

Grade

4

**Everyday**

Science and Technology

**Workbook**

**Answers**

# 1

# Living things and their environment



## Flashback zone

1. Teacher and learners; Insects like bees, mosquitoes and cockroaches; Small animals like rats and lizards.
2. Chairs, tables, desks, charts, dustbins, brooms, blackboard, books and pens.
3. (a) Learner to colour; housefly, lizard / Gecko, bird and tree / plant  
(b) Rock/stone, vehicle/bus, dress and water flowing in a river.

## 1.1 Plants

### Characteristics of plants as living things

#### Part A

1. B                      2. Move                      3. D                      4. C                      5. B

#### Part B

1. (a) Plants die                      (b) Plants reproduce  
(c) Plants feed                      (d) Plants respond to changes in the environment
2. Picture **a**: Plants remove waste; Picture **b**: Plants feed; Picture **c**: Plants respond to changes in their environment/ plants move
3. (a) False                      (b) True                      (c) True                      (d) True



## Digital zone

Guide learners to do the suggested tasks and assess appropriately.

### Functions of external parts of a plant

#### Part A

1. A – Leaves; B – Stem; C – Roots
2. Stem
3. (a) Roots                      (b) Stem                      (c) Leaves
4. Food, photosynthesis

## Part B

- (a) Transpiration in plants  
(b) Droplets of water seen inside the transparent polythene bag
- Leaves – Removes excess water from the plant;  
Roots – Absorbs water and mineral salts from the soil;  
Stem – Connects the roots and the branches.
- (a) Roots  
(b) Carrot, cassava, sweet potatoes and yams  
(c) Absorbing water and mineral salts from the soil and supporting the plant firmly in the soil.

## The need to care for plants

### Part A

- (a) Picture **a** – Mulching; Picture **b** – Applying manure; Picture **c** – Protecting young plants/seedlings from direct sunlight;  
(b) Watering, pruning and protecting plants from animals.
- Plants give us food; Some parts of plants are used as medicine; Plant roots protect the soil from erosion; Plants are home to some animals.
- Safely

### Part B

- Picture **a** – Gloves; Picture **b** – Overall; Picture **c** – Goggles; Picture **d** – Forceps; Picture **e** – Gumboots
- (a) Tick      (b) Tick      (c) Cross      (d) Tick      (e) Tick

### Stretch zone

- Guide learners to find the words in the word search puzzle.
- Award correct answers given. Sample answers are shown in the table below.

Name of plant	Parts of plant	Uses of plant parts
Sugarcane	Stem	Used as food
Kales, spinach, <i>Managu</i> ,	Leaves	Used as food
Neem	Leaves	Used as medicine
Carrot, cassava, yams	Roots	Used as food

## Monitoring Progress 1

1. Picture A- Animals die; Picture B - Plants make their own food
2. Living thing
3. Group A – Plant respond to stimuli/ changes in their environment;  
Group B – Plants grow  
Group C – Plants remove waste;  
Group D – Plants reproduce
4. C
5. (a) False      (b) True      (c) True      (d) True
6. Plants exchange gases
7. Plants remove waste
8. (a) Watering, applying manure      (b) Plants reproduce /grow
9. Shedding off leaves; Waste gases removed through the stomata of the leaves;  
Some plants remove waste products through their barks. For example, the Gum tree; Removing excess water through their leaves.
10. (a) Plants wilt      (b) Water the plant regularly      (c) Plant would die
11. (a) Stem      (b) Roots
12. Protecting them from animals; Watering; Mulching; Applying manure;  
Weeding; Pruning
13. Watering; Applying manure; Mulching; Weeding; Protecting plant from direct sunlight; Pruning

## 1.2 Animals

### Characteristics of animals as living things

#### Part A

1. C
2. Picture **a** – Animals move (Bird flying);  
Picture **b** – Animals respond to changes in the environment (A cow resting under a shade during a hot weather);  
Picture **c** – Animals feed and die (A lion kills and eats dead gazelle).

#### Part B

1. A hen lays eggs – Animals reproduce;  
We sweat when it is hot – Animals respond to changes in the environment;

A kitten grows into a mature cat – Animals grow;

A lion eats flesh – Animals feed.

