SCIENCE

Pupil's Book

GRADE 6

Mauritius Institute of Education
under the aegis of
Ministry of Education and Human Resources, Tertiary Education and Scientific Research


I think ...
I believe ...
I have read ...
ENERGY

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Foreword

MIE has produced a brand new collection of textbooks based on the National Curriculum Framework for the Nine Year Continuous Basic Education as from 2016. These textbooks have been written by a team of academic staff from MIE, supported by experienced Educators, advised by Inspectors, mentors and Deputy Head Masters.

We have done our best to ensure that the textbooks enable children to undergo a pleasant learning experience. We have taken care to align the textbooks with very clearly defined learning outcomes and objectives set for the respective subjects as outlined in the National Curriculum Framework, Grades 1 to 6. The textbooks provide clear indications of the diverse skills that children should master at each stage.

We are also providing a set of teachers' manuals where we have outlined the appropriate techniques and pedagogical approaches so that children are helped to make optimal use of the textbook and materials provided. Some of the textbooks have been updated and changes effected after receiving feedback from educators.

We are thankful to all those who have provided us with constructive feedback, thereby enabling us to make this curriculum development endeavour come to fruition. We are also thankful to the artists who carried out the illustrations, and to our graphic artists who have tried their best to create the right layout for the books. The authors and the curriculum team, under the guidance of Professor Vassen Naëck, also deserve our thanks.

We hope that you enjoy this material and wish you lots of success.

Dr O. Nath Varma
Director
Mauritius Institute of Education

Note to the teacher

The conceptualisation of the Grade 6 Primary Science book rests on three premises, namely:

- Pupils are allowed to **'reinvent the wheel'**. It is only through 'reinvention' that pupils can construct dispositions to, later on, be creative and innovative.

- Pupils construct purposeful knowledge structures while interacting with **concept cartoons** which highlight contextual issues about real life situations. The learning of science from the known to the unknown facilitates conceptual understanding. In situations where concept cartoons are provided, the teacher is advised to organise role-plays so that pupils can express themselves in relation to the given situations. Role-plays provide opportunities for pupils to develop thinking skills, which encompass reading, vocabulary, asking questions, organising information, solving problems, and making decisions.

- **Mistakes** made by pupils are opportunities for teachers to explore. The contextual issues exposed in the concept cartoons provide pupils with a variety of ideas that may at times be conflicting. The teacher holds the position of a facilitator who bears the responsibility of guiding pupils towards the correct argument through active participation and engagement.

What is particular to the Science Grade 6 workbook is that right as from the start, pupils are engaged in knowledge construction by performing activities through group discussions (while considering human values) and formative assessment procedures. While they are engaged in an activity, pupils are encouraged to undertake careful observation of the situations that have been provided; to make assumptions; to discuss and share their views (agree to disagree); to experiment (depending on the activity – which could be hands-on or minds-on); to confirm their assumptions; and finally, to report their findings.

To strengthen the conceptual understanding of pupils, it is recommended that the teacher requests pupils to write, as homework, insightful summaries of what they have learnt in the classroom. The formative as well as the summative (multiple choice and structured questions) assessments will serve as valuable prompts for the writing of these summaries.

A website (http://science.mie.mu/primary/) on the primary science concepts, with elements of interactivity and integration with Mathematics and English, has been developed to facilitate the teaching and learning of science.

It is understood that the *website features*, *'Did you know?'* and *'Find out!'* that do not form part of the syllabus or that have not been developed in the core text should not form part of the formal assessment structure. They should instead be construed as a means to strengthen pupils' abilities.

The Teacher's Guide provides teachers with extensive information on the concepts as well as on how to proceed with the lesson.

The science curriculum being a dynamic one, it may be even more adapted to the needs of pupils, teachers and society at large. Your ideas and suggestions for the improvement of this science workbook are most welcome. Please submit them by email to: y.ramma@mieonline.org

Professor Y. Ramma
Grade 6 Primary Science Coordinator
Mauritius Institute of Education

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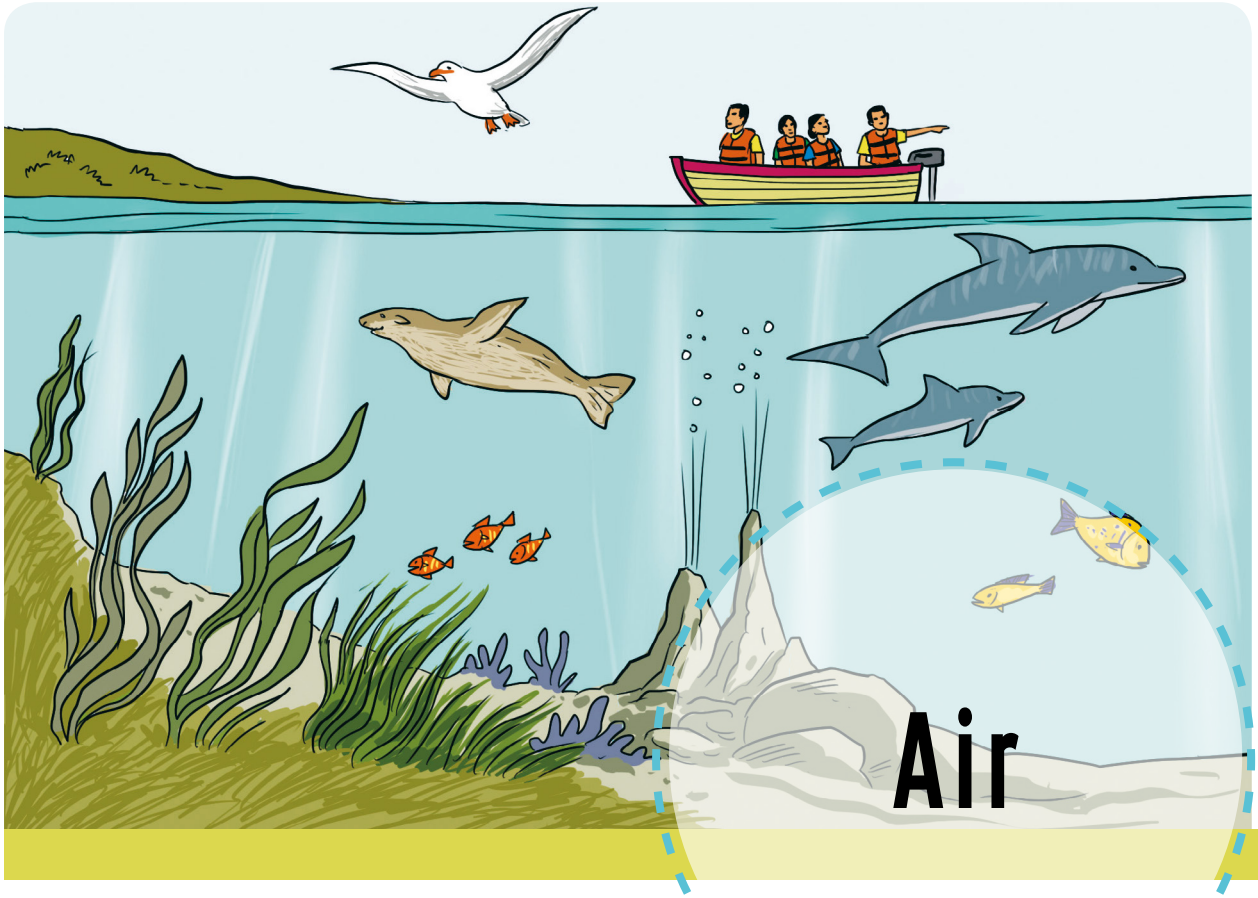


UNIT 1

Air

In Grades 3 and 4, you have learnt that:

(i) Air is all around us.

(ii) Living things (plants and animals) need air to live.

(iii) Air is present in empty bottles, soil and water.

(iv) Air is important for burning.

(v) Air is odourless, colourless and tasteless.

At the end of this unit, you should be able to

- State that air is a mixture of gases.
- Conclude that oxygen is important for life.
- State an experiment to demonstrate that oxygen is important for burning.
- Demonstrate understanding that air exerts pressure.
- State some causes of air pollution and some measures to avoid it.

Activity 1: Air and Living Things

Figure 1: Taking in air to live

You have learnt that all plants and animals need air to live.

REFER TO WEBSITE:

http://science.mie.mu/primary/ Interact with the living things.

Group discussion

Observe Figure 1 carefully and identify the living things. Pay attention to the place where each one is situated, and from where each of the living things is getting air.

DICTIONARY

Situated: to be in a particular place.

Complete Table 1.

Table 1

Living thing	Place where the living thing is found	From where the living thing gets air

a. Do all living things need air to live? ……

b. What do you conclude?

……

Find Out

- In 1969, astronauts set foot on the moon for the first time. We all know that there is no air over there. Therefore, where did they get oxygen for breathing?

Activity 2: Composition of air

During a classroom discussion with the teacher, pupils learnt that air is composed of gases, four of them being **oxygen, carbon dioxide, nitrogen** and **water vapour**.

Figure 2: Classroom discussion on Air

Table 1 shows the amount of oxygen, carbon dioxide and nitrogen present in dry air.

Table 2

Gas	%
Nitrogen	78.1
Oxygen	21.0
Carbon dioxide	0.03
Other gases	0.87

Note: 1. Water vapour is absent in dry air.
2. You will learn about percentage (%) in the Mathematics lesson.

VALUES EDUCATION

When discussing with your friends you need to:

Respect their views.

Talk softly.

Make your point without offending others.

Wait for your turn to express yourself.

Figure 3 shows a bar chart illustrating the proportion (share) of gases.

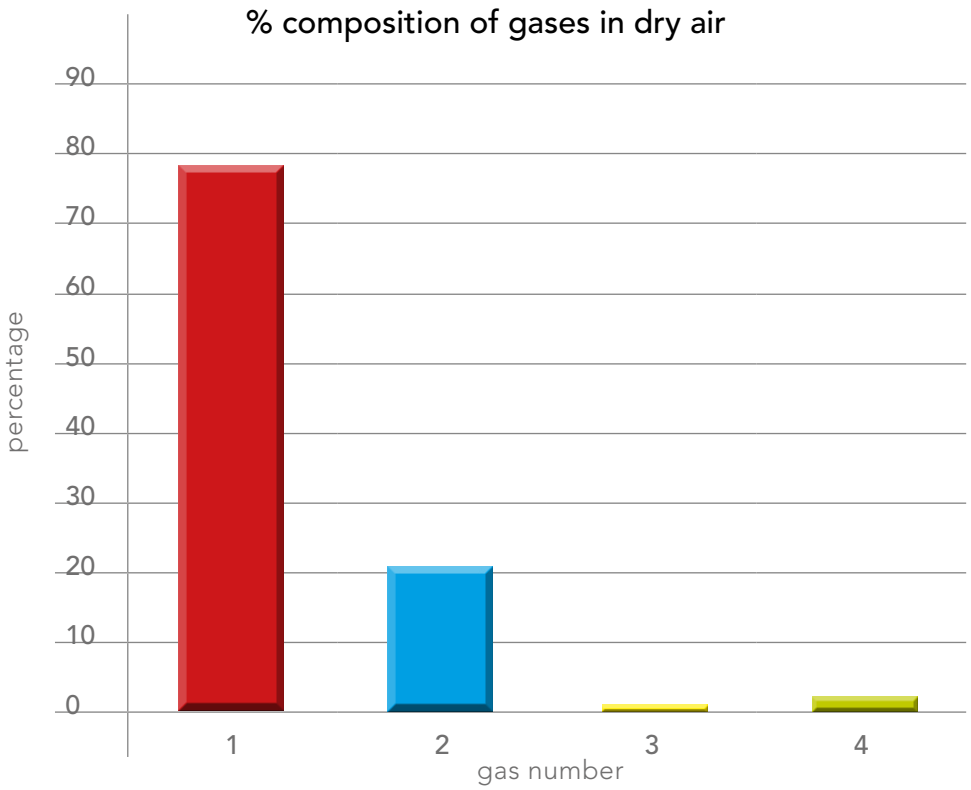


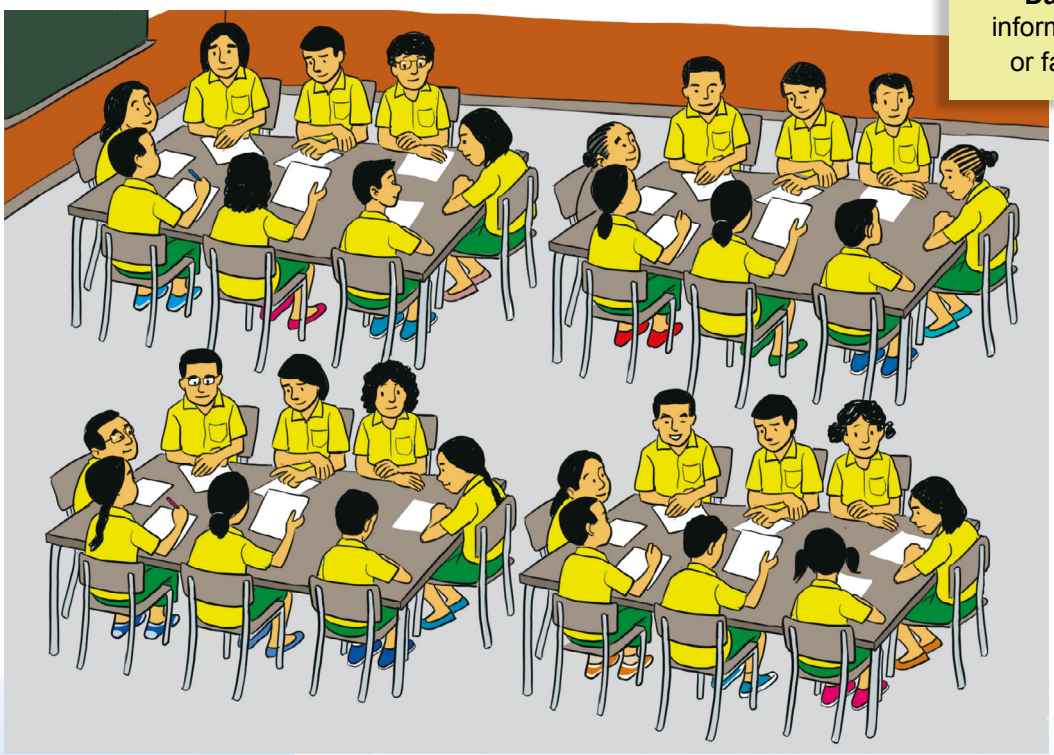
Figure 3: Gases

Note:
The height of the bars are for illustrative purposes and not to scale.

http:
To see the % of gases on a pie chart.

Group discussion

Refer to the data in Table 2 and after discussion with your friends, answer the following questions about the bar chart (Figure 3).



DICTIONARY
Data: information or facts.

(i) Which bar (1, 2, 3 or 4) of the bar chart represents oxygen?

.....

Explain why you think so.

.....

.....

.....

.....

.....

VALUES EDUCATION

When discussing with your friends:

Don't forget to respect your friends even if you disagree with their views.

