OXFORD

INTERVENTION GUIDE

Natural Sciences and Technology
Grade 4

Packed with catch-up and assessment support!

- *Baseline assessments*
- *Intervention strategies*
- *Answers to assessments*

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Contents

Types of assessment

This handbook focuses on three main types of assessment: baseline assessment; formal formative assessment and summative assessment.

Type of assessment	Description
Baseline assessment	Establishes whether learners meet the basic skills and knowledge level required. Helps the teacher plan for the year and for each learner. Is administered at the beginning of the year and before a particular topic. Results are used as a guide for teaching and not for promotion purposes.
Formative assessment	Used to aid the learning process and not for promotion purposes. Usually informal, to provide the teacher and learner with a more frequent account of where the learner is at in their learning journey. Teachers can use this form of assessment to modify and adapt their own teaching.
Summative assessment	Carried out after completion of a topic or cluster of topics. Is an assessment of learning that has taken place. Recorded and used for promotion. This is usually formal assessment, making up the formal Programme of Assessment.

All assessment tasks that make up a formal Programme of Assessment for the year are regarded as formal assessment. Formal assessment tasks are marked and formally recorded by the teacher for progression and certification purposes. All formal assessment tasks are subject to moderation for the purpose of quality assurance and to ensure that appropriate standards are maintained.

The forms of assessment used should be appropriate for the learners' ages and developmental levels.

Learners must complete formal assessments each term. Formal assessment provides teachers with a systematic way of evaluating how well learners are progressing in a grade and in a particular subject. This guide includes a number of intervention strategies that can be used to help learners that have performed poorly in the assessments. It is essential that intervention occurs at an early stage in order for it to be effective.

Programme of assessment

The formal assessment programme for Grade 4 Natural Sciences according to the mediated programme of 2021 consists of three practical investigations and four tests. Term 1 and Term 3 tests are out of 20 marks, while the Term 2 and Term 4 tests are longer at 40 marks each.

The Term 4 test is made up of 40% work from Term 3 and 60% work from Term 4.

The practical investigations count 40% towards the term mark, while the tests count 60% towards that term's results.

Summary of the programme of assessment for Grade 4 Natural Sciences:

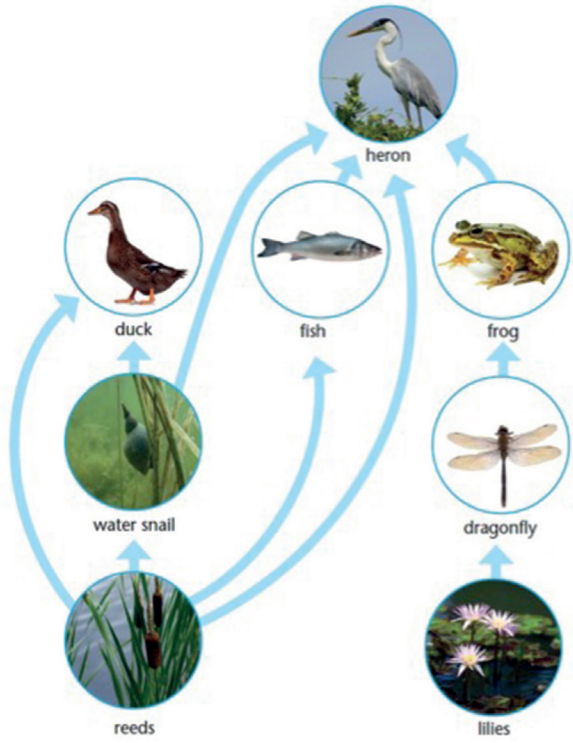
	Term 1	Term 2	Term 3	Term 4
Assessment task 1	Practical investigation (20 marks)	Practical investigation (20 marks)	Test (20 marks)	End-of-year test (40 marks)
Assessment task 2	Test (20 marks)	Mid-year test (40 marks)	Practical investigation (20 marks)	

In this guide you will find a baseline assessment that you can photocopy and give to learners in order to better assess their current skills and knowledge. This baseline assessment assesses the skills and knowledge that the learners should have gained in Grade 3. It requires the learners to use the information given to answer the questions that follow. Emphasis is placed on the interpretation of information rather than content that might or might not have been taught.

You will also find a number of tests. These can be copied and given to the learners. These tests will help learners prepare for their formal assessments, specifically for the mid-year and end-of-year tests. The memoranda for all assessments are available at the back of the guide. The guide also contains intervention strategies that can assist learners that performed below average in the baseline assessment and tests. These intervention strategies give practical guidelines on how to help learners in order for them to improve their understanding.

Baseline assessment

1. The place where an animal lives is its habitat. All animals need food to grow. The picture below is a food web. It shows which animals feed on which. Use the picture to answer the questions that follow:

