basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

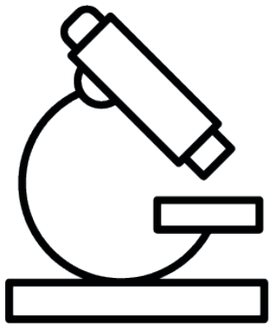
NATIONAL EDUCATION COLLABORATION TRUST

2030 NDP

Read to Lead
A Reading Nation is a Leading Nation

Planner & Tracker for Recovery ATP

Natural Sciences



Grade 9 Term 4

Table of Contents

Introduction

Dear Natural Sciences Teachers,

The COVID-19 Pandemic has left us with an enormous challenge in education. As we return to 'normal schooling', we all have to work smarter and harder to ensure that our system recovers.

This document is designed to help you achieve this. By systematically working through this plan, we are confident that you can address the loss of teaching and learning time, and bring your learners to the level where they need to be in terms of NS.

We thank you in advance for the commitment, dedication and hard work that is required of you.

You are truly building our nation.

With very best wishes for the term ahead,

The DBE / NECT Recovery ATP Trackers Team

Overview

Please continue to keep the following key principles in mind throughout the recovery journey:

- The development of **Science Process Skills** is key to the teaching and learning of the subject. Focussing on these skills is critical.

- Learners should be given as many opportunities as possible to **write regularly and read for meaning, in Natural Science,** in order to develop **language skills** as well. Due to learning losses, as a result of the Covid pandemic, it is the responsibility of every educator to develop these literacy skills.

- It is very important to give learners a sense of **how science applies to their daily lives**, and of **the value that science adds to their lives**. Hold a brief discussion on this point when introducing a new topic, and invite learners to contribute their ideas on the uses and value that this topic has.

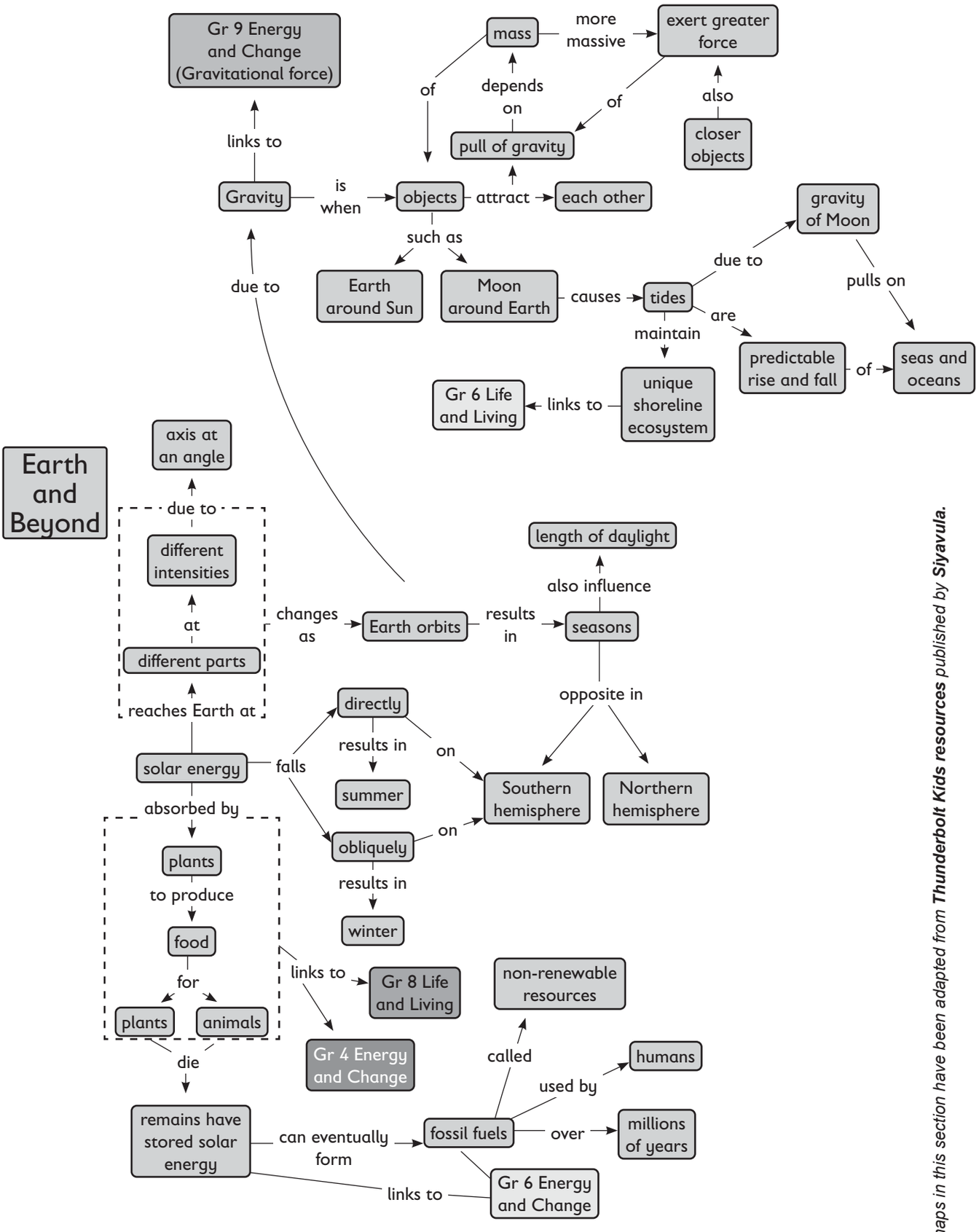
- At the end of every topic, come back to the topic overview, and **reflect on what has been learnt and taught**. In particular, it is important to note your challenges and ideas for future improvement, so that you can improve your teaching the next year.

