am familiar with
- Write a reflection based on evidence
- Create a personal interpretation of the ways control is enforced within a society.

20

20

Lesson 6: Dystopian Control

- **Consider:** Perhaps the most significant qualities of most dystopian novels is the way that control is employed to maintain dominance over the majority and misinform the citizens about the true nature of their society. This control comes in many forms. It may be:
  - Government control: perhaps a dictatorship or a leader who must be obeyed or even worshipped
  - Surveillance
  - Corporate control: a large corporation or business controls advertising, products and the media
  - Technological control: humans are at the mercy of machines or artificial intelligence
  - Philosophical or religious control: people do not have freedom of their beliefs and are forced to follow a particular belief system

Reflect: Pick a movie, book or game you know that shows one of more of the types of control listed above. Explain in your own words how that control impacts the imaginary world of your text. How do people feel/think/act? What does the world look like?

E.g. Wall-E, Handmaid's Tale, Maze Runner.

21

21

Lesson 6: Dystopian Control

- **Create:** Often control is reflected in propaganda – posters or advertisements which help maintain control.
- **Draw** a possible poster to impose control of the citizens of a dystopian world – you may take inspiration from the images on the previous page
- **OR write** the introduction to a story in which control is rife in a dystopian world. You can describe what the place looks like, how people feel or what measures are used to control people.

22

22

Lessons 7 and 8: Creative Response

Learning Intention:

To develop my skills in comparing and contrasting a range of texts.

Success Criteria:

I can...

- Use my understanding of utopias and dystopias to create my own response
- Use appropriate language from the genre in my writing
- Draw on ideas from related texts to inspire my writing

23

23

Lessons 7 and 8: Creative Response

- **Plan:** Drawing on the knowledge and work you have done in previous lessons, brainstorm ideas for a piece of creative writing. **Your story must feature:**
- a utopian or dystopian society
- descriptive language which shows the features of the society
- a challenge posed by this society
- A central character who must find a solution to thee challenge

Use the table below to write your plan. You will write your short story over the next 2 lessons. You may choose to type your story or use the lined paper provided.

Society type:	
Features to include: E.g. elements of control, laws, technology.	
Central character description	
Challenge:	
Plot: what will happen? You may write this in dot points.	

24

24

REMEMBER TO PROOFREAD YOUR WORK!

25

25

REMEMBER TO PROOFREAD YOUR WORK!

26

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REMEMBER TO PROOFREAD YOUR WORK!

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REMEMBER TO PROOFREAD YOUR WORK!

28

28

Seymour College

English Work Pack 2021

Year 10

Instructions to Students:

Learning Intention	**Success Criteria**
• To develop my skills in comparing and contrasting a range of texts.	I can: • Discuss similarities and differences between two images or films • Use the connective language in my discussion • Use the metalanguage from each text-type to assist my explanations. • Create my own texts using the appropriate conventions for the genre/form.

Week 1

Lesson	
1	What are Utopias and Dystopias? Complete the comparative table and short answer questions
2	Comparative Writing: write an introduction
3	Comparative Writing: write a body paragraph
4	Creating a True Utopia: complete the brainstorm activity and written reflection

Week 2

Lesson	
1	Future Dystopias: Complete a pros and cons list then write a response to the prompt provided
2	Dystopian Control: Draw or write a response based on the reading provided.
3	Creative Response: Plan a short story based on a utopia or dystopia.
4	Creative Response: Write your short story based on a utopia or dystopia.

Notes to Parents/Guardians:

You can support your child to complete their work at home by:

- Encouraging them to allocate time for specific subjects
- Reading the material and talking about the ideas with your child (where possible)
- Checking in with your child to ask how they are going
- Contacting Teachers if more support or explanation is required

Submission of Work and Feedback:

Students can upload work to Compass where access is available. Photos of handwritten tasks may also be uploaded. Students can also mail hard copies of their work back to the school in the supplied envelope.

Students and parents can continue to communicate with Teachers via Compass email. Any questions should be directed to the school email: seymour.co@education.vic.gov.au

Lesson 1

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Identify how the concepts of utopian and dystopian worlds apply to my texts - Discuss similarities and differences between different images or texts - Use comparative and connective language in my discussion - Use the metalanguage from each text-type to assist my explanations.	
First	10 minutes	1. Look at the images provided and complete the Comparing Images table on page 5.	Tick when completed:
Next	20 minutes	2. Read the definitions of a Utopia and Dystopia and complete the writing exercises on pages 3 and 4.	
Then	20 minutes	3. Use the Comparing Images table on page 5 to write a paragraph explaining the difference between Utopias and Dystopias in your own words.	
Last	5 minutes.	4. Check your work.	

Lesson 2

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Identify how the concepts of utopian and dystopian worlds apply to my texts - Discuss similarities and differences between different images or texts - Use comparative and connective language in my discussion - Use the metalanguage from each text-type to assist my explanations.	
First	10 minutes	1. Read the introduction guide provided	Tick when completed:
Next	5 minutes	2. Examine the images included on pages 8 and 9	
Then	30 minutes	3. Write an introduction in response to the topic: ***Do both Katniss and Truman inhabit dystopian worlds?***	
Last	5 minutes.	4. Check your work by using the checklist provided on page 10.	

Lesson 3

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Identify how the concepts of utopian and dystopian worlds apply to my texts - Discuss similarities and differences between different images or texts - Use comparative and connective language in my discussion - Use the metalanguage from each text-type to assist my explanations.	
First	10 minutes	1. Read the body paragraph guide provided	Tick when completed:
Next	5 minutes	2. Re-read your introduction from the last lesson	
Then	30 minutes	3. Write a body paragraph in response to the topic: ***Do both Katniss and Truman inhabit dystopian worlds?***	
Last	5 minutes.	4. Check your work by using the checklist provided on page 13.	

Lesson 4

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Use my understanding of a Utopia to assess causes and effects - Consider the elements of a Utopia to create my own ideas - Reflect critically on my own ideas	
First	5 minutes	1. Read the task description on page 15	Tick when completed:
Next	20 minutes	2. Complete the brainstorm activity using the template on page 16	
Then	20 minutes	3. Using your brainstorm, complete the written reflection on page 15.	
Last	5 minutes.	4. Review you writing.	

Lesson 5

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can -	
First	5 minutes	1. Read the prompt on page 18	Tick when completed:
Next	20 minutes	2. Complete the "pros and cons" table on page 18.	
Then	20 minutes	3. Complete the written reflection on page 19, responding to the question: ***Is Artificial Intelligence an enabler for a better future, or a great risk to humanity?***	
Last	5 minutes.	4. Review you writing.	

Lesson 6

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Identify the theme of control in a text I am familiar with - Write a reflection based on evidence - Create a personal interpretation of the ways control is enforced within a society.	
First	5 minutes	1. Read the prompt on page 21 about Dystopian control.	Tick when completed:
Next	10 minutes	2. Complete the written reflection on a text of your choosing.	
Then	30 minutes	3. Draw or write a creative response based on the issue of control in a dystopian world.	
Last	5 minutes.	4. Check your work	

Lesson 7

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Use my understanding of utopias and dystopias to create my own response - Use appropriate language from the genre in my writing - Draw on ideas from related texts to inspire my writing	
First	5 minutes	1. Carefully read through the criteria on page 24.	Tick when completed:
Next	30 minutes	2. Complete a thorough plan for a creative piece of writing by filling in the table provided.	
Then	10 minutes	3. You may choose to begin writing your creative response.	
Last	5 minutes.	4. Review your work	

Lesson 8

	Approx. Time	**Learning Intention:** To develop my skills in comparing and contrasting a range of texts. **Success Criteria:** I can - Use my understanding of utopias and dystopias to create my own response - Use appropriate language from the genre in my writing - Draw on ideas from related texts to inspire my writing	
First	5 minutes	1. Review the plan you wrote in the previous lesson	Tick when completed:
Next	40 minutes	2. Write your Creative Response. Ensure you use rich descriptive language to create a utopian or dystopian society.	
Then	5 minutes	3. Make any additions or changes needed to meet the criteria on page 24. Ensure your story has as logical conclusion.	
Last	5 minutes.	4. Proofread your work.	

