OXFORD

SCHOOL Improvement

CAPS

# PLANNER & TRACKER

## Natural Sciences and Technology
## Grade 6

- *Progress tracker*
- *Intervention strategies*
- *Worksheets and exam papers*
- *Assessment support*
- *Key vocabulary*

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# Contents

The worksheets in this resource book are developed for use with *Oxford Successful Natural Sciences and Technology* Grade 6 Learner's Book. The answers to the worksheets can be found in the *Oxford Successful Natural Sciences and Technology* Grade 6 Teacher's Guide.

## Progress tracker



## Term 1



## Term 2



## Term 3



## Term 4

# TERM 1

| Progress tracker for *Oxford Successful Natural Sciences and Technology* Grade 6 | | | | | | |
|---|---|---|---|---|---|---|
| **STRAND 1**<br>**NATURAL SCIENCES: Life and Living**<br>**TECHNOLOGY: Processing** | | | | | | |
| **Weeks** | **Content and concepts (as per 2023/24 ATP)** | **Learner's Book page ref.** | **Time allocated (as per ATP)** | **Assessment** | **Date of completion** | **Teacher reflection** |
| 1–3 | **Photosynthesis**<br>• Plants and food<br>• Plants and air | **10**<br>10<br>14 | 2,5 weeks (8,75 hours) | | | |
| 3–5 | **Nutrients in food**<br>• Food groups | **16**<br>16 | 2 weeks (7 hours) | | | |
| 5–6 | **Nutrition**<br>• Balanced diets | **22**<br>22 | 1,5 weeks (5,25 hours) | | | |
| 7–9 | **Ecosystems and food webs**<br>• Different ecosystems<br>• Living and non-living things in ecosystems<br>• Food webs | **36**<br>36<br>40<br>42 | 3 weeks (10.5 hours) | | | |
| 10–11 | Revision<br>Strand 1: Summary<br>LB: p. 44 | | | Exemplar test<br>LB: p. 45<br><br>Control test<br>TG: p. 132 | | |

# TERM 2

| Progress tracker for *Oxford Successful Natural Sciences and Technology* Grade 6 | | | | | | |
|---|---|---|---|---|---|---|
| **STRAND 2**<br>**NATURAL SCIENCES: Matter and Materials**<br>**TECHNOLOGY: Processing** | | | | | | |
| **Weeks** | **Content and concepts (as per 2023/24 ATP)** | **Learner's Book page ref.** | **Time allocated (as per ATP)** | **Formal assessment activities** | **Date of completion** | **Teacher reflection** |
| 1 | **Solids, liquids and gases**<br>• Arrangement of particles | **48**<br>48 | 1 week (3, 5 hours) | | | |
| 2 | **Mixtures**<br>• Mixtures of materials<br>• Solutions | **51**<br>51<br>56 | 1 week (3,5 hours) | Practical task: Activity 1<br>LB: p. 52<br>TG: p. 64 | | |
| 3–4 | **Solutions as special mixtures**<br>• Soluble substances<br>• Saturated solutions<br>• Insoluble substances | **58**<br>58<br>62<br>64 | 2 weeks (7 hours) | Practical task: Activity 3<br>LB: p. 61<br>TG: p. 70 | | |
| 5 | **Dissolving**<br>• Rates of dissolving | **66**<br>66 | 1 week (3,5 hours) | Practical task: Activity 1<br>LB: p. 67<br>TG: p. 76 | | |
| 6–7 | **Mixtures and water resources**<br>• Water pollution<br>• Importance of wetlands | **70**<br>70<br>74 | 2 weeks (7 hours) | | | |
| 8–9 | **Processes to purify water**<br>• Clean water | **76**<br>76 | 2 weeks (7 hours) | | | |
| 10–11 | Revision<br>Strand 2: Summary<br>LB: p. 79 | | | Exemplar test<br>LB: p. 80<br><br>Exemplar mid-year exam<br>LB: p. 82<br><br>Control test (Terms 1 and 2)<br>TG: p. 139 | | |

# TERM 3

| Progress tracker for *Oxford Successful Natural Sciences and Technology* Grade 6 | | | | | | |
|---|---|---|---|---|---|---|
| **STRAND 3**<br>**NATURAL SCIENCES: Energy and Change**<br>**TECHNOLOGY: Systems and Control** | | | | | | |
| **Weeks** | **Content and concepts (as per 2023/24 ATP)** | **Learner's Book page** | **Time allocated (as per CAPS)** | **Formal assessment activities** | **Date of completion** | **Teacher reflection** |
| 1–3 | **Electrical circuits**<br>• Simple circuits<br>• Circuit diagrams | **86**<br>86<br>90 | 3 weeks (10,5 hours) | | | |
| 4–5 | **Electrical conductors and insulators**<br>• Conductors<br>• Insulators | **93**<br>93<br>96 | 2 weeks (7 hours) | Practical task:<br>Activity 2<br>LB: p. 93<br>TG: p. 95 | | |
| 6–7 | **Systems to solve problems**<br>• Using electric circuits | **98**<br>98 | 2 weeks (7 hours) | OR<br>Practical task:<br>Activity 1<br>LB: p. 100<br>TG: p. 99 | | |
| 8–9 | **Mains electricity**<br>• Fossil fuels and electricity<br>• Cost of electricity<br>• Renewable ways to generate electricity | **102**<br>102<br>105<br>111 | 2 weeks (7 hours) | | | |
| 10–11 | Revision<br>Strand 3: Summary LB: p. 113 | | | Exemplar test<br>LB: p. 114<br><br>Control test<br>TG: p. 146 | | |

# TERM 4

| Progress tracker for *Oxford Successful Natural Sciences and Technology* 6 | | | | | | |
|---|---|---|---|---|---|---|
| **STRAND 4**<br>**NATURAL SCIENCES: Planet Earth and Beyond**<br>**TECHNOLOGY: Systems and Control** | | | | | | |
| **Weeks** | **Content and concepts (as per CAPS)** | **Learner Book page** | **Time allocated (as per ATP)** | **Formal assessment activities** | **Date of completion** | **Teacher reflection** |
| 1–3 | **The solar system**<br>• The Sun, planets and asteroids<br>• Moons | **116**<br>116<br>120 | 2,5 weeks (8,75 hours) | Practical task: Activity 2<br>LB: p. 119<br>TG: p. 115 | | |
| 3–4 | **Movements of the Earth and planets**<br>• Rotation (Earth)<br>• Revolution (Earth) | **122**<br>122<br>124 | 1 week (3,5 hours) | | | |
| 4–5 | **The movement of the Moon**<br>• Rotation (Moon)<br>• Revolution (Moon) | **126**<br>126<br>128 | 1 week (3,5 hours) | | | |
| 5–6 | **Systems for looking into space**<br>• Telescopes | **130**<br>130 | 1 week (3,5 hours) | | | |
| 6–8 | **Systems to explore the Moon and Mars**<br>• Vehicles used on the Moon<br>• Vehicles used on Mars | **132**<br>132<br>135 | 2,5 weeks (8,75 hours) | OR<br>Practical task: Activity 1<br>LB: p. 132<br>TG: p. 126 | | |
| 9 | Revision<br>Strand 4: Summary LB: p. 137 | | | Exemplar test<br>LB: p. 138<br><br>Control end-of-year exam (Terms 1-4)<br>TG: p. 152 | | |

# STRAND 1: Science vocabulary

**ADDITIVE [IN FOOD]**

| | |
|---|---|
| **Pronunciation** | ***ad**-uh-tive* |
| **Part of speech** | noun (plural: additives) |
| **Definition** | something that is added to food in small amounts |
| **Afrikaans** | bymiddel |
| **IsiXhosa** | isinongi |
| **IsiZulu** | isinongo |

**CARBOHYDRATE**

| | |
|---|---|
| **Pronunciation** | *kaa-boh-**hide**-rayt* |
| **Part of speech** | noun (plural: carbohydrates) |
| **Definition** | enegy-rich nutrient like sugar or starch |
| **Afrikaans** | koolhidraat |
| **IsiXhosa** | isakhamzimba esinika amandla |
| **IsiZulu** | isikhuthazimandla; ikhabhohayidirethi |

**CARBON DIOXIDE**

| | |
|---|---|
| **Pronunciation** | ***kaa**-buhn dy-**ok**-side* |
| **Part of speech** | noun (no plural) |
| **Definition** | a gas in the air that plants and animals give off when they breathe and that plants need for photosynthesis |
| **Afrikaans** | koolstofdioksied; koolsuurgas |
| **IsiXhosa** | umoya ongcolileyo |
| **IsiZulu** | isikhutha |

**COLOURANT**

| | |
|---|---|
| **Pronunciation** | ***kul**-uh-rint* |
| **Part of speech** | noun (plural: colourants) |
| **Definition** | food additive used to improve the look of a food product |
| **Afrikaans** | kleursel |
| **IsiXhosa** | isiqholo esinombala |
| **IsiZulu** | isinongo esisetshenziswa ukuthuthukisa ukubukeka kokudla |

**CONSUMER [IN FOOD WEB]**

| | |
|---|---|
| **Pronunciation** | *kuhn-**syoom**-uh* |
| **Part of speech** | noun (plural consumers) |
| **Definition** | an animal that feeds on plants or on animals that have eaten plants |
| **Afrikaans** | verbruiker |
| **IsiXhosa** | izidla-zityalo |
| **IsiZulu** | isilwane esidla izitshalo |

**DECOMPOSER**

| | |
|---|---|
| **Pronunciation** | *dee-kuhm-**pohz**-uh* |
| **Part of speech** | noun (plural: decomposers) |
| **Definition** | a micro-organism that breaks down dead plant and animal matter |
| **Afrikaans** | ontbinder |
| **IsiXhosa** | intsholongwane ebolisayo |
| **IsiZulu** | igciwane elisebenza ukubolisa noma ukubhucisa |

**DIABETES**

| | |
|---|---|
| **Pronunciation** | *dy-uh-**bee**-tiz* |
| **Part of speech** | noun (no plural) |
| **Definition** | a disease that makes it difficult for your body to control the level of sugar in your blood |
| **Afrikaans** | suikersiekte |
| **IsiXhosa** | isifo seswekile |
| **IsiZulu** | isifo sikashukela |