2. (a) True                      (b) False                      (c) True                      (d) False

## Vertebrates and invertebrates

### Part A

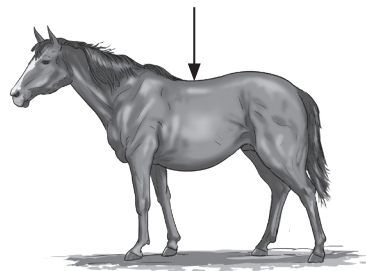
- (a) Invertebrates              (b) Vertebrates              (c) Backbone

### Part B

1. Picture a: Lion                      Picture b: Spider                      Picture c: Crocodile  
Picture d: Cow                      Picture e: Snail                      Picture f: Fish
- 2.

Vertebrates	Invertebrates
Lion, crocodile, cow and fish	Spider and snail

3. Backbone: Award if learner marks any area around the stretch of the backbone.



## The need to care for animals

### Part A

Accept correct answers such as: Wear personal protective equipment (PPEs) such as gumboots, gloves, overcoat and dust masks; Approach all animals with caution, staying alert from any erratic behaviour; Make sure animals capable of kicking and biting have been fenced in.

### Part B

1. (a) Picture a: Watering animals  
Picture b: Cleaning animal house  
Picture c: Veterinary care/ Treating animals when sick  
Picture d: Feeding animals
- (b) Accept correct answers such as: Keeping the animal's environment clean

Reporting people who mistreat animals by overworking and beating to relevant authorities; Keeping the animal houses safe and comfortable.

- Domestic animals provide us with food and give us manure; Some animals are kept as pets; Wild animals attract tourists who come to see them and give us money.

### Stretch zone

- Guide learners to identify the words such as: grow, feed, move and die
- |                      |                     |
|----------------------|---------------------|
| (a) Picture a: Glove | Picture b: Gumboots |
| Picture c: Overall   | Picture d: Forceps  |

(b) Gloves to protect the hands when touching animals; Gumboots protects the feet from animal waste and dirt; Overcoat protects the body from small insect bites and clothes from dust and dirt; Forceps helps in picking and observing small animals.
- Accept correctly drawn, named and coloured animals as outlined. Award appropriately.

### Monitoring Progress 2

- |  |
|--|
| (a) Animals feed; Animals grow   |
| (b) Feeding and giving it water  |
| Regular cleaning of its hutch and ensuring the pet is comfortable and safe |
| Treating it when sick  |
- |               |               |                  |
|---------------|---------------|------------------|
| (a) Breathing | (b) Reproduce | (c) A vertebrate |
|---------------|---------------|------------------|
- |   |                |
|---|----------------|
| (a) Invertebrate                                      | (b) Vertebrate |
| (c) Vertebrate (Backbone), Invertebrate (No backbone) |                |
- |                  |                          |
|------------------|--------------------------|
| (a) Animals move | (b) Animals remove waste |
|------------------|--------------------------|
- |  |                 |
|--|-----------------|
| (a) Shelters under a shade   | (b) Bask/ warms |
| (c) Change colour to match their background (camouflage)                                 |                 |
| (d) Puts on warm clothes/Eats and drinks hot food/ Heat rooms or sit around a fireplace. |                 |
- |              |                |                  |
|--------------|----------------|------------------|
| (a) Backbone | (b) Vertebrate | (c) Invertebrate |
|--------------|----------------|------------------|
- A snake is a vertebrate while a snail is an invertebrate; A snake moves by slithering while a snail moves by sliding.

8. Picture **a**: Cockroach – Invertebrate      Picture **b**: Housefly – Invertebrate  
Picture **c**: Frog – Vertebrate      Picture **d**: Salamander – Vertebrate  
Picture **e**: Millipede – Invertebrate      Picture **f**: Goat - Vertebrate

## 1.3 The human digestive system

### Parts of the human digestive system

#### Part A

- (a) Picture **a** – A family eating; Picture **b** – A girl going to the toilet/ latrine  
(b) It becomes digested in the human body;  
(c) Picture **a** – Feeding; Picture **b** – Removing waste
- Mouth → Oesophagus/Gullet → Stomach → Small intestine/Ileum → Large intestine/colon → Rectum- Anus