Seymour College

Humanities Work Pack 2021

Year 10

Student: Teacher:

Learning Intention	Success Criteria
- Reviewing topics from earlier in the year to build and consolidate understanding. - Practice and build source analysis skills - Understand and interpret data	I know I have been successful if I have been able to read and understand the text and have provided adequate and detailed answers filling the spaces provided. (The amount of space provided for your answers is a guide to how much information you are expected to write)

Lesson 1	The impact of climate change on the Great Barrier Reef
Lesson 2	'Forward defence' and the 'domino theory'
Lesson 3	What caused WWII
Lesson 4	Source Analysis
Lesson 5	An unequal world

Notes to Parents/Guardians:

You can support your child to complete their work at home by:

- Encouraging them to allocate time for specific subjects
- Reading the material and talking about the ideas with your child (where possible)
- Checking in with your child to ask how they are going
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Students and parents can continue to communicate with Teachers via Compass email. Any questions should be directed to the school email:
seymour.co@education.vic.gov.au

Lesson 1

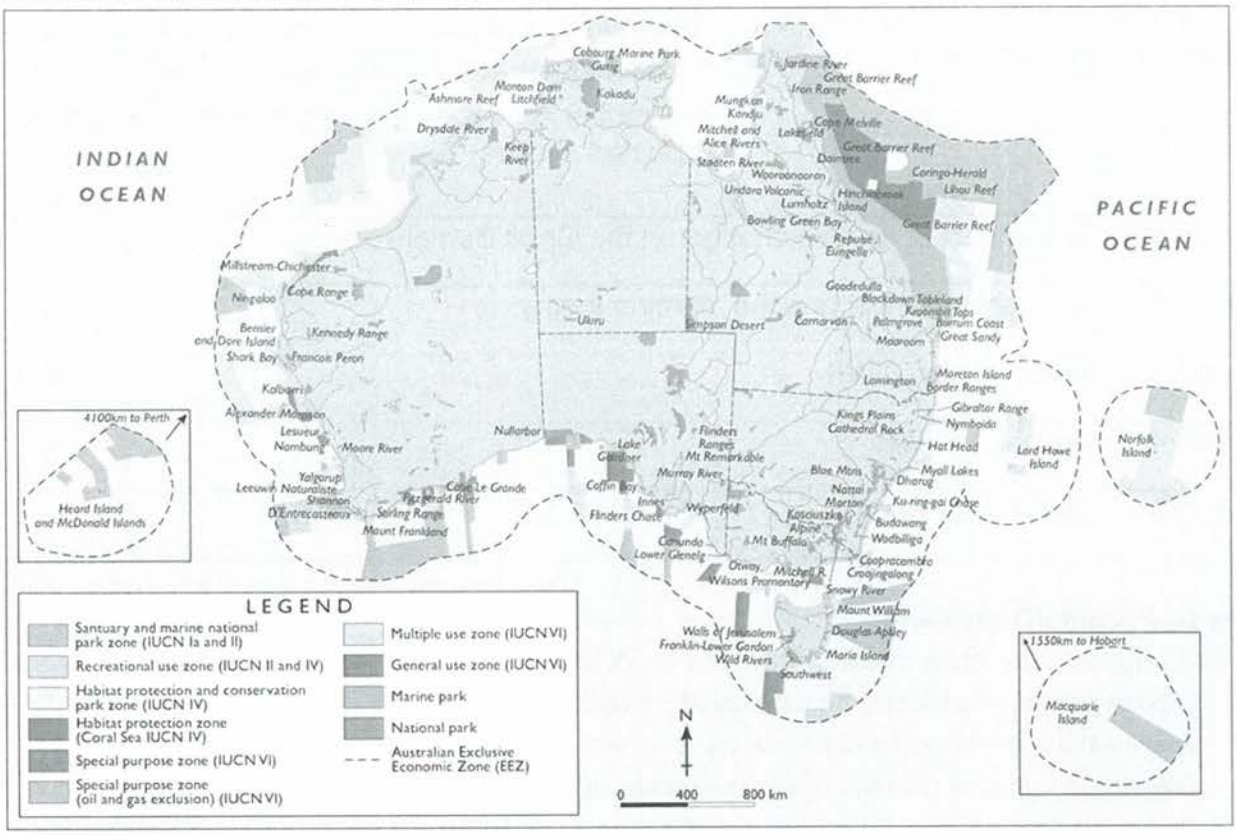
Task 1

The impact of climate change on the Great Barrier Reef

Pages 98–99

Look closely at the map below.

AUSTRALIA: NATIONAL PARKS AND MARINE RESERVES, 2012



Source 1

Source: Oxford University Press

Give details of the three coloured zones around Lord Howe Island and explain why they extend for some distance both north and south of the actual island.

3 Explain how future environmental damage to the Great Barrier Reef could affect the sustainability and survival of Lord Howe Island.

4 There is a limit on the number of tourists that visit Lord Howe Island each year. Use the Internet to find the answers to the following questions.

a How many hotels are there on the island and how many beds do they offer in total?

b How many people are allowed to live on the island permanently?

c What are the limits on tourist numbers and why can't tourists go there and camp?

Task 2

1 Environmental changes are always interconnected. Match the cause to the effect(s) below by drawing a line between them. Some effects may be used more than once as they have multiple causes.

Causes	Effects
Land clearing	Some plants and animals migrate to new cooler habitats
	Increased extreme weather events
Fossil-fuel burning	Global warming
	Increased amount of CO_2
Increased amount of CO_2	Ocean acidification
	Land ice melting
Global warming	Increased beach erosion
	Rising sea temperatures
Rising sea levels	Risk to homes along coastlines
	Loss of biodiversity
Ocean acidification	Increase in flooding incidence/loss of lowlands
	Rising sea levels

Extension

3 Classify the following as natural or human processes in the table below:

land reclamation	lightning	urban development	storms
tides and currents	deposition	burning fossil fuels	overfishing
landslides	deforestation	weather	erosion
	desalination	introduced species	drought

Natural process	Human process

Lesson 2

Task 1

16.2 French Indochina

Pages 16.4–16.5

'Forward defence' and the 'domino theory'

> It is a matter of vital importance to maintain the gap between Australia and the present high-water mark of the southward flow of communism. Should this gap narrow, the nature and scale of attack on Australia would become intensified as distance shortened. Finally, should the tide of communism lap our shores, we would face an intolerable defence burden and a scale of attack which would be beyond our capacity to repel alone. There is, therefore, every reason strategically and economically why Australia should co-operate to keep aggressive Communism within its present boundaries, and to stem its onward flow.

Source 1 Statement by Australian Defence Minister Sir Philip McBride, September 1954

> If the whole of Indo-China fell to the Communists, Thailand would be gravely exposed. If Thailand were to fall, the road would be open to Malaya and Singapore. From the Malay Peninsula, the Communists could dominate the northern approaches to Australia and even cut our life-lines with Europe.

Source 2 Richard Casey, Australian External Affairs Minister, speaking in October 1954.Commonwealth Parliamentary Debates (House of Representatives) (CPD–HR), vol. 5, 27October 1954, p. 238

Source 3
A cartoon from the *Catholic News Weekly*, 21 July 1954

1 Analyse the Sources 1–3. To what extent do they give only one perspective on the issue of communism in Asia?

2 Two of these sources are quotes from federal cabinet ministers in 1954. Discuss what issues this creates for historians using them to investigate external threats to Australia in the 1950s.

3 Do any of the sources give an explanation why communism might have been increasing in Asia?

Extension

To what extent do these sources indicate a viewpoint that communism was a single, monolithic organisation?'

Task 2

Read the following personal account of the battle. To what extent do you think it illustrates the 'Anzac spirit'?

It was pretty obvious we had run into a very large VC force. But we could not withdraw … I called for the whole regiment of 18 105 mm guns … I requested ammunition resupply by helicopter … I requested USAF combat air support. Then the afternoon monsoonal rain started. The combat aircraft could not identify us and were directed by ATF to drop their bombs, rockets, and napalm to the east. It was more important to us to have the artillery. Then two RAAF helicopters came in over the trees and thankfully dropped the ammunition right into our lap.

… all withdrew back into the company area where we organised ourselves into a defensive position to fight off the VC. We established an aid post for casualties and set about repelling wave after wave of enemy attacks … They would reorganise and come back in with bugles sounding, clambering over bodies of dead comrades, but thanks to the courageous performance of our men in forward sections, never getting inside our position. At times we brought the artillery fire in very close, almost on top of us. The volume and noise of all the artillery and small arms fire was horrendous – deafening – but, in hindsight, wonderful music … Often asked if we were afraid, I reply, 'Not that I recall. We were all so busy methodically doing what we had to do we did not have time for fear – until it was over.' Everyone did what they were trained for – and did it so well we were able to repel and survive the enemy onslaughts.