**DIET**

| | |
|---|---|
| **Pronunciation** | ***dy**-uht* |
| **Part of speech** | noun (plural: diets) |
| **Definition** | the selection of food a person usually eats from day to day |
| **Afrikaans** | dieet |
| **IsiXhosa** | ukutya; indlela yokutya |
| **IsiZulu** | uhlelo lokudla; indlela yokudla |

**ECOSYSTEM**

| | |
|---|---|
| **Pronunciation** | ***ee**-koh-siss-tuhm* |
| **Part of speech** | noun (plural: ecosystems) |
| **Definition** | a system made up of the habitats and community of plants and animals |
| **Afrikaans** | ekosisteem |
| **IsiXhosa** | umxokomezelo wendalo |
| **IsiZulu** | isayensi yokuphilisana nobudlelwano phakathi kwezitshalo nezilwane |

**FAT**

| | |
|---|---|
| **Pronunciation** | ***fat*** |
| **Part of speech** | noun (plural: fats) |
| **Definition** | the substance containing oil that we get from animals, plants or seeds and use for cooking |
| **Afrikaans** | vet |
| **IsiXhosa** | amanqatha; amafutha |
| **IsiZulu** | itebhe; inoni; amafutha |

**FERMENT**

| | |
|---|---|
| **Pronunciation** | *fuh-**ment*** |
| **Part of speech** | verb (fermenting; fermented) |
| **Definition** | process of using yeasts or bacteria to turn carbohydrates into acids, alcohols or carbon dioxide |
| **Afrikaans** | gis |
| **IsiXhosa** | igwele |
| **IsiZulu** | -vubela |

**FLAVOURANT**

| | |
|---|---|
| **Pronunciation** | ***flay**-vuh-rint* |
| **Part of speech** | noun (plural: flavourants) |
| **Definition** | a food additive used to improve a food product's taste or smell |
| **Afrikaans** | geursel |
| **IsiXhosa** | isiqholo; isinongo |
| **IsiZulu** | isithokela |

**FOOD WEB**

| | |
|---|---|
| **Pronunciation** | ***food web*** |
| **Part of speech** | noun (plural: food webs) |
| **Definition** | a system of linked food chains that depend on each other |
| **Afrikaans** | voedselweb |
| **IsiXhosa** | ikhonkco lokutya |
| **IsiZulu** | umzungezo wokudla |

**GLUCOSE**

| | |
|---|---|
| **Pronunciation** | ***gloo**-kohss* |
| **Part of speech** | noun (no plural) |
| **Definition** | a type of sugar in your blood that gives you energy |
| **Afrikaans** | glukose |
| **IsiXhosa** | iswekile enika amandla |
| **IsiZulu** | ushukela onika amandla |

**MICRO-ORGANISM**

| | |
|---|---|
| **Pronunciation** | *mike-roh aw-guh-niz-m* |
| **Part of speech** | noun (plural: micro-organisms) |
| **Definition** | an extremely small living thing that you can only see with a special instrument |
| **Afrikaans** | mikro-organisme |
| **IsiXhosa** | intsholongwane; imayikhro-oganizim |
| **IsiZulu** | igciwane |

**MINERAL**

| | |
|---|---|
| **Pronunciation** | ***min**-uh-ruhl* |
| **Part of speech** | noun (plural: minerals) |
| **Definition** | a nutrient like calcium that is important for healthy growth and development |
| **Afrikaans** | mineraal |
| **IsiXhosa** | isakhamzimba esisidlo |
| **IsiZulu** | -okunika amandla emzimbeni ukuze ubenempilo |

**OBESE**

| | |
|---|---|
| **Pronunciation** | *oh-**beess*** |
| **Part of speech** | adjective |
| **Definition** | very overweight, in a way that is not healthy |
| **Afrikaans** | vetsugtig |
| **IsiXhosa** | -tyebe kakhulu |
| **IsiZulu** | -okhuluphele |

**OIL**

| | |
|---|---|
| **Pronunciation** | *oyl* |
| **Part of speech** | noun (plural: oils) |
| **Definition** | a liquid, energy-rich nutrient that does not mix with water |
| **Afrikaans** | olie |
| **IsiXhosa** | ioli; ioyile |
| **IsiZulu** | amafutha; u-oyela |

**OXYGEN**

| | |
|---|---|
| **Pronunciation** | ***ok****-si-juhn* |
| **Part of speech** | verb (no plural) |
| **Definition** | a gas in the air and in water that plants and animals need to take in to live, and that plants make |
| **Afrikaans** | suurstof |
| **IsiXhosa** | i-oksijini; umongomoya |
| **IsiZulu** | umoyampilo; umoya ohlanzekile; i-oksijini |

**PHOTOSYNTHESIS**

| | |
|---|---|
| **Pronunciation** | *foh-toh-****sin****-thuh-siss* |
| **Part of speech** | noun (no pural) |
| **Definition** | the process by which plants take in Sun energy to make food |
| **Afrikaans** | fotosintese |
| **IsiXhosa** | ukwenziwa kokutya zizityalo ngelanga |
| **IsiZulu** | ukwakhiwa kokudla yizitshalo eziluhlaza zisebenzisa ilanga |

**PRESERVATIVE**

| | |
|---|---|
| **Pronunciation** | ***pri-****zurv-uh-tiv* |
| **Part of speech** | noun (plural: preservatives) |
| **Definition** | a food additive that is used to make a food product last longer |
| **Afrikaans** | preserveermiddel |
| **IsiXhosa** | isilondolozi |
| **IsiZulu** | isivimbelakubola |

**PRODUCER**

| | |
|---|---|
| **Pronunciation** | *pruh-****dyoo****-suh* |
| **Part of speech** | noun (plural: producers) |
| **Definition** | a plant that produces its own food |
| **Afrikaans** | produsent |
| **IsiXhosa** | umvelisi |
| **IsiZulu** | isitshalo esizikhiqizela ukudla |

**PROTEIN**

| | |
|---|---|
| **Pronunciation** | *proh-****teen*** |
| **Part of speech** | noun (plural: proteins) |
| **Definition** | a nutrient like meat for growth and repair |
| **Afrikaans** | proteïen; proteïne |
| **IsiXhosa** | iprotheni; isakhamzimba |
| **IsiZulu** | iphrotheyini |

**VITAMIN**

| | |
|---|---|
| **Pronunciation** | ***vit****-uh-min* |
| **Part of speech** | noun (plural: vitamins) |
| **Definition** | a nutrient like Vitamin C that you need to be healthy |
| **Afrikaans** | vitamien |
| **IsiXhosa** | ivithamini; isakhamzimba esiyivithamini |
| **IsiZulu** | umongo osekudleni okufana nezithelo nemifino osigcina sondlekile; uvithamini |

## ACTIVITY 1: Draw and write about how plants make food

**Name:**_____ **Grade:**_____

1. Make a drawing of the sunflower plant in Figure 3 on page 11 of the Learner's Book.
2. Add the labels given in the Learner's Book to your drawing.
3. Draw arrows to show where the water, carbon dioxide and oxygen enter the plant.

4. Write about how plants make food, using your drawing as a guide. Start at the roots.

## ACTIVITY 2: Sort foods into the four different nutrient groups

**Name:**_____ **Grade:**_____

1. Look at the pictures of the different foods in Figure 5 on page 20 of the Learner's Book. Sort the foods into the four different food groups by completing the table below.

| Carbohydrates | Proteins | Fats and oils | Vitamins and minerals |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

2. For the fats and oils foods, identify the ones that are fats.

   _____

   _____

3. Determine whether the foods in each group are from mostly plants or mostly animals.

   Carbohydrates: _____

   Proteins: _____

   Fats and oils: _____

   Vitamins and minerals: _____

## ACTIVITY 2: Study an ecosystem

**Name:**_____ **Grade:**_____

**Aim:** In this activity you will look for links between plants and animals in an ecosystem.

**Method**

**Step 1–2** Refer to page 39 of the Learner's Book.

**Step 3** Identify and draw three plants and animals.

**Questions**

1. Look for signs of feeding on each of the three plants. Identify what has been eating them and which parts of the plant have been eaten.

Plant 1: Eaten by:

_____

Part(s) eaten: _____

_____

Plant 2: Eaten by:

_____

Part(s) eaten: _____

_____

Plant 3: Eaten by:

_____

Part(s) eaten: _____

_____

2. State what each of the three animals eat.

Animal 1: _____

Animal 2: _____

Animal 3: _____

2.1 Name the sort of animal that would eat each of these animals.

Animal 1: _____

Animal 2: _____

Animal 3: _____

2.2 Explain how these animals and plants depend on each other for food.

_____

_____

_____

3. Identify and describe possible threats to your ecosystem.

_____

_____

_____

_____

3.1 Suggest possible ways to overcome the threat or problem.

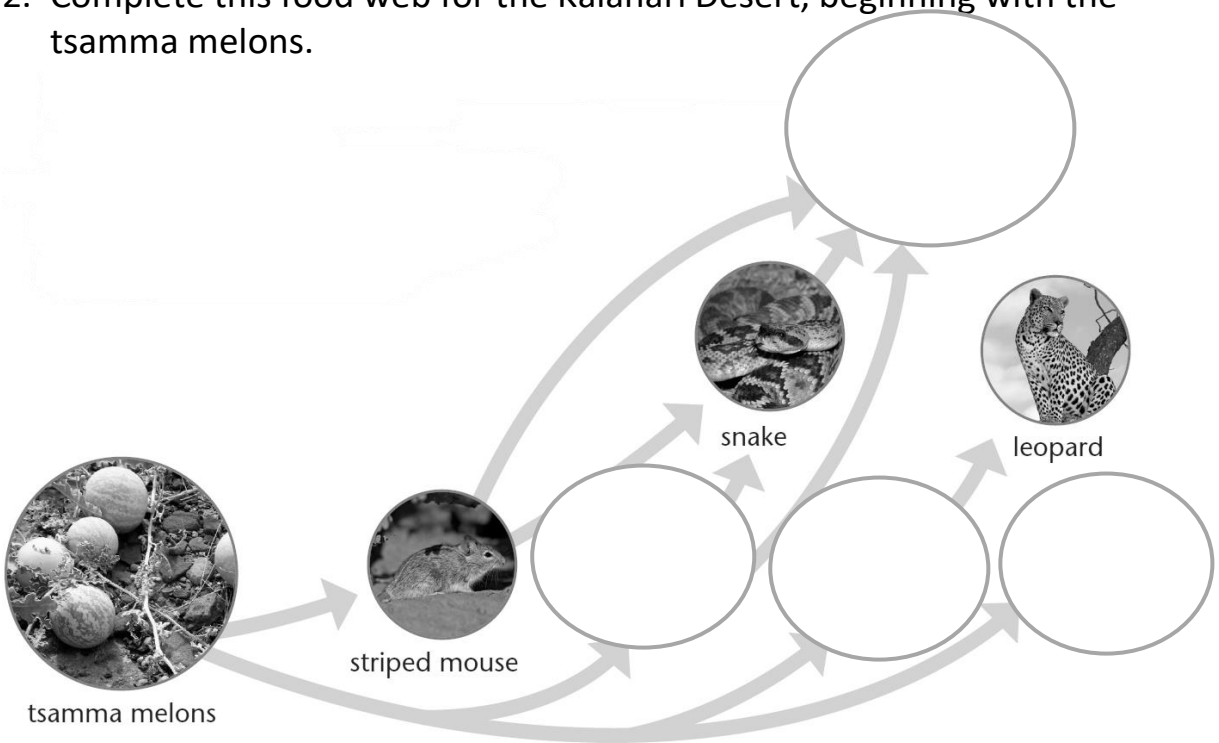
_____

## ACTIVITY 2: Draw and label food webs

**Name:**_____ **Grade:**_____

1. Identify and draw three food chains that make up the food web below.

2. Complete this food web for the Kalahari Desert, beginning with the tsamma melons.




3. Look at the rocky shore ecosystem on page 37 of the Learner's Book. Draw and label a simple food web for this ecosystem.

## STRAND 1: Control test

**Name:**_____ **Grade:**_____

1. Fill in the missing words: (6)

   Plants make their own food by a process called 1.1 _____.

   They use 1.2 _____ from the soil, 1.3 _____ from the air and 1.4 _____ to make 1.5 _____. In the process, they give off 1.6 _____ into the air.

   **[6]**

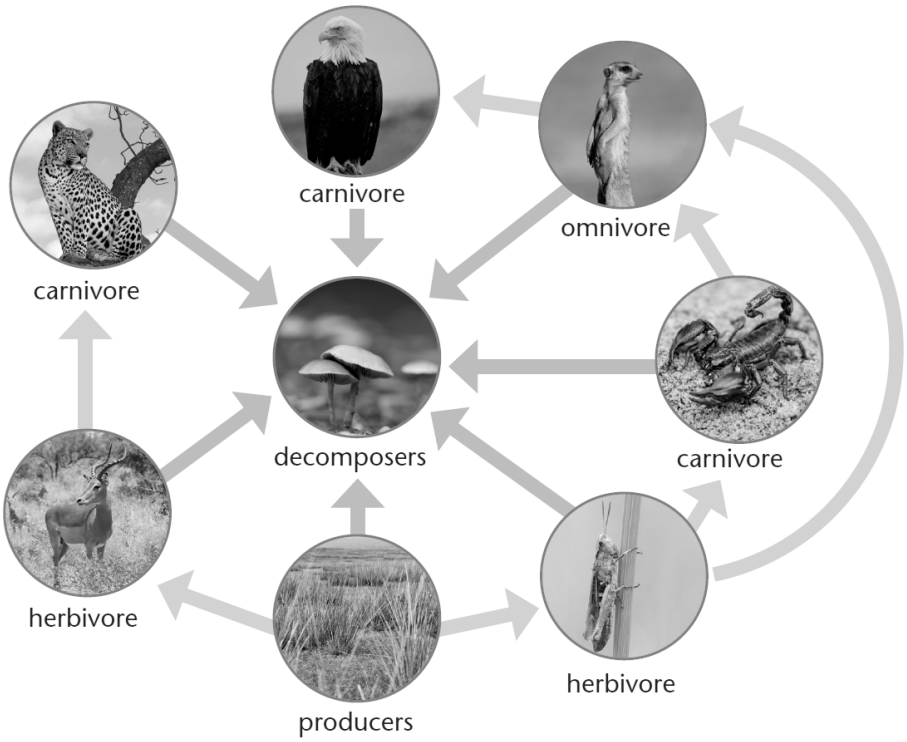
2. Fill in the missing parts of the table with foods from the box below. (5)

| milk | fish | spinach | butter | pasta |
|---|---|---|---|---|

| Nutrient group | Food |
|---|---|
| Carbohydrates | 2.1 |
| Proteins | 2.2 |
| Fats and oils | 2.3 |
| Vitamins and minerals | 2.4 |

**[5]**

3. Look at the food web below and answer the questions that follow:



3.1 Identify the ecosystem in which you will find this food web. (1)

_____

3.2 Describe the ecosystem. (*Hint*: Explain the conditions in this ecosystem.) (3)

_____

_____

_____

_____

_____

_____

_____

_____

_____

3.3 Identify three food chains in this food web. (3)

_____

_____

_____

_____

_____

_____

3.4 Define the term *producer*. (2)

_____

_____

_____

_____

**[9]**

**Total: 20 marks**

## STRAND 2: Science vocabulary

**ACID**

| | |
|---|---|
| **Pronunciation** | ***ass**-id* |
| **Part of speech** | noun (plural: acids) |
| **Definition** | a substance with a pH less than 7; strong acids can burn things and make holes in metal |
| **Afrikaans** | suur |
| **IsiXhosa** | iasidi |
| **IsiZulu** | uketshezi olushisayo; i-esidi |

**CRYSTALLISATION**

| | |
|---|---|
| **Pronunciation** | ***kris**-tah-li-zay-shuhn* |
| **Part of speech** | noun (no plural) |
| **Definition** | the slow process of forming crystals from a solution |
| **Afrikaans** | kristallisering |
| **IsiXhosa** | untlalutyiso; ukwakheka kweentlalutye |
| **IsiZulu** | ukuphenduka kube itshe |

**CRYSTALLISE**

| | |
|---|---|
| **Pronunciation** | ***kris**-tah-lize* |
| **Part of speech** | verb (crystallising; crystallised) |
| **Definition** | to form crystals from a solution |
| **Afrikaans** | kristaliseer |
| **IsiXhosa** | untlautyiso |
| **IsiZulu** | ukwenzasatshe |

**DECANT**

| | |
|---|---|
| **Pronunciation** | *di-**kant*** |
| **Part of speech** | verb (decanting; decanted) |
| **Definition** | to pour out a liquid to separate it from the sediment |
| **Afrikaans** | afgiet; dekanteer |
| **IsiXhosa** | ukucwenga |
| **IsiZulu** | ukucwenga |

**DIARRHOEA**

| | |
|---|---|
| **Pronunciation** | *u-uh-**ree**-uh* |
| **Part of speech** | noun (no plural) |
| **Definition** | an infectious illness that causes a runny stomach |
| **Afrikaans** | diarree |
| **IsiXhosa** | urhudo; ukuhambisa |
| **IsiZulu** | isihudo; ushudo |

**DISSOLVE**

| | |
|---|---|
| **Pronunciation** | *di-**zolv*** |
| **Part of speech** | verb (dissolving; dissolved) |
| **Definition** | to mix a solid and a liquid until the solid becomes part of the liquid and is no longer visible |
| **Afrikaans** | oplos |
| **IsiXhosa** | nyibilikisa |
| **IsiZulu** | -ncibilikisa |

**EVAPORATE**

| | |
|---|---|
| **Pronunciation** | *i-**vap**-uh-rayt* |
| **Part of speech** | verb (evaporating; evaporated) |
| **Definition** | to change from a liquid into a gas |
| **Afrikaans** | verdamp |
| **IsiXhosa** | ukuba ngumphunga |
| **IsiZulu** | -hwamuka |

**FERTILISER**

| | |
|---|---|
| **Pronunciation** | ***fur**-ti-lize-uh* |
| **Part of speech** | noun (plural: fertilisers) |
| **Definition** | a natural or artificial additive to soil to make plants grow better |
| **Afrikaans** | kunsmis; misstof |
| **IsiXhosa** | isichumisi |
| **IsiZulu** | isivundisi; umanyolo; umquba |

**FILTER**

| | |
|---|---|
| **Pronunciation** | ***fil**-tuh* |
| **Part of speech** | verb (filtering; filtered) |
| **Definition** | to separate a solid from a liquid using a funnel and filter paper |
| **Afrikaans** | filtreer |
| **IsiXhosa** | hluza |
| **IsiZulu** | -cwenga; -vova; -hluza; -sefa |

**GAS**

| | |
|---|---|
| **Pronunciation** | ***gass*** |
| **Part of speech** | noun (plural: gases) |
| **Definition** | a substance like air that is not a solid or a liquid |
| **Afrikaans** | gas |
| **IsiXhosa** | igesi; irhasi |
| **IsiZulu** | igesi |

**INSECTICIDE**

| | |
|---|---|
| **Pronunciation** | *in-**sek**-ti-side* |
| **Part of speech** | noun (insecticides) |
| **Definition** | a chemical substance you use to kill insects you do not want |
| **Afrikaans** | insekdoder |
| **IsiXhosa** | isibulala-zinambuzane |
| **IsiZulu** | umuthi wokubulala izilwanyakazane/isinambuzane |

**INSOLUBLE**

| | |
|---|---|
| **Pronunciation** | *in-**sol**-yuhb-l* |
| **Part of speech** | adjective |
| **Definition** | when a solid is not able to dissolve in a liquid and the solid is still visible after mixing |
| **Afrikaans** | onoplosbaar |
| **IsiXhosa** | into enganyibilikiyo |
| **IsiZulu** | -ngancibiliki |

**LIQUID**

| | |
|---|---|
| **Pronunciation** | ***lik**-wid* |
| **Part of speech** | noun (plural: liquids) |
| **Definition** | a substance like water that is not a solid or a gas |
| **Afrikaans** | vloeistof |
| **IsiXhosa** | ulwelo |
| **IsiZulu** | uketshezi |

