

"One of the basic rules of the universe is that nothing is perfect. Perfection simply doesn't exist. Without imperfection, neither you nor I would exist."

-Stephen Hawking

**NATURAL
SCIENCES
&
TECHNOLOGY**

**LESSON PLAN
GRADE 5 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 begun 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 9 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':

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- 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 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.
 - d. 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

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- 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

The distribution of these strands across the year is summarised in the table below:

Grade 5							
Term 1		Term 2		Term 3		Term 4	
Strands NS & Tech		Strands NS & Tech		Strands NS & Tech		Strands NS & Tech	
Life and Living	Structures	Matter and Materials	Processing	Energy and Change	Systems and Control	Planet Earth and Beyond	Systems and Control
Plants and animals on Earth	Skeletons and structures	Metals and non-metals	Processing materials	Stored energy in fuels	Systems for moving things	Planet Earth	-
Animal Skeletons		Uses of metals	Processed materials	Energy and electricity		Surface of the Earth	
Food Chains				Energy and movement		Sedimentary Rocks	
Life cycles						Fossils	

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).

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	• Skeletons and Structures	2½	• Nutrition	1½
	• Habitats of animals	1	• Food Chains	1½	• Food Processing	2½
	• Structures for animal shelters	2½	• Life cycles	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)		(10 wks)		(10 wks)
					• Mixtures and water resources	2½
					• Processes to purify water	2½
						(10 wks)

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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	1
	• Rocket Systems	2			• Systems to explore the Moon and Mars	2½
		(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?		

PROGRAMME ORIENTATION

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:

Life and Living; Structures

Term 1, Weeks 1A – 3A

A. TOPIC OVERVIEW

Term 1, Weeks 1a – 1c

- This topic runs for 2 ½ weeks.
- It is presented over 7 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 5	GRADE 6 & 7
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Living things: Many kinds of animals and plants; carry out all seven life processes • Non-living things: do not carry out all seven life processes • Conditions for growth • Different habitats and need for a habitat • Animal shelters 	<ul style="list-style-type: none"> • Many different plants and animals and their habitats • Interdependence; plants and animals depend on each other; plants and animals depend on their resources available • Many different animal types; invertebrates and vertebrates 	<ul style="list-style-type: none"> • Photosynthesis: plants make their own food; process of photosynthesis • Plants and air: plants take in carbon dioxide, give off oxygen; animals use the oxygen and give off carbon dioxide

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

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

	TERM	EXPLANATION
1.	biodiversity	Refers to all the different living things in a habitat
2.	indigenous	Occurs naturally in a particular place
3.	variety	Many things of the same kind
4.	habitat	A plant or animal's home; the place where it lives or grows; a habitat is made up of all the plants, animals and non-living things in a specific area.
5.	scalloped	Has a series of small curves along the edge
6.	characteristics	A quality that a person, place or thing has
7.	fleshy	Being plump, fat
8.	nectar	A sugary liquid found inside flowers
9.	floral	Of flowers
10.	webbed	Having toes that are connected by some skin, a water bird has webbed feet. 
11.	organised	Carefully arranged in a sensible way
12.	pests	A destructive insect that annoys people, animals or eats crops
13.	reproduction	Process of producing offspring
14.	disperse	Spread over a wide area
15.	droppings	Waste matter of animals
16.	pollination/ pollinate	When pollen is taken from one flower to another for the plant to make seeds
17.	resources	Existing things that plants and animals need in order to survive
18.	prey	An animal that is hunted and killed by another for food
19.	protection	Something that keeps a person or thing from being harmed
20.	damp	Slightly wet

21.	scales	Thin, flat, hard plates that cover fish
22.	mammal	A vertebrate that has hair or fur and suckles its young
23.	fur	Short, soft hair on many mammals, like cats
24.	invertebrate	Animals without backbone
25.	exoskeleton	Hard protective layer outside the body of an animal
26.	hydroskeleton	Skeleton which is filled by fluid / water moist skinned body of an invertebrate
27.	vertebrate	Animals with backbones
28.	endoskeleton	Skeleton found inside the body of a vertebrate

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

With the increasing number of people on planet Earth, the natural resources are being used up at a very fast rate. Studying habitats and biodiversity will lead to a better understanding of how to protect these natural resources.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

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

TOPIC: Plants and animals on Earth

1 A

Term 1, Week 1, Lesson 1 A

Lesson Title: Many different plants and animals

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Many different plants and animals		
CAPS Page Number	31		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • identify different plants and animals • group leaves according to certain criteria 			
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 1: 'An egret catching a fish'	

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 the seven life processes that you learnt about last year?

3. Learners should enter the classroom, then discuss the seven life processes with the teacher and then answer the question in their workbooks.
4. Discuss their answers with the learners.
5. Write the model answer onto the chalkboard.

The seven life processes are feeding, growing, reproducing, breathing, excreting, sensing, and moving.

D ACCESSING INFORMATION

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

MANY DIFFERENT PLANTS AND ANIMALS

1. There are many different habitats on Earth.
 2. Many different animals and plants live in these habitats.
 3. **Indigenous** plants are those that occur naturally in a specific place.
 4. This means that they have not been brought in from somewhere else.
 5. **Biodiversity** refers to the number of different types of animals and plants in an area.
 6. South Africa has habitats with high biodiversity.
2. Explain and discuss the following with the learners:
 - a. The learners studied habitats and the need for a habitat in Grade 4.
 - b. A habitat is a plant's or animal's home; it is the place where it grows or lives.
 - c. Animals and plants share their habitats.
 - d. If an animal or plant is referred to as 'indigenous' it means that it naturally occurs in that area.
 - e. South Africa has many indigenous plants and animals.
 - f. The number of different plants in an area is the plant diversity of that area.
 - g. The number of different animals in an area is the animal diversity of that area.

TOPIC: Plants and animals on Earth

- h. All the plants and animals together with their habitats make up the biodiversity of that area.
- i. South Africa has habitats with high biodiversity.
- j. This means that there are many different types of plants and animals in that habitat.
- k. People come from all over the world to look at our plants and animals.
- l. Show learners Resource 1: An egret catching a fish.
- m. An egret needs to live near water as it eats fish.
- n. It lives in a water habitat.

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 does the word 'indigenous' mean?
- b. What does 'biodiversity' mean?

Answers to the checkpoint questions are as follows:

- a. 'Indigenous' refers to the plants and animals that occur naturally in a particular area.
- b. 'Biodiversity' refers to all the different types of animals and plants in that area.

E

CONCEPTUAL DEVELOPMENT

1. Before the lesson, collect leaves of different types (colour, shape, edges and size).
2. Write the following onto the chalkboard:

1. Most plants have leaves.
2. The leaves have different shapes.
3. Some are long and thin and some are wide.
4. Some have different colours.

5. COLOUR
dark green, light green, grey, yellow, green with white marks

6. SHAPE
long, thin, wide, narrow, heart-shaped

7. EDGES
smooth, tooth-like, scalloped

8. SIZE
small, medium, large

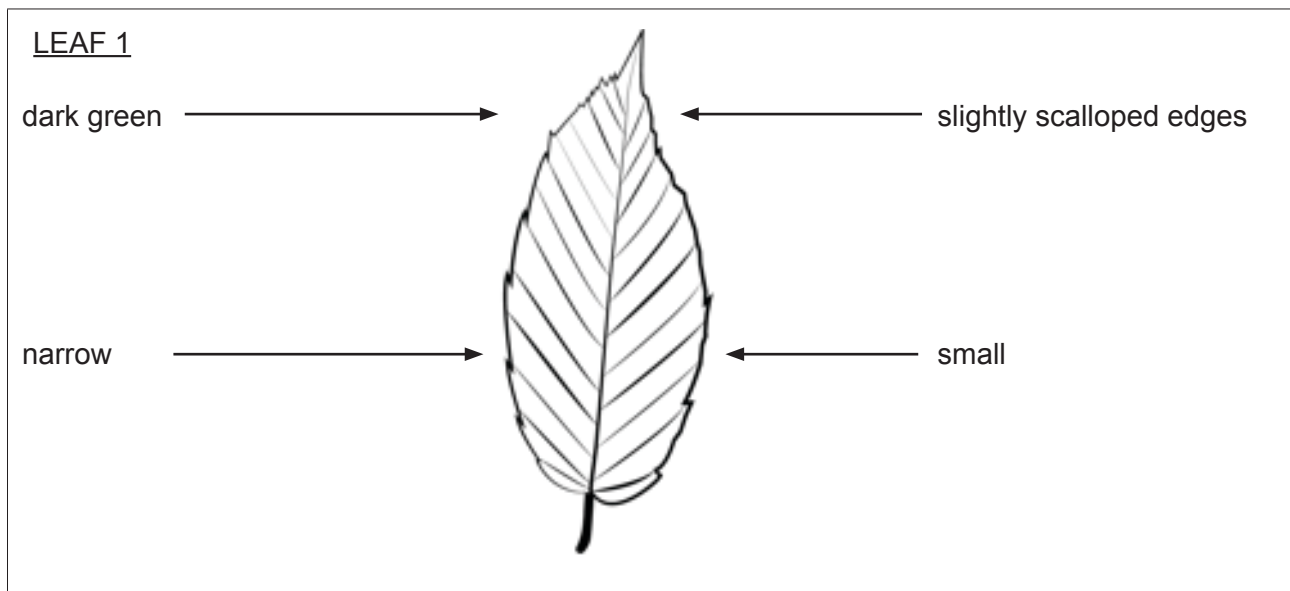
9. TASK 1
 - a. Find three different types of leaves.
 - b. Draw these leaves in your workbook.
 - c. Label your drawing to show how the leaves are different.
 - d. Write three sentences to describe each leaf.

10. TASK 2
 - a. Collect all the leaves from the class.
 - b. Decide how you would put these leaves into groups.
 - c. This will be discussed as a class.
 - d. Put the leaves into the grouping decided upon.

3. Explain this task to the learners as follows:
 - a. Learners need to bring three leaves each to their lessons.
 - b. Learners will draw each leaf in their workbooks.
 - c. Go over the words to describe leaves according to their colour, shape, edge and size.

TOPIC: Plants and animals on Earth

- d. leaves and describe them to the class. Discuss these answers.
 - e. Each leaf should have four labels to describe the colour, shape, and size.
 - f. Let the learners discuss how to group the leaves.
 - g. Let the learners put these leaves into groups according to their decision.
 - h. Plants are normally classified according to their colour, shape and size.
4. Give learners some time to complete Task 1 in their workbooks.
 5. Ask learners to share their answers to Task 1 with the class. The learners hold up their leaves and describe them to the class. Discuss these answers.
 6. Example of an answer:



7. When learners have completed Task 1, do Task 2.
 - a. Read through the instructions on the chalkboard with the class.
 - b. Ask learners to discuss how to group all the leaves collected.

Checkpoint 2

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

- a. South Africa has habitats with high biodiversity. What does this mean?
- b. Name three ways in which we can group leaves.

Answers to the checkpoint questions are as follows:

- c. This means that there are many different types of plants and animals that live in a habitat.
- d. We can group leaves according to their colour, shape and size.

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

TOPIC: Plants and animals on Earth

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	Plants and animals on Earth	12-13
Viva	Plants and animals on Earth	1-3
Platinum	Plants and animals on Earth	2
Solutions for All	Plants and animals on Earth	2-3
Day-by-Day	Plants and animals on Earth	1-3
Oxford	Plants and animals on Earth	10-15
Spot On	Plants and animals on Earth	2-3
Top Class	Plants and animals on Earth	1-2
Sasol Inzalo BkA	Plants and animals on Earth	4

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/8w4YDR> (2 1/2 mins) [South Africa Biodiversity]

TOPIC: Plants and animals on Earth

1 B

Term 1, Week 1, Lesson B

Lesson Title: Many different plants and animals

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Plants and animals in their habitats.		
CAPS Page Number	31		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • conduct an investigation • draw conclusions from the data • categorise information 			
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 2: Different types of leaves	
string or wool – 9 metres per group	
four sticks	
ruler or tape measure	

C CLASSROOM MANAGEMENT

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

Give the three ways in which leaves can be grouped.

3. Learners should enter the classroom, then discuss the seven life processes with the teacher and then answer the question in their workbooks.
4. Discuss their answers with the learners.
5. Write the model answer onto the chalkboard.

Leaves can be grouped according to their shape, colour or size.

D ACCESSING INFORMATION

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

CLASSIFYING

1. Plants and animals can be classified.
2. To classify items means to put them into groups according to certain characteristics.
3. Scientists classify items to help them group and name items in an **organised** way.

2. Explain and discuss the following with the learners:
 - a. In the previous lesson, learners put their leaves into groups according to shape, colour or size.
 - b. The task from the previous lesson dealt with classifying leaves.
 - c. To classify items means to put things into groups according to certain criteria.
 - d. Colour, shape or size are the criteria used to classify leaves.
 - e. Scientists classify items to help them understand, group and name these items in an organised way.
 - f. It is easier to study plants and animals and to learn about patterns in nature if they are grouped in some way.

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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 does the word 'classify' mean?
- b. Why do scientists classify things?

Answers to the checkpoint questions are as follows:

- a. Classify means to put into groups according to certain characteristics.
- b. Classifying helps scientists group and name items in an organised way.

E

CONCEPTUAL DEVELOPMENT

1. To do this activity, each group will need the following:
 - 30m of sting or wool
 - four short sticks
 - ruler or tape measure
2. Ensure you have these materials prepared for each group before the lesson starts.
3. Divide the learners into groups of four or six.
4. Write the following onto the chalkboard (always try to do this before the lesson starts):

PRACTICAL TASK

METHOD

- a. Measure out an square area 6 metres by 6 metres somewhere on the school grounds. (6 big steps by 6 big steps)
 - b. Put a stick in each corner of the square.
 - c. Tie the wool or string around these sticks to mark out you area.
 - d. Complete the task as outlined below: (Draw the table into your workbook)
 - e. Each learner should complete the task individually.
5. Make sure the learners understand what they have to do.
 6. Explain that they must try to choose an area that has pants, soil and rocks in it.
 7. Ensure that the learners understand what a "bird's-eye" view is. (A bird's eye view is the view from the top, as if a bird was looking down. You only see the shape of the top of the object.)
 8. Now ask the learners to copy the questions for the task into their workbooks.
 9. This will need to be written onto the chalkboard: After the learners have copied down the task, ask them if they have any questions.

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Task 1: (3 marks)

- a. Use half a page to draw a bird's-eye view of the area. In the diagram draw and label all the natural features you can see.
- b. Give a suitable name to this habitat.

Task 2: (3 marks)

- a. Draw a front view of the plants you can see in your marked off area.
- b. Do you see any flowers, fruits or seeds in this habitat? Draw what you observe.

Task 3: (3 marks)

- a. Choose one leaf from a plant in your area and sketch it in detail.
- b. Label the following:
 - Leaf edge
 - Leaf surface
 - Veins
 - Leaf stem

Task 4: (3 marks)

- a. Look under any stones, on tree bark, in plants and in the soil. Draw and name any creatures you can see.
- b. What other living creatures could live in this habitat?

Task 5: (3 marks)

- a. Name 3 animals that could not live in this habitat. Give reasons why.

TOTAL 15 marks

10. After the learners have copied down the task, ask them if they have any questions.
11. Explain any terminology they may not understand.
12. Allow learners out of the class to complete the activity.
13. Supervise them and assist whilst they are completing the activity.
14. Mark the learners' work using the rubric.

TOPIC: Plants and animals on Earth

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	Plants and animals on Earth	17
Viva	Plants and animals on Earth	3-4
Platinum	Plants and animals on Earth	13
Solutions for All	Plants and animals on Earth	2-4
Day-by-Day	Plants and animals on Earth	4-5
Oxford	Plants and animals on Earth	-
Spot On	Plants and animals on Earth	3
Top Class	Plants and animals on Earth	5
Sasol Inzalo Bk A	Plants and animals on Earth	16-17

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

TOPIC: Plants and animals on Earth

1 C

Term 1, Week 1, Lesson C

Lesson Title: Habitats: Plants and Animals

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants and animals living in different habitats on Earth.	
CAPS Page Number	31	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • name four different types of habitats • give examples of animals and plants living in these habitats • describe some characteristics of these animals and plants 		
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 2: Different types of leaves	
Resource 3: Different habitats	
Resource 4: Different habitats continued	

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 do we mean by the word 'habitat'?

3. Learners should enter the classroom, then discuss the seven life processes with the teacher and then answer the question in their workbooks.
4. Discuss their answers with the learners.
5. Write the model answer onto the chalkboard.

A habitat is a plant or animal's home; it is the place where a plant or animal grows or lives.

D

ACCESSING INFORMATION

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

DIFFERENT HABITATS

Plants grow in different habitats.

1. The water lily lives in water.
2. Their leaves are large and flat so they can float on water.
3. The aloe lives in dry areas.
4. Their leaves are thick and fleshy so that they can store water.
5. The clivia does not like lots of light so it grows in a forest.

Animals live in different habitats.

1. The frog lives in water.
2. It has **webbed** fingers and toes so that it can swim.
3. Sunbirds have long beaks to suck nectar from flowers on plants.
4. It lives in a **floral** area.
5. The elephant has a trunk and tusks to help it get food to eat.
6. The trunk can reach leaves on trees and the tusks dig up roots.
7. They like living in grassland areas.
8. Ostriches like to live in hot areas like a desert.
9. They have long, strong legs to protect themselves.

2. Explain and discuss the following with the learners:
 - a. Remind the learners that they learnt about habitats in Grade 4.
 - b. The learners studied grassland, forest, river and sea habitats.
 - c. The learners also looked at the need for a habitat, such as food, water, shelter, to raise their young and to escape from danger.
 - d. Show learners Resource 3: Different habitats.
 - e. Explain that the sunbird has a long beak so that the beak can go into a flower to get nectar.
 - f. It likes to live in a floral area, which means an area where plants have many flowers.
 - g. The elephant has a trunk for getting leaves of trees and tusks for digging up roots.
 - h. They also use their trunks and tusks to defend themselves.
 - i. Grassland areas have grass and trees like acacias (thorn trees).
 - j. Show learners Resource 4: Different habitats continued.
 - k. Explain that the clivia grows under trees as it does not like a lot of light.
 - l. You will find clivias in a forest.

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- m. Ostriches like to live in hot areas like a desert.
- n. They can run fast and kick hard to protect themselves.
- o. In a desert area, they can see far.

Checkpoint 1

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

- a. Name one plant or animal that lives in or near water.
- b. Why does a sunbird have a long beak?

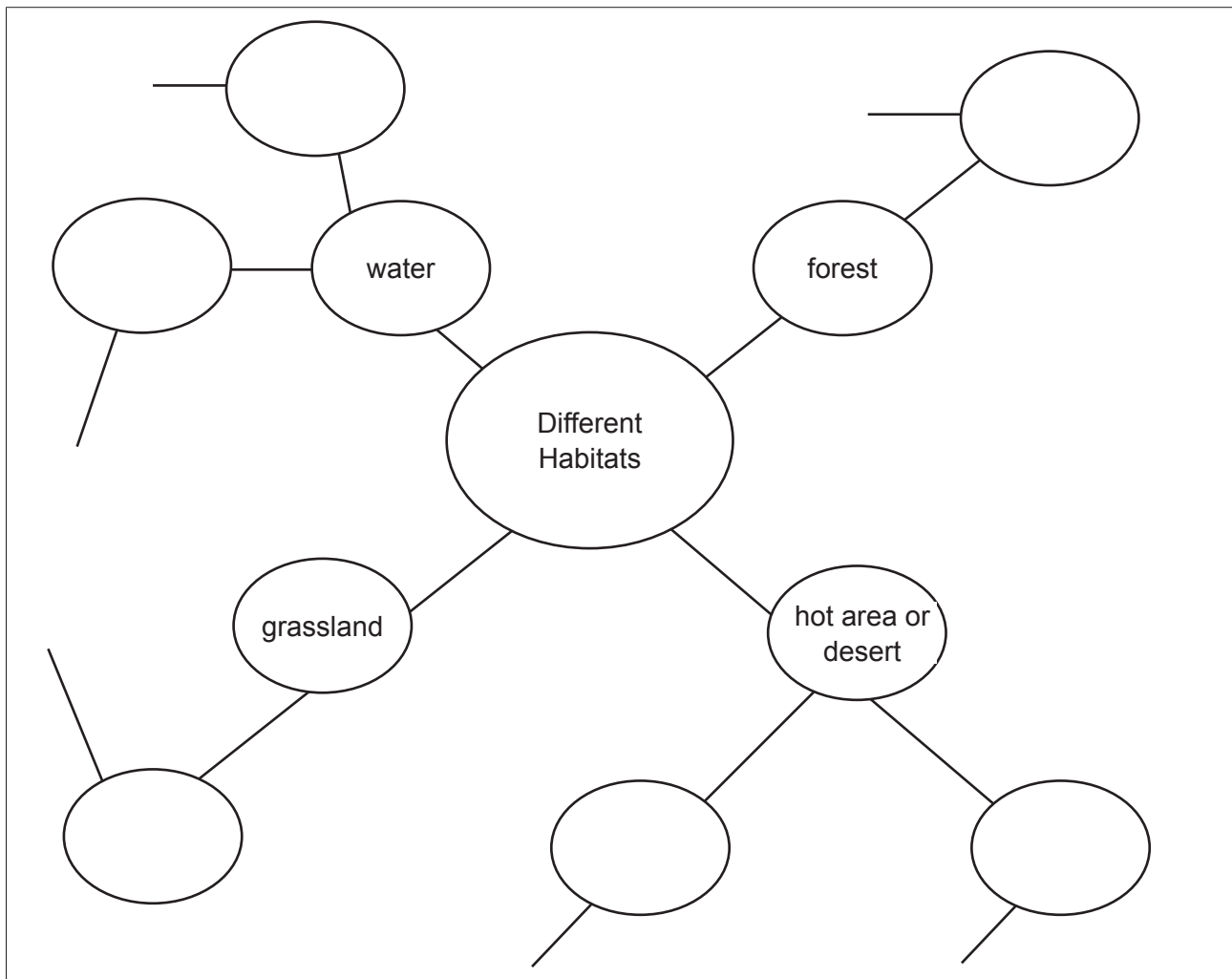
Answers to the checkpoint questions are as follows:

- a. Many answers will be correct, e.g. water lily or frog. Learners might list other plants or animals that live on or near water.
- b. A sunbird has a long beak so that the beak can enter a flower to get nectar.

