

"If you want to find the secrets of the universe, think in terms of energy, frequency and vibration."
"

-Nikola Tesla

**NATURAL
SCIENCES
&
TECHNOLOGY**

**LESSON PLAN
GRADE 6 TERM 1**



A MESSAGE FROM THE NECT

NATIONAL EDUCATION COLLABORATION TRUST (NECT)

Dear Teachers

This learning programme and training is provided by the National Education Collaboration Trust (NECT) on behalf of the Department of Basic Education (DBE)! We hope that this programme provides you with additional skills, methodologies and content knowledge that you can use to teach your learners more effectively.

What is NECT?

In 2012 our government launched the National Development Plan (NDP) as a way to eliminate poverty and reduce inequality by the year 2030. Improving education is an important goal in the NDP which states that **90% of learners will pass Maths, Science and languages with at least 50% by 2030**. This is a very ambitious goal for the DBE to achieve on its own, so the NECT was established in 2015 to assist in improving education.

The NECT has successfully brought together groups of people interested in education to work together to improve education. These groups include the teacher unions, businesses, religious groups, trusts, foundations and NGOs.

What are the learning programmes?

One of the programmes that the NECT implements on behalf of the DBE is the 'District Development Programme'. This programme works directly with district officials, principals, teachers, parents and learners; you are all part of this programme!

The programme began in 2015 with a small group of schools called the **Fresh Start Schools (FSS)**. Curriculum **learning programmes** were developed for **Maths, Science and Language** teachers in FSS who received training and support on their implementation. The FSS teachers remain part of the programme, and we encourage them to mentor and share their experience with other teachers.

The FSS helped the DBE trial the NECT learning programmes so that they could be improved and used by many more teachers. NECT has already this scale-up process in its Universalisation Programme and in its Provincialisation Programme.

Everyone using the learning programmes comes from one of these groups; but you are now brought together in the spirit of collaboration that defines the manner in which the NECT works. Teachers with more experience using the learning programmes will deepen their knowledge and understanding, while some teachers will be experiencing the learning programmes for the first time.

Let's work together constructively in the spirit of collaboration so that we can help South Africa eliminate poverty and improve education!

www.nect.org.za

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PROGRAMME ORIENTATION

Welcome to the NECT Natural Sciences & Technology learning programme! This CAPS compliant programme consists of:

- A full set of lesson plans for the term (3 lessons per week)
- A resource pack with images to support the lesson plans
- A full colour poster for one topic
- An outline of the assessment requirements for the term
- A tracker to help you monitor your progress

Lesson Plan Structure

1. The Term 1 lesson plan is structured to run for 8 weeks.
2. Each week, there are three lessons, of the following notional time:

1 x 1 hour 30 minutes

2 x 1 hour

This time allocation of 3.5 hours per week is CAPS aligned.

Lesson Plan Contents

1. The lesson plan starts with a **CONTENTS PAGE** that lists all the topics for the term, together with a breakdown of the lessons for that topic. You will notice that lessons are named by the week and lesson number, for example, Week 8 Lesson 8C.
2. Every topic begins with a 2 - 4 page **TOPIC OVERVIEW**. The topic overview pages are grey, making them easy to identify. The topic overview can be used to introduce the topic to learners. The topic overview includes:
 - a. A **general introduction** to the topic that states how long the topic runs for, the value of the topic in the final exam and the number of lessons in the topic.
 - b. A table showing the **position of the topic** in the term.
 - c. A **sequential table** that shows the prior knowledge required for this topic, the current knowledge and skills that will be covered, and how this topic will be built on in future years. Use this table to give learners an informal quiz to test their prior knowledge. If learners are clearly lacking in the knowledge and skills required, you may need to take a lesson to cover some of the essential content and skills. It is also useful to see what you are preparing learners for next, by closely examining the 'looking forward' column.
 - d. A glossary of **scientific and technological vocabulary**, together with an explanation of each word or phrase. It is a good idea to display these words and their definitions somewhere in the classroom, for the duration of the topic. It is also a good idea to allow learners some time to copy down these words into their personal dictionaries or science exercise books. You must explicitly teach the words and their meanings as and when you encounter these words in the topic. A good way to teach learners new vocabulary is to use 'PATS':

PROGRAMME ORIENTATION

- POINT – if the word is a noun, point at the object or at a picture of the object as you say the word.
 - ACT – if the word is a verb, try to act out or gesture to explain the meaning of the word, as you say it.
 - TELL – if the word has a more abstract meaning, then tell the learners the meaning of the word. You may need to code switch at this point, but also try to provide a simple English explanation.
 - SAY – say the word in a sentence to reinforce the meaning.
- e. Understanding the uses / value of natural sciences & technology.** 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 the topic, and invite learners to elaborate on the uses and value that this topic will have to their lives.
- f. Personal reflection.** At the end of every topic, come back to the topic overview, and complete this table. In particular, it is important to note your challenges and ideas for future improvement, so that you can improve your teaching the next year.
3. After the topic overview, you will find the **INDIVIDUAL LESSONS**. Every lesson is structured in exactly the same way. This helps you and the learners to anticipate what is coming next, so that you can focus on the content and skills. Together with the title, each lesson plan includes the following:
- a. Policy and Outcomes.** This provides you with the CAPS reference, and an overview of the skills that will be covered in the lesson. You can immediately see the SCIENCE PROCESS + DESIGN SKILLS AND DESIGN SKILLS that will be covered, and whether they are lower or higher order skills.
 - b. Possible Resources.** Here, you will see the resources that you should ideally have for the lesson. If you need to use the poster or pages from the resource pack, this will be listed here. There is also a space for improvised resources, and you are invited to add your own ideas here.
 - c. Classroom Management.** Every lesson starts in the same way. Before the lesson, you must write a question that relates to the previous lesson on the chalkboard. Train your learners to come in to the classroom, to take out their exercise books, and to immediately try to answer this question. This links your lesson to the previous lesson, and it effectively settles your learners.
- Once learners have had a few minutes to answer, read the question and discuss the answer. You may want to offer a small reward to the learner who answers first, or best. Get your learners used to this routine.
- Next, make sure that you are ready to begin your lesson, have all your resources ready, have notes written up on the chalkboard, and be fully prepared to start. Remember, learners will get restless and misbehave if you do not keep them busy and focussed.
- Accessing Information.** This section contains the key content that you need to share with learners. Generally, it involves sharing some new information that is written on the chalkboard, explaining this information, and allowing learners some time to copy the information into their exercise books. Train learners to do this quickly and efficiently. Learners must anticipate this part of the lesson, and must have their books, pens, pencils and rulers ready.

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Explain to learners that this is an important resource for them, because these are the notes they will revise when preparing for tests and exams.

Checkpoint 1. Straight after 'Accessing Information', you will find two checkpoint questions. These questions help you to check that learners understand the new content thus far.

- e. Conceptual Development.** At this point, learners will have to complete an activity to think about and apply their new knowledge, or to learn a new skill. This is the most challenging part of the lesson. Make sure that you fully understand what is required, and give learners clear instructions.

Checkpoint 2. Straight after 'Conceptual Development, you will find two checkpoint questions. These questions help you to check that learners understand the new concepts and skills that they have engaged with.

- f. Reference Points for Further Development.** This is a useful table that lists the relevant sections in each approved textbook. You may choose to do a textbook activity with learners in addition to the lesson plan activity, or even in place of the lesson plan activity. You may also want to give learners an additional activity to do for homework.

- g. Additional Activities / Reading.** This is the final section of the lesson plan. This section provides you with web links related to the topic. Try to get into the habit of visiting these links as part of your lesson preparation. As a teacher, it is always a good idea to be more informed than your learners.

4. At the end of the week, make sure that you turn to the **TRACKER**, and make note of your progress. This helps you to monitor your pacing and curriculum coverage. If you fall behind, make a plan to catch up.
5. **POSTER AND RESOURCE PACK.** You will have seen that the *Possible Resource* section in the lesson plan will let you know which poster or reference pages you will need to use in a lesson.

Please note that you will only be given these resources once. It is important for you to manage and store these resources properly. Do this by:

- Writing your name on all resources
- Sticking Resource onto cardboard or paper
- Laminating all resources, or covering them in contact paper
- Filing the resource papers in plastic sleeves once you have completed a topic

Have a dedicated wall or notice board in your classroom for Natural Science and Technology.

- Use this space to display the resources for the topic
- Display the vocabulary words and meaning here, as well as the resources
- Try to make this an attractive and interesting space
- Display learners' work on this wall – this gives learners a sense of ownership and pride.

PROGRAMME ORIENTATION

- 6. ASSESSMENT.** At the end of the lesson plans, you will find the CAPS assessment requirements for the term.

Lesson Plan Routine

Train your learners to know and anticipate the routine of Natural Science and Technology lessons. You will soon see that a good knowledge of this routine will improve time-on-task and general classroom discipline and that you will manage to work at a quicker pace.

Remember, every Natural Science and Technology lesson follows this routine:

- 1. Classroom Management:** settle learners by having two questions written on the chalkboard. Learners take out their exercise books and pens, and immediately answer the questions. Discuss the answers to the questions, and reward the successful learner.
- 2. Accessing Information:** have key information written on the chalkboard. Explain this to learners. Allow learners to copy this information into their books.
- 3. Checkpoint 1:** ask learners two questions to check their understanding.
- 4. Conceptual Development:** complete an activity to apply new knowledge or skills.
- 5. Checkpoint 2:** ask learners two questions to check their understanding.
- 6. Reference Points for Further Development:** links to textbook activities – you may choose to use these activities as additional classwork activities, or as homework activities.
- 7. Tracker:** fill in your tracker at the end of the week to track your progress.

PROGRAMME ORIENTATION

A vehicle to implement CAPS

Teaching Natural Sciences & Technology can be exciting and rewarding. These lesson plans have been designed to guide you to implement the CAPS policy in a way that makes the teaching and learning experience rewarding for both the teacher and the learners.

To support the policy's fundamentals of teaching Natural Sciences & Technology, these lesson plans use the CAPS content as a basis and:

- provide a variety of teaching techniques and approaches
- promote enjoyment and curiosity
- highlight the relationship between Natural Science and Technology and other subjects
- where appropriate, draw on and emphasise cultural contexts and indigenous knowledge systems
- show the relationship between science, learners, their societies and their environments
- aim to prepare learners for economic activity and self-expression

Content and Time Allocation

These lessons plans have been developed to comply with CAPS in respect of both content and time allocation. In developing these lesson plans, we took into consideration the realities of teachers and to this end, we made some simple adjustments, without deviating from policy, to make the teaching of these lesson plans more achievable. The kinds of adjustments made include using some of the practical tasks in the lesson plans for assessment purposes; and building in time for revision and exams during terms 2 and 4.

CAPS assigns one knowledge strand to form the basis of content in each term. These strands are as follows:

- Term 1: ***Life and Living***
- Term 2: ***Matter and Materials***
- Term 3: ***Energy and Change***
- Term 4: ***Planet Earth and Beyond***

In most terms, there are Technology knowledge strands that complement the Natural Sciences strands. There are three Technology strands, they are:

- ***Structures***
- ***Systems and Control***
- ***Processing***

PROGRAMME ORIENTATION

Grade 6							
Term 1		Term 2		Term 3		Term 4	
Strands NS & Tech		Strands NS & Tech		Strands NS & Tech		Strands NS & Tech	
Life and Living	Processing	Matter and Materials	Processing	Energy and Change	Systems and Control	Planet Earth and Beyond	Systems and Control
Photosynthesis	Food Processing	Solids, liquids and gases	Processes to purify water	Electric circuits	Systems to solve problems	The solar system	Systems looking into space
Nutrients in Food		Mixtures		Electrical conductors and insulators		Movements of the earth and planets	Systems to explore the Moon and Mars
Nutrition		Solutions as special mixtures		Mains electricity		The movement of the Moon	
Eco Systems and food webs		Mixtures and water resources					
<p>These lesson plans have been designed against the stipulated CAPS requirements with topics being allocated for the time prescribed by CAPS. (Remember that some slight changes have been incorporated to accommodate time for revision, tests and examinations).</p>							

PROGRAMME ORIENTATION

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The time allocation by topic is summarised in the table below.

Remember that one week equates to 3,5 hours or three lessons: two lessons of 1 hour each; and one lesson of 1½ hours.

TERM	GRADE 4		GRADE 5		GRADE 6	
	Topic	Time in weeks	Topic	Time in weeks	Topic	Time in weeks
Term 1: Life and Living	• Living and non-living things	2	• Plants and animals on Earth	2½	• Photosynthesis	2½
	• Structures of plants and animals	2½	• Animal Skeletons	1½	• Nutrients in Food	1½
	• What plants need to grow	1	• Food Chains	2½	• Nutrition	1½
	• Habitats of animals	1	• Life cycles	1½	• Food Processing	2½
	• Structures for animal shelters	2½	• Skeletons and Structures	2	• Eco Systems and food webs	2
		(10 wks)		(10 wks)		(10 wks)
Term 2: Matter and Materials	• Materials around us	3½	• Metals and non-metals	2	• Solids, liquids and gases	½
	• Solid materials	2	• Uses of metals	2½	• Mixtures	1
	• Strengthening materials	2	• Processing materials	3½	• Solutions as special mixtures	2½
	• Strong frame structures	2½	• Processed materials	2	• Dissolving	1
			(10 wks)		• Mixtures and water resources	2½
				• Processes to purify water	2½	(10 wks)

PROGRAMME ORIENTATION

Term 3: Energy and Change	• Energy and Energy transfer	2½	• Stored energy in fuels	3	• Electric circuits	2½
	• Energy around us	2½	• Energy and electricity	3	• Electrical conductors and insulators	2
	• Movement energy in a system	2½	• Energy and movement	1	• Systems to solve problems	2½
	• Energy and sound	2½	• Systems for moving things	3	• Mains electricity	3
		(10 wks)		(10 wks)		(10 wks)
Term 4: Planet Earth and Beyond	• Planet Earth	2	• Planet Earth	1	• The solar system	2½
	• The Sun	1	• Surface of the Earth	2½	• Movements of the earth and planets	1
	• The Earth & the Sun	1	• Sedimentary Rocks	2	• The movement of the Moon	1
	• The Moon	2	• Fossils	2½	• Systems looking into space	2½
	• Rocket Systems	2			• Systems to explore the Moon and Mars	
		(8 wks)		(8 wks)		(8 wks)
TOTALS	38 weeks		38 weeks		38 weeks	

PROGRAMME ORIENTATION

REFLECTING ON THE LESSONS THAT YOU TEACH

It is important to reflect on your teaching. Through reflection, we become aware of what is working and what is not, what we need to change and what we do not. Reflecting on your use of these lesson plans will also help you use them more effectively and efficiently.

These lesson plans have been designed to help you deliver the content and skills associated with CAPS. For this reason, it is very important that you stick to the format and flow of the lessons. CAPS requires a lot of content and skills to be covered – this makes preparation and following the lesson structure very important.

Use the tool below to help you reflect on the lessons that you teach. You do not need to use this for every lesson that you teach – but it is a good idea to use it a few times when you start to use these lessons. This way, you can make sure that you are on track and that you and your learners are getting the most out of the lessons.

LESSON REFLECTION TOOL		
Preparation		
1.	What preparation was done?	
2.	Was preparation sufficient?	
3.	What could have been done better?	
4.	Were all of the necessary resources available?	
Classroom Management		
		Yes
		No
5.	Was there a question written in the board?	
6.	Was there an answer written on the board?	
7.	Was the answer discussed with the learners in a meaningful way?	
8.	Overall reflection on this part of the lesson: What was done well? What could have been done better?	

PROGRAMME ORIENTATION

Accessing Information			
		Yes	No
9.	Was the text and/ or diagrams written on the chalkboard before the lesson started?		
10.	Was the work on the board neat and easy for the learners to read?		
11.	Was the explanation on the content easy to follow?		
12.	Was the information on the board used effectively to help with the explanations?		
13.	Was any new vocabulary taught effectively? (in context and using strategies like PATS)		
14.	Were the learners actively engaged? (asked questions, asked for their opinions and to give ideas or suggestions)		
15.	Were the checkpoint questions used effectively?		
16.	Overall reflection on this part of the lesson: What was done well? What could have been done better?		
Conceptual Development			
		Yes	No
17.	Was the information taught in the 'Accessing Information' part of the lesson used to foreground the activity?		
18.	Were clear instructions given for the conceptual development activity?		
19.	Were the outcomes/answers to the activities explained to the learners?		
20.	Could the learners ask questions and were explanations given?		
21.	Was a model answer supplied to the learners? (written or drawn on the board)		
21.	Were the checkpoint questions used effectively?		
22.	At the end of the lesson, were the learners asked if they had questions or if they needed any explanations?		
23.	Overall reflection on this part of the lesson: What was done well? What could have been done better?		

TOPIC OVERVIEW:

Photosynthesis

Term 1, Weeks 1A – 2C

A. TOPIC OVERVIEW

Term 1, Weeks 1a – 2c

- This topic runs for 2 weeks.
- It is presented over 6 lessons.
- This topic's position in the term is as follows:

LESSON	WEEK 1			WEEK 2			WEEK 3			WEEK 4			WEEK 5		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B

LESSON	WEEK 6			WEEK 7			WEEK 8			WEEK 9			WEEK 10		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B

B. SEQUENTIAL TABLE

GRADE 4 &	GRADE 6	GRADE 7 & 8
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Living and non-living things • Structures of plants • What plants need to grow 	<ul style="list-style-type: none"> • Plants and food 	<ul style="list-style-type: none"> • Classification of living things • Diversity of plants • Photosynthesis and respiration

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

Ensure that you teach the following vocabulary at the appropriate place in the topic:

	TERM	EXPLANATION
1.	absorbed	Soaked up
2.	occur	To happen
3.	identify	To recognise and correctly name something
4.	releases	To allow something to move freely, to set it free
5.	starch	An odourless, tasteless white substance found in plants
6.	observe	To notice something; to look at something carefully
7.	conclusion	The end of something; the last statement about something
8.	blindfold	A piece of cloth tied round the head and covering the eyes so that a person cannot see
9.	dissolve	To mix with a liquid so that there is no solid part left
10.	exists	To be alive, to live
11.	indicates	Shows, points out, gives direct attention to

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

Knowing about photosynthesis gives us a better understanding about plants and how they survive. All animal life depends on plants and therefore we need to make sure that plant life is sustained.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

Date completed:	
Lesson successes:	
Lesson challenges:	
Notes for future improvement:	

1 A

Term 1, Week 1, Lesson A

Lesson Title: Plants and Food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Photosynthesis	
CAPS Page Number	47	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> describe the process of photosynthesis draw a flow diagram of the process 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing	✓	15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	✓
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Photosynthesis

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 1: Photosynthesis	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What living things make their own food?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Plants make their own food.

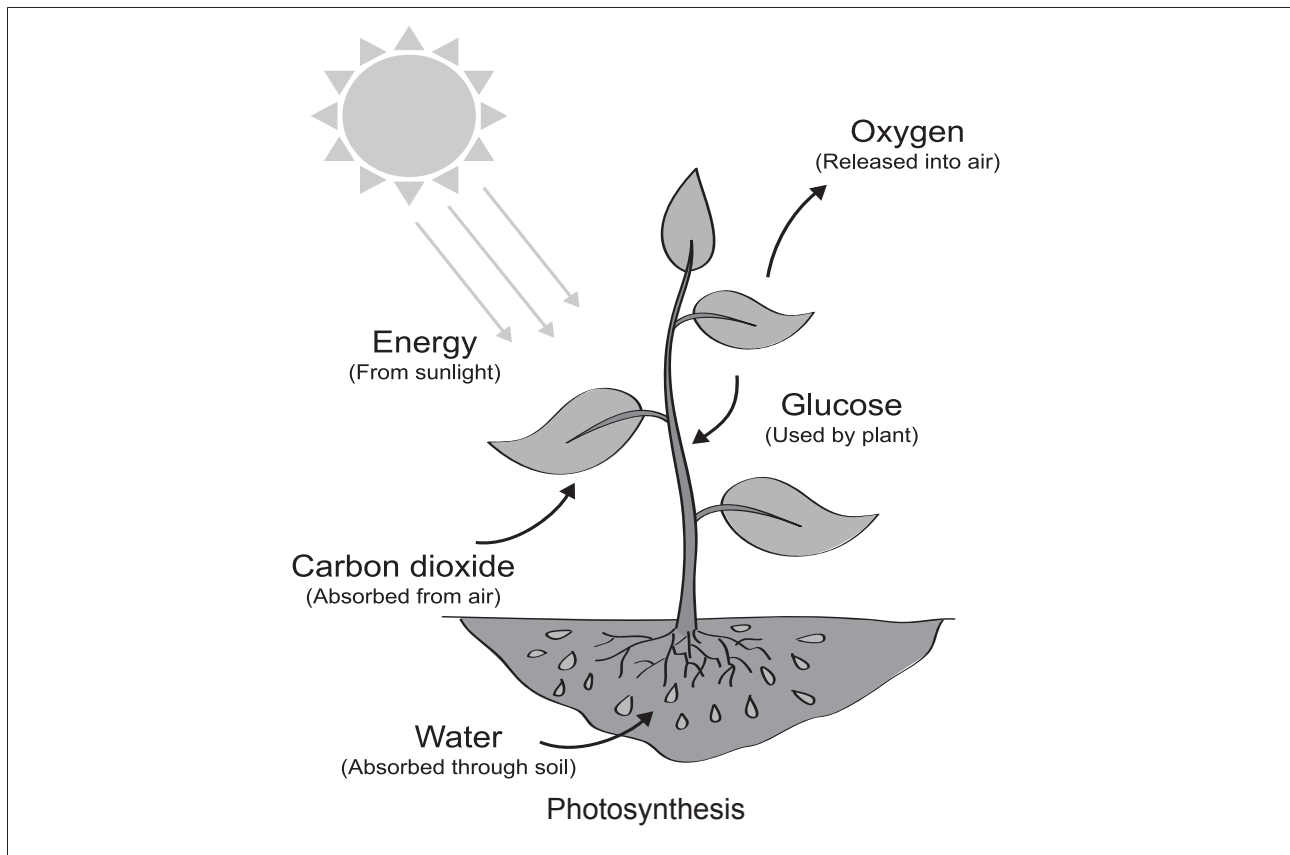
D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

PHOTOSYNTHESIS

1. Like people, plants need food.
2. Unlike people, plants make their own food.
3. This process is called photosynthesis.
4. Photosynthesis changes the energy from sunlight into energy for food.
5. This food is a type of sugar called glucose.
6. Photosynthesis happens in the green parts of the plant, mainly the leaves.
7. Plants need three things to make food: water, sunlight and carbon dioxide.
8. Water is **absorbed** through the roots of the plant.
9. Carbon dioxide is absorbed by the green parts of the plants.
10. This changes into oxygen that the plant gives off (releases).

TOPIC: Photosynthesis



2. Explain this to the learners as follows:
 - a. Plants are the only living things that make their own food.
 - b. This process is called photosynthesis.
 - c. Energy from the sun, water from the soil and carbon dioxide from the air is needed for photosynthesis.
 - d. Photosynthesis makes food in the form of a special type of sugar called glucose sugar.
 - e. The process of photosynthesis also absorbs carbon dioxide and releases oxygen.
3. Give learners some time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What is photosynthesis?
- b. What three things do plants need for photosynthesis to occur?

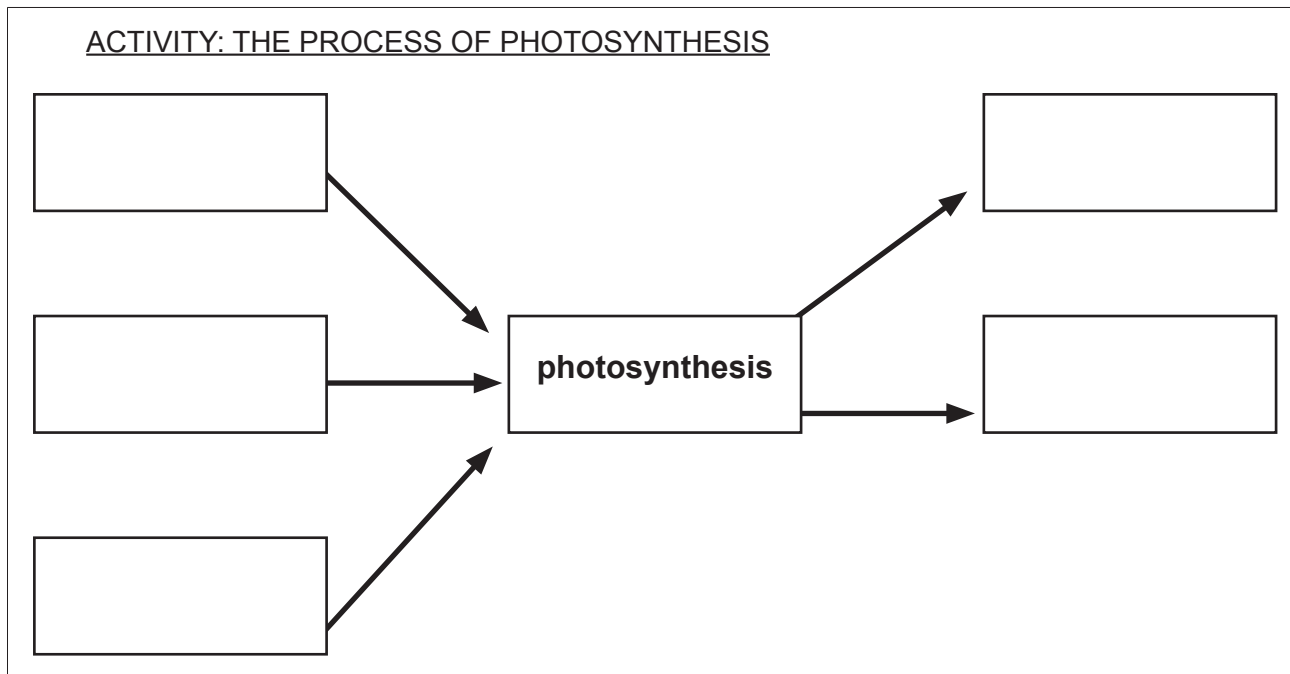
Answers to the checkpoint questions are as follows:

- a. Photosynthesis is the process by which plants make their own food.
- b. Plants need sunlight, water and carbon dioxide for photosynthesis.

