

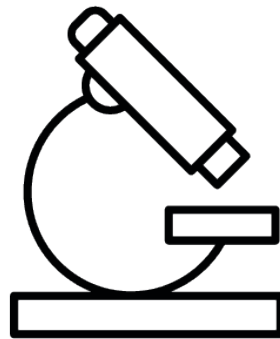


**basic education**  
Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA



# **Planner & Tracker for Recovery ATP**

## **Natural Sciences**



# **Grade 9 Term 1**

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## 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,

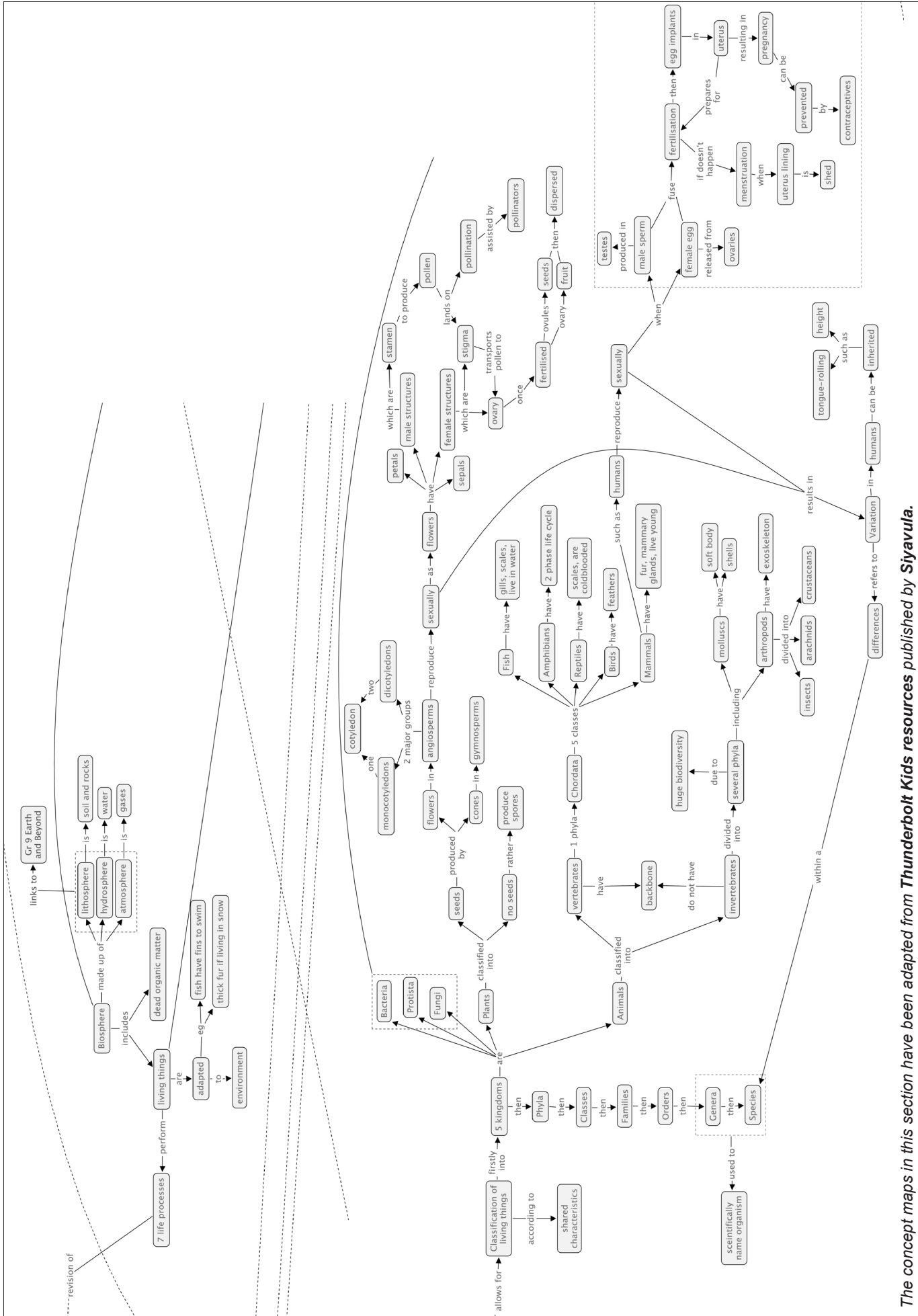
**The DBE / NECT Recovery ATP Trackers Team**