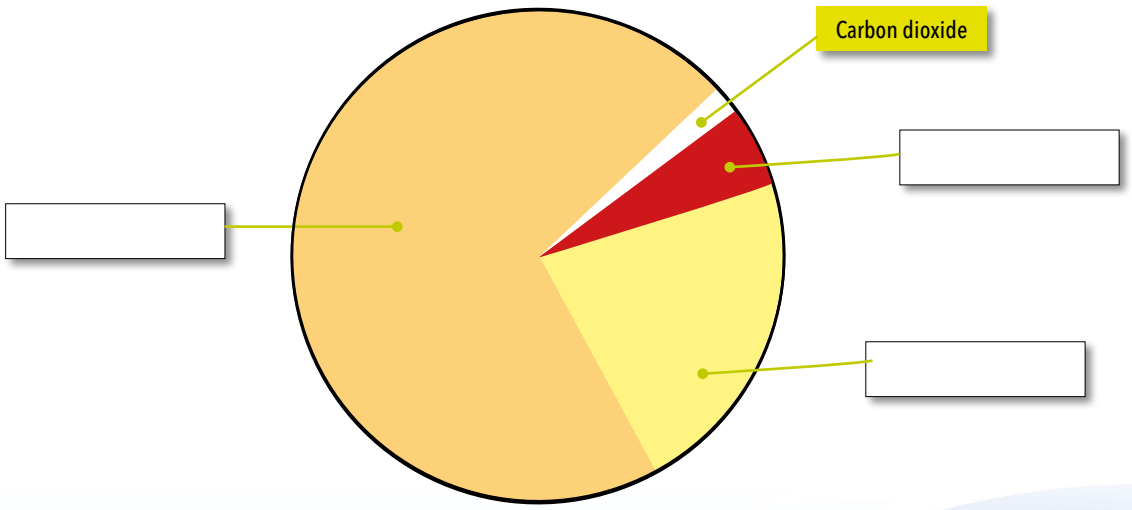
Talk softly so as not to disturb the other groups.

(ii) Now, complete Table 3.

Table 3

Gas	%	Gas number	Colour of the bar
Nitrogen	78.1		
Oxygen	21.0		
Carbon dioxide	0.03		
Other gases	0.87		

(iii) Complete the pie chart by labelling the sectors with the appropriate gases (one has been done for you).



Activity 3: Importance of oxygen

Why do we need to breathe oxygen?

Our body uses oxygen and food to produce energy. Energy

(i) Helps to keep our body warm.

(ii) Allows us to move about and do all our activities.

(iii) Helps all our organs to work properly.

Study Figure 4 carefully.

Figure 4 : Importance of oxygen

Group discussion

Observe carefully the activities that the pupils are doing.

a. Which group of pupils needs more energy and therefore more oxygen to perform the activity? Explain.

.....

.....

b. Which group of pupils need less energy and therefore less oxygen to perform the activity? Explain.

……

……

Complete Table 4 by ticking the correct grid.

Table 4

Activity	More oxygen	Less oxygen	Least oxygen
Playing volleyball			
Playing 'Passe Mouchoir'			
Resting			

What happens to the amount of oxygen in a room when we are breathing air?

Let's find out.

Two pupils are measuring the amount of oxygen present in a jar. The jar contains two cockroaches.

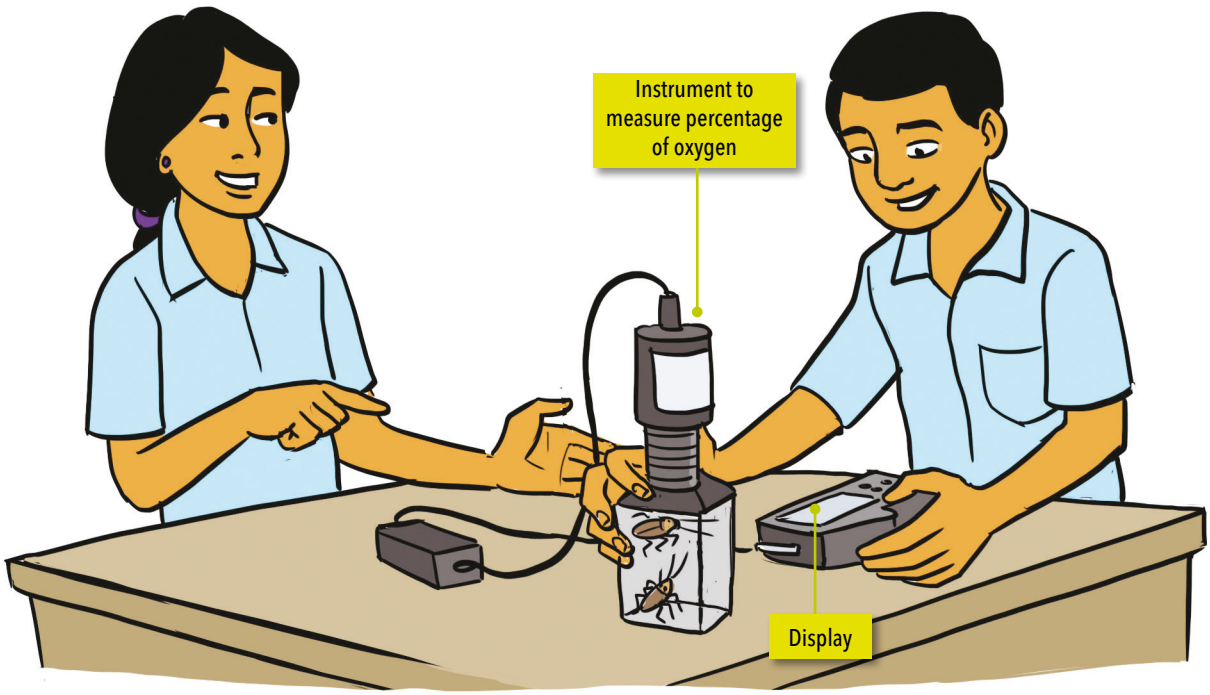


Figure 5: Importance of oxygen for living things

http: Watch the video about this experiment.

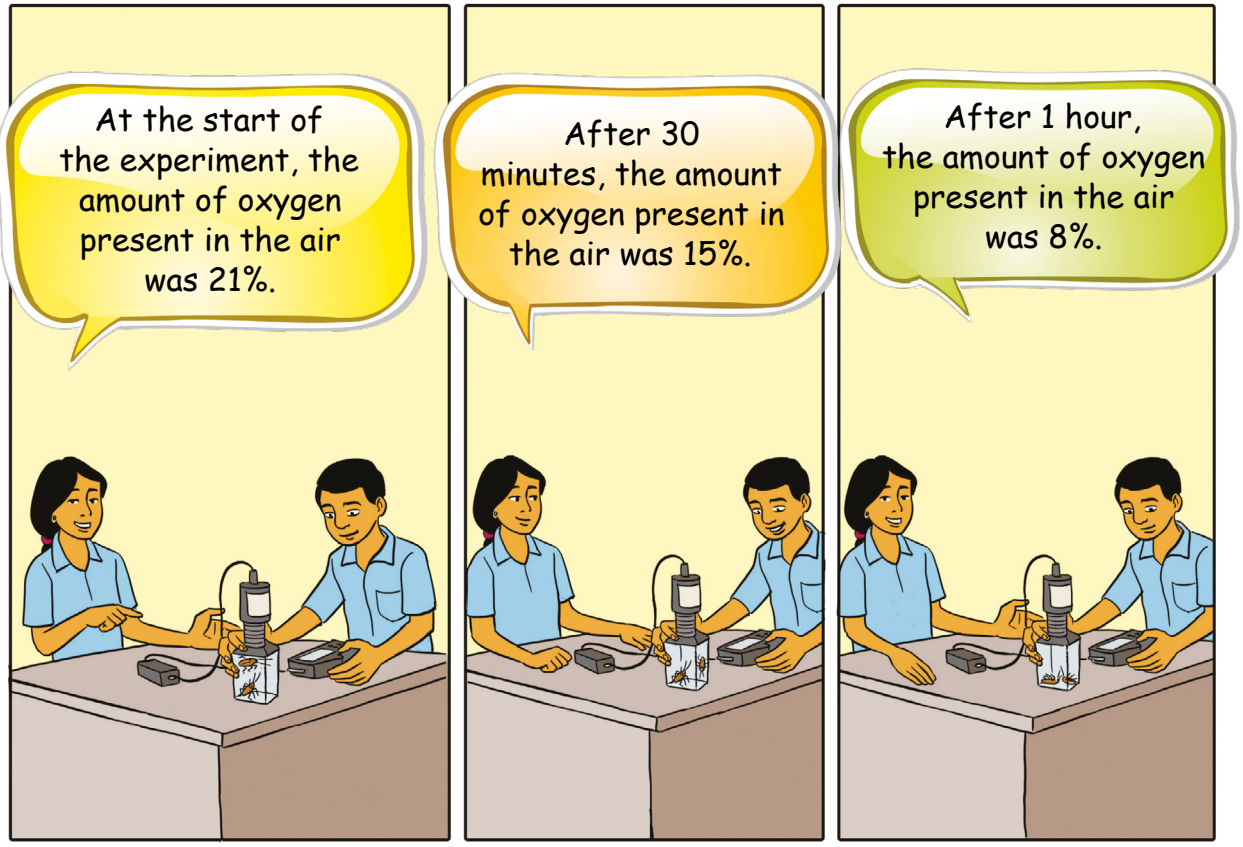


Figure 6: Activity about oxygen

After discussing with your friends, answer the following questions.

a. Why did the percentage of oxygen decrease with time?

.....

b. What may happen to the animals (cockroaches) if the jar is not opened to allow air, i.e. oxygen, to get in?

.....

c. What can you conclude about the importance of oxygen for life?

.....

Find Out

- Why is it not advisable to keep potted plants in a closed bedroom while sleeping at night?
- Why should we always breathe through the nose and not through the mouth?
- Find out about some exceptional cases when we need to breathe through the mouth.

Activity 4: Oxygen and burning

A group of pupils is discussing about whether **two conditions** need to be fulfilled for burning to take place.

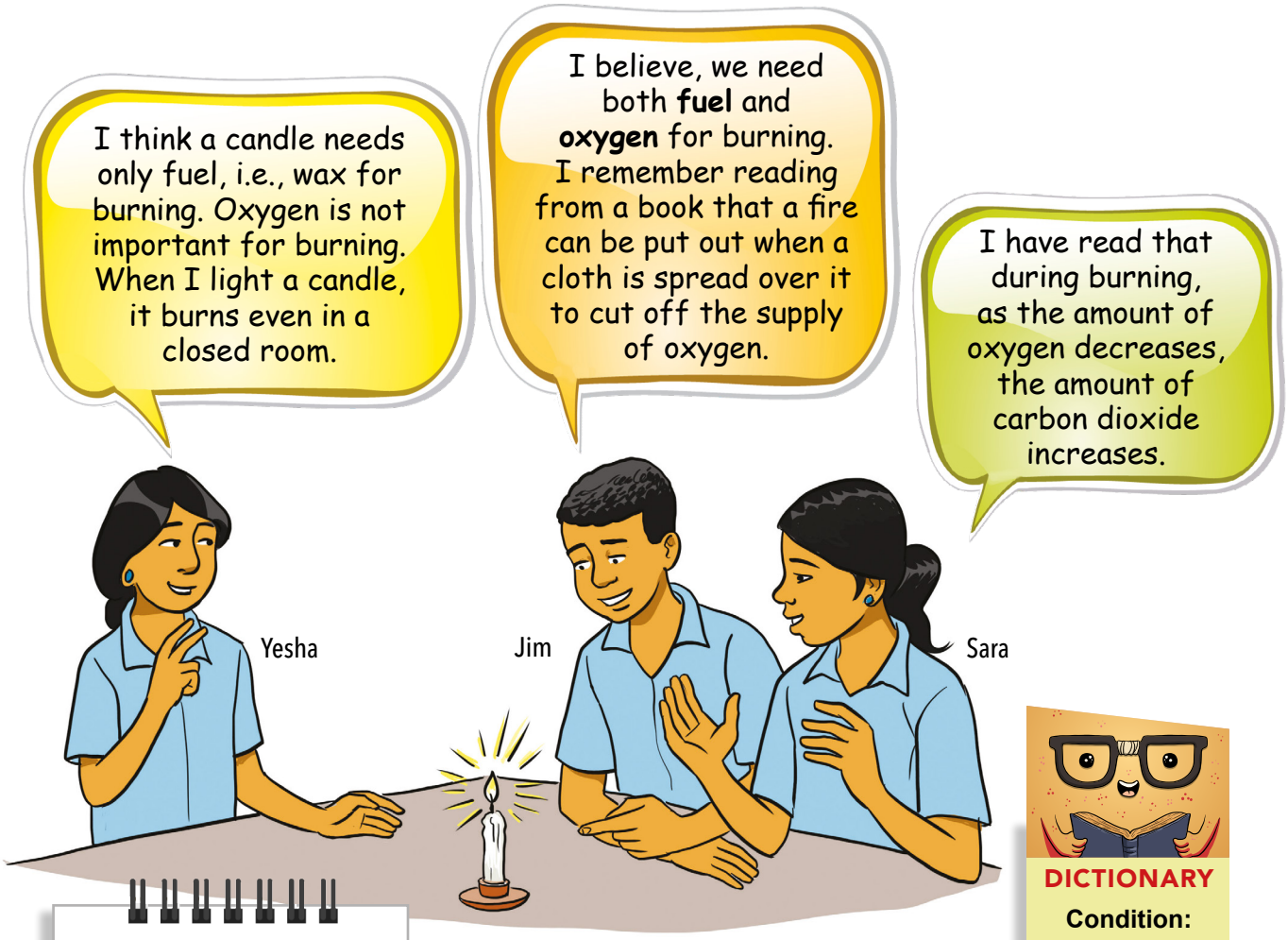


Figure 7: Oxygen and burning

NOTEPAD

It is important to read books in order gain additional knowledge and also to develop a reading culture.

DICTIONARY

Condition: a necessary situation for something to happen.

Fulfil: to do something as required.

(i) Who do you think is/are right, Yesha, Jim or Sara?

.....

Explain.

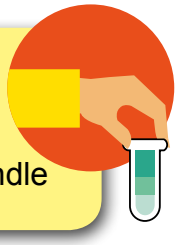
.....

.....

(ii) Now, let us find out the answer from an experiment.

Teacher needs:

- 2 similar candles
- A matchbox
- A jar that is large enough to cover one candle



DICTIONARY

Procedure: a series of actions to perform something.

Procedure

1. The pupils label the candles: Candle A and Candle B.
2. The teacher lights both candles.
3. The pupils observe each candle flame.

A B

Are both candles burning?

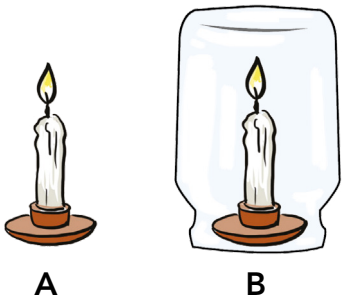
……

NOTEPAD

The teacher will light the candles and not the pupils. The pupils should be careful with fire at home.

4. The teacher now covers candle B with the jar.

(i) What do you observe about the flame of candle A and that of candle B?



A B

……

……

(ii) What did you observe when candle B was covered with the jar?

Flame from candle A: ……

Flame from candle B: ……

(iii) Which gas is produced during burning?

……

5. What happened to the amount of oxygen when candle B was covered with the jar?

……

……

……

6. Now, refer back to **part (i)** on page 10 and improve your work.
Put a cross on the wrong statement in Figure 7.

7. Fill in Table 5 by putting ticks (✔) in the appropriate boxes.

Table 5

	Candle A	Candle B
Amount of **Oxygen** at the start of the experiment and before candle B is covered with the jar.	Small amount ☐ Large amount ☐ 	Small amount ☐ Large amount ☐ 
Amount of **Oxygen** when candle B is covered with the jar. Candle A is not covered.	Small amount ☐ Large amount ☐ 	Small amount ☐ Large amount ☐ 
Amount of **Carbon dioxide** present in the air around the flame when candle B is covered with the jar. Candle A is not covered.	Small amount ☐ Large amount ☐ 	Small amount ☐ Large amount ☐ 

Find Out

- Why should we allow a good flow of air in the kitchen when using the stove at home?
- Why should you not pull the blanket over your head when you are sleeping?
- Why is it not advisable to set the gas water heater in the bathroom?

VALUES EDUCATION

Share what you have learnt in class, with your parents at home, especially about the gas water heater.

Extinguishing fires

One common way of putting out a fire is by pouring water on it.