- At the core of all scientific activities is the need to **ask questions**. These questions help us seek answers through observation and experimental design. The results of these questions should raise more questions. It is this natural curiosity that all teachers, and especially science teachers, should be encouraging in their classrooms. **Encourage curiosity** and **questions that investigate, inquire and probe.**

- **Build a solid conceptual foundation** for learners. A **conceptual chain** for the phase is provided at the start of this document. It is important for all NS teachers to work cohesively to ensure that learners are equipped with a solid understanding of the required concepts, by the time they leave the phase.

- Using the **CONCEPTUAL CHAIN** provided, **work together** as a department to:
  a. Check that all **concepts for the phase are covered** in your school's recovery plan.
  b. **Check for overlaps** across the grades.
  c. **Identify the weak links in the conceptual chain** - points where learners struggle and may be the source of misconceptions or common errors.
  d. Decide how to **emphasise critical concepts from previous grades** especially where topics have moved from a different grade in the revised ATP.

Senior Phase Conceptual Chain: Grade 7



*The concept maps in this section have been adapted from **Thunderbolt Kids resources** published by **Siyavula.***

Senior Phase Conceptual Chain: Grade 8

*The concept maps in this section have been adapted from **Thunderbolt Kids resources** published by **Siyavula.***

*The concept maps in this section have been adapted from **Thunderbolt Kids resources** published by **Siyavula.***

Amendments to the Annual Teaching Plan

The Recovery ATP for Natural Sciences has the same content as in CAPS. It is important to note that all the topics for Gr9 Term 4, NS, remain as per CAPS (Grade 9). Therefore, there is no change to the topics and time allocation.

- All topics **remain** the same:

1.	The Earth as a system	(1 week)
2.	Lithosphere	(2 weeks)
3.	Mining of mineral resources	(2 weeks)
4.	Atmosphere	(2 weeks)
5.	Birth, life and death of a star	(1 week)

Directions on how to cover all required topics are provided in the Tracker that follows.

Amendments To The Programme Of Assessment

- The Programme of Assessment is aligned to the *Revised Section 4 of CAPS.*
- Both formal and informal assessment should continue as normal.
- Recording of the informal assessment is left to the discretion of the teacher.
- The 2021 formal assessment tasks for Grade 9 are as follows:

	TERM 1	TERM 2	Term 4	TERM 4
Practical Task/Investigation/Projects	20 marks	20 marks	30 marks	-
Test	70 marks	100 marks	70 marks	100 marks

Sample Assessment task and memoranda for Grade 9 Term 4 are included in this document.

ATP / NECT Lesson Plan / Textbook Alignment: Grade 9 Term 4

Notes:

- **Column 1** shows the **time allocation** per topic.
- **Column 2** shows the **Recovery ATP requirements** for Grade 9 Term 4.
- **Column 3** shows **where in the NECT lesson plans** this is covered.
- **Column 4** shows **where in the approved textbooks** this is covered.
- Finally, if, for any reason, the **Term 4 teaching time** for NS **is reduced,** please ensure that the **KEY CONCEPTS** listed below each table are thoroughly covered.