#### Part B

- (a) The human digestive system  
(b) A – Mouth; B – Oesophagus/ gullet; C – Stomach; D – Liver; E – Pancreas; F – Large intestine; G – Small intestine; H – Rectum; I – Anus  
(c) Award correct path: Starting from the Mouth-oesophagus/gullet – stomach – small intestine/ ileum – large intestine/ colon – rectum- anus
- (a) Teeth      (b) Tongue
- Stomach – Produces an acid that kills germs in food; Oesophagus – A tube through which food moves from the mouth to the stomach; Rectum – It stores faeces for some time before it is removed from the body; Small intestine – Absorption of food into the blood takes place here; Large intestine – Absorbs water from undigested and unabsorbed food materials.

### Stretch zone

Guide learners in following the steps as outlined and assess for correct description of pathway through the human digestive system.



### Digital zone

Guide learners in carrying out the task as outlined.



## Stretch zone

Use the hints to complete the word search puzzle.

### Healthy eating

#### Part A

- It is the practice or habit of eating different types of food in their right amounts and drinking enough water daily.
  - Exercises such as: Jumping jacks/ Pushups/ Squats/ Aerobics/ Walking/ Running/ Skipping
  - Award appropriate number of glasses of water given.
- Planning helps and reminds us of the habits or activities we ought to do daily in order to be healthy.
- Planning what kinds of food to eat; How to care for the teeth and gums; When to deworm; When to exercise and the amount of water to take daily.

#### Part B

- A and D
- Award marks for correctly stated action plan.

### Symptoms of unhealthy digestive system

#### Part A

- You will develop symptoms of unhealthy digestive system.
- Eating too much food; Drinking contaminated water; Eating contaminated food; Not eating fruits and vegetables; Not drinking enough water daily.

#### Part B

- B
- Radek

### Importance of a healthy digestive system

- Eating contaminated food; Drinking contaminated water; Eating too much food; Not eating fruits and vegetables
- A, B and C
- Helps body absorb nutrients from foods.

## Stretch zone

**Across:** (a) Diarrhoea (b) Constipation

**Down:** (a) Worms (b) Vomiting (c) Bloating (d) Stomachache

## Monitoring Progress 3

1. Digestion
2. (a) Anus (b) (i)d (ii) c
3. (a) Ebby: I brush my teeth using circular motions.  
(b) To prevent damaging your teeth and gums/ To have strong or healthy teeth and gums; To avoid having bad breath and tooth decay  
(c) Sugary foods such as cakes, sweets, biscuits, soda, juice and sugar.
4. Deworming regularly; Maintaining a healthy dental hygiene; Eating properly cooked food; Drinking enough water daily; exercising daily
5. Drinking contaminated water; Eating contaminated food; Eating food that is not properly cooked; Touching and eating food without washing hands; Eating fruits and vegetables without washing them properly.
6. (a) Having worms  
(b) The children should avoid touching their mouth and wash their hands thoroughly after playing with soil.
7. (a) Constipation  
(b) Eating fruits and vegetables, drinking enough water frequently
8. (a) Stomachache  
(b) Bloating; Constipation; Vomiting; Diarrhoea;  
(c) Eating contaminated food; Eating too much food; Drinking contaminated water; Not eating fruits and vegetables  
(d) It helps the body to function properly/ absorb nutrients from foods; It gives the body energy; Helps to prevent diseases which is essential for proper health and general wellbeing.
9. (a) The process of giving medication to a human or animal to remove worms from the digestive system  
(b) After three months  
(c) May suffer from an unhealthy digestive system by having worms.
10. (a) It is a feeling of fullness or swelling of the stomach/tummy.  
(b) Stomach ache – Eating contaminated food; Bloating- Eating too much food; Constipation-Not eating fruits and vegetables  
(c) Eating properly cooked food; Drinking safe and clean water; Planning on the kinds and amounts of food to eat; Eating lots of fruits and vegetables
11. (a) Tick (b) Tick (c) Tick (d) Cross  
(e) Tick (f) Cross (g) Tick



### Digital Interactive Exercise 1

Assist learners who have challenges answering the questions.