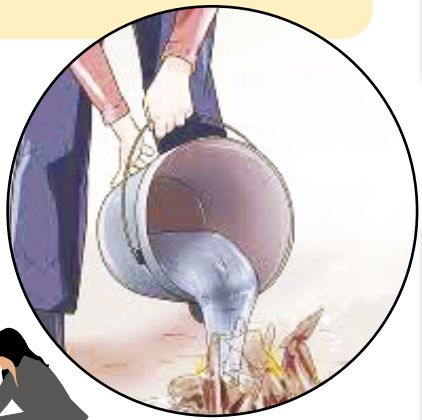


Figure 8: Extinguishing an engine fire

DICTIONARY

To pour: to spread something (often in liquid form) on something else.

Go to the website to see the fire extinguisher in action

Group discussion

VALUES EDUCATION

Don't forget to respect the views of your friends even if you disagree.

Observe Figure 8 carefully. The engine of a car is on fire and the driver is putting it out with a fire extinguisher.

Answer the following questions.

(i) Name the fuel that is burning.

……

(ii) Which gas is responsible for the fuel to burn?

……

(iii) What is the driver using to put out the fire?

……

(iv) Why can't she use water?

……

Find Out

- Why should we never pour water over burning oil?
- What should instead be used to extinguish an oil fire in the kitchen?

The fire extinguisher releases a lot of carbon dioxide. The carbon dioxide extinguishes the fire.

Did you know?

- The nozzle of the fire extinguisher should always be pointed towards the base of the flame to put out the fire.
- As a measure of safety, all vehicles should be equipped with fire extinguishers.

NOTEPAD

PRECAUTIONS

Tell your parents to keep all inflammable materials such as alcohol, gas, etc., in a safe place, away from a source of fire.

Activity 5: Air pressure – a suction cup

Air is present all around us. Air exerts pressure on everything around us.

Air pressure

(i) Helps a suction cup to stick on windows or smooth walls.

Figure 9a: Suction cups

Figure 9b: Drinking juice using a straw

(ii) Allows us to drink juice using a straw.

How can we demonstrate air pressure?

Let us find out why a suction cup sticks to a window pane.

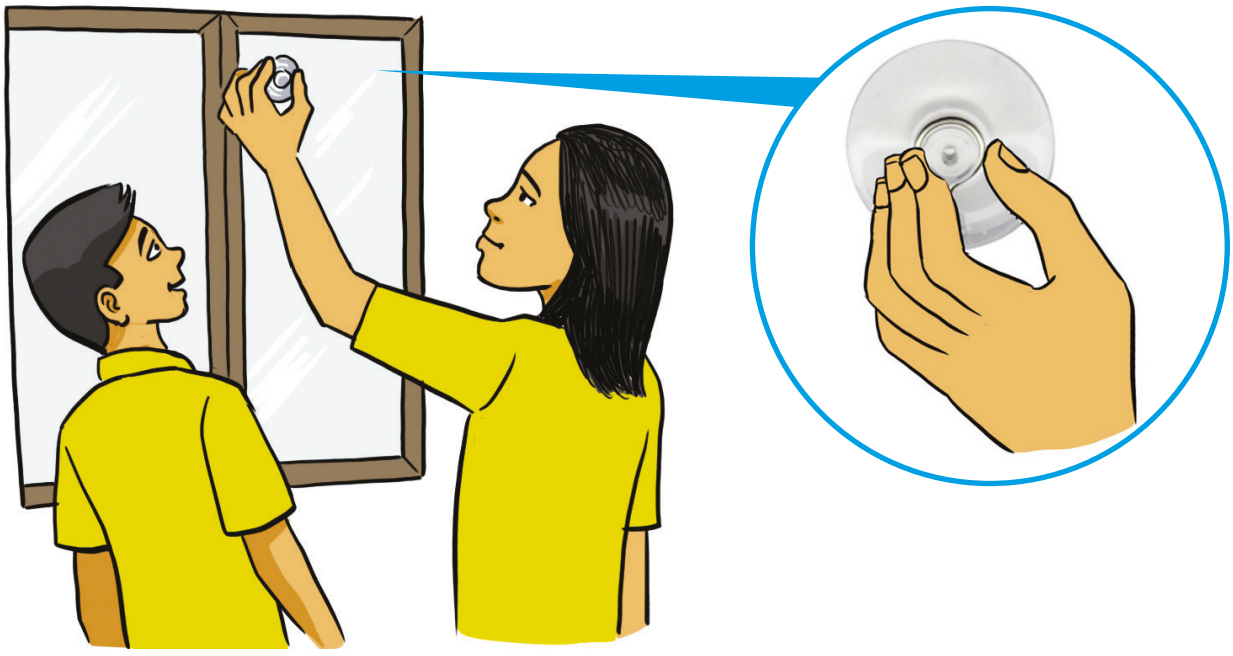


Figure 10: Suction cup

(i) When you press the suction cup on the window pane, does air get in or out of it?

.....

(ii) Fill in Table 6 by ticking the correct boxes.

Table 6

	Before pressing the suction cup	After pressing the suction cup
Air pressure **inside** the suction cup	☐ same as outside ☐ different from outside	
Air pressure **outside** the suction cup		☐ same as inside ☐ different from inside and large

(iii) Now, refer to the concept cartoon and after discussion in your group explain who of the two pupils is right.

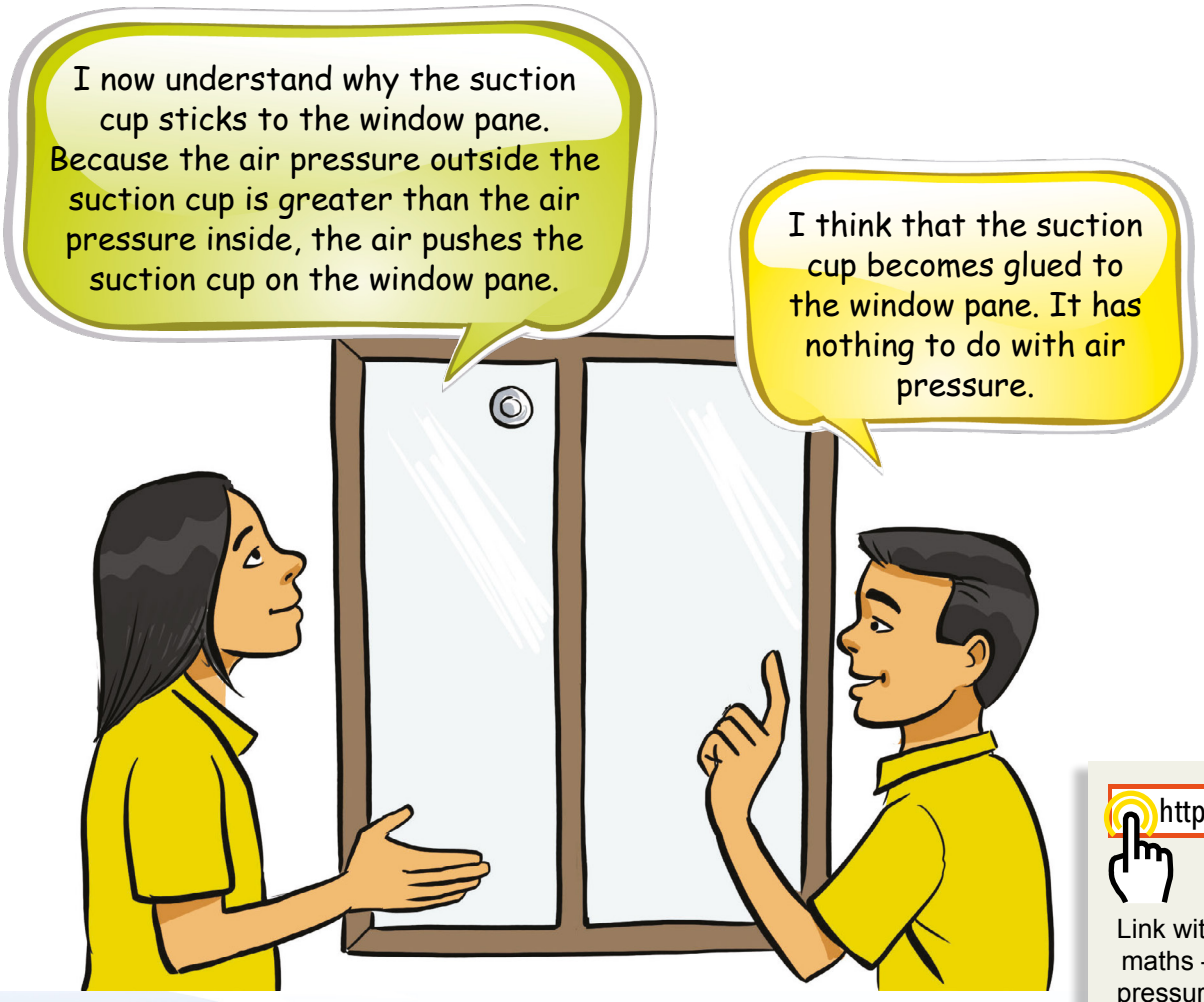


Figure 11: Air pressure and suction cup

http:

Link with maths – pressure difference.

Write your explanation using illustrations to show who of the two pupils is right about why the suction cup sticks to the window pane.

……

……

……

……

……

……

Note: Watch the 'Meteo' on TV tonight.

Did you know?

A barometer is used to measure air pressure.

When the surrounding air pressure is high, the weather is good. Bad weather is associated with low pressure.

Air exerts a pressure of about 10 tonnes (10,000 kilograms) per square metre (m^2) on every person. If it were not for the air inside our bodies pushing outward and keeping the balance, we would be crushed by the air pressure.

Mathematics

1 tonne =
1000 kilograms

Area of
the square =
1 m x 1 m = $1m^2$

Find Out

- How is medicine drawn into a syringe?
- Why does a balloon get larger and larger when air is blown into it?

Activity 6: Air pollution

DICTIONARY

Emitting: sending out.

Pollute: to make the surrounding air, water and soil dangerously dirty.

Substances: elements

You have certainly seen vehicles on the road emitting black smoke. The surrounding air thus becomes polluted. Air pollution is bad for living things.

How are living things affected?

In order to stay in good health, people and animals need to breathe clean air, i.e. air which is free from dust, smoke and other poisonous gases.

These harmful substances may cause lung cancer.

Plants cannot grow well and may even die.

Figure 12: Air pollution

In plants, the pores are blocked by dust and soot from smoke, preventing them from:

(i) Exchanging gases.

(ii) Getting a good supply of sunlight for photosynthesis.

Group discussion

Observe Figure 12 carefully and discuss with your friends about:

(i) The different sources of air pollution.

(ii) What can be done to avoid air pollution in each case.

Now complete Table 7.

Table 7

Sources of air pollution	Measures to avoid air pollution

Further practice

- Identify some sources of air pollution in your environment.

- Mention one way in which you can help to reduce air pollution in your environment.

- How can you help to sensitize your parents and family about the problem of air pollution so that they can contribute to address them?

Did you know?

- **The Bhopal disaster**

In December 1984, an accident occurred in a large pesticide manufacturing plant in Bhopal, India. Thousands of tonnes of toxic gases were released into the atmosphere. These gases were inhaled (breathed in) by thousands of people living nearby. 3000 people died as a result and even today thousands of people are still suffering from eye, skin, lung infection and deformation.

DICTIONARY

To breathe: to take air into the lungs and out again.

Atmosphere: the gases surrounding the Earth.

What I have learnt:

- Living things need to take in oxygen (from the air) to live and to carry out daily activities.
- Living things will die if they do not get sufficient oxygen to take in.
- Oxygen and fuel are necessary for burning. During burning, carbon dioxide is produced.
- Air exerts pressure on all things. The difference in air pressure causes a suction cup to stick to a window pane.
- Air pollution is harmful for the health and plants.

http: Visit the website to learn more about air.

Multiple Choice Questions

Put a circle around the correct answer.

1. Breathing is important as our body constantly needs

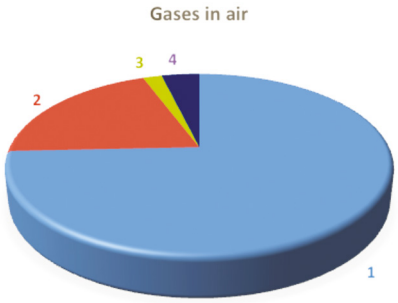
   A carbon dioxide.
   B water vapour.
   C oxygen.
   D nitrogen.

2. When we breathe out air, that air is richer in

   A carbon dioxide.
   B smoke.
   C oxygen.
   D nitrogen.

3. The pie chart shows the proportion of carbon dioxide, nitrogen, oxygen and other gases in the air. Which sector represents oxygen?

   A sector 1
   B sector 2
   C sector 3
   D sector 4



4. Which two conditions are needed in abundance to start a fire?

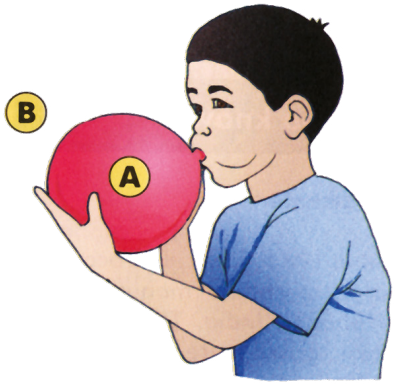
   A oxygen and carbon dioxide
   B fuel and nitrogen
   C oxygen and water
   D fuel and oxygen

5. A suction cup gets stuck to a window pane when pressed because of

   A difference in air pressure.
   B glue.
   C a push.
   D water.

Structured Questions

6. Study the picture carefully.



a. What is the boy doing?

……

b. Is air pressure greater at A (inside the ballon) or at B (outside the ballon)?

……

c. What may happen if the boy continues to blow air into the balloon?

……

7. Draw an inflated balloon. Using arrows, show air pressure in it.

8. Name two common uses of air pressure.

a. ……

b. ……

9. Zara lits a candle and then places a jar over it. After a while, the flame dies. What does this show? Tick the correct answer.

There is insufficient carbon dioxide. ☐

There is insufficient oxygen. ☐

The jar is wet. ☐

Wind blew out the flame. ☐

10. a. Name two causes of air pollution.

i. ……

ii. ……

b. Mention two ways in which air pollution can be controlled.

i. ……

ii. ……

c. Give one reason why we need clean and pure air.