## Overview

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

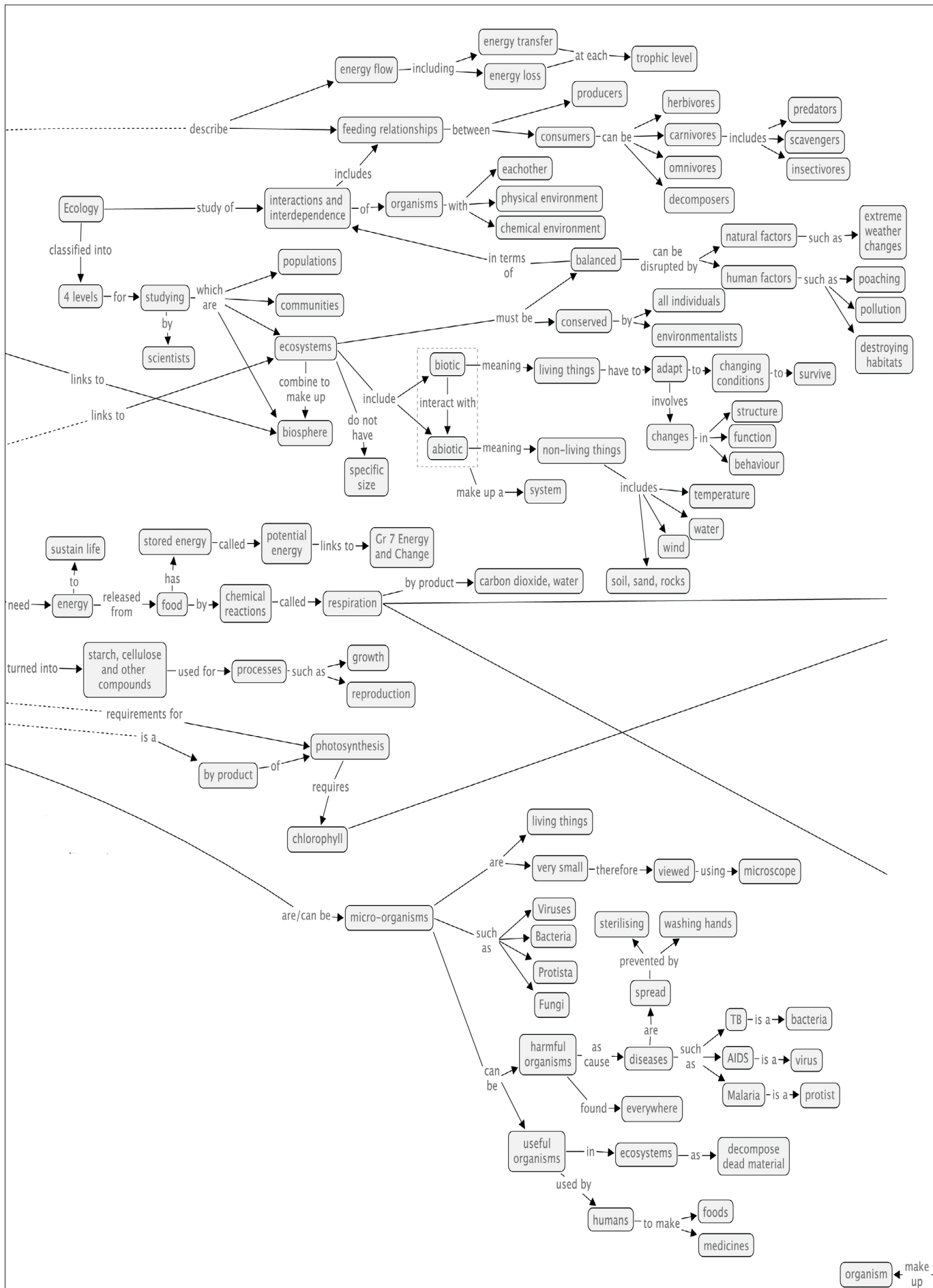
- The development of **Science Process Skills** is key to the teaching and learning of the subject. Focussing on these skills is critical.
- Learners should be given as many opportunities as possible to **write regularly and read for meaning, in Natural Science**, in order to develop **language skills** 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