# 2

## Matter



### Flashback zone

1. Things such as: Air, furniture, utensils, stationery, water, plants and animals.
2. (a) Waste materials such as: kitchen waste, animal waste, household waste, plastic waste, paper waste and farm waste.  
(b) Make compost manure for sale; Collect waste materials and take to recyclers; Use waste materials to make items such as balls and sculptors for sale.
3. Picture **a** – Washing vegetables  
Picture **b** – Watering plants  
Picture **c** – Cooking

### 2.1 Properties of matter

#### Matter and states of matter

##### Part A

1. (a) Matter            (b) Mass            (c) Volume
2. Solids, liquids and gases

##### Part B

1. Picture **a** – Liquid            Picture **b** – Solid  
Picture **c** – Gas            Picture **d** – Liquid
2. A – Gas            B – Liquid            C – Solid
3. Gases include: Air, cooking gas, carbon dioxide and oxygen; Liquids include water, milk, juice, soda, porridge, ink, tea, coffee and cocoa drink; Solids include table, chair, mobile phone, stone, cup, plate and wood.

#### Characteristics of matter

##### Part A

1. A

2. Have no definite shape/ fills every space; have no definite volume/ can be compressed; have a definite mass.
3. Liquids take the shape of the container/ No definite shape

### Part B

1. (a) Liquids (b) Gases and liquids  
(c) Solids and liquids (d) Gases
- 2.

Characteristics of solids	Characteristics of liquids	Characteristics of gases
Have a definite shape, volume and mass.	<ul style="list-style-type: none"> <li>No definite shape, take the shape of the container</li> <li>Have a definite volume and mass.</li> <li>They can flow.</li> </ul>	<ul style="list-style-type: none"> <li>Fill up all the space.</li> <li>Can be compressed.</li> <li>Have no definite shape nor volume</li> <li>Have a definite mass.</li> </ul>

3. Picture A – Gases occupy space  
Picture B – Gases can be compressed  
Picture C – Gases have mass

4.

	Mass	Volume	Shape
Gases	Fixed	Not fixed	Not fixed
Solids	Fixed	Fixed	Fixed
Liquids	Fixed	Fixed	Not fixed

### Importance of states of matter in day-to-day life

Activity	States of matter	Application
b	Foods are solids or liquids.	The food we eat is either solid or liquid.
c	The cooking gas is a gas. The food is solid Cooking oil is liquid. Clothes are solids.	Gas can be compressed and put into a container.
d	Rain water is liquid	Plants need water to grow and give us food. We also use water for various activities.

## Stretch zone

- Down: 1. Volume 3. Shape  
Across: 2. Liquids 4. Mass 5. Matter 6. Space



## Digital zone

Guide learners as they carry out the suggested tasks.

## Monitoring Progress 4

- Mariam
- (a) (i) Solid (ii) Liquid (iii) Gas  
(b) Maintain a safe distance from source of heat and water vapour; Use a piece of heavy clothe (poor conductor of heat) to hold the container with hot water.

3.

Properties of matter	State of matter
Have no definite shape, take the shape of the container.	Gases
Has a definite shape and volume.	Liquids
Has no fixed shape or volume.	Solids

- (a) Liquids have no definite shape; they take the shape of the container.  
(b) Liquids have definite volume and mass.
- Filling balloons with air.
- (a) True (b) False (c) True (d) True

## 2.2 Management of solid waste

### Types of solid waste

#### Part A

- (a) Any solid material that is not used any more (✓)
- Solid waste materials such as: sweet wrappers, used water bottles, fruit peelings, food remains, worn out shoes, worn out clothes, worn out books, broken digital devices.

- Waste that decomposes easily can rot or decay while waste that do not decompose easily does not rot.
- Discarded electronic materials and devices such as worn-out or broken computers and mobile phones.

### Part B

- Decomposable waste: Dried grass, orange peels, bread with moulds, empty juice packets and old carton boxes.
- Non-decomposable waste: Broken computer parts, used water bottles, used wrapping bags, used cans, parts of an old car and used polythene papers.

## Dangers of solid waste

### Part A

- Picture a – Broken glass bottles  
Picture b – Assorted waste  
Picture c – Banana peeling

2.