**MATTER**

| | |
|---|---|
| **Pronunciation** | ***mat**-uh* |
| **Part of speech** | noun (no plural) |
| **Definition** | any physical substance in solid, liquid or gas state |
| **Afrikaans** | materie; stof |
| **IsiXhosa** | into |
| **IsiZulu** | utho |

**MIXTURE**

| | |
|---|---|
| **Pronunciation** | ***mikss**-tshuh* |
| **Part of speech** | noun (plural: mixtures) |
| **Definition** | two or more different substances or materials combined together |
| **Afrikaans** | mengsel |
| **IsiXhosa** | umxube |
| **IsiZulu** | ingxube; inhlanganisela |

**PARTICLE**

| | |
|---|---|
| **Pronunciation** | ***paa**-tik-l* |
| **Part of speech** | noun (plural: particles) |
| **Definition** | a very small part that makes up matter |
| **Afrikaans** | deeltjie |
| **IsiXhosa** | isuntswana |
| **IsiZulu** | inhlayiya |

**SATURATE**

| | |
|---|---|
| **Pronunciation** | ***sat**-yuh-rayt* |
| **Part of speech** | verb (saturating; saturated) |
| **Definition** | to fill a solution so that it has no more space for any more particles of the solute |
| **Afrikaans** | versadig |
| **IsiXhosa** | eyeneleyo |
| **IsiZulu** | -ngokuyidadada; -ngokweqisiwe; -jonqisa |

**SATURATION**

| | |
|---|---|
| **Pronunciation** | ***sat**-yuh-ray-shuhn* |
| **Part of speech** | noun (no plural) |
| **Definition** | the process of filling a solution so that it has no more space for any more particles of the solute |
| **Afrikaans** | versadiging |
| **IsiXhosa** | ukuzalizwa kwento ngokwaneleyo |
| **IsiZulu** | ukujonqisa |

**SETTLE**

| | |
|---|---|
| **Pronunciation** | ***sett**-l* |
| **Part of speech** | verb (settling; settled) |
| **Definition** | to sink down and clarify a liquid |
| **Afrikaans** | afsak |
| **IsiXhosa** | -ngcwenga |
| **IsiZulu** | -zika |

**SIEVE**

| | |
|---|---|
| **Pronunciation** | ***siv*** |
| **Part of speech** | verb (sieving; sieved) |
| **Definition** | to separate substances by passing one through a mesh |
| **Afrikaans** | sif |
| **IsiXhosa** | isihluzo |
| **IsiZulu** | sefa; -hlunga |

**SOLID**

| | |
|---|---|
| **Pronunciation** | ***sol**-id* |
| **Part of speech** | noun (plural: solids) |
| **Definition** | a substance that is hard, not like a liquid or a gas |
| **Afrikaans** | vaste stof |
| **IsiXhosa** | into eqinileyo |
| **IsiZulu** | -qinile; isigaxa |

**SOLUBLE**

| | |
|---|---|
| **Pronunciation** | ***sol**-yuhb-l* |
| **Part of speech** | adjective |
| **Definition** | when a solid is able to dissolve in a liquid |
| **Afrikaans** | oplosbaar |
| **IsiXhosa** | -nokunyityilikiswa |
| **IsiZulu** | -encibilikayo |

**SOLUTE**

| | |
|---|---|
| **Pronunciation** | ***sol**-yoot* |
| **Part of speech** | noun (plural: solutes) |
| **Definition** | a solid that can dissolve in a liquid |
| **Afrikaans** | opgeloste stof |
| **IsiXhosa** | into enyibilikayo emanzini |
| **IsiZulu** | into encibilikayo |

**SOLUTION**

| | |
|---|---|
| **Pronunciation** | *suh-**loo**-shuhn* |
| **Part of speech** | noun (plural: solutions) |
| **Definition** | a mixture of a solid and a liquid where the solid fills the spaces between the liquid particles |
| **Afrikaans** | oplossing |
| **IsiXhosa** | ukunyityilikiswa |
| **IsiZulu** | umbhubhudlo; incibilikiselo |

**SOLVENT**

| | |
|---|---|
| **Pronunciation** | ***sol**-vuhnt* |
| **Part of speech** | noun (plural: solvents) |
| **Definition** | a liquid in which a solute can dissolve |
| **Afrikaans** | oplosmiddel |
| **IsiXhosa** | -nyibilikisa(yo) |
| **IsiZulu** | into engancibilikisa |

**SORT [INTO GROUPS]**

| | |
|---|---|
| **Pronunciation** | ***sawt*** |
| **Part of speech** | verb (sorting; sorted) |
| **Definition** | to separate things or substances by putting them into groups that are similar |
| **Afrikaans** | sorteer |
| **IsiXhosa** | -hlela |
| **IsiZulu** | -khetha; -ahlukanisa ngezinhlobo |

**VIBRATE**

| | |
|---|---|
| **Pronunciation** | *vy-**brayt*** |
| **Part of speech** | verb (vibrating; vibrated) |
| **Definition** | to move continuously and rapidly to and fro |
| **Afrikaans** | vibreer; tril |
| **IsiXhosa** | -ngcangcazela; -ngcangcazelisa |
| **IsiZulu** | -vevezela; -thuthumela; -dlidliza; -zamazama |

**WETLAND**

| | |
|---|---|
| **Pronunciation** | ***wet**-luhnd* |
| **Part of speech** | noun (plural: wetlands) |
| **Definition** | an area of land that is mostly covered by water and that is a habitat for plants and animals which we want to protect |
| **Afrikaans** | moerasland |
| **IsiXhosa** | umhlaba olijojo |
| **IsiZulu** | ixhaphozi |

## ACTIVITY 2: Draw the particle arrangement of solids, liquids and gases

**Name:**_____ **Grade:**_____

1. Draw a diagram to represent each of the pictures in Figure 6 on page 50 of the Learner's Book.
2. Add the following labels to the diagrams you have drawn:
   - Particles that vibrate in the same place
   - Particles that are far apart
   - Particles that can move past each other

   (Ensure you match the correct label to the correct diagram.)

_____

_____

_____

## ACTIVITY 1: Make, draw and write about mixtures

**Name:**_____ **Grade:**_____

**Aim:** In this activity you will make mixtures and compare them.

**Materials:** Refer to page 52 of the Learner's Book for a list of materials.

**Method:** Follow Steps 1 and 2 on page 52 of the Learner's Book.

**Step 3** Draw a diagram of a mixture of two solids.

**Step 4** Draw a diagram of a mixture of a solid and a liquid.

**Step 5** Label the substances if you can see them.

**Results:** Record your results in this table. (24)

| Mixture | Material number 1 | Material number 2 | Is material number 1 visible or invisible? | Is material number 2 visible or invisible? |
|---|---|---|---|---|
| A | | | | |
| B | | | | |
| C | | | | |
| D | | | | |
| E | | | | |
| F | | | | |
| G | | | | |
| H | | | | |
| I | | | | |
| J | | | | |
| K | | | | |
| L | | | | |

Teacher assessment of experimental procedure: 6 marks

**Total: (30 ÷ 2) = 15 marks**

## ACTIVITY 3: Filter and purify water

**Name:**_____ **Grade:**_____

**Design brief:** Imagine you are stranded in a desert. You come across a small pool of water. You are desperately thirsty but you have to clean the water before you can drink it. Build your own system to purify water.

### PART 2: Design a solution

**Steps 1–2** Refer to page 78 of the Learner's Book.

**Step 3** Evaluate your ideas in the following table:

| Method of separation | Materials | Problems |
|---|---|---|
| Sorting by hand | Hands | |
| Sieving | Sticks | |
| Filtering | Your sock | |
| Settling | A cup | |
| Boiling | Fire and pot | |

**Step 4** Write a paragraph about why your idea will make the water clean.

_____

_____

_____

**Steps 5–6** Draw and label your proposed method of filtering the water.

**Step 7** Indicate where the water will enter and exit the system.

## STRAND 2: Control test

**Name:**_____ **Grade:**_____

1. Name the state defined by the following:
   1.1 The particles are packed closely together. (1)

   _____

   1.2 The particles can move around each other. (1)

   _____

   1.3 The spaces between the particles are big. (1)

   _____

   **[3]**

2. Answer the following questions:
   2.1 Give an example of a mixture of two solids. (2)

   _____

   2.2 Give an example of a mixture of two liquids. (2)

   _____

   2.3 Identify the solute and the solvent in salt water. (2)

   _____

   2.4 Identify the group of solids that does not form a solution in water. (1)

   _____

   2.5 State what a solution is called when no more solute can dissolve in it. (1)

   _____

   **[8]**

3. State whether the following are true or false:
   3.1 Salt will dissolve faster in cold water. (1)

   _____

3.2 Large grains of salt dissolve faster than small grains. (1)

3.3 Salt can be removed from water by evaporation. (1)

3.4 Sand can be removed from beans by filtering. (1)

**[4]**

4. Provide one example of each of the following:

4.1 Soluble pollution (1)

4.2 Insoluble pollution (1)

4.3 Disease that is spread in water. (1)

**[3]**

5. Describe two ways in which wetlands are important. (2)

**Total: 20 marks**

## STRAND 2: Control test (Terms 1 and 2)

**Name:**_____ **Grade:**_____

1. Match the word in Column A with the examples in Column B. (5)

| Column A | Column B |
|---|---|
| 1.1 Carbohydrate | **A** Fizzy cooldrink, ice cream |
| 1.2 Food additive | **B** Bacteria, fungi |
| 1.3 Junk food | **C** Sugar, starch |
| 1.4 Fast food | **D** Fried chicken, pizza |
| 1.5 Decomposer | **E** Preservative, flavourant, colourant |

**[5]**

2. Give the functions of the different food groups.

| Food group | Function |
|---|---|
| Carbohydrates | 2.1<br>(1) |
| Proteins | 2.2<br>(2) |
| Fats and oils | 2.3<br>(2) |
| Vitamins and minerals | 2.4<br>(2) |