Extract from Lieutenant Colonel Harry Smith's account of the Battle of Long Tan, www.awm.gov.au

Lesson 3

Pages 284–287

What caused World War II?

Many historians have argued that the causes of World War II, including the rise of Adolf Hitler and the Nazi Party, can be traced back to decisions made during the Paris Peace Conference when the Treaty of Versailles was agreed upon. The Treaty humiliated Germany and blamed it for World War I. It economically crippled Germany by imposing massive reparation payments, as well as by removing control of territory that was necessary to generate economic wealth and activity.

The ravages of the Great Depression during the 1920s also affected Germany greatly. Many businesses went bankrupt, and by the early 1930s one in three workers were unemployed.

German people were despairing. They were desperate for solutions to their problems, but also for something or someone to blame.

In the lead-up to the election of 1932, Hitler and his Nazi Party made the following promises:

- To tear up the Treaty of Versailles (including promises to pay reparations for World War I)
- To build up the armed forces again
- To provide work for all
- To reunite the 'fatherhood'.

They also said that the Jews were to blame for Germany's problems.

By January of 1933, Hitler became the Chancellor (Prime Minister) of Germany. Within a few months, concentration camps were opened and political opponents of the Nazis (mainly Communists) were placed in them. By March, Hitler introduced the Enabling Act, which let him make laws without going to parliament or the President. By July, Hitler had banned all political parties except the Nazi Party.

Hitler declares himself Führer

When President Hindenburg died in 1934, Hitler took over his role as President and declared himself the 'Führer' (leader) of Germany. A range of methods were then used to ensure the Nazis faced very little opposition during the following years. The Nazis controlled education and the media to ensure that German people only heard praise for the Nazi regime. The 'terror' organisations of the SS and the Gestapo were established to discover and punish anyone who could be an enemy of the Nazis.

On 2 August 1934, the entire army swore an oath of personal loyalty to Hitler. They agreed to stay out of politics and to serve Hitler. In return, Hitler began re-establishing Germany as a military power. He increased the size of the army, began building warships, and created a German air force. Compulsory military service was also introduced. This was despite the fact that one of the requirements of the Treaty of Versailles was that Germany had limited armed forces.

Germany pushes into Rhineland

Another of the requirements of the Treaty of Versailles had been that no German troops were allowed into the Rhineland, the border area between Germany and France. Yet in 1936, Hitler took a huge risk and ordered German troops to enter the Rhineland. The French, reluctant to start another war, decided to do nothing. At the same time, Hitler made alliances with Italy and Japan.

Hitler's next step was to begin taking back the land that had been lost as a result of the Treaty of Versailles. In March 1938, German troops marched into Austria and forced the Austrian leader, Schuschnigg, to hold a vote asking the Austrian people whether they wanted to be part of Germany. Schuschnigg asked for help from France and Britain, but they refused. Over 99% of Austrian citizens voted for 'Anschluss'—political union with Germany. With Germany and Austria joining, another condition of the Treaty of Versailles had been broken.

Hitler takes part of Czechoslovakia

Later in 1938, Hitler demanded that the Sudetenland, part of Czechoslovakia, become part of Germany. The leader of Czechoslovakia was completely opposed to this, and wanted support from Britain and France. Neville Chamberlain, Prime Minister of Britain, thought that if Hitler's demands for the Sudetenland were met, he would at last be satisfied and would stop seeking to occupy further areas. A number of meetings were held between the leaders of Britain, Germany, France and Italy. On 29 September, they made a decision to give Hitler what he wanted. This agreement, known as the 'Munich Agreement', stated that Hitler could have the Sudetenland region of Czechoslovakia if he promised not to invade the rest of Czechoslovakia. Chamberlain and Hitler published a joint declaration that this agreement would assure peace for Europe.

In March 1939, Hitler broke his promise and invaded the rest of Czechoslovakia. Britain and France still did nothing. They did, however, tell Hitler that if he invaded Poland, they would declare war.

Invasion of Poland

On 24 August 1939, Hitler and Stalin, the leader of the Soviet Union, made a deal not to attack one another and to divide Poland between them. This was known as the Nazi–Soviet Pact.

On 1 September 1939, German troops invaded Poland from the west, and Soviet forces invaded Poland from the east. On 2 September, Britain and France declared war on Germany.

From September through to March 1940, however, there was little actual fighting. Although Britain and France had declared war on Germany, they did not actually send troops to defend Poland. For this reason, the period became known as the 'Phoney War'.

In April 1940, Hitler invaded Denmark and Norway, and in May, the German army turned its power on France. The French government surrendered on 21 June 1940.

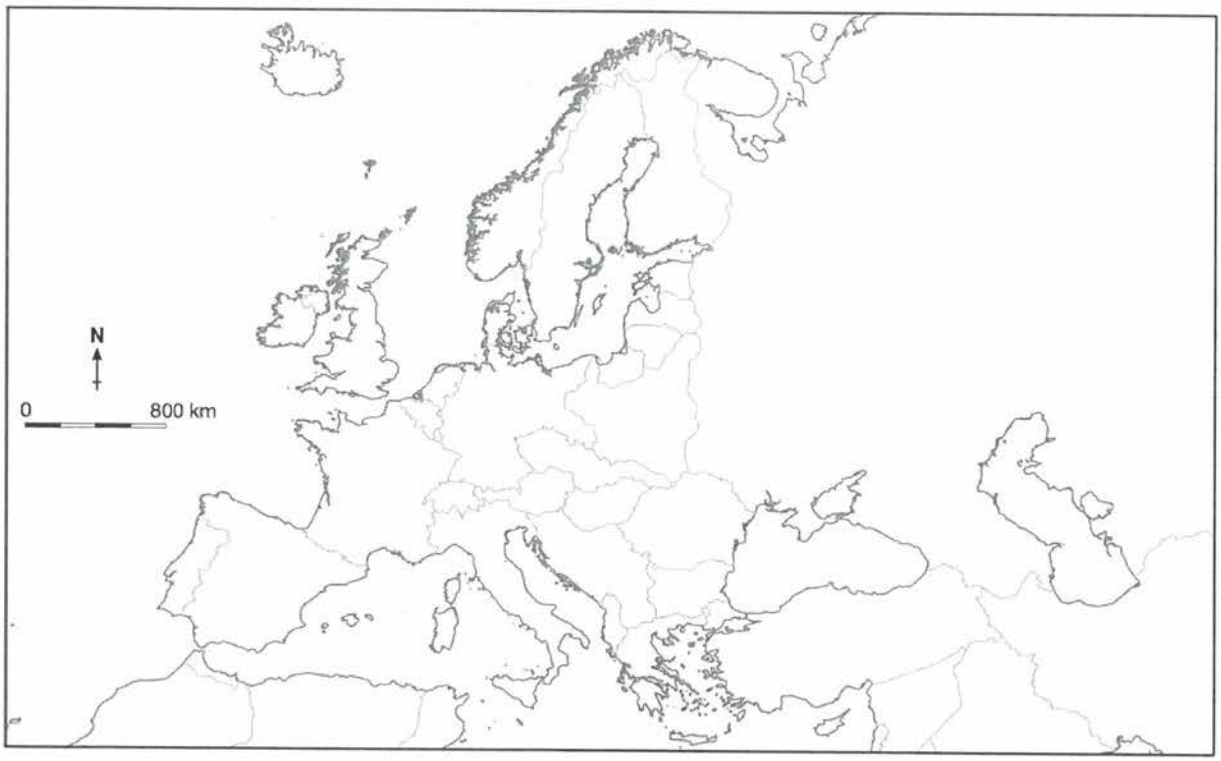
1 On the map below:

a Shade Germany in one colour.

b Use another colour to outline the Rhineland.

c Shade in the countries that Germany took over between 1936 and 1940 in a different colour.