E

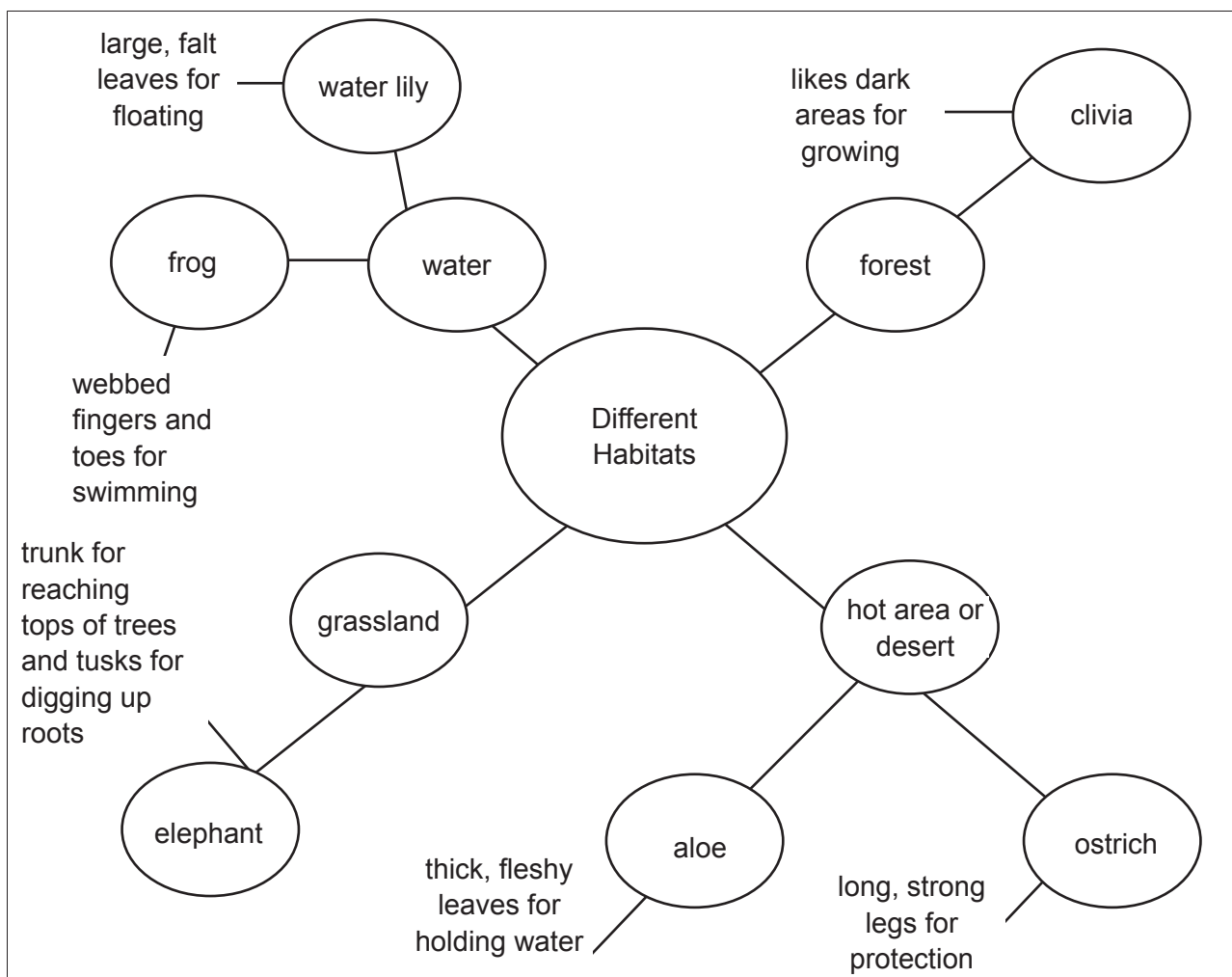
CONCEPTUAL DEVELOPMENT

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



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2. Explain the following to the learners:
 - a. Learners must copy this diagram into their workbooks.
 - b. In the empty circles, they must fill in the correct animals and plants from the information on the chalkboard.
 - c. Then at the end of the lines coming out from those circles, the learners must fill in information about that plant or animal.
3. Give learners some time to complete this task in their workbooks.
4. The model answer is:



Checkpoint 2

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

- a. Name four different types of habitats.
- b. Why can a frog swim so well in water?

Answers to the checkpoint questions are as follows:

- a. Grassland, desert, water, forest
- b. It has webbed fingers and toes.

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	Plants and animals on Earth	13-16
Viva	Plants and animals on Earth	2-4
Platinum	Plants and animals on Earth	4-5
Solutions for All	Plants and animals on Earth	-
Day-by-Day	Plants and animals on Earth	1-2
Oxford	Plants and animals on Earth	-
Spot On	Plants and animals on Earth	3
Top Class	Plants and animals on Earth	2
Sasol Inzalo BkA	Plants and animals on Earth	2-17

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/QEVmsq> (4min) [Animal Habitats]
2. <https://goo.gl/NbSjih> (1min) [Habitats - Grasslands – an introduction]
3. <https://goo.gl/qkdkdh> (4min) [Animals and their habitats]

TOPIC: Plants and animals on Earth

2 A

Term 1, Week 2, Lesson A
Lesson Title: Inter-dependence
Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants and animals depend on each other		
CAPS Page Number	31		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • define inter-dependence • describe how plants and animals depend on each other. 			
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 5: Lions in the shade of a tree	
Resource 6: Inter-dependence: Oxpeckers on a giraffe	
Resource 7: Bees pollinating a plant	

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 does a water lily have large, flat leaves?

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 water lily has large flat leaves so that it can float on water.

D

ACCESSING INFORMATION

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

INTER-DEPENDENCE BETWEEN PLANTS AND ANIMALS

1. Inter-dependence is when two or more things depend on each other.
2. Animals and plants depend on each other for food, shelter and **reproduction**.

FOOD

1. Animals cannot make their own food.
2. They eat plants or other animals that have eaten plants.

SHELTER

1. Trees provide shelter for birds to make their nests.
2. Trees provide shelter from the weather.
3. Insects live in plants.
4. Spiders make their webs in these plants.

AGENTS OF POLLINATION

1. Some plants need animals to **disperse** their seeds.
2. Animals either pick up the seeds in their fur or carry them in their **droppings**.
3. Some insects **pollinate** plants.

2. Explain and discuss the following with the learners:
 - a. Plants need to have their seeds spread over a large area.
 - b. Animals carry seeds in two ways: droppings or when seeds get caught in their fur.
 - c. Insects and plants need each other.
 - d. They are inter-dependent.
 - e. Lions need protection from the sun, so they will lie under a tree in the middle of the day.
 - f. Show learners Resource 6: Lions in the shade of a tree.
 - g. Without the shade of trees, lions would not be able to rest in order to hunt. It would be too hot.
3. Give learners some time to copy this information from the chalkboard into their workbooks.

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Checkpoint 1

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

- a. Name two things that animals depend on plants for.
- b. Give one way in which animals can disperse plant seeds.

Answers to the checkpoint questions are as follows:

- a. Animals need plants to provide shelter and food.
- b. Either answer: They can disperse plant seeds by their droppings or by carrying them in their fur.

E

CONCEPTUAL DEVELOPMENT

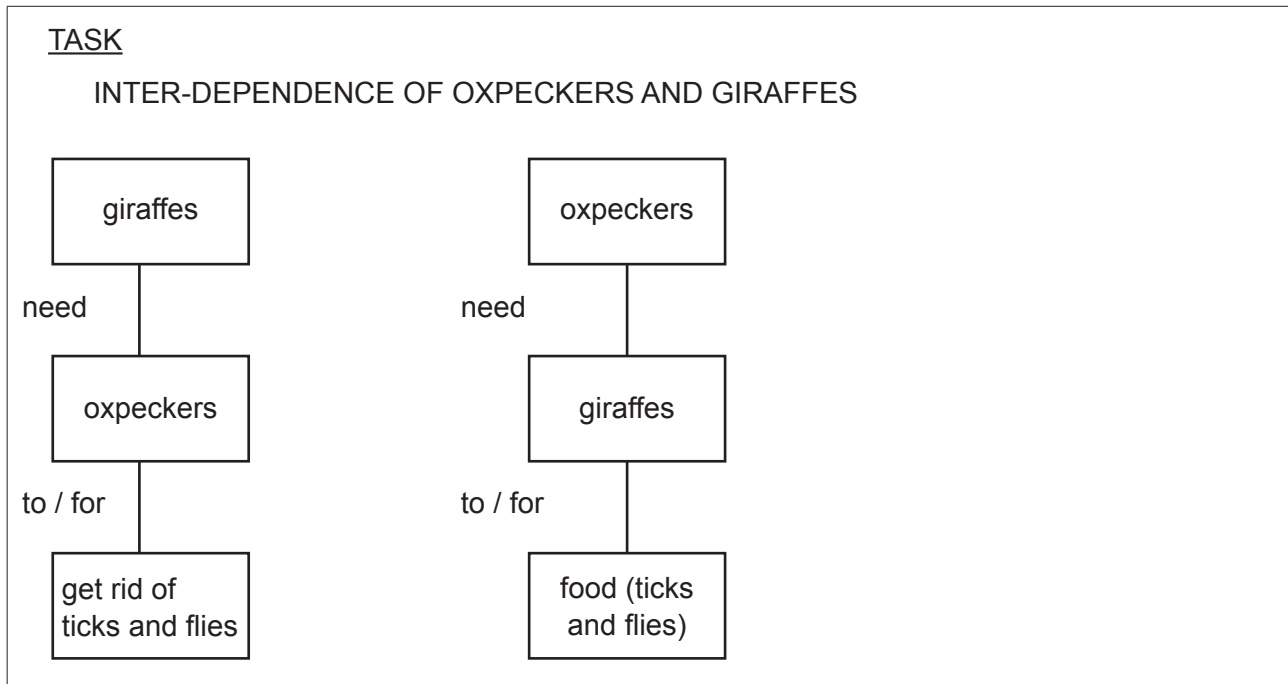
1. Write the following onto the chalkboard (always try to do this before the lesson starts).

- A
1. Ticks and flies bother giraffes.
 2. A bird called an oxpecker will land on a giraffe and pick off and eat these ticks and flies.
 3. The oxpecker and giraffe are inter-dependent.
- B
1. Bees land on flowers to get **nectar**.
 2. Bees need nectar to make honey.
 3. The pollen from the flower sticks to the bees' legs.
 4. The pollen gets taken to another flower by the bees.
 5. Pollination then takes place.
 6. The plant can then make seeds.

2. Explain this task to the learners as follows:
 - a. Show learners Resource 6: Inter-dependence: Oxpeckers on a giraffe.
 - b. The giraffe has ticks and flies that bother it.
 - c. The oxpeckers pick off these pests.
 - d. This helps the giraffe get rid of unwanted pests.
 - e. This helps the oxpecker as it eats these pests.
 - f. The giraffe and the oxpeckers are inter-dependent.
 - g. Show learners Resource 7: Bees pollinating a plant.
 - h. Bees depend on the nectar inside plants to make their honey.
 - i. The flowers depend on the bees to pollinate them.
 - j. Without nectar, bees cannot make honey, and without pollen going to another flower, the plants cannot reproduce.

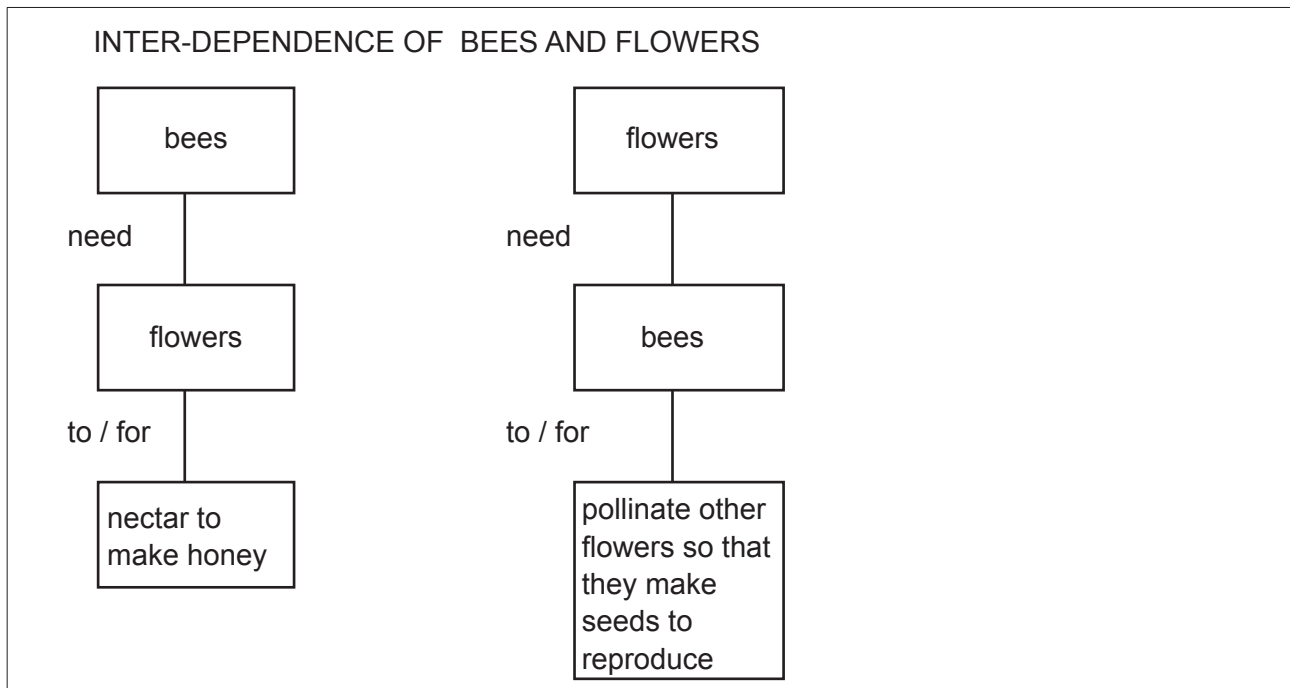
TOPIC: Plants and animals on Earth

- k. Explain how pollen sticks on the bees' legs and it then gets taken to other plant.
 - l. Pollination enables the plants to make seeds.
 - m. Bees need flowers for their nectar and flower need bees for pollination.
3. Draw the following diagram on the chalkboard. Always try to do this before the lesson starts.



4. Explain the following to the learners:
- a. The diagram shows why the one animal/bird is dependent on another animal/bird.
 - b. It then shows how they are inter-dependent.
 - c. Do a similar diagram for bees and flowers.
 - d. Learners must write the following heading in their workbooks: INTER-DEPENDENCE OF BEES AND FLOWERS
5. Give learners some time to complete this task in their workbooks.
6. The model answer for this task is as follows:

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Checkpoint 2

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

- a. What do bees get from flowers?
- b. What do they use this for?

Answers to the checkpoint questions are as follows:

- a. Bees get nectar from flowers.
- b. They use nectar to make honey.

7. 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	Plants and animals on Earth	18-19
Viva	Plants and animals on Earth	5
Platinum	Plants and animals on Earth	6-7
Solutions for All	Plants and animals on Earth	6-7
Day-by-Day	Plants and animals on Earth	6-7
Oxford	Plants and animals on Earth	16
Spot On	Plants and animals on Earth	4
Top Class	Plants and animals on Earth	4
Sasol Inzalo BkA	Plants and animals on Earth	18-23

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/haXJgM> (3min 30sec) [How plants and animals depend on each other]
2. <https://goo.gl/UJ11t6> (2min 30sec) [Pollination lesson]

TOPIC: Plants and animals on Earth

2 B

Term 1, Week 2, Lesson B

Lesson Title: Inter-dependence

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Interdependence between living things and resources available		
CAPS Page Number	31		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • Explain what is meant by non-living resources • Describe how animals need both living and non-living resources in order to survive. 			
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 8: Crocodiles	

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 inter-dependence mean?

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.

It means when two or more things depend on each other.

D ACCESSING INFORMATION

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

INTER-DEPENDENCE BETWEEN PLANTS, ANIMALS AND RESOURCES

1. Living things need non-living things as well as each other to survive.
 2. Plants need air, water, soil and sunlight from their habitats to survive.
 3. Animals need air, water, food and shelter from their habitats to survive.
 4. Resources are existing things that are needed for animals and plants to survive.
 5. Animals make use of these resources for food, **protection** and **reproduction**.
2. Explain and discuss the following with the learners:
 - a. Plants and animals depend on their habitats for their needs.
 - b. Plants need sunlight, water, minerals from the soil and carbon dioxide from the air to survive.
 - c. Animals need sunlight, water, food and oxygen to survive.
 - d. Many animals need a shelter of some sort as well as which also acts as protection from predators.
 - e. To protect themselves, birds make nests high up in trees and meerkats make burrows in the ground.
 - f. These shelters also keep their young safe.
 3. Give learners some time to copy this information into their workbooks.

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Checkpoint 1

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

- a. Name three non-living resources.
- b. What do animals get from their habitats that they need in order to survive?

Answers to the checkpoint questions are as follows:

- a. Any three of: air, water, soil, food.
- b. Animals get air, water, soil, food and shelter in order to survive.

E CONCEPTUAL DEVELOPMENT

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

CROCODILES

1. Crocodiles live in water and on land next to water.
2. They **prey** on animals that come to drink at a river or a watering hole.
3. Crocodiles can move very fast.
4. They can also swim without making ripples in the water.
5. Their eyes and snout (nose) lie just above the water.
6. They lay their eggs in river banks.
7. Crocodiles eat about 50 times a year.
8. Crocodiles breathe air like people but they can hold their breath underwater for a very long time.

TASK

Complete the following sentences using the following words:

water; living; animals; land; air; non-living; eggs

- a. Crocodiles live in ____ and on ____.
- b. They need ____ to breathe but they can be underwater for a long time.
- c. They survive by eating other ____.
- d. Crocodiles need both ____ and ____ things to survive.
- e. They keep their ____ safe by laying them in river banks.

2. Explain this task to the learners as follows:
 - a. The crocodile lives in a water habitat and a land habitat.
 - b. They eat other animals.
 - c. These animals eat other animals or plants in order to live and grow.

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- d. Crocodiles keep their eggs safe by laying their eggs in river banks.
 - e. Crocodiles can lie still underwater for up to two hours.
 - f. Crocodiles can move very fast.
 - g. They wait to attack their prey.
 - h. Show learners Resource 8: Crocodiles.
3. Ask learners to complete the task in their workbooks by filling in the correct words from the given list.
 4. Give learners some time to complete this task in their workbooks.
 5. The model answers for the task are:

CROCODILES

- a. Crocodiles live in water and on land.
- b. They need air to breathe but they can be underwater for a long time.
- c. They survive by eating other animals.
- d. Crocodiles need both living and non-living things to survive.
- e. They keep their eggs safe by laying them in river banks.

Checkpoint 2

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

- a. In what habitats does a crocodile live?
- b. Why does a crocodile lay its eggs in a river bank?

Answers to the checkpoint questions are as follows:

- a. A crocodile lives in the water and on land.
- b. It lays its eggs in a river bank to keep them safe.

6. 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	Plants and animals on Earth	19
Viva	Plants and animals on Earth	8-9
Platinum	Plants and animals on Earth	8-9
Solutions for All	Plants and animals on Earth	6-7
Day-by-Day	Plants and animals on Earth	8
Oxford	Plants and animals on Earth	17
Spot On	Plants and animals on Earth	4-5
Top Class	Plants and animals on Earth	4
Sasol Inzalo BkA	Plants and animals on Earth	23-27

G ADDITIONAL ACTIVITIES/ READING

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

1. <https://goo.gl/1n6a7T> (6min 30sec) [Understanding ecosystems]
2. <https://goo.gl/5gpF3Z> (8min) [Living and non-living objects]

2 C

Term 1, Week 2, Lesson C
Lesson Title: Animal types
Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Invertebrates	
CAPS Page Number	31	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • define an invertebrate • describe what an invertebrate looks like • give some examples of invertebrates. 		
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 9: Classifying animals	
Resource 10: Invertebrates: A crab and a snail	
Resource 11: Invertebrates: An earthworm and a butterfly	

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 do animals need in order to survive?

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 need air, water, food and some need shelter in order to survive.