**[7]**

3. Look at the processed foods below and answer the questions that follow.

A B C D

3.1 Identify the food that is made by fermenting. (1)

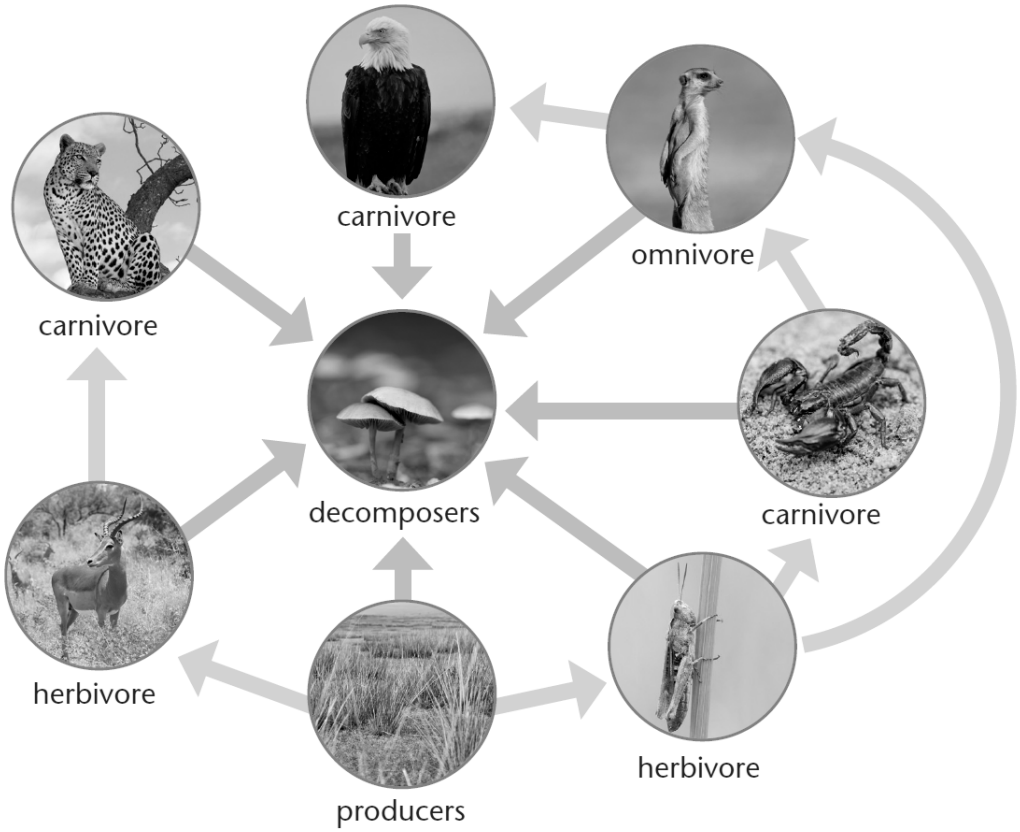
3.2 Identify the food that is preserved by pickling. (1)

3.3 Define the process of fermenting. (2)

3.4 Define the process of pickling. (2)

**[6]**

4. Look at the food web and answer the questions below.




4.1 Explain the role of producers in a food web. (3)

4.2 Explain the role of decomposers in a food web. (3)

4.3 Give the term for an animal that eats herbivores. (1)

_____

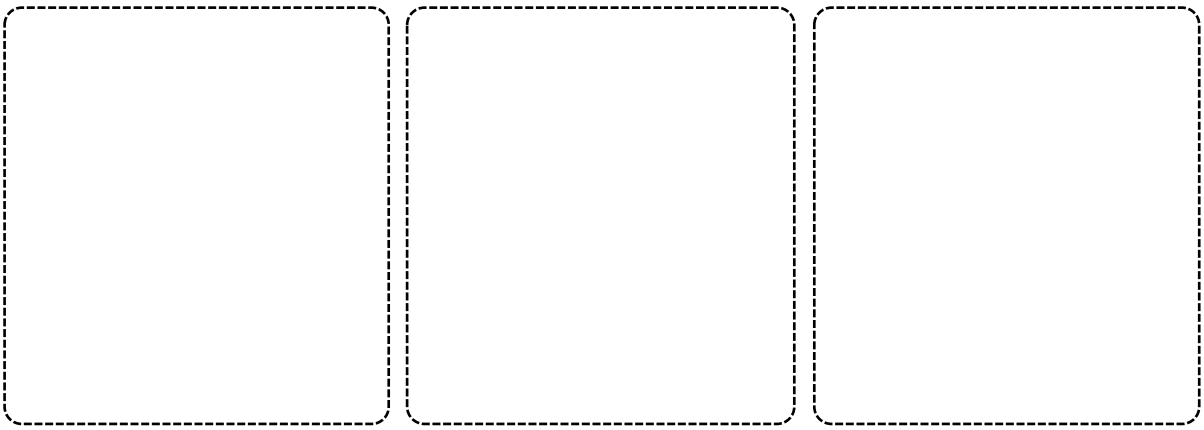
**[7]**

5. Draw a labelled diagram that shows the arrangement of particles in a:

5.1 solid (2)

5.2 liquid (2)

5.3 gas. (2)



**[6]**

6. Write down definitions for the following terms.

6.1 Solute (1)

_____

_____

6.2 Mixture (1)

_____

_____

6.3 Soluble (1)

_____

_____

**[3]**

7. Describe how to test if the grain size has an effect on the rate of dissolving. Explain the method in numbered steps. (5)

_____

_____

_____

_____

8. The following information shows the results of the effect of temperature on the rate of dissolving. Use the information to draw a graph.

| | Cold water | Warm water | Hot water |
|---|---|---|---|
| Time taken to dissolve salt in water (minutes) | 10 | 8 | 4 |

**[4]**

9. Name the best method to separate the following substances in a mixture.

9.1 Beans and peanuts (1)

_____

9.2 Sand and water (1)

_____

9.3 Cheese and milk (1)

_____

**[3]**

10. Classify the following examples of pollution as soluble or insoluble.

10.1 Tyres: _____(1)

10.2 Washing powder: _____(1)

10.3 Fertiliser: _____(1)

**[3]**

11. Describe an important function of a wetland. (1)

_____

_____

**Total: 50 marks**

## STRAND 3: Science vocabulary

**BUZZER**

| | |
|---|---|
| **Pronunciation** | ***buz**-uh* |
| **Part of speech** | noun (plural: buzzers) |
| **Definition** | a device that makes a sound like a bee |
| **Afrikaans** | gonser |
| **IsiXhosa** | intsimbi eliqhosha |
| **IsiZulu** | okokushaya insimbi okusebenza ngogesi |

**CIRCUIT DIAGRAM**

| | |
|---|---|
| **Pronunciation** | ***sur**-kit **dy**-uh-gram* |
| **Part of speech** | noun (plural: circuit diagrams) |
| **Definition** | a drawing of the path along which an electric current flows |
| **Afrikaans** | stroombaandiagram; kringdiagram |
| **IsiXhosa** | umzobo wojikeleziso lombane |
| **IsiZulu** | umdwebo okhombisa ukuhamba kwegesi |

**CIRCUIT SYMBOL**

| | |
|---|---|
| **Pronunciation** | ***sur**-kit **simb**-l* |
| **Part of speech** | noun (plural: circuit symbols) |
| **Definition** | symbols on a circuit diagram that represents a piece of equipment connected to the system |
| **Afrikaans** | stroombaansimbool; kringsimbool |
| **IsiXhosa** | uphawo lojikeleziso lombane |
| **IsiZulu** | uphawu olutholakala kumdwebo okhombisa ukuhamba kukagesi |

**CONDUCTOR [ELECTRICITY]**

| | |
|---|---|
| **Pronunciation** | *kuhn-**duk**-tuh* |
| **Part of speech** | noun (plural: conductors) |
| **Definition** | substance that allows electricity to pass through or along it |
| **Afrikaans** | geleier |
| **IsiXhosa** | isinikezeli sombane; isigqithiseli sombane |
| **IsiZulu** | isidlulisi sikagesi |

**DEVICE**

| | |
|---|---|
| **Pronunciation** | *di-**vise*** |
| **Part of speech** | noun (plural: devices) |
| **Definition** | something which changes one type of energy into a different type of energy |
| **Afrikaans** | toestel |
| **IsiXhosa** | isixhobo |
| **IsiZulu** | isisebenziso; insizakusebenza |

**ELECTRIC CIRCUIT**

| | |
|---|---|
| **Pronunciation** | i-**lek**-trik ***sur**-kit* |
| **Part of speech** | noun (plural: electric circuits) |
| **Definition** | a system that transfers electrical energy |
| **Afrikaans** | elektriese kring; stroombaan |
| **IsiXhosa** | indlela yokudlisa; ukujikelezisa umbane |
| **IsiZulu** | umgudu kagesi; impelelomgudu kagesi |

**FOSSIL FUEL**

| | |
|---|---|
| **Pronunciation** | ***foss**-l **fyoo**-uhl* |
| **Part of speech** | noun (plural: fossil fuels) |
| **Definition** | energy that comes from burning natural material formed a very long time ago from dead plants and animals |
| **Afrikaans** | fossielbrandstof |
| **IsiXhosa** | amafutha avela endalweni |
| **IsiZulu** | isiphehlamandla esimbiwayo |

**HYDROELECTRIC POWER**

| | |
|---|---|
| **Pronunciation** | *hy-droh-i-**lek**-trik **pow**-wuh* |
| **Part of speech** | noun (no plural) |
| **Definition** | the energy from water used to generate electricity |
| **Afrikaans** | hidroëlektriese krag; waterkrag |
| **IsiXhosa** | umbane otsalwa emanzini |
| **IsiZulu** | amandla kagesi adonswa emanzini |

**INSULATOR [ELECTRICITY]**

| | |
|---|---|
| **Pronunciation** | ***in****-syuu-lay-tuh* |
| **Part of speech** | noun (plural: insulators) |
| **Definition** | a material or device that prevents electricity from passing through |
| **Afrikaans** | isolator; nie-geleier |
| **IsiXhosa** | isigqumi |
| **IsiZulu** | isivimbelakushisa |

**LIGHT BULB**

| | |
|---|---|
| **Pronunciation** | ***lite bulb*** |
| **Part of speech** | noun (plural: light bulbs) |
| **Definition** | the glass part of an electric lamp that gives light |
| **Afrikaans** | gloeilamp |
| **IsiXhosa** | ibhalbhu |
| **IsiZulu** | igilobhu; isibani |