Name of waste	Danger of solid waste to the environment
Food remains	Bad smell
Broken glasses	Injuries and cuts
Used plastic bottles	Pollution in the environment

### Part B

- C
- A
- Tin cans and bottles can collect water when it rains. The water become breeding grounds for mosquitoes which bring malaria; Food remains bring about an increase in flies and rats which bring diseases; Waste damped on land makes the place look ugly; Waste washed into rivers, lakes and oceans the waste will kill animals that live in water. For example, when a fish swallows a plastic material; Some waste easily catch fire.

### Stretch zone

- The letter should cover the following
  - Common waste in the school compound like plastic bottles, worn out books, pieces of papers, food remains like banana peelings.

- Dangers of the waste in the environment such as increase in rats, bad smell, injuries.
- Request the headteacher to let whole school know why the waste should be disposed of properly.

## Ways of managing solid waste

### Part A

- (a) Clean            (b) Separating            (c) Label            (d) Recycling  
(e) Composting   (f) Manure            (g) Burn            (h) Sick  
(i) Reducing        (j) Reusing
- To enable us dispose of the different wastes properly.
- D
- D
- D
- Recycle: To use waste to make new products; Re-use: To utilise waste in other ways; Reduce: To try to produce less waste into the environment.
- (a) Recycle            (b) Reuse            (c) Reduce
- 

Ways of managing waste we make at school	Ways of managing waste we make at home	Ways of managing waste we make in public places
Separating waste, labelling waste bins, reducing waste by avoiding waste, reusing waste that can be put to other uses and recycling waste by making new things from it.	Repairing equipment and devices, taking waste to a collection center, donating to others what we no longer need but still in good condition.	Separating waste, labelling waste bins, carrying your own water in reusable bottles and disposing waste in the correct waste bin.

- (a) Carrier bags, water bottles  
(b) Milk, water, perfume and some dry food items such as sugar, tea leaves and spices  
(c) Fewer waste in the environment, cuts down the amount of waste we make and saves materials of making more.



## Monitoring Progress 5

1. A
2. D
3. (a)

Decomposable waste	Non-decomposable waste
Food remains; Vegetable left overs; Fruit peelings; Pieces of paper; Animal dung	Old pens; Old parts of computers; Used plastic bottles; Damaged mobile phones; Pieces of glass; Used dry cells

- (b) Old parts of computers; Damaged mobile phones; Used dry cells
  - (c) Wear protective gear; Avoid playing with the items; Label and sort out the items
- (a) Mostly decomposable waste and some non-decomposable waste
  - (b) Make the environment dirty; Can cause injuries; Spread diseases, pollute water, air and land; Some waste catch fire easily; Bad smell as the decomposable waste rot
  - (c) The rotting waste can be decomposed to make manure.
- Reusing by putting to other uses without changing the form of the waste; Repairing for reuse; Recycling to produce new items from the waste.
- (a) Reusing      (b) Reducing      (c) Recycling
  - (d) Reducing      (e) Reusing
- (a) In the classroom      (b) At home
  - (c) During a public function
- Creates new items; New items can be sold for money or income; Saves money and materials in the environment.

## 2.3 Water conservation

### Part A

- Using water economically without wasting it and protecting water sources.
- (a) Using water sparingly without wasting it
  - (b) Using the same water for other purposes/ using water more than ones
  - (c) Treating waste water to make it usable for other uses.

### Part B

- (a) Living      (b) Waste      (c) Conserve

## Ways of conserving water

### Part A

1. B
2. Drip irrigation reduces water wastage by directing the water to the roots of a plant where it is needed.
3. (a) Picture **a** – Reusing; Picture **b** – Reducing; Picture **c** – Reducing  
(b) Picture **a**: Water used for washing clothes is reused to clean the floor;  
Picture **b**: Harvesting rain water and storing it into tanks reduces water waste due to surface runoff;  
Picture **c**: Mulching reduces loss of soil water through evaporation.  
(c) Closing taps after fetching water; watering plants early in the morning.
4. B
5. Mulching; Drip irrigation
6. (a) True (b) False (c) True (d) False