Key To Approved Textbook Abbreviations:	
SbS	Step-by-Step Natural Sciences Grade 9 Van Schaik
SFA	Solutions for All Natural Sciences Grade 9 MacMillan
SO	Spot On Natural Sciences Grade 9 Pearson
TC	Top Class Natural Sciences Grade 9 Shuter and Shooter
VA	Via Afrika Natural Sciences Grade 9 Via Afrika
PLAT	Platinum Natural Sciences Grade 9 Maskew Miller Longman
OX	Oxford Successful Natural Sciences Grade 9 Oxford University Press
PEL	Pelican Natural Sciences Grade 9 Global MBD Africa
SIBB	Sasol Inzalo Bk B Natural Sciences Grade 9 Sasol

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Week 1, 3 hours	The Earth as a system 1. Spheres of the Earth		***Gr 9 Term 4 Lesson Plans*** Lesson 1A: Earth as a system Lesson 1B: Spheres of the Earth Lesson 1C: Earth as a system	SbS Gr 9	180 -183	
				SFA Gr 9	251 - 262	
				SO Gr 9	144 - 147	
				TC Gr 9	197 - 202	
				VA Gr 9	168 -171	
				PLAT Gr 9	201 - 205	
				OX Gr 9	168 - 170	
				PEL Gr 9	196 - 200	
				SIBB Gr 9	208 - 225	

Scaling down

If the Term 4 teaching time is reduced, ensure that learners have a thorough understanding of the following key content and concepts:

The Earth as a system

- The structure of the Earth – the 4 different layers: crust, mantle, inner core, outer core and their main features.
- Identify the 4 spheres of the Earth – biosphere, atmosphere, lithosphere, hydrosphere.
- Identify the main components of each sphere and how they interact near the surface of the Earth.
- Explain how all 4 spheres are needed to support life on Earth.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Week 2 and 3 6 hour	Lithosphere 1. Lithosphere 2. The rock cycle		***Gr 9 Term 4 Lesson Plans*** Lesson 2A: The structure of the lithosphere Lesson 2B: Igneous rocks Lesson 2C: Sedimentary rocks Lesson 3A: The lithosphere Lesson 3B: Metamorphic rocks Lesson 3C: The lithosphere	SbS Gr 9	184 - 193	
				SFA Gr 9	262 - 275	
				SO Gr 9	148 - 155	
				TC Gr 9	201 - 209	
				VA Gr 9	171 - 177	
				PLAT Gr 9	207 - 217	
				OX Gr 9	171 - 181	
				S&S Gr 9	201 - 210	
				SIBB Gr 9	222 - 249	

If the Term 4 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

Lithosphere

- Identify the lithosphere as the outer most layer of the mantle and Earth's crust.
- List the different minerals in the Earth's crust – gold, silver, copper, hematite. Know the differences between elements and compound.
- Igneous rocks are formed from volcanic lava – different rates of cooling form granite, pumice, obsidian rocks, which have different mineral content.
- Explain how rocks on the Earth's surface are weathered by heat, cold, wind and water.
- List characteristics of sedimentary rocks and know they are formed by weathering. Compare processes of weathering and erosion.
- Identify metamorphic rocks, explain how they are formed. Describe the process of the rock cycle.
- Reasons why the Earth is the only planet that is known to support life. Earth is the 3rd planet from the Sun.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Weeks 4 and 5 6 hours	<u>Mining of mineral resources</u> 1. Extracting ores 2. Refining minerals 3. Mining in South Africa		*<u>Gr 9 Term 4 Lesson Plans</u>* Lesson 4A: Mining of mineral resources Lesson 4B: Mining of mineral resources Lesson 4C: Mining of mineral resources Lesson 5A: Mining of mineral resources Lesson 5B: Pros and cons of mining in South Africa Lesson 5C: Mining of mineral resources	SbS Gr 9	194 - 199	
				SFA Gr 9	277 - 297	
				SO Gr 9	157 - 164	
				TC Gr 9	211 - 222	
				VA Gr 9	178 - 186	
				PLAT Gr 9	219 - 232	
				OX Gr 9	182 - 191	
				S&S Gr 9	211 - 227	
				SIBB Gr 9	250 - 282	

If the Term 4 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

<u>Mining of mineral resources</u>

- Names of the useful minerals found in South Africa's lithosphere. List 6 of the main minerals mined in South Africa.
- The 2 main methods of extraction and refining of minerals from ore
- The location of different mines in South Africa. The provinces where large scale mining occurs. Compare traditional and modern-day mining.
- The 2 basic ways and the 2 methods of refining materials.
- Some metals need physical and some need chemical processes to extract materials from the ore.
- The number of minerals that are mined on a large scale in South Africa.
- The significant environmental impacts of mining.
- The group of people who should benefit from mining. Reasons why this group should benefit.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Week 6 and 7 6 hours	Atmosphere 1. Atmosphere 2. Troposphere 3. Stratosphere 4. Mesosphere 5. Thermosphere 6. The greenhouse effect		***Gr 9 Term 4 Lesson Plans*** Lesson 6A: The atmosphere Lesson 6B: The troposphere Lesson 6C: The stratosphere Lesson 7A: The mesosphere Lesson 7B: The thermosphere Lesson 7C: The greenhouse effect	SbS Gr 9	200 - 205	
				SFA Gr 9	298 - 320	
				SO Gr 9	166 - 174	
				TC Gr 9	223 - 235	
				VA Gr 9	187 - 195	
				PLAT Gr 9	233 - 250	
				OX Gr 9	192 - 203	
				S&S Gr 9	223 - 241	
				SIBB Gr 9	282 - 315	