……

11. Figure 13 shows two pupils doing an experiment on the importance of oxygen for living things.

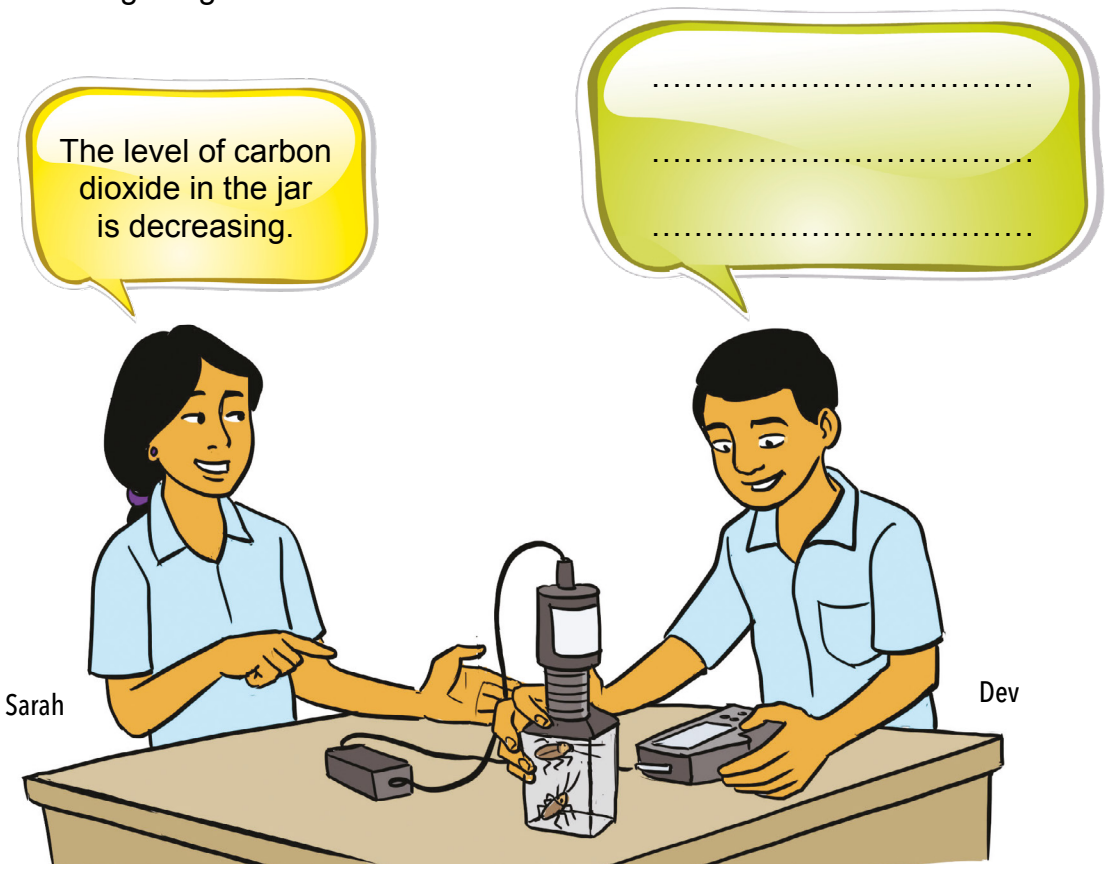


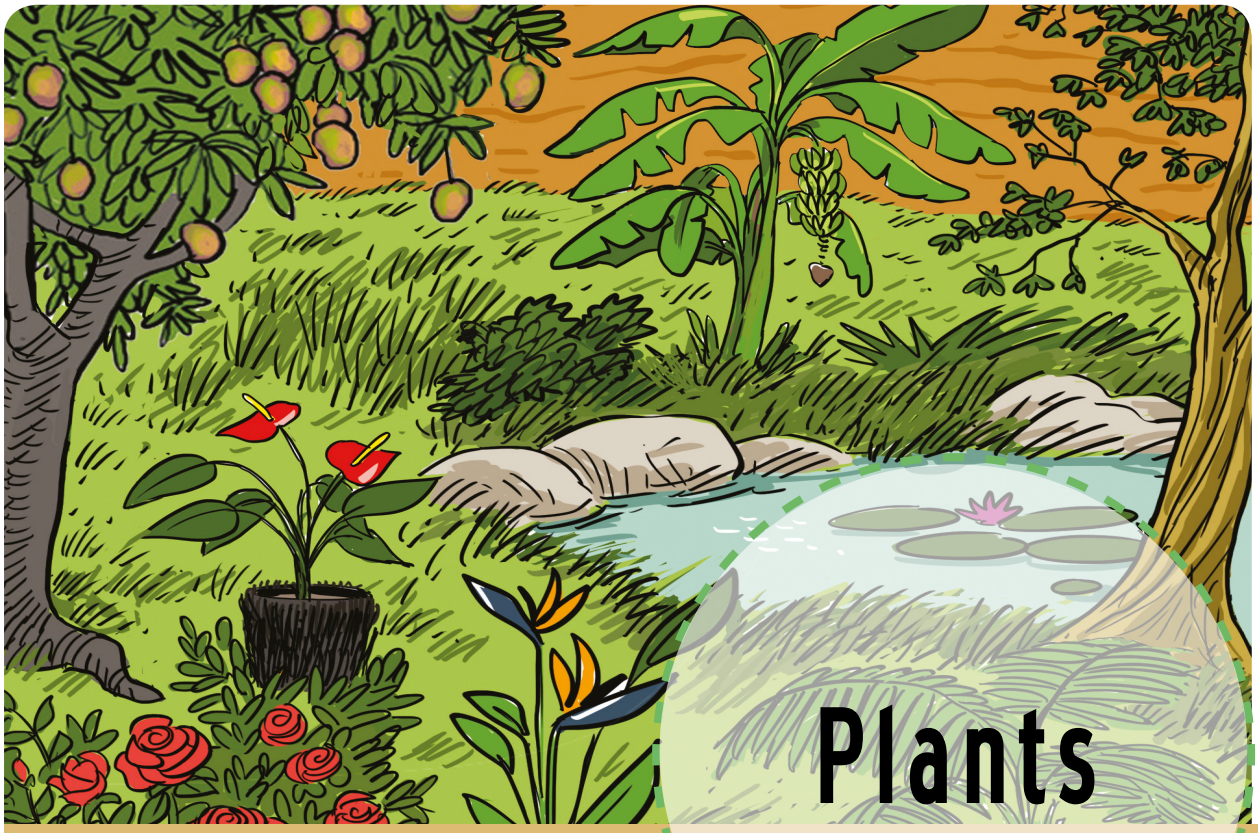
Figure 13: Importance of oxygen

a. Do you agree with what Sarah is saying? Explain why.

……

……

b. Write Dev's conversation in the bubble.



Plants

UNIT 2

In Grades 3, 4 and 5, you have learnt that:

(i) Plants are useful to people and animals.

(ii) Human activities lead to soil erosion.

(iii) There are conditions necessary for plants to germinate and grow well.

At the end of this unit, you should be able to

- List the main functions of the leaf.
- Explain how plants manufacture their food.
- Explain the process of photosynthesis.
- List the conditions necessary for plants to make their food.
- Infer how plants help to maintain the composition of the air constant.
- State the importance of plants in the environment.

Activity 1: Plants

Plants form an important part of our environment.

Let's recall what you have learnt about plants.

Study Figure 1 carefully.

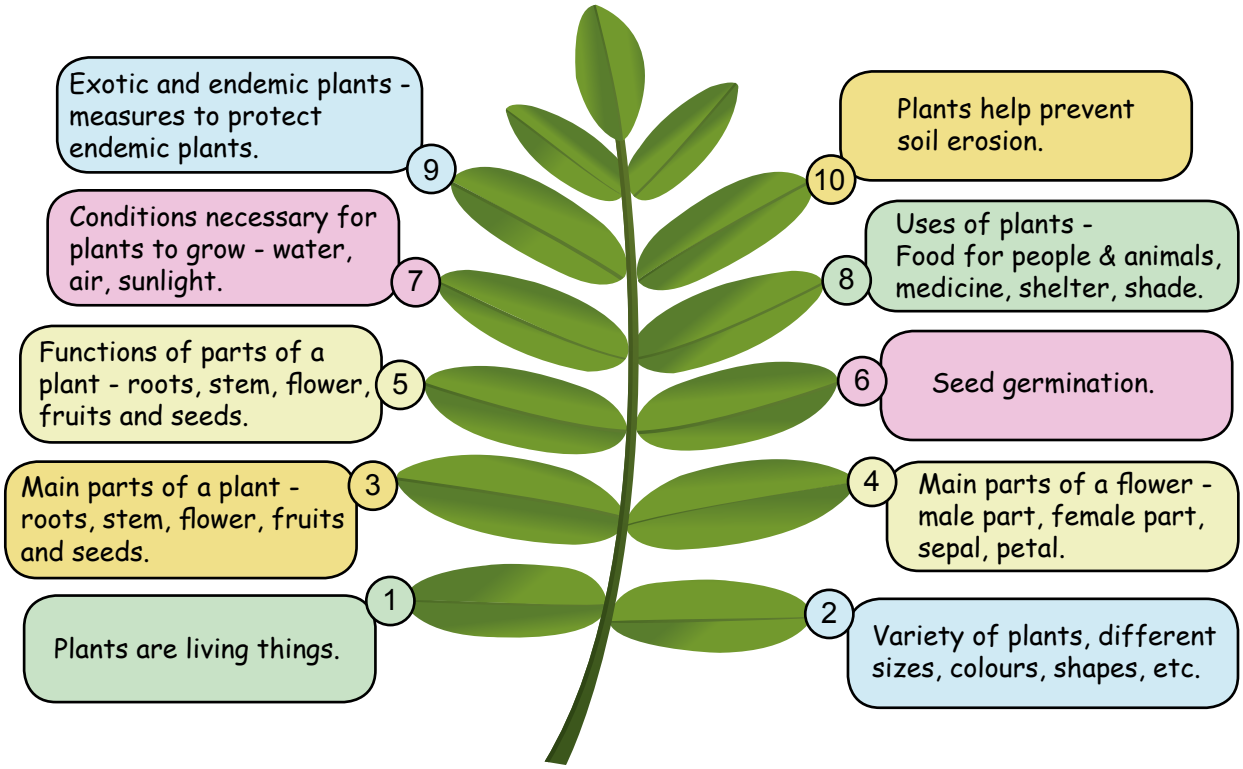


Figure 1: Learning about plants (Grades 3, 4 & 5)

Group Work

With the help of your teacher,

- Organise yourselves in groups.
- Each group discusses one or two ideas listed in Figure 1.
- Note all your ideas on a large sheet of paper/Bristol paper.
- Display your work on the wall and make a presentation.

VALUES EDUCATION

When discussing with your friends, always respect each other's views. If you are not sure about an idea, ask your teacher for advice.

Activity 2: Functions of the leaf

In Grades 4 and 5, you learnt about the functions of the root, stem, flower, fruit and seed.

You will now learn about the functions of the leaf.

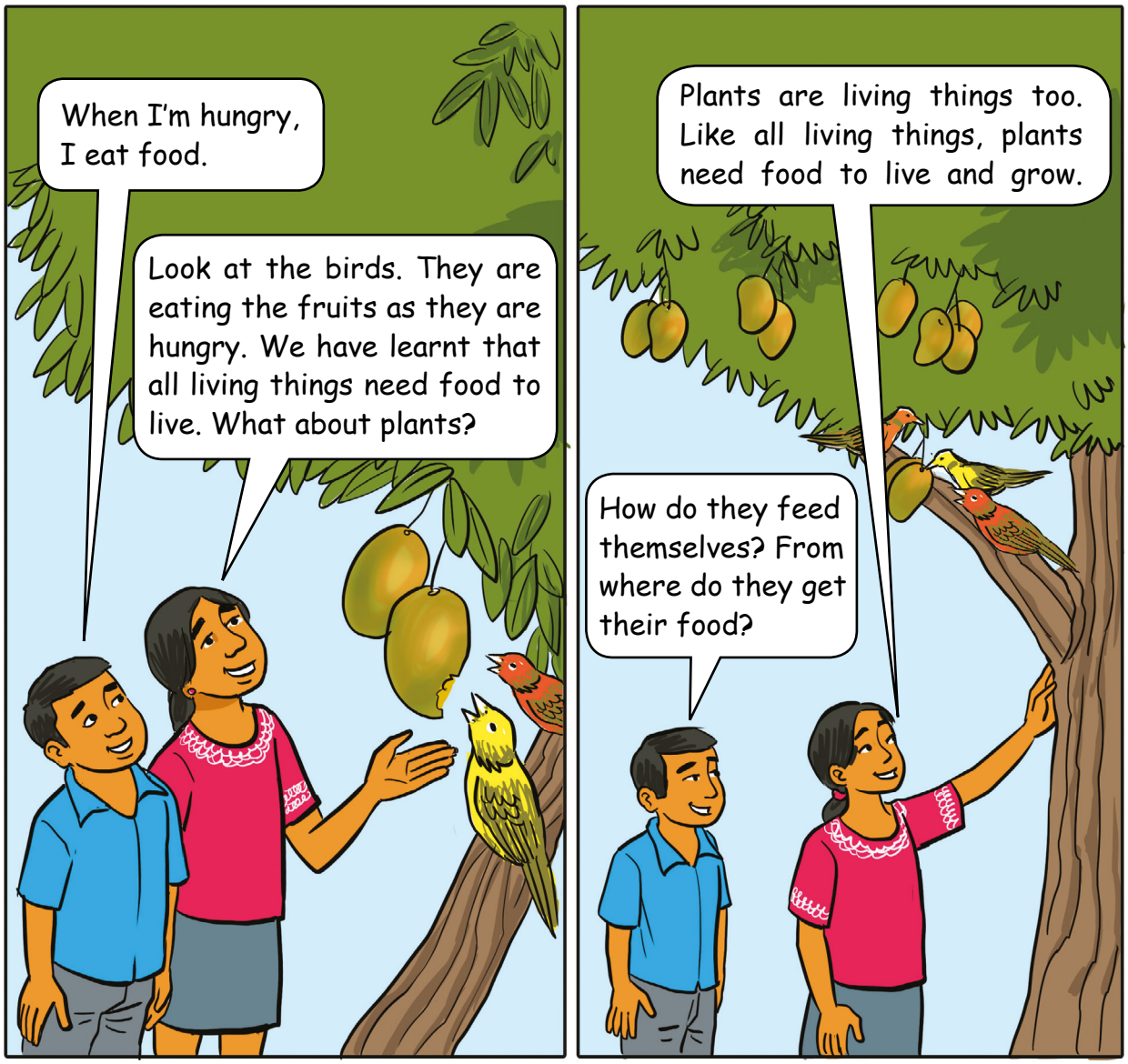


Figure 2: Living things need food

You have learnt that **plants are living things**.
Like all living things, plants need food.
However, **plants make their own food**.

Leaves have different functions.

One of the main functions of leaves is to manufacture food for the plant.

DICTIONARY
Manufacture: to make or to produce

Let us find out how the leaf manufactures food for the plant.

Study Figure 3 carefully.

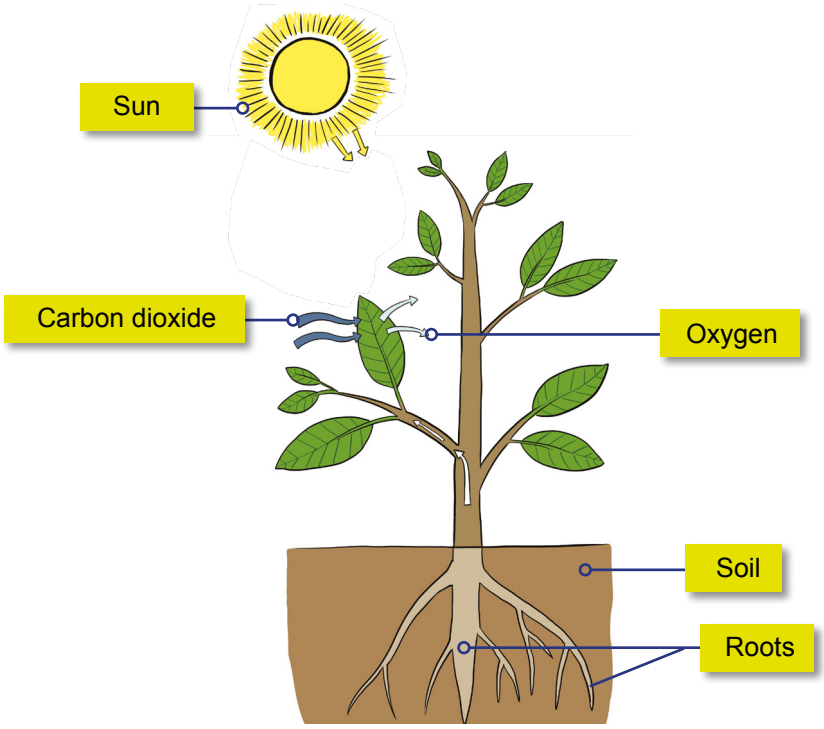


Figure 3: Leaf manufacturing its food

Observe one of the leaves carefully.

(i) What colour is it? .....

(ii) Which gas is the leaf taking in? .....

(iii) Which gas is the leaf releasing? .....

(iv) How does the leaf get water? .....

Leaves contain a green substance called **chlorophyll.**
The chlorophyll in the leaves absorbs sunlight.

DICTIONARY
Chlorophyll: the green coloured substance in plants.

Process: a series of events that produce gradual change.

The green leaf uses **carbon dioxide, water** and **minerals** in the presence of **sunlight** to manufacture food for the plant. This process is called **photosynthesis**.

During photosynthesis, plants release oxygen.

Note: Refer to Unit on Air to recall facts about oxygen gas.

Every single **green leaf** is like a **factory**.

Let us find out why a green leaf is compared to a factory.

What is a factory? What takes place in a factory?

In a factory, raw materials called **inputs** are processed into useful products called **outputs**.