### Part B

1. (a) Dripping water eventually leads to loss of a lot of water that will be lost without being used  
(b) Close the tap tightly/Notify her parent or guardian to repair the tap.
2. (a) To reduce the water loss by reusing the water for other relevant activities  
(b) The water can be recycled by treatment.
3. (a) At the dining hall; Kitchen; Wash areas in the toilets/ latrines  
(b) Reuse the water to mop classrooms or water flowers; Treatment by recycling

## Importance of water conservation

### Part A

Prevent water shortage; Reduce water bills; Reduce water pollution; Reduce conflicts between people and animals

### Part B

- (a) Prolonged drought; Ignorance on ways of conserving water
- (b) The villagers were educated on ways to conserve water; Harvesting rain water; Using water economically
- (c) Availability of water for everyone; Saved time used for searching for water; Reduced conflicts; Saved money for water bills.

## Stretch zone

Assess the written speech for the following points:

- Conservation of water is using water without wasting it and protecting the sources of water for all living things.
- Water is conserved when it is not wasted, when it is used efficiently without wasting, when the sources of water are protected from water pollution.
- Waste water should be reused for other activities. For example, water used for washing vegetables can be used to water plants.
- Reduce water wastage by harvesting rain water, repairing leaking taps, practicing mulching, using drip irrigation and watering plants early in the morning or late afternoon.
- Water can also be conserved by recycling. For example, treated bathroom water can be used again for flushing the toilet, dirty water can be treated in a recycling machine to be used again.



## Digital zone

Guide learners to do the tasks as suggested.

## Monitoring Progress 6

1. Conserve water for us to have enough water for use/ Reduce water loss by closing the tap after using.
2. (a) Treating water to make it usable for other uses  
(b) Using waste water for other purposes / Using waste water more than ones  
(c) Using water without wasting it or using water economically.
3. Reusing water, using the same water for other purposes; Reducing water loss by reporting to authorities any leaking taps and pipes; Recycling water by treating it before using.
4. (a) Reusing (b) Recycling (c) Reducing (d) Reusing
5. To reduce water bills; To have enough water for everyone; To prevent pollution; To prevent waterborne and water washed diseases.



## Digital Interactive Exercise 2

Assist learners who have challenges answering the questions.

# 3

## Force and energy



### Flashback zone

1. Picture **a** – Charcoal jiko; Picture **b** – Kerosene stove; Picture **c** – Traditional fireplace/ Three stone fireplace
2. Cooking, warming the house, drying
3. Fire, electricity, candle, torch

### 3.1 Force and its effects

#### What is force

##### Part A

1. B
2. Picture **a** – Push; Picture **b** – Push; Picture **c** – Pull

#### Types of force in nature

##### Part A

1. C
2. B

##### Part B

1. (a) Picture **b, c** and **d** (b) Picture **a**
2. Picture **a** – Gravity; Picture **b** – Gravity; Picture **c** – Friction
3. (a) True (b) False (c) True

#### Effects of force on objects in nature

##### Part A

1. Picture **a** – Gravity makes objects released from above to come down; Picture **b** – Gravity makes water flow downwards.
2. (a) Force makes moving objects to slow down then stop or change direction.  
(b) Force increases the speed of a moving object.

- (c) Force makes a stationary object to start moving.
- 3. (a) Hold the stone in his hand in a raised position then release it or throw it up.
- (b) That gravity attracts all objects towards the earth.

## Part B

- 1. Y
- 2. Place the small block of wood on the smooth surface of the table and push it gently. Pour the sand on the surface of the smooth table, place the small block of wood on the surface of the table then push the block gently. Compare the two activities based on the force needed to push the small block of wood.
- 3. (a) Force increases the speed of a moving object, force slows down the speed of moving objects;
- (b) Force makes moving objects to stop;
- (c) Force makes working difficult
- (d) Friction force generates heat
- 4. C
- 5. Picture **a** – Force can change the shape of an object.  
Picture **b** – Force makes objects at rest to start moving.  
Picture **c** – Force can change the direction of a moving object.  
Picture **d** – Force can make a moving object to stop.

## Minimising friction between moving objects

### Part A

- 1. Picture **a** – Use of rollers  
Picture **b** – Use of ball bearings  
Picture **c** – Lubricating/ Applying oil or grease
- 2. Greater force is applied where there is friction in order to overcome it. Minimising friction ensures less force is applied to do work.
- 3. (a) Ball bearings (b) Friction  
(c) Apply grease on the wheel axle
- 4. (a) Rollers  
(b) They reduce friction between the load and the ground making it easy for the load to move.