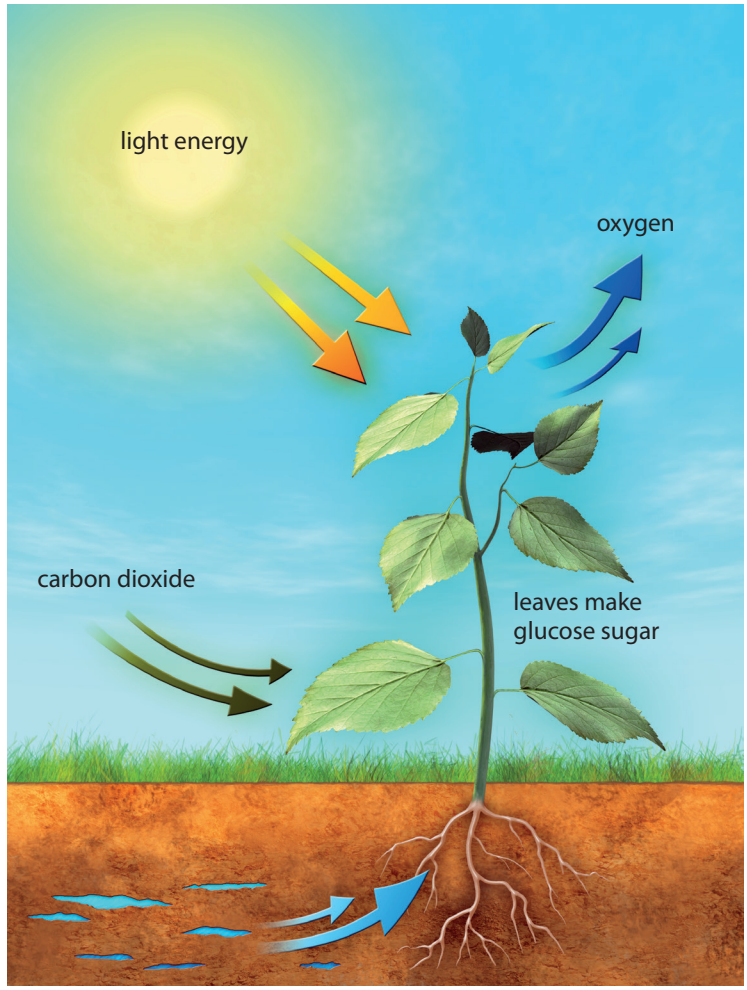


1.1 A carnivore is an animal that feeds on another animal, while a herbivore only eats plants. Identify two carnivores in this food web. (2)

1.2. A frog is an example of an amphibian. Complete the table below comparing frogs and fishes: (6)

	Frogs	Fishes
Living/non-living		
Lives in land/water		
Carnivore or herbivore		

1.3 Plants like the reeds and lilies in the food web use photosynthesis to make food. Use the picture below to answer the questions about photosynthesis:



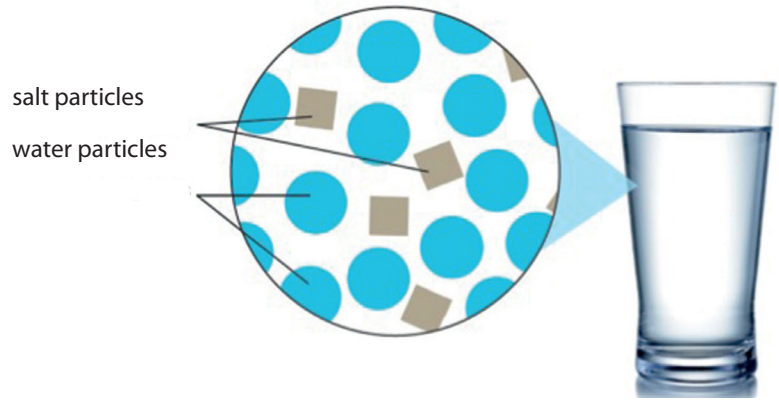
1.3.1 Where does the light energy come from? (1)

1.3.2 What do plants need for photosynthesis to take place? (3)

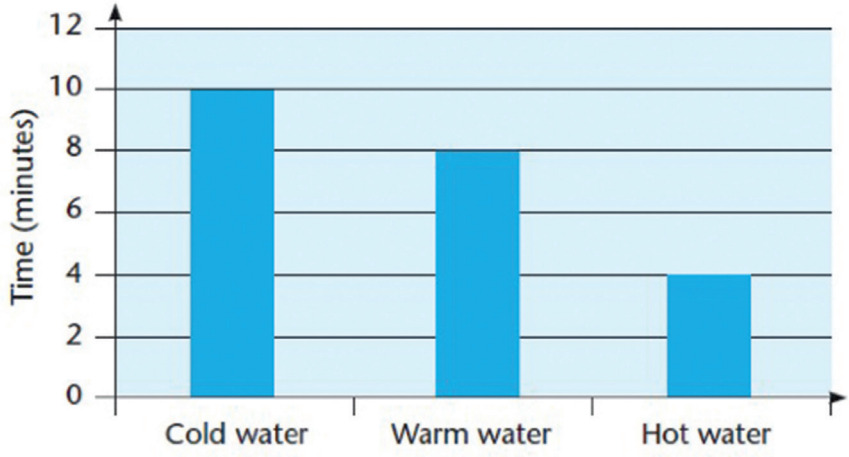
1.3.3 Which gas is given off during photosynthesis? (1)

1.3.4 Is soil an example of a living or non-living thing? (1) **[14]**

2. When salt dissolves in water, the salt mixes with the water until you can no longer see the grains of salt.



The bar graph below shows how long it took for the salt to dissolve so that you could no longer see the grains of salt.



2.1 How long did it take for the salt to dissolve in the cold water? (2)

2.2 Did the salt dissolve faster in the hot water? Give a reason for your answer. (2)

2.3 Name another substance that is able to dissolve in water. (1)

2.4 Is water a solid, a liquid or a gas? (1) **[6]**

3. Polar bears and scorpions live in very different habitats.

polar bear

scorpion

The photographs below show three different habitats:

A

B

C

3.1 Which animal, the polar bear or the scorpion, is an example of a mammal? Give a reason for your answer. (2)

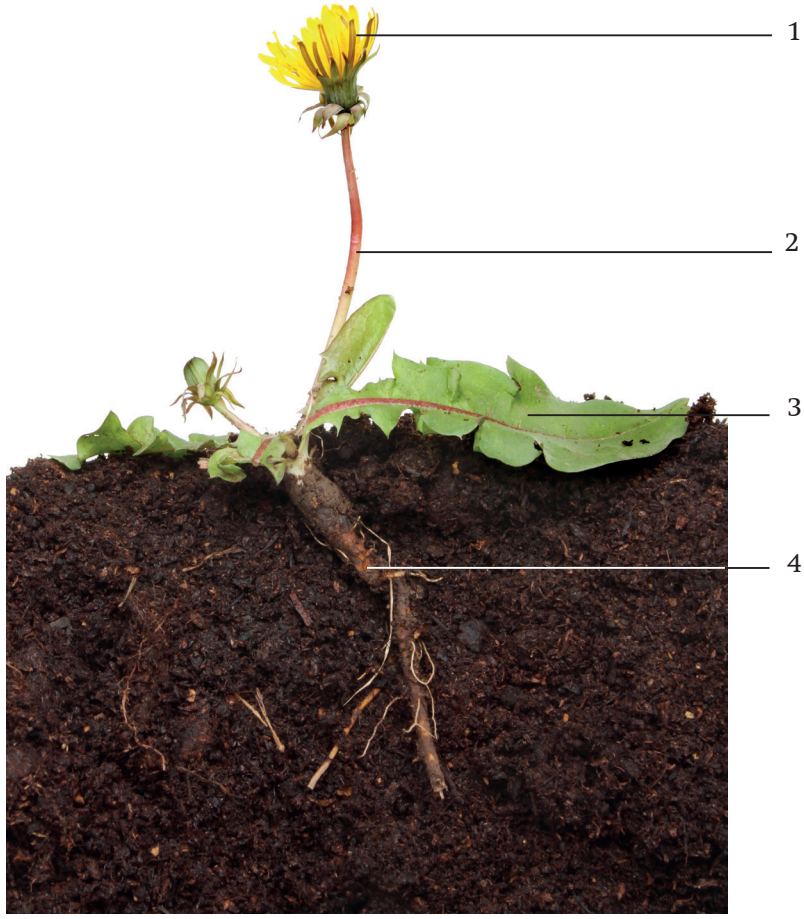
3.2 In which habitat does the polar bear live? (1)

3.3 What does the polar bear have to help it survive in this habitat? (1)

3.4 In which habitat does the scorpion live? (1)

3.5 How does the scorpion protect itself from other animals? (1)

3.6 Many plants grow in habitat C. Label the diagram of the plant below:



(4) **[10]**

[Total marks: 30]

Term 1 Assessment

Living and non-living things

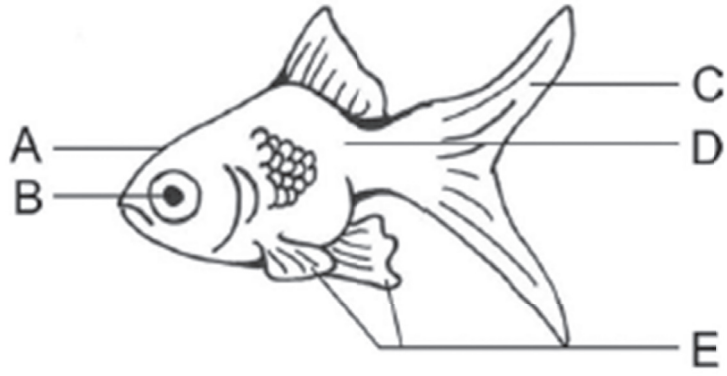
1. Match the life process in the first column with the correct description in the second column. (7)

1.1 reproducing	a. When a living thing gets rid of waste.
1.2 feeding	b. Living things do not stay still.
1.3 excreting	c. When a living thing makes its own young.
1.4 moving	d. Getting bigger or older.
1.5 sensing	e. Eating food to move, grow and reproduce.
1.6 growing	f. Animals need oxygen from their air.
1.7 breathing	g. When living things can tell what is going on in their environment.

2. Is this sentence true or false?
A seed is a living thing. (1) **[8]**

Structures of plants and animals

3. Label this drawing of a fish. (5)



4. Look at these photographs. These three animals have different types of limbs.


zebra


millipede


spider

Write a paragraph to compare the animals' limbs. Your paragraph should include the following information:

- three sentences to describe the animals' limbs (one sentence for each animal)
- two or three sentences to compare how the animals use their limbs. (5) **[10]**

What plants need to grow

5. Define the term germination. (2)
6. What does a plant need to grow? Choose the correct answer.
   a. water, soil, and air
   b. light and water
   c. light, water, and air
   d. water and ai (2) **[4]**

Habitats of animals

7. Describe a grassland habitat. (3)
8. Give an example of an animal that lives in a grassland habitat. (1)
9. Describe a forest habitat. (3)
10. Give an example of an animal that lives in a forest habitat. (1) **[8]**

Structures for animal shelters

11. Classify the following animal shelters into two categories: natural and human-made:

    kennel; nest; burrow; bird cage; ant hill; stable; cave; tree hollow (4)

12. Describe a shell structure. (2)
13. Give two examples of animal shelters that are shell structures. (2)
14. Give two examples of animal shelters that are frame structures. (2) **[10]**

[Total marks: 40]

Glossary

category: group of things that share certain characteristics
classify: put into specific categories or groups
column: division in a table that goes from the top of the table to the bottom
compare: discuss how two or more things are similar or not similar
define: write a definition; describe exactly in one sentence
describe: give a detailed explanation
description: words or a picture that describes or explains something
false: not true; incorrect
habitat: area or place where animals and plants live
label (noun): a description for a part of a picture
life process: something a living thing does to stay healthy and alive
limb: arm or leg
term: the word we use for a specific thing
true: correct

English	isiZulu	isiXhosa	Afrikaans	Setswana	Sesotho
category	ingxenye	udidi	kategorie	baa ka boleng	mokgahlelo/ boemo
classify	hlela	hlela	klassifiseer	baa mmogo (go baya dilo tse di tshwanang mmogo)	hlopha
column	ikholamu	ikholam	kolom	kholomo	kholomo
compare	qhathanisa	thelekisa	vergelyk	tshwan-tshanya	bapisa
define	chaza	nika ingcaciso	definieer	tlhalosa	hlalosa
describe	chaza	chaza	beskryf	tlhalosa	hlalosa
description	incazelo	inkcazelo	beskrywing	tlhaloso	tlhaloso
false	amanga	into ebubuxoki	onwaar	ke maaka	mafosi
habitat	indawo yokuhlala	indawo yokuhlala	habitat	bonno	tikoloho/ bophelo ba dimela le diphoofolo
label	bhala amagama ento	ileyibhile	byskrif	kwala maina	leibole
life process	isimo sempilo	indlela yokuphila	lewens-proses	dikgato tsa botshelo	potoloho ya bophelo
limb	ilungu	ilungu	ledemaat	setho	setho
term	igama	ikota	term	kgweditharo	kotara
true	iqiniso	yinyaniso	waar	ke nnete	nnete