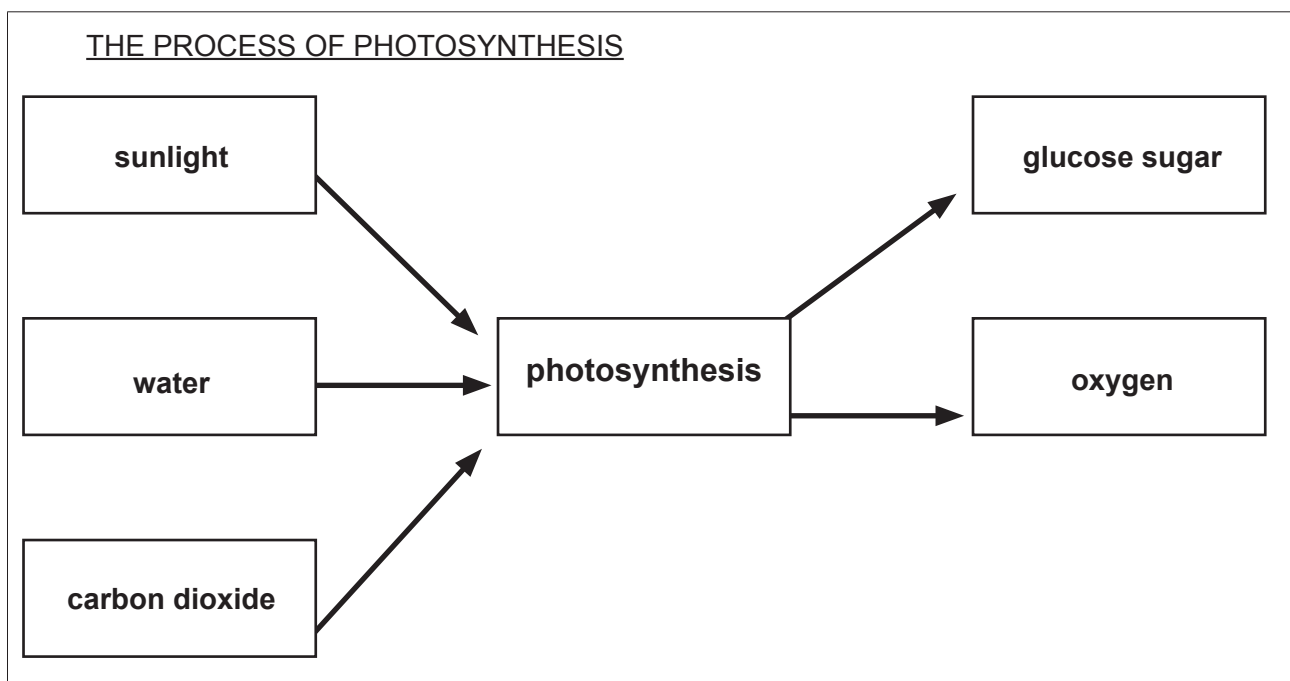
TOPIC: Photosynthesis

E CONCEPTUAL DEVELOPMENT

1. Draw the following onto the chalkboard (always try to do this before the lesson starts):



2. Explain the task to the learners:
 - a. In the three blocks on the left, fill in the three things that photosynthesis needs to make food for the plant.
 - b. In the two blocks on the right, fill in the two things that result from the process of photosynthesis.
 - c. Point out the arrows to the learners. Explain that these arrows show the steps in the process.
3. Give learners some time to complete this task in their workbooks.
4. The model answer is:



TOPIC: Photosynthesis

5. ACTIVITY: Why animals need plants.

Write the following on the chalkboard (always try to do this before the lesson starts):

Question: Why would animals not survive if there were no plants? Give two reasons for your answer.

6. Explain the following to the learners:

- a. Each learner must write down an answer to the question. Give the learners two minutes to do this.
- b. Each learner must share their answers with a partner. They must discuss their answers and change their answers if they need to.
- c. Ask three learners to share their answers with the rest of the class. Discuss these answers.

7. The model answer is:

1. *Plants release oxygen which animals need in order to breathe.*
2. *Animals eat plants or other animals which also eat plants.*

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Give two reasons why animals need plants.
- b. What type of sugar do plants make for their own food?

Answers to the checkpoint questions are as follows:

- a. Animals need plants as they eat plants or animals that eat plants. Plants release oxygen which animals need in order to breathe.
- b. Plants make glucose sugar.

8. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Photosynthesis

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Photosynthesis	10-11
Viva	Photosynthesis	2-7
Platinum	Photosynthesis	2-3
Solutions for All	Photosynthesis	2-5
Day-by-Day	Photosynthesis	1-3
Oxford	Photosynthesis	10
Spot On	Photosynthesis	1-2
Top Class	Photosynthesis	1-4
Sasol Inzalo Bk A	Photosynthesis	4-8

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/KrkMcT> (4min) [The simple story of photosynthesis and food]
2. <https://goo.gl/ZGHcnA> (4min 52sec) [Photosynthesis in plants]
3. <https://goo.gl/M3iJ6P> (1min 57sec) [Photosynthesis]

1 B

Term 1, Week 1, Lesson B

Lesson Title: Plants and Food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants and food		
CAPS Page Number	47		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • describe the function of glucose sugar • understand that glucose sugar is changed to starch • investigate the difference between glucose sugar and starch • conduct a taste test. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations	✓	17. Communicating	✓
6. Identifying problems & issues		12. Recording Information			

TOPIC: Photosynthesis

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Two examples of glucose sugar, sweets fresh fruit	-
Two examples of starch, milie meal, flour, cooked rice, potato	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is the process called when plants make their own food?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Photosynthesis is the process by which plants make their own food.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

GLUCOSE SUGAR

1. Glucose sugar is a food that is a good source of energy for plants and animals.
2. Plants make their own food through a process called photosynthesis.
3. Energy from the sunlight is changed into energy for food.
4. Glucose can **dissolve** easily in water.
5. This means it can be carried easily to other parts of the plant where it is needed for the life processes to be carried out.
6. Glucose sugar is needed for growth and reproduction.

STARCH

1. Plants change some of the glucose sugar they make in their leaves into starch.
2. Plants store starch in different parts of the plant.

TOPIC: Photosynthesis

2. Explain this to the learners as follows:
 - a. Glucose sugar is the food made by plants during photosynthesis.
 - b. Glucose sugar is made in the leaves of the plant.
 - c. Glucose sugar can dissolve very easily in water which means it can be carried easily to other parts of the plants.
 - d. Glucose sugar enables plants to grow and reproduce.
 - e. Some glucose sugar is changed into starch.
 - f. Starch is stored in different parts of the plant.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. In what part of the plant is glucose sugar made?
- b. Where does a plant get its energy to make food?

Answers to the checkpoint questions are as follows:

- a. Glucose sugar is made in the leaves.
- b. The energy comes from the Sun.

E

CONCEPTUAL DEVELOPMENT

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

COMPARE GLUCOSE SUGAR AND STARCH

Materials

- two examples of glucose sugar (sugar, glucose sweets, fresh fruit)
- two examples of starch (mielie meal, flour, cooked rice or potato, bread)
- **blindfold**
- pen and paper

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INVESTIGATION 1

1. Work with a partner.
2. The first learner must be blindfolded.
3. The second learner must let the first learner taste each of the four foods.
4. These foods must be numbered 1 to 4.
5. Write the numbers 1 to 4 on the piece of paper.
6. The first learner must guess whether the food is a sugar or a starch by the taste.
7. The second learner must record the answers.
8. When this is completed, swap around and repeat the taste test.

INVESTIGATION 2

1. Put half a teaspoon of sugar and half a teaspoon of mielie meal on a plate or similar item.
 2. Compare how each of these foods looks.
2. Explain the following to the learners:
 - a. Read through the investigation with the learners before they start to make sure they understand each step.
 - b. The second learner must write the numbers 1 to 4 on the piece of paper to record the results of the tastings.
 - c. The second learner must blindfold the first learner.
 - d. The second learner must use a teaspoon to place the flour or the sugar into the mouth of the first learner.
 - e. The second learner should place the other item of food into the hand of the first learner for him or her to place in his or her mouth.
 - f. When learners have finished their tasting test, they need to do Investigation 2 where they look at the differences between glucose sugar and starch.
 3. Give learners some time to complete this task.
 4. Write the following questions on the chalkboard:

TOPIC: Photosynthesis

QUESTIONS: COMPARE GLUCOSE SUGAR AND STARCH

1. Was it easy to taste each time the difference between the sugar and the starch? If not, say why it was difficult to taste the difference.
2. Describe the difference between the taste of the sugar and the taste of the starch.

Start each sentence like this:

Sugar tastes ...

Starch tastes ...

Use words from the following list:

bitter, sweet, coarse, dry, salty

5. A possible answer is:

COMPARE GLUCOSE SUGAR AND STARCH

Sugar tastes sweet and coarse.

Starch tastes dry and slightly bitter.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Give one word to describe the taste of sugar.
- b. Give one word to describe the taste of starch.

Answers to the checkpoint questions are as follows:

- a. Sweet
- b. Dry

6. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Photosynthesis

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Photosynthesis	11
Viva	Photosynthesis	7
Platinum	Photosynthesis	3-4
Solutions for All	Photosynthesis	3
Day-by-Day	Photosynthesis	4
Oxford	Photosynthesis	11
Spot On	Photosynthesis	3
Top Class	Photosynthesis	5
Sasol Inzalo Bk A	Photosynthesis	12-13

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/Y3pznR> [Sambal's Science Web: Photosynthesis]

1 C

Term 1, Week 1, Lesson C

Lesson Title: Plants store food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants and food		
CAPS Page Number	47		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • explain how plants store their food • identify the different parts of a plant that store starch. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Photosynthesis

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 2: Different plant products: A mielie	A mielie
Resource 3: Different plant products: Lettuce	A lettuce
Resource 4: Different plant products: A banana	A banana
Resource 5: Different plant products: Sugar cane	Sugar cane
Resource 6: Different plant products: Potatoes	Potatoes

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is the name of the sugar that plants produce as food?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Plants make glucose sugar.

TOPIC: Photosynthesis

D

ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

STARCH

1. Plants make glucose sugar.
 2. Some of the glucose sugar is used for food energy for growing.
 3. Some of the glucose sugar is changed into starch.
 4. This starch is stored in the plant's leaves, stems, roots, flowers, fruits and seeds.
 5. Plants change starch and nutrients from the soil into other foods.
2. Explain and discuss the following with the learners:
 - a. Plants make their own food called glucose sugar.
 - b. Some of this glucose sugar is changed into starch.
 - c. Starch is stored in many different parts of the plant.
 - d. Starch, together with nutrients from the soil, is changed into other food.
 3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Name four parts of a plant that store starch.
- b. What does a plant do with some glucose sugar?

Answers to the checkpoint questions are as follows:

- a. Any four of: leaves, stems, roots, fruit, flowers, or seeds.
- b. Some glucose sugar is changed into starch.

E

CONCEPTUAL DEVELOPMENT

1. Write the following on the chalkboard (always try to do this before the lesson starts):

WHICH PART OF THE PLANT DO WE EAT?

leaves, stems, roots, flowers, fruits, seeds

1. mielies
2. lettuce
3. banana
4. sugar cane
5. potatoes

TOPIC: Photosynthesis

2. Explain the following to the learners: that you will show them an image and they should **identify** and write down the part of the plant.
 - a. Tell learners to write the following heading in their workbooks:

WHICH PART OF THE PLANT DO WE EAT?

- b. You will show the learners an image and you will say what the image is.
 - c. Each learner must identify which part of the plant is shown.
 - d. These parts are written on the chalkboard (leaves, stems, roots, flowers, fruits, seeds).
 - e. Show the learners Resource 2, Resource 3, Resource 4, Resource 5 and Resource 6: Different plant products.
 - f. Read out the name of each product, which is also written on the chalkboard.
 - g. Learners must write down the name of the product and then the part of the plant it comes from.
3. A model answer is:

WHICH PART OF THE PLANT DO WE EAT?

1. mielies - *seed*
2. lettuce – *leaf*
3. banana – *fruit*
4. sugar cane – *stem*
5. potatoes - *root*

Checkpoint 2

Ask learners the following questions to check their understanding at this point:

- a. True or False: Sugar cane is the stem of a plant.
- b. True or False: A potato is the stem of a plant.

Answers to the checkpoint questions are as follows:

- a. True.
- b. False. A potato is the root of a plant.

4. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Photosynthesis

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Photosynthesis	-
Viva	Photosynthesis	8
Platinum	Photosynthesis	3
Solutions for All	Photosynthesis	3
Day-by-Day	Photosynthesis	4
Oxford	Photosynthesis	11
Spot On	Photosynthesis	3
Top Class	Photosynthesis	5
Sasol Inzalo Bk A	Photosynthesis	9-11

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <http://www.first-learn.com/food-from-plants.html> [Food from plants]
2. <https://goo.gl/6tZBqv> (2min 4sec) [Food from plants]

2 A

Term 1, Week 2, Lesson A

Lesson Title: Testing for starch

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants and food		
CAPS Page Number	47		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • conduct an investigation • investigate whether a food contains starch. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing	✓	8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing	✓	15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations	✓	17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Photosynthesis

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Iodine, dropper, saucer or a similar item, four foods (two must be a starch)	Instead of a dropper, a syringe could be used

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What part of the plant do we get potatoes from?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Potatoes are the root of a plant.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

THE STARCH TEST

1. The test will show us if starch **exists** in a food.
 2. Iodine is used.
 3. Iodine is a brown colour.
 4. If it comes into contact with starch, it turns a blue-black colour.
 5. Iodine is called an indicator because it **indicates** if starch is present.
2. Explain this to the learners as follows:
 - a. To carry out an investigation, get learners to gather all the materials and tools before they start.
 - b. Read through the information on the chalkboard before the learners start the investigation to make sure that they understand each step.
 - c. You may use any four foods, but make sure two are starchy foods, such as potatoes, rice, pap or bread; the other two foods could be oil, margarine, meat, eggs, and milk.
 - d. The four foods must not touch each other.
 - e. Learners must conduct the investigation carefully (as outlined later in this lesson).
 3. Give learners time to copy this information into their workbooks

TOPIC: Photosynthesis

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What substance do we use to see if starch is present in a food product?
- b. What colour does this substance change to when starch is present?

Answers to the checkpoint questions are as follows:

- a. We use iodine to see if starch is present.
- b. Iodine changes colour from brown to blue-black when starch is present in a food product.

E CONCEPTUAL DEVELOPMENT

1. Write the following on the chalkboard (try to do this before the lesson starts):
2. Activity: Test for starch

TEST FOR STARCH

Materials

iodine solution
dropper
saucer (or something similar)
four different types of food

Method

1. Place small samples of each type of food on a saucer or a similar item. These foods must not touch.
2. Use the dropper to place one or two drops of iodine on each type of food.
3. Copy the table below. Record your observations in the table.

Food	Colour of iodine after it is added to the food sample (stays brown or changes to blue-black)

TOPIC: Photosynthesis

3. Explain the following to the learners:
 - a. Tell learners that they will work in groups of four to six.
 - b. Learners must copy the table into their workbooks before they start the investigation.
 - c. Give each group four different foods: two with starch and two with no starch (an example would be cooked rice, boiled egg, bread, cheese).
 - d. Each group must place the four foods on a saucer or something similar.
 - e. The four foods must not touch each other.
 - f. One learner must use a dropper to place a drop of iodine on each food.
 - g. Each learner must record his or her observations in the table.
 - h. With the foods that contain starch, such as cooked rice and bread, the iodine will change colour from brown to blue-black.
 - i. With the foods that do not contain starch, the iodine stays a brown colour.

4. A model answer for the table:

Food	Colour of iodine after it is added to the food sample (stays brown or changes to blue-black)
<i>cooked rice</i>	<i>iodine changes from brown to blue-black</i>
<i>potatoes</i>	<i>iodine changes from brown to blue-black</i>
<i>cheese</i>	<i>iodine stays brown</i>
<i>boiled egg</i>	<i>iodine stays brown</i>

Checkpoint 2

Ask learners the following questions to check their understanding at this point:

- a. What colour is the iodine after it has been placed on cooked rice?
- b. What colour is the iodine after it has been placed on a boiled egg?

Answers to the checkpoint questions are as follows:

- a. Iodine will change from brown to blue-black when placed on cooked rice.
- b. Iodine will stay brown when placed on a boiled egg.

5. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Photosynthesis

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Photosynthesis	12
Viva	Photosynthesis	9-10
Platinum	Photosynthesis	5-6
Solutions for All	Photosynthesis	-
Day-by-Day	Photosynthesis	6
Oxford	Photosynthesis	12
Spot On	Photosynthesis	4
Top Class	Photosynthesis	5-6
Sasol Inzalo Bk A	Photosynthesis	13-15

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/a7wU7C> (1min 43sec) [Starch test]
2. <https://goo.gl/zVwyup> (1min 15sec) [To test the presence of starch in the given food sample]

2 B

Term 1, Week 2, Lesson B
Lesson Title: Plants and air
Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants use carbon dioxide		
CAPS Page Number	47		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe the process in which plants use carbon dioxide and give off oxygen draw a diagram to explain the process. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing	✓	8. Predicting	✓	14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations	✓	16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations	✓	17. Communicating	
6. Identifying problems & issues		12. Recording Information			

TOPIC: Photosynthesis

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
-	-

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

If you put iodine on a food that contains starch, what colour does it change to?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Iodine changes from brown to blue-black when placed on starch.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

CARBON DIOXIDE AND OXYGEN CYCLE OF THE PLANT

1. Plants use carbon dioxide from the air and **release** oxygen.
 2. Plants use carbon dioxide for photosynthesis.
 3. Plants are very important as they keep the amounts of oxygen and carbon dioxide in the air at the correct level.
2. Explain this to the learners as follows:
 - a. Oxygen and carbon dioxide are both gases.
 - b. Plants are very important in keeping the amount of oxygen and carbon dioxide in the air at the correct level.
 - c. Other living organisms, including humans, use the oxygen that plants release.
 - d. The process of photosynthesis.
 3. Give learners time to copy this information into their workbooks.

TOPIC: Photosynthesis

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What gas do plants use for photosynthesis?
- b. What gas do plants release into the air?

Answers to the checkpoint questions are as follows:

- a. Plants use carbon dioxide for photosynthesis.
- b. Plants release oxygen into the air.

E

CONCEPTUAL DEVELOPMENT

1. To do this activity, each group will need the following:
 - a clear glass jar filled with warm water
 - 2 small bunches of freshly picked green leaves
 - a sunny spot to put their jars
 - a hammer, stone, heavy object for hammering
2. Ensure you have these materials prepared for each group before the lesson starts.
3. Tell the learners that they are going to be doing an investigation to see what happens during photosynthesis.
4. Divide the learners into groups of four or six.
5. Write the following onto the chalkboard (always try to do this before the lesson starts):

PRACTICAL TASK

METHOD

- a. Take one small bunch of green leaves (3 or 4) and put them into the glass jar with the water.
 - b. Make sure they are completely covered by the water.
 - c. Place the jar in a sunny spot.
6. Make sure the learners understand what they have to do.
 7. Now ask the learners to copy the questions for the task into their workbooks.
 8. This will need to be written onto the chalkboard:

TOPIC: Photosynthesis

Task 1: (6 marks)

- a. Draw a LABELLED diagram of your investigation with the following labels:
 - leaves
 - jar
 - water
 - sunlight
- b. Discuss in your group what you think might happen in this investigation. Write down your prediction.

Task 2: (5 marks)

- a. Using a leaf from the second bunch of leaves, draw a detailed diagram of the leaf. Pay attention to the leaf shape, the veins and the leaf edges.
- b. Label the following on the diagram:
 - leaf edge
 - veins
 - leaf stem
- c. Mark any openings or holes visible on the back of the leaf.

Task 3: (4 marks)

It is now time to check on your leaves in the jar. Answer the following:

- a. What can you see on the undersides of the leaf?
- b. What do you think these are?
- c. Why do you think the leaves needed to be placed in a sunny spot?
- d. During photosynthesis, what do plants absorb and release?

TOTAL 15

9. Allow learners time to complete the task.
10. Supervise them and assist whilst they are completing the activity

TOPIC: Photosynthesis

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Photosynthesis	13-14
Viva	Photosynthesis	11-12
Platinum	Photosynthesis	8-9
Solutions for All	Photosynthesis	4-5
Day-by-Day	Photosynthesis	7-8
Oxford	Photosynthesis	14-15
Spot On	Photosynthesis	5
Top Class	Photosynthesis	8-10
Sasol Inzalo Bk A	Photosynthesis	15-16

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <http://www.kids-fun-science.com/plant-experiments.html> [Plant experiments]
2. <http://photosynthesisforkids.com/> [Photosynthesis for kids]

2 C

Term 1, Week 2, Lesson C

Lesson Title: Plants and air

Time for lesson: 1½ hour

A POLICY AND OUTCOMES

Sub-Topic	Animals use oxygen		
CAPS Page Number	47		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> draw a diagram to show how plants and animals are inter-dependent describe the oxygen-carbon dioxide cycle. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing	✓	8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues	✓	12. Recording Information	✓		

TOPIC: Photosynthesis

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 7: Oxygen-carbon dioxide cycle	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What gas do plants need for photosynthesis?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Plants need carbon dioxide for the process of photosynthesis.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

THE ANIMALS OXYGEN AND CARBON DIOXIDE CYCLE

1. Animals use oxygen from the air and release carbon dioxide.
 2. Animals use oxygen to carry out the seven life processes.
 3. Animals are **consumers**. They eat (consume) food.
 4. Plants are **producers**. They make (produce) food.
 5. Animals depend on plants for food and oxygen.
2. Explain this to the learners as follows:
 - a. Go over the seven life processes with the learners (they learnt this in Grade 4): feeding, growing, reproducing, breathing, excreting, sensing, moving.
 - b. To consume something means to eat or drink it. Animals consume food.
 - c. To produce something means to make it. Plants produce food.
 3. Give learners time to copy this information into their workbooks.

TOPIC: Photosynthesis

Checkpoint 1

Ask learners the following questions to check their understanding at this point:

- a. Are animals consumers or producers?
- b. Are plants consumers or producers?

Answers to the checkpoint questions are as follows:

- a. Animals consume food so they are consumers.
- b. Plants produce food so they are producers.

E

CONCEPTUAL DEVELOPMENT

1. Show learners Resource 7: The oxygen-carbon dioxide cycle.
2. Draw a similar diagram on the chalkboard (always try to this before the lesson starts). The drawing must have a heading.
3. Explain the diagram as follows to the learners:
 - a. Animals need oxygen to breathe (respiration) and survive.
 - b. This is one of the reasons that oxygen is so important to animals.
 - c. Animals breathe out carbon dioxide.
 - d. Plants take in carbon dioxide.
 - e. Through the process of photosynthesis, plants release oxygen into the air.
 - f. The cycle then continues.

Checkpoint 2

Ask learners the following questions to check their understanding at this point:

- a. Name the gas that is released when animals breathe out.
- b. Name the gas that is released from a plant during photosynthesis.

Answers to the checkpoint questions are as follows:

- a. Animals breathe out carbon dioxide.
- b. Plants release carbon dioxide during photosynthesis.

4. Ask learners if they have any questions and provide answers and explanations.

TOPIC: Photosynthesis

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Photosynthesis	-
Viva	Photosynthesis	12
Platinum	Photosynthesis	8
Solutions for All	Photosynthesis	5
Day-by-Day	Photosynthesis	7
Oxford	Photosynthesis	-
Spot On	Photosynthesis	-
Top Class	Photosynthesis	9
Sasol Inzalo Bk A	Photosynthesis	16-18

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/k2WyRg> (3min 54sec) [Why do we need oxygen?]
2. <https://goo.gl/8wtoDV> (1min 36sec) [Facts about oxygen]

TOPIC OVERVIEW:

Nutrients in food

Term 1, Weeks 3A – 4B

A. TOPIC OVERVIEW

Term 1, Weeks 3a – 4b

- This topic runs for 1½ weeks.
- It is presented over 5 lessons.
- This topic's position in the term is as follows:

LESSON	WEEK 1			WEEK 2			WEEK 3			WEEK 4			WEEK 5		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B

LESSON	WEEK 6			WEEK 7			WEEK 8			WEEK 9			WEEK 10		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B

B. SEQUENTIAL TABLE

GRADE 4 & 5	GRADE 6	GRADE 7 & 8
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Food chains: animals need food to carry out their life processes; a food chain starts with a plant and ends with a carnivore or omnivore 	<ul style="list-style-type: none"> • Food groups: the four main groups according to their functions and the main nutrients they supply • Natural foods contain more than one food group • Processed foods have added salt, sugar, colourings and preservatives 	<ul style="list-style-type: none"> • Feeding relationships • Energy flow: food chains and food webs

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

Ensure that you teach the following vocabulary at the appropriate place in the topic:

	TERM	EXPLANATION
1.	nutrients	Substances that provides food for growth and development
2.	functions	Activities that are natural to that person or thing
3.	repairs	Fixes our bodies if we have been sick
4.	diet	The kind of food that a person or animal eats regularly
5.	preservative	Substance used to keep food from rotting
6.	additives	Somethings added to food to change it in some way
7.	immune system	The processes of the body that fight disease
8.	junk food	Packaged food that has low nutritional value
9.	decay	To rot or decompose.
10.	allergens	Substances that people are allergic to
11.	obesity	When someone is very fat in a way that is unhealthy

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

Knowing about the nutrients in food will enable us to be more aware of eating healthily. Different food groups have different functions and we should understand these functions. Understanding the nutritional value of food products will enable us and our families to be healthier.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

Date completed:	
Lesson successes:	
Lesson challenges:	
Notes for future improvement:	

TOPIC: Nutrients in food

3 A

Term 1, Week 3, Lesson A

Lesson Title: The main food groups

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food groups		
CAPS Page Number	48		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • identify which food groups certain foods belong to • understand the functions of different food groups. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations		17. Communicating	✓
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Nutrients in food

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster: Food groups and nutrition	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What gas do animals release and plants take in?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Animals release and plants take in carbon dioxide.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

THE MAIN FOOD GROUPS

1. Animals need food to give their bodies energy to carry out the seven life processes.
2. Everything animals eat contains **nutrients**.
3. These nutrients keep your body healthy.
4. Food can be grouped according to their **functions** in the body and the nutrients they supply.
5. There are four main food groups: carbohydrates, proteins, fats and oils, and vitamins and minerals.
6. Carbohydrates give us energy.
7. Proteins help repair and grow our body.
8. Fats and oils store energy.
9. Vitamins and minerals build and protect our bodies.