D ACCESSING INFORMATION

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

INVERTEBRATES

1. One way to classify (group) animals is to put them into two groups: those with bones and those with no bones.
2. **Invertebrates** are animals with no bones.
3. Some invertebrates have a hard covering around their body, like a crab or a cockroach.
4. This hard covering is called an **exoskeleton**.
5. An exoskeleton does not grow with the body of the invertebrate.
6. All insects have an exoskeleton and six legs.
7. Some invertebrates are soft, like an earthworm.
8. These soft invertebrates need a **damp** habitat.
9. They have a skin that needs to breathe and so it must be kept damp.
10. This is called a **hydroskeleton**.

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2. Explain and discuss the following with the learners:
 - c. Look at Resource 9: Classifying animals.
 - d. Point out the two main groups of animals on this poster: vertebrates and invertebrates.
 - e. Point out that these two main groups are put into smaller groups.
 - f. Invertebrates are animals with no bones.
 - g. Some may have a hard covering to protect their body like a crab or scorpion.
 - h. This is called an exoskeleton.
 - i. Other invertebrates are soft and need to live either in water or in a **damp** habitat.
 - j. Their skin is thin and they breathe through their skin.
 - k. This is called a hydroskeleton.
3. Give learners some time to copy this information into their exercise books.

Checkpoint 1

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

- a. What are the two main groups into which animals can be classified?
- b. What is an invertebrate?

Answers to the checkpoint questions are as follows:

- a. Animals can be classified as invertebrates or vertebrates.
- b. An invertebrate is an animal with no bones.

E

CONCEPTUAL DEVELOPMENT

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

TASK

Copy and complete the table below:

	crab	snail	earthworm	butterfly
number of legs				
numbers of wings				
type of skeleton				

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2. Explain this task to the learners as follows:
 - a. Show the learners Resource 9: Classifying animals.
 - b. Point out the crab, the snail, the earthworm and the butterfly.
 - c. Show the learners Resource 10: Invertebrates: A crab and a snail.
 - d. Show the learners Resource 11: Invertebrates: An earthworm and a butterfly.
 - e. Point out the type of skeleton on each invertebrate (hydroskeleton or exoskeleton).
 - f. Point out the number of legs and wings on each invertebrate.
3. Ask learners the following questions and discuss the answers:
 - a. How are these four invertebrates different from each other? (*the skeletons are different - some have legs, some have wings*)
 - b. How are they all the same? (*they are all invertebrates so they do not have bones*)
 - c. Which invertebrate has the softest outer 'skin'? (*the earthworm*)
 - d. Which invertebrates have legs? (*the crab and the butterfly*)
 - e. Which invertebrate has a shell? (*the snail*)
 - f. Why do you think it has a shell? (*to protect its soft body*)
4. Give learners some time to complete the table in their workbooks.
5. The model answers are as follows:

	crab	snail	earthworm	butterfly
number of legs	<i>8 and claws</i>	<i>0</i>	<i>0</i>	<i>6</i>
numbers of wings	<i>0</i>	<i>0</i>	<i>0</i>	<i>4</i>
type of skeleton	<i>exoskeleton</i>	<i>exoskeleton</i>	<i>hydroskeleton</i>	<i>hydroskeleton</i>

Checkpoint 2

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

- a. What is an invertebrate?
- b. What type of skeleton does an earthworm have?

Answers to the checkpoint questions are as follows:

- a. An invertebrate is an animal with no bones.
- b. An earthworm has a hydroskeleton.

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

TOPIC: Plants and animals on Earth

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	Plants and animals on Earth	20-23
Viva	Plants and animals on Earth	9-10
Platinum	Plants and animals on Earth	10-11
Solutions for All	Plants and animals on Earth	8-9
Day-by-Day	Plants and animals on Earth	9-10
Oxford	Plants and animals on Earth	18
Spot On	Plants and animals on Earth	6
Top Class	Plants and animals on Earth	5-10
Sasol Inzalo BkA	Plants and animals on Earth	32-35

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. goo.gl/l5lsz (5min 30sec) [Invertebrate animals]
2. <https://goo.gl/ytBmDe> (3min) [Invertebrates]
3. <https://goo.gl/XKF5gk> (3min) [Vertebrates and Invertebrates]

TOPIC: Plants and animals on Earth

3 A

Term 1, Week 3, Lesson A

Lesson Title: Animal types

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Vertebrates		
CAPS Page Number	31		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • define a vertebrate • describe what a vertebrate looks like • give some examples of vertebrates. 			
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: Plants and animals on Earth

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 9: Classifying animals	
Resource 12: Vertebrates: Nguni cows and a fish	
Resource 13: Vertebrates: A bird and a snake	

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 a snail an invertebrate?

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 snail has no bones but it has a shell to protect its soft body.

D ACCESSING INFORMATION

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

VERTEBRATES

1. **Vertebrates** are animals that have bones.
 2. Vertebrates have a backbone inside their body.
 3. Other bones are attached to the backbone.
 4. This type of skeleton is called an **endoskeleton**.
 5. These bones grow with the body of the vertebrate.
 6. This is why vertebrates can grow very big.
 7. Endoskeletons support, shape and protect the body of a vertebrate.
2. Explain the following to the learners:
 - a. Show learners Resource 9: Classifying animals.
 - b. Point out the section for vertebrates.
 - c. Vertebrates are animals with bones.
 - d. These bones are inside the vertebrates' bodies.

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- e. This is known as an endoskeleton.
 - f. An endoskeleton supports the body of a vertebrate – it holds the body up.
 - g. An endoskeleton gives the vertebrate its shape.
 - h. An endoskeleton protects many inside organs, like the heart and lungs of a vertebrate.
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 a vertebrate?
- b. What is the name given to the skeleton of a vertebrate?

Answers to the checkpoint questions are as follows:

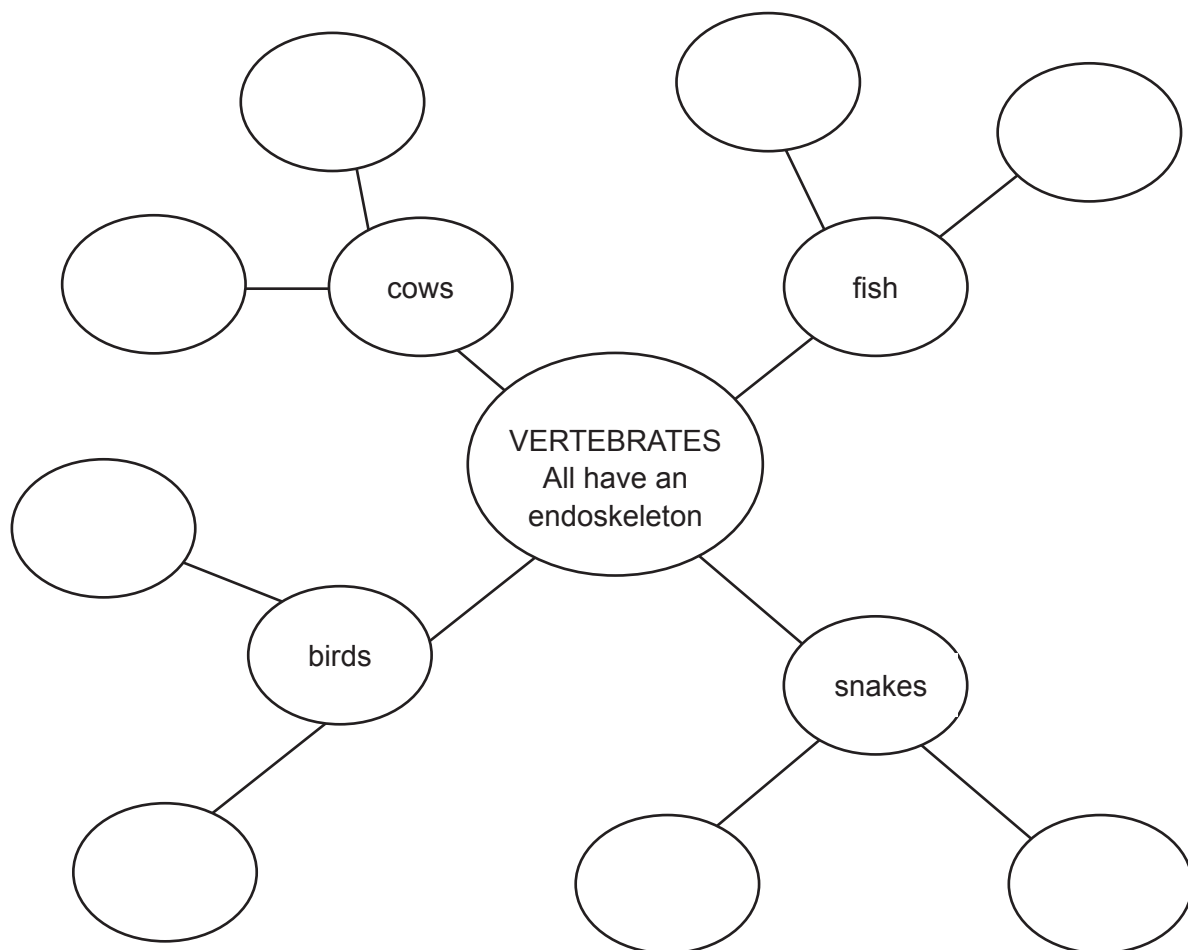
- a. A vertebrate is an animal with bones.
- b. An endoskeleton is the skeleton of a vertebrate.

E CONCEPTUAL DEVELOPMENT

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

1. Vertebrates are different from one another in many ways.
2. They have different body coverings.
3. Fish have **scales**.
4. Snakes have thin, smooth skin.
5. Birds have feathers.
6. Many **mammals** are covered with hair or fur.

VERTEBRATES

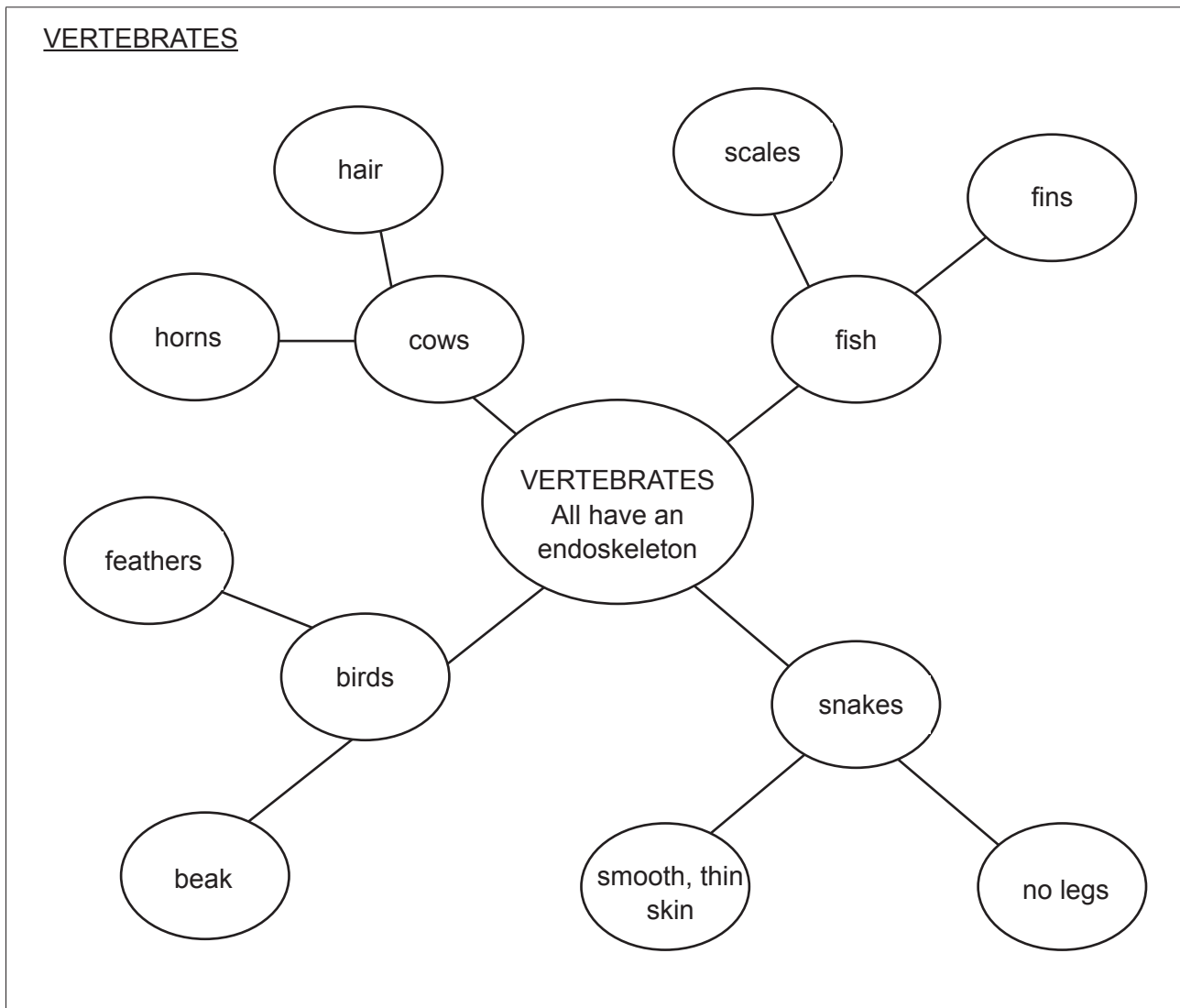


2. Explain the following to the learners:

- a. Vertebrates are all similar as they all have an endoskeleton.
- b. Vertebrates also have many differences.
- c. One difference is their body coverings.
- d. Go through the different body coverings of the different vertebrates on the chalkboard.
- e. Ask learners to draw the diagram into their workbooks.

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- f. In the empty circles, they must fill in characteristics of the animal that are different from the other animals' characteristics.
 - g. For example, a bird has feathers and a beak, unlike other animals.
 - h. Show learners Resource 12: Vertebrates: Nguni cows and a fish.
 - i. Look at the body covering of these vertebrates. Nguni cows have hair and fish have scales.
 - j. Discuss other differences as well. Nguni cows have horns. Fish have fins.
 - k. Show learners Resource 13: Vertebrates: A bird and a snake.
 - l. Look at the body coverings of these vertebrates. A bird has feathers and a snake has a smooth, soft skin.
 - m. Discuss other differences as well. Birds have a beak and wings. Snakes have no legs.
3. Give learners some time to complete this task in their workbooks.
 4. The model answer to this task follows. Discuss the model answer with the learners. They might have different answers that are correct.



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

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Checkpoint 2

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

- a. What does an endoskeleton do?
- b. Name an animal that is a vertebrate.

Answers to the checkpoint questions are as follows:

- a. An endoskeleton supports, shapes and protects the bodies of vertebrates.
- b. Any suitable answer: a bird, snake, cow, fish or any other vertebrate.

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	Plants and animals on Earth	20-23
Viva	Plants and animals on Earth	11-12
Platinum	Plants and animals on Earth	11-12
Solutions for All	Plants and animals on Earth	9-11
Day-by-Day	Plants and animals on Earth	11-13
Oxford	Plants and animals on Earth	19
Spot On	Plants and animals on Earth	6-7
Top Class	Plants and animals on Earth	8-10
Sasol Inzalo BkA	Plants and animals on Earth	35-39

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/NsVgV1> (1min 54sec) [Skeletons and vertebrates]
2. <https://goo.gl/uNbXJN> (3min 52sec) [Vertebrate animals]
3. <https://goo.gl/iR3oZb> (3min 39sec) [Vertebrates]

TOPIC OVERVIEW:

Animal Skeletons

Term 1, Weeks 3B – 4C

A. TOPIC OVERVIEW

Term 1, Weeks 3b – 4c

- This topic runs for 1 ½ 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	GRADE 5	GRADE 6 & 7
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Structures for animal shelters 	<ul style="list-style-type: none"> • Animal skeletons • Skeletons as structures 	-

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

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

	TERM	EXPLANATION
1.	curved	Being bent in part of a circle, not straight
2.	skull	The bone protecting the brain of a vertebrate
3.	flexible	Able to be bent without breaking
4.	contracts	To shrink
5.	tissue	A type of material from which some parts of animals are made
6.	hinge	A joint that can move; hinges help gates and doors to open and close

7.	spinal cord	The thick string of nerves in the spine that sends messages to and from the brain
8.	functions	The jobs that someone or something does
9.	socket	A natural hollow into which something fits

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

Understanding animals' skeletons is useful. It helps us understand how animals, including humans, work. Skeletons support the body. Without skeletons, animals would not be upright or able to move.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

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

TOPIC: Animal skeletons

3 B

Term 1, Week 3, Lesson B

Lesson Title: Skeletons of vertebrates

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Bones and joints		
CAPS Page Number	32		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • describe what a bone is • describe what a joint is. 			
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: Animal skeletons

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 17: A skeleton	

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 do we call an animal with bones?

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 animal with bones is called a vertebrate.

D ACCESSING INFORMATION

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

SKELETONS OF VERTEBRATES

1. Vertebrates are animals with skeletons inside their bodies.
2. This type of skeleton is called an endoskeleton.

BONES

1. Bones give shape and support to the body.
2. They are very hard.
3. Bones have different shapes.

JOINTS

1. Joints are the places where two or more bones meet.
2. They enable the body to move.

2. Explain and discuss the following with the learners:
 - a. Remind the learners that a skeleton which is inside a body is called an endoskeleton.
 - b. Without bones, animals' bodies would have no shape or be unable to hold themselves up.
 - c. Bones are very hard and do not often break.
 - d. If you eat chicken or fish, you can see the bones.

TOPIC: Animal skeletons

- e. All vertebrates have similar kinds of bones.
 - f. Certain bones might be bigger on one animal than another but otherwise they are similar.
 - g. Show learners Resource 17: A skeleton.
 - h. Point out the different shapes and sizes of the bones on the skeleton.
 - i. Point out the joints.
 - j. The wrist, elbow, knee and ankle are all joints.
3. Give learners some time to copy this information into their exercise books.

Checkpoint 1

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

- a. True or False: Bones are very hard.
- b. True or False: Joints are where two or more bones meet.

Answers to the checkpoint questions are as follows:

- a. True
- b. True

E

CONCEPTUAL DEVELOPMENT

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

BONES

- a. All animals with a backbone are vertebrates.
- b. Bones are strong and do not bend.
- c. Not all vertebrates have the same bones.

JOINTS

- a. Different joints allow for different types of movement.
- b. Your elbows and knees are hinge joints.
- c. They can bend in one direction only.

2. Do the following activity with the learners:
- a. Tell learners to look at their hand.
 - b. Ask learners to feel the bones and joints of their hand.
 - c. The bones are hard and rigid (they do not bend or twist).
 - d. The joints are the knuckles (the middle finger joints) and the wrist (where the hand joins the arm).

TOPIC: Animal skeletons

- e. Tell them to notice the different way in which these joints move: the knuckles and the wrist.
 - f. Ask learners to look at their elbows and shoulder joints.
 - g. All these joints enable us to move our bones.
 - h. Tell learners to clench their hands into a fist and notice how the knuckles enable the fingers to bend.
 - i. Tell learners to stand up and move their arms round and round.
3. Give learners some time to copy the information into their workbooks.

Checkpoint 2

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

- a. True or False: All vertebrate animals have a backbone.
- b. True or False: All bones can bend.

Answers to the checkpoint questions are as follows:

- a. True.
- b. False: Bones cannot bend.

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

TOPIC: Animal skeletons

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	Animal skeletons	24-26
Viva	Animal skeletons	13-14
Platinum	Animal skeletons	15-16
Solutions for All	Animal skeletons	16-17
Day-by-Day	Animal skeletons	15-16
Oxford	Animal skeletons	20-21
Spot On	Animal skeletons	8
Top Class	Animal skeletons	13
Sasol Inzalo BkA	Animal skeletons	44-49

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.youtube.com/watch?v=ywDOiNEdJVc> (4min 16sec) [Bones]
2. <https://www.youtube.com/watch?v=vRuh9aBwUdM> (4min 10sec) [Your Super Skeleton]

3 C

Term 1, Week 3, Lesson C

Lesson Title: Skeletons of vertebrates

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Bones and frame structure		
CAPS Page Number	32		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • identify the main parts of a skeleton • identify these main parts in different vertebrates. 			
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: Animal skeletons

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resources Page 14: A skull	
Resources Page 15: A skull	
Resources Page 16: A backbone	
Resources Page 17: A skeleton	

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 do we call the joints between the hand and the fingers?

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.

These joints are called the knuckles.

D ACCESSING INFORMATION

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

PARTS OF A SKELETON

1. The bones of the **skull** form around the brain.
2. The skull has eye sockets.
3. The jawbone has teeth.
4. The backbone runs from the skull downwards.
5. The backbone is made up of many small bones called vertebrae.
6. The ribs are **curved** bones joined to the backbone.
7. Vertebrates with arms will have a shoulder girdle.
8. Vertebrates with legs will have a hip **girdle**.
9. Some vertebrates have upper limbs and lower limbs.
10. Upper limbs are made up of the arm and the hand.
11. The upper limbs fit into a shoulder girdle.
12. Lower limbs are made up of legs and feet.
13. The lower limbs fit into a hip girdle.

