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PLANNER & TRACKER FOR RECOVERY ANNUAL TEACHING PLAN (ATP)

2021 - 2023

NATURAL SCIENCES

GRADE 8 TERM 2

Helping teachers and learners to catch up with learning losses, master new content and acquire skills for the future.

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REPUBLIC OF SOUTH AFRICA

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Read to Lead
A Reading Nation is a Leading Nation

2030 NDP

- Please note that a Natural Sciences structured learning programme that includes daily lesson plans and classroom resources is available for download from www.nect.org.za
- This is a zero-rated website, so there are no data costs for downloads.
- This document can be used independently of the structured learning programme.

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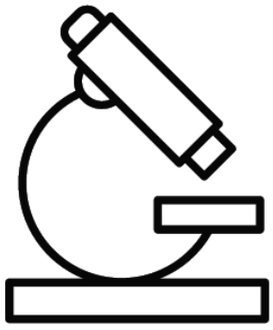
Natural Sciences



Grade 8 Term 2

2021 - 2023

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.

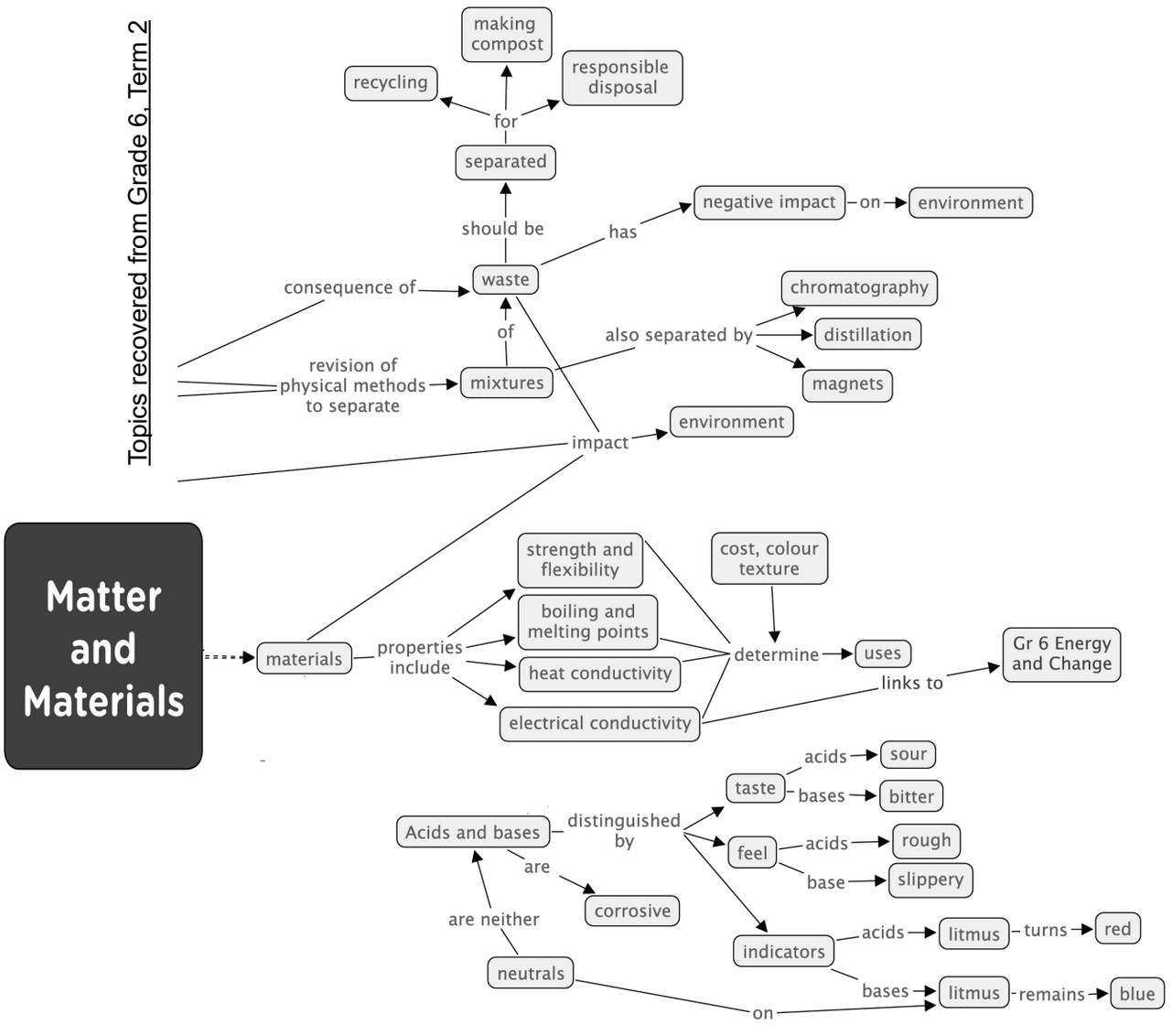
- At the end of every topic, come back to the topic overview, and **reflect on what has been learnt and taught**. In particular, it is important to note your challenges and ideas for future improvement, so that you can improve your teaching the next year.

- 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.