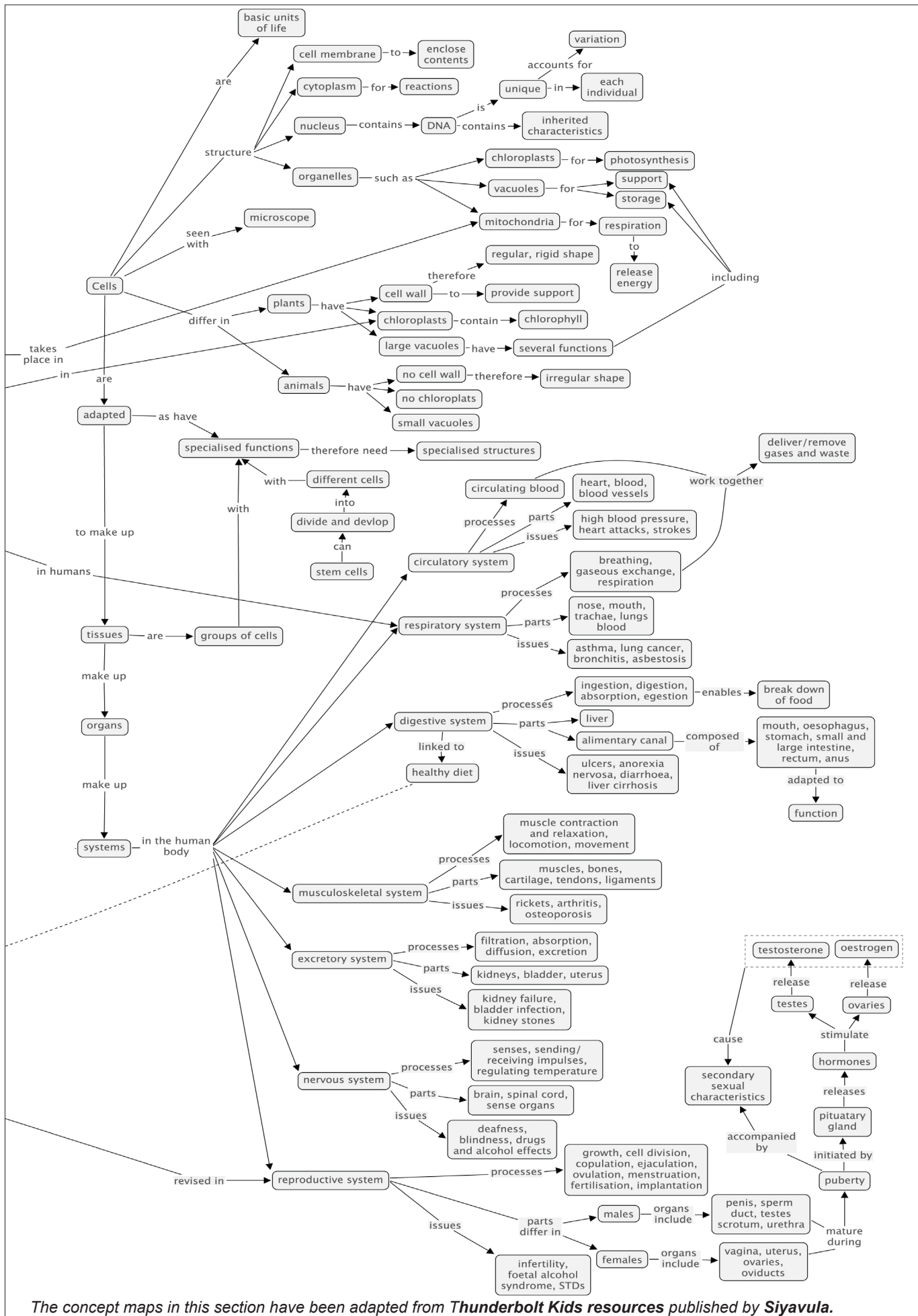
The concept maps in this section have been adapted from *Thunderbolt Kids resources published by Siyavula.*

# Senior Phase Conceptual Chain: Grade 8



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

# Senior Phase Conceptual Chain: Grade 9



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 Gade 9 Term 1, NS have been **brought back as per CAPS (Grade 9)**. Therefore, there is no change to the topics and time allocation.

- All topics **remain** the same:
  1. Cells as basic units of life (2 weeks)
  2. Systems in the human body integrated (2 weeks)  
with the human reproduction system
  3. Systems in the human body integrated (2 weeks)  
with the circulatory and respiratory systems
  4. Systems in the human body integrated (2 weeks)  
with the digestive system

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 9 are as follows:

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

Sample Assessment Tasks and Memoranda / Rubrics for Grade 9 Term 1 are included in this document.



**Notes:**

- **Column 1** shows the **time allocation** per topic.
- **Column 2** shows the **Recovery ATP requirements** for Grade 9 Term 1.
- **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 1 teaching time** for NS is **reduced**, please ensure that the **KEY CONCEPTS** listed below each table are thoroughly covered.

**Key To Approved Textbook Abbreviations:**

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

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Weeks 1 - 2	<p>Cells as basic units of life</p> <ol style="list-style-type: none"> <li>1. Cell structures</li> <li>2. Differences between plant and animal cells</li> <li>3. Draw and label a generalised plant and animal cell</li> <li>4. Cells in tissues, organs and systems</li> </ol>	<p><b>Gr 9 Term 1 Lesson Plans</b></p> <p>Lesson 1A: The structure of the cell</p> <p>Lesson 1B: The functions of the parts of the cell</p> <p>Lesson 1C: Plant and animal cells</p> <p>Lesson 2A: Specialised organelles in plant cells</p> <p>Lesson 2B: Different types of animal cells</p> <p>Lesson 2C: Cells are the basic unit of all living organisms</p>	<p>SFA Gr9 2 – 17</p> <p>VA Gr9 7 – 19</p> <p>OX Gr9 12 – 18</p> <p>SO Gr9 2 – 14</p> <p>PLAT Gr9 2 – 13</p> <p>TC Gr9 2 – 9</p> <p>SbS Gr9 3 – 22</p> <p>PEL Gr9 4,11-17</p> <p>SIBB Gr9 4 – 13, 22 - 26</p>	

**Scaling down**

If the Term 1 teaching time is reduced, ensure that learners have a thorough understanding of the following key content and concepts:

**Cells as basic units of life**

- The cell is the basic unit of all living organisms. Identify organelles inside cells and their functions: cell membrane, nucleus, cytoplasm, mitochondria.
- The 7 characteristics determined by DNA: eye colour, height, weight, sporting ability, hair texture, right or left handed, allergies.
- Plant cells: structures and their functions: vacuole, nucleus, cell wall, chloroplast, cytoplasm.
- Differentiate between plant cells and animal cells.
- Animal cells: different shapes and sizes, specialised cells are adapted to perform specific functions e.g. muscle cells, red blood cells.
- Different cells work together to make sure the animal survives.
- A group of cells forms tissue, a group of tissues makes up an organ and organs working together make an organism.
- The human body has 7 systems: excretory, digestive, circulatory, musculoskeletal, nervous, reproductive, respiratory.
- Stem cells can divide and develop into many different cell types.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Week 3 - 4	Systems in the human body integrated with the human reproduction system 1. Purpose 2. Components 3. Processes 4. Health Issues 5. Puberty 6. Reproductive organs 7. Stages of reproduction 8. Labelling the reproductive system	<b><u>Gr 9 Term 1 Lesson Plans</u></b> Lesson 5A: The reproductive system Lesson 5B: Puberty Lesson 5C: Hormones responsible for puberty Lesson 6A: Reproductive organs Lesson 6B: The menstrual cycle Lesson 6C: Formation of the foetus	SbS Gr9 54 - 70 SFA Gr9 40 – 65 SO Gr9 33 – 43 TC Gr9 41 – 56 VA Gr9 36 – 48 PLAT Gr9 32 – 47 OX Gr9 38 – 48 PEL Gr9 42 – 61 SIBB Gr9 52 – 77	

If the Term 1 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

**Systems in the human body integrated with the human reproduction system**

- Main purpose of reproduction is for gametes (sex cells) to combine for the continuation of the species.
- Puberty changes in male and female bodies.
- The hormones testosterone (males) and oestrogen (females) are released by the pituitary gland into the body during puberty bring about maturation of the sex organs and changes in the body that also cause secondary sexual characteristics – underarm and pubic hair, menstruation in girls, grow taller.
- Male reproductive organs include the penis, sperm duct, testes, scrotum and urethra. Know the function of each.
- Female reproductive organs include the vagina, uterus, ovaries and oviducts. Know the function of each.
- Main processes of growth, cell division, maturation, copulation, ejaculation.
- Stages of reproduction, ovulation, menstruation, fertilisation, implantation, growth, cell division, pregnancy, maturation.
- The menstrual cycle - steps. Fertilisation - steps
- Health issues associated with reproduction: infertility, foetal alcohol syndrome, STDs. Use of contraception methods for protection.
- Labelling the reproductive system.
- Formation of a foetus: process of fertilisation to the development of the foetus. Role of the placenta, what happens during pregnancy

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Weeks 5 - 6	<p>Systems in the human body integrated with the circulatory and respiratory systems</p> <ol style="list-style-type: none"> <li>Purpose</li> <li>Components</li> <li>Processes</li> <li>Health Issues</li> <li>Breathing, gaseous exchange, circulation and respiration</li> <li>Label the respiratory system</li> </ol>	<p><u>Gr 9 Term 1 Lesson Plans</u></p> <p>Lesson 7A: Breathing - inhalation</p> <p>Lesson 7B: Double circulatory system</p> <p>Lesson 7C: Blood vessels</p> <p>Lesson 8A: The process of respiration</p> <p>Lesson 8B: Breathing – exhalation</p>	<p>SbS Gr 9 71 – 80</p> <p>SFA Gr 9 69 – 78, 83</p> <p>SO Gr 9 46 – 48</p> <p>TC Gr 9 60 – 66</p> <p>VA Gr 9 51 – 53</p> <p>PLAT Gr 9 50 – 56</p> <p>OX Gr 9 48 – 57</p> <p>PEL Gr 9 68 – 74</p> <p>SIBB Gr 9 84 - 100</p>	

If the Term 1 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

**Systems in the human body integrated with the circulatory and respiratory systems**

- The process of breathing: inhalation and exhalation. Gaseous exchange in the lungs. The role of the alveoli. Gaseous exchange in the body cells.
- The movement of oxygenated blood from the lungs to the body cells. The importance of oxygenated blood travelling to the heart first where it is then pumped to all cells in the body. Diffusion is the movement of gases from a high concentration to a low concentration.
- The structural and functional differences between arteries and blood capillaries. Arteries are much bigger than capillaries. Arteries take blood away from the heart. Veins take blood to the heart.
- Respiration occurs in the mitochondrion of cells. Oxygen reacts with glucose (from the food we eat) in the cells and energy is released. Carbon dioxide is produced as a waste product and is taken back to the heart to be pumped to the lungs where gaseous exchange occurs and carbon dioxide is breathed out via the nose and mouth – exhalation.
- Label the circulatory and respiratory systems.