EUROPE

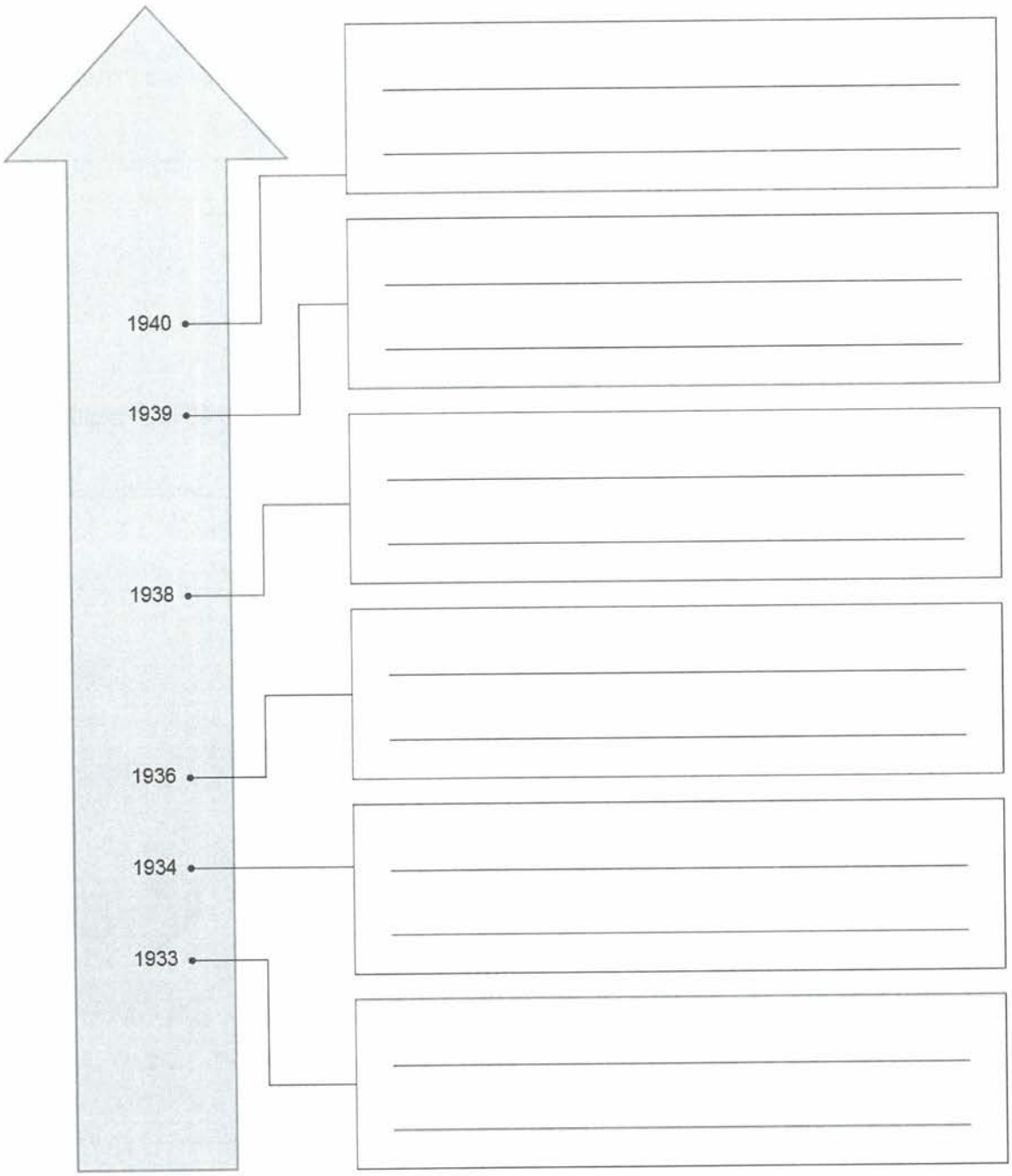


Source 2

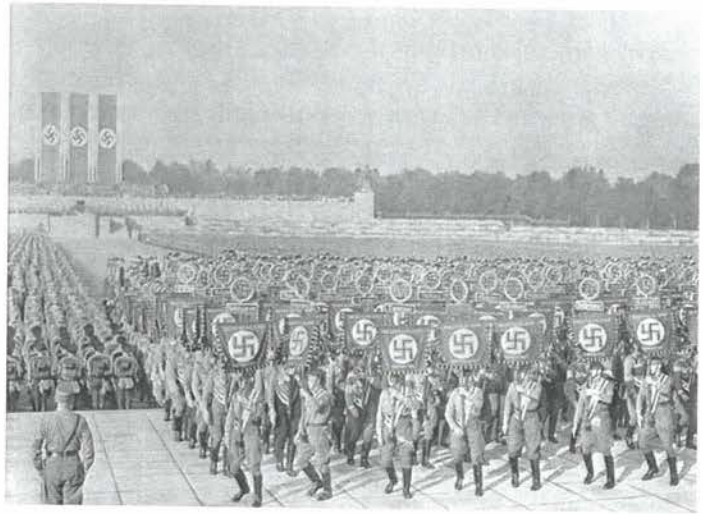
Source: Oxford University Press

Extension

2 Using the information provided above, complete the timeline below by summarising the key events in the lead-up to, and the early years of, World War II.


1940
1939
1938
1936
1934
1933

Task 2



Source 1

1 What or who was each of the following called?

a a post–World War I agreement between the Allied nations and Germany that imposed harsh conditions on Germany

b the political leader of Germany who gave up his position and 'ran away' before the end of World War I

c The new democratic government established in Germany after World War I

d A political party that represented German workers and was strongly opposed to communism

Lesson 4

Source Analysis

On the morning of Thursday, 19 February 1942, my ship was heading out of port and those of us who were not on duty were sitting on deck. We had not cleared the harbour, when we noticed a formation of planes approaching over East Head. It would have been close to 10.00 am when we first saw them. The planes were glinting in the morning sun, and we remarked on the good formation they were keeping. At first we thought these planes were ours, and then we noticed some silver-looking objects dropping from them. It was not long before we knew what they were as they exploded in smoke and dust on the town and waterfront. More Japanese planes came in from another direction. These were dive bombers, and they attacked the ships in the harbour. We saw a couple of planes crash into the sea. I thought they were ours.

Then it was our turn for some attention. They began strafing us from almost mast height. As the only armament we had against aircraft was a Lewis machine gun, and this had been disabled by a Japanese bullet hitting the magazine pan, the skipper was firing at them with his .45 revolver. This strafing went on for approximately half an hour before my first taste of action ended. Our casualties were nine wounded out of a crew of thirty-six, and one of these died on the hospital ship *Manunda* on the following day. The skipper had both knees shattered by Japanese bullets.

We transferred our injured to the *Manunda*, and then our motor boat began rescuing survivors in the water. The scenes in the harbour during the raid were horrific, with ships on fire, oil and debris everywhere, ships sinking, and ships run aground. The merchant ship *Neptuna* was berthed alongside the wharf. It received a direct hit and blew up. The tremendous explosion was ear-shattering and sent debris flying up to half a kilometre. *Neptuna* had been loaded with depth charges and ammunition.

Source 3 Stoker 2nd Class Charlie Unmack was aboard *HMAS Gunbar* in Darwin harbour during the first Japanese air raid

Read Source 3. What can you infer about the extent of damage inflicted on Darwin by the Japanese on the 19 February 1942?

Task 2

Describe the scene shown in Source 1.

Extension Task

Analyse Source 2. What message is being conveyed in the poster? What do you think was the motive behind its publication?