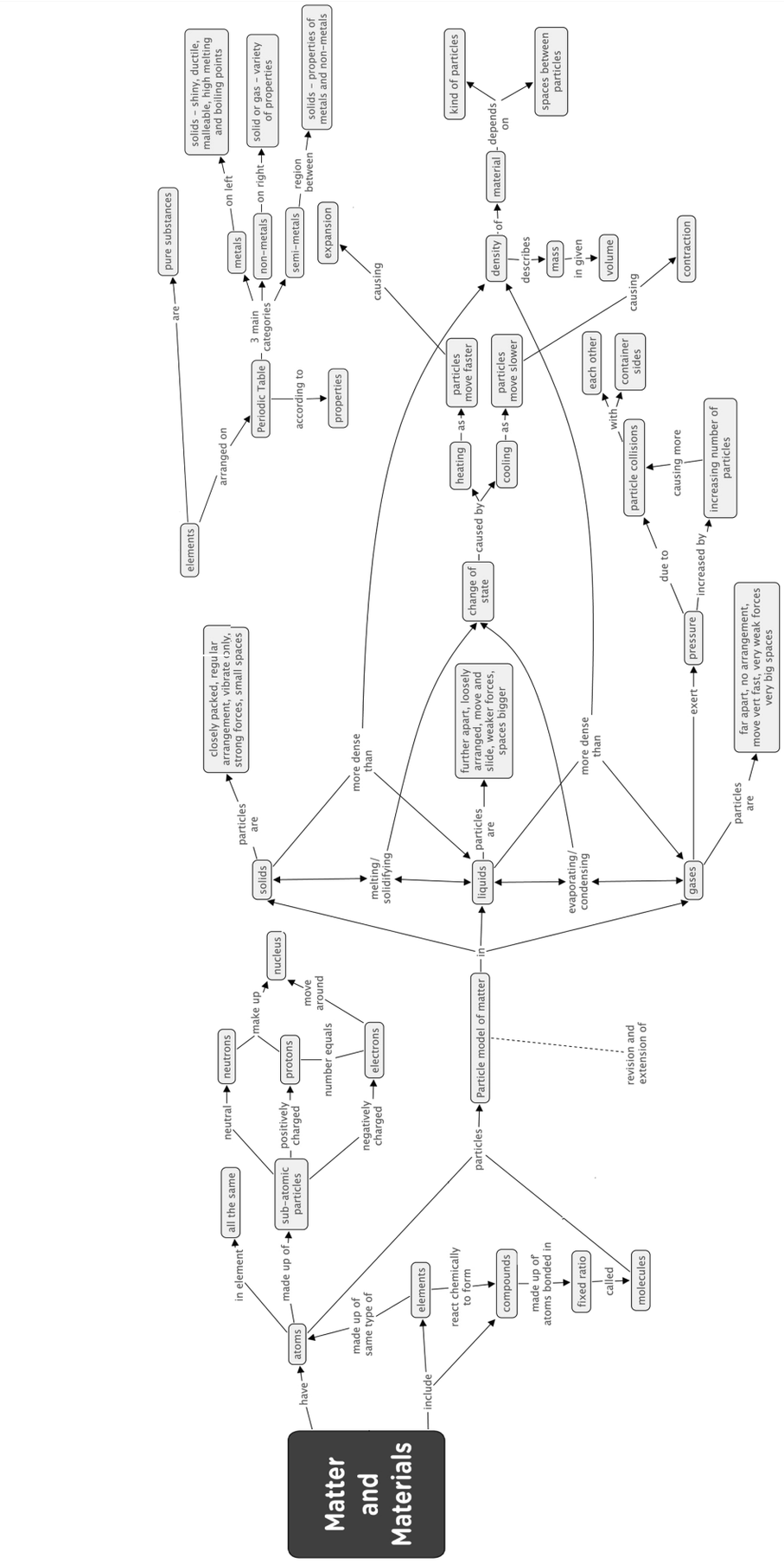
Gr 7



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

Gr 8

Topic recovered from Grade 7, Term 2



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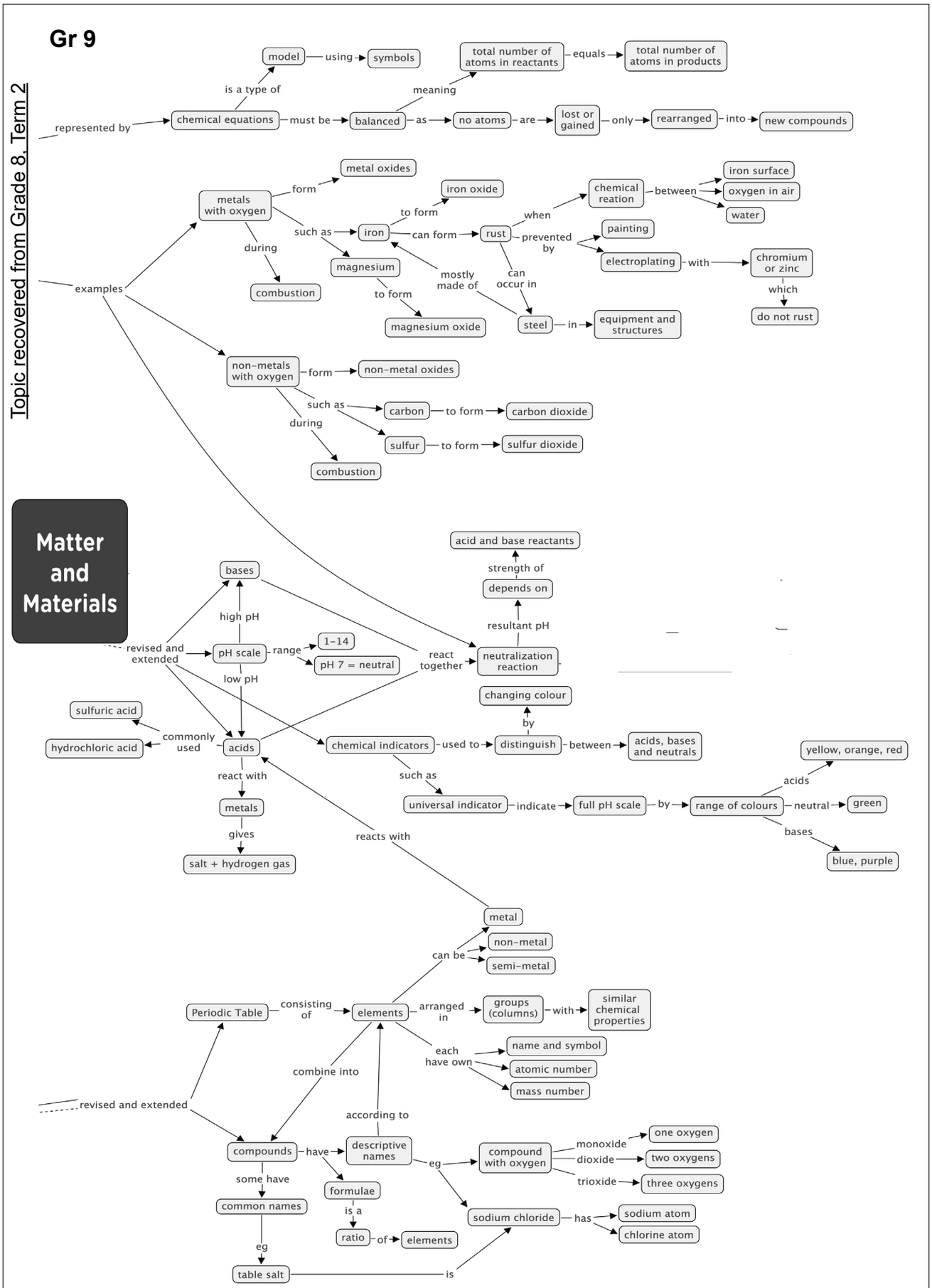