Skills covered

Question number	Level of difficulty	Skill	More exercises in *Oxford Successful Natural Sciences and Technology Grade 4 Learner's Book* for further practice
Living and non-living things			
1	low order	match	Strand 1 Unit 1 Activity 2 (p. 13)
2	low order	identify	Strand 1 Unit 2 Activity 3 (p. 14)
Structures of plants and animals			
3	middle order	label	Strand 1 Unit 4 Activity 1 (p. 23)
4	middle order	compare	Strand 1 Unit 4 Activity 2 (p. 25)
What plants need to grow			
5	low order	define	Strand 1 Unit 5 Activity 2 (p. 28)
6	low order	identify	Strand 1 Unit 5 Activity 2 (p. 28)
Habitats of animals			
7	middle order	describe	Strand 1 Unit 6 Activity 2 (p. 33)
8	middle order	give examples	Strand 1 Unit 6 Activity 2 (p. 33)
9	middle order	describe	Strand 1 Unit 6 Activity 2 (p. 33)
10	middle order	give examples	Strand 1 Unit 6 Activity 2 (p. 33)
Structures for animal shelters			
11	middle order	classify	Strand 1 Unit 8 Activity 2 (p. 40)
12	middle order	describe	Strand 1 Unit 8 Activity 2 (p. 40)
13	middle order	give examples	Strand 1 Unit 8 Activity 2 (p. 40)
14	middle order	give examples	Strand 1 Unit 8 Activity 2 (p. 40)

Term 2 Mid-year exam

Section A

Living and non-living things

1. Are the following things living or non-living?

zebra; water; car; butterfly; seed; tree; shell; spider

[4]

Structures of plants and animals

2. Look at this diagram of a plant below.

In a table, write down the labels and the function of each part of the plant.

Part of the plant	Function
A	
B	
C	
D	

[8]

Habitats of animals

3. Match the examples of the animals with the habitat that they live in.

3.1	springbok	a.	desert
3.2	monkey	b.	forest
3.3	crocodile	c.	grassland
3.4	scorpion	d.	river

[4]

Structures for animal shelters

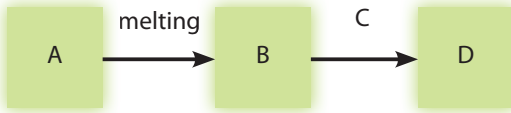
4. Write down four reasons why a bird's nest built in a tree is a good shelter for birds. **[4]**

[Section A total marks: 40]

Section B

Materials all around us

5. Label this flow chart. (4)



6. Explain this statement: No new water is added to Earth. (3) **[7]**

Solid materials

7. Match the raw material in the first column with a manufactured product in the second column.

7.1	oil	a.	glass
7.2	sand	b.	paper
7.3	wood	c.	paint
7.4	animal hide	d.	leather

[4]

Strengthening materials

8. Explain how you would fold a piece of paper to make a pillar that is strong enough to hold up a book. **[4]**

Strong frame structures

9. What is a strut? (2)

Look at this photograph. Explain how struts have been used to strengthen the structure. (3) **[5]**

[Section B total marks: 40]

Glossary

diagram: drawing or picture
explain: make something clear by describing it in detail and giving some facts
flow chart: a diagram that shows the order or sequence of a process
function (noun): what something is used for; purpose
label (noun): a description for a part of a picture
manufactured product: something that has been made and processed
material: what a thing is or can be made from
reason: explanation that says why or why not
statement: a sentence that is, or appears to be, factual
strengthen: make stronger
table: a set of facts shown in rows and columns

English	isiZulu	isiXhosa	Afrikaans	Setswana	Sesotho
diagram	umdwebo	isazobe	diagram	setshwan-tsho	tayakeramo
explain	chaza	cacisa	verduidelik	tlhalosa	hlalosa
flow chart tjhate ya	ishadi lohlelo	itshati	vloeidiagram	chate	tjhate ya tatellano ya diketsahalo
function	umsebenzi	umsebenzi	funksie	tiro	kabelo
label	bhala amagama ento	ileyibhile	byskrif	kwala maina	leibole
manu-factured product	izimpahla ezakhiwe izimpahla ezilungele ukusetshen-ziswa	imveliso eyenziweyo	vervaardigde produk	tsa maitirelo	sehlahiswa se entsweng
material	izinto noma izinsiza kukhiqiza	izixhobo	stof	didiriswa	sesebediswa
reason	isizathu	isizathu	rede	lebaka	lebaka
statement	isitatimende	ingxelo	stelling	motlhala	taba e bolelwang
strengthen	qinisa	qinisa	versterk	tiisa/ matlafatsa	matlafatsa
table	ithebula	itheyibhile	tabel	dikholomo le mela	papetla

Skills covered

Question number	Level of difficulty	Skill	More exercises in *Oxford Successful Natural Sciences and Technology Grade 4 Learner's Book* for further practice
Section A			
Living and non-living things			
1	middle order	classify	Strand 1 Unit 1 Activity 1 (p. 11)
Structures of plants and animals			
2	high order	tabulate	Strand 1 Unit 3 Activity 1 (p. 19)
Habitats of animals			
3	low order	match	Strand 1 Unit 6 Activity 2 (p. 33)
Structures for animal shelters			
4	high order	justify	Strand 1 Unit 8 Activity 2 (p. 40)
Section B			
Materials all around us			
5	middle order	label	Strand 2 Unit 2 Activity 1 (p. 50)
6	middle order	explain	Strand 2 Unit 3 Activity 1 (p. 53)
Solid materials			
7	low order	match	Strand 2 Unit 4 Activity 1 (p. 55)
Strengthening materials			
8	middle order	explain	Strand 2 Unit 6 Activity 1 (p. 60)
Strong frame structures			
9	low order	define	Strand 2 Unit 7 Activity 1 (p. 63)
10	middle order	explain	Strand 2 Unit 7 Activity 3 (p. 65)