Lesson 5

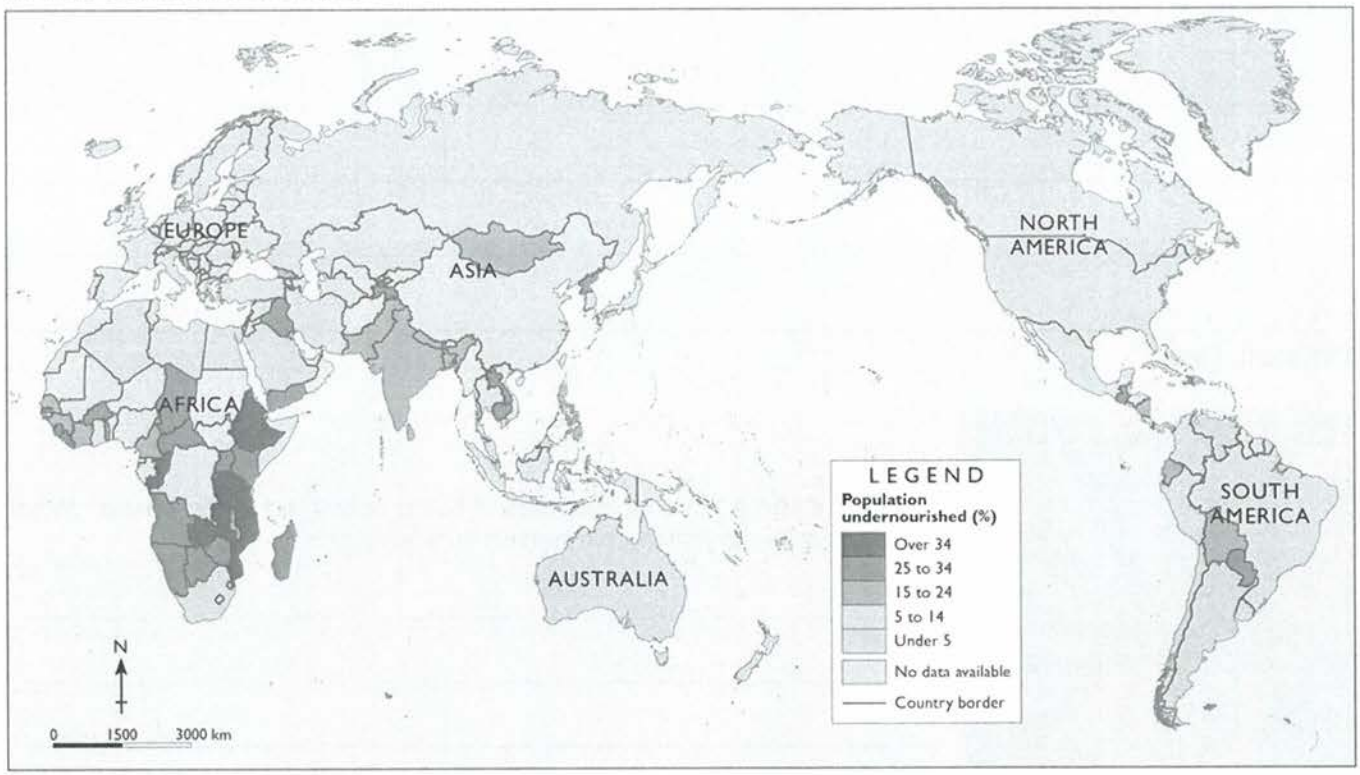
An Unequal World

Malnourishment

Another indicator of the wellbeing of people within a country is the availability of food. One method of measuring food availability is estimating the percentage of the population that is undernourished. People are undernourished when they do not have enough food to eat or do not have enough nutrients in their food.

2 Use Source 1 below (or refer to Source 1 on page 152 of your student book) to answer the following questions:

WORLD HUNGER LEVELS, 2012



Source 1

Source: Oxford University Press

a What percentage of Australians are undernourished?

b Do most of the world's countries have high rates of undernourishment or low rates?

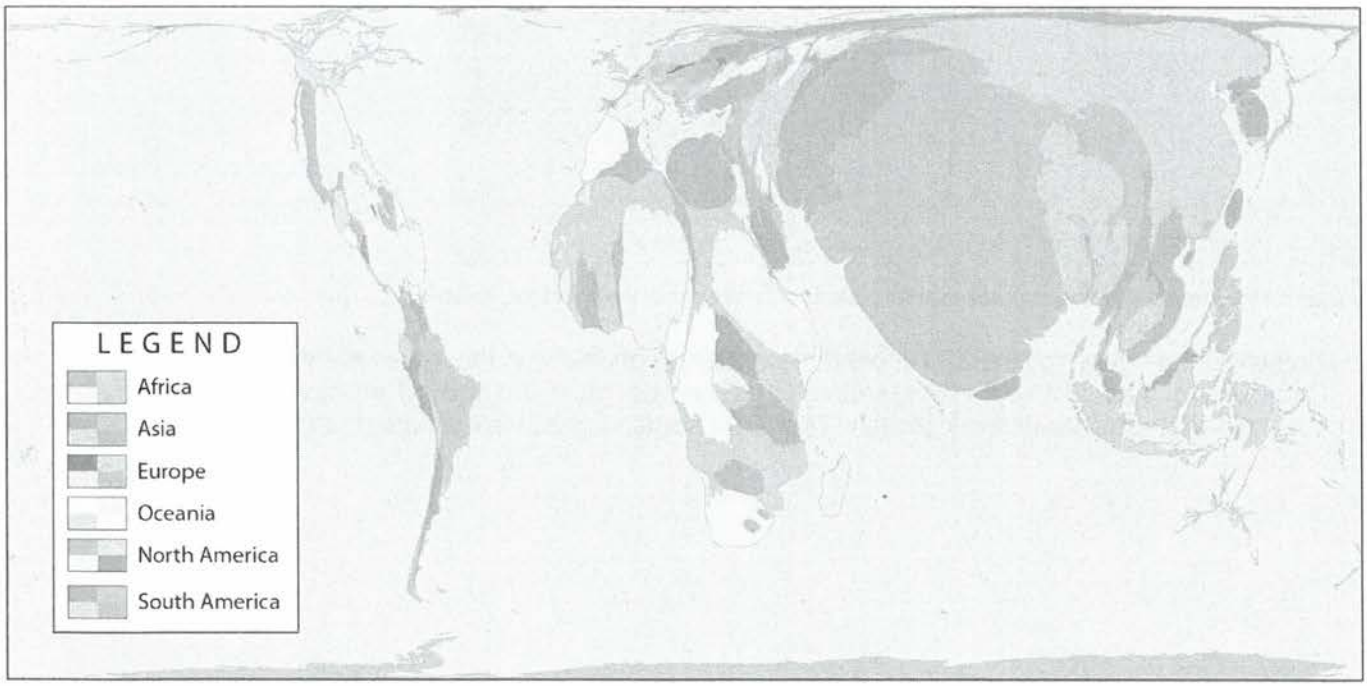
c Where are most of the countries that have high rates of undernourishment?

Task 2

1 How can education improve wellbeing?

2 Consider the map below. Why is Australia gone from the map?

WORLD: PROPORTION OF POPULATION LIVING IN POVERTY



Source: Oxford University Press

Extension

Comparing Kerala and Chhattisgarh

Source 1 Houseboats in the popular tourist destination of Kerala backwaters, India

1 Complete the following SHEEPT table that contrasts conditions in the Indian states of Kerala and Chhattisgarh. Conduct your own research to ensure that there are several examples for each, making sure you use statistics where possible. There are some suggestions provided to guide you.

	Kerala	Chhattisgarh
Social *e.g. education levels, access to healthcare*		
Historical *e.g. civil war, exploitation during colonisation*		
Economic *e.g. GDP per capita, average income, sectors which contribute most to the economy*		
Environmental *e.g. climate, natural disasters, topography*		
Political *e.g. corruption, local policies for development*		
Technological *e.g. mechanised farm machinery, access to computers*		

Welcome to remote learning PE challenge.

THE PURPOSE: To keep yourself healthy, physically and mentally

.INSTRUCTIONS:

1. NUTRITION: You will be taking photos of your healthy food with ingredient list listed in a word document (Aim for 3 meals in a week - a breakfast, lunch and dinner)

2. EXERCISING: 30 minutes each day for 4-5 days.

3. SLEEPING: This is self-monitored (Most teens need 8-10hours)

4. WATER INTAKE: Aim to drink 2 litres of water each day.

POINT SYSTEM				
Nutrition (3 healthy meal photos/week with ingredient listed in word doc. Weekly maximum points = 30pts)	Breakfast photo (10pts)	Lunch photo (10pts)	Dinner photo (10pts)	
Exercising (weekly maximum points: 30pts)	1 day of 30 minutes (5pts)	2 days of 30 minutes (10pts)	3 days of 30 minutes (20 pts)	4/5 days of 30 minutes (30 pts)
Sleeping (pts for how many hours of sleep x 7 nights)	7 hours (7 pts)	8 hours (8 points)	9 hours (9 points)	10 hours (10 points)
Water intake (Maximum Points = 20 points)	Drink enough water 4 out of 7 days (2 pts)	Drink enough water 5 out of 7 days (5 pts)	Drink enough water 6 out of 7 days (10 pts)	Drinking enough water 7 out of 7 days (20pts)

Record your total points at the end of each week.

100 Point Challenge

PRACTICAL ACTIVITY

Instructions:

- Accumulate as many points as possible within the set time limit.