If the Term 4 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

The Atmosphere

- Extends from sea level to 20km above the surface of the Earth.
- The 4 layers of the atmosphere: troposphere, stratosphere, mesosphere, thermosphere. The main features of these layers.
- The 4 layers – have different temperature gradients which change with height above sea level.
- The troposphere: the mixture of gases, how it supports life, why all weather happens here.
- The stratosphere: extends 50km above the troposphere, characteristics, layer of ozone - important role.
- In absorbing radiation from the sun.
  temperature changes according to distance away from Earth.
- The mesosphere: extends 50 to 80km above earth's surface, characteristics, shooting stars.
- The thermosphere: extends from 80km above earth's surface, characteristics, activities in this layer.
- The greenhouse effect: how it works, characteristics, what is the greenhouse effect – how it affects life on Earth.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Week 8 3 hours	Birth, life and death of a star 1. Birth of a star 2. Life of a star 3. Death of a star		***Grade 9 Term 4 Lesson Plans*** Lesson 8A: The birth of a star Lesson 8B: The life of a star Lesson 8C: Death of a star	SbS Gr 9	206 - 215	
				SFA Gr 9	321 - 328	
				SO Gr 9	175 - 177	
				TC Gr 9	236 - 241	
				VA Gr 9	196 - 201	
				PLAT Gr 9	251 - 257	
				OX Gr 9		
				SIBB Gr 9	316 - 332	

If the Term 4 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

Birth, life and death of a star

- Draw a flow diagram to explain how a star is born.
- Identify the gases needed to form a star.
- List the main stages in the life of a star. Classify different stars according to colour, age, temperature and mass.
- Explain why a star dies. Explain red giant, planetary nebula and white dwarf.
- Compare the different stages of evolution of a star with the life cycle of a person.

Below is a sample test and memorandum. Please feel free to use this task as is, or to adapt for your context. It is important to ensure that learners are only assessed on work that has been taught.

Natural Sciences
Test
Term 4
100 Marks

NOTES TO THE TEACHER

If possible, photocopy this test for each learner. If this is not possible, write the test on the chalkboard.

INSTRUCTIONS TO THE LEARNERS

1. Answer all questions in blue or black ink.
2. Read each question carefully before answering it.
3. Pay attention to the mark allocations.
4. Plan your time carefully.
5. Write your answers in the spaces provided.
6. Write neatly.

PRACTICE QUESTION

Read the question and circle the letter that shows the correct answer.

Lightning is an example of …

a. gravitational force
b. electrostatic force
c. magnetic force
d. contact force

You have answered correctly if you have circled (b)

Grade 9 Natural Sciences Term 4 Assessment

SECTION A: Energy and Change

QUESTION 1: MULTIPLE CHOICE **[5]**

Read each question and circle the letter that shows the correct answer.

1a. Which of the following is a non-contact force?

a. compression

b. friction

c. magnetic

d. tension

1b. Potential difference is measured in …

a. amperes

b. volts

c. joules

d. ohms

1c. (Note to educator: Use the picture below or Resource 15)

The picture above shows a …

a. resistor

b. fuse

c. buzzer

d. conductor

1d. What is a simple device that opens and closes a circuit?

a. switch

b. cell

c. light bulb

d. fuse

1e. Electricity generation by falling water is called?

a. nuclear fission

b. sun-heated steam

c. wave

d. hydroelectric

QUESTION 2 - TERMS **[5]**

Write the correct word for the following definitions.

2a. Devices that produce electricity by converting chemical energy to electrical energy.

_____

2b. The flow of electric charge through an electrical conductor.

_____

2c. A safety device in a circuit that melts and breaks if the current exceeds a safe level.

_____

2d. A substance that does not allow electric current to flow through it.

_____

2e. A schedule of prices or fees used to charge for services.

_____

QUESTION 3: ANSWER THE QUESTIONS BELOW. [21]

3a. In which unit is force measured in? (1)

_____

3b. (Note to educator: Use photographs from Resource 2, 3 and 4)
Identify the effect of forces shown below. (3)

Man pushing a car that is moving

3b.1. _____

A hand squashing a tin can

3b.2. _____

Boy spinning on a skateboard

3b.3. _____

3c. What is the difference between a balanced and an unbalanced force? (2)

_____

_____

_____

3d. Fill in the missing words to make these sentences true. (4)

a. Mass is measured in _____, while weight is measured in _____.

b. The _____ of an object does not depend on the size of the gravitational force on it, while the _____ of an object depends on the size of the gravitational force on it.