TOPIC: Animal skeletons

2. Explain and discuss the following with the learners:
 - a. Show learners Resource 17: A skeleton.
 - b. Point out the skull.
 - c. The skull is formed around the brain.
 - d. Ask learners to feel their own skulls.
 - e. Point out the eye sockets on the skull on the skeleton.
 - f. Ask learners to feel their own eye sockets.
 - g. The jawbone holds teeth.
 - h. There is an upper jawbone and a lower jawbone.
 - i. Point out the jawbones on the skull of the skeleton.
 - j. Ask learners to feel their own jawbones.
 - k. The backbone runs from the skull downwards.
 - l. Ask learners to see if they can feel the many small bones that make up the backbone.
 - m. The ribs are attached to the backbone.
 - n. Ribs come from the backbone to the front of the body in a curve.
 - o. Point this out on the drawing of the skeleton.
 - p. Ask learners to feel their ribs.
 - q. Shoulder blades run from the side of the neck to the top of the arm.
 - r. Hip girdles are at the top of our legs.
 - s. Upper limbs are our arms and hands that fit into the shoulder girdle.
 - t. Lower limbs are our legs and feet that fit into the hip girdle.
3. Give learners some time to copy this information into their exercise books.

Checkpoint 1

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

- a. What part of the skeleton are the ribs attached to?
- a. True or False: The backbone is made up of one bone.

Answers to the checkpoint questions are as follows:

- a. Ribs are attached to the backbone.
- b. False. The backbone is made up of many small bones.

E

CONCEPTUAL DEVELOPMENT

1. Do the following with the learners:
 - a. Show learners Resource 14: A Skull, and Resource 15: A Skull.
 - b. Ask the learners if they know to which animals the skulls belong. *Rhino* and *crocodile*
 - c. Point out the eye sockets (the crocodile's sockets are on top of its skull).
 - d. Point out the jawbones with teeth.
 - e. Show learners Resource 16: A backbone.
 - f. Point out the ribs that are attached to the backbone.
 - g. Point out the hip girdle and the shoulder girdle.
 - h. Show learners Resource 17: A skeleton.
 - i. Point out all the different parts of the skeleton that they have learnt about: skull, backbone, ribs, upper limbs, lower limbs, shoulder girdle, hip girdle.
2. Ask learners to stand up and do the following:
 - c. Call out the following one at a time: skull, backbone, ribs, lower limbs, upper limbs, hip girdle, shoulder girdle.
 - d. Ask learners to point to the part of the skeleton on their own bodies as it is being called out.
3. Ask learners to complete the following activity in their workbooks:

Fill in the missing words from the list below. Underline these words in the sentence you write.

hands, ribs, jawbone, skull, feet, arms, lower limbs

- a. The ____ has eye sockets and a ____ with teeth.
- b. The upper limbs consist of ____ and ____.
- c. The ____ ____ consist of legs and ____.
- d. ____ are attached to the backbone.

4. The model answer is:

- a. The skull has eye sockets and a jawbone with teeth.
- b. The upper limbs consist of arms and hands.
- c. The lower limbs consist of legs and feet.
- d. Ribs are attached to the backbone.

5. Give learners some time to complete this task in their workbooks.
6. If you have time, ask the learners to do the following activity.
 - a. Get into pairs.
 - b. One learner must point to a part of his/her skeleton (bones and joints).
 - c. The other learner must name the part.
 - d. When they have completed all the parts of the skeleton they know, then they must swap around.

TOPIC: Animal skeletons

Checkpoint 2

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

- a. Name the part of the skeleton that forms around the brain.
- b. True or False: Ribs are curved.

Answers to the checkpoint questions are as follows:

- a. The skull forms around the brain.
- b. True. Ribs are curved.

7. Ask 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	Animal skeletons	27-29
Viva	Animal skeletons	15
Platinum	Animal skeletons	16-21
Solutions for All	Animal skeletons	17-22
Day-by-Day	Animal skeletons	15
Oxford	Animal skeletons	20-22
Spot On	Animal skeletons	9
Top Class	Animal skeletons	14-17
Sasol Inzalo Bk A	Animal skeletons	46-48

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/jejCYa> (28 sec) [Learn Science: Class 5: Human Body -The Skeletal System]
2. <https://goo.gl/XmHtMF> (1min 54sec) [Skeletons and vertebrates Grade 5]

TOPIC: Animal skeletons

4 A

Term 1, Week 4, Lesson A

Lesson Title: Skeletons of vertebrates

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Functions of a skeleton		
CAPS Page Number	32		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • identify animals from their skeletons • compare and contrast the different skeletons. 			
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: Animal skeletons

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 17: A skeleton	
Resource 18: A skeleton of a bat	
Resource 19: A skeleton of a cat	
Resource 20: A skeleton of a fish	

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 do we call an animal with bones?

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 animal with bones is called a vertebrate.

D ACCESSING INFORMATION

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

DIFFERENT VERTEBRATE SKSELTONS

1. All animals with a backbone will be a vertebrate.
 2. Their bodies may look very different but some of their bones will be similar.
 3. All vertebrates will also have a skull and ribs.
 4. Some vertebrates will not have a shoulder or a hip girdle.
 5. Fish and snakes do not have shoulder or hip girdles.
 6. Fish and snakes do not have upper or lower limbs.
2. Explain and discuss the following with the learners:
 - a. All vertebrates will have a backbone.
 - b. They will also have a skull and ribs.
 - c. Not all vertebrates will look the same.
 - d. Fish and snakes do not have shoulder or hip girdles as they do not have upper or lower limbs.

TOPIC: Animal skeletons

3. Give learners some time to copy this information into their exercise books.

Checkpoint 1

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

- a. Name two bones in an endoskeleton that all vertebrates have.
- b. Name one animal that does not have shoulder or hip girdles.

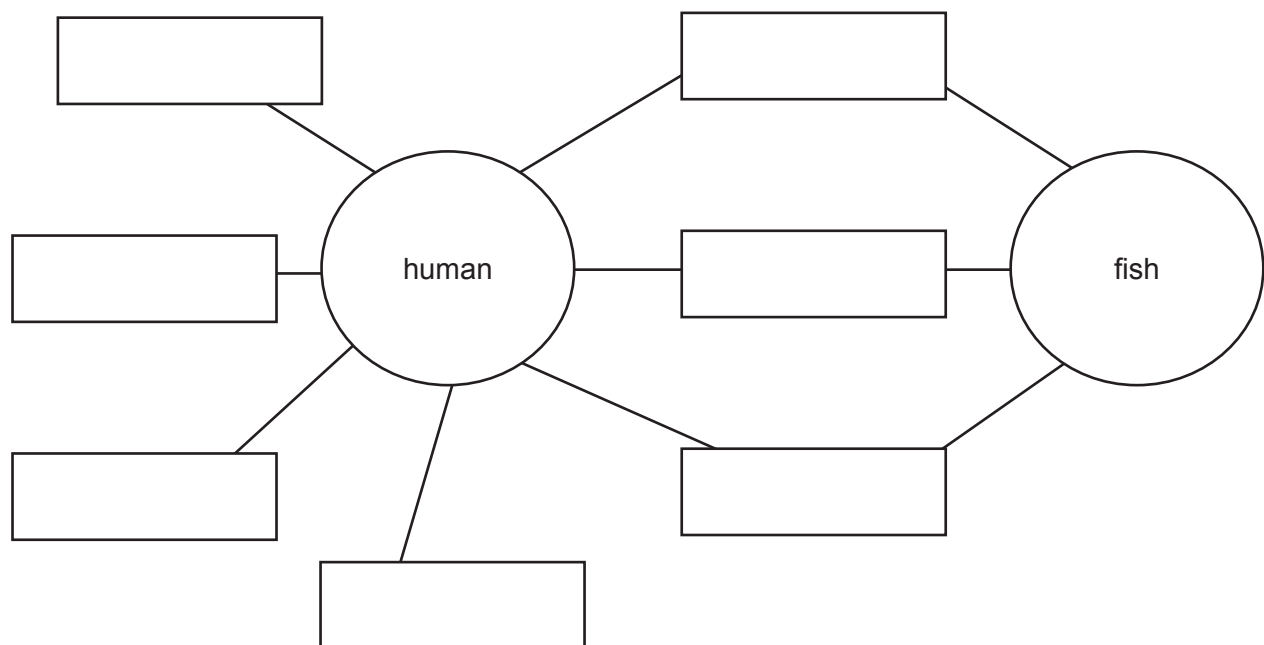
Answers to the checkpoint questions are as follows:

- a. Either two of: a skull, a backbone, ribs.
- b. Either of: a fish or a snake.

E CONCEPTUAL DEVELOPMENT

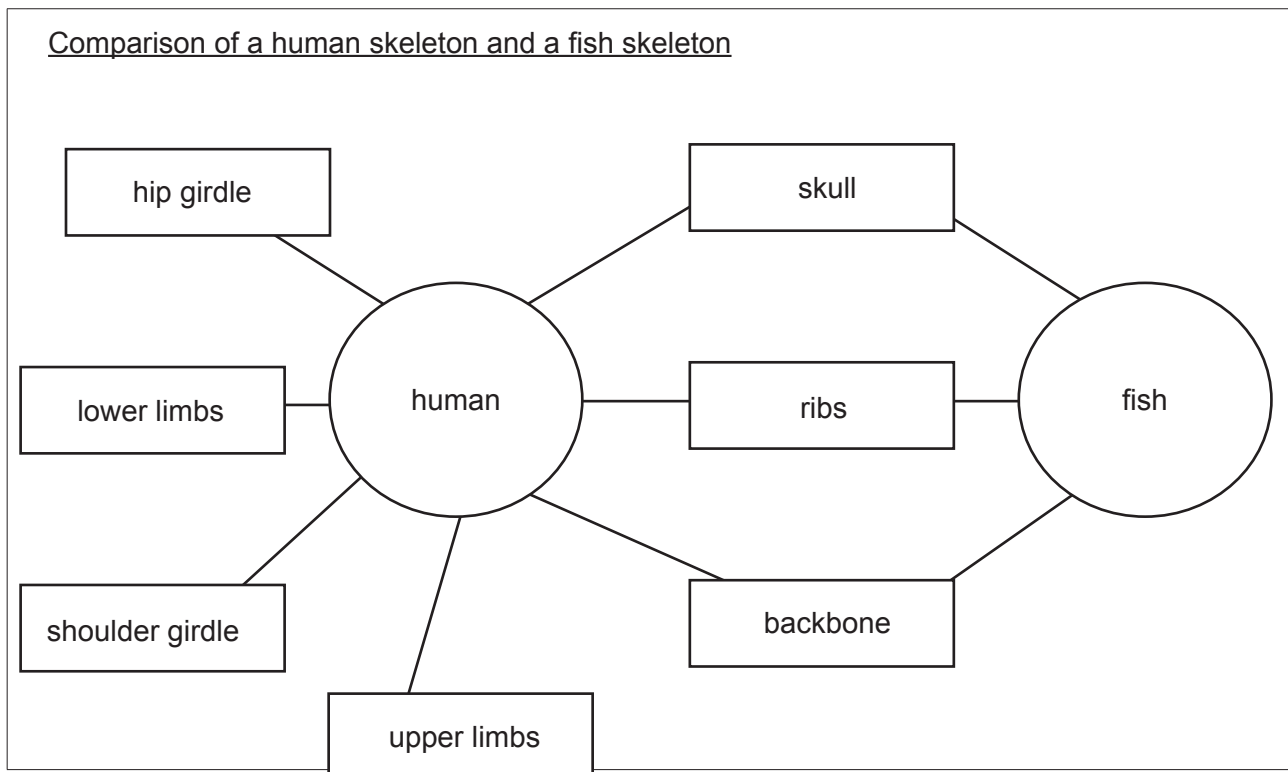
1. Explain the following to the learners (always try to do this before the lesson starts):
 - a. Show the learners Resource 18: Skeleton of a bat.
 - b. Ask the learners if they can see the skull, backbone and ribs of this skeleton.
 - c. Show the learners Resource 19: Skeleton of a cat.
 - d. Ask the learners if they can see the skull, backbone and ribs of this skeleton.
 - e. Ask learners what else they can see that is similar in these skeletons (they might not know the correct words for these parts yet). *Tail at the end of the backbone, upper limbs, lower limbs*
2. Draw the following onto the chalkboard (always try to do this before the lesson starts):

Comparison of a human skeleton and a fish skeleton



TOPIC: Animal skeletons

3. Explain this task to the learners as follows:
 - a. Show the learners Resource 17: A skeleton, and Resource 20: A skeleton of a fish.
 - b. Ask the learners to look carefully in order to see what parts of the skeleton are the same and what parts are different.
 - c. Ask learners to draw the diagram from the chalkboard into their workbooks.
 - d. In the centre blocks, they must fill in the three parts of a skeleton that both a human skeleton and a fish skeleton have.
 - e. In the blocks on the left, they must fill in the four parts of a human skeleton that a fish skeleton does not have.
4. The model answer is as follows:



5. Give learners some time to complete this task in their workbooks.
6. Next time the learners eat chicken or fish, they must look at the skeleton and see if they can identify the different parts.

Checkpoint 2

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

- a. True or False: Cat and bat skeletons both have a backbone with a tail.
- b. True or False: Human and fish skeletons both have a hip girdle.

Answers to the checkpoint questions are as follows:

- a. True.
- b. A fish skeleton does not have hip girdle.

TOPIC: Animal skeletons

7. Ask 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	Animal skeletons	24-26
Viva	Animal skeletons	13-14
Platinum	Animal skeletons	15-16
Solutions for All	Animal skeletons	16-17
Day-by-Day	Animal skeletons	15-16
Oxford	Animal skeletons	20-21
Spot On	Animal skeletons	8
Top Class	Animal skeletons	13
Sasol Inzalo BkA	Animal skeletons	44-49

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

TOPIC: Animal skeletons

4 B

Term 1, Week 4, Lesson B

Lesson Title: Skeletons of vertebrates

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Functions of skeletons		
CAPS Page Number	32		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • describe the functions of skeletons • give the names of the parts of the body that are protected by the skeleton. 			
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: Animal skeletons

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 17: A skeleton	
Resource 18: A skeleton of a bat	
Resource 19: A skeleton of a cat	

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 three bones that all vertebrate skeletons have.

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 skull, ribs and backbone.

D ACCESSING INFORMATION

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

FUNCTIONS OF BONES IN A VERTEBRATE SKELETON

1. Bones support or protect parts of the body.
2. Some bones have both of these functions.
3. The backbone is made up many small bones called vertebrae.
4. Animals have different numbers of vertebrae.
5. The backbone protects the spinal **cord** and supports the upper body.
6. The spinal cord sends messages from the brain to all other parts of the body.
7. All vertebrates have a skull to protect the brain, eyes, ears, nose and mouth.
8. The ribs protect organs like the lungs and heart.
9. The ribs of a snake also support the body.
10. Upper and lower limbs support the muscles needed for movement.

TOPIC: Animal skeletons

2. Explain and discuss the following with the learners:
 - a. Bones have two functions: they either support or protect parts of the body or do both.
 - b. The backbone supports and protects.
 - c. It supports the upper body and protects the spinal cord.
 - d. The spinal cord sends messages to and from the brain to all other parts of the body.
 - e. The skull protects the brain. It also protects the ears, eyes, nose and mouth.
 - f. The rib cage protects the heart, lungs and other organs.
 - g. In an animal like a snake, the rib cage protects and supports the whole body.
 - h. Show the learners Resource 18: A skeleton of a bat.
 - i. Point out the backbone, the skull, and the rib cage.
 - j. Show the learners Resource 19: A skeleton of a cat.
 - k. Point out the backbone, the skull, and the rib cage.
3. Give learners some time to copy this information into their workbooks.

Checkpoint 1

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

- a. What are the two functions of bones?
- b. What does the backbone protect?

Answers to the checkpoint questions are as follows:

- a. Bones support and protect.
- b. The backbone protects the spinal **cord**.

E

CONCEPTUAL DEVELOPMENT

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

BONES SUPPORT AND PROTECT

hip girdle, shoulder girdle, backbone, skull, messages, ribs, bones, hearts, vertebrae, brain, legs

1. The ___ protects the spinal cord.
2. The spinal cord sends ___ from the ___ to other parts of the body.
3. The backbone is made of many small ___ called ___.
4. Vertebrates need ___ to protect their ___ and lungs.
5. The ___ protects the brain.
6. Arms attach to the body at the ___.
7. ___ attach to the body at the ___.

TOPIC: Animal skeletons

2. Explain the following to the learners:
 - a. Ask learners if they understand all the words in the list.
 - b. They must write out the sentences and fill in the correct words from the list.
 - c. Learners must underline the words filled in.
3. Give learners some time to complete this task in their workbooks.
4. Below is the model answer.

BONES SUPPORT AND PROTECT

1. The backbone protects the spinal cord.
2. The spinal cord sends messages from the brain to other parts of the body.
3. The backbone is made of many small bones called vertebrae.
4. Vertebrates need ribs to protect their hearts and lungs.
5. The skull protects the brain.
6. Arms attach to the body at the shoulder girdle.
7. Legs attach to the body at the hip girdle.

Checkpoint 2

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

- a. What bone supports the upper body of vertebrates?
- b. What vertebrate has ribs that support its body?

Answers to the checkpoint questions are as follows:

- a. The backbone supports the upper body of vertebrates.
- b. A snake has ribs that support its body.

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

TOPIC: Animal skeletons

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	Animal skeletons	27-29
Viva	Animal skeletons	13-15
Platinum	Animal skeletons	16-21
Solutions for All	Animal skeletons	17-18
Day-by-Day	Animal skeletons	17
Oxford	Animal skeletons	20-22
Spot On	Animal skeletons	8-9
Top Class	Animal skeletons	14-17
Sasol Inzalo Bk A	Animal skeletons	49-53

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/D3zaua> (4min 43sec) [Spine or vertebral column]
2. <https://goo.gl/9yE44J> (2min 17sec) [Bill Nye the Science Guy on Bones]

4 C

Term 1, Week 4, Lesson C

Lesson Title: Movement

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Movement of vertebrates		
CAPS Page Number	32		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe how vertebrates move using muscles describe how joints enable vertebrates to move. 			
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: Animal skeletons

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 21: Bicep and triceps muscles	

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 the backbone do?

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 backbone protects the spinal cord.

D ACCESSING INFORMATION

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

MOVEMENT OF VERTEBRATES

Vertebrates can move because they have joints and muscles.

Muscles are tough, stretchy **tissues** that pull bones so that they can move.

Muscles work in pairs.

When one muscle **contracts**, the other muscle relaxes.

To move your lower arm, the bicep muscle contracts and the triceps muscle relaxes.

Joints are where two or more bones meet.

Joints make skeletons **flexible**.

2. Explain and discuss the following with the learners:
 - a. Vertebrates need muscles and joints to move.
 - b. Muscles work in pairs: one muscle will contract and the opposite muscle will relax.
 - c. Show learners Resource 21: Bicep and triceps muscles.
 - d. If you lift something heavy, the bicep muscle will contract (get shorter and fatter) and the triceps muscle will relax.
 - e. Joints enable vertebrate animals to move and bend.
3. Give learners some time to copy this information into their workbooks.

TOPIC: Animal skeletons

Checkpoint 1

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

- a. What do muscles do?
- b. Where are joints found?

Answers to the checkpoint questions are as follows:

- a. Muscles pull on bones to make them move.
- b. Joints are found where two or more bones meet.

E

CONCEPTUAL DEVELOPMENT

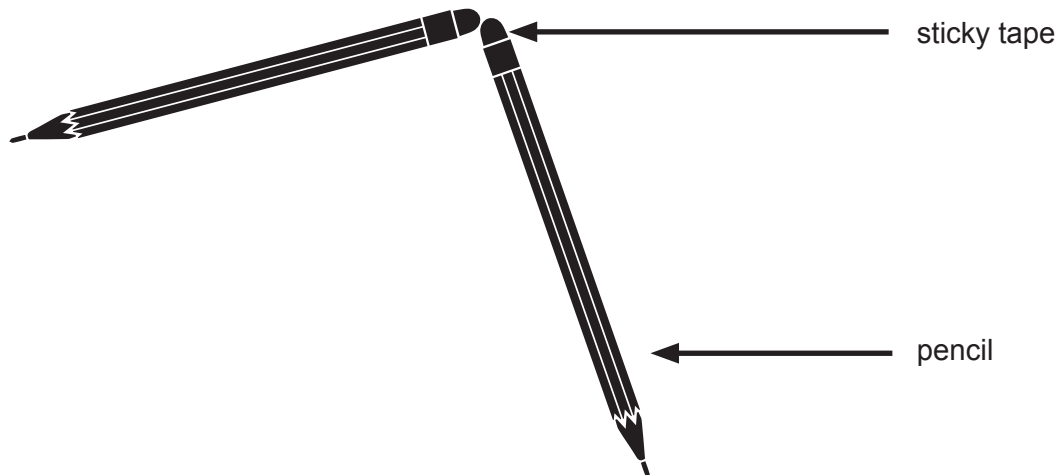
1. Do the following activity with the learners:
 - a. Go outside with the learners.
 - b. Ask the learners to walk around without bending their legs.
 - c. Explain that the knee is a joint that allows us to bend our legs to make walking easier.
 - d. Ask the learners to pick up an object without bending their arms.
 - e. Explain that the elbow is a joint that allows us to bend our arms.
 - f. The bicep and triceps muscles make the bones in our arms move.
 - g. Ask the learners to put their one hand on the other arm's bicep muscle.
 - h. Then they must bend their arm at the elbow.
 - i. Ask learners to feel their bicep muscle move as they bend their arm.
 - j. To bend your arm, the bicep muscle will contract and the triceps muscle will relax.
 - k. To straighten your arm, the bicep muscle will relax and the triceps muscle will contract.