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Amendments to the Annual Teaching Plan

The Recovery ATP for Natural Sciences has the same content as in CAPS, however, this content has been arranged as follows for Grade 8 Term 2:

One **topic from Grade 7** has been **included/recovered**

1. **Introduction to the periodic table of elements** (1 week)

Some topics **remain**

2. **Atoms** (2 weeks)
3. **Particle model of matter** (5 weeks)

Some topics have been **removed completely**

Chemical reactions

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 2022 formal assessment tasks for Grade 8 are as follows:

	TERM 1	TERM 2	TERM 3	TERM 4
Practical Task/Investigation/Projects	20 marks	20 marks	30 marks	-
Test	60 marks	90 marks	60 marks	90 marks

Sample Assessment Tasks and Memoranda / Rubrics for Grade 8 Term 2 are included in this document.

ATP / NECT Lesson Plan / Textbook Alignment: Grade 8 Term 2

Notes:

- **Column 1** shows the **time allocation** per topic.
- **Column 2** shows the **Recovery ATP requirements** for Grade 8 Term 2.
- **Column 3** explains any **changes** that have been made to the teaching plan.
- **Column 4** shows **where in the NECT lesson plans** this is covered.
- **Column 5** shows **where in the approved textbooks** this is covered.
- Finally, if, for any reason, the **Term 2 teaching time** for NS **is reduced,** please ensure that the **KEY CONCEPTS** listed below each table are thoroughly covered.

Key To Approved Textbook Abbreviations:	
S&M	Study & Master Natural Sciences Grade 8 Cambridge University Press
VA	Via Afrika Natural Sciences Grade 8
PLAC	Placanum Natural Sciences Grade 8 Maskew Miller Longman
SFA	Solutions for All Natural Sciences Grade 8 MacMillan
DbD	Day by Day Natural Sciences Grade 8 Maskew Miller Longman
OX	Oxford Successful Natural Sciences Grade 8 Oxford University Press
SO	Spot On Natural Sciences Grade 8 Pearson
TC	Top Class Natural Sciences Grade 8 Shuter and Shooter
SIBB	Sasol Inzalo Bk B Natural Sciences Grade 8 Sasol
SNS	Successful Natural Sciences Grade 8
SbS	Step by Step Natural Sciences Grade 8
NS	Natural Sciences Grade 8

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Weeks 1 1 week	Introduction to the periodic table of elements 1. Arrangement of elements on the periodic table 2. Some properties of metals, semi-metals and non-metals	This topic has been recovered from Grade 7 Term 2	***Gr 7 Term 2 Lesson Plans*** Lesson 6C: Introduction to the Periodic Table Lesson 7B: The 3 main categories of elements Lesson 7C: Properties of metals Lesson 8A: Properties of non-elements Lesson 8B: Properties of semi-metals	OX Gr7	82 – 89	
				VA Gr7	82 – 89	
				PLAT Gr7	109 – 119	
				SO Gr7	91 – 96	
				SbS Gr7	105 – 108	
				PEL Gr7	130 – 138	
				SFA Gr7	178 – 187	
				TC Gr7	103 – 108	
				SIBB Gr7	232 – 248	

Scaling down

If the Term 2 teaching time is reduced, ensure that learners have a thorough understanding of the following key content and concepts:

Introduction to the periodic table of elements

- The Periodic Table is a classification system. The elements are arranged on the Periodic Table according to their properties. An element is a
- pure substance that cannot be broken down.
- The rows on the table are called periods. The columns on the table are called groups.
- The elements are arranged into 3 main categories: metals, semi-metals and non-metals
- Properties of metals: shiny, ductile, malleable, solid at room temperature except mercury, they have high boiling and melting points, they are good conductors of electricity. Metals are found on the left-hand side of the Table
- Properties of non-metals will vary depending on if they are solids, liquid or gas: most are dull and weak, they are brittle and can be crushed
- into powder, they are not ductile or malleable, they are poor conductors of heat and electricity, they have low boiling and melting points.
- Non-metals are found on the right-hand side of the Table.
- Properties of semi-metals: they have some properties of metals and some properties of non-metals, they are solids at room temperature, there are only 7 semi-metals, they can be dull or shiny, they are good semi-conductors of electricity when they are heated. Semi-metals are found between metals and non-metals on the Table.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Weeks 2 - 3 2 weeks	Atoms 1. Atoms – building blocks of matter 2. Sub-atomic particles 3. The concept of the Particle model of matter		***Gr 8 Term 2 Lesson Plans*** Lesson 1A: Atoms – building blocks of matter Lesson 1B: Protons, neutrons and electrons Lesson 1C: Elements Lesson 2A: Compounds Lesson 2B: Pure substances Lesson 2C: Mixtures of elements and compounds	SNS Gr8	64 – 76	
				TC Gr8	68 – 76	
				VA Gr8	64 – 75	
				SFA Gr8	84 – 95	
				SO Gr8	50 – 58	
				PLAT Gr8	72 – 87	
				SbS Gr8	46 – 59	
				NS Gr8	68 – 81	
				SIB Gr8	120 – 145	

If the Term2 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

Atoms

- Everything is made up of matter. Matter is everything that has mass and occupies space. Matter is made up of tiny particles called atoms. An atom is the smallest particle of matter that can exist on its own.
- Atoms cannot be created or destroyed. Not all atoms are the same.
- Anything that is made up of only one kind of atom is called an element. The atoms of some elements exist individually.
- The atoms of some elements combine to form diatomic molecules.
- An atom is made up of smaller sub-atomic particles: protons, neutrons and electrons which are found in the nucleus of the atom.
- The nucleus is a positively charged sphere in the centre of the atom - the protons are positively charged, the electrons are negatively charged, the neutrons are neutral and have no charge. A neutral atom has the same number of positive and negative charges.
- An element is made up of only 1 kind of atom. There are 118 elements listed on the Periodic Table, arranged in order of their atomic number. The atomic number is the number of protons that the atom has in its nucleus. Each element has its own name, symbol and unique properties.
- Some elements consist of single atoms while other elements consist of diatomic molecules, which are 2 or more atoms bonded together.
- Identify names, symbols and number of protons of the first 20 elements.
- Compounds consist of atoms of two or more different elements that are chemically bonded together to form molecules. A molecule is the smallest part of a compound and consists of 2 or more different atoms. Chemical bond is the force that holds atoms together in a compound.