Term 3 Assessment

Energy and energy transfer

1. Read this food chain:
   Sun → grass → cow → human
   Explain how the energy from the Sun is transferred through this food chain until it reaches the human. (4)

2. Look at these photographs. Write down a food chain.

Sun; grass

snake

bird

grasshopper

rat

(6) **[10]**

Energy around us

3. Complete this table.

Appliance	Input energy	Output energy
Kettle		
Ceiling fan		
Gas stove		
Car		

[10]

Energy and sound

4. This picture shows the ear. Match the labels to the picture.

   a. Three small bones called the ossicles vibrate.
   b. The liquid in the cochlea vibrates and sends signals to the brain to help you identify the sound.
   c. The outer ear funnels the sound into the inner ear.
   d. A membrane called the eardrum expands and vibrates. (4)

5. Compare pitch and volume. Use examples to explain your answer. (4)

6. Name three ways that noise pollution can be harmful. (6)

7. List three sources of noise pollution. (6) **[20]**

[Total marks: 40]

Glossary

appliance: machine used in a home to make life easier
food chain: visual representation of a series of living things, which are each dependent on the next for food
harmful: something that causes harm or damage
input energy: energy that is put into a system or process
name (verb): say what the word for something is
noise pollution: harmful levels of loud and unpleasant sounds
output energy: energy that comes out of a system or process
transfer: move from one place to another
vibrate: move or shake rapidly and continuously

English	isiZulu	isiXhosa	Afrikaans	Setswana	Sesotho
appliance	izinto zikagesi	izinto zombane	toestel	sediriswa sa motlakase	sesebediswa sa motlakase
food chain	ubudlelwano bokudla phakathi kwezilwane nezitshalo	itsheyini yokutya	voedsel-ketting	dijo	ketane ya dijo
harmful	okunobun-gozi	inobungozi	skadelik	ekotsi	ekotsi
input energy	amandla angenayo	amandla afakiweyo/ asetyenzisi-weyo	inset-energie	maatla a go kenyelletswa	matla a ho kenyelletswa
name	nika igama lento	xela/biza	benoem	neela	reha
noise pollution	ukuphaza-miseka komsindo	ungcoliseko lwengxolo	geraas-besoedeling	kgotlelego ya modumo	tshilafatso ya lerata
output energy	amandla aphumayo	imveliso yamandla	uitset-energie	maatla a twsayang	matla a tswang
transfer	dlulisa	tshintshela	oordra	fetisetsa	fetisetsa
vibrate	dlidliza	ngcangcaze-la/ngcang-cazelisa	vibreer	roroma/ tetesela	thothomela

Skills covered

Question number	Level of difficulty	Skill	More exercises in *Oxford Successful Natural Sciences and Technology Grade 4 Learner's Book* for further practice
Energy and energy transfer			
1	middle order	outline	Strand 3 Unit 2 Activity 1 (p. 83)
2	high order	organise	Strand 3 Unit 2 Activity 1 (p. 83)
Energy around us			
3	middle order	tabulate	Strand 3 Unit 3 Activity 2 (p. 87) Strand 3 Unit 4 Activity 3 (p. 90)
Energy and sound			
4	low order	match	Strand 3 Unit 6 Activity 2 (p. 99)
5	middle order	compare	Strand 3 Unit 7 Activity 1 (p. 100) Strand 3 Unit 7 Activity 3 (p. 102)
6	middle order	name	Strand 3 Unit 8 Activity 3 (p. 105)
7	middle order	list	Strand 3 Unit 8 Activity 1 (p. 104) Strand 3 Unit 8 Activity 2 (p. 104)

Term 4 End-of-year exam

Section A

Energy and energy transfer

1. Johnny and his family are eating a roast chicken for dinner. Write a food chain to show how energy from the Sun is transferred to Johnny from the chicken. (3)

2. What is the difference between a food chain and a food web? (2) **[5]**

Energy around us

3. Complete this table.

Appliance	Input energy	Output energy
Torch		
Hairdryer		
Paraffin lamp		
Helicopter		
Vuvuzela		

[10]

Energy and sound

4. Give five examples of how noise pollution can be reduced. **[5]**

[Section A total marks: 20]

Section B

Planet Earth

5. Look at this photograph of Earth.

Describe the features of the Earth, using what you know about the Earth and using the photograph to help you. **[5]**

The Sun

6. Why is the Sun important for life on Earth? (2)

7. Is this sentence true or false?
The Sun is the closest planet to Earth. (1) **[3]**

The Earth and the Sun

8. Name two ways that the Earth moves in space. (2)

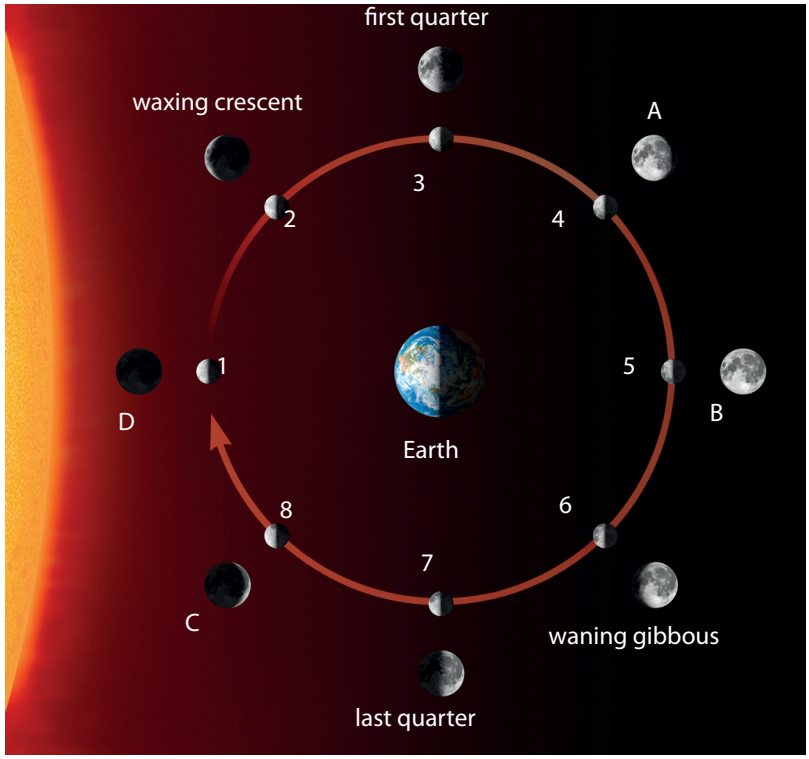
9. Is this sentence correct? Explain why or why not.
The Earth experiences night and day because the Earth orbits around the Sun. (3) **[5]**