Group discussion

Discuss the following with your friends:

(i) The materials which are brought at the input for the production of sugar.

(ii) The materials which are produced at the output.

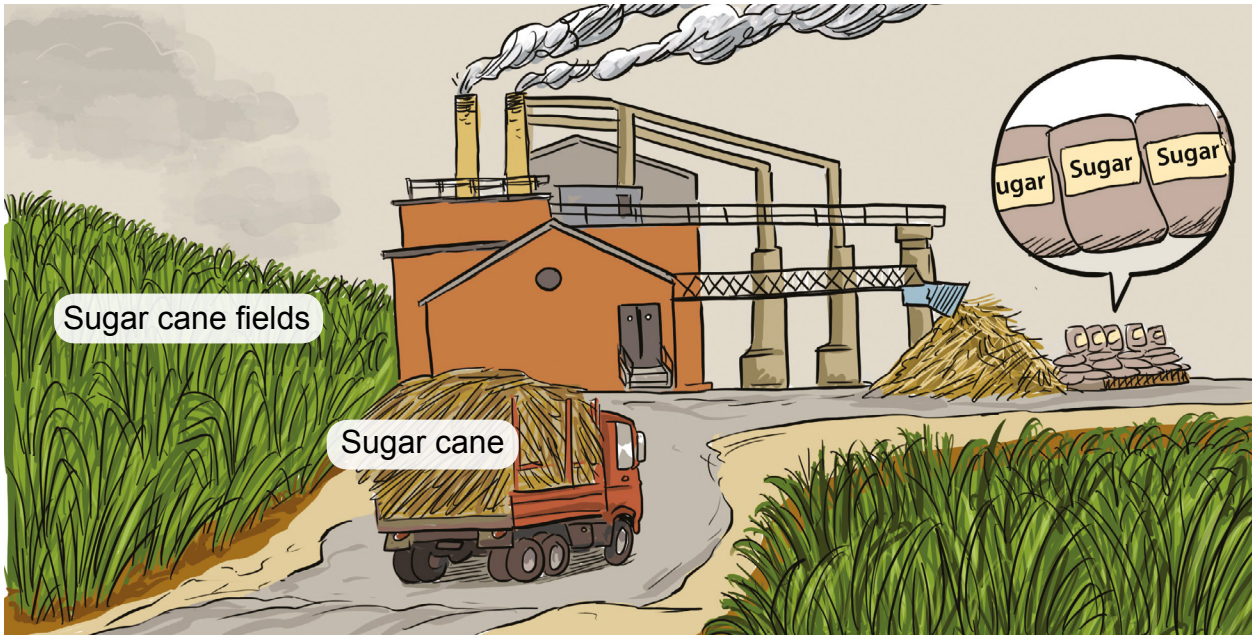


Figure 4: A factory

1. Complete Table 1 and Figure 5.

Table 1

	INPUT	OUTPUT
Production of sugar		

Figure 5: Production of sugar

The green leaf produces food for the plant from **sunlight**, **carbon dioxide**, **minerals** and **water** in the presence of chlorophyll. Oxygen gas is released in the process.

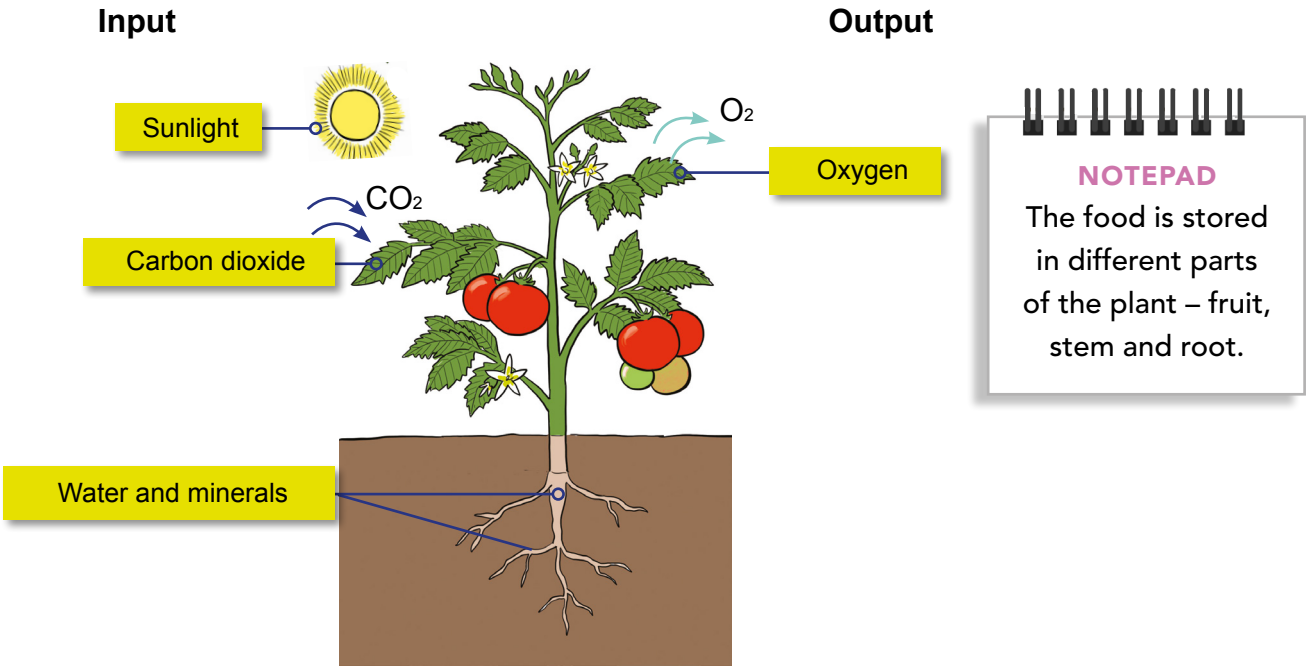


Figure 6: Plant manufacturing its food

2. Complete Table 2 and Figure 7.

Table 2

	INPUT	OUTPUT
Production of plant food		

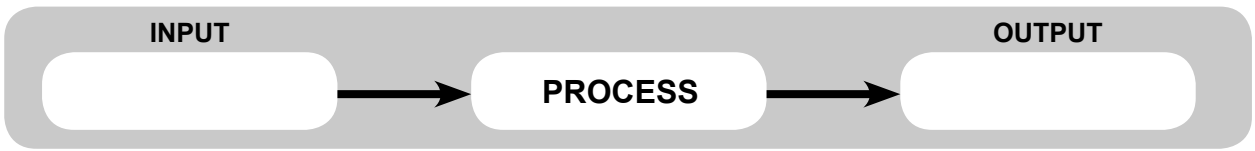


Figure 7: The leaf as a factory

Some green stems also carry out photosynthesis.

Another function of the leaf is that it releases carbon dioxide during respiration. During respiration, the leaf takes in oxygen through pores and releases carbon dioxide day and night, as illustrated in Figure 8.

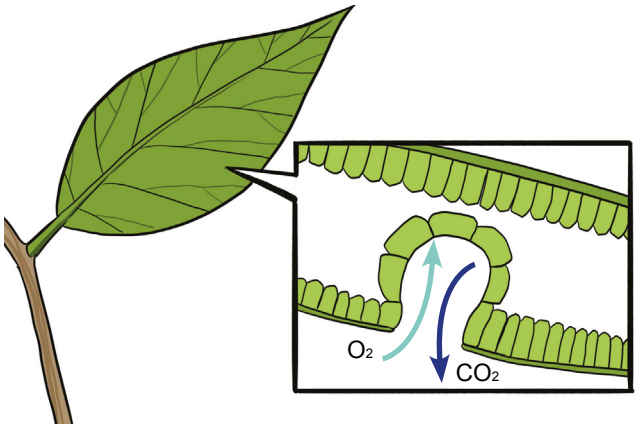


Figure 8: Respiration in plants

NOTEPAD

Do not confuse between respiration and photosynthesis. During photosynthesis, carbon dioxide is used by the plant and oxygen is produced.

http: to learn more on respiration and breathing.

What I have learnt:

The leaf has different functions.

- It carries out the process of photosynthesis, i.e. it manufactures food for the plant all day long in the presence of sunlight. Oxygen is released in the air during the process of photosynthesis.
- For photosynthesis to occur, four conditions are necessary: water, sunlight, carbon dioxide, and chlorophyll (which is found in green leaves) are needed.
- Like all living things, plants respire. During respiration, plants use oxygen and releases carbon dioxide day and night.

Activity 3: Importance of plants in the environment

Plants are very useful to both people and animals.

Study Figure 9 carefully.

Figure 9: Uses of plants

Group Work

With the help of your teacher,

- Organise yourselves in groups.
- Discuss each of the uses of plants.
- Find out other ways in which plants are used in your environment.
- Note your findings on a large sheet of paper.
- Display your work on the wall and make a presentation.

VALUES EDUCATION

Always respect the views of your friends even if you have a different point of view.

Compromise must be actively sought.

Do not be rude to your friends.

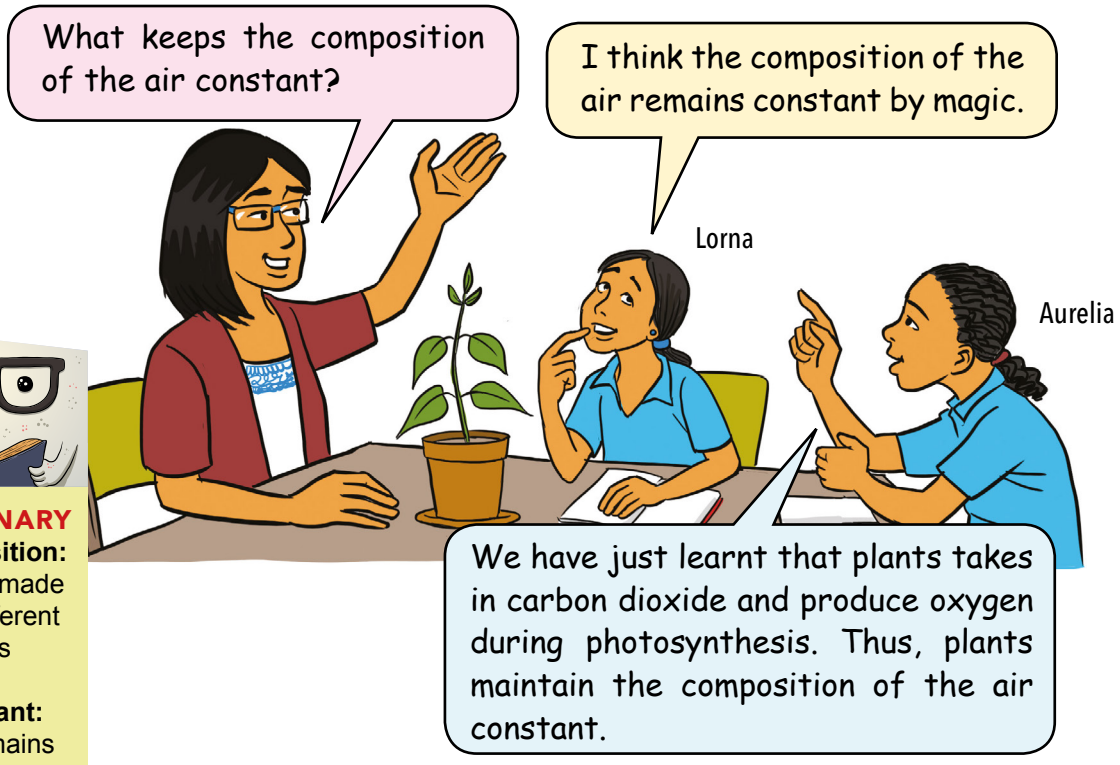
What I have learnt:

Plants are useful to people and animals in different ways.

- Plants provide food and shelter to animals.
- Plants provide food to people.
- Plants are used to make furniture.
- Plants provide fibers which are used to make many things.
- Plants are used as herbs and spices to give flavour, taste and colour to food.
- Plants provide wood pulp which is used to make paper.
- Some plants are used to make medicine.
- Plants provide us with shade and beautify our environment.

Activity 4: Maintaining the composition of the air constant

Living things take in oxygen and release carbon dioxide. However, the composition of the air remains constant.



DICTIONARY

Composition: a whole made from different parts

Constant: that remains unchanged for a period of time.

Figure 10: Carbon dioxide and oxygen in the air

Group discussion

Reflect on the question from the teacher and the conversation between Lorna and Aurelia. After discussion with your friends,

1. Explain who is right between them and say why you think so.

.....

.....

2. Livings things, (human beings, animals and plants) take in oxygen day and night and release carbon dioxide.

   How is this process called? .....

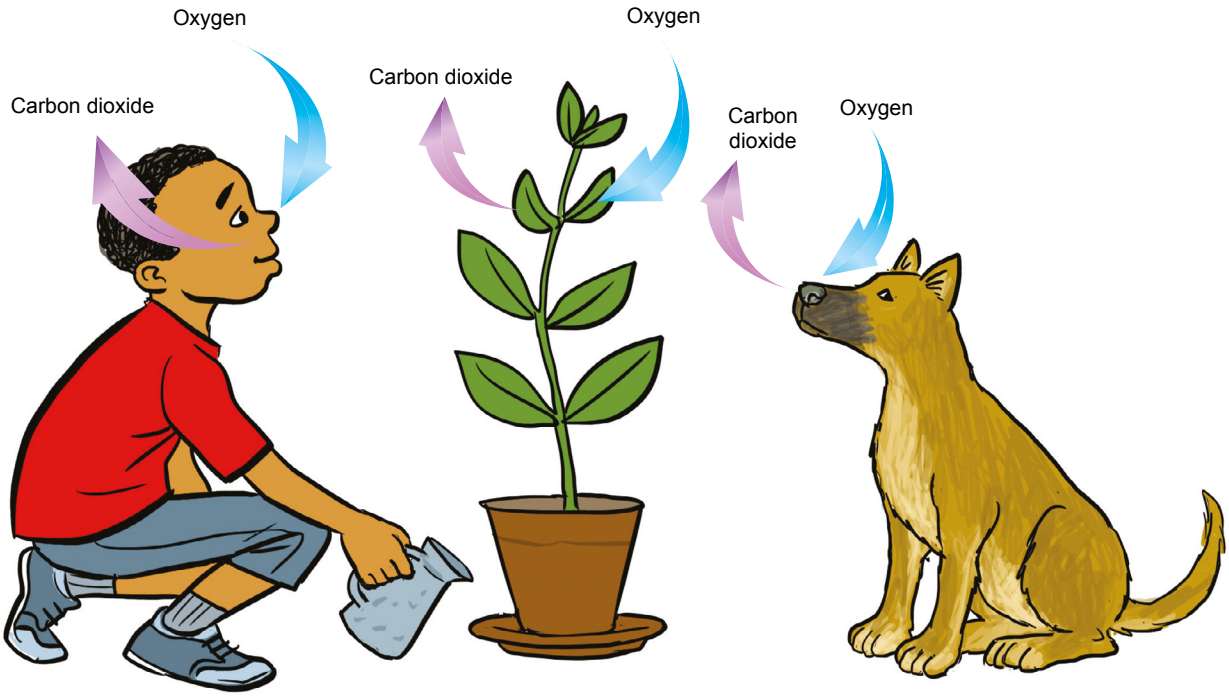


Figure 11: Living things taking in oxygen

3. What would happen to human beings and animals if there were no plants in our environment?

.....

.....