3e. What instrument is used to measure mass? (1)

_____

3f. Explain the term magnetic force. (2)

_____

_____

3g. What is electrostatic force? (2)

_____

_____

3h. Thato rubs a plastic ruler against her jersey. The ruler now has a negative charge. Choose the correct words and fill in into the sentence below: (2)

The ruler has a negative charge because it has _____ (gained/lost) _____ (protons/electrons).

3i. Lightning can be very dangerous. List FOUR safety precautions that you should do during thunder and lightning storms. (4)

_____

_____

_____

_____

QUESTION 4 [9]

Answer the questions below:

4a. Draw a circuit diagram that contains the following: a series battery with 2 cells, 2 light bulbs connected in series and a resistor. (5)

4b. Calculate how much you would use in electricity per month for a geyser of 3500 watts that runs for 24 hours a day, if charges are fixed at R0,76 per kWh? Show your working. (4)

SECTION B: Planet Earth and Beyond

QUESTION 1: MULTIPLE CHOICE **[6]**

Read each question and circle the letter that shows the correct answer.

1a. Which layer of the Earth's structure is made of liquid iron and nickel?

a. mantle
b. inner core
c. outer core
d. crust

1b. Which of the colours below indicate the hottest star?

a. red
b. blue
c. yellow
d. white

1c. Which layer of the Earth consists of life?

a. atmosphere
b. crust
c. mantle
d. inner core

1d. Which gas is essential for life?

a. nitrogen
b. water vapour
c. oxygen
d. hydrogen

1e. Which of the following is NOT an example of a fossil fuel?

a. gas
b. coal
c. oil
d. dead matter

1f. The water on, or surrounding, the surfaces of the Earth, i.e. the oceans and rivers is called:

a. Atmosphere
b. Biosphere
c. Lithosphere
d. Hydrosphere

QUESTION 2: SCIENTIFIC WORDS **[10]**

Write the correct word for the following definitions.

2a. The gas that absorbs ultraviolet radiation.

_____

2b. The layer of air held around Earth by gravity.

_____

2c. Height above sea level.

_____

2d. The process during which rock is broken up into smaller particles.

_____

2e. An explosion in a high mass star.

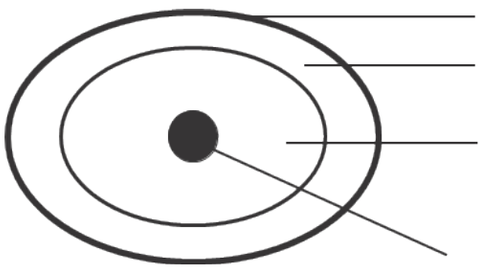
_____

2f. The sphere of the Earth that contains different gases.

_____

2g. Label the 4 layers of the Earth, on the diagram below.

The concentric layers of the inside of the Earth



QUESTION 3 **[12]**

3a. Name the 2 parts of the Earth's layers that make up the lithosphere.

_____

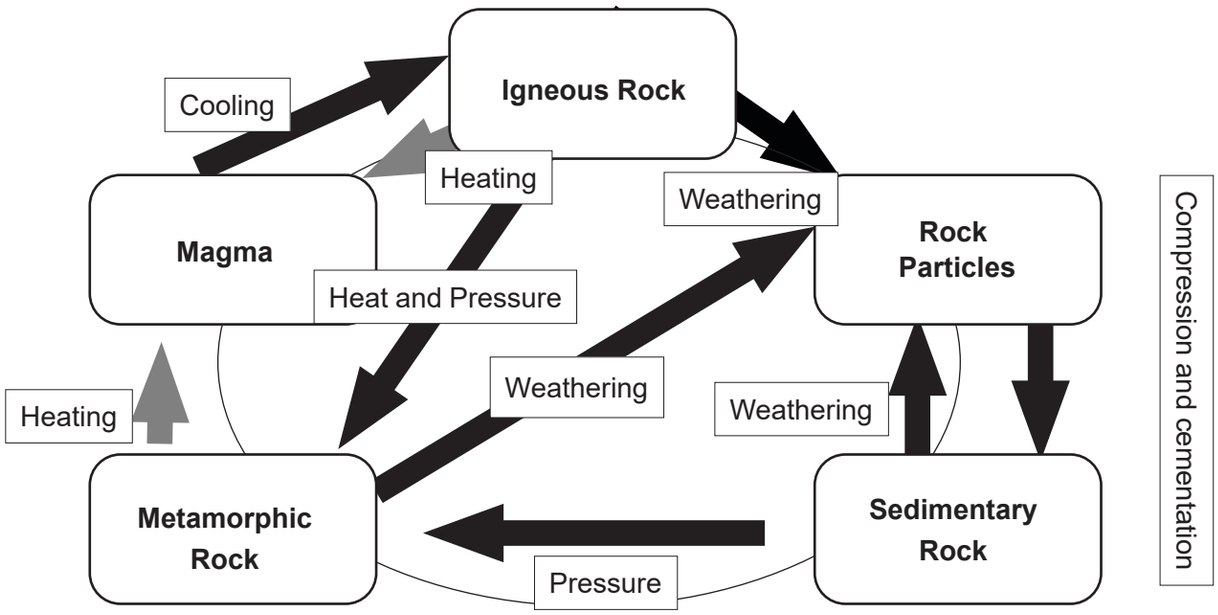
3b. Give 3 reasons why the lithosphere is so important.