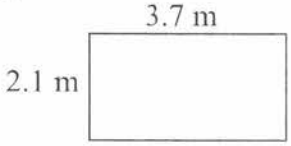
#	Challenges	Points	Points Earned
1	Bounce a small ball 10 times with your left hand then 10 times with your right hand	2	
2	Throw a small ball underarm against a wall with your left hand and catch it with your right (Must do 10 times in a row without dropping the ball)	2	
3	Throw a small ball underarm against a wall with your right hand and catch it with your left (Must do 10 times in a row without dropping the ball)	2	
4	Throw a small ball in the air and clap 10 times before you catch it	2	
5	Throw a small ball in the air over your head and catch it behind your back three times without dropping it	4	
6	Do 20 push ups without stopping	4	
7	Do 30 burpees or step-back burpees without stopping	4	
8	Do 40 hip lifts without stopping	4	
9	Do 50 step ups without stopping	4	
10	Hold the 'plank' position for 1 minute	4	
11	Keep a larger ball in the air using your feet - 20 touches without the ball hitting the ground	6	
12	Keep a larger ball in the air using your head - 10 touches without the ball hitting the ground	6	
13	Throw a larger ball over your head and catch it behind your back - 10 times without the ball hitting the ground	6	
14	Spin a larger ball on your finger for 10 seconds	6	
15	Hold the 'plank' position for 2 minutes	6	
16	Bounce a small ball into a bucket from 10 metres away	6	
17	Jog on the spot with fast feet for 2 minutes without stopping	6	
18	Do 70 star jumps without stopping	7	
19	Jog or run 2km (or ten minutes) without stopping	9	
20	Juggle 3 balls for 15 seconds without dropping one. Need video proof! For some tips see: https://www.youtube.com/watch?v=x2_j6kMq1co	10	
	TOTAL	100	

Reference: Michael Naughton

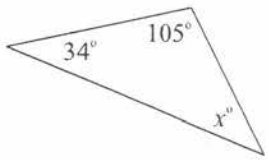
Mathematical Skills Practice

Set 1

1. 2956 + 3128
2. Convert $\frac{39}{5}$ to a mixed number.
3. 7.84 × 1000
4. Find 30% of 80 kg.
5. Divide \$80 in the ratio 3:5.
6. Find the perimeter of this rectangle.



7. Find the area of a square with side length 8 m.
8. Find the volume of a rectangular prism with side lengths 3 m, 4 m and 5 m.
9. Convert 4.15 m to mm.
10. Find x°.

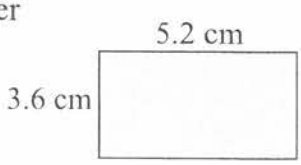


11. If $a = 5$ and $b = -4$ find:
$2a^2 + 3b$
12. Transpose the following equation to make y the subject:
$2y - 8x = 20$
13. Factorise: $2x^2 - 6x$
14. Simplify: $a \times a \times a \times b \times a \times b$
15. Simplify: $\frac{a}{6} + \frac{a}{4}$
16. Simplify: $4\sqrt{5} + 3\sqrt{5}$
17. What is the probability of randomly choosing a ***blue ball*** from this box? Write answer as a fraction.

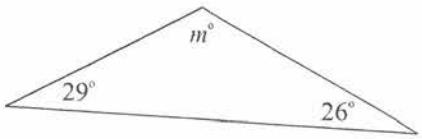
18. Find the ***mean*** of the following numbers:
3, 8, 4

Set 2

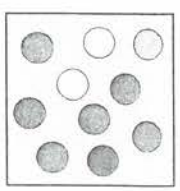
1. 5809 + 2384
2. Convert $\frac{57}{8}$ to a mixed number.
3. 3.791 × 10 000
4. Find 40% of \$30.
5. Divide 60 kg in the ratio 5:1.
6. Find the perimeter of this rectangle.



7. Find the area of a rectangle with side lengths 6 mm and 15 mm.
8. Find the volume of a rectangular prism with side lengths 4 cm, 5 cm and 6 cm.
9. Convert 8.3 m to cm.
10. Find m°.



11. If $n = -3$ and $m = 6$ find:
$2n^2 - 4m$
12. Transpose the following equation to make a the subject:
$5a + 4b = 40$
13. Factorise: $6n^2 - 15mn$
14. Simplify: $2x \times x \times y \times 5x \times y \times x \times y$
15. Simplify: $\frac{x}{3} + \frac{x}{5}$
16. Simplify: $8\sqrt{3} - 3\sqrt{3}$
17. What is the probability of randomly choosing a ***green ball*** from this box? Write answer as a fraction in its simplest form.

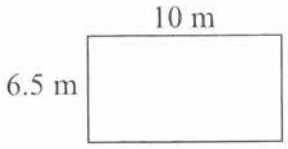


18. Find the ***mean*** of the following numbers:
8, 3, 15, 2

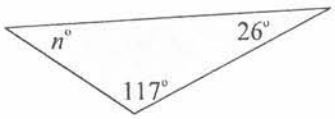
Mathematical Skills Practice

Set 3

1. 7604 - 5518
2. Convert $3\frac{4}{5}$ to an improper fraction.
3. 0.0291 × 1000
4. Find 6% of 50 m.
5. Divide 200 m in the ratio 2:3.
6. Find the perimeter of a square with side length 12 m.
7. Find the area of this rectangle.



8. Find the volume of a cube with side length 8 cm.
9. Convert 0.082 m to mm.
10. Find n°.



11. If $p = -5$ and $q = -3$ find:

$$3pq - 5p + 2q$$

12. Transpose the following equation to make b the subject:

$$3(b - 4c) = 8$$

13. Factorise: $10x^2y - 8xy^2$

14. Simplify:

$$n \times 3n \times 5m \times 2n \times m \times 4n \times n \times m$$

15. Simplify: $\frac{2x}{3} - \frac{x}{4}$

16. Simplify: $2\sqrt{7} + 9\sqrt{7} - \sqrt{7}$

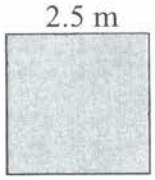
17. What is the probability of randomly choosing a ***black ball*** from a bag containing 10 black balls and 6 white balls?
Write answer as a fraction in its simplest form.

18. Find the ***mean*** of the following numbers:

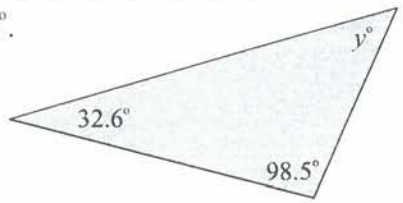
2, 0, 11, 19

Set 4

1. 3401 - 2694
2. Convert $6\frac{4}{7}$ to an improper fraction.
3. 0.004 × 100
4. Find 8% of 640 m.
5. Divide $4900 in the ratio 2:5.
6. Find the perimeter of this square.



7. Find the area of the above square.
8. Find the volume of a rectangular prism with side lengths 4.0 cm, 2.5 cm and 20 cm.
9. Convert 35.78 cm to mm.
10. Find y°.



11. If $a = -6$ and $b = -3$ find:

$$2a^2 - 5b + 4a$$

12. Transpose the following equation to make x the subject:

$$3y - 2x = -8$$

13. Factorise: $8p^2 - 24pq + 12p$

14. Simplify: $4x^8 \times 5x$

15. Simplify: $\frac{m}{6} + \frac{3m}{8}$

16. Simplify: $5\sqrt{2} + 6\sqrt{2} - 4\sqrt{2}$

17. What is the probability of randomly choosing a ***girl*** from a class of 24 students that has 16 ***girls***?
Write answer as a fraction in its simplest form.

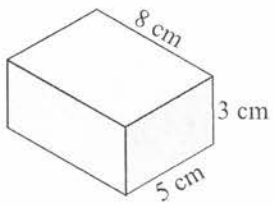
18. Find the ***mean*** of the following numbers:

6, 1, 11, 26, 31

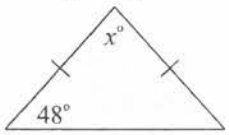
Mathematical Skills Practice

Set 5

1. 8753 + 7959
2. Convert $\frac{3}{5}$ to a decimal.
3. 8703.5 ÷ 100
4. Find 12% of $5000.
5. Divide 840 kg in the ratio 7:5.
6. Find the perimeter of a square with side length 4.5 m.
7. Find the area of a square with side length 4.5 m.
8. Find the volume of this rectangular prism.



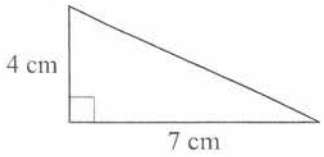
9. Convert 0.0049 kg to g.
10. Find x°.