Properties of compounds are different from the properties of the elements that it is made up of. E.g. water H20.

- Compounds can be broken down into their original elements by heating or electrolysis. Electrolysis is when an electrical current is passed through a solution of a compound.
- Pure substances consist of only one kind of atom or molecule. Elements and compounds are pure substances.
- Mixtures are 2 or more substances mixed together, but not chemically combined to form a new substance. A mixture has the combined properties of the substances that form the mixture. Elements and compounds are mixed together to form mixtures.
- Mixtures can be separated into the separate substances by physical means,

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NOTES	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS		DATE COMPLETED
Weeks 4 - 8 5 weeks	Particle model of matter 1. Pure substances 2. Elements 3. Compounds 4. The concept of the particle model of matter 5. Change of state 6. Density, mass and volume 7. Density and states of matter 8. Density of different materials 9. Expansion and contraction of materials 10. Pressure		***Gr 8 Term 2 Lesson Plans*** Lesson 3A: The concept of the particle model of matter Lesson 3B: States of matter: solids Lesson 3C: States of matter: liquids Lesson 4A: States of matter: gases Lesson 4B: Diffusion Lesson 4C: Change of state: heating Lesson 5A: Change of state: cooling Lesson 5B: Density: mass and volume Lesson 5C: Density: mass and volume Lesson 6A: Density and different materials Lesson 6B: Expansion and contraction of materials Lesson 6C: Contraction of materials Lesson 7A: Pressure of gases Lesson 7B: Increasing pressure on gases Lesson 7C: Decreasing pressure on gases	SNS Gr8	74 – 87	
				TC Gr8	78 – 94	
				VA Gr8	76 – 89	
				SFA Gr8	97 – 116	
				SO Gr8	61 – 86	
				PLAT Gr8	89 – 114	
				SbS Gr8	60 – 72	
				NS Gr8	87 – 106	
				SIBB Gr8	152 - 203	

If the Term 2 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

- **Particle model of matter**
- A model is used to explain the behaviour of particles because they are too small to see. Atoms and molecules are referred to as particles in the particle model of matter. These particles are represented by circles.

- The Particle Model of Matter states: All matter is made up of particles
  The particles are continuously moving
  The particles have spaces between them
  The particles exert forces on each other
- Macroscopic properties of a solid: Matter can exist in a solid state. Solids have a definite shape and occupy a definite space, they can be hard, soft or powdery. They cannot be compressed.
- Microscopic properties of a solid: The particles are closely packed and arranged in an orderly way, the forces between the particles are strong, the particles vibrate around fixed points in one place, the spaces between the particles are small
- Macroscopic properties of a liquid: Matter can exist in a liquid state. Liquids are runny, they flow and have volume. They take the shape of the container and are not easily compressible.
- Microscopic properties of a liquid: the particles are loosely arranged but are still in contact, they are constantly moving and sliding past each other in all directions. They have weaker forces and smaller spaces between them.
- Macroscopic properties of a gas: matter can exist in a gaseous state. Most gases are colourless and not visible. Gas has no definite shape or volume and will fill all the available space. A gas can be compressed into a smaller space.
- Microscopic properties of a gas: the particles have no particular arrangement, they move very fast in straight lines until they collide with another particle within the walls of the container. They have very weak forces and very big spaces between them.
- Diffusion is when particles move from a highly concentrated area to an area with a lower concentration. It only takes place in liquids and gases. It is faster in gases than liquids. Gas particles move more quickly and at greater speeds so they move more quickly from high concentration to low concentration areas.
- Concentration is the number of particles in a certain area.
- When a solid is heated it changes to a liquid state, this is called melting. The particles of the solid gain energy and overcome the strong forces between them and move freely apart.
- When a liquid is heated it changes to a gas, this is called evaporation or boiling. The liquid particles gain energy and overcome the forces between them and move faster and further apart from one another.
- The amount of matter stays the same during a change of state.
- When a substance is cooled, heat is taken away and the temperature decreases. When gas is cooled, it changes to a liquid state, this is called condensation. The particles of the gas lose energy, they move less and move closer to each other.
- When a liquid is cooled, it changes to a solid state, this is called freezing or solidification. The particles of the liquid lose energy, they move less and move closer to each other until they only vibrate in one place.

- Density of matter describes the amount of mass in a given volume of that matter. Mass is a measure of the amount of matter that an object is made of. It is measured in grams or kilograms.
- Volume is the amount of space an object occupies. It is measured in millilitres and litres.
- We can observe and measure mass and volume.
- Density of material depends on the state it is in. Solids, liquids and gases have different densities because of the distances between their particles. The closer together the particles are, the higher the density. Solids have high densities. In general, gases are less dense than liquids and solids.
- Materials with big particles have a high mass, materials with small particles have a small mass. A material that has a lower density, floats on a liquid with a higher density. But a material with a higher density than the liquid will sink.
- In general, solids, liquids and gases tend to expand when heated. Expansion is an increase in size of an object when the temperature is increased. The particles move faster and push further apart, the spaces between the particles gets bigger and the material expands.
- Materials contract when they are cooled. Contraction is a decrease in the size of an object when the temperature decreases. The particles move less and move closer together and the space between then gets smaller.
- Pressure is an important property of a gas. It is the force that gas particles in a closed container, exert on the sides of the container and other particles.
- Gases exert pressure in all directions. Gas particles inside a closed container move around very quickly and collide more frequently with each other and the sides of the container. Factors that influence the pressure of a gas are: the number of gas particles, the temperature of the gas and the volume of the container.
- Three ways to increase the pressure of gas in a container: decrease the volume of the gas, increase the number of gas particles, increase the temperature of the gas.
- Three ways to decrease the pressure of gas in a container: increase the volume of the gas, decrease the number of gas particles, decrease the temperature of the gas.