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Week 7 - 8	<p>Systems in the human body integrated with the digestive system</p> <ol style="list-style-type: none"> <li>Purpose</li> <li>Components</li> <li>Processes</li> <li>Health Issues</li> <li>Healthy diet</li> <li>The alimentary canal and digestion</li> <li>Label the digestive system</li> </ol>	<p><b>Gr 9 Term 1 Lesson Plans</b></p> <p>Lesson 8C: A healthy diet</p> <p>Lesson 9A: Starch and fats in food</p> <p>Lesson 9B: The alimentary canal</p> <p>Lesson 9C: Mechanical and chemical Digestion</p>	<p>SbS Gr 9 84 – 89</p> <p>SFA Gr 9 87 – 95</p> <p>SO Gr 9 51 – 55</p> <p>TC Gr 9 72 – 81</p> <p>VA Gr 9 56 – 65</p> <p>PLAT Gr 9 63 – 70</p> <p>OX Gr 9 58 – 64</p> <p>PEL Gr 9 80 – 92</p> <p>SIBB Gr 9 114 - 131</p>	

If the Term 1 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

**Systems in the human body integrated with the digestive system**

- Digestion is the breakdown of food into a useable dissolved form. Ingestion is taking food into the mouth. Egestion is expelling of waste products out of the body.
- A healthy eating plan (diet) must have proteins, carbohydrates, fats and oils, vitamins and minerals, fibre and water. Know the importance and function of these nutrients. Know the best foods to eat.
- The alimentary canal is made up of the mouth, oesophagus, stomach, small intestine, large intestine, rectum and anus. Know the function and processes of each part.
- Mechanical digestion: food is physically broken down through chewing, churning and mashing (teeth and stomach). Oesophagus uses peristaltic waves to also break down food.
- Chemical digestion: food is broken down into smaller pieces by enzymes in the mouth (saliva) and acid in the stomach. Enzymes in the small intestine also break down food.
- Label the digestive system.

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.

### **Ns** **Grade 9** **Practical Task** **Term 1** **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 1B.
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 learners will be working in groups and constructing a model of an animal cell. Some materials will need to be collected in advance.
6. Try and collect as many of these materials as possible.
7. Suggested materials are: newspaper, clear plastic bags or scraps, small stones, dried beans, dried mielie seeds, string or wool, lengths of sticks, cardboard boxes, polystyrene trays, dough or clay or Prestik, cardboard offcuts, paper, marker pens, sheets of paper, glue, cellotape, scissors
8. Each group will also need a piece of cardboard 30cm x 50cm big. This can be a new sheet or from a cardboard box.
9. Each group will also need a sheet of lined paper for Task 2. If this is not available, the task can be done in their workbooks.
10. The instructions and content of the practical task should be written on the chalkboard for the learners.
11. The memorandum for assessing the practical task is provided.
12. The learners should complete the drawings and graphs with a sharp pencil and the written answers should be completed in pen.

Divide the learners into groups of 6.

1. The learners will be making a 3D model of an animal cell for this activity.
2. For this activity you will need the items that have been collected to build the model. These could include: newspaper, clear plastic bags or scraps of plastic, small stones, dried beans, dried mielie seeds, string or wool, pieces of sticks, cardboard boxes, polystyrene trays, dough or clay or Prestik, cardboard offcuts, paper, marker pens, sheets of paper, glue, cellotape, scissors, etc.
3. Each group will also need a piece of cardboard on which to construct the model. This needs to be 30cm x 50 cm big. It can be a new sheet of cardboard or a piece of cardboard from a box.
4. Each group will also need a sheet of lined paper for Task 2. If this is not available, they can use their workbooks.
5. Write the following onto the chalkboard (always try to do this before the lesson starts):

### **PRACTICAL TASK**

- This task will be done in groups.
- Each group is going to make a 3D (three dimensional) model of an animal cell.
- The model is going to be made out of the materials that have been collected.
- You will have to discuss, in your groups, what materials you are going to use to make your model.
- You will need to think creatively and work neatly as a team.
- You will be assessed as a group.

6. Read over the practical task with the learners.
7. Remind the learners that they looked at the structure of the animal cell in the previous lesson.
8. Have the learners open their workbooks to the drawing they did of the animal cell in the previous lesson.
9. Tell the learners that they are going to make a three dimensional model of the animal cell, in groups.
10. Explain what “three dimensional” means that something that has height, width and depth.
11. An example of something that is three dimensional could be a chair. You can see it from all sides. It has height and width and depth.
12. Write the following on the chalkboard (try to do this before the lesson starts):



### **Instructions:**

- Using the materials available, make a 3D model of the animal cell.
- The model should be no smaller than 30cm x 50cm
- As a group, identify the parts of the cell that you need to make using your drawing from the previous lesson.
- Choose suitable materials and construct your model.
- Be sure that you look at sizes and shapes when doing construction.
- All learners names must be written on the back of the model AND on the answer sheet for Task 2.

### **Task 1**

**(14 marks)**

- 1a. Draw and cut out the shape of your basic animal cell.
- 1b. Now add the cell membrane to the animal cell.
- 1c. The next step is to add the following organelles:
  - Mitochondria
  - Ribosomes
- 1d. Lastly label the following on your model:
  - Cell membrane
  - Cytoplasm
  - Mitochondrion
  - Ribosome
  - Nucleus

13. Read through the task with the learners.
14. Ask the learners if they have any questions about what they need to do.
15. Tell the learners that they have 25 minutes to complete this task.
16. Tell learners to work neatly and to avoid wasting materials.
17. While the learners are working, supervise and answer any questions they may have.
18. After 25 minutes, call the learners to attention.
19. Tell the learners they will now do task 2.
20. This task will be a written task.
21. The group need only complete one set of answers together, and hand it in with their model.
22. Each group will need a piece of lined paper to complete the answers for Task 2.
23. Write the following on the chalkboard:



### Task 2

(6 marks)

- 2a. What is the function of the cell membrane?
- 2b. What is the function of the mitochondrion?
- 2c. What is the function of the nucleus?
- 2d. Describe what cytoplasm looks like.
- 2e. What happens in the cytoplasm of the animal cell?
- 2f. What do the ribosomes of the animal cell do?