**MOTOR**

| | |
|---|---|
| **Pronunciation** | ***moh****-tuh* |
| **Part of speech** | noun (plural: motors) |
| **Definition** | the part inside a machine that generates energy to make it move or work |
| **Afrikaans** | motor |
| **IsiXhosa** | injini |
| **IsiZulu** | injini |

**NON-RENEWABLE [ENERGY SOURCE]**

| | |
|---|---|
| **Pronunciation** | ***non*** *ri-****nyoo****-uhb-l* |
| **Part of speech** | adjective |
| **Definition** | something that cannot be made again very quickly |
| **Afrikaans** | niehernubaar |
| **IsiXhosa** | into engavuselelekiyo |
| **IsiZulu** | izimbiwa eziphelayo |

**POWER STATION**

| | |
|---|---|
| **Pronunciation** | ***pow****-wuh* ***stay****-shuhn* |
| **Part of speech** | noun (plural: power stations) |
| **Definition** | a place where electricity is generated |
| **Afrikaans** | kragsentrale |
| **IsiXhosa** | isitishi sombane; iziko lombane |
| **IsiZulu** | isiteshi sikagesi |

**PYLON**

| | |
|---|---|
| **Pronunciation** | ***pile****-uhn* |
| **Part of speech** | noun (plural: pylons) |
| **Definition** | a tall metal tower that supports heavy electrical wires high above the ground |
| **Afrikaans** | kragmas |
| **IsiXhosa** | uphondo lwentsimbi yombane |
| **IsiZulu** | umbhoshongo wensimbi |

**SWITCH**

| | |
|---|---|
| **Pronunciation** | ***swich*** |
| **Part of speech** | noun (plural: switches) |
| **Definition** | a part of an electrical circuit that opens and closes the system, where you turn the electricity on and off |
| **Afrikaans** | skakelaar |
| **IsiXhosa** | iqhosha lombane |
| **IsiZulu** | inkinobho kagesi; isiqhafazo; isiciphizo |

**WIND POWER**

| | |
|---|---|
| **Pronunciation** | ***wind pow****-wuh* |
| **Part of speech** | noun (no plural) |
| **Definition** | energy used that is generated by winds |
| **Afrikaans** | windkrag |
| **IsiXhosa** | amandla omoya |
| **IsiZulu** | amandla omoya |

## ACTIVITY 1: Investigate electrical pathways

**Name:**_____ **Grade:**_____

**Aim:** In this activity you will make a simple electrical circuit.

**Hypothesis, materials:** Refer to page 88 of the Learner's Book for the hypothesis, a list of materials and step-by-step instructions.

### Method

**Steps 1–3** Follow the steps on page 88 of the Learner's Book.

**Step 4** Predict what will happen to the light bulb after you attach the ends of the first wire to the battery and the light bulb holder.

_____

**Step 5** Follow the step on page 88 of the Learner's Book.

**Step 6** Predict what will happen to the light bulb when you attach the ends of the second wire to the light bulb holder and battery.

_____

**Step 7** Follow the step on page 88 of the Learner's Book.

### Questions

1. Explain why the bulb did not shine after Step 5.

   _____

2. Explain why the bulb lit up after Step 7.

   _____

3. Draw your simple circuit.

4. Report back to your class.

## ACTIVITY 2: Investigate materials that conduct electricity

**Name:**_____ **Grade:**_____

**Aim:** In this activity you will test which materials allow electricity to pass through them.

**Hypothesis and materials:** Refer to pages 93 and 94 of the Learner's Book.

**Method:** Follow Steps 1–4 on page 94 of the Learner's Book.

**Step 5** Record your findings in the table below.

**Step 6** Repeat this process for all of your materials. (14)

| Object | Metal or non-metal? | Will the light shine? | Does the bulb light up? | Was your prediction correct? | Categorise this object as a conductor or non-conductor |
|---|---|---|---|---|---|
| Copper wire | | | | | |
| Metal paperclips | | | | | |
| Ceramic mug | | | | | |
| Nails | | | | | |
| Wire | | | | | |
| Steel wool | | | | | |
| Coins | | | | | |
| Plastic cup | | | | | |
| Glass | | | | | |
| Cardboard | | | | | |
| Paper | | | | | |
| Wood | | | | | |
| Rubber | | | | | |
| Chalk | | | | | |

Teacher assessment of experimental procedure: 6 marks

**Total: 20 marks**

## ACTIVITY 1: Explain how fossil fuels are made

**Name:**_____ **Grade:**_____

Draw a flow diagram of how fossil fuels are made. Make sure to include the following steps:

- Plants and animals die
- Soil, rocks and water compress
- Pressure and heat
- Millions of years
- Fossil fuels

## ACTIVITY 1: Examine labels on appliances

**Name:**_____ **Grade:**_____

1. Examine the labels on appliances you have at home and record how many watts of electricity the appliance needs to run. Complete the table below.

| Appliance | Power usage (watt) |
|---|---|
| kettle | 2 000 watts |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

2. State which appliance uses the most power.

_____

3. Name the appliance that uses the least amount of power.

_____

4. Report your findings back to the class.

## STRAND 3: Control test

**Name:**_____ **Grade:**_____

1. Match the words in Column A with their meanings in Column B. (6)

| Column A | Column B |
|---|---|
| 1.1 Input energy | **A** Device which transfers the Sun's light energy into heat energy |
| 1.2 Circuit | **B** Something that can be made quickly or easily |
| 1.3 Renewable | **C** Devices which produce electricity from other kinds of energy |
| 1.4 Generators | **D** Source of energy used to power a device |
| 1.5 Fossil fuels | **E** Complete unbroken pathway of electricity |
| 1.6 Solar panel | **F** Stored energy that comes from dead plants and animals |

**[6]**

2. Draw the circuit symbol for the following electrical components:
   2.1 Open switch (1)
   2.2 Battery (1)

**[2]**

3. Name two ways in which people connect illegally to the national grid. (2)

_____

_____

_____

4. State whether the following are conductors or insulators:

4.1 Ceramic (1)

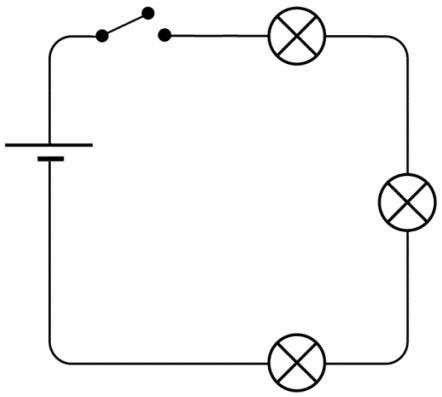
4.2 Plastic (1)

4.3 Wire (1)

**[3]**

5. Explain how the Sun powers your television. (4)

6. Study the following circuit diagram.



6.1 State how many cells are connected to the circuit. (1)

6.2 State how many light bulbs are connected to the circuit. (1)

6.3 Explain why the light bulbs will not go on. (1)

**[3]**

**Total: 20 marks**

## STRAND 4: Science vocabulary

**ASTEROID**

| | |
|---|---|
| **Pronunciation** | ***ass**-tuh-royd* |
| **Part of speech** | noun (plural: asteroids) |
| **Definition** | a piece of rock orbiting a planet or a star |
| **Afrikaans** | asteroïde |
| **IsiXhosa** | isijikelezi-langa esincinci |
| **IsiZulu** | itshe elincane elisemzileni weplanethi noma inkanyezi |

**CRATER**

| | |
|---|---|
| **Pronunciation** | ***krayt**-uh* |
| **Part of speech** | noun (plural: craters) |
| **Definition** | a large bowl-shaped dent in a surface |
| **Afrikaans** | krater |
| **IsiXhosa** | umlomo wentabamlilo |
| **IsiZulu** | imbobo entabeni ephuquka umlilo |

**ELLIPTICAL**

| | |
|---|---|
| **Pronunciation** | *i-**lip**-tik-l* |
| **Part of speech** | adjective |
| **Definition** | rounded shape like an oval |
| **Afrikaans** | ellipsvormig |
| **IsiXhosa** | embhoxo |
| **IsiZulu** | -sambulunga |

**HIGH TIDE**

| | |
|---|---|
| **Pronunciation** | ***hy tide*** |
| **Part of speech** | noun (no plural) |
| **Definition** | when the sea is nearest the land |
| **Afrikaans** | hoogwater |
| **IsiXhosa** | ukuzala kolwandle |
| **IsiZulu** | ukuhlehla nokubuya kolwandle okunomfutho omkhulu |

**LOW TIDE**

| | |
|---|---|
| **Pronunciation** | ***loh tide*** |
| **Part of speech** | noun (no plural) |
| **Definition** | when the sea is furthest from the land |
| **Afrikaans** | laagwater |
| **IsiXhosa** | ukurhoxa kolwandle |
| **IsiZulu** | ukuhlehla nokubuya kolwandle okunomfutho omncane |

**MOON**

| | |
|---|---|
| **Pronunciation** | ***moon*** |
| **Part of speech** | noun (plural: moons) |
| **Definition** | large natural object or satellite that moves around a planet |
| **Afrikaans** | maan |
| **IsiXhosa** | inyanga |
| **IsiZulu** | inyanga |

**NEAP TIDE**

| | |
|---|---|
| **Pronunciation** | ***neep tide*** |
| **Part of speech** | noun (no plural) |
| **Definition** | the lowest tide during the quarter Moon |
| **Afrikaans** | dooie ty |
| **IsiXhosa** | ukuzala okuncinane kolwandle |
| **IsiZulu** | ukuhlehla nokubuya kolwandle okunomfutho emncane ngesikhathi inyanga isilucezu |

**PLANET**

| | |
|---|---|
| **Pronunciation** | ***plan**-uht* |
| **Part of speech** | noun (plural: planets) |
| **Definition** | large object in space that moves around the Sun or another star |
| **Afrikaans** | planeet |
| **IsiXhosa** | iplanethi |
| **IsiZulu** | iplanethi |

**REVOLUTION [PLANET MOVES AROUND SUN]**

| | |
|---|---|
| **Pronunciation** | *rev-uh-**loo**-shuhn* |
| **Part of speech** | noun (plural: revolutions) |
| **Definition** | the movement of an object around another object in space |
| **Afrikaans** | omwenteling |
| **IsiXhosa** | lomhlaba |
| **IsiZulu** | ukuzungeza |