JOINTS

1. There are different types of joints.
2. The elbow and knee can bend in one direction only.
3. These joints are called **hinge** joints.
4. The arm and leg move in a circle.
5. They fit into the **socket** of the hip and shoulder girdles.
6. These joints are called ball-and-socket joints.

TOPIC: Animal skeletons

2. Do the following activity with the learners. Do this as a demonstration.
 - a. Join two pencils at their ends (not the side with the lead) with sticky tape.
 - b. Place the sticky tape on one side of the pencils only, not all the way around.
 - c. Show the learners how the pencils can move in one direction only.
 - d. This is like an elbow and knee joint.
 - e. It is called a hinge joint.



3. Do the following activity with the learners:
 - a. Ask the learners to stand up (you might have to go outside for this activity).
 - b. Tell the learners to bend their knees.
 - c. They must notice how the knee can only bend backwards and not to the side or frontwards.
 - d. Tell the learners that this is called a hinge joint.
 - e. Ask the learners to keep their arms straight and to move their arms in a big circle.
 - f. Tell the learners that their arms fit into a shoulder girdle.
 - g. Tell the learners that this is called a ball-and-socket joint.
 - h. Demonstrate a ball-and-socket joint by making a fist with one hand and put your fist into the opposite open hand. Move your fist around. This is how a ball-and-socket joint works.
 - i. Get the learners to do this.
4. Give learners some time to write this information into their workbooks.

TOPIC: Animal skeletons

5. Ask learners the following questions:
 - a. Which other vertebrate animals have hinge joints? (*There are many examples. The answers will be land animals that walk or run, like the cheetah, the leopard, the elephant.*)
 - b. Which other vertebrate animals have ball-and-socket joints? (*These are also land animals that walk or run. Birds do not have ball-and-socket joints (their wings do not move in a circle).*)

Checkpoint 2

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

- a. What type of joint is the knee?
- b. What type of joint is where the arm is attached to the body?

Answers to the checkpoint questions are as follows:

- a. The knee is a hinge joint.
- b. This joint is called a ball-and-socket joint.

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

TOPIC: Animal skeletons

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	Animal skeletons	30-35
Viva	Animal skeletons	16-18
Platinum	Animal skeletons	22-24
Solutions for All	Animal skeletons	24-28
Day-by-Day	Animal skeletons	20-21
Oxford	Animal skeletons	23-25
Spot On	Animal skeletons	10-12
Top Class	Animal skeletons	17-19
Sasol Inzalo Bk A	Animal skeletons	54-58

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://goo.gl/nXP8ka> (2min 42sec) [Muscles moving your bones]
2. <https://goo.gl/1rwD3z> (3min 13sec) [Science - bones and muscles]
3. <https://goo.gl/SdBkBq> (56sec) [Bones and muscles]

TOPIC OVERVIEW:

Skeletons as structures

Term 1, Weeks 5A – 7A

A. TOPIC OVERVIEW

Term 1, Weeks 5a – 7a

- This topic runs for 2½ weeks.
- It is presented over 7 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 5	GRADE 6 & 7
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Natural and man-made structures • Frame and shell structures • Shape and size of structures • Different materials that are used in structures • Ways to strengthen materials • Struts and frame structures 	<ul style="list-style-type: none"> • Vertebrates as frame structures • Invertebrates as shell structures 	-

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

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

	TERM	EXPLANATION
1.	contains	To keep something in; a margarine tub keeps margarine in so the tub contains the margarine; a bucket will hold water so the bucket contains the water
2.	purposes	The reasons for which something is done, or for which something exists
3.	stable	Not likely to fall over; steady
4.	hollow	Having an empty space inside
5.	design brief	This is a short statement saying what is going to be designed and made. It can say who the design is for (its target market).
6.	specifications	These give more details, such as purpose, materials, tools, target market.
7.	constraints	These limit the design; they are the boundaries to the design.
8.	beams	Part of a frame structure that is horizontal across columns
9.	struts	Part of a frame structure that supports

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

Understanding how to order and categorise information is a valuable skill that is learnt in science. This topic allows learners to categorise structures into frame or shell structures. It is important to understand how skeletons are structured.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

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

TOPIC: Skeletons as structures

5 A

Term 1, Week 5, Lesson A

Lesson Title: Frame and shell structures

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Vertebrate skeletons as frame structures		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • define a structure • describe the functions of structures. 			
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: Skeletons as structures

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:

What type of joint is an elbow?

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 elbow is a hinge joint.

D ACCESSING INFORMATION

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

STRUCTURES

1. A structure is an object that supports something, or **contains** and protects something.
 2. Structures can be natural or human-made.
 3. Structures need to be strong enough to support, or contain and protect something.
 4. Structures need to be **stable** enough not to fall over.
 5. Objects can be frame or shell structures.
2. Explain and discuss the following with the learners:
 - a. The learners learnt about natural and human-made structures in Grade 4.
 - b. They also learnt about struts and frame structures.
 - c. Structures have **purposes**.
 - d. Two of these purposes are that they support something, or that they contain and protect something.
 - e. Structures can be found in the natural world and the human-made world.
 - f. Structures need to be strong enough to support something otherwise they will collapse.
 - g. Structures need to be stable which means they will not fall over easily.
 3. Give learners some time to copy this information into their workbooks.

TOPIC: Skeletons as structures

Checkpoint 1

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

- a. Give two purposes of structures.
- b. Is a spider's web natural or human-made?

Answers to the checkpoint questions are as follows:

- a. Structures can support something or they can contain and protect something.
- b. A spider's web is a natural structure.

E

CONCEPTUAL DEVELOPMENT

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

FRAME AND SHELL STRUCTURES

1. State whether the structures below are natural or human-made.
2. Which of these structures support something? What do they support?
3. Which of these structures contain and protect something? What do they contain and protect?

electricity pylon

egg shell

plastic bottle

spider's web

human skeleton

2. Explain the following to the learners:
 - a. Write the heading in your workbook.
 - b. Look at the five structures on the chalkboard.
 - c. Answer the given questions in your workbooks.
3. Give learners some time to complete this task in their workbooks.
4. A model answer is:

TOPIC: Skeletons as structures

FRAME AND SHELL STRUCTURES

1. *Electricity pylon – human-made*
Egg shell – natural
Plastic bottle – human-made
Spider’s web – natural
Human skeleton – natural
2. *An electricity pylon supports electric cables.*
A spider’s web supports a spider and its prey.
A human skeleton supports the body.
3. *An egg shell contains an egg.*
A plastic bottle contains the contents of the bottle.

Checkpoint 2

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

- a. Does a chair support or contain and protect something?
- b. Does a shopping bag support or contain and protect something?

Answers to the checkpoint questions are as follows:

- a. A chair supports whoever is sitting on it.
- b. A shopping bag contains and protects the items that have been bought.

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

TOPIC: Skeletons as structures

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	Skeletons as structures	36-43
Viva	Skeletons as structures	21-29
Platinum	Skeletons as structures	38-31
Solutions for All	Skeletons as structures	31-33
Day-by-Day	Skeletons as structures	25-27
Oxford	Skeletons as structures	26-29
Spot On	Skeletons as structures	13
Top Class	Skeletons as structures	20-22
Sasol Inzalo Bk A	Skeletons as structures	62-68

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/qHPWxP> (7min) [Skeletal System Functions for Kids]
2. http://msfriess.weebly.com/uploads/4/0/7/9/40799617/classifying_structures.pdf

TOPIC: Skeletons as structures

5 B

Term 1, Week 5, Lesson B

Lesson Title: Frame and shell structures

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Vertebrate skeletons as frame structures		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • define a shell structure • give examples of natural and human-made shell structures. 			
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: Skeletons as structures

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 23: Shell structures	
Resource 10: Invertebrates: A crab and a snail	

C CLASSROOM MANAGEMENT

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

Does a plastic bottle support something or contain and protect something?

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 plastic bottle contains and protects its contents.

D ACCESSING INFORMATION

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

SHELL STRUCTURES

1. A shell structure is made from solid parts but it is **hollow**.
 2. It does not have gaps like a frame structure.
 3. Shell structures contain (hold) or protect things inside the structure.
 4. Invertebrates' skeletons are shell structures.
 5. They have exoskeletons which are hard and found outside the body.
 6. An egg is a natural shell structure.
 7. A car is a human-made shell structure.
2. Explain and discuss the following with the learners:
 - a. The definition of a shell structure is that it is made from solid parts and it protects or contains (holds) things inside the structure.
 - b. The exoskeleton of an invertebrate is a shell structure.
 - c. It is made up of a solid part which can be a shell.
 - d. Human-made shell structures are objects such as shopping bags, a box to hold apples, a house, a car.

TOPIC: Skeletons as structures

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. Is an exoskeleton a shell or frame structure?
- b. Is the skull of a vertebrate a frame or a shell structure?

Answers to the checkpoint questions are as follows:

- a. An exoskeleton is a shell structure.
- b. A skull is a shell structure.

E

CONCEPTUAL DEVELOPMENT

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

SHELL STRUCTURES: TASK

a snail's shell, a suitcase, a crab's shell, a helmet

- a. Name the natural shell structures in the list above.
- b. Name the human-made shell structures in the list above.
- c. Why are all the structures in the list shell structures?

2. Explain the following to the learners:

- a. Show learners Resource 10: Invertebrates: a crab and a snail.
- b. Point out the hard shell of the crab and the shell of the snail.
- c. These are exoskeletons.
- d. An exoskeleton is a shell structure.
- e. Show learners Resource 22: Shell structures.
- f. These are shell structures because they are made of solid parts, there are no gaps and they are hollow.

3. Give learners some time to complete this task in their workbooks.

4. A model answer is:

SHELL STRUCTURES: TASK

- a. *A snail's shell and a crab's shell are natural shell structures.*
- b. *A suitcase and a helmet are human-made structures.*
- c. *They are all shell structures as they are made up of solid parts with no gaps.*

TOPIC: Skeletons as structures

Checkpoint 2

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

- a. Are all exoskeletons shell structures?
- b. Is an exoskeleton a natural or human-made structure?

Answers to the checkpoint questions are as follows:

- a. Yes, as these structures are made up of solid parts.
- b. An exoskeleton is a natural structure.

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	Skeletons as structures	37
Viva	Skeletons as structures	22
Platinum	Skeletons as structures	30-31
Solutions for All	Skeletons as structures	32-33
Day-by-Day	Skeletons as structures	26
Oxford	Skeletons as structures	27
Spot On	Skeletons as structures	13
Top Class	Skeletons as structures	25
Sasol Inzalo Bk A	Skeletons as structures	70-71

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/xQuUsG> (9min 50sec) [Science 7 Shell Structures]

TOPIC: Skeletons as structures

5 C

Term 1, Week 5, Lesson C

Lesson Title: Frame and shell structures

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Vertebrate skeletons as frame structures		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • define a frame structure • give examples of natural and human-made frame structures. 			
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: Skeletons as structures

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 17: A skeleton	
Resource 22: Frame structures	
Resource 24: Struts	
Resource 25: Making newspaper tubes for struts	
Newspapers, sticky tape, pair of scissors, pencil/dowel stick	

C CLASSROOM MANAGEMENT

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

Are invertebrate skeletons frame or shell structures?

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.

Invertebrate skeletons are shell structures.

D ACCESSING INFORMATION

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

FRAME STRUCTURES

1. A frame structure is made up of many stiff parts that are joined together.
2. In human-made structures, these parts are either beams or struts.
3. Vertebrates have an endoskeleton which is found inside the body.
4. The endoskeleton consists of bones that are joined together by joints.
5. This skeleton also supports the vertebrate's weight and gives the body its shape.
6. It is made up of many stiff parts that are joined together.
7. A skeleton is an example of a frame structure.

TOPIC: Skeletons as structures

STRUTS

1. Struts are parts of frame structures.
 2. Struts hold other parts of frame structures in position by pushing against them.
 3. This stops the structure from collapsing.
 4. Many different parts of the human skeleton are struts.
 5. The backbone is a strut.
 6. It holds the skull, ribs and the hip girdle in position.
2. Explain the following to the learners:
- a. The definition of a frame structure is that it is made up of many stiff parts joined together.
 - b. There will be gaps (empty spaces) between these parts.
 - c. Human-made frame structures have beams and struts.
 - d. The **endoskeleton** of a vertebrate is a frame structure.
 - e. It is made up of many stiff parts joined together.
 - f. The learners studied struts in Grade 4.
 - g. Struts make frame structures stronger.
 - h. Show learners Resource 24: Struts.
 - i. Point out the strut in the diagram.
3. Give learners some time to copy this information into their exercise books.

Checkpoint 1

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

- a. True or False: An endoskeleton is an example of a frame structure.
- b. True or False: A frame structure is made up of many stiff parts.

Answers to the checkpoint questions are as follows:

- a. True.
- b. True.

E

CONCEPTUAL DEVELOPMENT

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

TASK: FRAME STRUCTURES

ladder, spider's web, endoskeleton, electricity pylon

- a. Name the natural frame structures in the list above.
- b. Name the human-made frame structures in the list above.
- c. Why are all the structures in the list frame structures?

2. Explain this task to the learners as follows:

- a. Show learners Resource 22: Frame structures.
- b. Show the learners how the ladder and the spider's web are made up of many different parts.
- c. Gaps between the parts that are joined together.
- d. This makes them a frame structure.
- e. In the same way, an electricity pylon and an endoskeleton are frame structures.

3. Give learners some time to complete this task in their workbooks.

4. A model answer is:

TASK: FRAME STRUCTURES

- a. *A spider's web and an endoskeleton are natural frame structures.*
- b. *A ladder and an electricity pylon are human-made structures.*
- c. *They are all frame structures as they are made up of many different parts joined together.*

5. Activity: Making newspaper tubes for struts.

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

ACTIVITY: MAKING NEWSPAPER TUBES FOR STRUTS

You will need:

newspapers, sticky tape, scissors, a pencil/dowel stick.

You need to do the following:

- a. Fold the newspaper sheet from one corner to the opposite side to make a square.
- b. Cut off the extra piece.
- c. Roll the newspaper sheet from one corner to the other.

TOPIC: Skeletons as structures

- d. Do this by rolling the newspaper around a pencil or dowel stick.
- e. After a few rolls, take out the dowel stick or pencil and continue rolling.
- f. Put a piece of sticky tape across the end of the newspaper to hold it in place.
- g. Cut the ends of the tube off.
- h. Put your name on the completed newspaper tube.
- i. When finished, tidy up your workspace.

6. Explain the following to the learners:
 - a. Read through the instructions on the chalkboard.
 - b. Make sure the learners understand what they have to do to make the struts.
 - c. Show Resource 25: Making newspaper tubes for struts.
 - d. Tell learners to put their names on their newspaper tubes.
 - e. They must keep their newspaper tubes in a safe place for a later lesson.
 - f. Leave enough time for the learners to tidy up their workspaces.

Checkpoint 2

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

- a. Are all endoskeletons frame structures?
- b. Is an endoskeleton a natural or human-made structure?

Answers to the checkpoint questions are as follows:

- a. Yes, as endoskeletons are made up of many parts joined together.
- b. An endoskeleton is a human-made structure.

7. 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	Skeletons as structures	36-37
Viva	Skeletons as structures	21, 23
Platinum	Skeletons as structures	28-29; 32-33
Solutions for All	Skeletons as structures	33-34
Day-by-Day	Skeletons as structures	25
Oxford	Skeletons as structures	26
Spot On	Skeletons as structures	13
Top Class	Skeletons as structures	21
Sasol Inzalo BkA	Skeletons as structures	63-65

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/5MJfyD> (1min 53sec) [Classifying structures]
2. <http://teachersfortechandscience.co.za/term1/term-1-topic-3/frame-and-shell-structures/> [Frame and shell structures]

TOPIC: Skeletons as structures

6 A

Term 1, Week 4, Lesson C

Lesson Title: Frame and shell structures

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Vertebrate skeletons as frame structures		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • name the main parts of the skeleton • name the main joints of the skeleton • identify the main parts of the skeleton • identify the main joints of the skeleton. 			
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: Skeletons as structures

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Poster of a skeleton	
Resource 17: A skeleton	
Resource 26: A skeleton	
Resource 27: A skeleton	
Paper for each group of learners to draw a skeleton	

C CLASSROOM MANAGEMENT

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

Are vertebrate skeletons frame or shell structures?

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.

Vertebrate skeletons are frame structures.

D ACCESSING INFORMATION

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

INVESTIGATING SKELETONS

1. A skeleton has the following parts:
skull, backbone, ribs, shoulder girdle, hands, arms, hip girdle, legs, feet
2. A skeleton also has the following joints:
shoulder, elbow, wrist, hip, knee, ankle.

2. Explain and discuss the following with the learners:
 - a. Read the information on the chalkboard.
 - b. Go over the main parts of the skeleton.
 - c. Show the learners the main parts on the poster: skull, backbone, ribs, shoulder girdle, hands, arms, hip girdle, legs, feet.
 - d. Remind learners that they learnt about joints in Lesson 3B.

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- e. Joints help animals move.
 - f. Go over the main joints of the skeleton.
 - g. Show the learners the six joints on the poster: shoulder, elbow, wrist, hip, knee, ankle.
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. Name the nine main parts of a skeleton.
- b. Name the six main joints of a skeleton.

Answers to the checkpoint questions are as follows:

- a. skull, backbone, ribs, shoulder girdle, hands, arms, hip girdle, legs, feet
- b. shoulder, elbow, wrist, hip, knee, ankle.

E

CONCEPTUAL DEVELOPMENT

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

1. On a piece of paper, trace or draw the skeleton.
2. Find the main parts of the skeleton.
3. Label these parts.
4. Find the main joints of a skeleton.
5. Label these parts.

2. Explain the following to the learners:
 - a. They will work in groups of six.
 - b. Each group must either trace from Resource 17, Resource 26 or Resource 27: A skeleton, or draw the skeleton from the poster.
 - c. Each group must label the main parts of the skeleton.
 - d. Each group must label the six main joints of the skeleton.
 - e. Each learner must put his or her name on the drawing.
 - f. Keep this drawing for the next lesson.
3. Give learners some time to complete this task.

TOPIC: Skeletons as structures

Checkpoint 2

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

- a. Which joint joins the lower leg to the upper leg?
- b. Which joint joins the hand to the arm?

Answers to the checkpoint questions are as follows:

- a. The knee joins the lower leg to the upper leg.
- b. The wrist joins the hand to the arm.

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	Skeletons as structures	-
Viva	Skeletons as structures	-
Platinum	Skeletons as structures	32-33
Solutions for All	Skeletons as structures	38
Day-by-Day	Skeletons as structures	28-29
Oxford	Skeletons as structures	28
Spot On	Skeletons as structures	14
Top Class	Skeletons as structures	22
Sasol Inzalo BkA	Skeletons as structures	66

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/rqHNQE> (6min 3sec) [ROYLCO Newspaper skeleton]
2. <http://www.wikihow.com/Make-a-Human-Skeleton-out-of-Paper> [How to make a human skeleton out of paper]

TOPIC: Skeletons as structures

6 B

Term 1, Week 6, Lesson B

Lesson Title: Frame and shell structures

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Vertebrate skeletons as frame structures	
CAPS Page Number	33	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • write a design brief • write specifications and constraints • plan how to make a model. 		
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: Skeletons as structures

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Newspaper rolls, dowel sticks or sticks, metal fasteners, sticky tape, glue, paper	-

C CLASSROOM MANAGEMENT

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

Is the skull a frame or shell structure?

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 skull is a shell structure.

D ACCESSING INFORMATION

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

TASK: DESIGN AND MAKE

You have been asked to make a model of a vertebrate skeleton to demonstrate vertebrates to a Grade 4 class. Your model must have the main parts and the main joints of the skeleton.

Design and make a model using any of the following materials:

newspaper rolls

dowel sticks or sticks (30cm x 10mm)

metal fasteners like paper clips, wire, and split pins

sticky tape

glue

paper

DESIGN BRIEF

Design and make a _____ (what it is you are making) using _____ (fill in the materials).

TOPIC: Skeletons as structures

CONSTRAINTS

You may only use the listed materials.

SPECIFICATIONS

The purpose of the model skeleton is to ... *(fill in what the model is for)*.

2. Explain the following with the learners:
 - a. A **design brief** is a sentence saying what it is you are going to design and make.
 - b. **Constraints** are things that limit what you are going to make. For this task, it is the materials.
 - c. **Specifications** give more details about the task, like who it is for, or what it is for.
3. Give learners some time to copy this information into their workbooks.
4. Learners must complete the Design Brief and the Specifications.
5. The model answer is:

DESIGN BRIEF

Design and make a model of a vertebrate skeleton using newspaper rolls, metal fasteners, sticky tape and paper.

SPECIFICATIONS

The purpose of the model skeleton is to demonstrate vertebrates to a Grade 4 class.

Checkpoint 1

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

- a. What is a design brief?
- b. What are specifications?

Answers to the checkpoint questions are as follows:

- a. A design brief is a sentence saying what it is you are going to design and make.
- b. Specifications give more details about the design and make the task easier.