24. Read over the questions for Task 2 with the learners.
25. Tell the learners that they only need to hand in one set of answers per group.
26. The answers for Task 2 must be handed in with the model.
27. All learners in the group must have their names on the top of the page of answers for Task 2.
28. Ask the learners if they have any questions.
29. Tell the learners to complete the answers in their groups.
30. Have each group hand in the completed model (Task 1) and answers to Task 2.

**Natural Sciences**  
**Grade 9**  
**Practical Task Memorandum**  
**Term 1**  
**20 Marks**

Topic	Task	Expected answer / outcome	Marks
	<b>1</b>		
Cells as the basic unit of life	1a.& 1b.	<ul style="list-style-type: none"> <li>The animal cell is a suitable shape and size ✓ ✓</li> <li>The cell membrane is in the correct place and surrounds the cell ✓</li> </ul>	3
Cells as the basic unit of life	1c.	<ul style="list-style-type: none"> <li>The mitochondria are a suitable shape and varied in size ✓</li> <li>The mitochondria are scattered in the cell ✓</li> <li>The ribosomes are a suitable shape and varied in size ✓</li> <li>The ribosomes are scattered in the cell ✓</li> <li>There are more ribosomes than mitochondrion ✓</li> </ul>	5
Cells as the basic unit of life	1d.	<ul style="list-style-type: none"> <li>A mitochondrion is labelled ✓</li> <li>A ribosome is labelled ✓</li> <li>The cell membrane is labelled ✓</li> <li>The cytoplasm is labelled in the correct place in the cell ✓</li> <li>The nucleus is in the centre of the cell ✓ The nucleus is labelled ✓</li> </ul>	6
	<b>2</b>		

## Grade 9 Natural Sciences Term 1 Assessment

Cells as the basic unit of life	2a.	Controls which substances pass in and out of the cell ✓	1
Cells as the basic unit of life	2b.	Creates energy for the cell ✓	1
Cells as the basic unit of life	2c.	Controls all activity in the cell ✓	1
Cells as the basic unit of life	2d.	It is a jelly-like liquid found in the cells ✓	1
Cells as the basic unit of life	2e.	All reactions take place in the cytoplasm ✓	1
Cells as the basic unit of life	2f.	They are responsible for creating proteins ✓	1
<b>TOTAL</b>			<b>20</b>

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 1 70 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**

e.g. Controls all activities inside the animal cell?

- A. cytoplasm
- B. nucleus
- C. mitochondrion
- D. cell membrane

You have answered correctly if you have circled **B**

QUESTION 1: MULTIPLE CHOICE

[4]

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

1a. Which one of these is NOT common to both plant and animal cells?

- A. Nucleus
- B. Cytoplasm
- C. Cell membrane
- D. Ribosomes

1b. Which of these statements is false?

- A. Plants are producers.
- B. Photosynthesis takes place in the large vacuoles.
- C. Animals are consumers.
- D. Mitochondria are the cell structures responsible for respiration.

1c. Which of these statements is true?

- A. Palisade cells in plants take up minerals and water from the soil.
- B. The root hair cell in plants holds the plant to the ground.
- C. Red blood cells in animals carry oxygen from the lungs to the body cells.
- D. Stem cells are specialised cells that can never change.

1d. Which one of these group of words describe an animal cell?

- A. Nucleus, ribosomes, cell membrane, mitochondria, cytoplasm
- B. Nucleus, vacuole, cell membrane, ribosomes, mitochondria, chloroplast
- C. Cell wall, cell membrane, ribosomes, mitochondria, cytoplasm
- D. Nucleus, ribosomes, vacuole, mitochondria,

## 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	Organ		A. Blood	
2a.	It is a tissue		B. Respiration	
2b.	This is also known as a windpipe		C. Metabolism	
2c..	Process of converting food into energy		D. Trachea	
2d..	The chemical reactions that take place in the body		E. Kidney	

## Question 3

[8]

Complete the following sentences using words from the block below:

*oesophagus, capillaries, anus, chemical, heart, bloodstream, chemical, stomach, large intestine, liver, peristalsis, carbon dioxide, oxygen.*

Rewrite the sentences and underline your answers.

- 3a. The \_\_\_\_\_ is the large organ that produces liquid to break down fats.
- 3b. The saliva in the mouth is responsible for \_\_\_\_\_ digestion.
- 3c. Food moves from the mouth, down the \_\_\_\_\_ and into the stomach by process of \_\_\_\_\_.
- 3d. Food that has been broken down is absorbed into the \_\_\_\_\_ from the small intestine.
- 3e. The \_\_\_\_\_ pumps blood around the body.
- 3f. The blood that goes from the heart to the lungs is low in \_\_\_\_\_ and high in \_\_\_\_\_.