2. Explain this to the learners as follows:
 - a. Go over the seven life processes with the learners: feeding, breathing, moving, growing, excreting, sensing things and reproducing.
 - b. Animals need energy to carry out these seven life processes.
 - c. Everything animals eat contains **nutrients**.
 - d. Foods can be grouped according to their **functions** in the body.

TOPIC: Nutrients in food

- e. The four food groups are: carbohydrates, proteins, fats and oils, vitamins and minerals.
 - f. Point out these four main groups of food on the poster.
 - g. Read through the information on the chalkboard and make sure the learners understand what is written.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Why do animals need food?
- b. Why do we need nutrients?

Answers to the checkpoint questions are as follows:

- a. Animals need food to give their bodies energy to carry out the seven life processes.
- b. We need nutrients to keep our bodies healthy.

E CONCEPTUAL DEVELOPMENT

1. Activity 1: Four Food Groups
2. Draw the following onto the chalkboard (always try to do this before the lesson starts):

THE FOUR FOOD GROUPS

CARBOHYDRATES	PROTEINS	FATS AND OILS	VITAMINS AND MINERALS
for energy	for growth and repair	for storing energy	for building and protecting our bodies

2. Explain the following to the learners:
 - a. Learners must copy the heading and the table into their workbooks.
 - b. From the poster, they must draw one of the foods for each food group into the correct block in the third row of the table.
 - c. For example, under carbohydrates, they must draw either a loaf of bread, a mielie, potatoes, rice, or pap.

TOPIC: Nutrients in food

3. The model answer is:

<u>THE FOUR FOOD GROUPS</u>			
<i>CARBOHYDRATES</i>	<i>PROTEINS</i>	<i>FATS AND OILS</i>	<i>VITAMINS AND MINERALS</i>
<i>for energy</i>	<i>for growth and repair</i>	<i>for storing energy</i>	<i>for building and protecting our bodies</i>
<i>Drawing of a potato, rice, bread, mielie</i>	<i>Drawing of milk, chicken, fish, eggs</i>	<i>Drawing of a jar of peanut butter, butter, bottle of sunflower oil</i>	<i>Drawing of any fruit and vegetable</i>

4. Activity 2: What have you eaten today?

Write the following on the chalkboard (always try to do this before the lesson starts):

WHAT HAVE YOU EATEN TODAY?

1. Write down three things that you have eaten today or are going to eat.
2. Next to each item, write down whether the food is a carbohydrate, protein, fat or oil, or vitamin or mineral.
3. Discuss what you have written with a partner to check each other's answers.

5. Explain the following to the learners:

- a. Read through the information on the chalkboard and make sure that the learners understand the activity.
- b. When they have finished, each learner must pair up with another learner to read out what they have written down.
- c. Learners are to check each other's work.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. A potato belongs to which food group: carbohydrates, proteins, fats and oils, or vitamins and minerals?
- b. An egg belongs to which food group: carbohydrates, proteins, fats and oils, or vitamins and minerals?

Answers to the checkpoint questions are as follows:

- a. A potato is a carbohydrate.
- b. An egg is a protein.

6. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Nutrients in food

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrients in food	15-16
Viva	Nutrients in food	13
Platinum	Nutrients in food	12
Solutions for All	Nutrients in food	14-15
Day-by-Day	Nutrients in food	11
Oxford	Nutrients in food	16
Spot On	Nutrients in food	6
Top Class	Nutrients in food	11
Sasol Inzalo Bk A	Nutrients in food	22-23

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/SPqkE7> (4min 26sec) [Super Fab Lab! Food groups – Sid the Science Kid]
2. <https://goo.gl/AiFBr1> (5min 4sec) [Food Pyramid - Nutrition Table]
3. <https://goo.gl/M7bUwe> ((9min 43sec) [Food groups]

3 B

Term 1, Week 3, Lesson B

Lesson Title: Food groups

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Carbohydrates and Proteins		
CAPS Page Number	48		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe the function of carbohydrates and proteins give some examples of food products for each of these food groups. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Nutrients in food

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster: Food groups and nutrition	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

Name the four food groups.

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

The four food groups are carbohydrates, proteins, fats and oils, and vitamins and minerals.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

CARBOHYDRATES

1. Carbohydrates are a source of energy for the body.
2. Carbohydrates are used by the body to keep it warm.
3. Sugar and starch are the two main types of carbohydrates that we eat.
4. Sugar is found in fruit and in products such as jam and soft drinks.
5. Sugar gives our body quick energy.
6. Starch is found in maize meal, potatoes and rice.
7. Starch gives you energy more slowly.

PROTEIN

1. Protein builds and repairs our bodies.
2. Protein helps our bodies grow.
3. Examples of protein are meat, fish, cheese, eggs, beans and seeds of plants.

TOPIC: Nutrients in food

2. Explain this to the learners as follows:
 - a. Foods such as maize meal, potatoes, and rice are rich in starch, which is part of a food group called carbohydrates.
 - b. Sugar is also a kind of carbohydrate.
 - c. So, starch and sugars are carbohydrates.
 - d. Our bodies need carbohydrates for energy.
 - e. If we eat more carbohydrates than our bodies need, this is stored as fat.
 - f. Read through the information on carbohydrates on the chalkboard. Make sure the learners understand what is written down.
 - g. Protein is important for the growth of our bodies.
 - h. Young children and pregnant women need more protein than other people.
 - i. Examples of protein are meat, fish, cheese, milk, eggs, seeds, lentils, soya beans, rice, and dried beans.
 - j. Read through the information on protein on the chalkboard. Make sure the learners understand what is written down.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask learners the following questions to check their understanding at this point:

- a. What food group do dried beans belong to?
- b. What food group do fish belong to?

Answers to the checkpoint questions are as follows:

- a. Dried beans are protein.
- b. Fish are protein.

E CONCEPTUAL DEVELOPMENT

1. Activity 1: Match the food!

Draw the following table on the chalkboard (always try to do this before the lesson starts):

<u>CARBOHYDRATES OR PROTEIN?</u>		
FOOD TYPE	CARBOHYDRATE	PROTEIN
eggs		
bread		
potatoes		
beef		
sardines		
dried beans		
maize porridge		
milk		
bread		
chicken		

2. Explain the following to the learners:

- a. Learners must write the heading and draw the table in their workbooks.
- b. Learners must put a tick in the correct column to show whether the food is a carbohydrate or a protein.
- c. Learners must compare their answers with a friend.
- d. Discuss the answers with the class.
- e. Point out the food examples on the poster under the carbohydrates and protein sections. Discuss whether the foods are carbohydrates or proteins.

3. The model answer is:

FOOD TYPE	CARBOHYDRATE	PROTEIN
eggs		✓
bread	✓	
potatoes	✓	
beef		✓
sardines		✓
dried beans		✓
maize porridge	✓	

TOPIC: Nutrients in food

milk		✓
bread	✓	
chicken		✓

4. Activity 2: Choose the correct word.

Write the following on the chalkboard (always try to do this before the lesson starts):

CARBOHYDRATES AND PROTEIN

body, protein, sugar, carbohydrates, starch

1. Milk and cheese are ____.
2. Bread and potatoes are ____.
3. Carbohydrates are used by the ____ to keep it warm.
4. ____ helps our bodies grow.
5. ____ and ____ are the main types of carbohydrates that we eat.
6. ____ gives our body quick energy.
7. ____ gives our body energy more slowly.
8. ____ repairs our bodies after injury.

5. Explain the following to the learners:

- a. Read through the activity with the learners.
- b. Make sure they understand what is written on the chalkboard.
- c. The sentences must be rewritten with the chosen word underlined.

6. The model answer is:

Go over the answers with the learners. Learners can mark their own work.

CARBOHYDRATES AND PROTEIN

body, protein, sugar, carbohydrates, starch

1. Milk and cheese are protein.
2. Bread and potatoes are carbohydrates.
3. The body uses carbohydrates to keep it warm.
4. Protein helps our bodies grow.
5. Sugar and starch are the main types of carbohydrates that we eat.
6. Sugar gives our body quick energy.
7. Starch gives our body energy more slowly.
8. Protein repairs our bodies after injury.

TOPIC: Nutrients in food

Checkpoint 2

Ask learners the following questions to check their understanding at this point:

- a. What type of carbohydrate gives our bodies quick energy?
- b. What food group helps our bodies grow?

Answers to the checkpoint questions are as follows:

- a. Sugar gives our bodies quick energy.
- b. Protein helps our bodies grow.

7. Ask the learners if they have any questions and provide answers and explanations.

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrients in food	17
Viva	Nutrients in food	14
Platinum	Nutrients in food	13
Solutions for All	Nutrients in food	15
Day-by-Day	Nutrients in food	11
Oxford	Nutrients in food	17
Spot On	Nutrients in food	7
Top Class	Nutrients in food	12
Sasol Inzalo Bk A	Nutrients in food	23-24

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/bjqxeu> (2min 3sec) [Carbohydrates, proteins and fats]
2. <https://goo.gl/wSnWQP> (5min 10sec) [How do carbohydrates impact your health?]

3 C

Term 1, Week 3, Lesson C

Lesson Title: Food Groups

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Fats and oils, Vitamins and minerals		
CAPS Page Number	48		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • understand the functions of different food groups. • identify which food groups certain foods belong to. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting	✓	14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations	✓	17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Nutrients in food

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster: Food groups and nutrition	
cooked rice, fried chips, yellow cheese, margarine, slice of carrot	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What type of carbohydrate gives us energy that we use slowly?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Starch is a type of carbohydrate that gives us energy that we use slowly.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

FATS AND OILS

1. Fats and oils give us energy.
2. Fats and oils keep our bodies warm.
3. Fats and oils are stored in the body as body fat.
4. They are energy-rich but they are not easily broken down by the body, like carbohydrates.
5. This food group contains butter, margarine, cooking oil, sweets, jams, cakes, puddings and biscuits.

VITAMINS AND MINERALS

1. Vitamins and minerals help build strong bones and healthy teeth.
2. Strong bones do not break easily.
3. Strong teeth do not decay.
4. Vitamins are named according to the letter of the alphabet.
5. You get Vitamin A, B, C, D and E.

TOPIC: Nutrients in food

6. Calcium and sodium are minerals.
 7. Most vitamins and minerals are found in vegetables and fruit.
 8. The **immune system** needs vitamins and minerals to do its job well.
2. Explain this to the learners as follows:
- a. Fats and oils give us a lot of energy but they are not easily used by the body.
 - b. The organs of our body, such as the lungs, heart and kidneys, need a layer of fat around them to protect them.
 - c. Some fats are healthy, like avocados, oily fish and nuts.
 - d. Some fats are unhealthy, like chips, chocolates and other junk food.
 - e. Read through the information about fats and oils on the chalkboard.
 - f. Fruits and vegetables have many vitamins and minerals.
 - g. The immune system in our bodies keeps us healthy by fighting germs that cause disease.
 - h. The immune system needs vitamins and minerals to do its job properly.
 - i. Read through the information about vitamins and minerals on the chalkboard.
10. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask learners the following questions to check their understanding at this point:

- a. Give two functions of fats and oils.
- b. What system needs vitamins and minerals to help fight disease?

Answers to the checkpoint questions are as follows:

- a. Fats and oils give us energy and keep our bodies warm.
- b. The immune system needs vitamins and minerals to fight disease.

E CONCEPTUAL DEVELOPMENT

1. Write the following on the chalkboard (always try to do this before the lesson starts):

TEST FOR FATS AND OILS

1. To see if a food contains fats and oils, rub a piece of the food on brown paper.
2. If a stain appears on the paper and it does not dry, it means that there is fat or oil in the food.

ACTIVITY: DOES THIS FOOD CONTAIN FAT OR OIL?

1. Discuss with a partner whether the following foods contain fat or oil.
2. You can investigate these foods at home.
3. Test the following foods:
cooked rice, fried chips, yellow cheese, butter or margarine, a carrot slice.
4. Draw up a table to record your results.

2. Explain the following to the learners:
 - a. Learners must draw up their own table.
 - b. The table must have a heading, six rows and two columns.
 - c. Write the names of the five foods down the first column.
 - d. Write Yes or No at the top of the second column.
 - e. Tell learners to write Yes or No according to whether the food left a stain on the brown paper.

3. The model answer is:

TEST FOR FATS AND OILS

Food products	Yes/No
cooked rice	No
fried chips	Yes
yellow cheese	Yes
butter or margarine	Yes
A carrot slice	No

TOPIC: Nutrients in food

Checkpoint 2

Ask learners the following questions to check their understanding at this point:

- True or False: A food containing fat or oil will leave a stain on brown paper.
- True or False: A carrot contains fat or oil.

Answers to the checkpoint questions are as follows:

- True.
- False. The carrot did not leave a stain on the brown paper.

4. Ask the learners if they have any questions and provide answers and explanations.

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrients in food	17-18
Viva	Nutrients in food	15-16
Platinum	Nutrients in food	15
Solutions for All	Nutrients in food	16-17
Day-by-Day	Nutrients in food	11-12
Oxford	Nutrients in food	17
Spot On	Nutrients in food	7
Top Class	Nutrients in food	13
Sasol Inzalo Bk A	Nutrients in food	25-27

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

- <https://goo.gl/33Frqt> (2min 7sec) [Fat and carbohydrates – difference lesson for kids]
- <https://goo.gl/shU2Rj> [Vitamins and minerals]

4 A

Term 1, Week 4, Lesson A

Lesson Title: Food groups

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Nutritional value	
CAPS Page Number	48	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • give the differences between natural foods and processed foods • understand the meaning of additives • read a food label to understand the nutritional value of the food product. 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	✓
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Nutrients in food

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 8: A nutritional label	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

Do fried chips contain fat? How do you know?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Yes. If I put fried chips on brown paper, they leave a stain.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

NATURAL AND PROCESSED FOODS

1. Natural foods have had nothing added to them.
 2. Most natural foods contain more than one nutrient group.
 3. A **diet** made up of a variety of natural foods will give the body the nutrients needed for growth and a good immune system.
 4. Processed foods have **additives** to make them look better, to make them last longer or to make them easier to cook and eat.
 5. These foods may have added salt, sugar or **preservatives**.
 6. **Preservatives** are what is added to food to make it last longer.
2. Explain this to the learners as follows:
 - a. Most natural foods contain a mixture of more than one food group.
 - b. To eat well, it is best to choose a mixture of foods with lots of nutrients (nutrient-rich) every day.
 3. Give learners time to copy this information into their workbooks.

TOPIC: Nutrients in food

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What are natural foods?
- b. Why are additives added to foods?

Answers to the checkpoint questions are as follows:

- a. Natural foods are foods that have had nothing added to them.
- b. Additives are added to foods to make them look better, to make them last longer or to make them easier to cook and eat.

E

CONCEPTUAL DEVELOPMENT

1. Explain the following to the learners:
 - a. Foods that are sold in packages, tins or containers have nutrition labels.
 - b. These labels tell you about the nutrients in the food.
 - c. Show learners Resource 8: A nutrition label.
 - d. The amounts shown on the label are for 100g.
 - e. The percentage Daily Value (DV) shows the amount of nutrients that a person will eat in one serving.
 - f. Ask one learner to read through the label and tell you what percentage (%) of carbohydrates applies to the percentage Daily Value. **3%**
 - g. Ask another learner to read through the label and tell you what DV percentage (%) of protein there is for this food product. **16%**
 - h. Ask a third learner to read through the label and tell you the DV percentage (%) of total fat that applies to this food product. **4%**
 - i. Ask a fourth learner to read out the types of vitamins (*Vitamin A and Vitamin C*) and minerals (*calcium and iron*) that this food product contains.
2. Write the following onto the chalkboard (always try to do this before the lesson starts):

NUTRITIONAL LABELS

Answer the following questions in your workbook:

1. This label shows that the food contains a mixture of the food groups. Does this food contain all four nutrient groups?
2. What are the two minerals contained in this food?
3. What are the two vitamins contained in this food?
4. What type of carbohydrate does this food contain?

TOPIC: Nutrients in food

3. The model answer is:

NUTRITIONAL LABELS

1. *Yes, all four food groups are contained in this food.*
2. *Calcium and iron are the minerals.*
3. *Vitamin A and Vitamin C are the vitamins.*
4. *This food contains sugar.*

Checkpoint 2

Ask learners the following questions to check their understanding at this point:

- a. Where are nutritional labels found?
- b. What do these labels tell you?

Answers to the checkpoint questions are as follows:

- a. Food sold in packages, tins or containers has nutritional labels.
- b. Nutritional labels tell you about the nutrients in the food.

4. Ask learners if they have any questions and provide answers and explanations.

TOPIC: Nutrients in food

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrients in food	15-16
Viva	Nutrients in food	13
Platinum	Nutrients in food	12
Solutions for All	Nutrients in food	14-15
Day-by-Day	Nutrients in food	11
Oxford	Nutrients in food	16
Spot On	Nutrients in food	6
Top Class	Nutrients in food	11
Sasol Inzalo Bk A	Nutrients in food	22-23

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/u7RuLw> (4min 42sec) [The 6 Major Nutrients]
2. <http://kidshealth.org/en/kids/labels.html> [Figuring out food labels]

4 B

Term 1, Week 4, Lesson B

Lesson Title: Food groups

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food labels		
CAPS Page Number	48		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • understand the information on food labels • identify the nutrients and/or additives in the food from the food label. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations	✓	17. Communicating	✓
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Nutrients in food

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 9: A food label on a bottle of milk	
Food labels from a variety of foods such as bread, sardines, mielie meal, samp, tomato sauce, fruit juice in a bottle	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What are preservatives?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Preservatives are what is added to food to make it last longer.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

READING FOOD LABELS

1. People need to know what is in the food that they buy.
2. The law states that a food product must list the food groups and the amount of energy in each of these per 100g of the food.
3. Food labels also give the amount of energy in the food.
4. Energy is measured in kilojoules (kJ).
5. Labels must also give any additives.
6. Processed food contains additives such as colouring, **preservatives**, salt (sodium), sugar and flavourings.
7. Most additives are not healthy.
8. Some people do not eat certain foods due to allergies or religious reasons.
9. Information about allergens, such as peanuts, will be given on the food label.

TOPIC: Nutrients in food

2. Explain this to the learners as follows:
 - a. The law states that a food product must have a label indicating the food groups and the amount of energy (measured in kilojoules [kJ]) for each group.
 - b. Additives are things that have been added to the food to make it last longer or taste better.
 - c. Sodium is salt and is added to food for extra flavor. Too much salt leads to high blood pressure.
 - d. Sugar is also added to food. Too much sugar leads to obesity.
 - e. **Allergens** must also be labelled.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask learners the following questions to check their understanding at this point:

- a. What is another name for salt?
- b. What is energy measured in?

Answers to the checkpoint questions are as follows:

- a. Another name for salt is sodium.
- b. Energy is measured in kilojoules (kJ).

E CONCEPTUAL DEVELOPMENT

1. Ask learners to bring as many food labels as possible to class.
2. Activity 1: Food labels

Write the following on the chalkboard (always try to do this before the lesson starts):

FOOD LABELS

Work with a partner.

Each of you must draw and complete the table in your workbooks.

Look for the following information for each food product and fill this in on the table:

Food product	Carbohydrate	Vitamins	Minerals	Sodium (salt)	Energy in kilojoules

TOPIC: Nutrients in food

3. Explain the following to the learners:
 - a. Work with a partner.
 - b. Each pair must have three food labels.
 - c. Record information from the three food products in the table.
 - d. Write the name of the food product in the first column.
 - e. Look for the carbohydrate value. Fill this in. Note the starch and sugar content.
 - f. Too much sugar in our diets leads to **obesity**.
 - g. Vitamins and minerals are healthy parts of our diets. Fill these two columns in.
 - h. Fill in the sodium levels.
 - i. Too much sodium (salt) is not good for us.
 - j. Write down the energy content of the food product.
 - k. Eating too many calories (kilojoules) in a day can lead to obesity.
4. Activity 2: Analysing the information on food labels

ANALYSING THE INFORMATION ON FOOD LABELS

1. Compare the sodium content in your three food labels. Which food product has the highest sodium content?
2. Why should we take note of the amount of sodium in food?
3. Compare the vitamins and minerals in your three food labels. Which food product has the highest percentage of vitamins and minerals?
4. Why should we take note of vitamins and minerals?
5. Which of these three food products is the healthiest? Give a reason for your answer.

5. Explain the following to the learners:
 - a. Work with a partner.
 - b. Answer the questions in your workbooks.
 - c. Record the information in a table in your workbook.
 - d. Answer the questions on the chalkboard in your workbooks.
5. An example of a model answer (there will be many differences in answers):

ANALYSING THE INFORMATION ON THE FOOD LABELS

1. *The first food product (a packet of Lays chips) has the highest sodium content.*
2. *Too much sodium (salt) is not good for us.*
3. *Frozen vegetables have the highest percentage of vitamins and minerals.*
4. *Vitamins and minerals are good for us as they build strong bones and teeth and help fight diseases.*
5. *Milk is the healthiest product of the three as milk has the highest vitamins and minerals content. It has no sugar, low sodium levels and a high energy level.*

TOPIC: Nutrients in food

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Why is it important to have food labels?
- b. Why is it important to know the vitamin and mineral content of food products?

Answers to the checkpoint questions are as follows:

- a. Information about allergens is provided in case some people are allergic to certain foods. Labels also tell us the sodium and sugar content, which is important to know for a healthy diet.
- b. Vitamins and minerals are healthy parts of our diets.

7. Ask the learners if they have any questions and provide answers and explanations.

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrients	21-22
Viva	Nutrients	17-20
Platinum	Nutrients	19-20
Solutions for All	Nutrients	22-25
Day-by-Day	Nutrients	15-18
Oxford	Nutrients	21
Spot On	Nutrients	-
Top Class	Nutrients	18
Sasol Inzalo Bk A	Nutrients	29

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <http://www.danone.co.za/upload/Nutriday%20Worksheet%20Grade%206.pdf> [Nutrition Lesson Plan]
2. https://www.vitalityschools.co.za/microsites_za/vitality_schools/web/pdfs/lesson_plans/grade_6_lesson_3.pdf [Discovery Vitality Know your Food]

TOPIC OVERVIEW:

Nutrition

Term 1, Weeks 4C – 5C

A. TOPIC OVERVIEW

Term 1, Weeks 4c – 5c

- This topic runs for 1 week.
- It is presented over 4 lessons.
- This topic's position in the term is as follows:

LESSON	WEEK 1			WEEK 2			WEEK 3			WEEK 4			WEEK 5		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B

LESSON	WEEK 6			WEEK 7			WEEK 8			WEEK 9			WEEK 10		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B

B. SEQUENTIAL TABLE

GRADE 4 & 5	GRADE 6	GRADE 7 & 8
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Food chains: animals need food to carry out their life processes; a food chain starts with a plant and ends with a carnivore or omnivore 	<ul style="list-style-type: none"> • Balanced diets: eat a selection of food; eat sufficient from four food groups; diseases related to diet 	<ul style="list-style-type: none"> • Feeding relationships

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

Ensure that you teach the following vocabulary at the appropriate place in the topic:

	TERM	EXPLANATION
1.	constipation	Difficulty in passing solid waste out of the body
2.	fibre	Helps push waste out of the body
3.	digest	To break down food so that it can be absorbed and used by the body
4.	staple food	A food that is eaten regularly and it is a large portion of a standard diet for a large group of people; meilie meal is a staple diet for many South Africans
5.	detail	A single item of fact

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

A knowledge of a balanced diets is necessary to prevent diet-related issues such as obesity and diabetes. Knowing the food groups and that eating sufficient quantities from these groups, as well as enough water and fibre, will enable us to lead healthy lives.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

Date completed:	
Lesson successes:	
Lesson challenges:	
Notes for future improvement:	

4 C

Term 1, Week 1, Lesson C

Lesson Title: Balanced diets

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	What we need to eat and drink every day	
CAPS Page Number	49	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • identify which food groups certain foods belong to • understand the functions of different food groups 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues	✓	12. Recording Information	✓		

TOPIC: Nutrition

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster: Food groups and nutrition	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What food group do starch and sugar belong to?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Starch and sugar are carbohydrates.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

THE IMPORTANCE OF A BALANCED DIET

1. A diet refers to the choice of foods we eat every day.
2. A balanced diet is choosing the right amounts of foods from the four different food groups every day.
3. A balanced diet contains the right amount of nutrients to keep your body healthy.
4. People of different ages and with different activities need different amounts of food.
5. If you are very active, you need more of the energy-giving foods such as carbohydrates.
6. If you are growing fast, you need more protein.
7. The following table is a balanced diet for 12- to 15-year-olds. No fats and oils are included as these are found in other foods.