Grade 8 Natural Sciences Term 2 Assessment

Below is a sample assessment 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
Grade 8
Term 2
Practical task
20 Marks

Time allocation: 60 minutes (20 minutes preparation, 40 minutes task time)

NOTES TO THE TEACHER

1. This practical activity will be completed as part of Section E of lesson 6A.
2. This practical will take place during the lesson after the teaching component in Section D, “Accessing Information”.
3. The first 20 minutes will be used to teach section D and prepare learners for the practical task.
4. The next 40 minutes will be used to complete the practical activity as outlined in Section E.
5. The instructions and content of the practical task should be written on the chalkboard for the learners.
6. This task will be done in groups of 6.
7. Each group will need the following in order to complete the investigation:
    - two small glass jars
    - one large glass jar
    - a container of water
    - a cup of cooking oil
    - a tablespoon of salt
    - A tablespoon of sugar
    - a quarter cup of methylated spirits
    - a quarter cup syrup
    - a quarter cup dishwashing liquid
    - a quarter cup amasi or milk
    - an iron nail, coin or key
    - a seed, peanut, dried bean
    - a piece of polystyrene (can be broken from a polystyrene tray)
8. Ensure that you have all the materials ready and prepared for the learners before the lesson begins.
9. The memorandum for assessing the practical task is provided.
10. The learners should complete the drawings with a sharp pencil and the written answers should be completed in pen.:

1. This activity will be done in groups.
2. To do this activity, each group will need the following:
   - two small glass jars
   - one large glass jar
   - a container of water
   - a cup of cooking oil
   - a tablespoon of salt
   - A tablespoon of sugar
   - a quarter cup of methylated spirits
   - a quarter cup syrup
   - a quarter cup dishwashing liquid
   - a quarter cup amasi or milk
   - an iron nail, coin or key
   - a seed, peanut, dried bean
   - a piece of polystyrene (can be broken from a polystyrene tray)
3. Ensure that you have these materials prepared for each group before the lesson starts.
4. Tell the learners that they are going to be doing an investigation where they will be looking at the density of different materials.
5. Divide the learners into groups of six.
6. Write the following onto the chalkboard (always try to do this before the lesson starts):

PRACTICAL TASK

1. This practical task will be done in groups of 6.
2. Each group will be doing tasks to investigate density.
3. Each person in the group must participate in the investigation and complete the answers to the written activities in their workbooks.
4. Each group will need the following materials and equipment to do the investigation:
   - two small glass jars
   - one large glass jar
   - a container of water
   - a cup of cooking oil
   - a tablespoon of salt
   - A tablespoon of sugar
   - a quarter cup of methylated spirits
   - a quarter cup syrup
   - a quarter cup dishwashing liquid
   - a quarter cup amasi or milk
   - an iron nail, coin or key
   - a seed, peanut, dried bean
   - a piece of polystyrene

7. Read through the practical task with the learners.
8. Remind the learners that different materials will have different densities.
9. Tell the learners that today they are going to be conducting a practical task where they will be investigating the density of some solids and some liquids.
10. Have each group collect the equipment they will need (as listed on the board) for the task.
11. Write the following "Investigation method" onto the chalkboard:

METHOD

a. Pour the sugar into one of the small glass jars.
b. Pour the salt into the second small glass jar.
c. Pour a quarter cup of water into the big jar.
d. Pour a quarter cup of oil into the same jar as the water.

12. Read through the method with the learners.
13. Ask them if they have any questions.
14. Tell the learners they have 5 minutes to complete this task.
15. Supervise the learners whilst they complete the task and answer any questions that they may have.
16. After 5 minutes call the learners back to attention.
17. Tell the learners that they are now going to work together as a group to investigate density.
18. The following will need to be written on the chalkboard:

Task 1 **(7 marks)**

Look at the jars of salt and sugar first.

1a. Which have the bigger crystals – the sugar or the salt?
1b. Which of the two is more dense?
1c. If you were to fill the jars, which jar would have the most particles, the sugar jar or the salt jar?
1d. Give a reason for your answer.

Now look at the jar of oil and water.

1e. What do you observe when looking at the jar?
1f. Why is the oil floating on top of the water?
1g. Which liquids molecules are more tightly packed together?

19. Read through task 1 with the learners.
20. Ask them if they have any questions.
21. Tell the learners they have 10 minutes to complete task 1 and to answer the questions in their workbooks.
22. Supervise the learners whilst they complete the task and answer any questions that they may have.
23. After 15 minutes call the learners back to attention.
24. Tell the learners that they are now going to work together, as a group, to make a density column.
25. The following will need to be written on the chalkboard:

METHOD

-

a. You are going to pour equal amounts (a quarter cup or agreed measure) of each liquid into the large glass jar.
b. Start by pouring the syrup into the large glass jar.
c. Next pour the amasi (or milk) into the large glass jar.
d. Now pour the dishwashing liquid into the same jar.
e. Now pour a quarter cup of water into the jar.
f. Next pour a quarter cup of cooking oil into the jar.
g. Lastly add the methylated spirits.
h. Allow the jar to stand for a few minutes for the layers to form.
i. Now carefully drop the nail, the seed and the polystyrene into the jar.

26. Read through the method with the learners.
27. Ask them if they have any questions.
28. Tell the learners they have 8 minutes to complete this task.
29. Supervise the learners whilst they complete the task and answer any questions that they may have.
30. After 8 minutes call the learners back to attention.
31. The following will need to be written onto the chalkboard:

Task 2 **(13 marks)**

Looking at the large jar of liquid, answer the following:

2a. Why have the liquids separated into layers?
2b. How many layers can you see?
2c. Which is the most dense liquid?
2d. Which is the least dense liquid?
2e. Which liquid has settled closest to the middle?
2f. Which objects have dropped under the water layer?
2g. What does this tell you about those objects?
2h. Are any objects above the water layer?
2i. What does that tell you about that object?
2j. A variable is somehing you can change in an investigation.
What variable did you keep the same in this investigation?
2k. Which variable did you change in this activity?
2l. Pour some more water into the jar. Allow it to settle for 2 minutes.
What do you notice has happened?