**REVOLVE**

| | |
|---|---|
| **Pronunciation** | ***ri**-volv* |
| **Part of speech** | verb (revolving; revolved) |
| **Definition** | to orbit around an object |
| **Afrikaans** | draai om; wentel om |
| **IsiXhosa** | jikeleza |
| **IsiZulu** | zungeleza |

**ROTATE [PLANET MOVES AROUND OWN AXIS]**

| | |
|---|---|
| **Pronunciation** | *roh-**tayt*** |
| **Part of speech** | verb (rotating; rotated) |
| **Definition** | to spin or circle around an axis (a central point) |
| **Afrikaans** | roteer |
| **IsiXhosa** | -jikeleza |
| **IsiZulu** | -zungeza |

**ROTATION**

| | |
|---|---|
| **Pronunciation** | *roh-**tay**-shuhn* |
| **Part of speech** | noun (plural: rotations) |
| **Definition** | the movement of an object when it spins on its own axis |
| **Afrikaans** | rotasie |
| **IsiXhosa** | ukujikeleza |
| **IsiZulu** | umzungezo |

**SOLAR SYSTEM**

| | |
|---|---|
| **Pronunciation** | ***soh**-luh **siss**-tuhm* |
| **Part of speech** | noun (plural: solar systems) |
| **Definition** | a sun with planets, satellites and asteroids that move around it |
| **Afrikaans** | sonnestelsel |
| **IsiXhosa** | ilanga nezijikelezi |
| **IsiZulu** | isimo sokuhambo kwelanga nezinkanyezi |

**SPRING TIDE**

| | |
|---|---|
| **Pronunciation** | ***spring tide*** |
| **Part of speech** | noun (no plural) |
| **Definition** | the highest tide during the full and new Moon |
| **Afrikaans** | springty; springvloed |
| **IsiXhosa** | intlakohlaza |
| **IsiZulu** | ukuhlehla nokubuya kolwandle okunomfutho omkhulu ngesikhathi inyanga ihlangene |

**TELESCOPE**

| | |
|---|---|
| **Pronunciation** | ***tel**-i-skohp* |
| **Part of speech** | noun (plural: telescopes) |
| **Definition** | a piece of equipment used to look at objects that are far away |
| **Afrikaans** | teleskoop |
| **IsiXhosa** | isibonakude; iteleskopu |
| **IsiZulu** | isibonakude |

**TIDE**

| | |
|---|---|
| **Pronunciation** | ***tide*** |
| **Part of speech** | noun (plural: tides) |
| **Definition** | the ongoing movement of the sea towards and away from the land that is influenced by the phases of the Moon |
| **Afrikaans** | gety |
| **IsiXhosa** | ukuzala nokurhoxa kolwandle |
| **IsiZulu** | ithayidi; ukuhlehla nokubuya kolwandle |

## ACTIVITY 1: Draw objects in our solar system

**Name:**_____ **Grade:**_____

Research the size of each planet in the solar system. Research how far away each planet is from the Sun. Draw a diagram of our solar system.

1. Draw the size of the planets in relation to one another.
2. Give your diagram a heading.
3. Label the different parts of the solar system.
4. Identify the interior and exterior planets.

## ACTIVITY 1: Compare the Sun, Moon and Earth

**Name:**_____ **Grade:**_____

1. Compare the Sun, Moon and Earth by comparing their:
   1.1 size
   1.2 shape
   1.3 composition
   1.4 ability to produce light
   1.5 movement in relation to other objects in space.
2. Complete the following table.

| | Sun | Moon | Earth |
|---|---|---|---|
| Shape | | | |
| Size | | | |
| Composition | | | |
| Ability to produce light | | | |
| Movement in relation to other objects in space | | | |

## ACTIVITY 1: Research, design, make and evaluate a Moon rover

**Name:**_____ **Grade:**_____

**Design brief:** In this activity you will research, design, make and evaluate a Moon rover with working wheels and axles.

### PART 2: Design your vehicle

Work with your partner and design your own Moon rovers. You and your friend should each design a different vehicle using different materials for the wheels and the body. Your designs should be drawn with a pencil. Make use of recycled materials. Add the following to your designs:

- Heading and labels (2)
- Materials used. (4)

**Sub-total: 6 marks**

## STRAND 4: Control test

**Name:**_____ **Grade:**_____

1. Match the words in Column A with the correct definitions in Column B.

( (6)

| Column A | Column B |
|---|---|
| 1.1 Satellite | **A** Piece of rock orbiting a planet or star |
| 1.2 Telescope | **B** Lowest tide during the quarter moon |
| 1.3 Asteroid | **C** Pull between two or more objects |
| 1.4 Gravitational force | **D** Planets orbiting a sun |
| 1.5 Solar system | **E** Object that orbits a bigger project |
| 1.6 Neap tide | **F** Tool used to look at objects that are far away |

**[6]**

2. List the gaseous planets of our solar system. (4)

_____

_____

3. Explain why we see only one side of the Moon from Earth. (2)

_____

_____

_____

_____

_____

4. Describe the effects of the Earth's rotation. (4)

_____

_____

_____

_____

5. Redraw the picture of the Moon below.

5.1 Identify the Moon's craters.

(1)

5.2 Identify the Moon's plains.

(1)

**[2]**

**Total: 15 marks**

## STRAND 4: Control end-of-year exam

**Name:**_____ **Grade:**_____

1. Match the word in Column A to the definition in Column B. (6)

| Column A | Column B |
|---|---|
| 1.1 System | **A** Allows electricity to travel through it |
| 1.2 Conductor | **B** Complete unbroken pathway of electricity |
| 1.3 Circuit | **C** People steal electricity from the national grid |
| 1.4 Output energy | **D** Transfer the energy into moving water to electrical energy |
| 1.5 Illegal connections | **E** Energy after it has gone through a device |
| 1.6 Hydroelectric power | **F** Many parts working together |

**[6]**

2. Give two examples of a fossil fuel. (2)

_____

3. Give two examples of a source of electricity. (2)

_____

4. Explain how fossil fuels are made. Use drawings to illustrate your answer. (4)

5. Explain how hydroelectric power stations work. (3)

_____

6. Draw a circuit diagram with the following components.
   - one battery
   - two light bulbs
   - a switch (3)

7. You own a building company and the Minister of Housing have asked companies to submit a proposal design for a house that saves energy. You decide to submit a report. Suggest five things that your house will have that will make it energy efficient. (5)

8.1 Define a solar system. (2)

8.2 Draw a diagram of our solar system labelling all eight planets in order from the Sun. (8)

**[10]**

9.1 State how long it takes for the Earth to orbit the Sun. (1)

9.2 Explain the effect of the Earth's orbit around the Sun. (2)

9.3 Name the shape of the Earth's orbit around the Sun. (1)

**[4]**

10.1 State how long it takes the Moon to rotate once. (1)

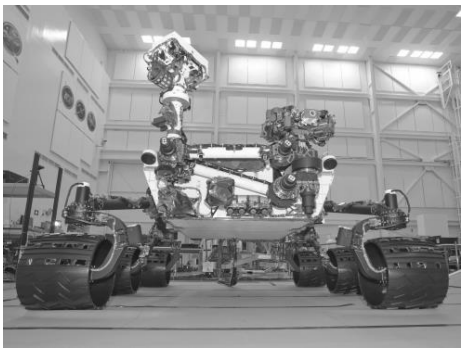
10.2 State how long it takes the Moon to revolve around the Earth. (1)

10.3 Explain the effect of the Moon's rotation and revolution. (2)

**[4]**

11. List two ways in which people explore other planets. (2)

12. Look at the image of the Mars rover alongside and answer the questions that follow.



12.1 Give the name of this Mars rover. (1)

12.2 List four components of this Mars rover. (4)

**[5]**

**Total: 45 marks**

# How to develop rubric and checklist assessment tools

## Rubrics

A rubric is a tool teachers use to assess a learner's performance on a specific task. It is presented in the form of a grid that clearly outlines the criteria used for assessment as well as different levels of performance per criterion.

**Benefits of using a rubric**

- A rubric helps learners to understand objectives. Developing rubrics with your learners will help them to understand the purpose and content and help them to prepare for the assessment.
- A rubric has a clear and standardised approach to assessment, which ensures that learners are assessed consistently and fairly.
- A rubric allows teachers to provide specific feedback to learners, highlighting areas of strength and areas for improvement.
- A rubric helps learners get a clear idea on how to improve their performance after assessment.
- A rubric allows learners to self-improve. Encourage learners to use the rubric before they hand in their work.
- A rubric is easy to use and can be easily adapted to meet changing needs.

**Steps to creating a rubric**

**Step 1:** Clearly define the purpose of the assessment. Use the assessment guidelines in the curriculum documents to determine what task/assignment the learners are required to complete.

**Step 2:** Define the criteria.
Use the objectives in the curriculum documents to consider what skills, knowledge or behaviours the assessment will evaluate.

Make sure that:
- criteria can be observed and measured
- criteria are important to the task at hand
- each criteria assesses a single aspect of the task.

- Each criteria contains levels of performance. When creating these, consider:

- what will constitute outstanding achievement
- how will you define moderate or adequate achievement
- how would you define work that falls below expectations.

- Ask yourself: Are there key criteria points that should carry a greater weight than others?

**Step 3:** Design a rating scale that clearly defines the levels of performance.
Check your mark allocation to ensure that your rubric falls in line with curriculum expectations. Make sure you use language and terminology that the learner is familiar with so that they have a clear understanding of what is required of them.

Provide a scale of achievement that can assess the learners' overall competency in completing the task. For example, you can provide an overall mark according to the seven-point scale of achievement:

| Rating code | Description of Competence | Percentage |
|---|---|---|
| 7 | Outstanding achievement | 80–100 |
| 6 | Meritorious achievement | 70–79 |
| 5 | Substantial achievement | 60–69 |
| 4 | Adequate achievement | 50–59 |
| 3 | Moderate achievement | 40–49 |
| 2 | Elementary achievement | 30–39 |
| 1 | Not achieved | 0–29 |

**Step 4:** Write descriptions of expected performance at each level of the rating scale.
Describe observable and measurable behaviour and use parallel language across the scale. Indicate the degree to which the standards are met. Ensure that learners understand the expectations before and during the assessment.