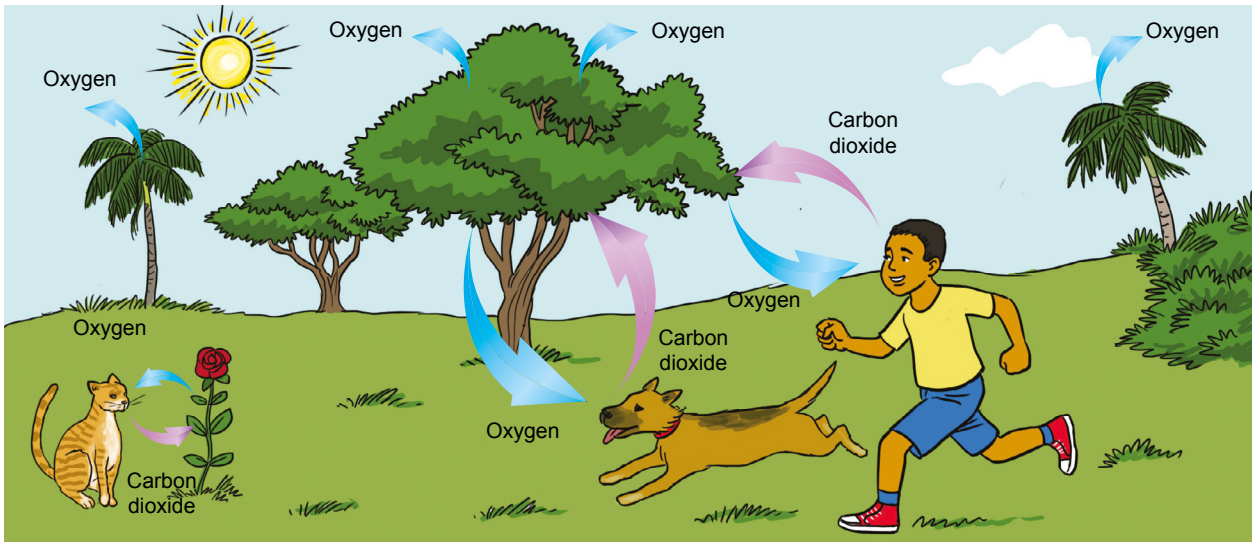


Figure 12: Animals and plants

4. Go back to Figure 10 and cross out the wrong argument.

5. Improve your answer to Question 1.

6. Figure 12 is an example of the **oxygen-carbon dioxide cycle**.

   Refer to Figure 12 and after discussion with your friends, explain what would happen to the oxygen-carbon dioxide cycle if we destroy plants in our environment.

.....

.....

7. List 4 possible things that would happen if plants stop manufacturing their food

(i) .....

(ii) .....

(iii) .....

(iv) .....

What I have learnt:

- During respiration, all living things take in oxygen and release carbon dioxide day and night.
- During the process of photosynthesis, plants take in carbon dioxide and release oxygen in the presence of sunlight. In this way, the composition of the air is maintained.
- All living things directly or indirectly depend on plants to survive.

Multiple Choice Questions

Put a circle around the correct answer.

1. The fruit protects and nourishes the

A seeds. B flowers.

C leaves. D roots.

2. Animals are important for plants because

A animals find shelter on plants. B animals eat plants.

C animals help in pollination. D animals provide oxygen to plants.

3. Chlorophyll is found in the ..... of plants.

A roots B flowers

C leaves D seeds

4. For a leaf to manufacture its food, carbon dioxide, water, chlorophyll and

..... are necessary.

A soil B wind

C heat D sunlight

5. Plants take in carbon dioxide during the process of

A photosynthesis. B germination.

C breathing. D pollination.

Structured Questions

6. In Grade 5, you learnt that plants help prevent soil erosion.

List down 2 causes of soil erosion.

(i) .....

(ii) .....

7. List down 2 effects of soil erosion.

(i) .....

(ii) .....

8. List 2 ways in which plants help prevent soil erosion.

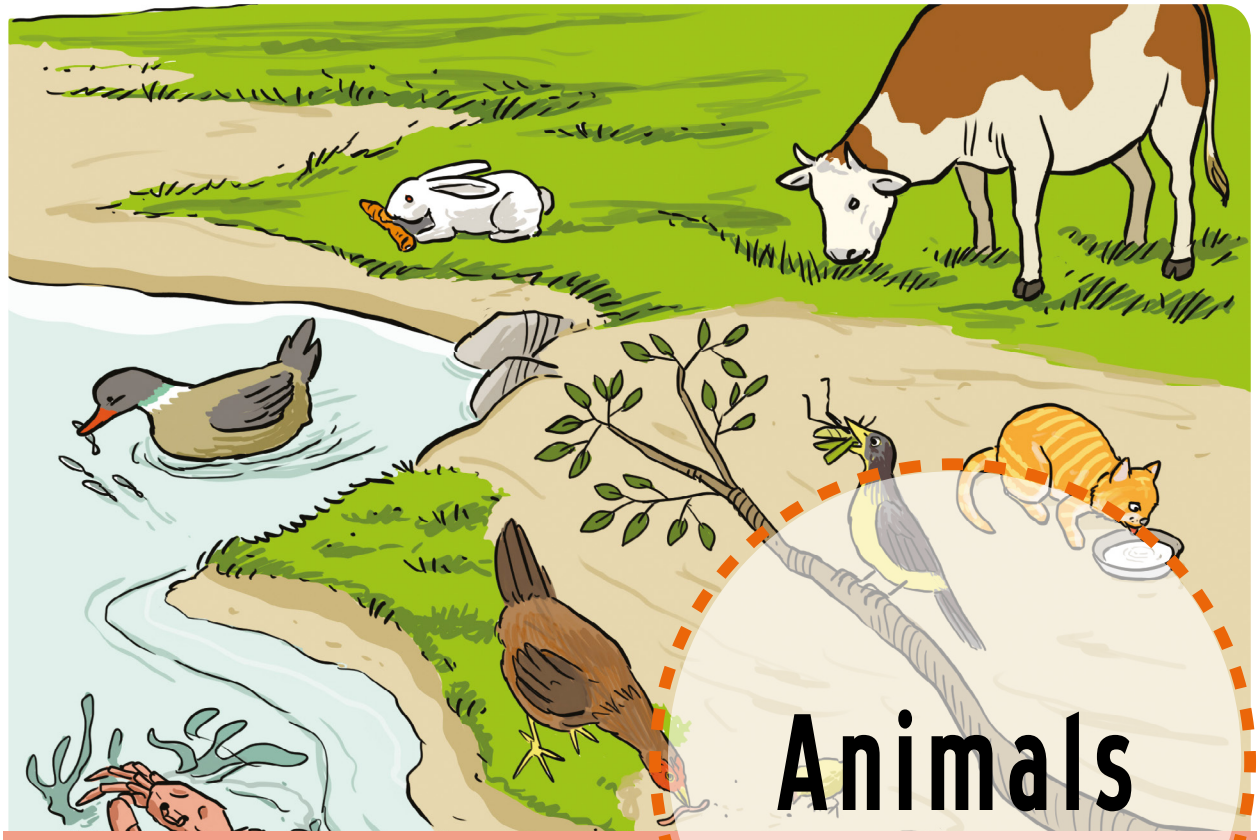
(i) .....

(ii) .....

9. Plants respire night and day. Photosynthesis occurs only during sunlight.
Complete Table 3.

Table 3

Conditions	Photosynthesis (Occur / not occur)	Respiration (Occur / does not occur)	Results
Dark			
Sunlight			



UNIT 3 Animals

In Grades 3, 4 and 5, you have learnt that

(i) Animals are living things.

(ii) Animals breathe air, need food, grow, move and reproduce.

(iii) Some endemic animals are rare and need to be protected.

At the end of this unit, you should be able to

- Identify and classify animals according to their characteristics.
- Identify foods taken by humans.
- Classify human food into food groups.
- State the reasons for eating a balanced diet.
- Name the different types of teeth and their functions.

Activity 1: Animals and their foods

You have learnt that animals must feed themselves to live. But how do animals obtain their food?

Study Figure 1 carefully and after discussion with your friends, complete the **first** and **second columns** of Table 1.

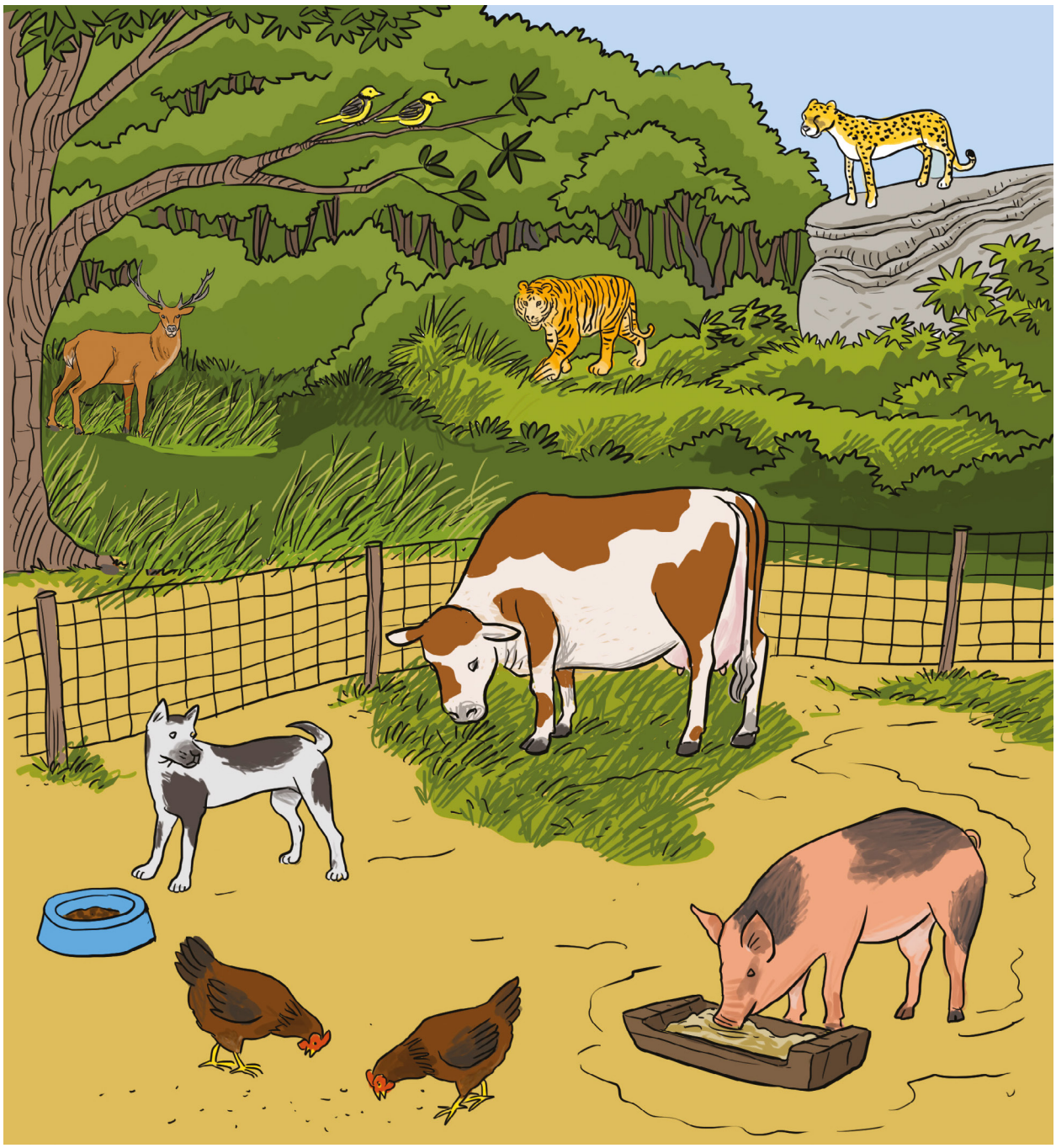


Figure 1: Animals and their foods

Table 1

Animal	Food	Type of Animal

Animals, like the cow, goat and giraffe eat grass or leaves. These animals are called **herbivorous animals**.

Other animals like the tiger, lion and kestrel eat the flesh of other animals. They are called **carnivorous animals**.

Some birds eat only seeds and grains. They are called **granivorous animals**.

Some animals may eat different types of food. They eat food of both plant and animal origins. They are called **omnivorous animals**.

Now complete the **third column** of Table 1 by writting the type of animals - **herbivorous, carnivorous, granivorous** and **omnivorous.**

What I have learnt:

- Different animals eat different types of food.
- These animals are classified as herbivores, carnivores, granivores and omnivores.

Activity 2: Animal covering

The bodies of animals may be covered with hairs, feathers or scales.

Figure 2: Animal covering

Group discussion

Study Figure 2 carefully and after discussion with your friends, state with what each animal body is covered. Then complete Table 2.

Table 2

Body covered with hairs	Body covered with feathers	Body covered with scales
dog	parrot	

What I have learnt:

- Different animals have different body coverings. Body covering is one of the characteristics of animals.

Activity 3: Animals with different characteristics

You have learnt that animals live in different habitats and have characteristics like they **feed themselves, grow, breathe, move** and **reproduce**. Different groups of animals display different characteristics, such as **moving in different ways** and **having different body coverings.**

Figure 3: Animals and their characteristics

Group discussion

Study Figure 3 carefully and discuss with your friends about the characteristics of the animals. Pay attention to:

(i) how they move

(ii) what they eat

(iii) how they reproduce

(iv) their body covering

DICTIONARY
Characteristic: a feature of something that is common and easy to recognize.

Complete Table 3.

Table 3

Animals	Characteristics			
	Movement	Feeding	Reproduction	Body covering
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

Dogs, deers, cows and goats have similar characteristics. They all have 4 legs and their bodies are covered with hair. These animals are classified as **mammals**. Most mammals live on land but some mammals, like the whale and the dolphin, live in the sea.

Characteristics of mammals

- All mammals reproduce by giving birth to their young.
- All mammals feed their young ones with milk.
- Most mammals have hairs on their bodies.

Go to this website to learn more about animals. http://kids.nationalgeographic.com/animals/

1. Name 5 other mammals you know.

.....

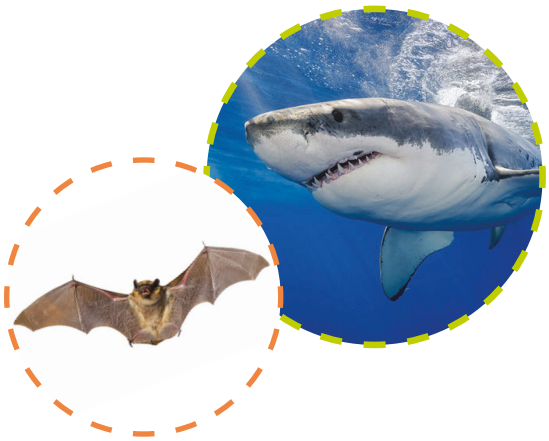
.....

2. Are human beings mammals? Explain.

.....

.....

Did you know?



The bat is a mammal that can fly.

The shark is **not** a mammal.

The duck-billed *platypus* is a semi-aquatic egg-laying mammal which is endemic to eastern Australia.

PLATYPUS

What I have learnt:

- A group of animals is called mammals.
- Mammals give birth to their young (except duck-billed platypus).
- Mammals can live on land and in water.
- Different mammals eat different types of food.

Activity 4: Insects, Birds, Fish and Reptiles

Study Figure 4 carefully. It shows insects, birds, fish and reptiles.

Group discussion

Discuss with your friends about the characteristics of the animals.

Figure 4: Animals – insects, birds, fish and reptiles

1. Write the name of each category of animals in the **first column** of Table 4 (under 'Animal Group').

2. Write the name of three common animals for each category in the **first column** of Table 4 (under 'Names of three animals').

NOTEPAD
Exoskeleton: An animal having a hard outer shell e.g. crab, snail, etc.

Table 4

Animal Groups [Insects, Birds, Fish, Reptiles]	Characteristics
Animal Group: _____ Names of three animals: 1. _____ 2. _____ 3. _____	They live in water. They are aquatic animals. They have fins and tails to help them swim. They take in air which is dissolved in water through their gills. They have scales on their bodies. They reproduce by laying eggs.
Animal Group: _____ Names of three animals: 1. _____ 2. _____ 3. _____	They are small animals. They have six legs and a hard outer shell, known as exoskeleton. *(see notepad)* Most of them have wings and antennae.
Animal Group: _____ Names of three animals: 1. _____ 2. _____ 3. _____	Most of them have scales on their bodies. They reproduce by laying eggs. They move by crawling or creeping.
Animal Group: _____ Names of three animals: 1. _____ 2. _____ 3. _____	They have two legs and two wings. The bodies of most of them are covered with feathers. Most of them can fly and they have two wings. Different types of the animals have different types of beaks.