32. Read through task 2 with the learners.
33. Ask the learners if they have any questions and answer as necessary.
34. Tell the learners they have 10 minutes to complete the written answers in their workbooks.
35. Supervise the learners as they complete the task and answer any questions they may have.
36. After 10 minutes call the learners to attention and have learners hand in their workbooks for assessment.
37. Learners must then tidy up investigation areas and hand back equipment.

Natural Sciences
Grade 8
Term 2
Practical task
Memorandum
20 Marks

Topic	Task	Expected answer / outcome	Marks
	1		
Particle model of matter	1a.	The sugar✓	1
Particle model of matter	1b.	The salt✓	1
Particle model of matter	1c.	The salt✓	1
Particle model of matter	1d.	The spaces between the salt crystals are smaller and so more of them will fit into the jar.✓	1
Particle model of matter	1e.	The oil is floating on top of the water.✓	1
Particle model of matter	1f.	The oil is less dense than the water.✓	1
Particle model of matter	1g.	The water✓	1
	2		
Particle model of matter	2a.	They are of different densities. ✓	1
Particle model of matter	2b.	Six ✓	1
Particle model of matter	2c.	Syrup ✓	1
Particle model of matter	2d.	Methylated spirits ✓	1
Particle model of matter	2e.	Answer will vary ✓	1
Particle model of matter	2f.	Nail and possibly seed (depending on size) ✓	1
Particle model of matter	2g.	It is more dense than the water ✓	1
Particle model of matter	2h.	Polystyrene ✓	1
Particle model of matter	2i.	It is less dense than the water ✓	1
Particle model of matter	2j.	The quantity of each liquid ✓	1
Particle model of matter	2k.	The objects dropped into the liquid ✓	1
Particle model of matter	2l.	The water eventually settles into the water layer and the water layer gets wider. ✓ ✓	2
		TOTAL	**20**

Below is a sample assessment test and memorandum. Please feel free to use this test 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
Grade 8
Term 2
Test
90 Marks
60 Minutes

NOTE TO THE TEACHER:

If possible, photocopy this exam for each learner. If this is not possible, write the exam 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.

Which one of these is a biotic factor of the environment?

A. rocks
B. plants
C. soil
D. water

You have answered correctly if you have circled (B)

Grade 8 Natural Sciences Term 2 Assessment

PART 1: Life and Living

QUESTION 1: MULTIPLE CHOICE **[4]**

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

1a. Which one of these is NOT an abiotic factor of the environment?

A. Air.
B. Soil.
C. Water.
D. Animals.

1b. Which of these statements is FALSE?

A. All ecosystems are large.
B. An ecosystem is a self-sufficient system.
C. Different ecosystems are linked to each other.
D. Ecosystems can be water systems or terrestrial systems.

1c. Which of these statements is TRUE?

A. Primary consumers eat secondary consumers in the food chain.
B. Lions are an example of a primary consumer.
C. Giraffes and zebras are examples of primary consumers.
D. Tertiary consumers eat plants..

1d. Which one of these is NOT an example of a decomposer?
:

A. Glucose + carbon dioxide + water
B. Energy+ oxygen + carbon dioxide
C. Glucose + oxygen + water
D. Energy + carbon dioxide + water

Question 2: Match the columns **[4]**

Instructions:

- Match the sentences in COLUMN A with the words in COLUMN B.
- Draw a line to join the sentence in COLUMN A with the correct word in COLUMN B. Do this as shown in the example below.

COLUMN A		COLUMN B
example	Animals that feed on plants only	A. Insectivore
2a.	An animal that feeds on other animals that have died	B. Scavenger
2b.	Animals that hunt and catch their prey.	C. Omnivore
2c..	Eats insects like ants, bee-tles and grasshoppers.	D. Predators
2d..	An animal that eats both plants and other animals.	E. Herbivore

Question 3 **[8]**

Complete the following sentences using words in the block below:

energy, glucose, oxygen, oxidised, exhale, inhale, water, carbon-dioxide, blood, air

Rewrite the sentences and underline your answers.

3a. Living organisms obtain _____ from the food that is stored in plants.

3b. Respiration is the process where energy is released when _____ is broken down in the presence of oxygen.

3c. The by-products of respiration in humans are _____ and _____.

3d. A human will _____ oxygen for the process of respiration, and then _____ carbon-dioxide.

3e. During respiration, oxygen in the _____ is exchanged with the carbon dioxide in the _____.

3f. The process of respiration is a chemical reaction where glucose is _____ to release energy.

3g. Glucose + _____ →Energy + carbon dioxide + water

Question 4 **[4]**

Write the word that is being described in the sentence.

Only write the answer.

4a. Process whereby green plants make their own food using energy from the Sun.

_____

4b. The green pigment in the cells of plants that absorbs radiant energy.

_____

4c. The substance known as the chemical compound H_20.

_____

4d. Gas released by plants during photosynthesis.

_____

Question 5 **[4]**

"Different food chains in an ecosystem are interconnected to form a food web."

Use the following food chains to draw a food web:

leaves→worm→lizard→bird

leaves→snail→bird→snake

leaves→rabbit→snake

leaves→worm→spider→lizard

Question 6 **[4]**

"Natural and human disturbances can cause a disruption in an ecosystem."

6a. Name two natural factors that can cause a disturbance in an ecosystem.

_____

_____

6b. Name two human factors that can cause a disturbance in an ecosystem.

_____

_____

Question 7 **[8]**

Read the following statement:

"Adaption is the change in the structural, functional and behavioural characteristics of an organism, enabling it to adjust to changing conditions within an environment.

7a. Why do plants and animal adapt to their environments?

_____

7b. Explain, using the camel as an example,the differences between structural adaption, behavioral adaption and functional adaption.

_____

_____

7c. How are water plants and desert plants adapted differently to their environments?

_____

_____

7d. What happens to a species if they are unable to adapt to changes in their environment quickly enough?