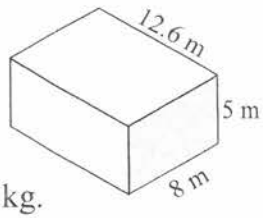
11. If $n = -6$ and $m = 5$ find:
$$(2n + 3m)^2$$
12. Transpose the following equation to make p the subject:
$$\frac{3p - 4q}{8} = 6$$
13. Factorise: $36ab^2c - 20abc^2$
14. Simplify: $n^2m^6 \times 4n^5 \times 9m^2$
15. Simplify: $\frac{6x}{7} - \frac{2x}{5}$
16. Simplify: $2\sqrt{5} + 9\sqrt{3} - \sqrt{3} + \sqrt{5}$
17. What is the probability of randomly choosing a ***white ball*** from a bag containing 8 white balls, 10 blue balls and 2 yellow balls?
Write answer as a fraction in its simplest form.
18. The ***mean*** of the following four numbers is 9. Find x.
$$x, 3, 12, 8$$

Set 6

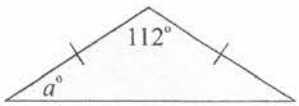
1. 12 839 + 5162
2. Convert $\frac{3}{4}$ to a decimal.
3. 9 730 000 ÷ 10 000
4. Find 40% of 8200 kg.
5. Divide 7500 tonnes in the ratio 12:13.
6. Find the perimeter of an equilateral triangle with side length 12.4 m.
7. Find the area of this triangle.



8. Find the volume of this rectangular prism.



9. Convert 3.7 tonnes to kg.
10. Find a°.



11. If $x = 8$ and $y = -4$ find:
$$(5x + 12y)^2$$
12. Transpose the following equation to make m the subject:
$$\frac{3n + 5m}{6} = 15$$
13. Factorise: $18a^2bc - 12abc^2 - 42ab^2c$
14. Simplify: $3x^3y^4 \times 4y \times 5x^7$
15. Simplify: $\frac{x}{4} - \frac{2x}{3} + \frac{x}{2}$
16. Simplify: $4\sqrt{7} - 8\sqrt{7} - 3\sqrt{7} + 9\sqrt{7}$
17. What is the probability that a baby will be born on a Wednesday?
18. Find the ***mean*** of the following numbers.
$$3, 12, 8, 13, 0, 9, 4$$

Mathematical Skills Practice

Set 7

1. 28 046 - 9485

2. Convert 0.4 to a fraction in simplest form.

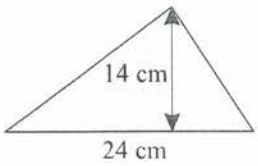
3. 800 000 ÷ 200

4. Find 30% of 280 m.

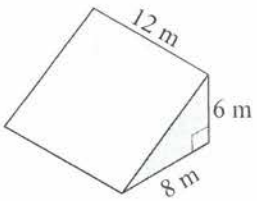
5. Divide 10 kg in the ratio 3.1.

6. Find the perimeter of a regular pentagon with side length 25 cm.

7. Find the area of this triangle.

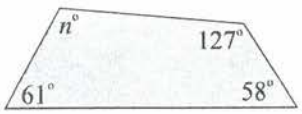


8. Find the volume of this prism.



9. Convert 85 g to kg.

10. Find n°.



11. If $a = 2$, $b = -3$ and $c = -4$ find:

$$2a + 4b - 3abc$$

12. Transpose the following equation to make x the subject:

$$\frac{3(x + 5y)}{4} = 12$$

13. Factorise: $-16p^2q^3r^2 - 64p^4q^2r^3 - 32p^3q^5r^2$

14. Simplify: $3a^3b^4 \times 2a \times 4a^5b^7$

15. Simplify: $\frac{x}{4} \times \frac{2x}{3}$

16. Simplify: $4\sqrt{7} \times 3\sqrt{2}$

17. What is the probability of randomly choosing a vowel from the following letters? Write answer as a fraction in its simplest form.

Q P
E M T N O L
D A F K

18. Find the ***median*** of the following numbers.

2, 3, 6, 8, 10, 12, 16, 25, 30

Set 8

1. 920 472 - 87 563

2. Convert 0.24 to a fraction in simplest form.

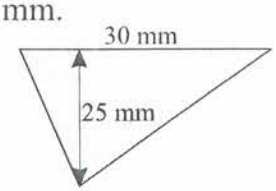
3. 6000 ÷ 30 000

4. Find 90% of 240 tonnes.

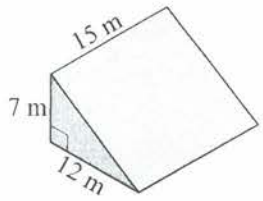
5. Divide 2.4 m in the ratio 2.1.

6. Find the perimeter of a regular hexagon with side length 400 mm.

7. Find the area of this triangle.

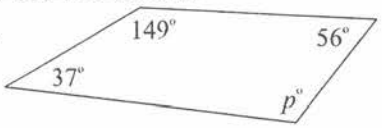


8. Find the volume of this prism.



9. Convert 0.04 m to cm.

10. Find p°.



11. If $p = -5$, $q = -6$ and $r = -1$ find:

$$2pq - 4p - 2pr$$

12. Transpose the following equation to make m the subject:

$$\frac{2(n - 5m)}{5} = 8$$

13. Factorise: $5a^2b^4c^3 - 15a^4b^5c^6 - 10a^3b^7c^3$

14. Simplify: $\frac{8a^5b^4}{10a^2b}$

15. Simplify: $\frac{8n}{15m} \times \frac{5m}{4n}$

16. Simplify: $3\sqrt{6} \times 2\sqrt{3}$

17. What is the probability of randomly choosing an odd number from the following numbers? Write answer as a fraction in its simplest form.

9 4 12 6 21 50 59
27 5 29 0 3 25 33 63

18. Find the ***median*** of the following numbers.

0, 4, 7, 9, 15, 19, 22, 29, 30, 33

Master Maths 10 Worksheet 71
Probability 1

71

Name: _____

1. Choose which of the following decimal probabilities best describes the outcome descriptions below.

0 0.2 0.7 1

(a) Event A will most likely occur
(b) Event B will not occur
(c) Event C will occur
(d) Event D will most likely not occur

2. One number is chosen from the following.

4 16 36 9 39 21
24 11 23 28 15 42

Find the following probabilities. Give answers as fractions in their simplest form.

(a) Pr(the number is even)

(b) Pr(the number is greater than 30)

(c) Pr(the number is a multiple of 3)

3. The probability of winning a prize in a raffle was 0.072. What is the probability of not winning a prize?
Give answer as a decimal.

4. There are 120 boxes in a lucky dip. One box has an electronic game, five boxes have movie tickets, 14 boxes have chocolates and the other boxes are empty.
Write the following probabilities as fractions in their simplest form.

(a) What is the probability of the first pick being:
(i) the game? (ii) a chocolate? (iii) a prize?

(b) The first 10 picks are the game, two tickets, three chocolates and four empty boxes. What is the probability of the next pick being a prize?

5. Tayla propagates seeds from native plants. She obtained 80 seeds of a new variety and found that 65 germinated.

(a) Based on these results, what is the probability that a seed will germinate?
Give answer as:
(i) a fraction in its simplest form

(ii) a decimal

(b) If Tayla collected 560 of these seeds, how many could she expect to germinate?

6. A footballer had 50 kicks at goal. 14 of the kicks missed to the left of the goal, 8 missed to the right and the other kicks were goals.

(a) Based on these figures find the following probabilities as percentages.
(i) Pr(he kicks a goal)

(ii) Pr(he misses to the left)

(iii) Pr(he misses to the right)

(b) If he has an average of 12 kicks at goal each game and plays 24 games, how many goals will he be expected to kick?
Give answer to the nearest goal.

7. The population of Coff Bay is 14 000. In one year 450 of the population caught influenza. The population of the neighbouring town of Achey Heads is 7500. In Achey Heads 265 people caught the influenza.
Find the percentage of each town that caught influenza (one decimal place) and state in which town you were more likely to catch it.

Coff Bay

Achey Heads

Town more likely to catch influenza

Master Maths 10 Worksheet 72
Probability 2

72

Name: _____

1. Rosanne has two hats (red and green), three scarves (red, blue and green) and three pairs of gloves (red, blue and green). One cold, dark morning she randomly chose a hat, scarf and pair of gloves from her wardrobe.
   (a) Construct a tree diagram showing all the possible combinations.

   (b) Find the following probabilities and write them as fractions in their simplest form.

   (i) Pr(all items are the same colour) ☐

   (ii) Pr(all items are different colours) ☐

   (iii) Pr(she chose at least one blue item) ☐

2. There is a game at a sideshow where you place ***two*** balls into the mouth of a clown.
   The clown's head turns from side to side and the balls can drop into any one of the four numbered boxes underneath. The boxes are numbered 1, 3, 5 and 10.
   The two numbers are ***multiplied*** to determine if a prize is won.

   (a) Complete the two-way table below showing all possible outcomes.