TOPIC: Skeletons as structures

E CONCEPTUAL DEVELOPMENT

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

TOOLS

MATERIALS

DESIGN

2. Explain the following to the learners:
 - a. Tools are the things that help you make the model, like scissors, rulers, pencils.
 - b. Learners need to think through how each main part of the skeleton can be made using newspaper rolls or pieces of paper.
 - c. Learners need to think through how they will make the main joints using metal fasteners or sticky tape.
 - d. Learners need to think through how they will make the skull, shoulder girdle and hip girdle.
 - e. Using the drawing of the skeleton that the learners did in the previous lesson, learners must work out how many newspaper tubes, dowel sticks or sticks, metal fasteners and pieces of paper they will need to make their model.
 - f. Learners need to write this down on their drawing.
 - g. Under the heading of Design, the learners need to think about how they are going to join the main parts of the skeleton together so that these parts can move. The learners must do a labelled drawing with notes for the joints.
3. Give learners some time to complete this task in their workbooks.
4. If there is time at the end of this lesson, learners can start to make their newspaper tubes. They must attach their names to these tubes. These will be similar to the ones they made in a previous lesson.

Checkpoint 2

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

- a. What are 'tools'?
- b. Give two examples of tools.

Answers to the checkpoint questions are as follows:

- a. Tools are those things we use to help us make a model.
- b. Possible answers are: scissors, rulers, pencils.

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	Skeletons as structures	41-42
Viva	Skeletons as structures	25-26
Platinum	Skeletons as structures	34-35
Solutions for All	Skeletons as structures	38-39
Day-by-Day	Skeletons as structures	27
Oxford	Skeletons as structures	29
Spot On	Skeletons as structures	15-16
Top Class	Skeletons as structures	23-24
Sasol Inzalo BkA	Skeletons as structures	69-71

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

TOPIC: Skeletons as structures

6 C

Term 1, Week 6, Lesson C

Lesson Title: Frame and shell structures

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Invertebrate skeletons as frame structures	
CAPS Page Number	33	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> • work out how to join pieces together to allow for movement • plan how to make a model • use their practical knowledge to make a model. 		
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: Skeletons as structures

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Newspapers, paper, wooden dowels or sticks, sticky tape, metal fasteners, pair of scissors	
Learners' drawings of a skeleton with labels from Lesson 6B	

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 design brief?

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 design brief is a sentence saying what you are going to design and make.

D ACCESSING INFORMATION

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

MAKE

Before you start making your model skeleton make sure that your group:

1. has the drawing of a skeleton
2. has a list of the tools and materials needed
3. gathers materials according to the list
4. gathers their newspaper tubes

After you have made your model make sure that your group:

1. tidies up their workspace
2. keeps the model in a safe place for the next lesson

2. Read and explain the list above to make sure that the learners understand the planning before they start to make their models.

TOPIC: Skeletons as structures

Checkpoint 1

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

- a. What joint is between the lower arm and the upper arm?
- b. What do we call the part of the skeleton that the upper arm fits into?

Answers to the checkpoint questions are as follows:

- a. The elbow is between the lower arm and the upper arm.
- b. The upper arm fits into the shoulder girdle.

E

CONCEPTUAL DEVELOPMENT

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

CHECKLIST

Before you make your model:

1. Have you got all the tools and materials that you will need to make the model?
2. Have you got the drawing of the skeleton in front of you?

After you make the model:

1. Did you observe the safety rules of no running, no shouting, hold the pair of scissors downwards when walking?
2. Have you included all the main parts of the skeleton in your model?
3. Have you included all the main joints of the skeleton in your model?
4. Has your group tidied up the workspace?

2. After you have read the checklist with the learners, explain the following:
 - a. They will make their models together in their groups.
 - b. When making the model, learners must observe the safety rules of no running, no shouting, and holding their pairs of scissors downwards when walking.
 - c. Learners should not waste materials.
3. Give learners some time to complete this task.
4. Tell learners to leave their models of skeletons in a safe place for the next lesson.

TOPIC: Skeletons as structures

Checkpoint 2

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

- a. What main parts of the skeleton did you have to include in your model?
- b. What main joints of the skeleton did you have to include in your model?

Answers to the checkpoint questions are as follows:

- a. The main parts are the skull, backbone, ribs, shoulder girdle, hands, arms, hip girdle, legs, feet.
- b. The main joints are the shoulder, elbow, wrist, hip, knee, ankle.

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	Skeletons as structures	41-42
Viva	Skeletons as structures	27
Platinum	Skeletons as structures	34-35
Solutions for All	Skeletons as structures	39-40
Day-by-Day	Skeletons as structures	27
Oxford	Skeletons as structures	29
Spot On	Skeletons as structures	16
Top Class	Skeletons as structures	24
Sasol Inzalo Bk A	Skeletons as structures	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:

N/A

TOPIC: Skeletons as structures

7 A

Term 1, Week 7, Lesson A

Lesson Title: Frame and shell structures

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Invertebrate skeletons as frame structures		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> • evaluate a model • work out how to improve the design of the model. 			
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: Skeletons as structures

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:

Is a skull a frame or a shell structure?

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 skull is a shell structure.

D ACCESSING INFORMATION

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

EVALUATE

1. Does your model have all the necessary main parts: skull, backbone, hands, arms, ribs, feet, legs, hips?
 2. Do all the necessary joints move: ankle, knee, hip, wrist, elbow, shoulder?
 3. Is your model well made?
 4. Did your group use only the allowed materials to make the model of a skeleton?
 5. What would you do differently if you could make another model?
2. After you have read the questions above with the learners, explain the following:
 - a. The evaluation is based on the specifications.
 - b. It is important to evaluate the model so it can be improved on.
 - c. Learners must write the responses to the questions in their workbook.
 3. Give learners some time to answer these questions in their workbooks.

TOPIC: Skeletons as structures

Checkpoint 1

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

- a. What part of the skeleton enables us to move?
- b. What part of the skeleton is a shell structure?

Answers to the checkpoint questions are as follows:

- a. The joints enable us to move.
- b. The skull is a shell structure.

E

CONCEPTUAL DEVELOPMENT

1. Let each group of learners demonstrate their model of a skeleton to the rest of the class.
2. Write the following on the chalkboard (always try to do this before the lesson starts):

ACTIVITY: EVALUATE

1. Each group will demonstrate their model to the class.
2. Each group needs to name the main parts of the skeleton.
3. Each group needs to name the main joints of the skeleton and demonstrate how the joints move.
4. Each group needs to say what they would do differently if they were given time to make another model of a skeleton.

3. If possible, evaluate each model by going through the questions on the chalkboard.
4. Learners need to write their responses to Number 4 in their workbooks.
5. Possible model answer (answers will vary):

EVALUATE

I would take more care to make my newspaper tubes more carefully.

I would make my joints move in a more realistic way.

I would not waste time when making the model.

I would plan better with my group.

TOPIC: Skeletons as structures

Checkpoint 2

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

- a. Why, do you think, is it important to evaluate a model?
- b. True or False: The skeleton has six main joints.

Answers to the checkpoint questions are as follows:

- c. It will help us to improve our designs.
- d. True.

6. 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	Skeletons as structures	42
Viva	Skeletons as structures	27
Platinum	Skeletons as structures	35
Solutions for All	Skeletons as structures	44
Day-by-Day	Skeletons as structures	-
Oxford	Skeletons as structures	29
Spot On	Skeletons as structures	17
Top Class	Skeletons as structures	24
Sasol Inzalo Bk A	Skeletons as structures	73

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

TOPIC OVERVIEW:

Food chains

Term 1, Weeks 7B – 8B

A. TOPIC OVERVIEW

Term 1, Weeks 7b – 8b

- This topic runs for 1½ weeks.
- 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	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	GRADE 5	GRADE 6 & 7
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Structures of plants and animals • What plants need to grow • Habitats of animals 	<ul style="list-style-type: none"> • Food chains 	<ul style="list-style-type: none"> • Photosynthesis • Ecosystems and Food webs • The biosphere

C. SCIENTIFIC AND TECHNOLOGICAL VOCABULARY

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

	TERM	EXPLANATION
1.	nutrient	A substance that provides food necessary for growth and development
2.	process	A series of steps taken to get to a certain outcome
3.	photosynthesis	The process by which green plants use sunlight, carbon dioxide, and water to make their own food
4.	transferred	Moved from one place to another
5.	produces	Makes; causes a result
6.	excrete	To get rid of waste material through the bowels
7.	herbivores	Animals that eat only plants
8.	carnivores	Animals that eat only meat
9.	omnivores	Animals that eat plants and meat

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

It is important to understand how plants make their own food as some animals rely on plants for their food. A knowledge of photosynthesis will make us more aware of the need to care more for our environment.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

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

7 B

Term 1, Week 7, Lesson B

Lesson Title: Food and feeding

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Green plants make their own food	
CAPS Page Number	33	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> describe what plants need to make food draw a diagram to show the process of photosynthesis. 		
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 chains

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:

True or False: The joints of a skeleton enable us to move.

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. Without joints, we would not be able to walk or move in any way.

D ACCESSING INFORMATION

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

GREEN PLANTS MAKE THEIR OWN FOOD

1. Plants are living things that need food.
 2. They need food to grow and build strong stems and branches.
 3. Plants are the only living things that make their own food.
 4. They are called producers because they produce their own food.
 5. All green parts of a plant can make food, especially the leaves.
 6. Plants use energy from the Sun, water, **nutrients** from the soil and carbon dioxide from the air to make food.
 7. This is called **photosynthesis**.
 8. Plants give off oxygen when they make food.
 9. Living things need oxygen to breathe.
2. After you have read through the information on the chalkboard with the learners, explain the following:
 - a. Learners should understand all the words.
 - b. Plants are the only living things that make their own food.
 - c. They do not 'eat'.
 - d. Plants need the Sun, water, nutrients from the soil and carbon dioxide from the air to make their own food.

TOPIC: Food chains

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:

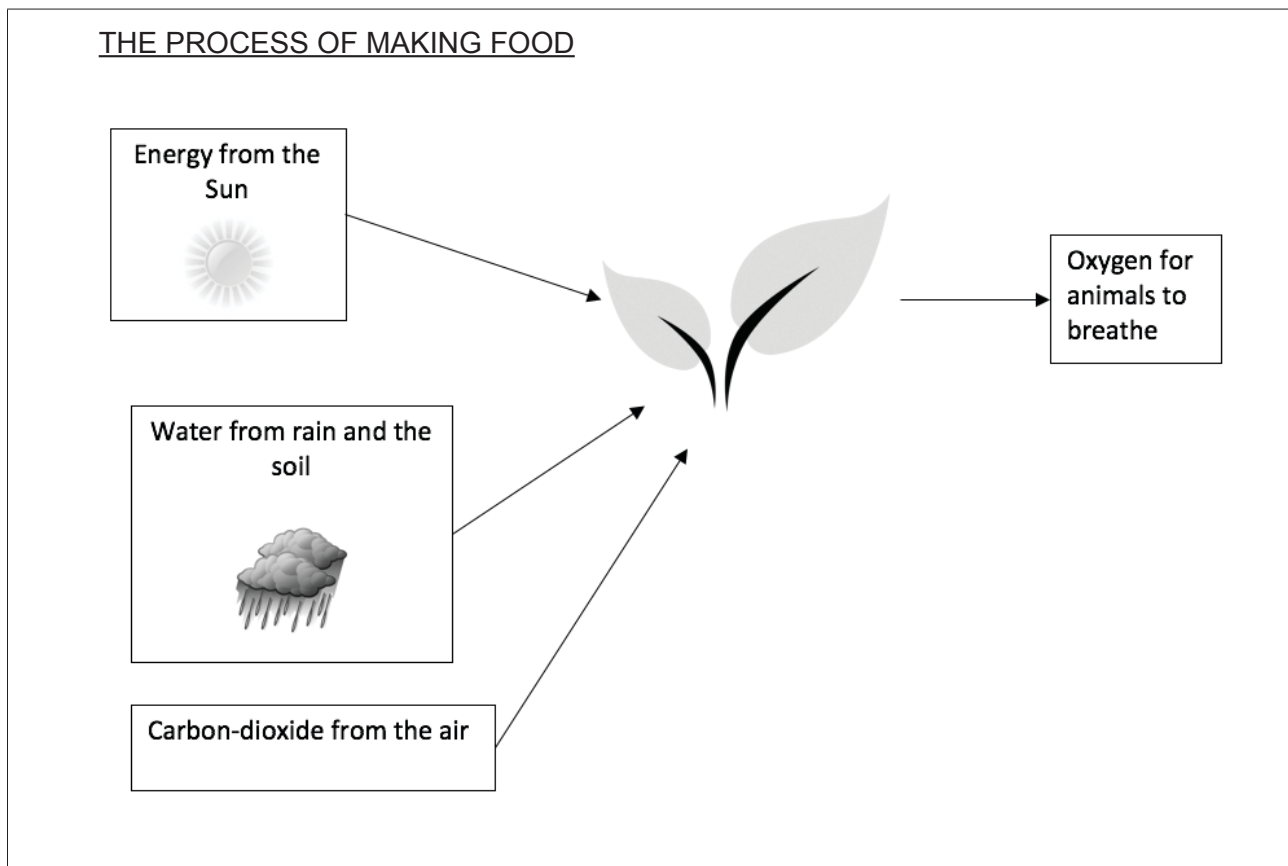
- a. What four things do plants need so that they can make their own food?
- b. What part of the plant makes the food?

Answers to the checkpoint questions are as follows:

- a. Plants need the Sun, water, soil and carbon dioxide to make their own food.
- b. All green parts of a plant make food.

E CONCEPTUAL DEVELOPMENT

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



2. Explain the following to the learners:
 - a. Plants need water, carbon dioxide, energy from the Sun and nutrients from the soil to grow.
 - b. Plants make oxygen when they make food.
 - c. Tell learners to copy the diagram of 'The **process** of making food' from the chalkboard into their workbooks.

TOPIC: Food chains

- d. The diagram must have a heading (The process of making food) and labels (carbon dioxide from the air, energy from the Sun, water from rain and the soil, oxygen for animals to breathe).
3. Give learners some time to copy this information into their workbooks.
4. Activity: Write the following onto the chalkboard.

ACTIVITY: PLANTS AS PRODUCERS

1. Explain what a plant needs to make its own food.
 2. Explain what a plant makes or **produces** from this.
5. Organise the activity as follows:
 - a. Group the learners into pairs.
 - b. Ask them to take turns to discuss what is written on the chalkboard.
 - c. Ask them to write down their answers in their workbooks.
 - d. Ask some learners to share their answers and discuss these as a class.
 6. A model answer for the Activity: Plants as producers.

ACTIVITY: PLANTS AS PRODUCERS

A plant uses energy from the Sun, water, carbon dioxide and nutrients from the soil to make its own food.

A plant produces oxygen and food.

Checkpoint 2

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

- a. What gas do plants produce when they make food?
- b. Where do plants get their energy for making food?

Answers to the checkpoint questions are as follows:

- a. Plants produce oxygen when they make food.
- b. Plants get their energy from the Sun.

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

TOPIC: Food chains

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 chains	44-45
Viva	Food chains	30
Platinum	Food chains	38-39
Solutions for All	Food chains	47-48
Day-by-Day	Food chains	33-34
Oxford	Food chains	30
Spot On	Food chains	18
Top Class	Food chains	28-29
Sasol Inzalo Bk A	Food chains	78-82

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://mass.pbslearningmedia.org/resource/tdc02.sci.life.stru.baggiezoom/biome-in-a-baggie/#.WbFEnJMjG8U> [Biome in a baggie]
2. <https://goo.gl/yRCiJ8> (3min 8sec) [Learn about photosynthesis]

7 C

Term 1, Week 7, Lesson C

Lesson Title: Food and feeding

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Animals need food / food and life processes	
CAPS Page Number	33	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> contrast the need for animals to eat with the need for plants to make their own food say how animals need food to carry out the life processes categorise animals into carnivores, herbivores and omnivores. 		
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 chains

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 28: Carnivores: A leopard eating meat	
Resource 29: Herbivores: A giraffe eating leaves	
Resource 30: Omnivores: Baboons eating seeds and meat	

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 do plants need in order to 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.

Plants need water, carbon dioxide, energy from the Sun and nutrients from the soil to grow.

D ACCESSING INFORMATION

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

ANIMALS NEED FOOD TO SURVIVE

1. Animals need food for energy so that they can carry out their life processes.
2. The life processes are to move, feed, grow, sense the environment, excrete, breathe and reproduce.
3. Animals cannot make their own food.
4. They have to eat plants and other animals to get the energy they need.
5. They are called consumers.
6. Animals that eat only plants are called **herbivores**.
7. Animals that eat only meat are called **carnivores**.
8. Animals that eat both plants and animals are called **omnivores**.

TOPIC: Food chains

2. Explain the following to the learners:
 - a. Read through the information on the chalkboard.
 - b. Make sure the learners understand the information.
 - c. Remind learners about the life processes.
 - d. Animals need energy for these life processes.
 - e. Without food, animals cannot survive.
 - f. Show learners Resource 30: Herbivores: A giraffe eating leaves.
 - g. A herbivore is an animal that only eats leaves.
 - h. Show learners Resource 29: Carnivores: A leopard eating meat.
 - i. A carnivore is an animal that only eats meat.
 - j. Show learners Resource 31: Omnivores: Baboons eating seeds and meat.
 - k. An omnivore eats both meat and plants.
3. Give learners some time to copy this information into their exercise books.

Checkpoint 1

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

- a. Why do animals need food?
- b. Can animals make their own food like plants?

Answers to the checkpoint questions are as follows:

- a. Animals need food so that they can carry out their life processes.
- b. No, animals should eat plants or other animals to get the energy they need.

E

CONCEPTUAL DEVELOPMENT

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

CARNIVORES, OMNIVORES AND HERBIVORES

Carnivores and omnivores eat animals that eat plants (herbivores).

All animals therefore depend on plants.

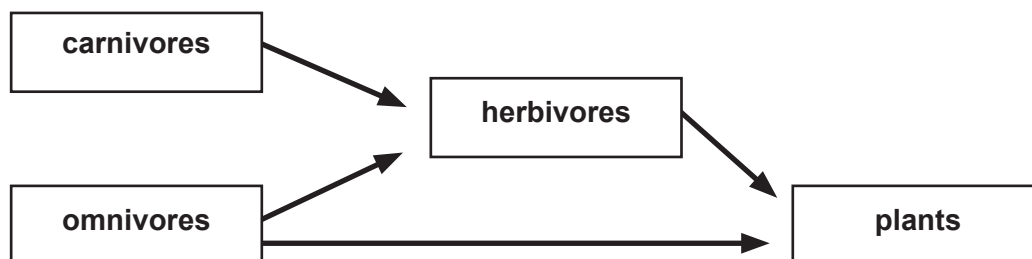


Diagram showing how all animals depend on plants

TOPIC: Food chains

2. Explain the following to the learners:
 - a. Carnivores eat other animals.
 - b. Show the learners Resource 28: Carnivores: A leopard eating meat.
 - c. The leopard killed another animal to eat.
 - d. Show the learners Resource 29: Herbivores: A giraffe eating leaves.
 - e. The giraffe eats only leaves in order to grow and develop.
 - f. Show the learners Resource 30: Omnivores: Baboons eating seeds and meat.
 - g. Baboons eat both plants and meat. They eat small animals.
 - h. Omnivores eat other animals and plants.
 - i. All animals therefore depend on plants.
 - j. Look at the diagram on the chalkboard and point out the sequence to the learners.
3. Give learners some time to copy this information and diagram into their workbooks.
4. Activity: To prepare for the activity (try to this before the lesson starts):
 - a. Write the headings 'Carnivore', 'Herbivore' and 'Omnivore' on three pieces of paper.
 - b. Put these up on the wall or on a table.
 - c. Write the following information on the chalkboard:

ACTIVITY: CARNIVORES, OMNIVORES AND HERBIVORES

1. Write down the name of an animal on a piece of paper.
2. Place your piece of paper under the correct heading.

5. Explain the following to the learners:
 - a. Write the name of an animal on a piece of paper.
 - b. Place this piece of paper under the correct heading: carnivore, herbivore or omnivore.
 - c. Check each other to make sure that all the names of animals are put under the correct heading.
 - d. Ask learners to tell you what these animals eat.

Checkpoint 2

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

- a. What is a carnivore?
- b. What is an omnivore?

Answers to the checkpoint questions are as follows:

- a. A carnivore is an animal that eats other animals.
- b. An omnivore is an animal that eats other animals and plants.

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

TOPIC: Food chains

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 chains	45-48
Viva	Food chains	31-32
Platinum	Food chains	40-41
Solutions for All	Food chains	49-50
Day-by-Day	Food chains	35-36
Oxford	Food chains	31-32
Spot On	Food chains	19
Top Class	Food chains	29
Sasol Inzalo Bk A	Food chains	78-85

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/jpNR2A> (3min 59sec) [Carnivores, herbivores, omnivores]
2. <https://goo.gl/P5mw5W> (2min 22sec) [What do carnivores, herbivores and omnivores eat?]

8 A

Term 1, Week 8, Lesson A

Lesson Title: Food and feeding

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Food chains		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> define a food chain draw a food chain with the correct sequence 			
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 chains

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 31: A food web with many food chains	

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 herbivore?

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 herbivore is an animal that eats only plants.

D ACCESSING INFORMATION

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

FOOD CHAINS

1. Carnivores and omnivores eat animals that have eaten plants.
 2. All animals therefore depend on plants.
 3. A food chain is a diagram that describes how each living thing gets food.
 4. A food chain shows how energy is passed from one living thing to another.
 5. Food chains always start with a green plant.
 6. A herbivore or omnivore then eats the plant.
 7. A carnivore then eats the herbivore or omnivore.
 8. A carnivore or omnivore always ends the food chain.
2. Explain the following to the learners:
 - a. Food chains always start with a green plant.
 - b. This green plant is then eaten by a herbivore or by an omnivore.
 - c. This herbivore is then eaten by an omnivore or a carnivore.
 - d. Therefore, an omnivore or carnivore will always end the food chain.
 3. Give learners some time to copy this information into their workbooks.