_____

_____

Question 8 **[5]**

State whether the following statements are True or False:

8a. All micro-organisms are consumers. _____

8b. We measure micro-organisms in micrometres. _____

8c. Bacteria are the smallest of the micro-organisms._____

8d. HIV is a disease caused by a virus, which is a micro-organism. _____

8e. Micro-organisms differ in size and function on different trophic levels. _____

Question 9 **[4]**

Using what you have learnt and the words in the box below, write 4 sentences showing how micro-orhanisms can be useful to man.

fermentation, cheese, vaccines, decomposer, protista, feeding cycle, yeast, antibodies,

_____

_____

_____

_____

_____

PART 2 : Matter and Materials

QUESTION 10: MULTIPLE CHOICE **[4]**

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

10a. Which one of these will NOT cause a chemical change in a substance?

A. Melting butter.
B. Electrolysis of water.
C. Burning wood.
D. Rusting of an iron gate.

10b. Which of these statements is FALSE?

A. Everything around us is made up of tiny particles called atoms.
B. Atoms are joined together by a chemical bond.
C. During a chemical reaction, atoms are destroyed.
D. During a chemical reaction, atoms are conserved or rearranged.

10c. Which of these statements is TRUE?

A. Expansion of materials occurs when the temperature is decreased.
B. Only solids and gases expand when heated.
C. When a material expands, the size of the particles changes.
D. When a material is heated, the particles move faster and push further apart.

10d. Which one of these is NOT an example of a decomposer?
:

A. Microscope.
B. Chromatography.
C. Filtration.
D. Distillation.

Question 11: Match the columns **[4]**

Instructions:

- Match the sentences in COLUMN A with the words in COLUMN B.
- Draw a line to join the sentence in COLUMN A with the correct word in COLUMN B. Do this as shown in the example below.

COLUMN A		COLUMN B
example	The force that holds atoms together in a molecule.	A. Diatomic molecule
11a.	Smallest particle of matter that can exist on its own.	B. Atom
11b.	Molecule that consists of two atoms of the same kind.	C. Nucleus
11c..	Consists of atoms of only one kind.	D. Element
11d..	The central region of an atom.	E. Chemical bond

Question 12 **[6]**

Complete the following sentences using words in the block below:

nucleus, electrons, protons, nucleus, sub-atomic, neutral

Rewrite the sentences and underline your answers.

12a. An atom is made up of smaller _____ particles, namely protons neutrons and electrons.

12b. The protons and neutrons are found in the _____ of the atom.

12c. The _____ move around the atom.

12d. The _____ are positively charged.

12e. The _____ are negatively charged.

12f. The neutrons are _____ and have no charge.

Question 13 **[5]**

Write the word that is being described in the sentence.

Only write the answer.

13a. The amount of mass for a given volume of material.

_____

13b. The force that gas particles exert on the walls of a container.

_____

13c. The process in which particles in liquids and gasses move from an area of high concentration to an area of low concentration.

_____

13d. A substance that takes part in a chemical reaction and undergoes change.

_____

13e. The reaction that takes place when a fuel reacts with oxygen to produce energy.

_____

Question 14 **[5]**

Using what you have learnt and the words in the box below, explain how hydrogen gas and oxygen gas bond to form water.

elements, diatomic, atoms, molecules, Hydrogen(H), Oxygen (O), bonds, energy, rearrange, compound, water, H_2O

_____

_____

_____

_____

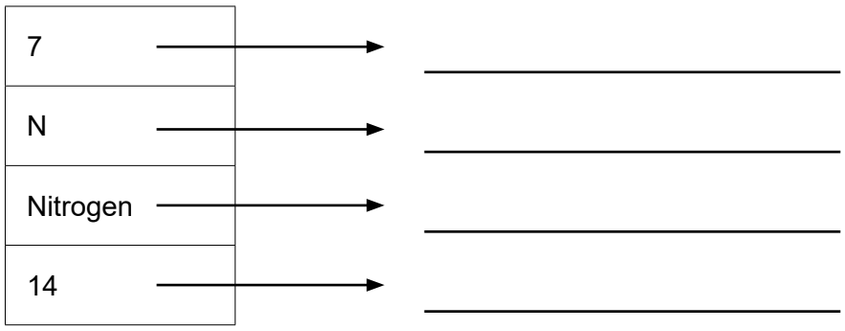
_____

_____

Question 15 **[4]**

Each element on the Periodic table has its own name, symbol, atomic number, atomic mass and position.

Below is the key for Nitrogen. Label what each part represents.



Question 16 **[5]**

A bottle of milk is put in the freezer.

16a. Why will the milk change state once it is put in the freezer?

_____

16b. Give one word to name this change of state.

_____

16c. Using what you know about the particle model of matter, explain how the milk particles changed in terms of the movement of particles.

_____

_____

16d. Using what you know about the particle model of matter, explain how the milk particles changed in terms of the arrangement of the particles.

_____

_____

16e. Using what you know about the particle model of matter, explain how the milk particles changed in terms of the spaces between the particles.

_____

_____

Question 17 **[7]**

Answer the following questions in the spaces provided:

17a. Name the three categories in which the elements are arranged on the Periodic Table.

_____

17b. Name a metal that is a liquid at room temperature. _____

17c. Some metals are malleable. What does that mean?

_____

17d. Name the 2 most common gases in the atmosphere

_____

_____

Question 18 **[5]**

State whether the following are True or False:

18a. A material with a lower density will float on liquid with a higher density. _____.

18b. An increase in the volume of a gas will increase the pressure of a gas in a container. _____