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Food group	Portions each day	Example of one portion
Carbohydrates	5 - 6	one slice of bread half cup cooked porridge half cup cooked rice or pap
Protein (meat, fish, eggs, grains)	2 - 3	two slice chicken or meat one piece of fish or four fish fingers one egg three-quarters cup mince or stew three-quarters cup of beans or lentils one tablespoon peanut butter 20 peanuts
Protein (dairy)	2 - 3	1 cup of milk two slices of cheese 150g yoghurt
Vitamins and minerals	three vegetables and two fruits	one portion will fit into the palm of your hand

FIBRE AND WATER

1. Your body also needs enough **fibre**.
2. Fibre is found in plants food like fruit, vegetables and grains.
3. Fibre keeps our insides healthy.
4. We also need to drink 6 to 8 glasses of water per day.
5. Substances are carried around your body in water.
6. We need water to sweat to keep us cool.
7. Waste products are passed out of our body in water.

2. Explain the following to the learners:
 - a. We all need to try and eat a balanced diet to stay healthy.
 - b. This means choosing the right amount of food from the four food groups to eat each day.
 - c. These foods need to be eaten in the correct amount.
 - d. Point out the food pyramid on the poster.

TOPIC: Nutrition

- e. At the bottom of the pyramid are fruit and vegetables. We need to eat 5 or more servings a day.
 - f. Next are the proteins, which consist of dairy, grains, fish, meat and eggs. We need to eat 4 to 6 servings of these per day.
 - g. At the top of the pyramid are the fats, sugar and salt. We need to eat small amounts of these food products.
3. Give learners time to copy the information about 'The importance of a balanced diet' and the table into their workbooks.
 4. Explain the following to the learners:
 - a. Fibre comes from plants.
 - b. Eating fibre keeps your insides clean and healthy.
 - c. Water in sweat cools you down.
 - d. Waste products pass out of our bodies in water.
 - e. Substances are carried around our bodies dissolved in water.
 5. Give learners time to copy the information about 'Fibre and Water' into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What is a balanced diet?
- b. How many glasses of water should we drink each day?

Answers to the checkpoint questions are as follows:

- a. A balanced diet is choosing the right amount of foods from the four food groups to be eaten every day.
- b. We should drink 6 to 8 glasses of water each day.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Balanced breakfasts

Write the following on the chalkboard (always try to do this before the lesson starts):

A HEALTHY BREAKFAST

1. Think of a healthy, balanced breakfast that you think people would like to eat.
2. List the foods that you would serve.
3. Write a few sentences explaining why this is healthy.

ZWEKAZI'S BREAKFAST AND SNACK

With a partner, look at the contents of Zwegazi's breakfast and mid-morning snack.

1. Is Zwegazi's breakfast and snack balanced? Give reasons for your answer.
2. Suggest two changes to make Zwegazi's breakfast and snack more balanced.
3. Does Zwegazi drink enough water? Give reasons for your answer.

ZWEKAZI'S BREAKFAST

Fried egg on bread

A glass of milk

SNACK

A packet of hot chips

A fizzy cooldrink

YOUR BREAKFAST AND SNACK

1. Write down what you ate for breakfast and what you ate (or will eat) for a snack.
 2. Is there anything you could change to make your breakfast and snack healthier?
2. Read through what is written on the chalkboard to the learners. Make sure they understand the activities – there are three.
 3. Explain the following to the learners:
 - a. A balanced diet will have a selection of food from the four food groups.
 - b. It will have these in the right amounts.
 - c. Choose foods from the table you wrote earlier in the lesson.
 - d. Choose the correct amounts of food.
 - e. Then analyse Zwegazi's breakfast and mid-morning snack.
 - f. Compare the foods Zwegazi eats with the food pyramid.
 - g. Answer the questions.

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4. A model answer (answers will vary):

Go over the answers with the class and have a discussion about each question. Refer to the Food Pyramid.

A HEALTHY BREAKFAST

1. *An egg, piece of bread with butter and a small amount of jam, an apple, a glass of water.*
2. *This breakfast has protein (egg), carbohydrates (bread), vitamins and minerals (apple) and fats and oils (butter). It includes a glass of water. It therefore has food from all four food groups and a small amount of sugar.*

ZWEKAZI'S BREAKFAST AND SNACK

1. *No, it is not balanced. There are no vitamins and minerals in this breakfast.*
2. *I would add an apple or orange to her breakfast, and instead of a packet of hot chips, I would include amasi or yoghurt.*
3. *No, Zweekazi does not drink enough water. If she has to drink 6 glasses a day, she should have one glass with her breakfast and one with her mid-morning snack.*

YOUR BREAKFAST AND SNACK

1. *I ate maize porridge with sugar and milk. I had a glass of water.*
2. *Yes, I could have some fruit with my breakfast.*

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. What two food groups should we eat 5 to 6 servings a day?
- b. What food group is at the top of the Food Pyramid?

Answers to the checkpoint questions are as follows:

- a. We should eat vitamins and minerals (fruit and vegetables).
- b. Fats and oils are at the top of the Food Pyramid.

5. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Nutrition

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrition	23-25
Viva	Nutrition	21-22
Platinum	Nutrition	21-24
Solutions for All	Nutrition	30-31
Day-by-Day	Nutrition	20-21
Oxford	Nutrition	22
Spot On	Nutrition	10-11
Top Class	Nutrition	19-20; 22
Sasol Inzalo Bk A	Nutrition	36-37

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/hNmjzY> (5min 40sec) Balanced Diet
2. <https://goo.gl/HRfRVt> (12mi 7sec) Nutrition, Food Pyramid, Healthy Eating

5 A

Term 1, Week 5, Lesson A
Lesson Title: Balanced diets
Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	An unhealthy diet	
CAPS Page Number	49	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • analyse a diet • make suggestions to make a diet healthier 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Nutrition

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster: Food groups and nutrition	
Resource 10 – Resource 14: An upside-down pyramid	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

In what sort of foods do we find fibre?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

We find fibre in fruits, vegetables and grains.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

EATING UNHEALTHILY

1. Junk food is food that is high in sugar, fat and salt.
 2. It usually has additives.
 3. Junk food normally contains little protein.
 4. Examples of junk food are sweets, biscuits, ice cream, crisps and fizzy cool drinks and fast food.
 5. Fast food is fried food or takeaway food.
 6. It is highly processed.
 7. Examples are hot chips, pies, hot dogs, burgers, fried chicken and pizzas.
2. Read through the information on the chalkboard and make sure the learners understand the information.
 3. Explain the following to the learners:
 - a. Junk food and fast food are not healthy for you.
 - b. If you eat a lot of junk food or fast food, you will not be eating a balanced diet.
 - c. Processed food is food that has been changed in some way from being natural.

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- d. Some processed food is healthy, like canned or frozen food.
 - e. Highly processed food (food that has had many changes to it) has high level of fat and sugar and low levels of nutrients and fibre.
4. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What is junk food?
- b. Give an example of junk food.

Answers to the checkpoint questions are as follows:

- a. Junk food is food that is high in sugar, fat and salt.
- b. Ice-cream, crisps, sweets, biscuits, fizzy drinks and fast foods are examples of junk food.

E

CONCEPTUAL DEVELOPMENT

1. Show learners the Healthy Food Pyramid on the poster.
2. Remind learners of the four food groups and the servings that they should eat each day.
3. Show learners Resource 10: An upside-down pyramid.
4. Explain the following to the learners:
 - a. The upside-down pyramid is an unhealthy way to eat.
 - b. Ask learners why they think this kind of food pyramid is unhealthy.
 - c. Ask learners to compare the Food Pyramid on the poster and the upside- down pyramid shown in Resource 10 to Resource 14. Share out these Resources with the learners.
 - d. When the learners have finished the comparison, they must write a conclusion.
 - e. A conclusion is a sentence which says what you have found.

COMPARING THE TWO PYRAMIDS

CONCLUSION

TOPIC: Nutrition

5. A model answer:

COMPARING THE TWO PYRAMIDS

1. *A person eating from the upside-down pyramid would eat a lot more fats and oils compared to the food pyramid.*
2. *The amounts of meat and fish are about the same.*
3. *The upside-down pyramid has few fruits and vegetables.*

CONCLUSION

The upside-down pyramid is an unhealthy way to eat as the person will not be getting enough vitamins and minerals to eat

6. Explain the following to the learners:

- a. Some families have to eat what they can afford.
- b. They cannot choose from the food pyramid.
- c. This diet often consists of carbohydrates and some vegetables.
- d. It does not often contain meat and fish as protein is often expensive to buy.
- e. The government does not charge tax on many natural **staple foods**.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. In the food pyramid, what food group should one eat the smallest amount of?
- b. In the unhealthy upside-down pyramid, what food is at the top?

Answers to the checkpoint questions are as follows:

- a. One should eat few fats and oils.
- b. Fats and oils are at the top.

6. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Nutrition

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrients	15-16
Viva	Nutrients	13
Platinum	Nutrients	12
Solutions for All	Nutrients	14-15
Day-by-Day	Nutrients	11
Oxford	Nutrients	16
Spot On	Nutrients	6
Top Class	Nutrients	11
Sasol Inzalo Bk A	Nutrients	22-23

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

N/A

5 B

Term 1, Week 5, Lesson B
Lesson Title: Balanced diets
Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Analysing a diet	
CAPS Page Number	49	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • identify which food groups are present in a diet • analyse a diet to see if it is balanced 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	✓
6. Identifying problems & issues	✓	12. Recording Information	✓		

TOPIC: Nutrition

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster: Food groups and nutrition	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

Why is junk food not healthy?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Junk food contains high levels of fat, sugar and salt.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

ANALYSE A DIET

1. Thabi wrote a list of all the foods she ate for one day.

BREAKFAST

1 cup pap
half a cup of milk
1 tsp sugar

LUNCH

Two slices of bread
Two teaspoons margarine
Half a cup of baked beans
One apple

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AFTERNOON SNACK

- One banana
- One bread roll
- One slice of cheese
- 20 peanuts

SUPPER

- One cup of samp
- Four fish fingers
- Two teaspoons of oil
- Half a cup of pumpkin
- Half a cup of cabbage

2. Read through the information on the chalkboard. Make sure the learners understand all the words.
3. Explain the following to the learners:
 - a. To analyse something means to look at it in **detail**.
 - b. To analyse a diet means you must look to see if the diet covers all the four food groups with the correct amounts for each food group.
 - c. Go through each item of food with the learners and discuss which food group it belongs.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What does 'analyse' mean?
- b. How would you analyse a diet?

Answers to the checkpoint questions are as follows:

- a. 'Analyse' means to look at something in detail.
- b. You would look to see if it contains all four food groups in the correct amounts.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Analysis of a diet.

Write the following on the chalkboard (always try to do this before the lesson starts):

QUESTIONS ON THABI'S DIET

Answer the following questions:

- a. Does this diet cover all the four food groups?
- b. Is this a balanced diet? Give reasons for your answer.
- c. What should she eat more of?
- d. What should she eat less of?
- e. Suggest what Thabi should take out of her diet and add to her diet to make it more balanced.

2. Explain the following to the learners:

- a. Look back to Lesson 4B where the learners copied down a table of a balanced diet for 12- to 15-year olds.
- b. Check Thabi's diet against this table to check if she is eating the correct amount of food for each food group.
- c. Read through the questions with the learners. Make sure they understand the questions.

3. Give learners time to answer these questions in their workbooks. They must write the heading first 'An analysis of Thabi's diet'.

4. A model answer is:

AN ANALYSIS OF THABI'S DIET

- a. *Yes, this diet does cover all four food groups.*
- b. *Although the diet covers all four food groups, it is not the correct amount.*
- c. *Thabi should eat more protein of both types, dairy and meat/fish/eggs/grains.*
- d. *Thabi could eat less carbohydrates and one more portion of vegetables.*
- e. *Thabi should eat 1 slice of bread for lunch and she should add a vegetable at lunch time, such as a tomato.*

5. Activity: Analysis of my diet

Write the following on the chalkboard (always try to do this before the lesson starts):

TOPIC: Nutrition

ANALYSIS OF MY DIET

1. Write down what you ate yesterday under the headings of:
Breakfast, Lunch, Supper.
2. If you had any snacks between meals, then included these too.
3. Analyse your diet. Answer the following questions:
 - a. Does this diet cover all the four food groups?
 - b. Is this a balanced diet? Give reasons for your answer.
 - c. What should you eat more of?
 - d. What should you eat less of?
 - e. Suggest what you should add or omit from your diet to make it more balanced.
6. Explain the following to the learners:
 - a. The analysis is the same analysis as the learners answered for Thabi's diet.
 - b. Each set of answers will vary.
 - c. When the class has completed this work, have a class discussion on how the learners can improve their diets.
7. Give the learners time to finish this activity.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. How many servings of carbohydrates should you have each day?
- b. How many eggs will make a single serving of protein?

Answers to the checkpoint questions are as follows:

- a. One should eat 5 – 6 servings of carbohydrates each day.
- b. One egg is a serving of protein.

7. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Nutrition

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrition	25
Viva	Nutrition	23
Platinum	Nutrition	23
Solutions for All	Nutrition	33-34
Day-by-Day	Nutrition	23
Oxford	Nutrition	25
Spot On	Nutrition	10
Top Class	Nutrition	21-22
Sasol Inzalo Bk A	Nutrition	48-54

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://www.peelregion.ca/health/shp/nutrition-campaign/pdf/gr6-lesson-plan.pdf> [Grade 6 Lesson Plan Personal Food Choices]
2. <http://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-nr-kit-gr6.pdf> [Nutrition Resource Kits]

5 C

Term 1, Week 5, Lesson C

Lesson Title: Balanced diets

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Disease and diet		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • understand that bad diet causes disease • list some diseases caused by diet 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues	✓	12. Recording Information	✓		

TOPIC: Nutrition

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 15: Diet-related diseases	
Poster: Food groups and nutrition	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is a balanced diet?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

A balanced diet is one that includes the correct amounts of four food groups.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

DISEASES RELATED TO DIET

1. Some diseases can be caused by something missing from the diet.
2. Protein helps us to grow and to repair our bodies.
3. A child suffering from kwashiorkor has not had enough protein.
4. The child will have a swollen stomach and will get sick easily.
5. To get better, the child will need to eat meat or fish, eggs and cheese and drink milk.
6. Too little Vitamin C will cause a disease called scurvy.
7. This disease makes your gums bleed and your teeth become loose.
8. To get better, eat oranges, broccoli, red peppers, and drink orange juice.
9. Malnutrition develops from having an unbalanced diet.
10. Tooth decay is caused by too much sugar.
11. Obesity is caused by having too much body fat for someone that age and height.
12. If the level of glucose sugar is too high, then diabetes will occur.

2. Explain and discuss the following with the learners:
 - a. People need to eat correct amounts of healthy food to grow and stay healthy.
 - b. If one food group is missing for a long period of time it could cause disease.

TOPIC: Nutrition

- c. Too much of some foods can also cause disease.
 - d. Show learners Resource 15: Diet-related diseases.
 - e. Explain that tooth decay is a result of too much sugar in a diet, and kwashiorkor is a result of no or very little protein in a diet.
3. Read through what is written on the chalkboard and make sure that learners understand all the words.
 4. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What causes tooth decay?
- b. What is kwashiorkor?

Answers to the checkpoint questions are as follows:

- a. Too much sugar causes tooth decay.
- b. Kwashiorkor is a disease that children get if they don't get enough protein.

E

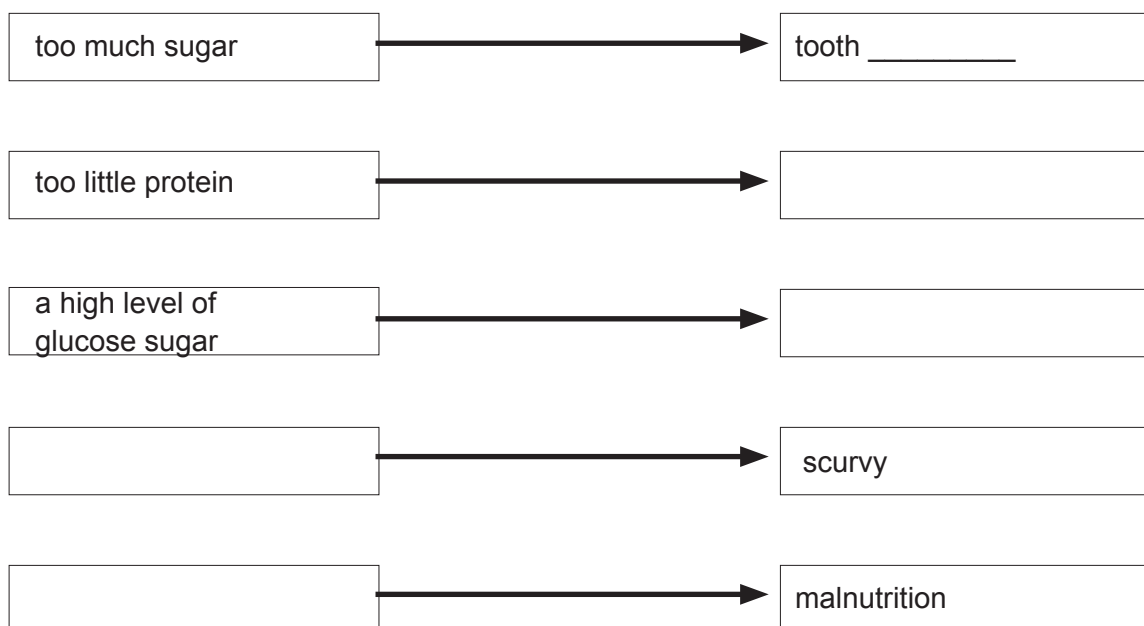
CONCEPTUAL DEVELOPMENT

1. Write the following on the chalkboard (always try to do this before the lesson starts):

CAUSES OF SOME DISEASES

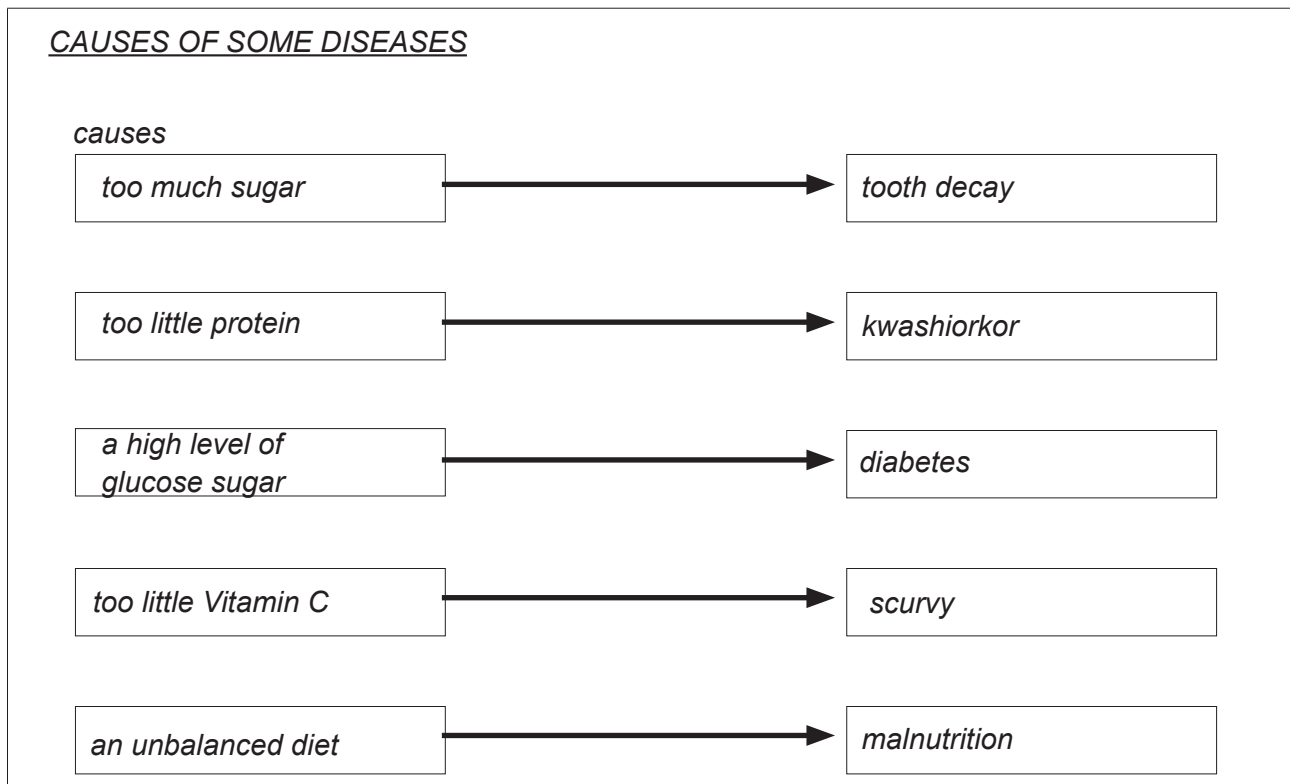
Fill in the empty blocks with the correct words. The causes of the disease are on the left and the name of the disease on the right.

causes



TOPIC: Nutrition

2. A model answer:



Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- What is obesity?
- Which disease gives children a swollen stomach?

Answers to the checkpoint questions are as follows:

- Obesity is when someone has too much body fat for their age and height.
- Kwashiorkor gives children a swollen stomach.

3. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Nutrition

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Nutrition	26-29
Viva	Nutrition	22-27
Platinum	Nutrition	24-25
Solutions for All	Nutrition	35-39
Day-by-Day	Nutrition	24-26
Oxford	Nutrition	26-27
Spot On	Nutrition	11
Top Class	Nutrition	23-26
Sasol Inzalo Bk A	Nutrition	47-51

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://classroom.kidshealth.org/6to8/problems/conditions/obesity.pdf> [Obesity]
2. <https://goo.gl/BKCEWb> (4min 51sec) [Deficiency diseases]

TOPIC OVERVIEW:

Food processing

Term 1, Weeks 6A – 7C

A. TOPIC OVERVIEW

Term 1, Weeks 6a – 7c

- This topic runs for 2 weeks.
- It is presented over 6 lessons.
- This topic's position in the term is as follows:

LESSON	WEEK 1			WEEK 2			WEEK 3			WEEK 4			WEEK 5		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C

LESSON	WEEK 6			WEEK 7			WEEK 8			WEEK 9			WEEK 10		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C

B. SEQUENTIAL TABLE

GRADE 4 & 5	GRADE 6	GRADE 7 & 8
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Food processing: reasons for processing food; nutrient value of processed foods; different methods of food processing 	<ul style="list-style-type: none"> • N/A

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

Ensure that you teach the following vocabulary at the appropriate place in the topic:

	TERM	EXPLANATION
1.	edible	If a food is edible it means we can eat it.
2.	digest	To break down food into smaller bits so it can be absorbed and used by the body
3.	preserved	To make food last longer and not go bad
4.	process	To change a food in some way to make it better
5.	fermentation	The process of using bacteria or yeast to change a food
6.	grinding	To make smaller particles by crushing or pounding
7.	stewed peaches	Peaches cooked slowly in water with added sugar
8.	minimally	To a very small extent
9.	shelf-life	The time in which a food product can be eaten
10.	sell-by-date	The recommended date by which the food product should be sold
11.	advantages	Something that makes it good
12.	disadvantages	Something that makes the product less good
13.	original	The first one; the way it was at the beginning
14.	micro-organisms	Very small organisms like bacteria, a virus or a fungus
15.	parasites	Organisms that live in another organism
16.	shelled	Having the shell taken off
17.	acidic	Sharp-tasting or sour
18.	dough	A thick mixture of flour and liquid used to make bread or pastry
19.	ingredients	Any of the foods or substances combined to make a dish
20.	additives	A substance added to something to improve or preserve it
21.	nutritional	Nourishing; health-giving

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

One of the purposes of food processing is to ensure that food will last longer. In Africa, fermentation processes have been in use for centuries. Understanding the value of fermented foods and how these foods add nutritional value can benefit those people who do not have access to electricity. Food security is becoming an issue in the world, so preserving food in healthy ways will mean that less food is wasted.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

Date completed:

Lesson successes:

Lesson challenges:

Notes for future improvement:

6 A

Term 1, Week 6, Lesson A

Lesson Title: Need for processing food

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Why food is processed		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • understand the importance of processing food • list some of the methods of processing food. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting	✓	14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Food processing

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Examples of processed food	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What causes diabetes?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Diabetes is caused by too high a level of glucose sugar in the body.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

WHY WE PROCESS FOOD

1. When something is processed it is changed in some way.
2. We process food to make it more **edible** (it is better to eat).
3. Raw foods are made edible by chopping, slicing, grinding, cutting off parts that cannot be eaten, and cooking
4. We process food to make it last longer.
5. Foods such as amahewu (mielie meal porridge) and yoghurt have been fermented to make them last longer.
6. We process food to improve the nutritional value.
7. **Fermentation** adds nutritional value as it increases the Vitamin B and calcium value.
8. Sometimes nutrients are lost during processing.
9. In cooking vegetables in water, some of the vitamins are lost.
10. There are three main reasons why food is processed: to make it edible, to make it last longer, to add nutritional value

2. Explain and discuss the following with the learners:
 - a. People process food all the time.
 - b. There are three main reasons for processing food: to make it edible, to make it last longer, to improve its nutritional value.

TOPIC: Food processing

- c. Read through the information on the chalkboard to make sure that the learners understand each point.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What does it mean if a food is 'edible'?
- b. What two vitamins and minerals does fermentation add to food?

Answers to the checkpoint questions are as follows:

- a. It means that the food can be eaten.
- b. Fermentation adds Vitamin B and calcium.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Reasons for processing food

Write the following on the chalkboard (always try to do this before the lesson starts):

REASONS FOR PROCESSING FOOD

Choose the correct reason for the processing of the following food products.

Reasons: make it edible; make it last longer; add nutritional value

Processed Food	Reason
canned fruit	
amahewu	
dried fruit	
peeled pumpkin	
frozen chicken pieces	
fried egg	

2. Explain the following to the learners:
 - a. Copy and complete the table written on the chalkboard into your workbooks.
 - b. Ask learners to choose one or more reasons as to why this food was processed.