TOPIC: Food chains

Checkpoint 1

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

- a. What is a food chain?
- b. What living thing always starts off a food chain?

Answers to the checkpoint questions are as follows:

- a. A food chain describes how each living thing gets food.
- b. A green plant always starts off the food chain.

E

CONCEPTUAL DEVELOPMENT

1. Activity: Food Chains

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

TASK: FOOD CHAINS

1. Write down two food chains from the web of food chains diagram.
2. Use arrows to show the order in which the food chain happens.
3. Always start the food chain with 'green plant'.

Example:

green plant → goat → jackal → lion

2. Explain the following to the learners:

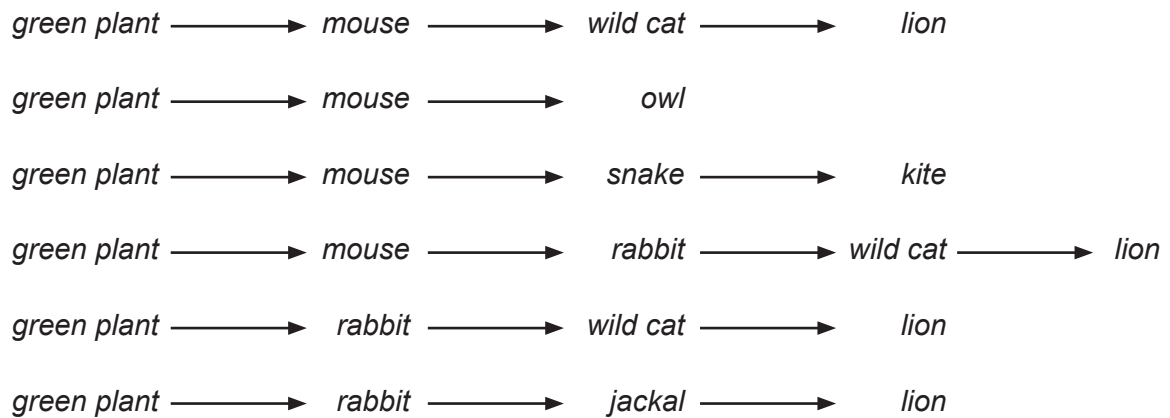
- a. Show the learners Resource 31: A food web with many food chains.
- b. Point out some of the food chains to the learners.
- c. Show the learners the example written on the chalkboard.
- d. When we draw a food chain we use an arrow between organisms to show that one eats the other and that energy is transferred from one organism to the next.
- e. A simple food chain is

green plant → cow → human

- f. The different food chains for Resource 31: A food web with many chains, are given in the model answers in 4 below.
3. Give learners some time to complete this task in their workbooks.
4. The model answers are:

TOPIC: Food chains

FOOD CHAINS



5. Go over the model answers with the learners. Get some learners to share their answers with the class and discuss these answers.
6. Ask learners the following:
 - a. What living thing is always at the beginning of a food chain? *A green plant*
 - b. What type of animal is always at the end of a food chain – a carnivore, herbivore or omnivore? *A carnivore (this could be an omnivore too but there was no example in the above diagram).*

Checkpoint 2

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

- a. Does a food chain start with a plant or an animal?
- b. What type of animal will end a food chain: carnivore, herbivore or omnivore?

Answers to the checkpoint questions are as follows:

- a. A food chain starts with a plant.
- b. A food chain ends with a carnivore or omnivore.

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

TOPIC: Food chains

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 chains	49-50
Viva	Food chains	31-37
Platinum	Food chains	42-43
Solutions for All	Food chains	50-53
Day-by-Day	Food chains	37-42
Oxford	Food chains	34-35
Spot On	Food chains	20-21
Top Class	Food chains	30-32
Sasol Inzalo Bk A	Food chains	86-94

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/i9Y1BW> (5min 10sec) [Food chains, food webs, energy pyramid in ecosystems]
2. <https://goo.gl/NLAUcc> (4min 57sec) [Food chains for kids]
3. <https://goo.gl/GrqD3z> (3min 26sec) [What is a food chain?]

8 B

Term 1, Week 8, Lesson B

Lesson Title: Food and feeding

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Food chain continued		
CAPS Page Number	33		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> organise living things in the correct order for a food chain understand the energy transformation in the food chain. 			
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 chains

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:

What is a food chain?

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 food chain is a diagram that describes how each living thing gets food and it shows how energy is transferred from one living thing to another.

D ACCESSING INFORMATION

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

MORE ABOUT FOOD CHAINS

1. Living things that make up a food chain cannot be in any order.
 2. They should be in the tight order so that energy is **transferred** between them.
 3. All the energy in a food chain starts with the Sun.
 4. Plants take the energy from the Sun to grow and develop.
 5. When a rabbit eats a plant, the energy is transferred to the rabbit.
 6. When an eagle eats a rabbit, the energy is transferred to the eagle.
 7. Nothing eats the eagle so it is at the top of the food chain.
 8. Most humans are omnivores and eat plant and animal products.
 9. Humans are at the top of their food chains.
2. Explain the following to the learners:
 - a. To transfer something means to move it from one place to another.
 - b. In a food chain, energy is transferred between different living things.
 - c. All the energy in a food chain starts with the Sun and the energy is then transferred from one animal to another.
 - d. The last animal in the food chain is said to be at the top of the food chain.

TOPIC: Food chains

- e. Humans are at the top of their food chains.
 - f. Humans eat plants and animals so they are omnivores.
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. Where does the energy in a food chain begin?
- b. Are humans carnivores, herbivores or omnivores?

Answers to the checkpoint questions are as follows:

- a. The energy in a food chain begins with energy from the Sun.
- b. Humans are omnivores.

E

CONCEPTUAL DEVELOPMENT

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

TASK: ORDERING FOOD CHAINS

Place these living things in the correct order as a food chain.

Use arrows to show the correct order.

1. snail, eagle, rat, beetle, lettuce leaf
2. owl, grasshopper, mouse, grass
3. human, grass, cow
4. grasshopper, snake, grass, eagle

2. Explain the following to the learners:
- a. The living things are not in order. Place them in order.
 - b. Use an arrow between the living things to show the order.
3. Model answer for the task: Ordering Food Chains.

1. lettuce leaf → snail → beetle → rat → eagle
2. grass → grasshopper → mouse → owl
3. grass → cow → human
4. grass → grasshopper → snake → eagle →

4. Give learners some time to complete this task in their workbooks.

TOPIC: Food chains

Checkpoint 2

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

- a. Are humans at the top or the bottom of their food chains?
- b. Where do plants get their energy from?

Answers to the checkpoint questions are as follows:

- a. Humans are at the top of their food chains.
- b. Plants get their energy from the Sun.

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 chains	50
Viva	Food chains	37
Platinum	Food chains	43
Solutions for All	Food chains	52-53
Day-by-Day	Food chains	39-42
Oxford	Food chains	35
Spot On	Food chains	21
Top Class	Food chains	33
Sasol Inzalo Bk A	Food chains	89-92

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/jAFjAH> (5min 53sec) [Food chains, food webs, energy pyramids]
2. <https://goo.gl/oJRTK5> (4min 57sec) [Food chains for kids]
3. <https://goo.gl/XYjURB> (3min 24sec) [Fabulous Food Chains]

TOPIC OVERVIEW:

Life Cycles

Term 1, Weeks 8C – 9C

A. TOPIC OVERVIEW

Term 1, Weeks 8c – 9c

- This topic runs for 1½ weeks.
- 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	GRADE 5	GRADE 6 & 7
LOOKING BACK	CURRENT	LOOKING FORWARD
<ul style="list-style-type: none"> • Living and non-living things: the seven life processes • Structure of plants and animals • What plants need to grow: light, water, air • Habitats of animals: need for a habitat 	<ul style="list-style-type: none"> • Plants and animals grow and develop • A Life Cycle describes the processes and stages of a plant or animal's life • Reproduction, death and caring for young are described 	<ul style="list-style-type: none"> • Photosynthesis • Nutrients in food: food groups, natural and processed foods • Nutrition • Ecosystems and food webs: different ecosystems; plants, animals and microorganisms are connected • Diversity 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.	stage	A step in a development; each part of the life cycle is called a stage
2.	reproduction	Process of producing off-springs
3.	generation	Animals or plants born and living at the same time
4.	adult	An animal or plant that is fully grown or developed
5.	cubs	Baby lions
6.	repeated	Happens again and again in the same way
7.	dispersed	Spread over a wide area
8.	germination	When seeds start growing into seedlings
9.	toddler	A young child who is just starting to walk
10.	conditions	Things affecting how it is
11.	pollination	When pollen is moved from one plant to another by bees or other insects
12.	mating	The coming together of a male and female to produce babies
13.	hatch	When an egg hatches, it breaks and lets the young bird or reptile out

D. UNDERSTANDING THE USES / VALUE OF SCIENCE

We need to understand the life cycles of plants and animals so that living things can have a healthy life. It is necessary to know how plants and animals reproduce in order to keep their species from going extinct.

E. PERSONAL REFLECTION

Reflect on your teaching at the end of each topic:

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

8 C

Term 1, Week 8, Lesson C

Lesson Title: Growth and Development

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Plants and animals grow and develop	
CAPS Page Number	34	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> describe how plants and animals grow and develop explain that this happens throughout their lives. 		
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: Life Cycles

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 5: Lions in the shade of a tree	-

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 at the start of every food chain?

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 green plant will start every food chain.

D ACCESSING INFORMATION

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

GROWTH AND DEVELOPMENT

1. Plants and animals are living things.
 2. They grow and change throughout their lives.
 3. This process is called development.
 4. A **generation** is a group of plants or animals at a similar **stage** in their development.
 5. One generation of a plant or animal gives rise to the next generation by **reproduction**.
 6. Reproduction is when plants and animals have babies.
 7. Death can occur at any stage in a plant or animal's life.
2. Explain and discuss the following with the learners:
 - a. They learnt in Grade 4 that plants and animals are living things which go through seven life processes.
 - b. The stages (steps) of this process are called development.
 - c. A generation is a group of plants or animals that are at the same stage in their development.
 - d. One generation gives birth to a new generation through reproduction.
 - e. At any stage in a plant or animal's life, death can occur.
 - f. Show learners Resource 5: Lions and cubs in the shade of a tree.

TOPIC: Life Cycles

- g. These cubs will grow into adult lions/lionesses and have cubs themselves.
- h. At any stage in the cubs' lives, as they grow and develop, they might die.
- i. Another male lion might attack them, they might die from disease, or they might die from old age.

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 a 'generation'?
- b. What do we call the growth of plants and animals throughout their lives?

Answers to the checkpoint questions are as follows:

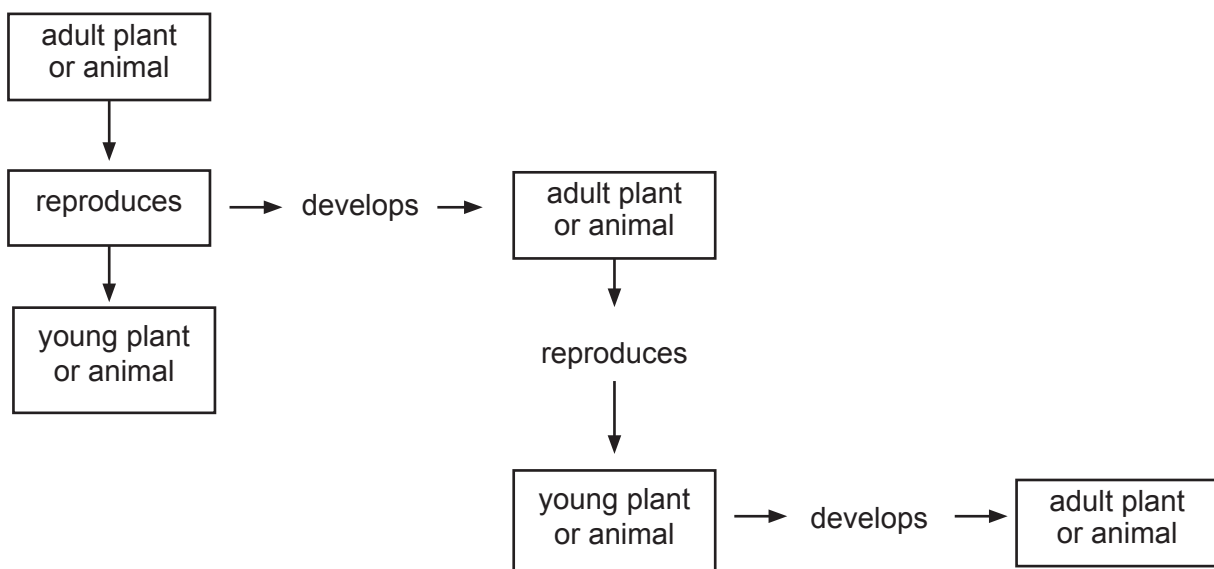
- a. A generation is a group of plants or animals at a similar stage in their development.
- b. We call this development.

E CONCEPTUAL DEVELOPMENT

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

GROWING AND DEVELOPING

- 1. An adult plant produces new, young plants.
- 2. These grow into a new generation of plants.
- 3. They then produce their own new, young plants which grow into the next generation of plants.
- 4. An adult born at a similar time to another adult would be the same generation.



TOPIC: Life Cycles

2. Explain the following to the learners:
 - a. An adult will reproduce a young plant or animal, which will then reproduce its own young plant or animal.
 - b. This process continues and creates a new generation each time.
3. Give learners some time to complete this information and diagram in their workbooks.

Checkpoint 2

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

- a. What does it mean when we say a plant or animal reproduces?
- b. What does it mean when we say a plant or animal develops?

Answers to the checkpoint questions are as follows:

- a. To reproduce means to make more of the same thing – for animals and plants this means having babies.
- b. To develop means to grow – plants and animals develop throughout their lives.

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	Life Cycles	51
Viva	Life Cycles	39
Platinum	Life Cycles	47-48
Solutions for All	Life Cycles	59-60
Day-by-Day	Life Cycles	43
Oxford	Life Cycles	36-37
Spot On	Life Cycles	22
Top Class	Life Cycles	34
Sasol Inzalo Bk A	Life Cycles	98-99

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

9 A

Term 1, Week 9, Lesson A

Lesson Title: Growth and development

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Stages and processes of animals	
CAPS Page Number	34	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> describe what a life cycle is give the purpose of a life 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: Life Cycles

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 I am born and grow and develop at the same time as you, are we of the same generation?

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, a generation is a group of plants or animals that are at the same stage in their development.

D ACCESSING INFORMATION

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

A LIFE CYCLE

1. All living things have a life cycle.
 2. A cycle is a set of steps that happen one after the other and then the cycle gets **repeated**.
 3. A life cycle describes the stages and processes that take place as a plant or animal grows and develops.
 4. It describes how one generation of a plant or animal gives rise to the next generation.
 5. This is done through reproduction.
 6. reathe and so it must be kept damp.
2. Explain the following to the learners:
 - a. Remind learners that they planted seeds and watched them grow in Grade 4.
 - b. This is the start of a life cycle.
 - c. Those seeds would grow into adult plants.
 - d. These would then get seeds which would be dispersed.
 - e. These seeds would then start a new life cycle.
 - f. One generation of a plant or animal gives rise to the next generation through reproduction.

TOPIC: Life Cycles

- g. Reproduction is one of the life processes.
 - h. Read through the information on the chalkboard to make sure that the learners understand all the information.
3. Read through the information on the chalkboard to make sure that the learners understand all the information.

Checkpoint 2

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

- a. Do non-living things have a life cycle?
- b. What is a life cycle?

Answers to the checkpoint questions are as follows:

- a. No, only living things have a life cycle.
- b. A life cycle describes the stages and processes that take place as a plant or animal grows and develops.

E

CONCEPTUAL DEVELOPMENT

1. ACTIVITY: Life Cycle of a Human. Write the following on the chalkboard (always try to do this before the lesson starts):

TASK: LIFE CYCLE OF A HUMAN

adult, **toddler**, teenager, baby, child, old person

2. Explain the following to the learners:
- a. The process of maturing into an adult is called development.
 - b. All living things mature.
 - c. Each living thing has a life cycle.
 - d. Put the above words in order of their life cycle.
 - e. Ask the learners at what stage in the life cycle they think they are? child
 - f. What starts off the life cycle of a human? baby
 - g. What is the last stage in a human's life cycle? old person
3. The model answer is as follows:

LIFE CYCLE OF A HUMAN

baby, toddler, child, teenager, adult, old person

4. Give learners some time to complete this task in their workbooks.

TOPIC: Life Cycles

Checkpoint 2

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

- a. What stage starts off the life cycle of a human?
- b. What stage ends the life cycle of a human?

Answers to the checkpoint questions are as follows:

- a. A baby starts off the life cycle of a human.
- b. An old person ends the life cycle of a human.

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	Life Cycles	-
Viva	Life Cycles	-
Platinum	Life Cycles	48
Solutions for All	Life Cycles	59-60
Day-by-Day	Life Cycles	-
Oxford	Life Cycles	37
Spot On	Life Cycles	22
Top Class	Life Cycles	34
Sasol Inzalo Bk A	Life Cycles	-

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.exploringnature.org/db/view/680> [Life Cycles: Plants and animals]
2. <http://sciencing.com/animal-plant-life-cycles-6392248.html> [Animal and plant life cycles]

9 B

Term 1, Week 9, Lesson B

Lesson Title: Growth and development

Time for lesson: 1½ hours

A POLICY AND OUTCOMES

Sub-Topic	Stages and processes of plants	
CAPS Page Number	34	
Lesson Objectives		
By the end of the lesson, learners will be able to:		
<ul style="list-style-type: none"> describe the different stages of the life cycle of plants put the different stages into an order. 		
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: Life Cycles

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 35: The Life Cycle of a plant from seed to fruit	
Resource 36: Life cycle of an apple tree	
Resource 7: Bees pollinating a plant	

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: Life cycles show the different stages and processes of a plant or animal as it grows and develops.

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):

STAGES OF THE LIFE CYCLE OF A PLANT

1. Nearly all flowering plants begin their life as seeds.
2. Seeds grow into seedlings.
3. Seedlings grow into adult plants.
4. Adult plants grow flowers.
5. The flower is **pollinated**.
6. After pollination, the flowers turn into fruit with seeds.
7. Fruit falls to the ground or is eaten by birds.
8. The seeds are dispersed.
9. The life cycle starts again.

2. Explain and discuss the following with the learners:
 - a. Flowering plants start their life cycle as seeds.
 - b. When **conditions** are right - warmth, air and water are available - the seeds grow into seedlings.

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- c. Seedlings grow into adult plants.
 - d. Adult plants grow flowers.
 - e. Flowers need to be pollinated so that the flower turns into a fruit.
 - f. Show learners Resource 7: Bees pollinating a plant.
 - g. Pollination is when pollen is moved from one plant to another.
 - h. Show learners Resource 35: Life Cycle of a plant from seed to fruit.
 - i. Point out the different stages of the life cycle of a plant.
 - j. The cycle starts off with a seed, which grows into a seedling, which grows into an adult tree.
 - k. The tree then gets flowers, which are pollinated by bees or other insects, and the flowers turn into fruit with seeds.
 - l. The seeds are dispersed by birds or by fruit falling on the ground.
 - m. The life cycle starts again.
3. Give learners some time to copy this information into their workbooks.
 4. Write the following onto the chalkboard (always try to do this before the lesson starts):

PROCESSES IN THE LIFE CYCLE OF A PLANT

The following processes happen during the life cycle of a plant:

1. Germination occurs when a seed starts growing into a seedling. Seeds need warmth, air and moisture to germinate.
 2. Growing happens throughout the life cycle. The seedling gets stronger and bigger.
 3. Maturing is when a seedling grows into an adult plant.
 4. Flowering happens in an adult plant for it to make fruit and seeds to reproduce.
 5. Pollination happens when pollen is carried by insects from the male part of the plant to the female part.
 6. Dispersing seeds occurs when the seeds from the fruit are spread by birds or animals that eat the fruit.
5. Explain the following to the learners:
 - a. Go through each word at the beginning of each sentence and explain what it means.
 6. Give learners some time to copy this information into their workbooks.