18c. Gases exert pressure in all directions. _____

18d. Pressure is an important property of liquids. _____

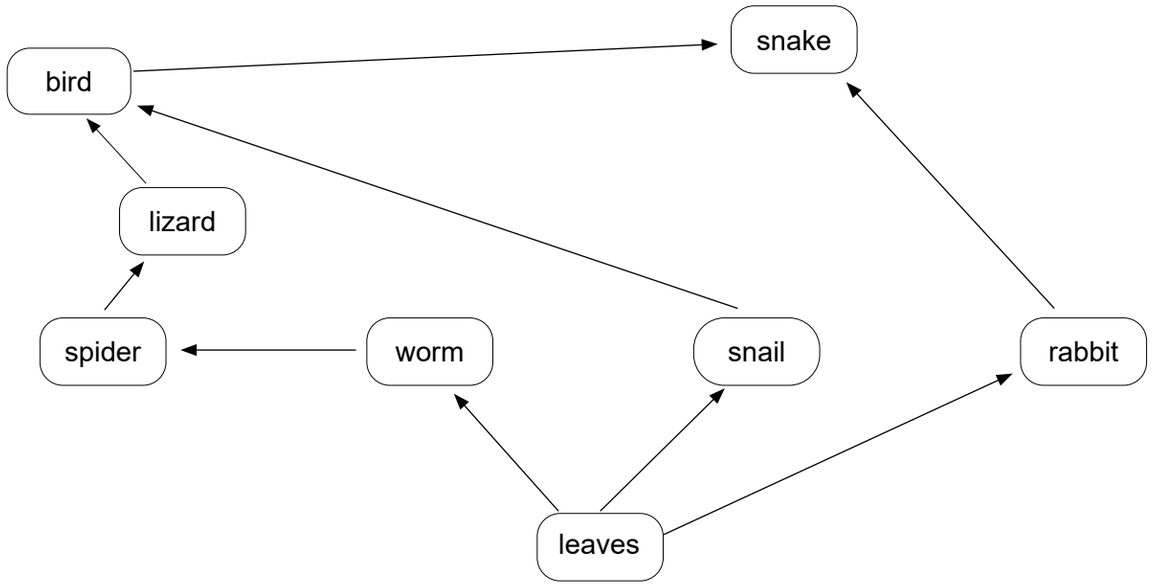
18e. Solids contract when they are cooled. _____

TOTAL: 90

Natural Sciences
Grade 8
Term 2
Test
Memorandum
90 Marks

Caps Topic	Questions	Expected answer(s)	Marks
	1		
	1a.	D ✓	1
	1b.	A ✓	1
	1c.	C ✓	1
	1d.	D ✓	1
	2		
	2a.	B ✓	1
	2b.	D ✓	1
	2c.	A ✓	1
	2d.	C ✓	1
	3		
	3a.	energy ✓	1
	3b.	glucose ✓	1
	3c.	carbon-dioxide ✓ 1/2 mark each water ✓	½ x 2 =1
	3d.	inhale ✓ 1/2 mark each exhale ✓	½ x 2 =1
	3e.	air ✓ blood ✓	2
	3f.	oxidised ✓	1
	3g.	oxygen ✓	1

	4		
	4a.	photosynthesis✓	1
	4b.	chlorophyll✓	1
	4c.	water✓	1
	4d.	oxygen✓	1
	5		
	5.		4



	6		
	6a.	Any 2 ✓ ✓ • Fires • Floods • Droughts • Tsunami • Volcanic activity • Extreme temperature changes	2
	6b.	Any 2 ✓ ✓ • Poaching and hunting • Pollution • Farming • Deforestation • Mining	2

	7		
	7a.	In order to ensure survival in a changing environment ✓	1
	7b.	✓ ✓✓ ✓ Structural adaptions are special features of the body adapted for the environment. In a camel: closed nostrils, long eyelashes, wide feet Behavioural adaptions are how a living organism behaves in its environment.In a camel: A camel knows to drink a lot of water when it is available. Functional adaptions are how the body of the organism works in its environment. In a camel: The hump of the camel is to store water	4
	7c.	✓ ✓ Water plants are flat so that they can float on water and have breathing pores on the top of their leaves. Desert plants store water in their thick and fleshy leaves and have thorns for protection from animals.	2
	7d.	They become extinct ✓	1
	8		
	8a.	False ✓	1
	8b.	True ✓	1
	8c.	False ✓	1
	8d.	True ✓	1
	8e.	True ✓	1
	9		
	9	Any 4 ✓ ✓✓ ✓ • In an eco-system. Bacteria and fungi act as decomposers • Bacteria are used to make wine, beer and yoghurt. • Some cheese need moulds to help them ripen. • Yeast is used to help bread rise. • Penicillin is used as an antibiotic to kill bacteria. • A vaccine contains small amounts of bacteria or virus and are used to fight disease.	4

PART 2 : Matter and Materials			
	10		
Particle model of matter	10a.	A ✓	1
Particle model of matter	10b.	C ✓	1
Particle model of matter	10c.	D ✓	1
Particle model of matter	10d.	Ar ✓	1
	11		
Atoms	11a.	B✓	1
Atoms	11b.	A✓	1
Atoms	11c.	D✓	1
Atoms	11d.	C✓	1
	12		
Atoms	12a.	sub-atomic✓	1
Atoms	12b.	nucleus✓	1
Atoms	12c.	electrons✓	1
Atoms	12d.	protons✓	1
Atoms	12e.	electrons✓	1
Atoms	12f.	neutral✓	1
	13		
Particle model of matter	13a.	density✓	1
Particle model of matter	13b.	pressure✓	1
Particle model of matter	13c.	diffusion✓	1
Particle model of matter	13d.	reactant✓	1
Particle model of matter	13e.	Combustion reaction✓	1
	14		
Particle model of matter		✓✓✓✓✓ • It takes two molecules of the diatomic gas • hydrogen (H) • and one molecule of the diatomic gas • oxygen (O) • to form water (H_2O) • When energy is added to the mixture of hydrogen gas and oxygen gas • The hydrogen atoms and oxygen atoms will rearrange themselves • And bond chemically • To form water-H_2O	5

	15		
Introduction to the Periodic Table of Elements	15.	atomic number ✓ symbol ✓ name ✓ atomic mass ✓	4
	16		
Particle model of matter	16a.	Energy is being removed from the milk as it cools✓	1
Particle model of matter	16b.	Freezing✓	1
Particle model of matter	16c.	The particles slow down/less movement of particles✓	1
Particle model of matter	16d.	The particles are arranged in a more orderly way✓	1
Particle model of matter	16e.	The spaces between the particles are very small✓	1
	17		
Introduction to the Periodic Table of Elements	17a.	metals✓ non-metals✓ semi-metals✓	3
Introduction to the Periodic Table of Elements	17b.	mercury✓	1
Introduction to the Periodic Table of Elements	17c.	Can be bent or flattened✓	1
Introduction to the Periodic Table of Elements	17d.	oxygen✓ nitrogen✓	2
	18		
Particle model of matter	18a.	True✓	1
Particle model of matter	18b.	False✓	1
Particle model of matter	18c.	True✓	1
Particle model of matter	18d.	False✓	1
Particle model of matter	18e.	True✓	1
			TOTAL: 90