TOPIC: Food processing

3. Model answer:

REASONS FOR PROCESSING FOOD

Processed Food	Reason
<i>canned fruit</i>	<i>make it last longer</i>
<i>amahewu</i>	<i>add nutritional value, make it last longer</i>
<i>dried fruit</i>	<i>make it last longer</i>
<i>peeled pumpkin</i>	<i>make it edible</i>
<i>frozen chicken pieces</i>	<i>make it last longer</i>
<i>fried egg</i>	<i>make it edible</i>

4. Discuss the model answer with the learners. They can mark their own work.

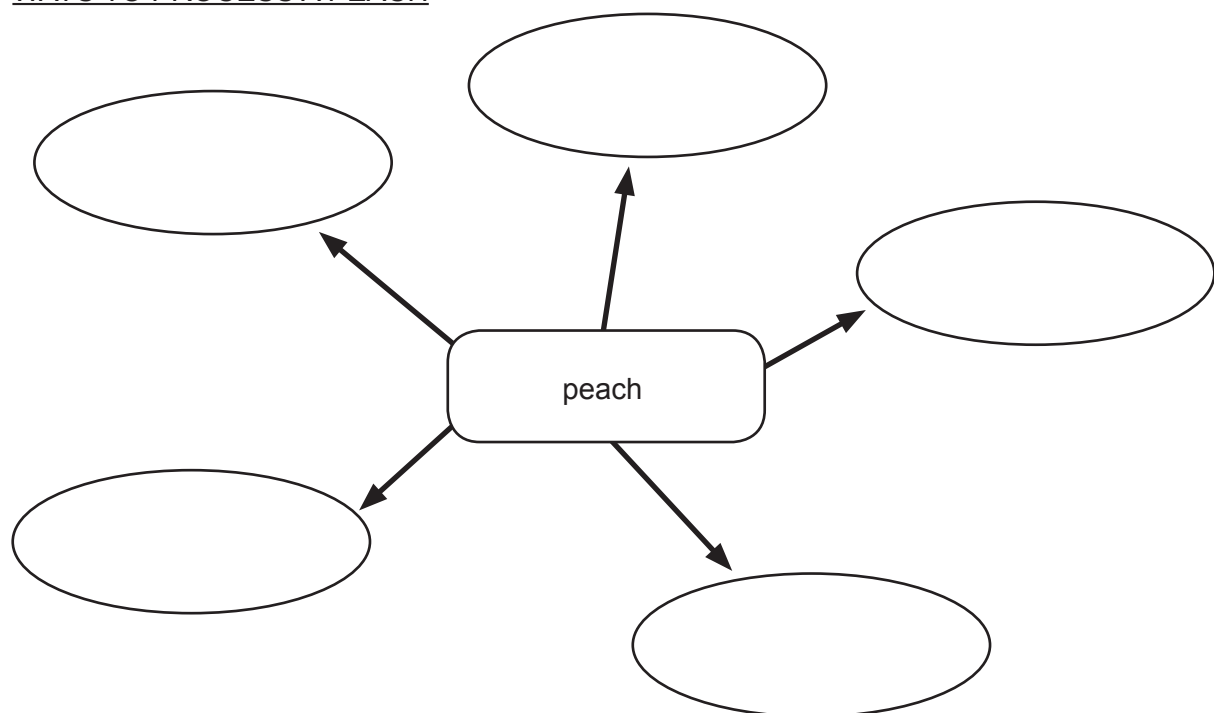
5. Activity: Ways to process a PEACH

Write the following on the chalkboard (always try to do this before the lesson starts):

WAYS TO PROCESS A PEACH

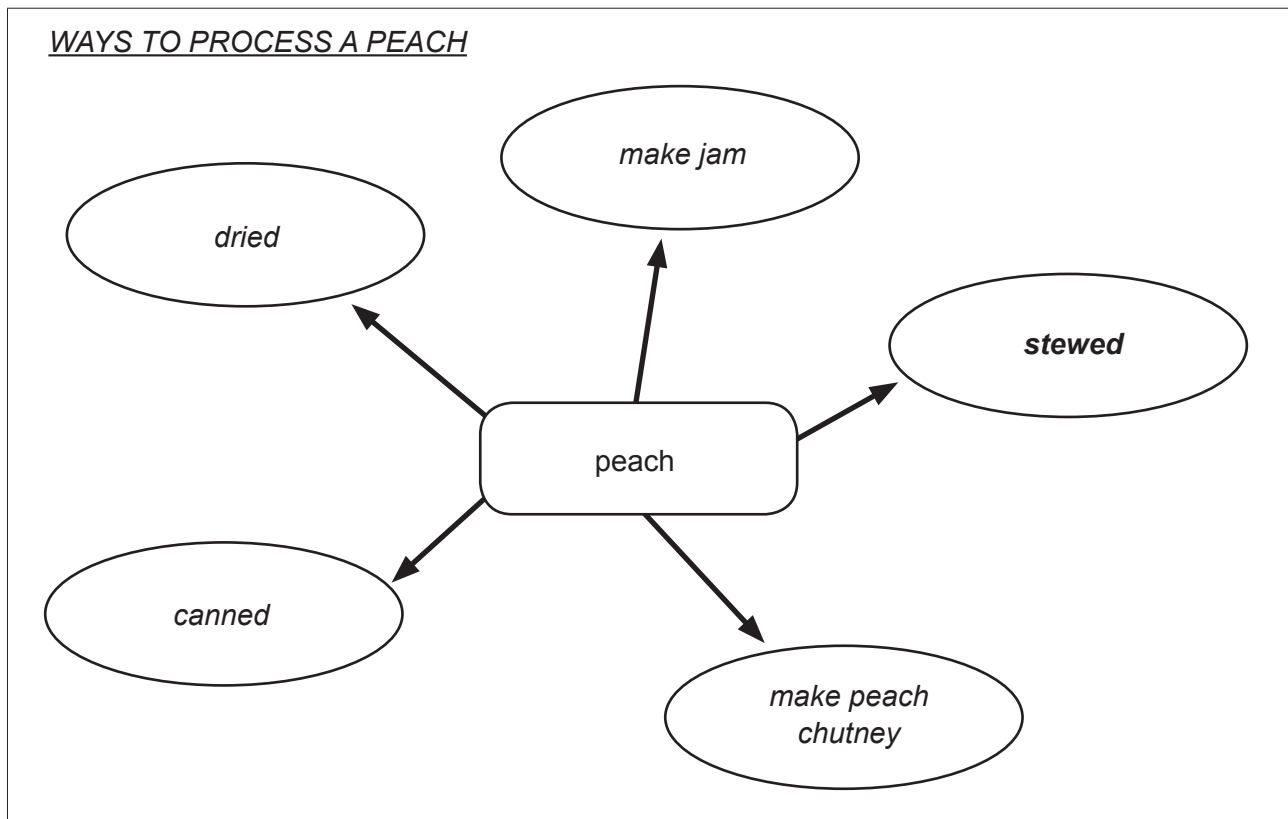
1. Draw a spider diagram.
2. Write 'peach' in the middle.
3. Think and write down as many ways as possible to process a peach so that it will last longer.
4. A spider diagram looks as follows:

WAYS TO PROCESS A PEACH



TOPIC: Food processing

6. Model answer:



7. Discuss the different ways a peach can be processed. Learners might not be familiar with all the different ways.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- What is the reason for drying fruit?
- What is the reason for peeling a pumpkin?

Answers to the checkpoint questions are as follows:

- We dry fruit to make it last longer.
- We peel a pumpkin to make it edible.

8. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Food processing

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Food processing	31-34
Viva	Food processing	29-33
Platinum	Food processing	28-29
Solutions for All	Food processing	44-47
Day-by-Day	Food processing	30-31
Oxford	Food processing	28-29
Spot On	Food processing	12-13
Top Class	Food processing	28
Sasol Inzalo Bk A	Food processing	54-63

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://e-classroom.co.za/download/grade-6-natural-science-technology-t1-food-processing-eng/> [Food processing]
2. <https://goo.gl/sTa6x4> (6min 26sec) [Food processing module]

6 B

Term 1, Week 6, Lesson B

Lesson Title: Methods of processing food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food processing		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe the different levels of processing food identify foods that belong to these levels. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Food processing

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Labels of canned food such as sardines, jam (record the sell-by-date if stamped on the can)	
Labels of boxed food such as biscuits, fruit juice, long-life milk	
Labels of other processed food such as bread, mielie meal	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

Why is fruit canned?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Fruit is canned to make it last longer.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

DIFFERENT LEVELS OF PROCESSING FOOD

1. If there has been a change in an animal or a plant from its natural habitat to where it is now (on a shop shelf, in the kitchen or on a plate), then that food has been processed.
2. **Minimally** processed foods, such as fruit, vegetables, nuts, meat and milk go through very little processing.
3. For example, a mielie needs to be harvested, washed and some of the outside leaves cut off before it is sold.
4. These products have a short **shelf-life**.
5. Highly processed foods usually have **additives** to make them last a long time.
6. Examples of highly processed foods are polony, vienna sausages, burgers, breakfast cereals, chips, and biscuits.
7. These products have a long shelf-life, but they have lost some of their nutritional value.

TOPIC: Food processing

2. Explain this to the learners as follows:
 - a. Foods that have been processed in a minimal way have a shorter **shelf-life** but they are nutritionally better.
 - b. Very little has been done to these products: they are normally harvested, washed and some of their leaves are cut off.
 - c. With highly processed foods, the final product does not look like the **original** product.
 - d. These processing techniques often break down any nutrient values.
 - e. The benefit is that they have a long shelf-life.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What is an example of a minimally processed food.
- b. What is an example of a highly processed food.

Answers to the checkpoint questions are as follows:

- a. Any of the following answers: any fruit, vegetable, nut, meat or milk is an appropriate answer.
- b. Any of the following answers: polony, vienna sausages, burgers, breakfast cereals, chips, biscuits (or any other food that has undergone many steps of processing from the raw product).

E

CONCEPTUAL DEVELOPMENT

1. Activity: Analysing processed food.

Write the following on the chalkboard (always try to do this before the lesson starts):

ANALYSING PROCESSED FOOD

1. Bring to the classroom different labels of processed food such as tinned food like sardines or tuna fish, fruit, jam; boxed food such as biscuits, long-life milk, fresh milk.
2. Draw a table to record the following the information.
3. The table must have the following heading: Food Product, Energy value, Additives, Shelf-life, Other.
4. Look at three labels and find the following information per 100g:
 - a. energy value of the food (kJ)
 - b. any additions to the food such as oil, sugar or salt (look at the ingredients on the label) and amount (under nutritional information in grams)
 - c. **shelf-life** (look at **sell-by-date**) and estimate how much time you have until the sell-by-date
 - d. any extra information.

TOPIC: Food processing

5. Answer the following questions:
- Which of these food products has the highest amount of salt (sodium) added?
 - Which of these food products has the highest amount of sugar added?
 - Which food product has the longest shelf-life (look at the sell-by-date)?
 - Which food product is the most highly processed?
 - Which food product has the most added vitamins and minerals?
 - Give three **advantages** of processed food.
 - What are the **disadvantages** of processed food?

2. A model answer:

ANALYSING PROCESSED FOOD

Food product	Energy value (kJ)	Additives (g) (mg)	Shelf-life	Other
Whole-wheat bread	974 kJ	sugar – 1,9g salt – 306mg	5 days	Added vitamins and minerals
Tinned tuna fish	980kJ		4 years	Added vegetable oil
Tinned butter beans	348kJ		3 years	-

- Tinned tuna fish has the highest amount of salt added.*
- Whole-wheat bread has the highest amount of sugar added.*
- Tinned tuna fish has the longest shelf-life.*
- Whole-wheat bread is the most processed as it has the most additives.*
- Whole-wheat bread has added vitamins and minerals.*
- Advantages of processed food are that the food can last a long time on the shelf, it is edible, and sometimes there is added nutritional value.*
- A disadvantage of processed food is that it loses some of its nutritional value.*

- Give learners time to complete this activity in their workbooks.
- Go over the answers with the learners. They will have different food products and different answers for the advantages and disadvantages but discuss with the class whether these answers are correct or not.

TOPIC: Food processing

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. What is an advantage of processed food?
- b. What is a disadvantage of processed food?

Answers to the checkpoint questions are as follows:

- a. An advantage of processed food is that it has a longer shelf-life than fresh food and so there is less wastage of food; it makes it edible; it adds nutritional value.
- b. A disadvantage of processed food is that it can lose some nutritional value.

5. Ask the learners if they have any questions and provide answers and explanations.

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Food processing	31-34
Viva	Food processing	34-35
Platinum	Food processing	28-30
Solutions for All	Food processing	44-48
Day-by-Day	Food processing	30-31
Oxford	Food processing	-
Spot On	Food processing	-
Top Class	Food processing	28-33
Sasol Inzalo Bk A	Food processing	58

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://e-classroom.co.za/download/grade-6-natural-science-technology-t1-food-processing-eng/> [Food processing]
2. http://www.woolworths.co.za/images/New_Site/Corporate/module_eng_natural_science.pdf [Food processing]

TOPIC: Food processing

6 C

Term 1, Week 6, Lesson C

Lesson Title: Preparing and cooking food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food processing		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • describe different ways to prepare food • describe different ways to cook food • identify foods that have been prepared and cooked. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓	
	2. UNDERSTANDING + CONNECTING IDEAS	✓	
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓	

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Food processing

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Examples of food to prepare	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

True or False: Minimally processed food has a short shelf-life.

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

True.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

PREPARING AND COOKING FOOD

1. We usually prepare and cook food to make it more edible.
2. Leaves and skins are cut-off vegetables and then sliced or chopped.
3. Meat is prepared by cutting off inedible parts and cutting it into smaller pieces.
4. Nuts should be **shelled** first before being roasted.
5. Some foods cannot be eaten raw, such as potatoes and eggs.
6. Cooking these foods destroys harmful **micro-organisms** and **parasites**.
7. There are many different cooking methods that make the same food taste different.
8. For example, potatoes can be boiled, fried (chips) or roasted.
9. Other ways to cook food are baking, steaming, and stewing.

2. Explain this to the learners as follows:
 - a. Food needs to be prepared to make it more edible.
 - b. Meat and vegetables are prepared.
 - c. After preparation, food is then cooked.
 - d. Cooking makes the food easier to **digest**.
 - e. It also changes the taste of the food.
3. Give learners time to copy this information into their workbooks.

TOPIC: Food processing

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Name two different ways to cook potatoes.
- b. How are nuts prepared before roasting?

Answers to the checkpoint questions are as follows:

- a. Either two of the following: roasting, frying, boiling
- b. Nuts are shelled before roasting.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Match the different ways of cooking.

Write the following on the chalkboard (always try to do this before the lesson starts):

ACTIVITY: MATCH THE WORD TO THE COOKING METHOD

Word	Cooking method
boiling	To oven-cook food in an uncovered pan at a high heat
roasting	To boil water changing it to steam which then carries the heat to the nearby food
stewing	To cook food in hot fat or oil over medium to high heat
frying	To cook in an oven without any added liquid, like a cake
baking	To cook food in a boiling liquid
steaming	To boil slowly over a low heat; usually a combination of meat and vegetables

2. Explain the following to the learners:
 - a. The left column consists of 'cooking' words.
 - b. The right column has definitions of the cooking words.
 - c. Match the word with the correct definition.
 - d. Write the word, then the correct definition next to it.
3. Give the learners time to complete this activity.
4. When they have completed the activity, learners must compare their answers with a partner.
5. Discuss the answers with the class.

TOPIC: Food processing

6. A model answer:

ACTIVITY: MATCH THE WORD TO THE COOKING METHOD

Word	Cooking method
<i>boiling</i>	<i>To cook food in a boiling liquid</i>
<i>roasting</i>	<i>To oven-cook food in an uncovered pan at a high heat</i>
<i>stewing</i>	<i>To boil slowly over a low heat; usually a combination of meat and vegetables</i>
<i>frying</i>	<i>To cook food in hot fat or oil over medium to high heat</i>
<i>baking</i>	<i>To cook in an oven without any added liquid, like a cake</i>
<i>steaming</i>	<i>To boil water changing it to steam, the steam carries the heat to the nearby food</i>

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. What is meant by frying?
- b. What word do we use to describe the cooking method where food is cooked in a boiling liquid?

Answers to the checkpoint questions are as follows:

- a. Frying is cooking food in fat or oil at a high temperature.
- b. Boiling is used to describe the method where food is cooked in a boiling liquid.

7. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Food processing

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Food processing	35
Viva	Food processing	30
Platinum	Food processing	31
Solutions for All	Food processing	44
Day-by-Day	Food processing	32
Oxford	Food processing	32
Spot On	Food processing	-
Top Class	Food processing	28-29
Sasol Inzalo Bk A	Food processing	-

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/EQJPoS> [Methods for processing]
2. <https://goo.gl/H99F5t> (3min 18sec) [Easy snack foods for kids]

7 A

Term 1, Week 7, Lesson A

Lesson Title: Preserving food

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Food processing		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe the need for preserving food describe different methods of food preservation. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations	✓	16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations	✓	17. Communicating	✓
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Food processing

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
at home: cutting board, knife, wire rack, clean dishcloth, piece of fruit	
evaluation table (conceptual development)	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is stewing?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Stewing is a cooking method where food, usually meat and vegetables, is placed in boiling liquid and cooked over a low heat.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

PRESERVING FOOD

1. Food does not last long.
2. Treating food to make it last longer is called preservation.
3. Pickling, salting, freezing and drying are food preservation methods.
4. Pickled food is food preserved in salt water or vinegar.
5. Gherkins and onions are examples of pickled food.
6. Micro-organisms cannot survive in salt.
7. Meat and fish are dried with plenty of salt to make biltong and bokkoms (dried fish).
8. Salt dries food out as it absorbs water.
9. Frozen food stops micro-organisms from growing as micro-organisms cannot survive in cold temperatures.
10. Frozen food can be stored for long periods of time.
11. Vegetables and meat can be frozen.
12. When food is dried, water is removed from it.
13. Raisins and pasta are examples of dried food.

TOPIC: Food processing

2. Explain this to the learners as follows:
 - a. Preserving food makes it last longer.
 - b. Four methods of preserving food are pickling, salting, freezing and drying.
 - c. Salt is one of the oldest methods of preserving food.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Name four ways of preserving food.
- b. What is pickled food preserved in?

Answers to the checkpoint questions are as follows:

- a. Pickling, salting, freezing and drying are four ways of preserving food.
- b. Pickled food is preserved in salt water or vinegar.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Drying Fruit (do this at home)

DRYING FRUIT

You will need:

- a wire rack
- a cutting board or plate
- a clean dishcloth
- a knife
- fruit
- jar or packet

What you need to do:

1. Wash your hands before you work with food.
2. Use a cutting board, knife and fruit.
3. Carefully cut up the fruit into slices on the cutting board.
4. Use the knife carefully, holding it carefully.
5. Put the slices on the wire rack leaving spaces between the slices.
6. Cover the fruit with a clean dishcloth to protect the fruit from birds and insects.
7. Place the wire rack in a sunny spot for 2 - 4 days.
8. Once the fruit is dry, put the slices in a sealed jar or packet.

Hint: If you have fruit that goes brown quickly, squeeze some lemon juice onto the fruit.

TOPIC: Food processing

2. Explain the following to the learners:
 - a. Learners must read through the list of ingredients and the method before starting.
 - b. Fruit such as apples and bananas goes brown quickly when they come into contact with oxygen; squeezing lemon juice onto them stops this.
 - c. The fruit must be cut up into thin slices.
 - d. This activity should be done at home.
 - e. Learners should bring their dried fruit to school for the next activity.






3. Activity: A Tasting Test

This activity must be done five or so days after you have gone over the previous activity. Learners must bring their dried fruit to school. You might need to carry on with the next lesson and come back to this activity when the fruit has had a chance to dry.

Write the following on the chalkboard (always try to do this before the lesson starts):

ACTIVITY: A TASTING TEST

1. Get five people to sit at a table.
2. Label six or so samples of dried fruit with the letters of the alphabet.
3. The teacher will keep a record of which pupil has been allocated which letter.
4. The tasting panel (the five people) will look at the taste, smell, colour and appearance of the dried fruit.
5. Tasters should have a sip of water between each tasting.
6. Tasters must not talk to each other.
7. Tasters must record their scores on an evaluation sheet.
8. Tasters must use the following ranking to score each sample:

Score 5	Score 4	Score 3	Score 2	Score 1
				
Like very much	Like	Don't like or dislike	Dislike	Dislike very much

9. The tasters must use the following table to keep a record of each sample scored. Each sample will get a score out of 20.

TOPIC: Food processing

Sample	Taste	Smell	Colour	Look	Total
A					
B					
C					
D					
E					
F					

10. Present the top five results to the class.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. What type of preservation method do raisins go through?
- b. What is pickled food preserved in?

Answers to the checkpoint questions are as follows:

- a. Drying. Raisins are dried grapes.
- b. Pickled food is preserved in vinegar or salt water.

4. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Food processing

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Food processing	35-36
Viva	Food processing	30-31
Platinum	Food processing	32
Solutions for All	Food processing	45
Day-by-Day	Food processing	32
Oxford	Food processing	33
Spot On	Food processing	15
Top Class	Food processing	32-35
Sasol Inzalo Bk A	Food processing	-

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/v7kH6P> (9min 36sec) [Learn science: needs and benefits of food preservation]
2. <https://goo.gl/7EjkCp> [3 simple food preservation methods]

7 B

Term 1, Week 7, Lesson B

Lesson Title: Fermenting food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food processing		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe the need for fermented food describe food that has been fermented. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Food processing

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 17: Food products made from yeast	
Resource 18: Food products made from yeast	
Resource 19: Preparing fermented milk to make cheese	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What does it mean to preserve food?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Preserving food means food is treated so that it can last longer.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

FERMENTATION

1. Fermentation is a method of food processing that uses yeast or bacteria.
2. Yeast is a micro-organism that multiplies as it feeds on sugar in the food.
3. It only ferments in warm conditions.
4. The bacteria that is used in fermentation is good bacteria.
5. The yeast and bacteria add nutritional value to the food in the form of Vitamin B.
6. Fermentation partly **digests** the food.
7. Yoghurt, amasi (fermented milk), ginger beer and sorghum beer are all made by fermentation.
8. Any food that is left for a time will ferment as there is yeast in the air.
9. Cheese, chocolate and coffee go through a short fermentation process.

TOPIC: Food processing

2. Explain this to the learners as follows:
 - a. Fermentation is one of the oldest methods of food processing.
 - b. The yeast in the air causes the food to become more **acidic** which preserves it.
 - c. Many foods go through a fermentation process.
 - d. Show the learners Resource 17 and Resource 18: Food products made from yeast.
 - e. Cheese, yoghurt, chocolate and bread are examples of fermented foods.
 - f. Show the learners Resource 19: Preparing fermented milk to make cheese.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Name four foods made from the fermentation process.
- b. Which vitamin is increased through fermentation?

Answers to the checkpoint questions are as follows:

- a. Chocolate, bread, cheese and yoghurt are fermented foods. (Or any other fermented foods can be given.)
- b. Vitamin B levels are increased through the process of fermentation.

E

CONCEPTUAL DEVELOPMENT

1. Write the following on the chalkboard (always try to do this before the lesson starts):

MORE ABOUT FERMENTATION

1. Fermentation makes foods go sour.
2. The longer the fermentation process, the more sour the food tastes.
3. Grains soaked overnight and left to ferment for days are used to make sour-dough bread.
4. The fermentation causes bubbles which make the dough rise.
5. This makes small holes in the bread when it is cooked.
6. Fermenting food is very useful as it:
 - improves our diet by making different flavours, smells and textures of food
 - it is a low-cost method of preserving food
 - it improves the nutritional value by adding Vitamin B to the food
 - reduces the cooking time.

TOPIC: Food processing

2. Explain the following to the learners:
 - a. Fermentation makes food taste sour according to the time that it is fermented.
 - b. There are many benefits to fermentation.
3. Read through the information on the chalkboard. Make sure the learners understand what is written on the chalkboard.
4. Give the learners time to copy the information on the chalkboard into their workbooks.
5. Activity: The benefits of fermentation

Write the following on the chalkboard (always try to do this before the lesson starts):

THE BENEFITS OF FERMENTATION

Choose the correct word from the list to complete the following sentences (underline the chosen word): cooking time, useful, Vitamin B, nutritional, Yoghurt:

1. Fermenting food is very ____.
2. Fermented food needs less ____.
3. Fermentation improves the ____ value of the food.
4. ____ is an example of a fermented food.
5. ____ levels are increased by fermentation.

6. A model answer

THE BENEFITS OF FERMENTATION

1. *Fermenting food is very useful.*
2. *Fermented food needs less cooking time.*
3. *Fermentation improves the nutritional value of the food.*
4. *Yoghurt is an example of a fermented food.*
5. *Vitamin B levels are increased by fermentation.*

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. True or False: Yeast is a micro-organism.
- b. True or False: Chocolate is a fermented food.

Answers to the checkpoint questions are as follows:

- a. True.
- b. True.

7. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Food processing

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Food processing	-
Viva	Food processing	35-36
Platinum	Food processing	32
Solutions for All	Food processing	45-47
Day-by-Day	Food processing	34-35
Oxford	Food processing	34
Spot On	Food processing	-
Top Class	Food processing	35-36
Sasol Inzalo Bk A	Food processing	69-70

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/SohCmZ> [Fermented food recipes]
2. <https://goo.gl/HQeqah> [6 Fermented food terms you should know]

7 C

Term 1, Week 7, Lesson C

Lesson Title: Traditional ways of processing food

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food processing		
CAPS Page Number	49		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe traditional foods that have been fermented develop a flow chart for a recipe. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Food processing

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 20: A traditional Xhosa beer pot	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What two micro-organisms does food need in order to ferment?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Yeast and bacteria are the micro-organisms needed for fermentation.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

TRADITIONAL WAYS OF PROCESSING FOOD

1. Food fermentation is one of the oldest ways of processing food.
2. One-third of the diet world-wide is based on a fermentation process.
3. Fermented foods are very traditional.
4. In South Africa, the Xhosa peoples ferment sorghum to make utshwala, a beer brewed in clay pots.
5. Amasi is soured milk and it is very nutritious.
6. The Indian community make a pickled vegetable dish called achar.
7. Many cultures have developed their own cheeses from fermented milk.
8. Many cultures have their own traditional bread as well.