Question 4

[6]

Write the word that is being described in the sentence.

Only write the answer.

4a. The structures that attach one bone to another bone on the skeleton.

\_\_\_\_\_

4b. The structures that assist the skeleton to move.

\_\_\_\_\_

4c. The structures that attach muscles to bones on the skeleton.

\_\_\_\_\_

4d. A disease often suffered by the elderly where bones start to break easily.

\_\_\_\_\_

4e. The process of taking waste, water and glucose out of the blood.

\_\_\_\_\_

4f. The process of removing urine and faeces from the body.

\_\_\_\_\_

Question 5

[12]

*“The respiratory system does three important processes: breathing, gaseous exchange and respiration.”*

5a. Describe the respiratory process from breathing to when oxygen is used to turn food into energy:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5b. Write down a word equation for respiration.:

\_\_\_\_\_

- Look at the information on this table and answer the questions that follow:

<u>Name of gas in the air</u>	<u>% of gas in air breathed in</u>	<u>% of gas in air breathed out</u>
Oxygen	21	16
Carbon dioxide	0,03	4
Nitrogen	78	78
Other gases	1	2

5c. What is the percentage of oxygen in inhaled air? \_\_\_\_\_

5d. What is the percentage of carbon dioxide in exhaled air? \_\_\_\_\_

5e. Why is there more carbon dioxide in exhaled air than in inhaled air?

\_\_\_\_\_

5f. Where does the gaseous exchange take place in the lungs? \_\_\_\_\_

5g. How does oxygenated blood get from the lungs to the heart? \_\_\_\_\_

5h. Why is there the same percentage of nitrogen in both inhaled and exhaled air?

\_\_\_\_\_



Question 6

[8]

Read the following passage and answer the questions that follow:

It may seem as if your brain is always busy. And that is because it is. The brain controls what you think and feel, how you learn and remember, and the way you move and talk. It also controls many things that you don't even think about like your heart beat and digestion. You can think of the brain as a super-fast computer. When a message comes into the brain from one of the sense organs, the brain reacts with super-fast speed to tell the body what to do.

Answer the following questions using examples from the passage:

6a. What is the main function of the nervous system?

\_\_\_\_\_

6b. Name three of the sense organs.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6c. The brain controls all that we do. Can you name three of the human activities that the brain controls?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6d. How do the sense organs send a message to the brain?

\_\_\_\_\_

## Grade 9 Natural Sciences Term 1 Assessment

### Question 7

[8]

Complete the following table:

<u>Nutrient</u>	<u>Function</u>	<u>Example of food that contains nutrient</u>
Carbohydrate		
	Prevents constipation	
		Oils, nuts, butter
Mineral: Calcium		

### Question 8

[8]

Read the words and phrases in the box below.:

*puberty, sexual organs mature, testosterone, oestrogen, pituitary gland, testes, ovaries, hormones, reproduction, body changes, hair, voice, pimples, menstruation*

*Using these words to write 5-8 sentences explaining what you understand about puberty.*

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## Grade 9 Natural Sciences Term 1 Assessment

### Question 9

[4]

Read the following sentences. In the brackets are two words. One word in the brackets will make the sentence true. Write tdown the correct word only.

Example: A girl's breasts get bigger during (puberty/menstuation).

Answer: puberty.

9a. The (testes/scrotum) produce sperm in the mature male body.

\_\_\_\_\_

9b. The (urethra/ovaries) produce egg cells in the mature female body.

\_\_\_\_\_

9c. When the penis releases sperm into the vagina, this is known as (ejaculation/  
pregnancy.)

\_\_\_\_\_

9d. An organ called the (zygote/placenta) gives the growing foetus food from the  
mother during pregnancy.

\_\_\_\_\_

### Question 10

[6]

Read the following statements and say whether each one is true or false:

10a. A full term pregnancy is usually 40 weeks. \_\_\_\_\_

10b. Copulation is the last stage of human reproduction. \_\_\_\_\_

10c. During pregnancy the ovary releases the egg cell. \_\_\_\_\_

10d. Fertilization occurs when the egg cell and sperm cell fuse. \_\_\_\_\_

10e. Condoms can help prevent the spread of HIV. \_\_\_\_\_

10f . Oviducts carry the egg from the ovary to the uterus. \_\_\_\_\_

### Question 11

[2]

Write down two ways to reduce your chances of becoming pregnant or causing a pregnancy