The moon

10. Complete this sentence:

    It takes a._____ days for the moon to b. _____ the Earth. (2)

    Give this diagram a heading, and provide the missing labels for A to D. (5)



[7]

[Section B total marks: 20]

Glossary

complete (verb): finish something
difference: how things are not the same
feature: a special characteristic of something
heading: a word or short statement that tells you what something is about
provide: supply or make available
reduce: make smaller or less
space: everything beyond Earth's atmosphere

English	isiZulu	isiXhosa	Afrikaans	Setswana	Sesotho
complete	qedela	gqibezela	voltooi	feleletsa	qetella
difference	umehluko	umahluko	verskil	pharologano	phapano
feature	uphawu	isimo	eienskap	ponagalo	makgetha
heading	sihloko	sihloko	opskrif	setlhogo	sehlooho
provide	nikeza	bonelela/ nika	voorsien	neela	fana
reduce	nciphisa	nciphisa	reduseer	fokotsa	fokotsa
space	umkhathi	isithuba	die ruimte	lefaufau	sepakapaka

Skills covered

Question number	Level of difficulty	Skill	More exercises in *Oxford Successful Natural Sciences and Technology Grade 4 Learner's Book* for further practice
Section A			
Energy and energy transfer			
1	high order	organise	Strand 3 Unit 2 Activity 1 (p. 83)
2	middle order	explain	Strand 3 Unit 2 Activity 1 (p. 83)
Energy around us			
3	middle order	tabulate	Strand 3 Unit 3 Activity 2 (p. 87) Strand 3 Unit 4 Activity 3 (p. 90)
Energy and sound			
4	middle order	give examples	Strand 3 Unit 8 Activity 3 (p. 105)
Section B			
Planet Earth			
5	middle order	describe	Strand 4 Unit 1 Activity 1 (p. 114)
The Sun			
6	middle order	explain	Strand 4 Unit 3 Activity 1 (p. 119)
7	low order	remember	Strand 4 Unit 3 Activity 1 (p. 119)
The Earth and the Sun			
8	middle order	name	Strand 4 Unit 4 Activity 1 (p. 122) Strand 4 Unit 4 Activity 2 (p. 122)
9	high order	justify	Strand 4 Unit 4 Activity 2 (p. 122)
The moon			
10	low order	remember	Strand 4 Unit 7 Activity 1 (p. 131)
11	low order	label	Strand 4 Unit 7 Activity 1 (p. 131)

Baseline assessment answers

1. 1.1 Duck ✓ heron ✓ or frog. (maximum 2 marks) (2)

1.2

	Frogs	Fishes
Living/non-living	Living ✓	Living ✓
Lives in land/water	Land and water ✓	Water ✓
Carnivore or herbivore.	Carnivore ✓	Herbivore ✓

(6)

1.3.1 From the sun ✓ (1)

1.3.2 Water ✓
Light energy ✓
Carbon dioxide ✓ (3)

1.3.3 Oxygen ✓ (1)

1.3.4 Non-living ✓ (1) **[14]**

2. 2.1 10 ✓ minutes ✓ (2)

2.2 Faster, ✓ it only took 4 minutes in the hot water. ✓ (2)

2.3 Sugar/instant coffee ✓ (any suitable example) (1)

2.4 Liquid ✓ (1) **[6]**

3. 3.1 Polar bear ✓ It has fur/gives birth to live young.
(Any suitable reason) ✓ (2)

3.2 A ✓ (1)

3.3 It has thick fur ✓ /it blends in with the snow. (1)

3.4 B ✓ (1)

3.5 It has a sting ✓ and pincers. (1)

3.6.1 1 – Flower/bud ✓
2 – Stem ✓
3 – Leaf ✓
4 – Roots ✓ (4) **[10]**

[Total marks: 30]

Term 1 Assessment answers

Living and non-living things

1. 1. c. ✓
   2. e. ✓
   3. a. ✓
   4. b. ✓
   5. g. ✓
   6. d. ✓
   7. f. ✓ (7)
2. True ✓ (1) **[8]**

Structures of plants and animals

3. A. head ✓
   B. eyes (also accept sense organs) ✓
   C. tail ✓
   D. body ✓
   E. fins ✓ (5)
4. Example answer: A zebra has four legs and hooves. A millipede has hundreds of small legs. A spider has eight long legs. The zebra needs to walk and run fast over grass and sand, so its legs help to keep it stable. A millipede and a spider are small and need to move quickly over all surfaces. Their many legs help them to do this. (5) **[10]**

What plants need to grow

5. The process whereby a seed comes to life. ✓ / The process through which a plant grows from a seed. ✓ (2)
6. C ✓✓ (2) **[4]**

Habitats of animals

7. Example answer: A grassland habitat is covered with mostly grasses and a few low-growing trees. There is a lot of open space for animals to graze. The land is quite dry, but water can be found in rivers and at waterholes. (3)

8. Accept any correct answers. For example: zebra, giraffe, lion, buck. (1)
9. Example answer: In a forest habitat, the vegetation is mostly tall trees. There is lots of shade because the trees are close together. The ground or floor of the forest habitat is covered with dead leaves, twigs, and other organic matter. (3)
10. Accept any correct answers. For example: monkeys, birds, frogs, lizards, snakes. (1) **[8]**

Structures for animal shelters

11. Natural: Nest, burrow, ant hill, cave, tree hollow
    Human-made: Bird cage, stable, kennel (4)
12. A shell structure has a strong cover ✓ and is hollow inside. ✓
    It often has a curved shape, which gives it more strength. (2)
13. Examples include nest, snail shell, egg. (2)
14. Examples include kennel, spider web, bird cage. (2) **[10]**

[Total marks: 40]

Term 2 Mid-year exam answers

Section A

Living and non-living things

1. Living: Zebra, butterfly, seed, tree, spider.
   Non-living: Water, car, shell. **[4]**

Structures of plants and animals

2.