2. Explain this to the learners as follows:
 - a. Fermented food is eaten around the world every day.
 - b. Many traditional foods are fermented.
 - c. Show learners Resource 20: 'A traditional Xhosa beer pot'.
 - d. Some of the items used to make the traditional foods are traditional too, like the Xhosa beer pot. South Africa has many indigenous plants and animals.

TOPIC: Food processing

3. Read through what is written on the chalkboard and make sure that the learners understand the information.
4. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. What is achar?
- b. What grain is used to make traditional beer in the Xhosa culture?

Answers to the checkpoint questions are as follows:

- a. Achar is a spicy, pickled vegetable fermented food.
- b. Sorghum is used to make traditional Xhosa beer.

E

CONCEPTUAL DEVELOPMENT

1. Activity: A recipe for umngqusho (a Xhosa dish made of various ingredients)

Write the following on the chalkboard (always try to do this before the lesson starts):

RECIPE FOR UMNGQUSHO

This is a traditional Xhosa food.

Ingredients:

mielies, samp, beans, butter, onions, chillies, lemons, salt, oil

What to do:

To make this dish, the mielies must be dried, broken and mixed with beans.

This is added to samp and boiled for three hours.

Fry onions and chillies in oil.

Then add butter, onions, potatoes, chillies, lemons, salt and oil to the mielie, bean and samp mixture.

Simmer at a low temperature until all the ingredients are tender.

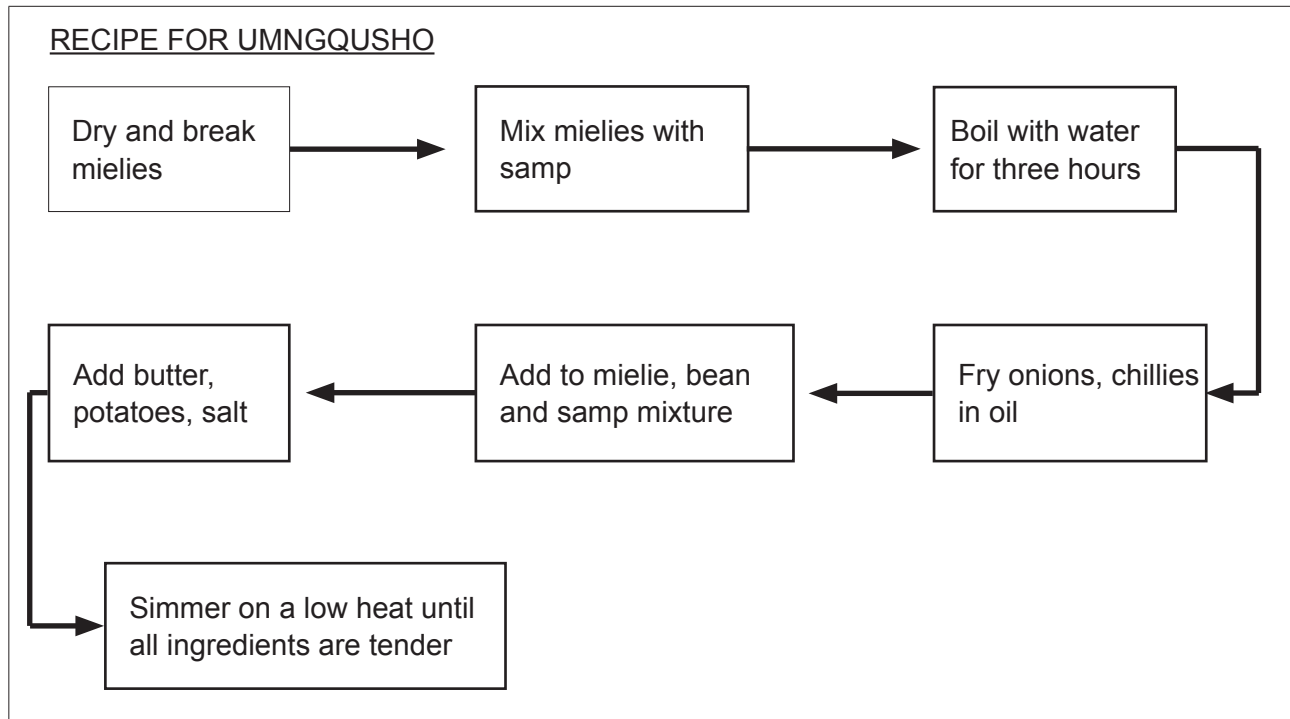
ACTIVITY

Draw a flow chart to show how to make umngqusho step-by-step. The first step has been done for you.



TOPIC: Food processing

2. Explain the following to the learners:
 - a. Read through the information on the chalkboard.
 - b. Take the ingredients and the information on what you have to do, and write this as a flow chart, showing each step.
3. A model answer (flow charts may vary slightly):



Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. From which culture does 'umngqusho' come?
- b. What are the three main ingredients of umngqusho?

Answers to the checkpoint questions are as follows:

- a. Umngqusho is from the Xhosa culture.
- b. Mielies, samp and beans are the three main ingredients for umngqusho.

4. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Food processing

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Food processing	-
Viva	Food processing	35-36
Platinum	Food processing	32
Solutions for All	Food processing	45-47
Day-by-Day	Food processing	34-35
Oxford	Food processing	34
Spot On	Food processing	-
Top Class	Food processing	35-36
Sasol Inzalo Bk A	Food processing	69-70

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/xGRb9V> [5 Ingredients to the perfect Umnqombothi]
2. <https://goo.gl/LvrZLX> [Samp and beans recipe]

TOPIC OVERVIEW:

Ecosystems and Food webs

Term 1, Weeks 8A – 9C

A. TOPIC OVERVIEW

Term 1, Weeks 8a – 9c

- This topic runs for 2 weeks.
- It is presented over 6 lessons.
- This topic's position in the term is as follows:

LESSON	WEEK 1			WEEK 2			WEEK 3			WEEK 4			WEEK 5		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C

LESSON	WEEK 6			WEEK 7			WEEK 8			WEEK 9			WEEK 10		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C

B. SEQUENTIAL TABLE

GRADE 4 & 5	GRADE 6	GRADE 7 & 8
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Living and non-living things and the seven life processes; the basic structures of plants and animals and visible differences; what plants need to grow and the right conditions; different habitats of animals and the need for a habitat; plants and animals on Earth and inter-dependence; food chains and feeding relationships; life cycles and growth and development. 	<ul style="list-style-type: none"> • Ecosystems and food webs; different ecosystems; living and non-living things; food webs and chains. 	<ul style="list-style-type: none"> • Ecosystems and the biological community and networks; feeding relationships – producers and consumers; energy flow: food chains and food webs; balance in an ecosystem including human and natural factors; conservation and management of the ecosystem • Biodiversity of animals and plants.

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

Ensure that you teach the following vocabulary at the appropriate place in the topic:

	TERM	EXPLANATION
1.	interact	Where two or more things react to each other
2.	micro-organisms	These are bacteria and fungi that feed on plants and animals. They break down the bodies of dead things into nutrients which are released into the soil. Plants take these nutrients from the soil.
3.	depend	To rely on, to be able to trust.
4.	coast	The part of the land near the sea
5.	high tide	When the sea is at its highest level on the beach
6.	oysters and mussels	Animals with shells that live on the rocks on the coast
7.	stagnant	Water that does not move; it stands still
8.	swamps	An area of low-lying ground where water collects and is stagnant
9.	coral reef	An underwater ecosystem held together by whitish structures
10.	cling	Hold onto tightly
11.	flamingos	Pink water birds with long legs
12.	relationship	A connection between things
13.	observe	Look very carefully

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

Understanding the inter-connectedness of animals and plants is vital for survival. Animals depend on plants for their existence. A food web helps us understand the relationships between plants and animals.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

Date completed:

Lesson successes:

Lesson challenges:

Notes for future improvement:

TOPIC: Ecosystems and Food webs

8 A

Term 1, Week 8, Lesson A

Lesson Title: Ecosystems and what they are

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Different ecosystems		
CAPS Page Number	50		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • describe different ecosystems • see the relationships between living and non-living things.. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing	✓	8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing	✓	15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

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B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resources 21-24: iSimangaliso Wetland Park, KwaZulu-Natal	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is an example of a non-living thing.

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Any of the following: water, air, sunlight, soil

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

ECOSYSTEMS

1. A system is made up of different parts that work together.
2. If one of the parts is missing then the system does not work well.
3. An ecosystem is made up of living and non-living things.
4. The living and non-living things **interact** with each other in different ways.
5. Living and non-living things **depend** on each other.
6. An ecosystem can be small like a puddle of water or it can be big like a desert.
7. The living things include plants, animals, and **micro-organisms**.
8. The non-living things include air, water, sunlight and soil.
9. For plants and animals to survive in an ecosystem there must be enough air, water, food and suitable shelters or habitats.

2. Explain the following to the learners:
 - a. A system is used to describe different parts that work together.
 - b. In an ecosystem, the living and non-living things interact with each other.
 - c. Micro-organisms are living things that are so small that you do not see them, such as bacteria and fungi.

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3. Read through the information on the chalkboard and make sure that the learners understand the information.
4. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Why is an ecosystem a type of system?
- b. What are the non-living things in an ecosystem?

Answers to the checkpoint questions are as follows:

- a. An ecosystem is made up of many parts that interact with one another.
- b. Air, water, soil and sunlight are the non-living things in an ecosystem.

E CONCEPTUAL DEVELOPMENT

1. Activity: Understanding ecosystems.

Write the following on the chalkboard (always try to do this before the lesson starts):

UNDERSTANDING ECOSYSTEMS

Answer the following questions, then discuss your answers with a partner.

1. Explain what an ecosystem is.
2. Explain why an ecosystem is a system.
3. What would happen to an ecosystem if the water were removed?
4. Look at the photograph of a wetland area in the iSimangaliso Wetland Park, KZN.
 - a. What living things can you see in this photograph?
 - b. What non-living things can you see in this photograph?

2. Explain the following to the learners:
 - a. Learners must write their answers in their workbook after writing down the heading. They must get their answers from the information they have previously written down.
 - b. When they have completed their answers, they must work with a partner and compare their answers.
 - c. Learners must change their answers if they need to correct them.
 - d. When this is complete, go through the answers with the learners and have a class discussion on some of the answers.

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3. A model answer:

UNDERSTANDING ECOSYSTEMS

1. *An ecosystem is made up of living and non-living things that interact with each other in different ways.*
2. *An ecosystem is a system as it is made up of different parts that work together.*
3. *If water was removed from an ecosystem, then plants would not grow to feed animals and animals would not survive.*
4. *a. Plants and trees are the living things.
b. Water, air, sunlight and soil are the non-living things.*

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Give an example of a living thing you would find in a wetland ecosystem.
- b. Give an example of a non-living thing you would find in a wetland ecosystem.

Answers to the checkpoint questions are as follows:

- a. Either answer: any plants or animals.
- b. One of the following: water, air, soil, sunlight.

4. Ask the learners if they have any questions and provide answers and explanations.

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F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Ecosystems and Food webs	40
Viva	Ecosystems and Food webs	42
Platinum	Ecosystems and Food webs	39-40
Solutions for All	Ecosystems and Food webs	67
Day-by-Day	Ecosystems and Food webs	42-43
Oxford	Ecosystems and Food webs	36
Spot On	Ecosystems and Food webs	18
Top Class	Ecosystems and Food webs	40-41
Sasol Inzalo Bk A	Ecosystems and Food webs	78

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/3D8cji> (1min 22sec) [What is an ecosystem?]
2. <https://goo.gl/1Xb6ct> (3min 28sec) [Ecosystems]
3. <https://goo.gl/AVWF94> (1min 6sec) [The Ecosystem]

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8 B

Term 1, Week 8, Lesson B

Lesson Title: Different ecosystems: rivers, sea, rocky shore, ponds, wetlands

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Different ecosystems		
CAPS Page Number	50		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • describe different ecosystems • identify at least two living things that are found in that ecosystem. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing	✓	8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

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B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 25: A river ecosystem	
Resource 26: A humpback whale	
Resource 27: Mussels clinging to a rock	
Resource 28: A pond ecosystem	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is an ecosystem?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

An ecosystem is made up of living and non-living things that interact and depend on one another in different ways.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

DIFFERENT ECOSYSTEMS

1. Ecosystems can be different as they have different non-living parts.
2. They have different soils, rainfall and temperature.
3. This affects the survival of living things in that ecosystem.

RIVER ECOSYSTEMS

1. In rivers, plants and animals are adapted to live in moving water.
2. Animals that live in a river ecosystem live in or near fresh water.
3. Examples are carp (fish) and kingfishers (birds).
4. Many insects and frogs will live near fresh water.

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SEA ECOSYSTEMS

1. Animals that live in the sea are adapted to live in salt water.
2. There are many different plants that live in the sea.
3. Many sea animals eat kelp, which is a type of seaweed.
4. Whales, seals, penguins, sharks, dolphins and many types of fish live in the sea.
5. The humpback whale is very big – it weighs 36 000 kg!
6. Whales eat very small sea creatures called plankton.

ROCKY SHORE ECOSYSTEMS

1. Along the **coast**, there will be big rocks between the land and the sea.
2. At **high tide**, the sea will cover some of the rocks.
3. **Oysters** and **mussels** will **cling** to the rocks.
4. Seaweed clings to rocks as well.

PONDS

1. Animals and plants found in ponds are similar to those found in rivers.
2. Ponds have **stagnant** water so more animals and plants can survive there compared to rivers.
3. Insects lay their eggs in and around ponds.
4. Frogs and fish eat these insects.

WETLANDS

1. Wetlands are areas where water covers the soil, or it is close to the surface of the soil for most of the year.
2. Many kinds of plants and animals live in wetlands.
3. A wetland has good biodiversity and many different habitats.
4. The iSimangaliso Wetland Park in KZN has 530 different types of birds.
5. There are 60 000 **flamingos** in the park and 36 different types of duck.
6. It has **swamps**, beaches, **coral reefs**, woodlands and forests.

2. Explain and discuss the following with the learners:
 - a. Remind learners that a habitat is an area in which an animal or plant lives.
 - b. An ecosystem will have many different habitats in it.
 - c. Show learners Resource 25: A river ecosystem.
 - d. This river is the Chobe River in Botswana.

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- d. Point out the hippos and all the plants that live there.
 - e. In a river ecosystem, plants will have soft stems and leaves that allow them to move with the water.
 - f. Crabs will live on the bottom in the mud.
 - g. Read through the information on River Ecosystems on the chalkboard.
 - h. Make sure the learners understand the information.
 - i. In the sea, the seaweed and animals have all adapted to living and breathing under water.
 - j. Show learners Resource 26: A humpback whale.
 - k. A humpback whale eats plankton which are tiny creatures that live in the sea.
 - l. A whale weighs 36 000 kg and so it must eat lots of plankton.
 - m. Read through the information on Sea Ecosystems on the chalkboard.
 - n. Make sure the learners understand the information.
4. Give learners time to copy this information on Different Ecosystems, River Ecosystems and Sea Ecosystems into their workbooks.
5. Explain the following to the learners:
- a. Show learners Resource 27: Mussels clinging to rocks.
 - b. Tell the learners that mussels are animals with a shell.
 - c. They cling to rocks.
 - d. In a rocky shore ecosystem, the conditions change every six hours because of the tides going in and out.
 - e. At high tide, the animals and plants are covered by moving, salty water and at low tide they are exposed to warm air.
 - f. Show learners Resource 28: A pond ecosystem.
 - g. Read out the names of all the animals and plants that live in a pond ecosystem.
 - h. Ask the learners if they can work out the name of the plants in this ecosystem. Duck, potato and water lily.
 - i. There are many insects and small animals that live in a pond ecosystem.
 - j. Show learners Resource 21: iSimangaliso Wetland Park.
 - k. Many different birds, animals and plants live in a wetland ecosystem.
 - l. Read through the information on rocky shore ecosystems, pond ecosystems and wetland ecosystems.
 - m. Make sure the learners understand the information.
6. Give learners time to copy the information on rocky shore ecosystems, pond ecosystems and wetland ecosystems into their workbooks.

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Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

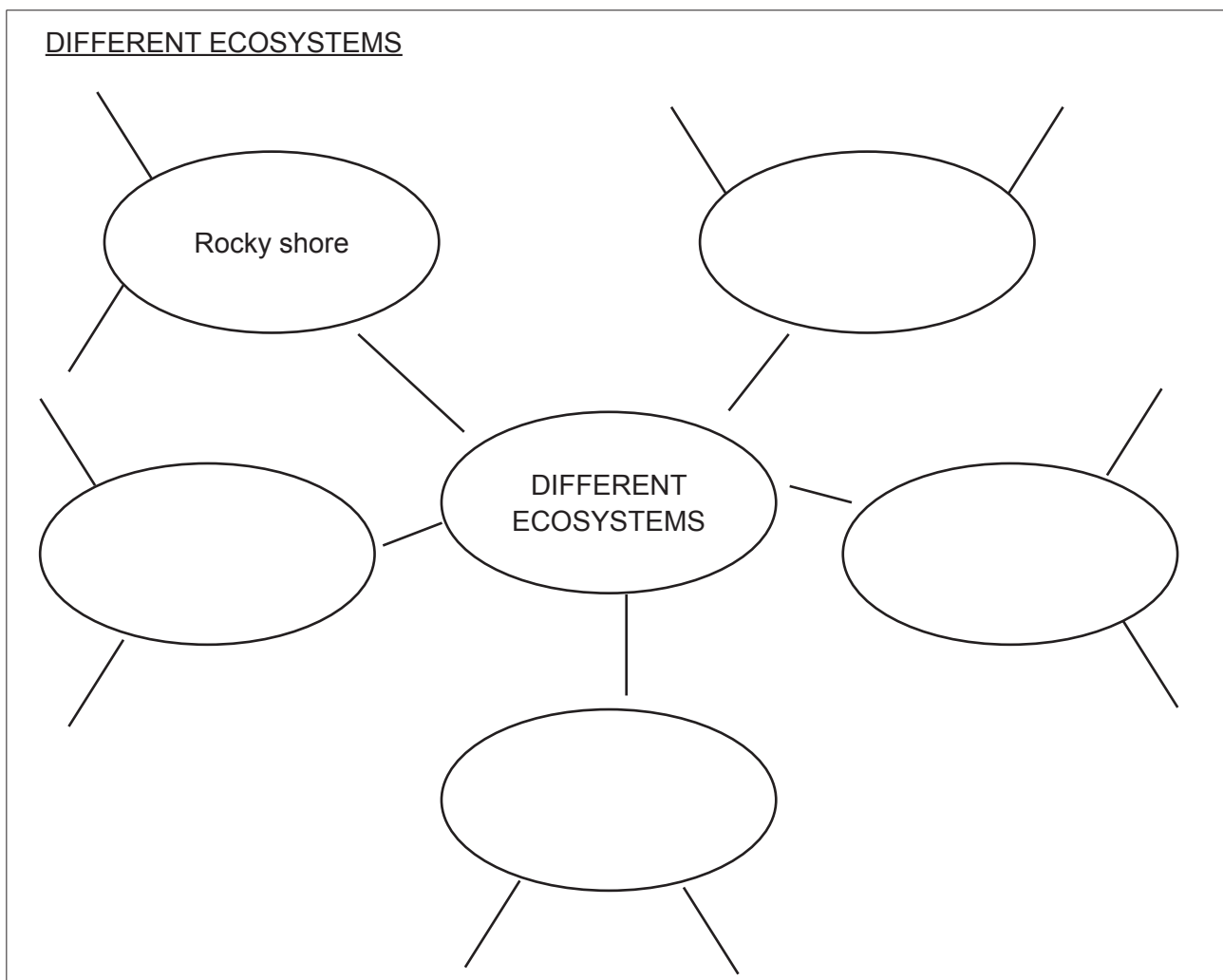
- a. What type of water is in a river ecosystem?
- b. What type of water is in a pond ecosystem?

Answers to the checkpoint questions are as follows:

- a. A river has moving, fresh water.
- b. A pond has stagnant, fresh water.

E CONCEPTUAL DEVELOPMENT

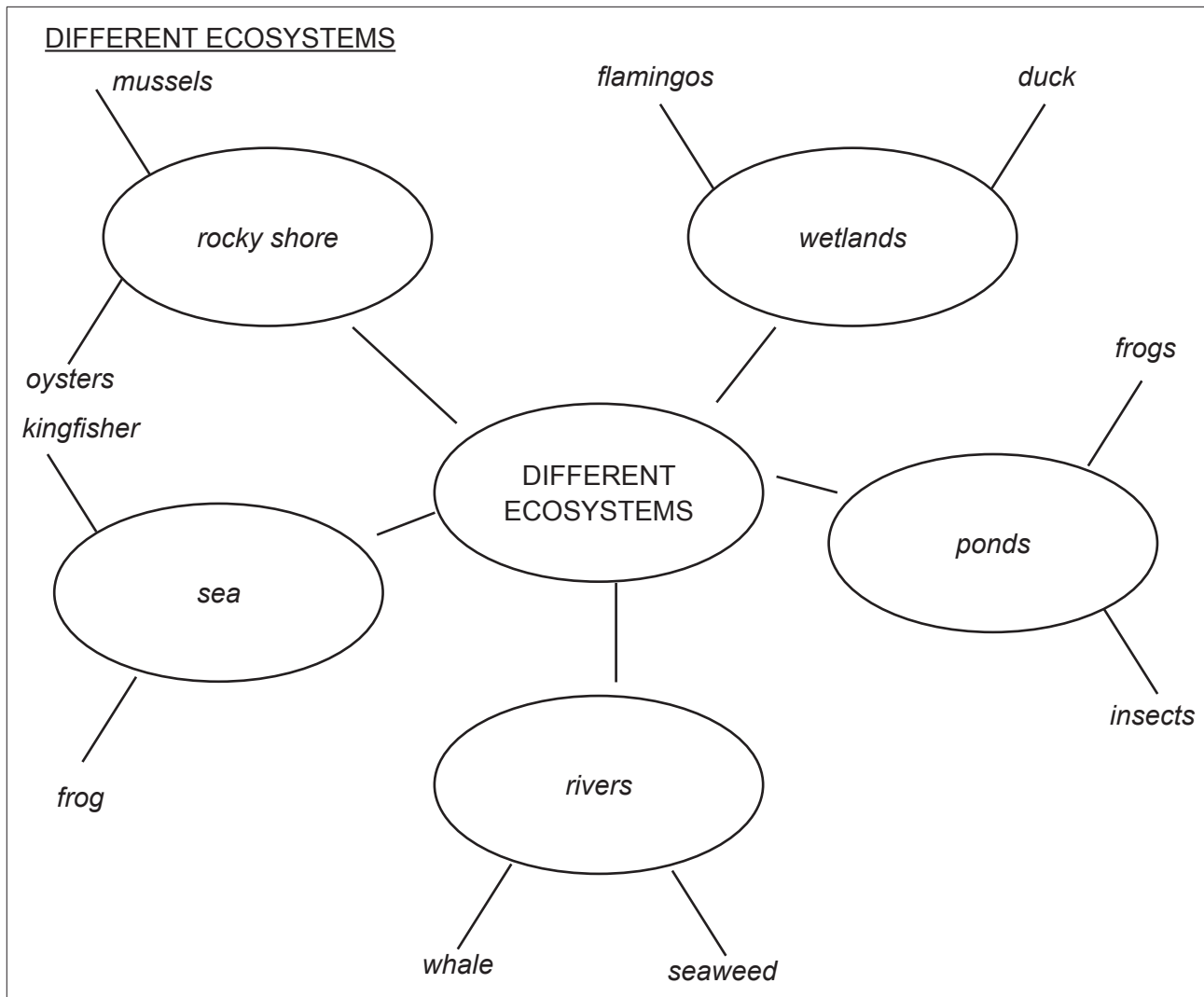
1. Draw the following on the chalkboard (always try to do this before the lesson starts):



2. Explain the following to the learners:
 - a. Learners must draw the diagram on the chalkboard into their workbooks.
 - b. In the five circles around the central circle, they must fill in the five different ecosystems they have learnt about.
 - c. The learners must then fill in at least two living things that live in that ecosystem.

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3. Give learners time to finish this activity in their workbooks.
4. A model answer (answers may vary):



Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. What is the name of a bird that lives in a wetland ecosystem?
- b. In what ecosystem does a whale live?

Answers to the checkpoint questions are as follows:

- a. Flamingos live in wetland ecosystems.
- b. A whale lives in a sea ecosystem.

5. Ask the learners if they have any questions and provide answers and explanations.

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F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Ecosystems and Food webs	40-47
Viva	Ecosystems and Food webs	42-45
Platinum	Ecosystems and Food webs	40-44
Solutions for All	Ecosystems and Food webs	67-74
Day-by-Day	Ecosystems and Food webs	43-46
Oxford	Ecosystems and Food webs	37-39
Spot On	Ecosystems and Food webs	19-23
Top Class	Ecosystems and Food webs	41-47
Sasol Inzalo Bk A	Ecosystems and Food webs	78-81

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/Mk3Uv4> [Pond ecosystem lesson plan]
2. <https://goo.gl/u2e6bU> (8min 23sec) [Pond ecosystem for kids]
3. <https://www.nationalgeographic.org/media/rocky-shore-ecosystem/> [Rocky shore ecosystem – National Geographic]
4. <https://goo.gl/pyxaYp> (6min 50sec) [Fabulous wetlands with Bill Nye]

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8 C

Term 1, Week 8, Lesson C

Lesson Title: Different ecosystems: mountains, grasslands, forests, deserts

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Different ecosystems	
CAPS Page Number	50	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • describe the different ecosystems • identify at least two living things in that ecosystem. 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	
2. Observing		8. Predicting		14. Designing	✓
3. Comparing		9. Hypothesizing	✓	15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information			

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B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 29: A mountain ecosystem	
Resource 30: A desert ecosystem	
Resource 31: A grassland ecosystem	
Resource 32: A forest ecosystem	
A pencil, a notebook or piece of paper, a magnifying glass, if you have one	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

In what ecosystem does kelp, a type of seaweed, live and grow?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

Kelp lives in a sea ecosystem.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

MOUNTAIN ECOSYSTEMS

1. On high mountains, animals and plants are adapted to living in cold conditions.
2. The plants are small and have hard leaves, like a fern.
3. Animals that live on mountains can either fly or they are good at climbing.
4. These animals can survive in cold weather during winter.
5. The duiker and vulture can be found on mountains.