**Step 5:** Create the rubric.
Try to keep it to one page. Ask your colleagues for feedback and consider testing it before you use it for assessment. After you use the rubric, consider how effective it was and make any necessary revisions.
Exemplar:

| **Criteria** | **Mark allocation** |
|---|---|
| **The learners:** | |
| set up their experiments properly. | 3 |
| timed the rate of dissolving accurately. | 3 |
| recorded their results accurately. | 3 |
| Clay sides are neatly smoothed. | 3 |
| transferred their results onto a bar graph with labels | 3 |
| **Total: 15 marks** | |

## Checklists

A checklist is a simple assessment tool that provides a list of items or criteria to be checked off. It differs from a rubric in that it provides learners with the criteria of the requirements of an assignment rather than a means of assessing acquired knowledge. A checklist can be used solely by you as a teacher, or you can give your learners a checklist that they can refer to in order to make sure that they have included the required components for a task.

Checklists usually consist of a number of statements that refer to specific criteria and where the answer will be, for example, “Yes” or “No”, or “Achieved”, “Not yet” or “Almost”.

**Benefits of using a checklist**

- A checklist ensures that all relevant criteria are assessed and evaluated.
- A checklist helps to ensure consistent assessment of specified criteria.
- A checklist can be used by learners as a self-assessment tool.
- A checklist identifies learning needs in a clear and simple way.
- A checklist is easy to create and use and provides an uncomplicated guide for assessment.

**Steps to create a checklist**

**Step 1:** Define the purpose and what you want to assess.
This could be specific skills or a general assessment.

**Step 2:** Identify the criteria.
What specific elements or content will be assessed?

**Step 3:** Create your checklist.
Check that it contains everything you want to assess.

Exemplar:

| **Criteria** | | | |
|---|---|---|---|
| **The learners …** | **Yes** | **Partly** | **No** |
| understood that an unhealthy ecosystem has one living thing that overpowers other living things. | | | |
| were able to describe the relationship between living and non-living things. | | | |
| were able to describe the relationship between living and non-living things. | | | |

# Intervention strategies

## Baseline assessment and intervention strategies

Some learners may experience academic backlogs for various reasons, including the impact on learning due to the COVID-19 pandemic, underlying learning barriers or special education needs such as visual or hearing impairments or intellectual barriers. Baseline assessment will help you identify learners that may be experiencing these barriers.

Analysing baseline assessment questions will provide insight into learners' current knowledge and skills regarding certain topics, as well as their preparedness for the work ahead. The results of baseline assessments can help to identify the areas where learners require support and/or intervention.

Learners may require support and/or intervention for the following reasons:

- barriers to learning
- class size
- reading comprehension (the ability to understand what they have read).

## Barriers to learning

Some learners may face barriers to learning. It is important to accommodate learners with barriers to learning 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), and completing assessment activities. Adapt the number of activities to be completed without interfering with learners gaining the required skills. Learners experiencing barriers to learning can also be paired with others who may be able to support them.

## Class size

- Peer tutoring can be an effective intervention method when class size is problematic.
- Quieter learners often struggle in a large class, as they tend not to ask questions. Organising learners into groups or pairs can help to create a more inclusive and enabling learning environment.
- Ensure that groups are made up of learners with varying ability, so that learners who may be struggling are supported by their peers.
- Peer assessment can also be used successfully during informal assessment and allows you to gauge learners' understanding in a less intimidating manner than a formal test or assignment.
- The following strategies can be used in a large class:
    - *Thumbs up/thumbs down:* Check understanding by a show of thumbs. Thumbs up indicate that learners have understood; thumbs down show that they have not understood; thumbs sideways could show that they are not sure.
    - *Response boards:* These are small chalkboards or whiteboards where learners record their response to a question. When you say "Show your answers" they all hold up the board. This way you can quickly see who is struggling.

- *Show fingers 1-2-3:* Ask learners to show fingers to indicate if 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 understand completely.

**Reading comprehension**

- Support learners by giving them pre-reading questions and post-reading strategies to organise what they have learnt. Pre-reading questions could include asking the learners what they already know about the topic. Teach learners to summarise the content into bullet points and make use of mind maps. This requires the learners to rewrite the content in their own words.
- Write difficult terminology on the board and give simple explanations.
- Diagrams can be very useful to explain concepts in a way that learners can visualise the situation.

## General teaching intervention strategies

**Teach from the learner's point of view**

- Put yourself in the learner's position: If you were the learner, what would you like the teacher to explain or show you that you could not learn previously?
- Remember that learners might still have emotional issues related to the COVID-19 pandemic, which you may need to address.

**Reteach topic(s) for which learners achieved low scores (closing the gap)**

- Focus on concepts, and not only on factual content. Then use illustrations to support learners' understanding and avoid superficial rote learning. The more "real-life" examples used, the easier it will be for the learners to conceptualise the topic.
- Make the structure of your lessons and teaching materials clear: State specific, achievable goals, provide graphic organisers to link parts of the lesson and give frequent summaries of sections of the lesson. A graphic organiser can be any visual representation of content that gives an immediate overview of main points.
- Refer frequently to your progress in terms of the lesson structure. This will help learners to develop an overall and cohesive (holistic) grasp of the content.
- Skills, knowledge and concepts run like threads through the previous grades. Explain these threads to learners, as you begin teaching a new topic or module – it will help learners to link the new content to what they already know.

**Metacognition**

Metacognition is the ability to understand our own thought processes. It is essential that metacognition takes place during lessons.

Learners retain information best when they can visualise situations. Visual aids, such as flash cards and mind maps, and practical work can aid with developing metacognition, or getting learners to think about and understand their own thought processes. After completing practical tasks, give learners sentence starters to complete. For example: I learnt . . .; I wonder . . .; I still want to know . . .; I still don't understand . . .; I still have a question about . . . .

**Retaining information**

- Flash cards and mind maps can be useful tools to help learners memorise facts.
- Encourage learners to break down content into more manageable sections. They can then create a mind map for each sub-topic. Tables can also help learners summarise content into more manageable sections.
- A mnemonic is a word, sentence or poem that helps you remember something. 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, a mnemonic such as "**E**at **A**n **A**pple **A**s **A** **N**ice **S**nack" can help learners to memorise the names of the continents: **E**urope, **A**sia, **A**frica, **A**ustralia, **A**ntarctica, **N**orth America, **S**outh America.

**Develop presentation skills**

Many learners find it challenging to speak in front of the class, but this improves with practice. Encourage learners to answer questions in class and take part in class discussions by using one or more of the following strategies:

- *Use the think-pair-share method:* Posing a question and giving learners a short time to think about it, followed by discussion with a partner and then sharing with others. Learners who are shy will find it easier to share ideas with a partner first.
- *Tell-check-say:* A learner tells the answer to a friend, together they check if the answer is correct by referring to the textbook, and then the first learner says the answer out loud to the class or writes it down.
- *Target basic and then more advanced questions to specific learners based on their readiness to answer them*: A good strategy is to first ask the question to the whole class. This ensures that everyone thinks about it. Then, ask a specific learner the question.
- *Keywords on cards:* These can be used to help the learner remember their presentation. Eye contact is essential, so emphasise to learners that they should not read their presentation.

## Interventions for learners with special education needs

- Special educational needs may include visual or hearing impairments or intellectual barriers. Do not form an opinion about a learner too early This could lead to an inaccurate assessment of a learner's barrier, or an inaccurate assessment of the existence of a barrier (when in fact there may not be one). If the barrier is obvious after the first term and becomes a serious obstacle to the learner, seek professional help from the district office.
- Immediate steps could include: observing the learner inside and outside of the classroom, contacting the learner's previous teachers and consulting learner progress reports to understand their needs.

Published in South Africa by
Oxford University Press Southern Africa (Pty) Limited

Vasco Boulevard, Goodwood, N1 City, P O Box 12119, Cape Town,
South Africa



First published 2017



**Oxford Successful Natural Sciences and Technology Grade 6 Teacher's Resource Book**

**PROM0190725129**

First impression 2017

Revised impression 2023

Typeset in Calibri 14pt
Printed on [insert paper quality e.g. acid-free paper]

**Acknowledgements**
Publisher: Brenda van der Poel
Content developer and editor: Dariol Wicomb
Reproduction by: Name Surname
Printed and bound by: XYZ Printing Company

Illustrations and photographs: p. 14a Genet; 14b, 15c, 26c Ecoprint/Shutterstock; 14c Riegsecker/Shutterstock; 14d, 15a, 26a Sue Green/Shutterstock; 15b, 26b Richard Lowthian/Shutterstock; 15d, 26d Lisa Brubaker/Shutterstock; 15e, 26e 312010/Shutterstock; 15f, 26f Stanislav Popov/Shutterstock; 15g, 26g tandemich/Shutterstock; 15h, 26h Marek R. Swadzba/Shutterstock; 25a Vankad/Shutterstock; 25b Edward Westmacott/Shutterstock; 25c Oleksii Khmyz/Shutterstock; 25d Marilyn Barbone/Shutterstock; 43a Eric Boucher/Shutterstock; 46a NASA/JPL-Caltech.

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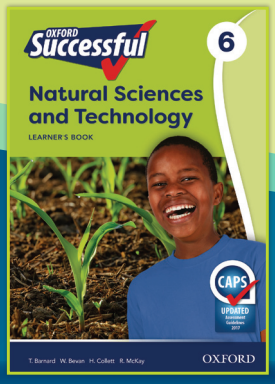


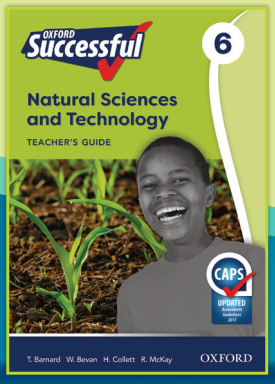


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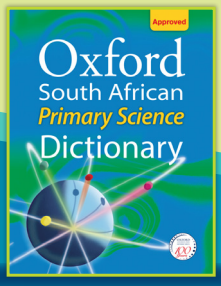


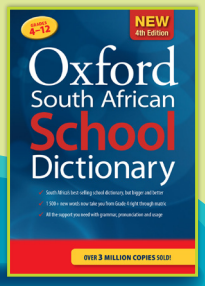


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