Part of the plant	Function
A. Leaf	Catch the sunlight.
B. Fruit	Holds the seeds.
C. Stem	Holds the plant upright.
D. Root	Hold the plant in the soil.

[8]

Habitats of animals

3. 1. c. ✓
   2. b. ✓
   3. d. ✓
   4. a. ✓ **[4]**

Structures for animal shelters

4. Accept reasonable answers. Example answer:
   - It is a shell structure, so eggs can be laid in it without rolling away.
   - It is made of twigs, leaves, and other materials that keep the birds and their chicks warm.
   - It is usually built high off the ground, out of the reach of predators.
   - If the tree has a lot of leaves, it will protect the birds from the wind, rain, and sun. **[4]**

[Section A total marks: 20]

Section B

Materials all around us

5. A. solid (also accept: ice) ✓
   B. liquid (also accept: water) ✓
   C. evaporation ✓
   D. gas (also accept: water vapour) ✓ (4)
6. Learners must discuss the statement in terms of the water cycle, and clearly explain how water evaporates from the oceans and other bodies of water, condenses in the sky in the form of clouds, and then falls back to Earth in the form of rain. In this way, water is recycled constantly. (3) **[7]**

Solid materials

7. 1. c. ✓
   2. a. ✓
   3. b. ✓
   4. d. ✓ **[4]**

Strengthening materials

8. Learners can describe any one of three methods of creating a pillar: folding the paper into triangles, tubes or squares. They should describe in points how to fold the paper. Look out for the following knowledge:
   - an understanding that the paper is stronger if it is folded
   - an understanding of how a pillar should look (i.e. it is hollow in the middle). **[4]**

Strong frame structures

9. A strut is used to strengthen a frame structure. It helps a frame structure to maintain its shape. (2)

10. Struts have been used to make the stilts stronger so that they hold up the top part of the structure, and make the structure strong enough to support weight. They have also been used to keep the poles at the top of the structure apart, so that the structure holds its square shape. Struts have also been used on the roof to keep it strong and to keep it above the bottom structure. (3) **[5]**

[Section B total marks: 20]

Term 3 Assessment answers

Energy and energy transfer

1. Sunlight travels to Earth and provides heat and light. ✓ Grass uses the energy from the Sun to grow. ✓ The cow eats the grass, which has the energy from the Sun. ✓ The human then eats the cow. ✓ (4)
2. Sun → grass → grasshopper → rat → snake → bird (6) **[10]**

Energy around us

3.

Appliance	Input energy	Output energy
Kettle	Electricity	Heat
Ceiling fan	Electricity	Movement
Gas stove	Gas	Heat
Desk lamp	Electricity	Light
Car	Petrol	Movement

[10]

Energy and sound

4. a. 3
   b. 4
   c. 1
   d. 2 (4)
5. Example answer: Volume is how loud or soft a sound is. For example, you can adjust the volume of a radio to make the sound louder or softer. Pitch is how high or low a sound is. For example, a whistle has a high pitch and the sound of a truck has a low pitch. (4)
6. Accept any three reasonable answers. Examples:
   - Causes stress.
   - Can prevent people from getting enough sleep.
   - Can cause hearing problems or deafness.
   - Can distract people so that they cannot work properly.
   - Can affect people's moods.
   - Can affect people's behaviour. (6)
7. Accept any three reasonable answers. Examples:
   - mines and factories
   - building sites
   - roads, railways, and airports
   - cars, helicopters, and planes
   - machines and appliances (6) **[20]**

[Total marks: 40]

Term 4 End-of-year exam answers

Section A

Energy and energy transfer

1. Sun → seeds → chicken feed → grass → Johnny (3)
2. A food chain is a simple diagram that shows how energy is transferred from the Sun through different organisms. It shows one organism at a time. A food web shows how these food chains are interlinked. (2) **[5]**

Energy around us

3.

Appliance	Input energy	Output energy
Torch	Batteries	Light
Hairdryer	Electricity	Sound/Heat
Parffin lamp	Paraffin	Light
Helicopter	Petrol/Diesel	Movement
Vuvuzela	Person's breath	Sound

[10]

Energy and sound

4. Accept any five reasonable answers. Examples:
   - People who work in mines and factories should wear noise-cancelling headphones/earplugs.
   - Give construction sites a time limit so that there is a break in the noise.
   - Plant tall trees next to roads to try to reduce the noise for people in the area.
   - Make sure that cars and other vehicles are well maintained so that they do not make so much noise.
   - Have quiet areas where people are not allowed to make a noise (forexample, parks).
   - Don't play music too loudly. **[5]**

[Section A total marks: 20]

Section B

Planet Earth

5. Learners must mention the following features:
   - The Earth is shaped like a sphere. ✓
   - The Earth is made of rock. ✓
   - Most of the planet is covered with water (oceans, lakes, rivers). ✓
   - The rest of the planet is covered by land (continents and islands). ✓
   - There is a thin layer of air that surrounds the Earth. ✓ **[5]**

The Sun

6. The Sun provides light and warmth, ✓ which are essential for life on Earth. ✓ (2)
7. False. (The Sun is the closest star; it is not a planet.) (1) **[3]**

The Earth and the Sun

8. The Earth orbits around the Sun. ✓
   The Earth rotates on its own axis. ✓ (2)
9. It is incorrect. ✓ The Earth's orbit around the Sun affects the seasons. ✓ The Earth experiences day and night because it rotates on its own axis. ✓ (3) **[5]**