DESERT ECOSYSTEMS

1. There is little or no rain in a desert ecosystem.
2. Few plants and animals can live in a desert.
3. They survive on very little water.

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4. There is very little biodiversity in a desert ecosystem.
5. The scorpion and the gemsbok live in this ecosystem.

GRASSLAND ECOSYSTEMS

1. Grasslands consist of many different types of grasses and a few trees.
2. This ecosystem is hot and wet in summer and cold and dry in winter.
3. Animals are suited to live in both these conditions.
4. Zebra, elephant and termites live in grassland ecosystems.

FOREST ECOSYSTEMS

1. A forest is very shady.
2. Young trees must grow quickly to reach the sunlight.
3. Monkeys have long arms and tails so they can swing from tree to tree.
4. Green mambas like to live in forest ecosystems.

2. Explain this to the learners as follows:
 - a. Show learners Resource 29: A mountain ecosystem.
 - b. Read through the information on mountain ecosystems on the chalkboard.
 - c. Make sure the learners understand the information.
 - d. Show learners Resource 30: 'A desert ecosystem.
 - e. Read through the information on desert ecosystems on the chalkboard.
 - f. Make sure the learners understand the information.
 - g. Show learners Resource 31: A grassland ecosystem.
 - h. Read through the information on a grassland ecosystem on the chalkboard.
 - i. Make sure the learners understand the information.
 - j. Show learners Resource 32: A forest ecosystem.
 - k. Read through the information on the chalkboard.
 - l. Make sure the learners understand the information.
3. Give learners time to copy this information into their workbooks.

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Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

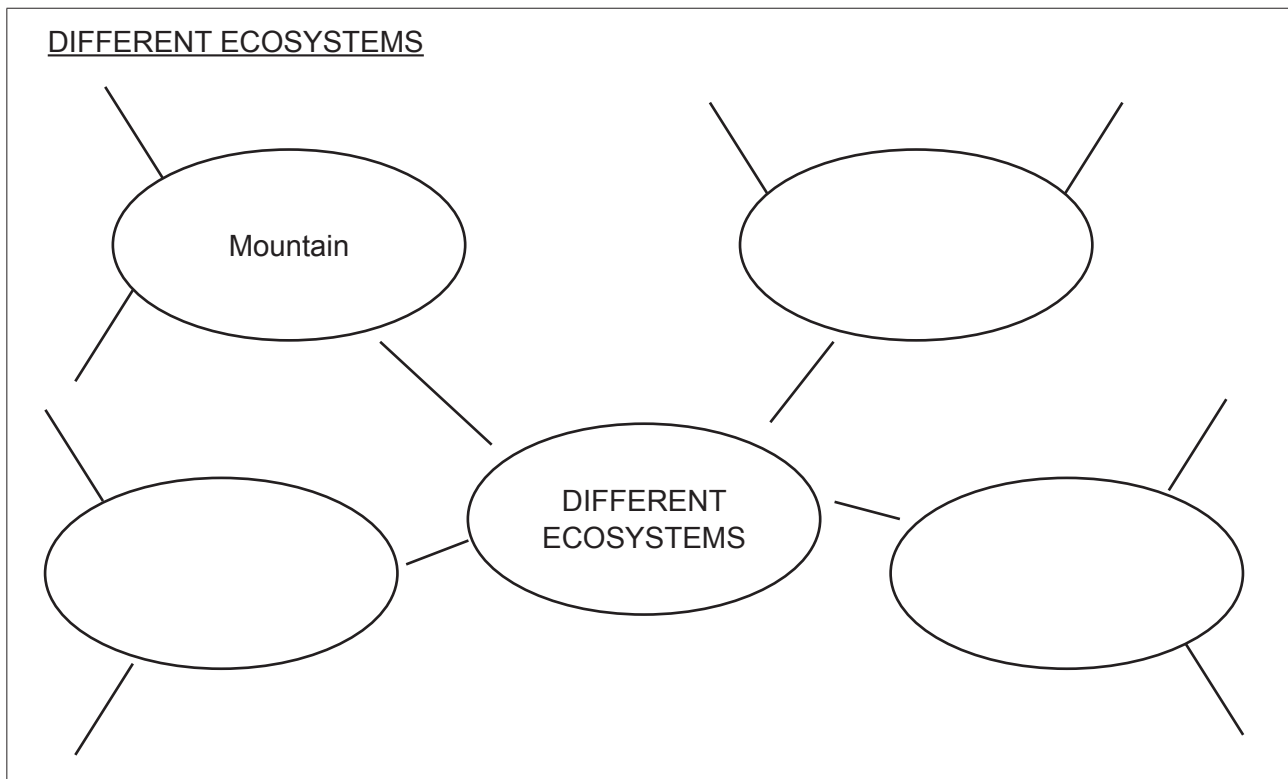
- a. Why can few plants or animals survive in a desert ecosystem?
- b. What do plants' leaves look like in a mountain ecosystem?

Answers to the checkpoint questions are as follows:

- a. There is very little water for animals or plants to survive.
- b. Plants have small, hard leaves in a mountain ecosystem.

E CONCEPTUAL DEVELOPMENT

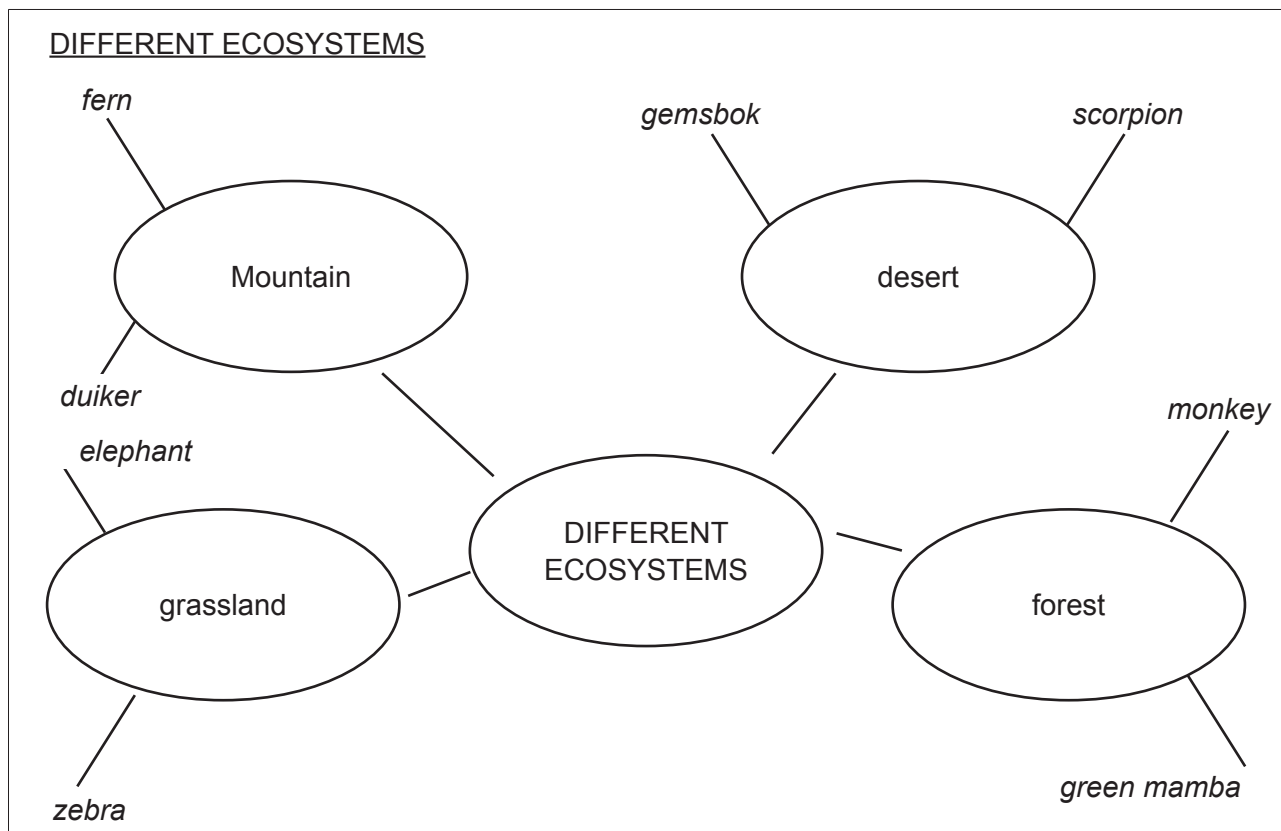
1. Draw the following on the chalkboard (always try to do this before the lesson starts):



2. Explain the following to the learners:
 - a. Learners must draw the diagram on the chalkboard into their workbooks.
 - b. In the four circles around the central circle, they must fill in the four different ecosystems they have learnt about in this lesson.
 - c. The learners must then fill in at least two living things that live in that ecosystem.
3. Give learners time to finish this activity in their workbooks.
4. A model answer (answers may vary):

E CONCEPTUAL DEVELOPMENT

1. Draw the following on the chalkboard (always try to do this before the lesson starts):



5. Activity: Study an ecosystem

Write the following on the chalkboard (always try to do this before the lesson starts):

STUDYING AN ECOSYSTEM

You will need:

A pencil, a notebook or piece of paper, a magnifying glass, if you have one.

You will:

1. Select part of an ecosystem in or near the school grounds. Make sure your teacher knows where you are going.
2. Measure a square area 5m by 5m (take five big steps for each side of the square). Put a stone at each corner.
3. Find, and then draw three different plants in this area. Name the plants if you can, otherwise use a descriptive name like 'pink flower plant'.
4. Find, and then draw three different animals in this area. Name the animals if you can, otherwise use a descriptive name like 'long, thin worm'.
5. Use a magnifying glass to look at small plants and animals.

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6. **Observe** your marked area for 15 minutes. Write down your observations. Use these questions to help you:
 - a. Is the ecosystem very wet or dry?
 - b. How does it get water?
 - c. Where do the animals get their food?
 - d. Where do the plants get their food?
 - e. Do the plants and animals have shelter? If so, what is it?
 - f. How much sunlight is there for plants to grow (full sun, medium sun, shade, or full sun for part of the day)?
 - g. Is the ecosystem affected by the learners at the school?
7. Go back to class to write a report. Use the following headings in your report:
 - a. The study area (describe where it is)
 - b. Plants (include a drawing of each plant)
 - c. Animals (include a labelled drawing of each animal)
 - d. What they need to survive (describe the amount of sunlight, shelter, food, water, soil)
 - e. Possible threats to the area (what might stop plants and animals being healthy; what you can do about this; look at noise, water, litter pollution)

6. Explain the following to the learners:
 - a. In Grade 4 the learners studied a habitat.
 - b. In Grade 5 they counted the number of plants in a given area.
 - c. This year, the learners are going to look more carefully at links and relationships between animals, plants and non-living things in a habitat.
 - d. Learners need to take a notebook or piece of paper and a pencil with them to record their observations.
 - e. Read through the instructions with them and make sure they understand them.
 - f. The learners might need to write down what they have to do.
 - g. When they have finished their observations, they must come back to class to write a report.
7. A model answer for the report (the reports will vary according to the area chosen):

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REPORT ON AN ECOSYSTEM

THE STUDY AREA

The area chosen was next to the fence on the school property. This area is overgrown with plants.

PLANTS

(Illustration of grass, a weed with a yellow flower, a blackjack plant with descriptive names under them)

ANIMALS

(Illustration of three animals: an ant, a bee and a bird with descriptive names)

WHAT THEY NEED TO SURVIVE

There is full sunlight so the plants can grow.

There is a tree in this area so the bird has shelter.

The bee will pollinate the flowers.

There is a tap nearby which drips and this provides enough water for this area.

THREATS TO THIS AREA

Litter like plastic can kill plants and animals. I can pick up the litter.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Which two animals live in a desert ecosystem?
- b. Why must young trees grow quickly in a forest ecosystem?

Answers to the checkpoint questions are as follows:

- a. The gemsbok and scorpion live in a desert environment.
- b. Young trees must grow quickly so that they can reach the sunlight.

8. Ask the learners if they have any questions and provide answers and explanations.

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F

REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Ecosystems and Food webs	40-43;46-47
Viva	Ecosystems and Food webs	44-45
Platinum	Ecosystems and Food webs	40-44
Solutions for All	Ecosystems and Food webs	69, 72-73
Day-by-Day	Ecosystems and Food webs	44-46
Oxford	Ecosystems and Food webs	36-39
Spot On	Ecosystems and Food webs	20-25
Top Class	Ecosystems and Food webs	41-44
Sasol Inzalo Bk A	Ecosystems and Food webs	79-82

G

ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/JfZhJS> (4min 53sec) [Desert plants and animals]
2. <https://goo.gl/BvPWY7> (2min 37sec) [Value of mountain ecosystems]
3. <https://goo.gl/KccTdB> (8min 27sec) [Importance of forest ecosystems]
4. <https://goo.gl/yaaHus> (3min 45sec) [Grassland ecosystems]

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9 A

Term 1, Week 9, Lesson A

Lesson Title: Relationships between living and non-living things

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Living and non-living things in ecosystems	
CAPS Page Number	50	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • describe the relationship between living and non-living things • draw a diagram describing this relationship. 		
Specific Aims	1. DOING SCIENCE + TECHNOLOGY	✓
	2. UNDERSTANDING + CONNECTING IDEAS	✓
	3. SCIENCE, TECHNOLOGY + SOCIETY	✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing	✓	8. Predicting		14. Designing	
3. Comparing	✓	9. Hypothesizing	✓	15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations	✓	17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

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B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 7: The oxygen-carbon-dioxide cycle.	
Resource 35: Relationships between living and non-living things	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

Why is there so little biodiversity in a desert ecosystem?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

A desert has no or very little water and therefore animals and plants find it difficult to survive in a such an ecosystem.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

LIVING AND NON-LIVING THINGS IN ECOSYSTEMS

1. In any ecosystem, there are **relationships** between living and non-living things.
2. Living things are plants, animals and **micro-organisms**.
3. Non-living things are air, water, soil, and sunlight.
4. Living and non-living things are interdependent.
5. Plants need air, water, sunlight and soil to grow.
6. Animals need plants and other animals for food.
7. Animals also need sunlight, air and water to survive.
8. Water and soil are suitable habitats for plants and animals.
9. Plants provide shelter for animals.
10. Living things need non-living things and each other to survive.

TOPIC: Ecosystems and Food webs

2. Explain this to the learners as follows:
 - a. The balance in an ecosystem between living and non-living things is important to keep the ecosystem healthy.
 - b. Remind the learners of the seven living processes: feeding, growing, reproducing, breathing, excreting, sensing, and moving.
 - c. All living things need water and sunlight.
 - d. Plants also need soil and carbon dioxide from the air.
 - e. Animals need plants to eat and oxygen from the air to survive.
 - f. Plants and animals need these non-living things (oxygen, water, sunlight) so that they can feed, grow, breathe.
 - g. Show the learners Resource 7: 'The oxygen-carbon-dioxide cycle'.
 - h. Remind learners that they learnt about this earlier in the term.
 - i. Show learners Resource 35: 'Relationships between living and non-living things'.
 - j. Spend some time going over each item of text to explain the many relationships in this illustration.
 - k. If the balance is upset in an ecosystem, it will start to become unhealthy.
3. Give learners time to copy this information into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

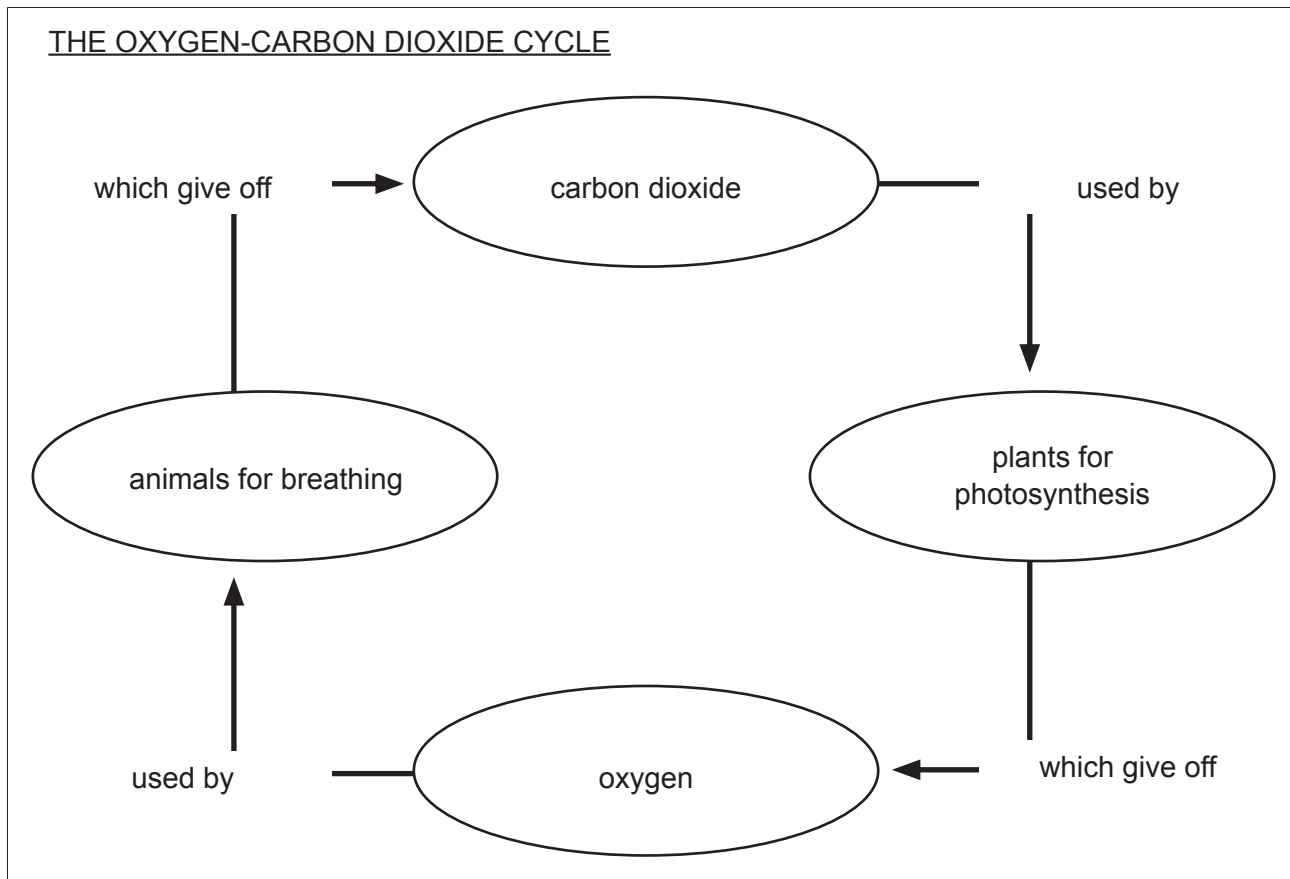
- a. What non-living things do plants need to survive?
- b. What non-living things do animals need to survive?

Answers to the checkpoint questions are as follows:

- a. Plants need water, sunlight, soil and carbon dioxide to survive.
- b. Animals need water, sunlight, plants and oxygen to survive.

E CONCEPTUAL DEVELOPMENT

1. Draw the following on the chalkboard (always try to do this before the lesson starts):



2. Explain the following to the learners:
 - a. Remind learners that they learnt about interdependence in Grade 5.
 - b. Animals and plants are interdependent.
 - c. Animals and plants depend on non-living things to survive.
3. Give learners time to copy this diagram into their workbooks.

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Can you name four non-living things?
- b. What do plants need from air in order to survive?

Answers to the checkpoint questions are as follows:

- a. Air, water, sunlight and soil are non-living things.
- b. Plants need carbon dioxide to carry out photosynthesis.

4. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Ecosystems and Food webs

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Ecosystems and Food webs	48-49
Viva	Ecosystems and Food webs	47-49
Platinum	Ecosystems and Food webs	45
Solutions for All	Ecosystems and Food webs	75-77
Day-by-Day	Ecosystems and Food webs	48-49
Oxford	Ecosystems and Food webs	40-41
Spot On	Ecosystems and Food webs	26-27
Top Class	Ecosystems and Food webs	45-47
Sasol Inzalo Bk A	Ecosystems and Food webs	82-86

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/EpqyeB> (5min 41sec) [Living and non-living things]
2. <https://goo.gl/LcP5N8> (7min 47sec) [Living and non-living objects]
3. <https://goo.gl/87iqzm> (6min 42sec) [Living and non-living things]

TOPIC: Ecosystems and Food webs

9 B

Term 1, Week 9, Lesson B

Lesson Title: Feeding relationships

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food webs		
CAPS Page Number	50		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • draw and label a simple food web • identify the producers and consumers in a food web. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions	✓	13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing	✓	15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying	✓	11. Doing Investigations	✓	17. Communicating	
6. Identifying problems & issues	✓	12. Recording Information			

TOPIC: Ecosystems and Food webs

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 37: A food web	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

True or False: Water is a living thing?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

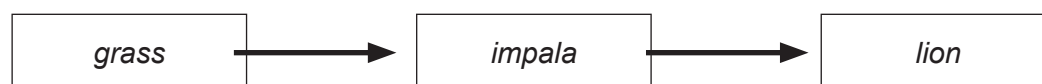
False, water is a non-living thing.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

FOOD WEBS

1. In an ecosystem, plants and animals are connected by their feeding relationships.
2. We use food chains to show these relationships.
3. A food chain shows the movement of energy from one living thing to another.
4. An impala eats grass and a lion eats the impala.
5. This is shown as a food chain:

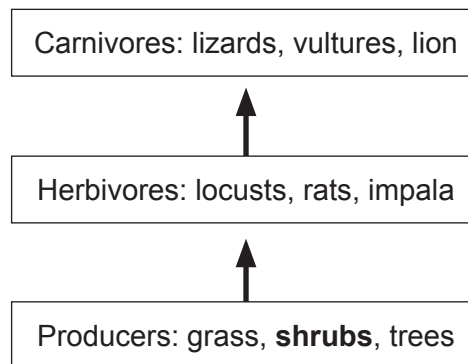


6. Animals eat more than one thing.
7. Lions will eat impala, guinea fowl, zebra, buffalo and other animals.
8. We show this with a food web.
9. Food webs are made up of many food chains.

TOPIC: Ecosystems and Food webs

LEVELS IN A FOOD WEB

1. Living things can be grouped according to what they eat.
2. Plants are called producers as they make their own food.
3. Animals are called consumers as they have to eat plants or other animals.
4. Animals that eat only plants are called herbivores.
5. Animals that eat only other animals are called carnivores.
6. Animals that eat both plants and animals are called omnivores.
7. The levels in a food web are as follows:



2. Explain the following to the learners:
 - a. In Grade 5 the learners studied food chains.
 - b. A food chain shows what eats what.
 - c. It starts with a plant, followed by an animal that eats the plant, followed by an animal that eats the first animal.
 - d. This shows the transfer of energy which goes from the plant through to the last animal in the chain.
 - e. Food webs are made up of many food chains as an animal eats more than one thing.
 - f. Read through the information on food webs on the chalkboard. Make sure that the learners understand the information.
3. Give learners time to copy this information on food webs into their workbooks.
4. Explain the following to the learners:
 - a. There are different levels in food webs.
 - b. Food webs start off with producers.
 - c. Producers are plants as they can make their own food.
 - d. The next level consists of herbivores.
 - e. Herbivores eat only plants.
 - f. The top level are the carnivores.
 - g. These animals eat other animals.

TOPIC: Ecosystems and Food webs

- h. Show learners Resource 36: A food web.
 - i. Point out the producers at the bottom of the web, then the herbivores, then the carnivores at the top.
5. Give learners time to copy the information on Levels in a food web into their workbooks.

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- a. Why are plants called producers?
- b. What type of animal is at the top of a food web?

Answers to the checkpoint questions are as follows:

- a. Plants are called producers as they make their own food.
- b. A carnivore is at the top of a food web.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Draw a food chain from a food web.

Write the following on the chalkboard (always try to do this before the lesson starts):

DRAW A FOOD CHAIN FROM A FOOD WEB

Look at Resource 38: A food web.

1. Draw a food chain from this web. Choose from the following words:
lizard, trees, impala, rats, hornbill bird, lion, grass, locusts, shrubs.
2. Answer the following questions:
 - a. What is the producer in this food chain?
 - b. What is the carnivore in this food chain?
 - c. What would happen if all the producers died in this food chain?

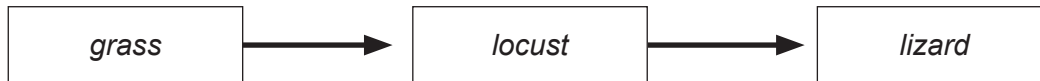
2. Explain the following to the learners:
 - a. Show the learners Resource 38: A food web.
 - b. Point out all the producers (grass, shrubs, trees).
 - c. Point out all the herbivores (locusts, rats, impala).
 - d. Point out all the carnivores (lizard, hornbill bird, lion).
 - e. The learners must write down a food chain in their workbooks.
3. Give learners time to complete this activity in their workbooks.