## Part B

- Increase friction
  - Friction when rubbing during washing
  - Picture b
- Friction between the brake pads and the wheel makes the wheel to slow down and then stop when breaks are applied
- In: b, c and d
- b and e
- The patterns on the tyre had worn out by the end of the term compared to the beginning of the term
  - Friction between the tyre and the road made the tyre to wear out.
- Ball bearings, reduce friction
  - Lubricants
  - Lubricating
- b; Placing it on rounded sticks(rollers) then push

## Uses of force in everyday life

### Part A

- B
- Award correct responses such as the ones given in the table below.

Activities I do in school using force	Activities I do at home using force
Writing, playing, kicking ball	Washing, cooking, pushing and pulling things

### Part B

Picture a – To play football

Picture b – Push a wheelbarrow

Picture c – Push and pull the handcart

## Application of force

### Part A

- Drawing water from a tank through a tap.
- Gravity makes the task of lifting the load difficult since it pulls the load towards the earth.

- (b) Place a plank of wood in a sloping position and pull the load along the plank of wood.
- (c) Force of gravity acting on the water makes it to flow continuously without stopping.

## Part B

- 1. (a)
  - Picture **a** - Friction between the saw blade and the wood wears out (cutting) the piece of wood.
  - Picture **b** - Friction between the chalkboard surface and the chalk stick makes it possible to write.
  - Picture **c** - The rough surface of the sandpaper increases friction thus wearing out the surface of the wood making it smooth.
  - Picture **d** - Friction between the mop and the floor removes the dirt.
- (b) Washing clothes; Chopping vegetables; Mopping the floor

## Stretch zone

- 1. Compress the bottle by applying force to change shape.
- 2. Check for correct drawn diagram of the bottle before and after compressing.

## Monitoring Progress 7

- 1. (a) Gravity      (b) Friction
- 2. Force makes stationary objects to start moving; Force stops motion; Force can change the direction of a moving object; Force increases the speed of a moving object; Force can change the shape of an object.
- 3. (a) (i) Gravity – Performing jumping jacks on the playground, pouring colouring paint from the paint container;  
(ii) Friction – Drawing images and painting them using paint brush  
(Accept any other relevant answer)
- (b) (i) Force starts motion.  
(ii) Force changes the direction of a moving object.  
(iii) Force stops motion.  
(iv) Force keeps objects in same position.  
(v) Force changes the shape of objects.



## Part B

- (a) Picture **a** – Using windows  
Picture **b** – Using electricity  
Picture **c** – Translucent roofing sheets  
(b) **a** – Dining halls, classrooms and churches; **b** – Homes; **c** – Factory buildings, meeting halls, warehouses
- (a) True                      (b) False                      (c) True                      (d) True
- Solar panel

## Uses of light

### Part A

- (a) Picture **a** – Communication; Picture **b** – Photography; Picture **c** - Seeing  
(b) Photosynthesis; Pilots when landing aeroplanes
- Tick (✓): **b**, **d** and **e**; Cross (×): **a** and **c**

### Part B

- (a) Accept well drawn and appropriately coloured diagram of the traffic light.  
(b) Green – Go/Cross; Red – Stop; Amber – Get ready

## Application of light in day-to-day life

### Part A

- |                      |                     |
|----------------------|---------------------|
| (b) See clearly      | (b) Keep pests away |
| (c) Read comfortably | (d) Security        |

### Part B

Solar light energy is cheap, readily available, does not pollute the air and can be stored in a battery to be used later.

### Stretch zone

Assess for relevant given points for both proposers and opposers.