Activity 5: Food Groups

As all other living things, human beings too need food to live. Human beings eat different types of food; so they are **omnivorous**.

Figure 5: The market

Observe Figure 5 carefully and after discussion with your friends, write the names of the food items you can identify.

Complete Table 5.

Table 5

No.	Food items
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

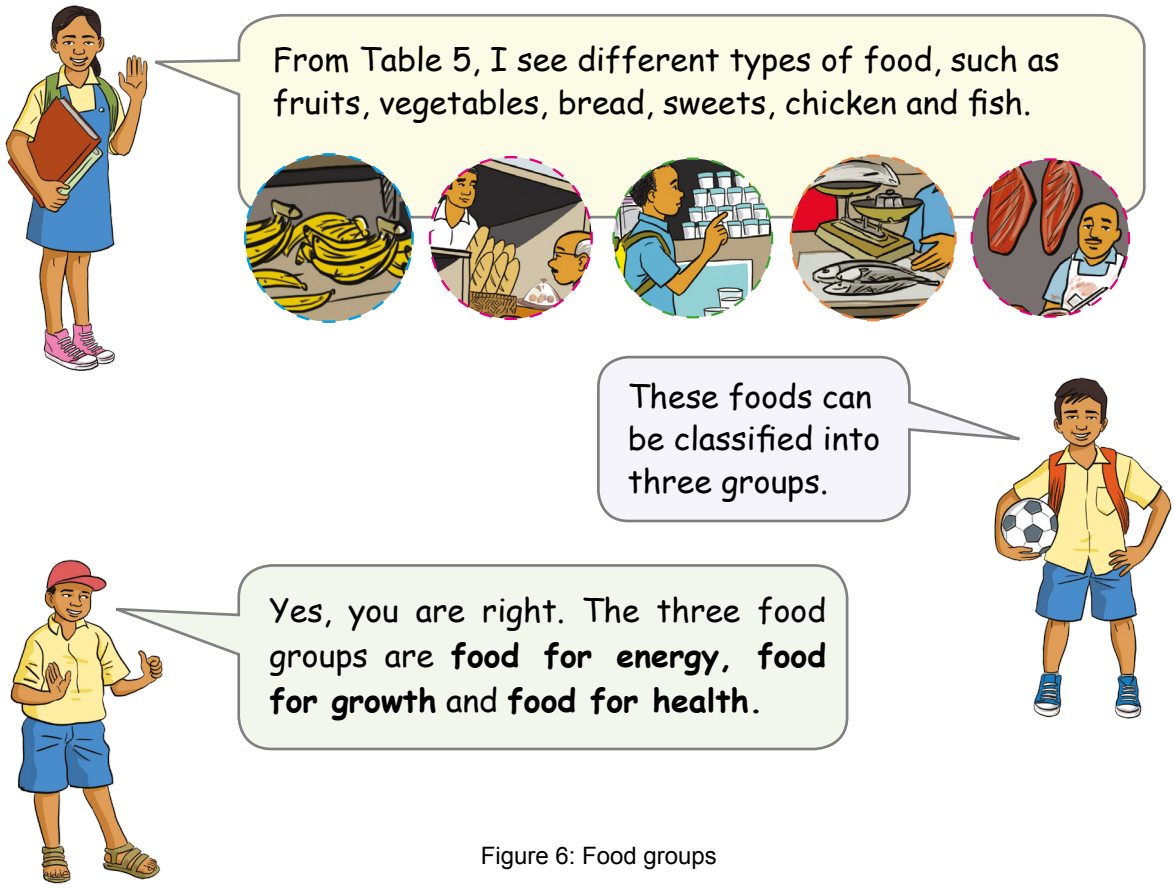


Figure 6: Food groups

Food can be classified into 3 groups - **food for energy, food for growth** and **food for health.**

Observe Figure 7 carefully and identify the food groups. Then fill in the blanks in Figure 7.

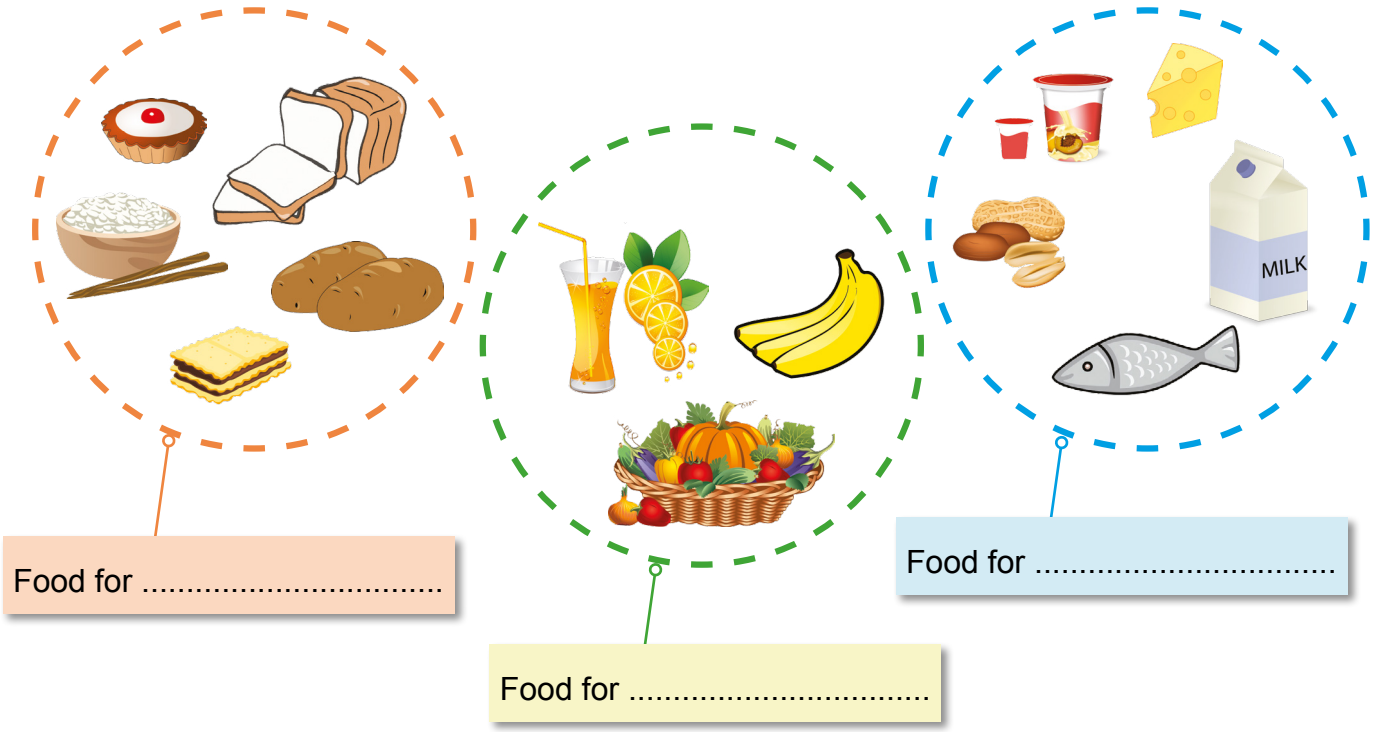


Figure 7: Food – energy, growth & health

1. Complete Table 6.

Table 6

Food for Energy	Food for Growth	Food for Health
Bread	Milk	Banana

2. Add the names of two more food items in each column, and draw the food alongside the food item.

3. At home, in the evening, identify the food items that you eat and write them in the respective food groups in Table 7.

Table 7

Food for Energy	Food for Growth	Food for Health

Activity 6: Balanced meals

To be in good health, we need to eat food from the three different food groups. We, therefore, need to eat a **balanced** or **complete meal**.

A balanced meal contains at least one food item from each food group.

Group discussion

Refer to Table 8 and after discussion with your friends, list the food items that are needed to make a balanced meal.

Complete **Table 8** by adding the missing food group.

NOTEPAD

1. We need to drink a lot of water.
2. We need to do regular physical exercises.
3. We should avoid oily food.

Table 8

	Food for Energy	Food for Growth	Food for Health
Balanced meal A	rice		
Balanced meal B		fish	
Balanced meal C (for non-vegetarians)			banana
Balanced meal D (for vegetarians)			

Even if you are vegeterians or non-vegeterians, if you do not eat food from each of a particular food group, you can become ill after some time.

You must eat food from the three food groups regularly or else you might get health problems and you will not grow up well.

What I have learnt:

- I need to eat food everyday.
- Food can be classified into three groups.
- There is food for health, food for energy, and food for growth.
- I need to eat balanced meals to grow up healthily.

NOTEPAD

A **vegetarian meal** does not include animal products or by-products.

Activity 7: Our teeth

Which part of our body do we use to tear and crush our food?

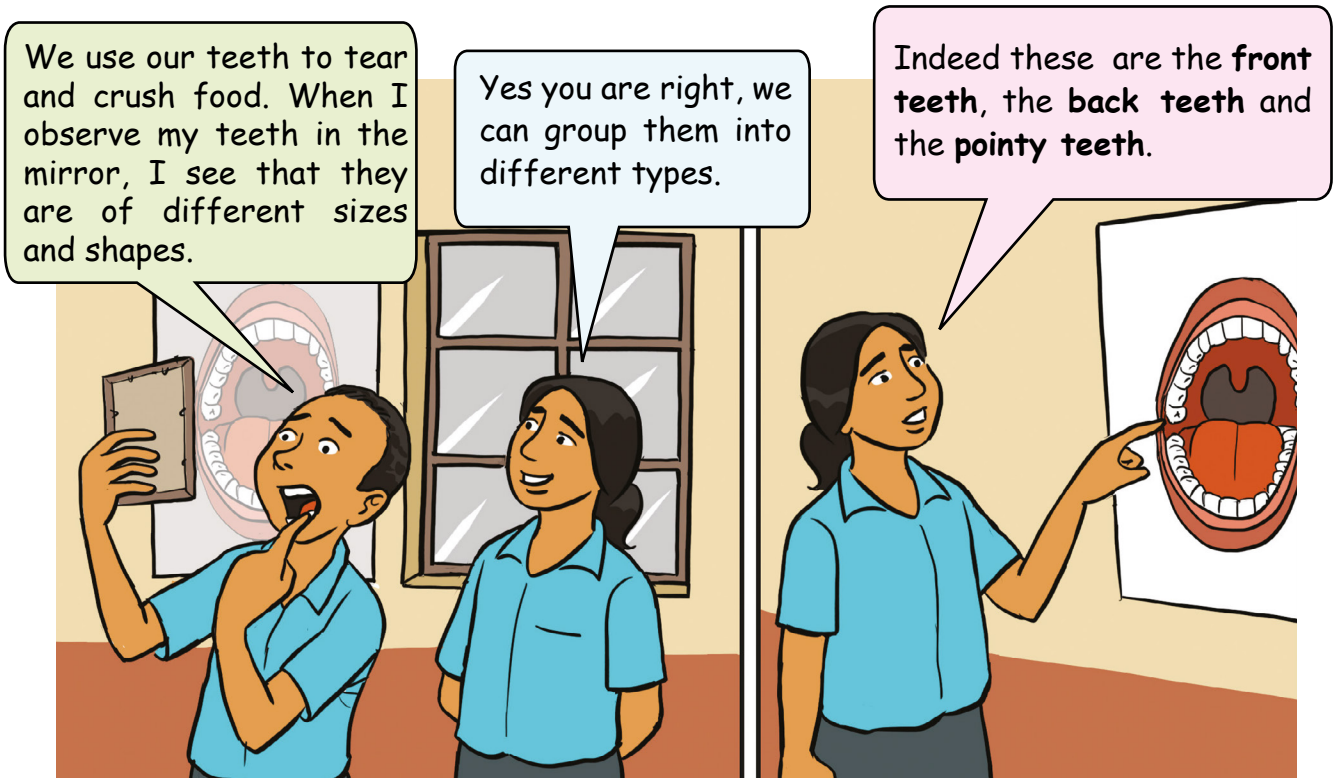


Figure 8: Our teeth

To be able to eat properly, we must have healthy teeth. We must therefore take care of our teeth.

Our teeth help us to **cut**, **tear** and **crush** our food well before we can swallow it.

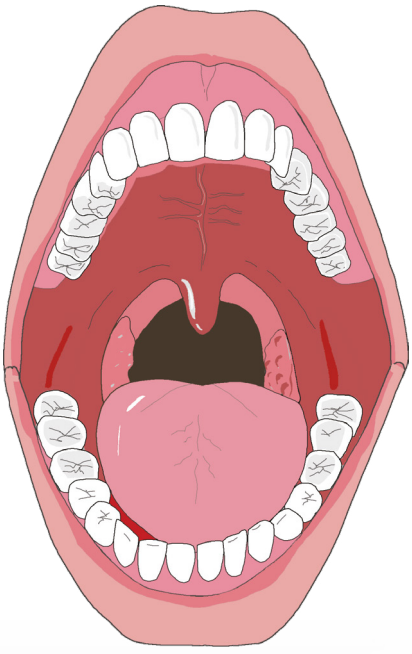


Figure 9: The teeth

The front teeth are called **incisors**.

There are two types of back teeth. They are **premolars** and **molars**.

The pointy teeth are called **canines**.

Front teeth **Back teeth** **Pointy teeth**

Figure 10: The four types of teeth

Table 9

Type of teeth	Name of teeth
Front teeth	Incisors
Back teeth	Premolars, Molars
Pointy teeth	Canines

The **front teeth (incisors)**, which are found at the front of the mouth, are sharp. They are used to bite, cut and tear food.

The **pointy teeth (canines)** are found next to the front teeth. They are sharp and pointed. They are used to tear food.

The **back teeth** (**premolars** and **molars**), which are found at the back of the mouth, are large and flat. They are used to crush food.

Observe Figure 11 carefully. Write the names of the teeth in the spaces next to each diagram.