TOPIC: Ecosystems and Food webs

4. A model answer:

There are many possible answers. Look at Resource 38: 'A food web' for all the possible food chains.

A FOOD CHAIN



Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. A carnivore such as a lion is at the top of a food web: True or False?
- b. An omnivore is called a consumer as it eats plants: True or False?

Answers to the checkpoint questions are as follows:

- a. True
- b. True

5. Ask the learners if they have any questions and provide answers and explanations.

TOPIC: Ecosystems and Food webs

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:

NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Ecosystems and Food webs	50-53
Viva	Ecosystems and Food webs	50-52
Platinum	Ecosystems and Food webs	46-48
Solutions for All	Ecosystems and Food webs	77-84
Day-by-Day	Ecosystems and Food webs	50-52
Oxford	Ecosystems and Food webs	42-43
Spot On	Ecosystems and Food webs	28
Top Class	Ecosystems and Food webs	49-50
Sasol Inzalo Bk A	Ecosystems and Food webs	86-90

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <https://goo.gl/es8kgr> (5min 53sec) [Food chains, food webs, energy pyramids]
2. <https://goo.gl/Nw6Ymb> (3min 52sec) [Food chain, food web]
3. <https://goo.gl/MvWzZ8> (4min 2sec) [BrainPOP UJ - Food chains]

TOPIC: Ecosystems and Food webs

9 C

Term 1, Week 9, Lesson C

Lesson Title: What makes a food web

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food webs		
CAPS Page Number	50		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • draw and label the components of a food web • identify the different parts of a food web. 			
Specific Aims	1. DOING SCIENCE + TECHNOLOGY		✓
	2. UNDERSTANDING + CONNECTING IDEAS		✓
	3. SCIENCE, TECHNOLOGY + SOCIETY		✓

SCIENCE PROCESS + DESIGN SKILLS

1. Accessing & Recalling Information	✓	7. Raising Questions		13. Interpreting Information	✓
2. Observing		8. Predicting		14. Designing	
3. Comparing		9. Hypothesizing		15. Making/ constructing	
4. Measuring		10. Planning Investigations		16. Evaluating and improving products	
5. Sorting & Classifying		11. Doing Investigations		17. Communicating	
6. Identifying problems & issues		12. Recording Information	✓		

TOPIC: Ecosystems and Food webs

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 37: Another food web	

C CLASSROOM MANAGEMENT

1. Make sure that you are ready and prepared.
2. Write the following question onto the chalkboard before the lesson starts:

What is a consumer?

3. Learners should enter the classroom and answer the question in their workbooks.
4. Discuss the answer with the learners.
5. Write the model answer onto the chalkboard.

A consumer is a living thing that cannot make its own food.

D ACCESSING INFORMATION

1. Write the following onto the chalkboard (always try to do this before the lesson starts):

MOVEMENT OF ENERGY

1. Food webs show the movement of energy in an ecosystem.
 2. Energy and nutrients flow from one link in the food web to another.
 3. Energy comes from the Sun.
 4. It then moves to green plants that live and grow.
 5. This energy is then transferred to herbivores that live and grow.
 6. From herbivores, the energy moves to omnivores and carnivores.
2. Explain this to the learners as follows:
 - a. Food webs and chains show the energy movements between the different levels.
 3. Give learners time to copy this information into their workbooks.

TOPIC: Ecosystems and Food webs

Checkpoint 1

Ask the learners the following questions to check their understanding at this point:

- What movement do food webs show?
- Where do green plants get their energy from?

Answers to the checkpoint questions are as follows:

- Food webs show the movement of energy.
- Green plants get their energy from the Sun.

E

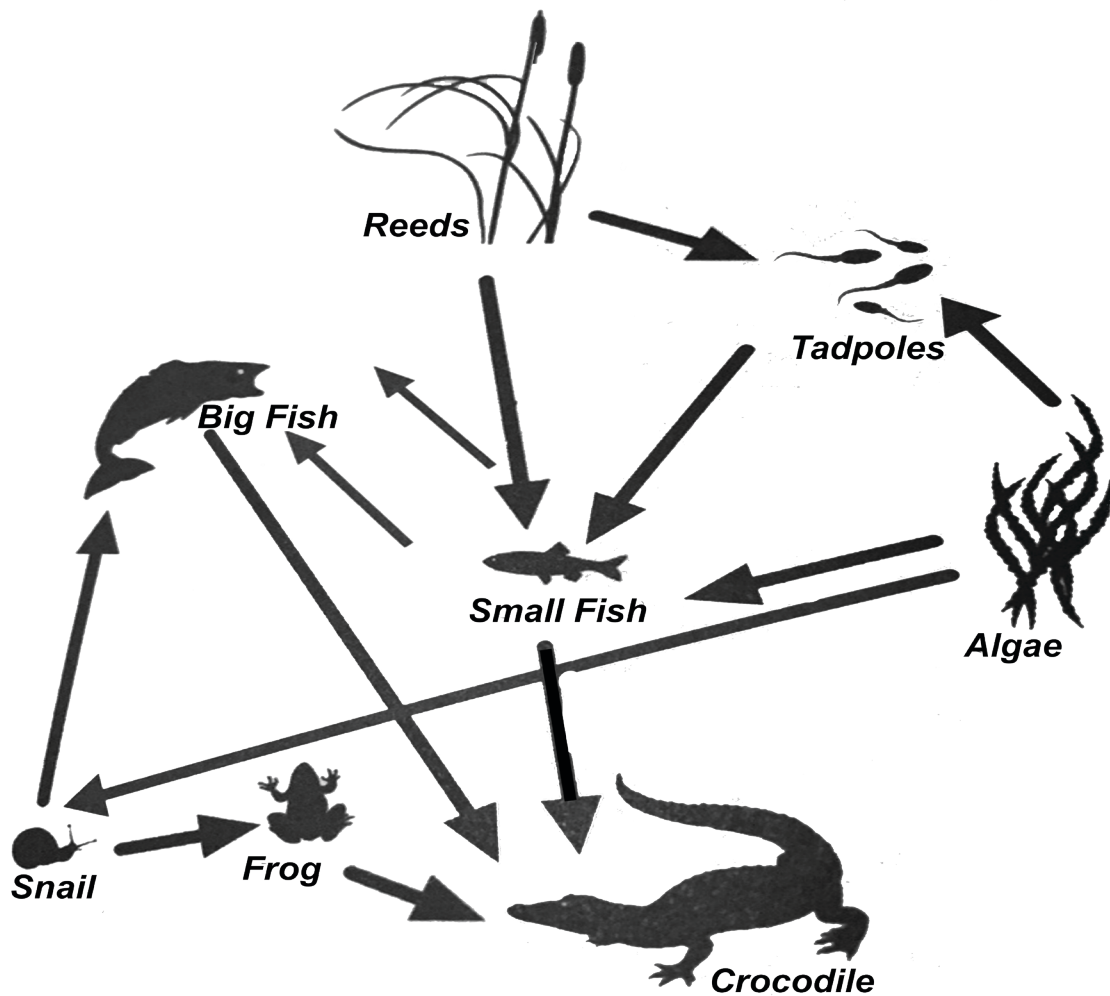
CONCEPTUAL DEVELOPMENT

- Activity: Draw food chains from a food web

Draw the following on the chalkboard (always try to do this before the lesson starts):

MORE ABOUT FOOD WEBS

Illustration



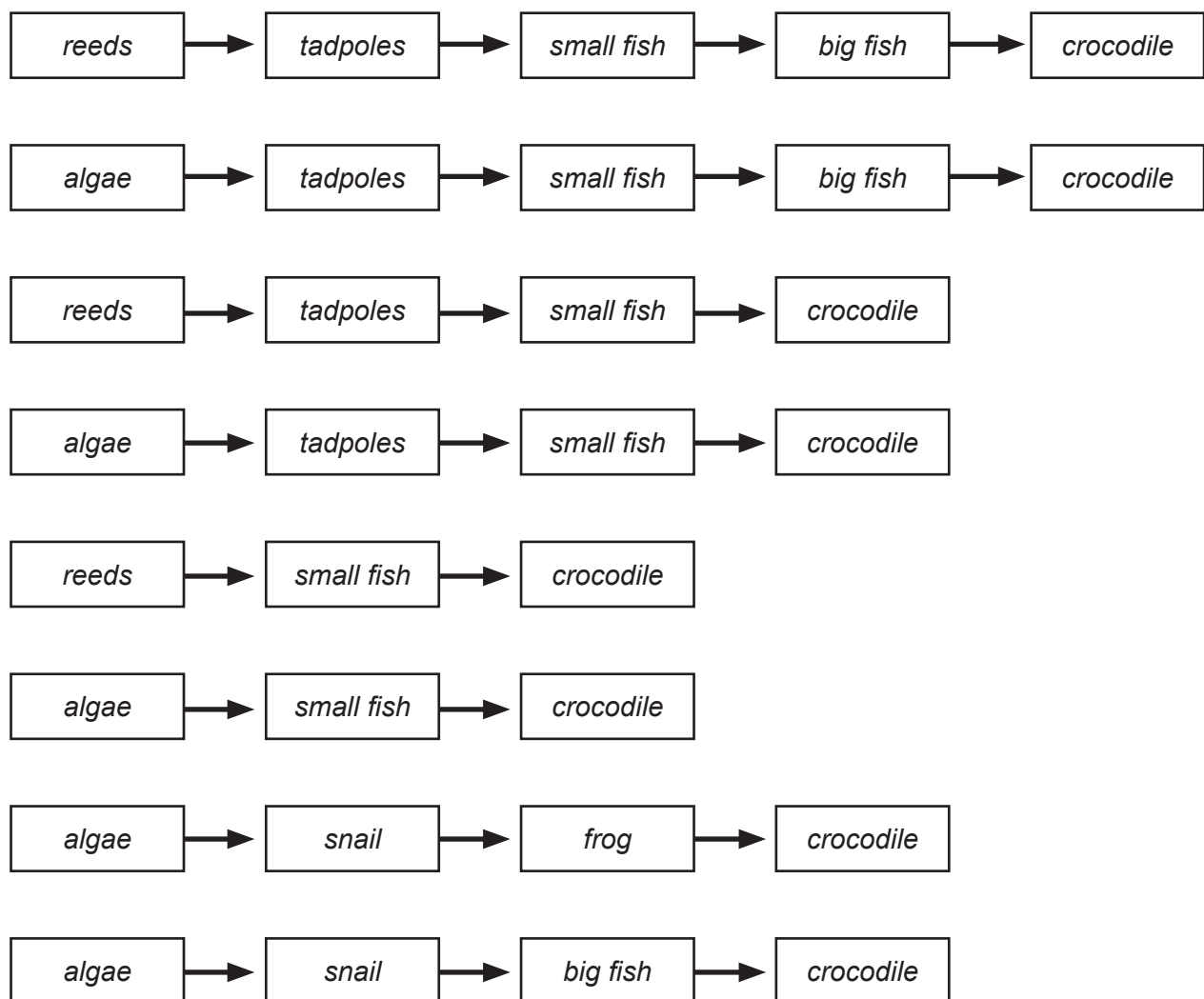
Resource 37: Another food web

TOPIC: Ecosystems and Food webs

1. Look at the food web carefully.
2. There are many different food chains.
3. Work with a partner to see how many you can find.
4. Write each food chain down as a flow diagram.
5. What ecosystem is this food web from?

2. Explain the following to the learners:
 - a. Read through the activity on the chalkboard.
 - a. Make sure the learners understand the instructions.
3. A model answer:

MORE ABOUT FOOD WEBS



5. This is from a river ecosystem.

TOPIC: Ecosystems and Food webs

Checkpoint 2

Ask the learners the following questions to check their understanding at this point:

- a. Producers will always be at the end of a food web: True or False?
- b. A carnivore eats other animals: True or False?

Answers to the checkpoint questions are as follows:

- a. False. Carnivores are at the end of a food web.
- b. True

5. Ask the learners if they have any questions and provide answers and explanations.

F REFERENCE POINTS FOR FURTHER DEVELOPMENT

If you need additional information or activities on this topic, you can find these in your textbook on the following pages:


NAME OF TEXTBOOK	TOPIC	PAGE NUMBER
Study & Master	Ecosystems and Food webs	53-54
Viva	Ecosystems and Food webs	51-52
Platinum	Ecosystems and Food webs	46-49
Solutions for All	Ecosystems and Food webs	81-84
Day-by-Day	Ecosystems and Food webs	52
Oxford	Ecosystems and Food webs	43
Spot On	Ecosystems and Food webs	29
Top Class	Ecosystems and Food webs	49-50
Sasol Inzalo Bk A	Ecosystems and Food webs	90-91

G ADDITIONAL ACTIVITIES/ READING

In addition, further reading, listening or viewing activities related to this sub-topic are available through the following web links:

1. <http://www.wikihow.com/Draw-a-Food-Web> [Draw a Food Web]
2. <https://goo.gl/VTP1uf> (3min 42sec) [Drawing a simple food web]
3. http://www.ducksters.com/science/ecosystems/food_chain_and_web.php [Food chain and food web]

NATURAL
SCIENCES
&
TECHNOLOGY
ASSESSMENT
GRADE 6 TERM 1



GRADE 6 ASSESSMENT

- This section presents the CAPS assessment requirements for this grade for this term.
- See your prescribed textbooks for examples of the required assessments.
- A example of a practical task and test has been included.

CAPS Assessment

Assessment is a continuous planned process that involves identifying, gathering, interpreting and diagnosing information about the performance of learners.

Assessment involves generating and collecting evidence of learner achievement and progress, and using this information to understand and provide assistance to the learner during the process of teaching and learning.

Assessment should be both *formal* and *informal*:

a. Informal Assessment involves regular checking of learners' class work and practical tasks; asking questions; discussions; informal classroom interactions; and giving constructive feedback. Informal assessment marks do not need to be recorded, but the teacher can make notes for future reference.

b. Formal Assessment provides teachers with a systematic way of evaluating how well learners are progressing. Formal Assessment consists of selected assessment tasks. These tasks are stipulated by CAPS and the marks need to be recorded. These tasks are done throughout the year, and include practical tasks, tests and examinations.

i. Tests and Examinations

Examinations must include questions on both Natural Sciences and Technology. The weighting of the marks should reflect the time allocated to each section in the curriculum content. Tests and exams should consist of a range of questions that cover different cognitive levels: recall; understanding; application; evaluation; analysis; and synthesis. CAPS aligned tests and examinations, with accompanying memoranda, are provided with these lesson plans.

ii. Practical Tasks

Practical tasks give learners the opportunity to demonstrate knowledge, skills and understanding. Practical tasks form part of the activities included in these lesson plans. Each term, one practical task has been selected for assessment. A rubric is provided to conduct the assessment.

A minimum mark allocation is prescribed in CAPS for tests, practical tasks and examinations for each grade. For this grade, these are summarised in the table below:

GRADE 6 ASSESSMENT

Grade 6						
Programme of Formal Assessment						
Formal Assessments	TERM 1	TERM 2	TERM 3	TERM 4	TOTAL MARKS FOR THE YEAR	TOTAL
School-based assessments	1 test [20 marks] 1 selected practical task [15 marks]	1 exam or test on work from terms 1 & 2 [50 marks] 1 selected practical task [15 marks]	1 test [20 marks] 1 selected practical task [15 marks]	1 selected practical task [15 marks]	150 marks	Together make up 75% of the total marks of the year
Exams [60 minutes]				Exam on work from terms 3 & 4 [50 marks]	50 marks	Makes up 25% of the total marks of the year
Number of formal assessments	2	2	2	2	Total 8 assessments [200 marks]	Total: 100%
Refer to CAPS on the processes for converting marks to percentages and to the 7-point scale.						

GRADE 6 ASSESSMENT

PRACTICAL TASK - INTRODUCTION

NS & TECH
GRADE 6
PRACTICAL TASK
TERM 1

15 MARKS

Time allocation: 60 minutes

NOTE TO THE TEACHER

1. This practical activity will be completed as part of Section E of lesson 2B.
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. The memorandum for assessing the practical task is provided.
7. The learners will need to have 2 small bunches of leaves per group to complete the task. If they are unable to collect these from the school grounds, you will need to provide them.
8. Other equipment required is listed in the outline of the practical task in Section E of Lesson 2B.
9. The learners should complete the drawings with a sharp pencil if possible and the written answers should be completed in pen.

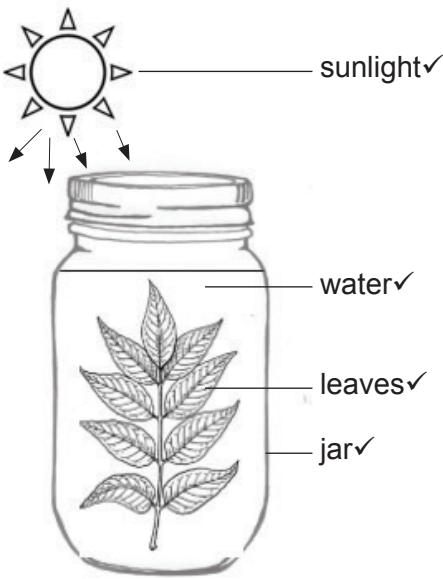
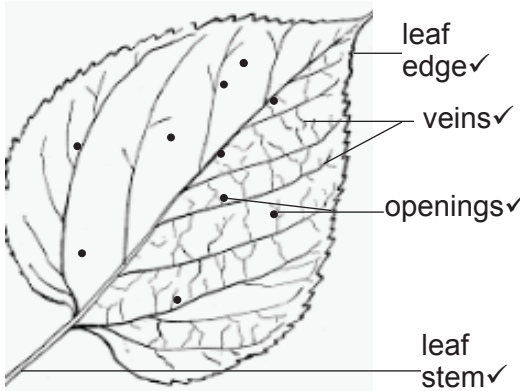
GRADE 6 ASSESSMENT

PRACTICAL TASK - MEMORANDUM

NS & TECH
GRADE 6
PRACTICAL TASK
TERM 1

15 MARKS

(see Section E of Lesson 2B for instructions and questions)

Topic	Activity	Expected answer/outcome	Marks
	1		
Photosynthesis	1a	Diagram is neatly drawn ✓ 	5
Photosynthesis	1b	We will see that the leaf has given off oxygen in the form of oxygen bubbles ✓	1
	2		
Photosynthesis		Drawing is neat and clear Care has been taken in getting shape of leaf accurate ✓ 	5

GRADE 6 ASSESSMENT

Topic	Activity	Expected answer/outcome	Marks
	3		
Photosynthesis	3a	little bubbles✓	1
Photosynthesis	3b	oxygen✓	1
Photosynthesis	3c	Energy from the sun is needed for photosynthesis to take place✓	1
Photosynthesis	3d	(half mark each) Absorb carbon dioxide✓ Release oxygen✓	1
		TOTAL	15

GRADE 6 ASSESSMENT

TERM TEST

**NS & TECH
GRADE 6
TEST
TERM 1**

**20 MARKS
30 MINUTES**

NOTE 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.

Which of the following is not a living thing?

- A. water
- B. wind
- C. sunlight
- D. food

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

GRADE 6 ASSESSMENT

NS & TECH
GRADE 6
TERM 1
TEST

20 MARKS

Question 1: Multiple choice

[4]

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

1.1. Which one of these is NOT one of the four food groups? (1)

- A. protein
- B. carbohydrates
- C. fats and oils
- D. fruit and vegetables

1.2. Which of these statements is TRUE? (1)

- A. Plants don't need food
- B. Plants only need energy from the sun during photosynthesis
- C. Plants are the only living things that can make their own food
- D. Plants absorb air through their leaves

1.3. Which of these statements is FALSE? (1)

- A. A balanced diet should include all four of the food groups
- B. Sugar is the most important part of a balanced diet
- C. Drinking enough water is an important part of keeping healthy
- D. Meat is an example of protein

1.4. Which one of these groups describes a pond ecosystem? (1)

- A. Fish, whales, sharks, dolphins
- B. Lions, zebras, hornbills, dung beetles
- C. Frogs, fish, ducks, insects
- D. Birds, ants, butterflies, ladybirds

GRADE 6 ASSESSMENT

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	The time when the sea is at its highest on the beach	A. Interact
2.1.	Water that does not move and stands still	B. Ecosystem
2.2.	Where two or more things react to each other	C. Stagnant
2.3.	Wetland	D. Bacteria
2.4.	Micro-organisms	E. High tide

Question 3

[4]

Write the word that is being described in the sentence.

Only write the answer.

3.1 Something that is added to food to make it last longer. (1)

3.2 A disease that occurs when the body cannot process high levels of glucose sugar. (1)

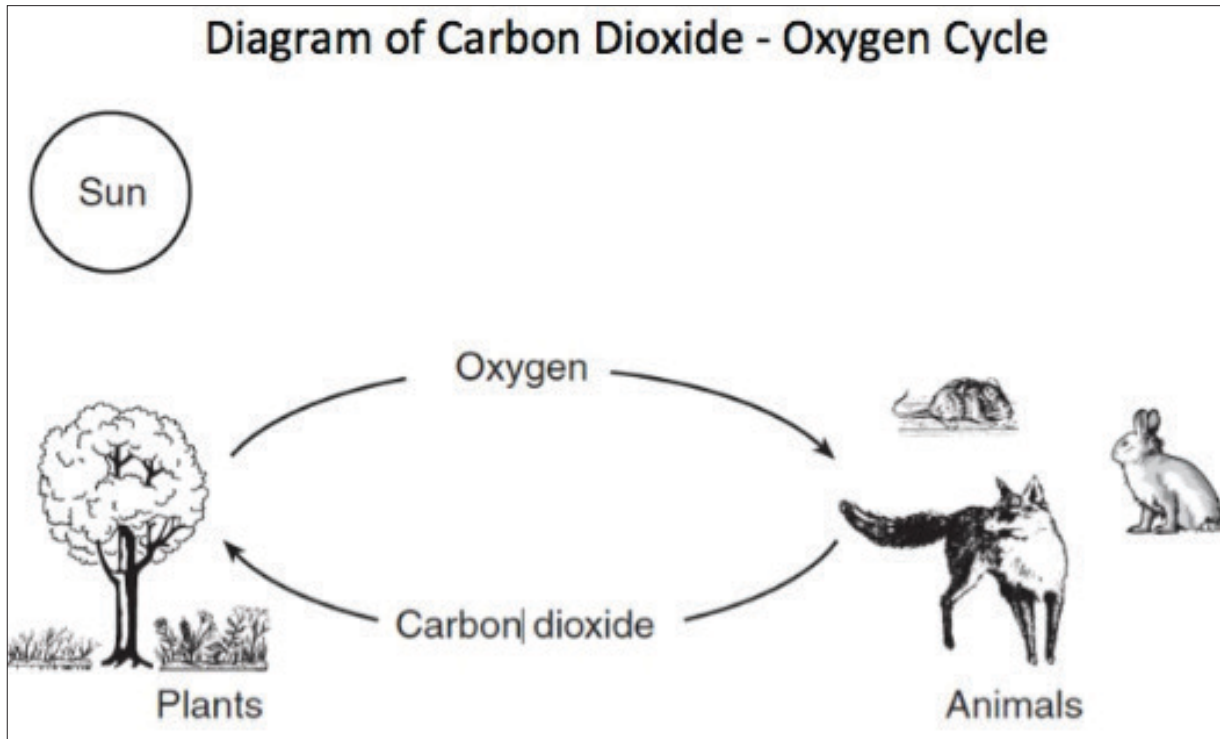
3.3 To rot or decompose. (1)

3.4 Government does not charge tax on these foods. (1)

Question 4

[5]

The diagram below shows the oxygen-carbon dioxide cycle.



(Note to teacher: Copy this picture or use Term 1, Resource 7)

animals, plants, carbon dioxide, oxygen, breathe, photosynthesis, cycle, life processes, live

Using this diagram and the words above, write 5 sentences to explain how plants make their own food.

GRADE 6 ASSESSMENT

Question 5

[3]

There are many levels in food webs.

9.1 All animals are called consumers. Which type of consumer is at the top of the food web? (1)

9.2 Draw a food chain showing the relationship between the following living organisms : (2)

locust, bird, lizard, grass

TOTAL [20]

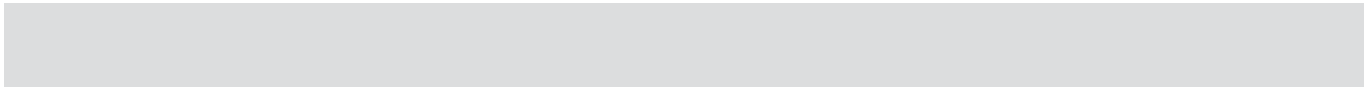
GRADE 6 ASSESSMENT

TERM 1 TEST – MEMORANDUM

**NS & TECH
GRADE 6
MEMORANDUM
TERM 1**

**20 MARKS
30 MINUTES**

Caps Topic	Questions	Expected answer(s)	Marks
	1		
Nutrition	1.1	D✓	1
Photosynthesis	1.2	C✓	1
Nutrition	1.3	B✓	1
Ecosystems and food webs	1.4	C✓	1
	2		
Ecosystems and food webs	2.1	C✓	1
Ecosystems and food webs	2.2	A✓	1
Ecosystems and food webs	2.3	B✓	1
Ecosystems and food webs	2.4	D✓	1
	3		
Nutrition	3.1	preservative✓	1
Nutrition	3.2	diabetes✓	1
Nutrition	3.3	decay✓	1
Nutrition	3.4	staple foods✓	1
	4		
Photosynthesis	4	(Any 5) Animals need to breathe✓ oxygen to live✓ and carry out the seven life processes.✓ They get oxygen from the air.✓ Animals breathe in oxygen✓ and breathe out carbon dioxide.✓ During photosynthesis✓ plants take in carbon dioxide✓ and let off oxygen.✓ Animals breathe in this oxygen✓ and let out carbon dioxide.✓ This cycle continues ✓and is called the oxygen-carbon dioxide cycle.✓	5



	5		
Ecosystems and food webs	5.1	carnivores✓	1
		grass→locust→lizard→bird ✓✓	2
TOTAL			20