_____

_____

_____

3c. Fill in the correct information in the rock cycle below: .



3d. Name the 2 different ways that rocks are weathered .

_____

_____

3e. Imagine you were digging in an outdoor area and found a rock with the fossilised remains of a small animal inside.

- What type of rock is this likely to be:

_____

- Explain how the animal was preserved inside the rock.

_____

_____

_____

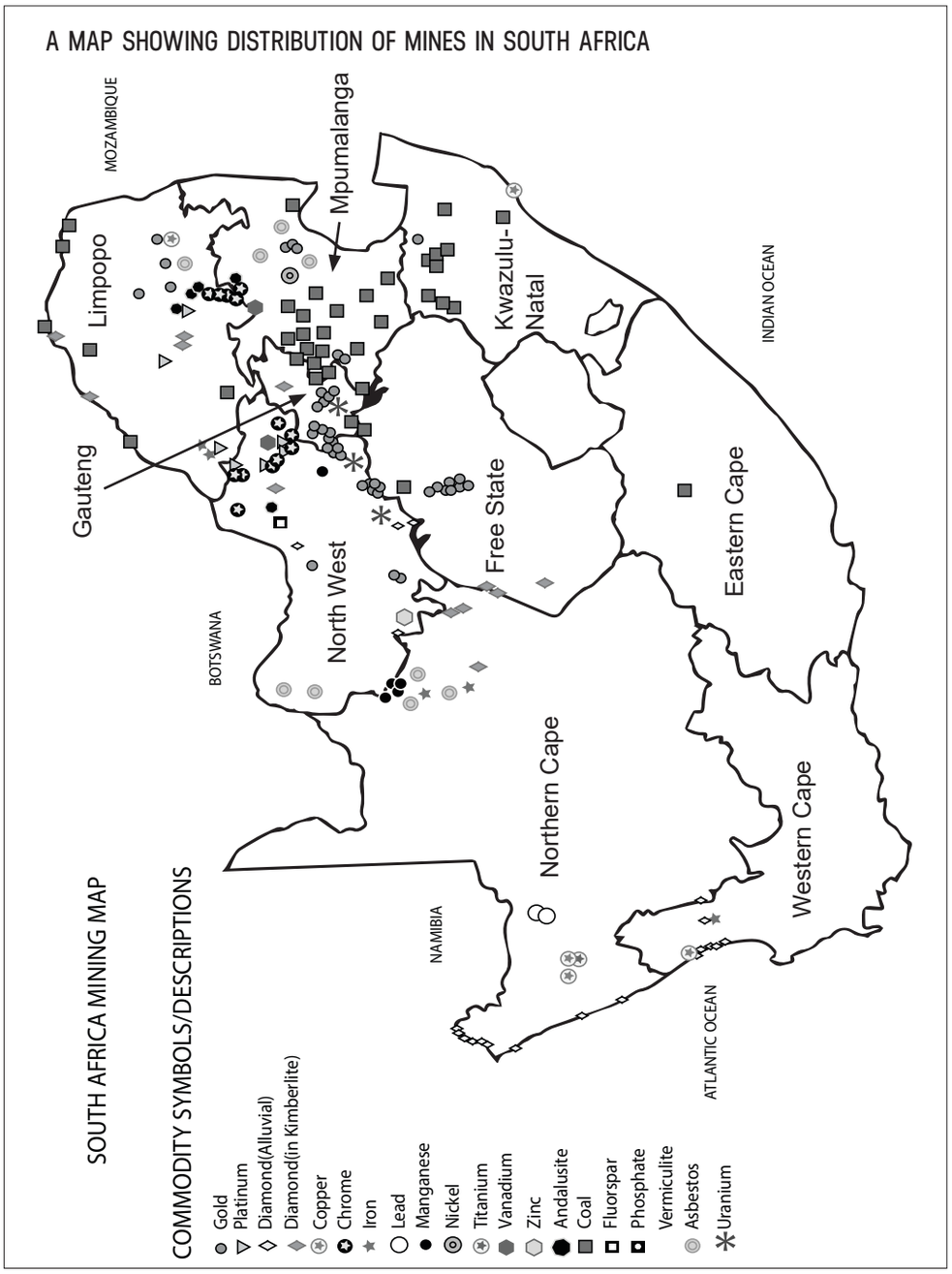
_____

QUESTION 4: **[15]**

Answer the following questions:

(Note to educator: Use map on Resource12)

Study the map below.