## Monitoring Progress 8

1. Natural sources – The sun, stars, glow worms and fire flies; Artificial sources- torch, candle, gas lamp, solar lamps and firewood.
2. The moon gets light from the sun.
3. (a) Translucent roof  
(b) Large buildings like halls, churches and warehouses
4. Translucent roofs, large windows
5. (a) Picture **a** – Solar lamp; Picture **b** – Candle  
(b) Solar is cheap and readily available; it does not pollute the environment.
6. (a) Photocopying  
(b) Seeing; Making plants food; Photography
7. Seeing things clearly; Scaring away pests; Security; Reading comfortably

### 3.3 Heat energy

#### Sources of heat

##### Part A

1. Energy
2. (a) Picture **a** – The sun; Picture **b** – Fireplace; Picture **c** – Cooking gas  
(b) Solar cooker, kerosene stove, charcoal jiko  
(c) The sun
3. (a) B (b) Firewood, charcoal, kerosene, gas

##### Part B

- (a) Electric iron- Uses electricity to iron clothes.
- (b) Electric heater - Uses electricity to generate/ produce heat for warming.
- (c) Electric cooker - Uses electricity to produce heat for cooking.

#### Uses of heat in day-to-day life

##### Part A

1. Picture **a** – Keeping warm  
Picture **c** – Cooking food  
Picture **b** – Drying  
Picture **d** – Preserving food
2. Seeing

## Part B

- (a) Warming (b) Cooking food (c) Preserving (d) Preserving food
- (a) True (b) True (c) False
- C
- Helps keep warm during cold season; Used in preparing food; Prevents food spoilage through preservation; Clothes hanged in a line dry because of heat.

## Safety measures and practices when using heat

### Part A

- Do not get too close to the source of heat; Wear protective clothing when handling heat; Do not leave fuels burning when not attended to; Keep things that can catch fire easily away from open fire; Use insulators to shield against heat
- (a) Personal protective equipment (PPE)  
(b) Item **a** - Kitchen gloves; Item **b** – Apron; Item **c** - Safety boots  
(c)
  - Kitchen gloves –Made using a material which is a poor conductor of heat to prevent burning hands when handling hot materials in the kitchen.
  - Apron – Protects the body against direct heat and any hot splashing fluids when handling hot food.
  - Safety boots – Made from a poor conductor of heat to prevent feet from excessive heat.

### Part B

- (a) A thick piece of cloth  
(b) To prevent the hands from getting burns.
- (a) Burning firewood produces smoke which pollutes the air.  
(b) Electricity, solar heating devices, biogas or cooking gas.  
(c) Gas does not produce smoke when burnt.

## Monitoring Progress 9

- Sun, fire, gas, electricity
- Charcoal, firewood, kerosene and gas
- (a) Improved charcoal jiko

- (b) The part made of soil prevents heat loss since soil is a poor conductor of heat.
4. (a) Solar cooker; Solar heater; Solar drier  
(b) They are affordable in the long run; They are environment friendly/ Do not pollute the air and easy to use.  
(c) They may not function when there is no sun; They may be expensive to install or purchase.
5. (a) To conserve forests; To minimise pollution of the air by smoke  
(b) Gas, electricity, solar heating devices
6. Picture **a** – Preserving food; Picture **b** – Warming
7. (a) Polythene is not a poor conductor of heat (Material for making kitchen gloves should be a poor conductor of heat).  
(b) Canvas sheet; Thick piece of cloth, waste carton boxes  
(c) To prevent he hands from being burned when handling heat.
8. Avoid direct contact with open fire; Wear appropriate protective clothing; Keep all things that can catch fire easily away from open fire; Turn off sources of heat after use.



### Digital Interactive Exercise 3

Assist learners who have challenges answering the questions.

# Summative Assessment

## Assessment Paper 1

1. D	2. C	3. B	4. B	5. D
6. A	7. D	8. B	9. A	10. B
11. A	12. D	13. B	14. A	15. B
16. B	17. A	18. D	19. B	20. A
21. D	22. A	23. B	24. A	25. C

## Assessment Paper 2

1. B	2. D	3. B	4. C	5. B
6. A	7. D	8. D	9. D	10. A
11. B	12. D	13. A	14. D	15. C
16. C	17. C	18. A	19. D	20. B
21. C	22. D	23. C	24. C	25. C

## Assessment Paper 3

1. C	2. A	3. A	4. C	5. B
6. D	7. B	8. C	9. B	10. A
11. C	12. B	13. A	14. C	15. A
16. C	17. B	18. C	19. D	20. C
21. B	22. B	23. D	24. C	25. D