The moon

10. a. 29½ days ✓
    b. orbit ✓ (2)
11. Heading: Phases of the moon ✓

    Labels:
    A. waxing gibbous ✓
    B. full moon ✓
    C. waning crescent ✓
    D. new moon ✓ (5) **[7]**

[Section B total marks: 20]

Intervention strategies

Natural Science can be a difficult subject for many learners. It requires learners to not only memorise the content, but also to apply their knowledge in various situations. It is essential that learners understand the content, rather than attempting to rote learn it

Analyse your basement assessment results and use the data to identify why the learner performed poorly. Due to the current circumstances many learners would have missed a large proportion of their Grade 3 year or spent much of it being taught online. This means that learners might not have gained the skills required. It is also possible that some learners will have a superior understanding to others. Poor results can be attributed to a number of factors including:

- Barriers to learning
- Class size
- Reading comprehension (the ability to understand what they have read)
- A lack of metacognition
- An inability to retain information.

Barriers to learning

- Learners may face barriers to learning. It is essential that we as educators accommodate these learners to ensure that our classrooms remain inclusive.
- These learners may require and should be granted more time for:
  - completing tasks
  - acquiring thinking skills (own strategies)
  - assessment activities.
- Teachers need to adapt the number of activities to be completed without interfering with the learners gaining the required language skills.
- Ensure that weaker learners are paired with learners who are academically strong.

Class size

- Peer tutoring can be an effective intervention method when class size is an issue.
- Quieter learners tend to struggle in a large class as they tend not to ask questions and often fall behind.
- Dividing the class into smaller groups or pairs can help these learners as they will feel less intimidated.
- Ensure that the groups are made up of learners with varying ability so that the weaker learners are helped by the stronger ones.
- Peer assessment can also be used successfully during informal assessment and allows you the educator to gauge the learner's understanding in a less intimidating manner than a formal test or assignment.

- Assessing the individual learner's understanding can be difficult in a large class. The following strategies can be used:
    - **Thumbs up/thumbs down**: Check if learners have understood a concept by show of thumbs. Thumbs up indicate they got it, thumbs down shows they did not, thumbs sideways could show they are not sure.
    - **Response boards**: small chalkboards or whiteboards where learners record their response to a question and when teacher says 'show your answers' they all hold up the board. This way you can quickly gauge how many are correct/incorrect.
    - **Show fingers 1-2-3:** Ask learners to show fingers to show they understand activity instructions before working in a group. 1 = I do not understand, 2 = I sort of understand but I need some help, 3 = I completely understand. This can also be used post activities to see you met the activity objectives.
- Differentiated instruction allows educators to cater to the individual learner's needs. Always have a few more challenging examples available to give to learners who have finished the task quickly. Ask them to set up the practical activity or help the learners that are struggling. Ask the learners to research the topic covered in the following lesson using the internet or textbooks.

Reading comprehension

- Many learners struggle to understand what they have read. It is therefore important to make content comprehensible for all learners, particularly those who have English as a second or third language.
- Support learners by giving them pre-reading questions (to aid while reading) and post reading strategies to organise what they have or learned.
- Pre-reading questions could include asking the learners *what they already know about the topic? What is the main idea in this paragraph? What real-life examples relate to this topic?*
- One strategy that can help these learners is teaching them to summarise the content into bullet points and make use of mind-maps. This forces the learners to rewrite the content in their own words.
- Write difficult terminology on the board and use simple words to explain what those terms mean. This intervention guide provides a glossary with the assessment that includes the English words and definitions and then the translation of these words into home languages spoken by the learners in the class. This glossary is a good guideline of the terminology that might prove challenging for some learners.
- Diagrams can be very useful for explaining concepts in such a way that learners can visualise the situation.
- Scaffolding is an important tool for educators with struggling students. Use a few minutes each day to revise the work covered in the previous lesson. This is especially essential if you don't see the learners every day.

A lack of metacognition

- It is essential that metacognition takes place during lessons. Metacognition is the ability to understand one's own thought processes. Learners retain information best when they can visualise situations.
    - Visual aids and practical work can aid learners to understanding the content.
    - After completing practical tasks, give learners sentence starters to complete. For example:
        - I learned…
        - I wonder….
        - I still want to know….
        - I still don't understand…
        - I still have a question about…

An inability to retain information

- Flash cards and mind-maps can be useful tools to help learners memorise facts.
- Term 1 covers a large amount of content and learners can be intimidated by the volume of work covered.
- Encourage learners to break the work down into more manageable sections. They can then create a mind-map for each sub-topic.
- Tables can also help learners summarise the work into more manageable sections.
- Mnemonics help learners to memorise content. Use the first letter of each word to create a sentence that the learners can memorise easily. For example the following mnemonic can be used to remember the formula for photosynthesis:

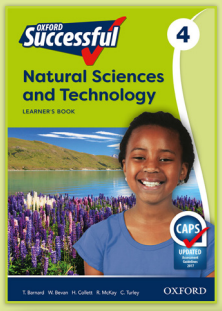
  Cows **E**at **W**et **G**rass **O**utside
  Carbon dioxide + **E**nergy + **W**ater → **G**lucose + **O**xygen

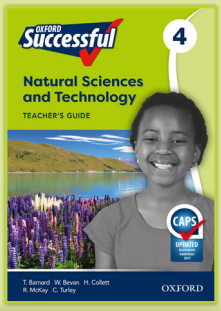
Notes

INTERVENTION GUIDE

Natural Sciences and Technology
Grade 4

For best results, use this guide with your *Oxford Successful Natural Sciences and Technology* Grade 4 Learner's Book and Teacher's Guide.





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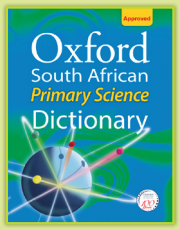

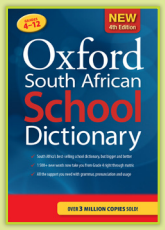

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