4a. Which province has the most minerals? (1)

_____

4b. Which province has the least minerals? (1)

_____

4c. Complete the table below to show which minerals are found in each province.

Only write ONE example of the mineral for each province. (9)

Province	Mineral

4d. Name the 2 most common ways of extracting minerals from the lithosphere. (2)

_____

4e. Mining can have an impact on our country in many ways. Discuss TWO ways in which mining can have a **Positive** impact. (2)

_____

_____

_____

QUESTION 5: **[12]**

5a. Give 2 functions of the atmosphere. (2)

_____

_____

_____

5b. The atmosphere is divided into 4 layers. Name the 4 layers. (4)

_____

_____

_____

_____

5c. Name the 3 greenhouse gases. (3)

_____

_____

_____

5d. Provide 3 effects of global warming. (3)

_____

_____

_____

_____

_____

_____

QUESTION 6: **[5]**

6a. Where are stars born? (1)

_____

6b. What is a star made of? (2)

_____

_____

6c. Briefly explain what a supernova is? (2)

_____

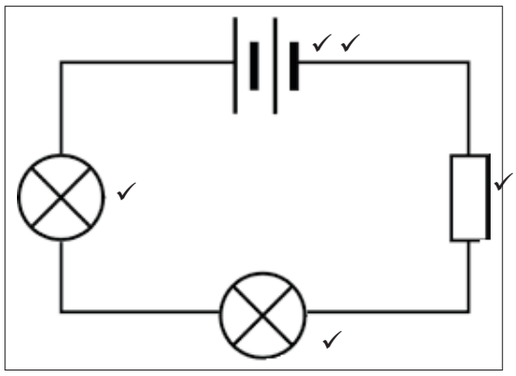
_____

TOTAL: 100

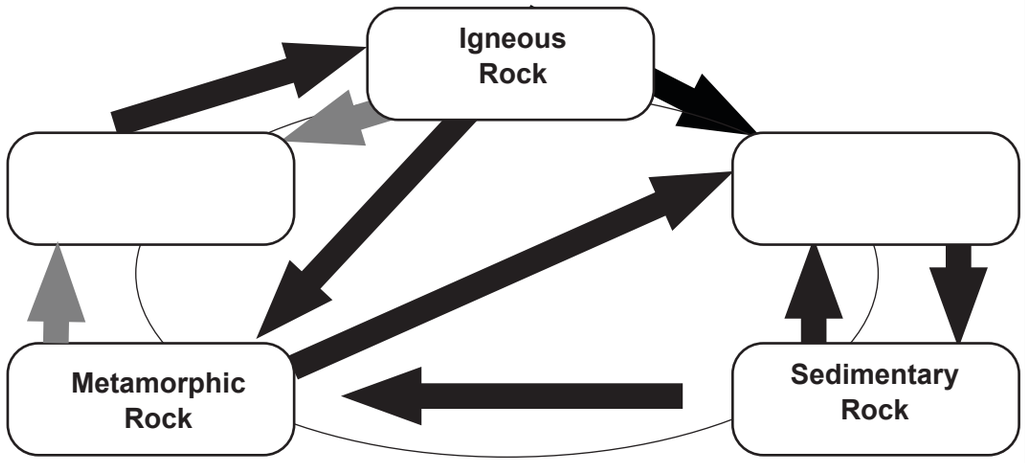
Term 4
Test 100 marks
Memorandum

CAPS Topic	Questions	Expected answer(s)	Marks
	1		
Forces	1a	C ✓	1
Electric cells as energy systems	1b	B ✓	1
Electric cells as energy systems	1c	A ✓	1
Electric cells as energy systems	1d	A ✓	1
Electric cells as energy systems	1e	D ✓	1
	2		
Electric cells as energy systems	2a	Cell/battery ✓	1
Electric cells as energy systems	2b	Current ✓	1
Electric cells as energy systems	2c	Fuse ✓	1
Electric cells as energy systems	2d	Insulator✓	1
Cost of electrical power	2e	Tariff ✓	1
	3		
Forces	3a	Newtons ✓	1
Forces	3b.1	Causes the object to move ✓	1
Forces	3b.2	Causes the object to change shape ✓	1
Forces	3b.3	Causes the object to rotate ✓	1
Forces	3c	Balanced forces are two forces that have no visible effect because they are equal and opposite. ✓ Unbalanced are two forces that have a visible effect because they are not equal and not opposite. ✓	2
Forces	3d	1. kilogram ✓ Newtons ✓ 2. mass and weight ✓ ✓	4
Forces	3e	Scale or balance✓	1