   The prizes and the scores needed are:
   A ***soft toy*** with a score of ***1 or 100***.
   A ***chocolate*** with a score that is an ***odd number***.
   A ***puzzle*** with a score that is a ***multiple of 5***.
   A ***poster*** with a score that is a ***multiple of 3***.

   (b) Find the following probabilities and write them as fractions in their simplest form.

   (i) Pr(winning a soft toy) ☐

   (ii) Pr(winning a chocolate) ☐

   (iii) Pr(winning a puzzle) ☐

   (iv) Pr(winning a poster) ☐

   (v) Pr(winning three prizes) ☐

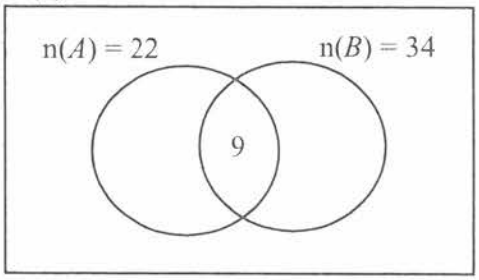
Master Maths 10 Worksheet 73
Venn Diagrams and Karnaugh Maps

73

Name: _____

1. (a) Complete the Venn diagram below by stating the number of elements in each region.

$n(\varepsilon) = 50$



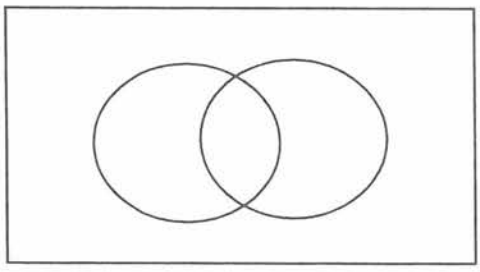
(b) Find the following probabilities if an element is randomly chosen.
Write as fractions in their simplest form.

(i) $Pr(A \cap B)$ (ii) $Pr(A \cup B)$ (iii) $Pr(B')$

(iv) $Pr(A' \cup B')$ (v) $Pr(A' \cap B)$ (vi) $Pr(A)$

2. 60 travellers in Europe were asked if they could speak French and/or German. 30 of them could speak French, 24 could speak German and 6 of these could speak both languages.

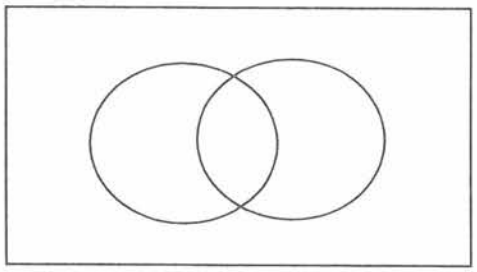
(a) Complete the Venn diagram below to display this information.



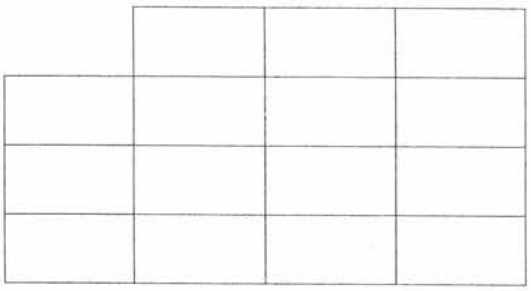
(b) Based on this information what is the probability of randomly choosing someone who could speak neither French nor German?
Give answer as a fraction in its simplest form.

3. A shop owner noted that of 100 people who came into her shop, 58 bought milk, 36 bought bread and 22 customers did not buy milk or bread.

(a) Complete the Venn diagram below to display this information.



(b) Complete the Karnaugh map below to display the information.



(c) For a customer entering the shop find the following probabilities.
Give answers as fractions in their simplest form.

(i) Pr(they will buy milk but not bread)

(ii) Pr(they will buy bread but not milk)

(iii) Pr(they will buy milk and bread)

Master Maths 10 Worksheet 74
Probability 4 - Pr(A or B)

74

Name: _____

1. A number from 1 to 30 (inclusive) is picked at random. Find the following probabilities as fractions in their simplest form.

(a) Pr(the number is a multiple of 3)

(b) Pr(the number is a multiple of 5)

(c) Pr(the number is a multiple of 3 and 5)

(d) Pr(the number is a multiple of 3 or 5)

2. 60 people were asked if they had been to Asia and/or Europe. 22 had been to Asia, 14 had been to Europe and 6 of these had been to both Asia and Europe.
Based on these figures, if a person is chosen at random, what is the probability that they have been to Asia or Europe?

3. $\Pr(X) = 0.64$, $\Pr(Y) = 0.38$, $\Pr(X \cap Y) = 0.24$
Use this information to find $\Pr(X \cup Y)$.
Write answer as a decimal.

4. Jim and Mark play cricket in the same team. Over a period of time it was calculated that the probability of Jim scoring more than 50 runs in a game was 0.45 and the probability of Mark scoring more than 50 runs in a game was 0.32. The probability of them both scoring more than 50 runs in a game was 0.24. What is the probability that Jim or Mark will score more than 50 runs in a game?

5. A lawn mower repairer found that an average of six out of ten mowers brought in to be repaired needed work on the engine and eight out of ten needed work on the blades. One in two needed work on the engine and blades. Based on these figures, what is the probability that a mower being repaired needed work on the engine or blades?
Give answer as a fraction in its simplest form.

6. Josephine had three pairs of black socks, four pairs of white socks, two pairs of green socks and one pair of purple socks.
If she randomly chose a pair of socks from her sock draw, what is the probability it was white or green?
Give answer as a fraction in its simplest form.

7. In the town of Greendale, 85% of the houses are brick and 74% of the houses are insulated. 68% of the houses are both brick and insulated. If a house is chosen at random, what is the probability (as a percentage) that it is brick or insulated?

Master Maths 10 Worksheet 75
Probability 5 - Pr(A and B)

75

Name: _____

1. A bag contains twenty balls numbered 1-20. A ball is chosen, replaced and another chosen. Find the following probabilities and write as fractions in their simplest form.

(a) Pr(both balls are even numbers)

(b) Pr(both balls are less than 5)

2. In the Slammers basketball team there are eight players - three of them left-handed. In the Jumpers basketball team there are nine players - four of them left-handed. A player is randomly chosen from each team. Find the following probabilities and write as fractions in their simplest form.

(a) Pr(both chosen players are left-handed)

(b) Pr(both chosen players are right-handed)

3. On any school day the probability of Kylie getting Mathematics homework is 0.8, English homework is 0.7 and homework in another subject is 0.9. Find the following probabilities giving answers as decimals.

(a) Pr(homework in only Mathematics on Monday)

(b) Pr(homework in Mathematics, English and another subject on Tuesday)

(c) Pr(no homework on Wednesday)

(d) Pr(getting homework in only Mathematics and English on Thursday and Friday)

4. A round of football had eight games. Chrissie is in a tipping competition and for one round asks her dog, Bob, to pick the winners. What is the probability that Bob picks all eight winners? Give answer as a fraction.

5. Hervey's guinea-pig had six babies - four of them males. He picks two at random to give to a friend. Find the following probabilities and write as fractions in their simplest form.

(a) Pr(both are males)

(b) Pr(both are females)

6. In a year 10 class there are 12 boys and 12 girls. Three are chosen at random to help the teacher. Find the probability that all three are girls and write as a fraction in its simplest form.

7. In another year 10 class there are 16 boys and 10 girls. Three are chosen at random from this class. Find the following probabilities writing answers as fractions in their simplest form.

(a) Pr(all three are boys)

(b) Pr(all three are girls)

(c) Pr(the first chosen is a boy and the next two are girls)

Master Maths 10 Worksheet 76
Probability 6 - Multiple Events

76

Name: _____

1. A farmer had three water bores drilled on his farm. He was told the probability of water being found in any of the bores was 0.6.

(a) Draw a tree diagram to show all possible outcomes and the probabilities of the water bores having water (W) or being dry (D).

(b) Find the following probabilities giving answers as decimals.

(i) Pr(water is found in all three bores)

(ii) Pr(water is found in at least one bore)

(iii) Pr(none of the bores have water)

2. A music festival was organised to be held on a long weekend (three days) in April at Rock Bay. On average it rains six days in April in Rock Bay.

(a) What is the probability that it rains on a particular day in Rock Bay in April? Give answer as a fraction in its simplest form.

(b) Draw a tree diagram to show all possible outcomes and the probabilities of rain occurring on any of the three days of the music festival.

(b) Find the following probabilities. Give answers as fractions in their simplest form.

(i) Pr(it rains on all three days)

(ii) Pr(it rains on more than one day)

(iii) Pr(there is no rain for the three days)