TOPIC: Life Cycles

Checkpoint 1

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

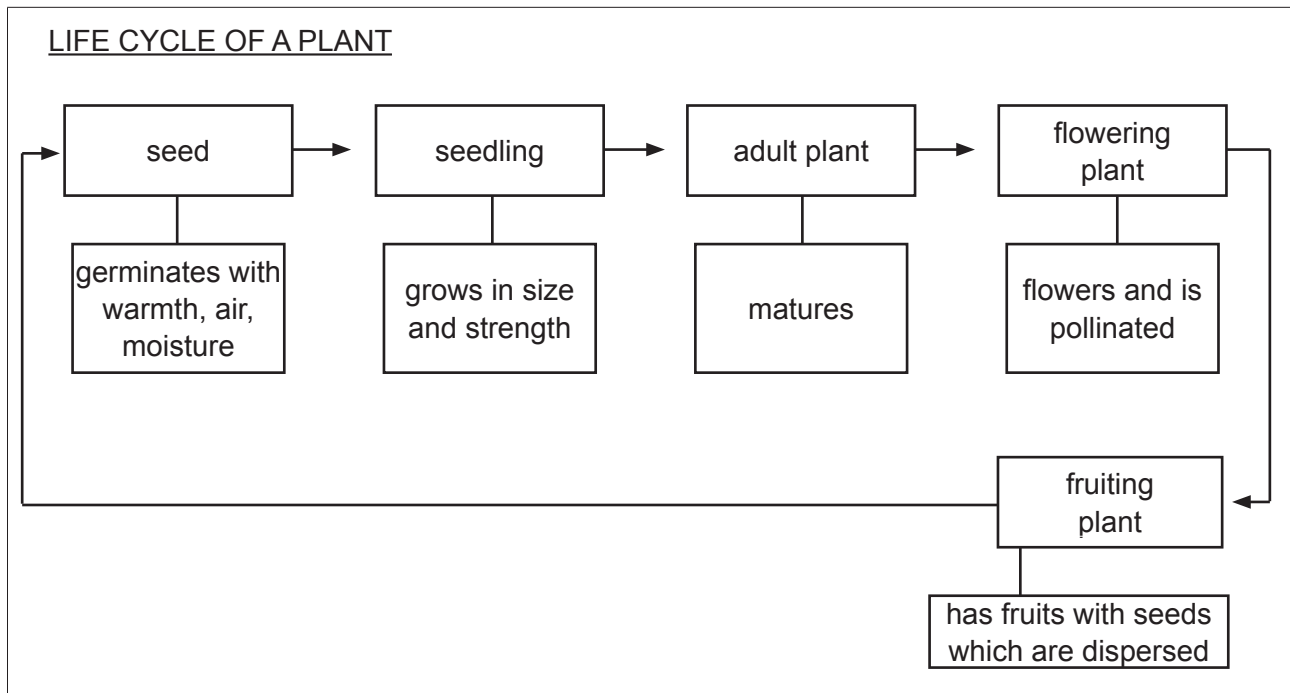
- What does 'germination' mean?
- What does 'pollination' mean?

Answers to the checkpoint questions are as follows:

- Germination occurs when a seed has enough warmth, moisture and air to start growing into a seedling.
- Pollination happens when an insect moves pollen from the male part of a plant to the female part.

E CONCEPTUAL DEVELOPMENT

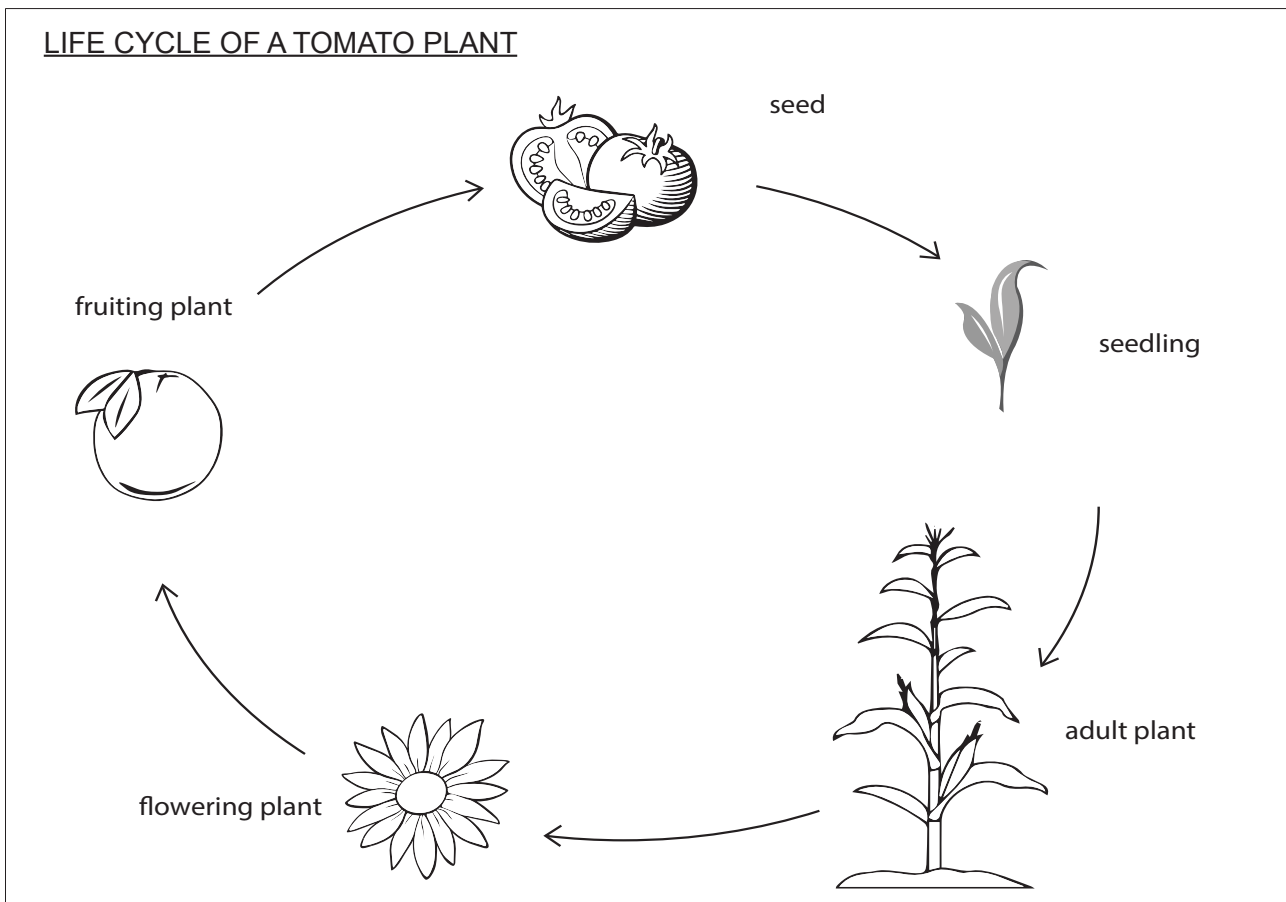
- Draw the following onto the chalkboard: (always try to do this before the lesson starts):



- Explain the following to the learners:
 - Show learners Resource 35: The Life Cycle of a plant from seed to fruit.
 - The life cycle starts with a seed.
 - Go through each stage with the learners explaining the processes that occur at each stage.
 - Make sure that learners understand the meaning of the words which were written down at the beginning of the lesson.
 - When seeds are dispersed, it means that they are carried to other places by birds, animals, wind or water.

TOPIC: Life Cycles

- f. Learners must be reminded that 'death' can occur at any time in the life cycle. Plants can be eaten by animals or not get enough water, sunlight or carbon dioxide.
 - g. Show learners Resource 36: Life cycle of an apple tree.
 - h. The life cycle starts with a seed, grows into a 'sprout' (seedling), which grows into a tree, which has flowers, which turn into fruit, which have seeds.
3. Give learners some time to copy this diagram into their workbooks.
 4. Draw the following on the chalkboard.



5. Give learners some time to copy this diagram into their workbooks.

Checkpoint 2

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

- a. Give the five stages in the life cycle of a tomato plant.
- b. What does it mean when seeds are dispersed?

Answers to the checkpoint questions are as follows:

- a. Seed, seedling, adult plant, flowering plant, fruit plant.
- b. It means that the seeds are carried to other places either by birds, animals, wind or water.

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

TOPIC: Life Cycles

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	Life Cycles	52-56
Viva	Life Cycles	39-41
Platinum	Life Cycles	49-51
Solutions for All	Life Cycles	60-63
Day-by-Day	Life Cycles	43-48
Oxford	Life Cycles	38-39
Spot On	Life Cycles	23-25
Top Class	Life Cycles	34-37
Sasol Inzalo Bk A	Life Cycles	99-105

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/TbZK2F> (3min 46sec) [How does a seed become a plant?]
2. <https://goo.gl/ow4PyL> (3min 34sec) [Life Cycle of a Plant Video]
3. <https://goo.gl/he7ame> (2min 11sec) [How does a seed grow?]
4. <https://goo.gl/ZhYSnm> (3min 55sec) [Parts of a flower and pollination]
5. <https://goo.gl/669w2x> (1min 21sec) [The Life Cycle of a Flower]

9 C

Term 1, Week 9, Lesson C

Lesson Title: Growth and development

Time for lesson: 1 hour

A POLICY AND OUTCOMES

Sub-Topic	Life cycle of a vertebrate		
CAPS Page Number	34		
Lesson Objectives			
By the end of the lesson, learners will be able to:			
<ul style="list-style-type: none"> describe the different stages of the life cycle of vertebrates put into order the different stages 			
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: Life Cycles

B POSSIBLE RESOURCES

For this lesson, you will need:

IDEAL RESOURCES	IMPROVISED RESOURCES
Resource 37: Life cycle of a chicken	
Resource 38: Life cycle of a frog	
Resource 39: A python hatching from an egg	
Resource 5: Lions in shade of tree	

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 when we say that a living thing 'matures'?

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.

To mature means to grow and develop into an adult.

D ACCESSING INFORMATION

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

STAGES OF THE LIFE CYCLE OF VERTEBRATES

1. Most vertebrates have a simple life cycle.
2. The cycle is: baby, young animal, mature adult.

PROCESSES IN THE LIFE CYCLE OF VERTEBRATES

1. During the three stages of the life cycle, the following processes happen:
 - growing
 - maturing
 - mating**
 - reproducing
 - dying

TOPIC: Life Cycles

2. Explain the following to the learners:
 - a. Show learners Resource 5: Lions in the shade of a tree.
 - b. A cub is the name for a baby lion.
 - c. These cubs are young animals.
 - d. The cubs have grown from baby cubs into young lions or lionesses.
 - e. The lioness has grown and matured from a young lioness into a mature adult.
 - f. The lioness will have mated with a male lion to produce baby lions or lionesses.
 - g. In the wild, lions and lionesses live for about 15 years.
 - h. Lions and lionesses might die from old age, a shortage of food or water, fighting or disease.
 - i. Read through what is written on the chalkboard and make sure the learners understand all the words.
3. Give learners some time to copy this information into their workbooks.
4. Write the following on the chalkboard (always try to do this before the lesson starts):

REPRODUCING

1. Some vertebrates called mammals give birth to live young.
 2. Other vertebrates such as birds and reptiles lay eggs.
 3. The eggs are covered by a hard shell.
 4. The babies **hatch** out of eggs.
 5. Parents need to feed and protect their babies.
 6. Some babies can walk or move straight away, like a giraffe or a horse.
 7. Other babies take longer to do this, like humans and birds.
5. Explain the following to the learners:
 - a. In mammals, the **embryo** develops inside the mother's body.
 - b. Most mammals give birth to live young.
 - c. Parents feed and protect their young.
 - d. Their young will grow into mature adults and carry on the cycle.
 - e. Birds and reptiles lay eggs.
 - f. The embryo develops inside the egg.
 - g. The egg has a hard shell to protect it.
 - h. The bird or reptile hatches out of the egg.
 - i. Show learners Resource 39: A python hatching from an egg.
 - j. A python is a reptile which lays eggs.

TOPIC: Life Cycles

Checkpoint 1

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

- a. What are the three main stages of the life cycle of animals?
- b. How do reptiles reproduce?

Answers to the checkpoint questions are as follows:

- a. The three stages are: baby, young animal, mature adult.
- b. Reptiles lay eggs.

E CONCEPTUAL DEVELOPMENT

1. Show learners Resource 37: The Life Cycle of a chicken.
2. Go through the life cycle with the learners from chicken to egg, to embryo growing and developing in an egg, to hatching to chick and back to chicken.
3. Show learners Resource 38: The Life Cycle of a frog.
4. Point out the life cycle of a frog from adult frog, to eggs, to embryos, to tadpoles, to young adult.
5. Write the following task onto the chalkboard:

TASK: THE LIFE CYCLE OF A DOG

The order of these sentences is mixed up. Write them in the correct order in your workbook.

1. The puppies grow until they are mature.
 2. The female dog is pregnant for 58 - 65 days.
 3. The female dog feeds her puppies with milk.
 4. The male and female dogs mate.
 5. The mature dog can reproduce and the life cycle starts again.
 6. The female dog gives birth to her puppies.
6. Explain the following to the learners:
 - a. The sentences describe the life cycle of a dog.
 - b. The sentences are not in the correct order.
 - c. Write the heading in their workbook.
 - d. Write the sentences in the correct order in their workbooks.

TOPIC: Life Cycles

7. Give learners some time to complete this task in their workbooks.
8. The model answer is:

TASK: THE LIFE CYCLE OF A DOG

1. *The male and female dogs mate.*
2. *The female dog is pregnant for 58 - 65 days.*
3. *The female dog gives birth to her puppies.*
4. *The female dog feeds her puppies with milk.*
5. *The puppies grow until they are mature.*
6. *The mature dog can reproduce and the life cycle starts again.*

Checkpoint 2

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

- a. What type of vertebrates lay eggs to reproduce?
- b. What type of vertebrates give birth to live young?

Answers to the checkpoint questions are as follows:

- a. Birds and reptiles lay eggs to reproduce.
- b. Most mammals give birth to live young.

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

TOPIC: Life Cycles

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	Life Cycles	57-64
Viva	Life Cycles	42-46
Platinum	Life Cycles	51-55
Solutions for All	Life Cycles	64-67
Day-by-Day	Life Cycles	49-52
Oxford	Life Cycles	39-43
Spot On	Life Cycles	26-28
Top Class	Life Cycles	38-41
Sasol Inzalo Bk A	Life Cycles	105-115

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/E99FyL> (4min 26sec) [Life cycle Video for Kids]
2. <https://goo.gl/A18V8U> (9min 30sec) [Animal Life Cycles]

NATURAL
SCIENCES
&
TECHNOLOGY
ASSESSMENT
GRADE 5 TERM 1



GRADE 5 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 / investigations, project, tests and examinations.

i. Tests and Examinations

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 / investigation tasks

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

iii. Project

Projects give learners the opportunity to demonstrate knowledge, skills, understanding and application. The project can be given in any term but must be recorded for term 4 assessment.

A minimum mark allocation is prescribed in CAPS for, practical / investigation projects, tests and examinations for each grade. These are summarised, by grade, in the table below:

GRADE 5 ASSESSMENT

Grade 5						
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 [15 marks] 1 selected practical task [15 marks]	1 exam or test on work from terms 1 & 2 [45 marks] 1 selected practical task [15 marks]	1 test [15 marks] 1 selected practical task [15 marks]	1 selected practical task [15 marks]	135 marks	Together make up 75% of the total marks of the year
Exams [60 minutes]				Exam on work from terms 3 & 4 [45 marks]	45 marks	Makes up 25% of the total marks of the year
Number of formal assessments	2	2	2	2	Total 8 assessments [180 marks]	Total: 100%

GRADE 5 ASSESSMENT

PRACTICAL TASK - INTRODUCTION

NS & TECH

GRADE 5

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 1B.
2. This practical will take place during the lesson after the teaching component in Section D, "Accessing Information".
3. The first 30 minutes will be used to teach section D and prepare learners for the practical task.
4. The second 30 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 rubric for assessing the practical task is provided.
7. The learners will work in groups of 4-6.
8. This practical task needs to be conducted outside.
9. The learners should complete the drawings with a sharp pencil and the written answers should be completed in pen.

GRADE 5 ASSESSMENT

PRACTICAL TASK - RUBRIC

NS & TECH

GRADE 5

PRACTICAL TASK

TERM 1

15 MARKS

(see Section E of Lesson 1B for instructions and questions)

Task	Good 3 marks	Achieved 2 marks	Not achieved 1 mark	Mark
1	<ul style="list-style-type: none"> A neat sketch of the area has been done The area has been sketched from a bird's eye perspective Most of the relevant features have been correctly labelled A name for this habitat has been given 	<ul style="list-style-type: none"> A neat sketch of the area has been done An attempt to sketch from a bird's eye perspective has been made Some of the relevant features have been labelled A name for this habitat has been given 	<ul style="list-style-type: none"> A sketch has been done but is untidy and inaccurate The sketch is not from a bird's eye view The relevant features have not been labelled The name for this habitat is unsuitable 	
2	<ul style="list-style-type: none"> Most of the plants in the area have been drawn The drawings are neat Any fruits or seeds that have been observed have been drawn 	<ul style="list-style-type: none"> Some of the plants in the area have been drawn The drawings are neat Some fruits or seeds that have been observed have been drawn 	<ul style="list-style-type: none"> Few of the plants in the area have been drawn The drawings are careless No fruits or seeds that have been observed have been drawn 	
3	<p>Leaf is neatly drawn showing clear:</p> <ul style="list-style-type: none"> Shape Defined edges Vein patterns 	<p>Leaf is neatly drawn showing clear:</p> <ul style="list-style-type: none"> Shape Defined edges Some vein patterns 	<p>Leaf is not neatly drawn and has little detail</p>	

GRADE 5 ASSESSMENT

4	<ul style="list-style-type: none"> • An attempt was made to find living creatures in area • At least 2 of the following are listed: ants, bees, butterflies, worms, birds, wasps, hornets, ladybirds, spiders, snails, lizards, flies 	<ul style="list-style-type: none"> • An attempt was made to find living creatures in area • At least 1 of the following is listed: ants, bees, butterflies, worms, birds, wasps, hornets, ladybirds, spiders, snails, lizards, flies 	<ul style="list-style-type: none"> • No attempt was made to find living creatures in area • No suitable creature is listed 	
5	<ul style="list-style-type: none"> • 2-3 suitable examples with a good reason are given 	<ul style="list-style-type: none"> • One suitable example with a reason are given 	<ul style="list-style-type: none"> • No suitable examples and reason are given 	
TOTAL				15

GRADE 5 ASSESSMENT

TERM TEST

**NS & TECH
GRADE 5
TEST
TERM 1**

**15 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. fly
- B. frog
- C. bee
- D. butterfly

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

GRADE 5 ASSESSMENT

NS & TECH
GRADE 5
TERM 1
TEST

15 MARKS

Question 1: Multiple choice

[4]

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

1.1. Which stage is the third stage of the human life cycle? (1)

- A. toddler
- B. teenager
- C. baby
- D. adult

1.2. Which stage is the at the start of the life cycle of a plant? (1)

- A. fruit
- B. flower
- C. seed
- D. photosynthesis

1.3. Which of these statements is FALSE? (1)

- A. Giraffes need oxpeckers to get rid of ticks
- B. Flowers need bees for pollination
- C. Bees need flowers to collect honey
- D. The giraffe and oxpecker are inter-dependent

1.4. Which of the following is not an example of inter-dependence between plants and animals? (1)

- A. feeding, talking, breathing
- B. breathing, growing, learning
- C. reproducing, feeding, breathing
- D. breathing, feeding, thinking

GRADE 5 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	One of the life processes	A. Herbivore
2.1.	Animals that only eat plants	B. Producer
2.2.	Animals that only eat meat	C. Carnivore
2.3.	Animals that eat both plants and meat	D. Omnivore
2.4.	A living organism that makes its own food	E. Breathing

Question 3

[2]

Complete the following sentences using words in the block below.

webbed, soil, transferred, food, inter-dependence, water, sunlight, energy

Rewrite the sentences and underline your your answers.

- 3.1 Frogs live in _____, so they have _____ fingers and toes to swim. (1)
- 3.2 We call it _____ when two or more things need each other to live. (½)
- 3.3 All the _____ in a food chain starts with the Sun. (½)

Question 4

[3]

Look at the names of the animals in the block below:

snail, earthworm, cow, fish, crab, butterfly

Place the animals under the correct headings:

<u>exoskeleton</u>	<u>endoskeleton</u>	<u>hydroskeleton</u>

Question 5

[2]

Draw two food chains showing the relationship between the living organisms listed below:

- 5.1 kudu, grass, lion
- 5.2 rat, eagle, mielie, leopard, snake

TOTAL: [15]

TERM 1 TEST – MEMORANDUM

**NS & TECH
GRADE 5
MEMORANDUM
TERM 1**

**15 MARKS
30 MINUTES**

Caps Topic	Questions	Expected answer(s)	Marks									
	1											
Life Cycles	1.1	B✓	1									
Life Cycles	1.2	C✓	1									
Plants and animals on Earth	1.3	C✓	1									
Plants and animals on Earth	1.4	C✓	1									
	2											
Plants and animals on Earth	2.1	A✓	1									
Plants and animals on Earth	2.2	C✓	1									
Plants and animals on Earth	2.3	D✓	1									
Plants and animals on Earth	2.4	B✓	1									
	3											
Animal skeletons	3.1	water ✓ webbed✓ (Half mark each)	1									
Plants and animals on Earth	3.2	Inter-dependence✓	½									
Food chains	3.3	energy✓	½									
	4											
Animal skeletons	4.1 (Half mark each)	<table border="1"> <thead> <tr> <th>exoskeleton</th> <th>endoskeleton</th> <th>hydroskeleton</th> </tr> </thead> <tbody> <tr> <td>snail✓</td> <td>cow✓</td> <td>earthworm✓</td> </tr> <tr> <td>crab✓</td> <td>fish✓</td> <td>butterfly✓</td> </tr> </tbody> </table>	exoskeleton	endoskeleton	hydroskeleton	snail✓	cow✓	earthworm✓	crab✓	fish✓	butterfly✓	3
exoskeleton	endoskeleton	hydroskeleton										
snail✓	cow✓	earthworm✓										
crab✓	fish✓	butterfly✓										
	5											
Food chains	5.1	grass→kudu→lion✓	1									
Food chains	5.2	mielie→rat→snake→eagle→leopard✓	1									
TOTAL			15									