Forces	3f	Magnetic force is the force that magnets ✓ exert on magnetic materials over a distance. ✓	2
Forces	3g.	Electrostatic force is the force that two electrically charged objects ✓ exert on each other over a distance. ✓	2
Forces	3h.	The ruler has a negative charge because it has ained electrons. ✓✓	2
Forces	3i.	(Any four) ✓ ✓ ✓ ✓ • The best place to go is a sturdy building or a car, but make sure the windows in the car are shut. • Avoid metal sheds and open areas. • If there is no shelter around you, stay away from trees. • Crouch down in the open area, keeping twice as far away from a tree as far as it is tall. • Put your feet together and place your hands over your ears to minimize hearing damage from thunder. • If you're with a group of people stay about 15 feet from each other. • Stay out of water. It's a great conductor of electricity. Also, don't stand in puddles. • Avoid metal. Stay away from clotheslines, fences, and drop your backpacks because they often have metal on them. • If you're playing an outdoor activity, wait at least 30 minutes after the last observed lightning strike or thunder. • Avoid water. It's a great conductor of electricity, so do not take a shower, wash your hands, wash dishes or do laundry. • Do not use a corded telephone. Lightning may strike exterior phone lines • Do not use electric equipment like computers and appliances during a storm. • Stay away from windows and doors.	4

	4		
Series and parallel circuits	4a		5
Cost of electric power	4b	3500 W = 3500 ÷ 1000 = 3,5 Kw ✓ Cost = Power of device (kWh) x time x unit price ✓ = 3,5 x 24 x R 0,76 ✓ = R63,84 ✓	4

PART B: Earth and Beyond			
CAPS Topic	**Questions**	**Expected answer(s)**	**Marks**
	1		
Lithosphere	1a	C ✓	1
Birth, life and death of stars	1b	B ✓	1
The Earth as a system	1c	B ✓	1
Atmosphere	1d	C✓	1
Lithosphere	1e	D ✓	1
The Earth as a system	1f	D ✓	1
	2		
Atmosphere	2a	Ozone ✓	1
Atmosphere	2b	Atmosphere ✓	1
Atmosphere	2c	Altitude ✓	1
Lithosphere	2d	Weathering ✓	1
Birth, life and death of stars	2e	Supernova ✓	1
The Earth as a system	2f	Atmosphere ✓	1
The Earth as a system	2g	From top: Crust, ✓ Mantle ✓, Outer Core ✓& Inner Core ✓	4
	3		
Lithosphere	3a	The crust and rocky/solid layer of the mantles ✓ ✓	2
Lithosphere	3b	It is where life is found ✓ There is soil to grow food ✓ Valuable minerals found there ✓	3

Lithosphere	3c	✓ ✓ ✓  	3
Lithosphere	3d	Chemical and Physical or heat, water and wind. (Any 2) ✓ ✓	2
Lithosphere	3e	Sedimentary ✓ The dead animal would have been buried in sediment. It would have been preserved between new layers in the rock ✓	2
	4		
Mining of mineral resources	4a	North West	
Mining of mineral resources	4b	Eastern Cape	
Mining of mineral resources	4c	At least two from each province – except EC) **Province** **Mineral** **Limpopo** Iron, gold, platinum, manganese, platinum, coal. chrome ✓ **Gauteng** Gold, coal ✓ **Mpumalanga** Iron, gold, coal, chromium, vanadium ✓ **North West** Gold, chromium, diamonds, platinum, copper, Manganese, vanadium ✓ **Free State** Gold, coal, uranium, diamonds ✓ **KwaZulu Natal** Gold, coal, titanium ✓ **Eastern Cape** Coal ✓ **Northern Cape** Iron, diamonds, manganese, copper ✓ **Western Cape** Iron, titanium, diamonds ✓	

Mining of mineral resources	4d	Surface and Underground ✓ ✓	2
Mining of mineral resources	4e	✓ ✓ (Any two) • Job creation • Adds value to currency – foreign exchange • Supplies raw materials needed for construction of roads, buildings or manufacturing of products such as cars, jewellery • Source of income	2
	5		
Atmosphere	5a	(Any two) ✓ ✓ • The atmosphere serves as a source of oxygen. • It protects the Earth from dangerous UV rays of the sun. • Reduces temperature variation between day and night.	2
Atmosphere	5b	• Troposphere ✓ • Stratosphere ✓ • Mesosphere ✓ • Thermosphere ✓	4
Atmosphere	5c	Carbon dioxide ✓, methane ✓ and water vapour ✓	3
Atmosphere	5d	(Any three) ✓ ✓ ✓ • Climate change • Rising sea levels • Food shortages • Mass extinction	3
	6		
Birth, life and death of stars	6a	In the nebula ✓	1
Birth, life and death of stars	6b	A star is made of hydrogen ✓ and helium ✓	2
Birth, life and death of stars	6c	A supernova is a huge explosion ✓ that happens when a massive star dies ✓	2
			TOTAL: 100