\_\_\_\_\_

\_\_\_\_\_

**TOTAL: 70**

## Grade 9 Natural Sciences Term 1 Assessment

<b>Term 4</b> <b>Test 70 marks</b> <b>Memorandum</b>			
CAPS Topic	Questions	Expected answer(s)	Marks
	<b>1</b>		
Cells as the basic units of life	1a.	D ✓	1
Cells as the basic units of life	1b.	B ✓	1
Cells as the basic units of life	1c.	C ✓	1
Cells as the basic units of life	1d.	A ✓	1
	<b>2</b>		
Systems in the human body	2a.	A ✓	1
Systems in the human body	2b.	D ✓	1
Cells as the basic units of life	2c.	B ✓	1
Systems in the human body	2d.	Cr ✓	1
	<b>3</b>		
Systems in the human body	3a	liver ✓	1
Systems in the human body	3b.	chemical ✓	1
Systems in the human body	3c.	oesophagus ✓ peristalsis ✓	2
Systems in the human body	3d.	bloodstream ✓	1
Systems in the human body	3e.	heart ✓	2
Systems in the human body	3f.	oxygen ✓ carbon dioxide ✓	2
	<b>4</b>		
Systems in the human body	4a.	ligaments ✓	1
Systems in the human body	4b.	muscles ✓	1
Systems in the human body	4c.	tendons ✓	1
Systems in the human body	4d.	osteoporosis ✓	1
Systems in the human body	4e.	filtration or excretion ✓	1
Systems in the human body	4f.	excretion or egestion ✓	1

## Grade 9 Natural Sciences Term 1 Assessment

	<b>5</b>		
Circulatory and respiratory systems	5a.	(The respiratory process starts with breathing.)  Breathing is inhalation✓where air is taken in through the mouth and nose into the lungs.✓  Gaseous exchange takes place here where oxygen moves from the lungs into the blood and carbon dioxide moves from the blood into the lungs✓.This carbon dioxide is breathed out through the mouth and nose.✓  (During respiration, oxygen is used to turn food into energy)	4
Circulatory and respiratory systems	5b.	Oxygen + glucose→energy + carbon dioxide✓	1
Circulatory and respiratory systems	5c.	21%✓	1
Circulatory and respiratory systems	5d.	4%✓	1
Circulatory and respiratory systems	5e.	Because carbon dioxide is produced during respiration and is then breathed out✓	1
Circulatory and respiratory systems	5f.	In the alveoli✓	1
Circulatory and respiratory systems	5g.	In the blood carried in the arteries	1
Circulatory and respiratory systems	5h.	Nitrogen is not used by the body during respiration. It is just breathed in and breathed straight out ✓ ✓	2
	<b>6</b>		
The nervous system	6a.	Receives messages from the environment and tells the body how to react✓	1
The nervous system	6b.	(Any 3) Eyes/ears/skin/tongue/nose ✓✓✓	3
The nervous system	6c.	(Any 3) Speech/learning/movement/body functions/remembering/feelings (there may be other correct answers) ✓✓✓	3
The nervous system	6d.	Through the spinal cord✓	1

## Grade 9 Natural Sciences Term 1 Assessment

	<b>7</b>																	
Digestive system	7		8															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Nutrient</th> <th style="width: 30%;">Function</th> <th style="width: 45%;">Example</th> </tr> </thead> <tbody> <tr> <td>Carbo-hydrate</td> <td>Energy✓</td> <td>Pasta/pap /rice /potatoes/ Mielies✓</td> </tr> <tr> <td>Fibre✓</td> <td>Prevents constipation</td> <td>Cereal/fruit /vegetables/ whole wheat bread✓</td> </tr> <tr> <td>Fats and oils✓</td> <td>Protects organs/ ✓stored energy/part of cell membrane</td> <td>Oils, nuts butter</td> </tr> <tr> <td>Mineral: Calcium</td> <td>Strong bones and teeth✓</td> <td>Milk/cheese✓</td> </tr> </tbody> </table>				Nutrient	Function	Example	Carbo-hydrate	Energy✓	Pasta/pap /rice /potatoes/ Mielies✓	Fibre✓	Prevents constipation	Cereal/fruit /vegetables/ whole wheat bread✓	Fats and oils✓	Protects organs/ ✓stored energy/part of cell membrane	Oils, nuts butter	Mineral: Calcium	Strong bones and teeth✓	Milk/cheese✓
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	<b>8</b>																	
The nervous system	8	(Any 8) <ul style="list-style-type: none"> <li>• Puberty is the time when the sexual organs have matured✓</li> <li>• They are now ready for reproduction.✓</li> <li>• Boys usually start between 9 and 14✓</li> <li>• Girls start between 8 and 13✓</li> <li>• The pituitary gland has the job of releasing hormones.✓</li> <li>• Testosterone is the male hormone ✓</li> <li>• It is released from the testes.✓</li> <li>• Oestrogen is the female hormone✓</li> <li>• It is released from the ovaries.✓Girls will start to menstruate.✓</li> <li>• Other body changes like hair growth pimples, voice changes and growing breasts start to happen.✓</li> </ul>	8															
	<b>9</b>																	
Human reproduction	9a.	testes✓	1															
Human reproduction	9b.	ovaries✓	1															
Human reproduction	9c.	ejaculation✓	1															
Human reproduction	9d.	placenta✓	1															

## Grade 9 Natural Sciences Term 1 Assessment

	<b>10</b>		
Human reproduction	10a.	true✓	1
Human reproduction	10b.	false✓	1
Human reproduction	10c.	false✓	1
Human reproduction	10d.	true✓	1
Human reproduction	10e.	true✓	1
Human reproduction	10f.	false✓	1
	<b>11</b>		
The nervous system	11	Abstain from sexual activity✓ Use contraception✓	2
<b>TOTAL</b>			<b>70</b>