Choose from the following list: **premolars** & **molars, incisors**, **canines**

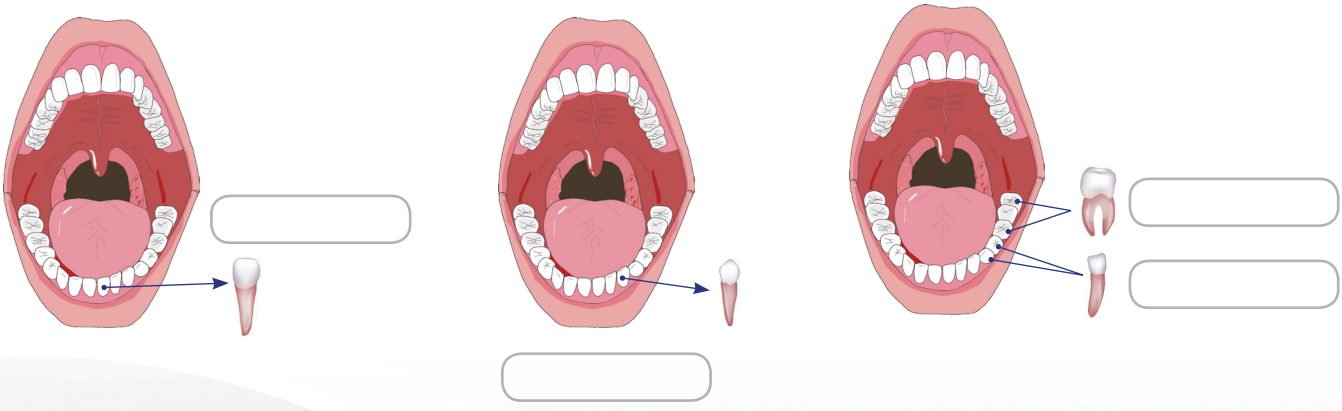


Figure 11: Incisors, canines, premolars & molars

Milk teeth

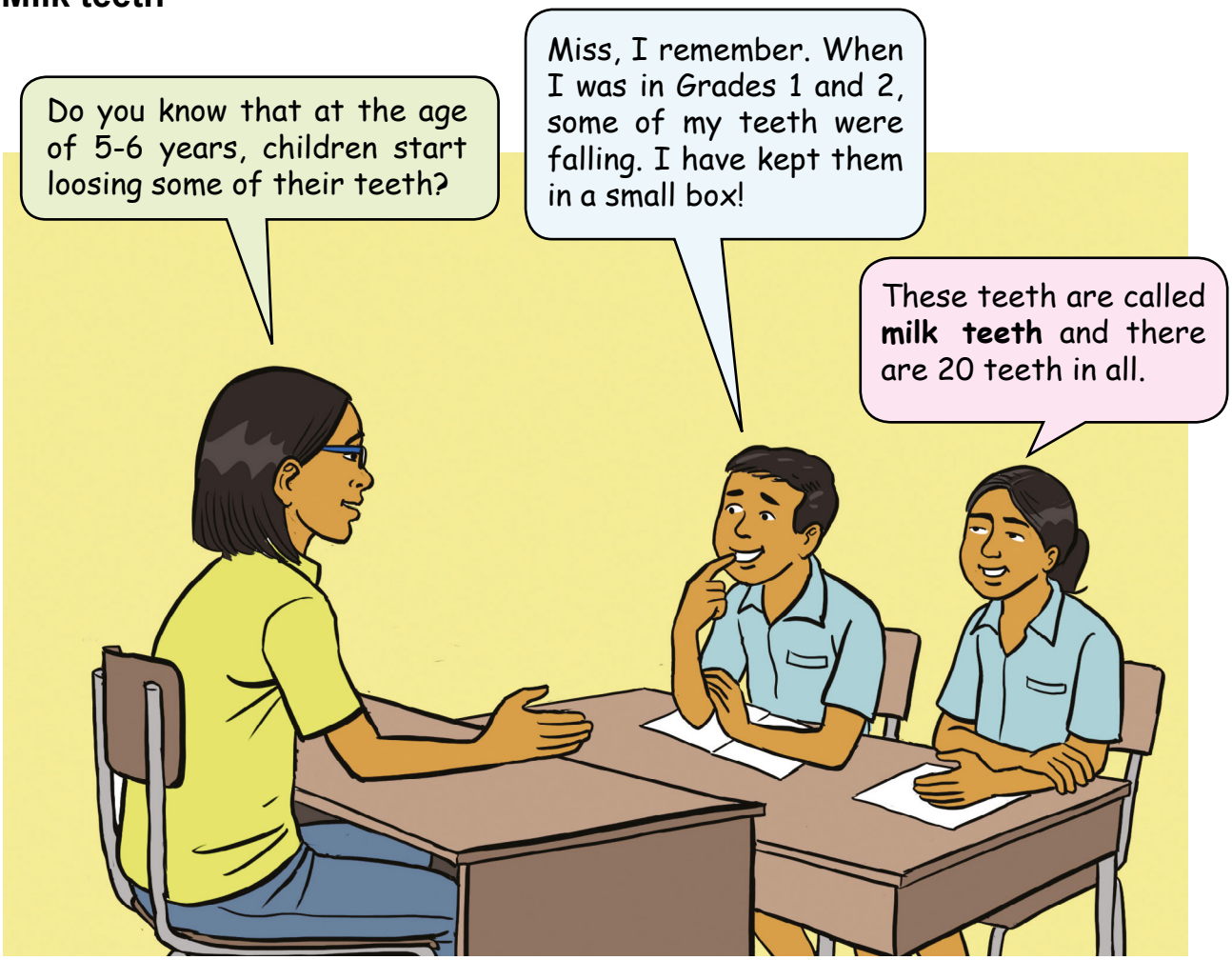


Figure 12: Milk teeth

Small children get their first milk teeth when they are around seven months old. A three-year old child has a complete set of milk teeth. The teeth start falling out when the child is around five years old.

Figure 13: My milk teeth

Permanent teeth

As the child grows older, all the milk teeth fall out. They are replaced by new teeth. These new teeth are called permanent teeth. If you lose the permanent teeth, new ones will not grow again.

Group discussion

Discuss with your friends what you should do to keep your permanent teeth healthy.

Complete Table 10.

Figure 14: Regular brushing of teeth

Table 10

No.	What should I do to keep my permanent teeth healthy?
1.	I need to brush my teeth regularly.
2.	
3.	
4.	
5.	

Did you know?

The hardest part of our body is our teeth.
An adult has 32 permanent teeth.

VALUES EDUCATION
To avoid bad breath, keep a good oral hygiene.

Group discussion

Study Figure 15 carefully.

Discuss with your friends about some differences between the **milk** and **permanent teeth** and complete Table 11.

Figure 15: Differences between milk and permanent teeth

Table 11

Milk teeth	Permanent teeth
There are 20 teeth	There are 32 teeth

What I have learnt:

- We have three types of teeth: **front, pointy** and **back teeth**. They are named **incisors, canines, premolars** and **molars**.
- Milk teeth fall and are replaced by permanent teeth.
- We must take care of our teeth and we must brush them regularly in the morning and evening or after each meal.

Multiple Choice Questions

Put a circle around the correct answer.

1. Different animals eat

A the same type of food.
B only one type of food.
C only vegetables.
D different types of food.

2. The following animals have similar characteristics.

A dolphin, bird, whale, dog
B dolphin, whale, dog, cow
C dog, cow, bat, sparrow
D dog, bat, whale, sparrow

3. Food can be classified into three groups. They are

A food for sport, food for energy, food for growth.
B food for energy, food for growth, food for play.
C food for growth, food for energy, food for health
D food for health, food for study, food for energy.

4. A balanced meal consists of

A at least on food item from each food group.
B two food groups only.
C one food group only.
D only food for energy.

5. The three types of teeth are

A incisors, front teeth and canines.
B incisors, canines and pointy teeth.
C incisors, premolars and pointy teeth.
D incisors, canines, premolars and molars.

Structured Questions

6. Refer to Figure 1 on page 38.

a. Identify the animals, their coverings and their types. Complete Table 12.

Table 12

Animals	Animal covering	Type of Animal

b. Add one animal of different type, not present in the picture, with different body covering in Table 12.

7. Animals have the following characteristics: movement, feeding, reproduction and body covering.

a. With reference to the animals you have identified in Table 12, complete Table 13.

Table 13

Animals	Movement	Feeding	Reproduction	Body covering

b. Put a tick (√) near the name of the animal which is a mammal.

8. a. Name the three food groups.

.....

b. Write the items for a balanced meal for a non-vegetarian.

.....

c. Write the items for a balanced meal for a vegetarian.

.....

9. a. Name the four types of teeth.

.....

b. Refer to the concept cartoon (Figure 16).

Complete the bubbles for Bob and Zaheen.

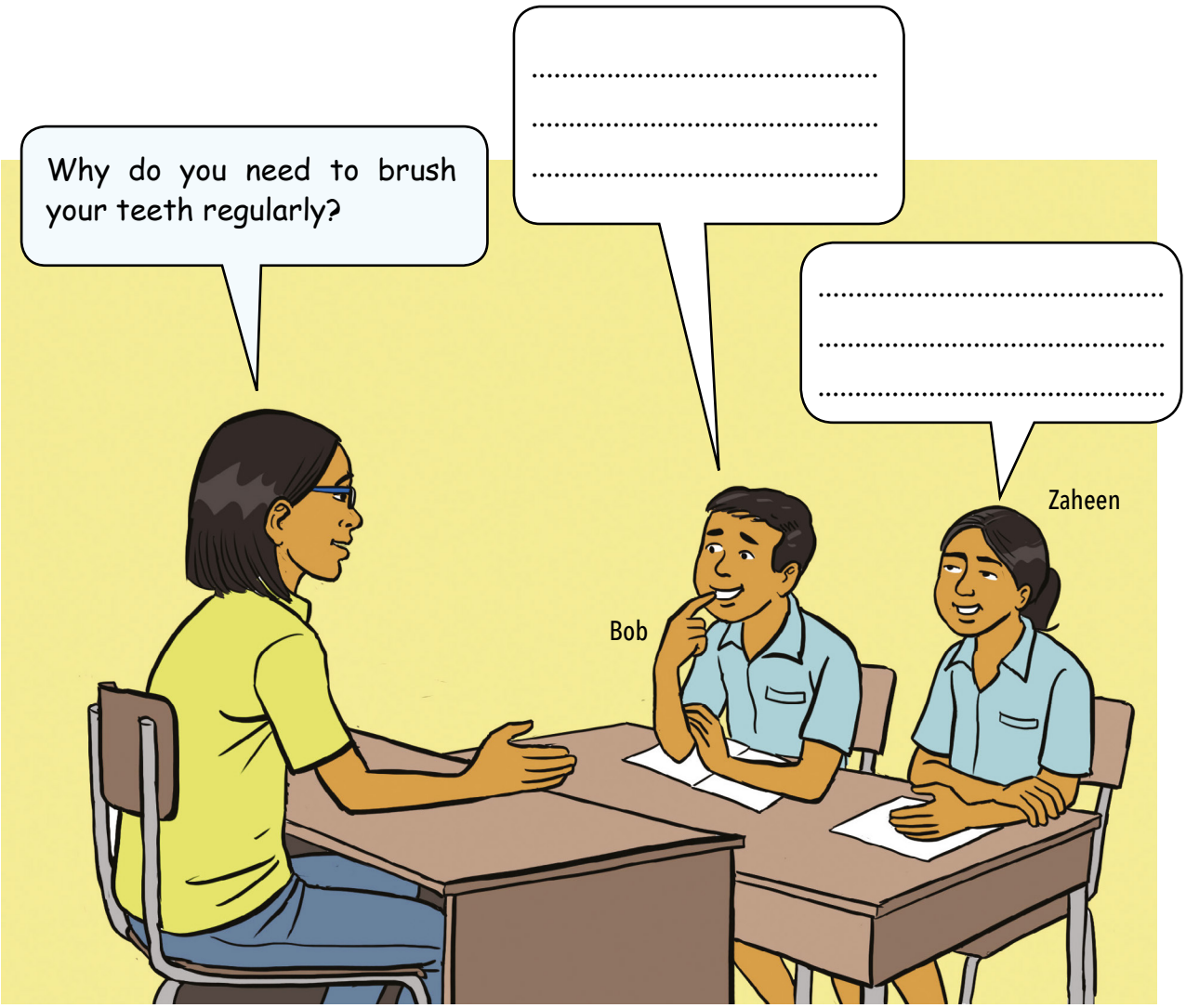


Figure 16: Oral hygiene

UNIT 4 Materials in our Environment

In Grades 3 and 4, you have learnt that:

(i) Objects are made of wood, plastic, paper and glass.

(ii) Different materials have different properties.

At the end of this unit, you should be able to

- Identify and name some common materials.
- Classify materials into natural and man-made materials.
- State the sources of natural materials.
- Explain what is rust and how it can be prevented.

Activity 1: Identifying some common materials

Identify as many objects as possible found in your classroom and fill in Table 1.

Table 1

Objects found in my classroom			
1		6	
2		7	
3		8	
4		9	
5		10	

Group discussion

Discuss with your friends with what each object is made up of, and fill in Table 2.

Table 2

Objects found in my classroom		Objects made of
1	Table	Wood
2		
3		
4		
5		
6		
7		
8		
9		
10		

The table is made up of wood. Thus, wood is the **material** with which the table is made.

Examples of some other materials are glass, metal, paper, cotton, plastic, rubber and silk.

Observe the objects in Figure 1.

Figure 1: Materials

Discuss what material each object is made up of and fill in Table 3.

Table 3

Object	Material/s
chair	
car wheel	
dress	
raincoat	
scarf	
pullover	
bag	
vase	

1. Are the objects made of one material only?

.....

2. What can you conclude?

.....

3. Now look into your school bag and identify the materials each object is made of.

4. Identify one object made of one material only. Name the material.

……

5. Identify one object made of more than one material. Name the materials.

……

Materials can be classified into **natural materials** and **man-made materials**.

Natural materials are those materials that we obtain from plants, animals, earth and sea.

Man-made materials are materials that are manufactured in factories. They are plastic, cement, steel, nylon and glass.

What I have learnt:

- ◯ Objects are made of materials.
- ◯ An object can be made of one or more materials.
- ◯ All objects around me are either made from natural materials or man-made materials.

Activity 2: Natural Materials - materials obtained from plants

Wood, **cotton** and **rubber** are natural materials which are obtained from plants.

Wood is obtained from the trunks of big trees such as **pine**, **eucalyptus** and **tecoma**.

The trunks are felled and cut into planks at the sawmill.

Figure 2: A sawmill

Wood is a material which is hard and strong. However, it can easily be shaped.

Some types of wood have a very good finish.

Look around you (in your environment) and identify objects made completely or partly of wood.

Now observe Figure 3 carefully.

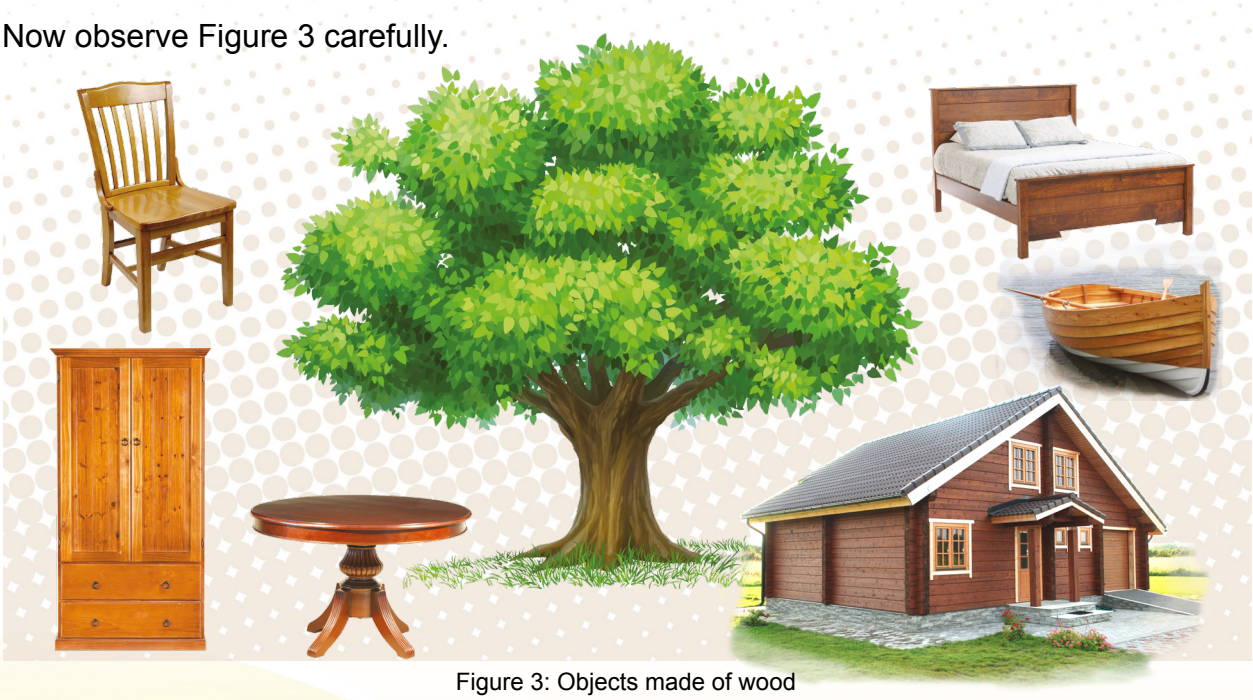


Figure 3: Objects made of wood

1. Write the objects made of wood.

……

2. State two properties of wood which make it a suitable material for manufacturing the different objects (Figure 3).

……

……

3. Paper is a material which is obtained from wood.

   Name two objects which are made of paper.

……

Cotton is collected from the pod of the cotton plant (Figure 4).

Figure 4: A cotton field

The cotton is used to make thread. Thread is then woven into cloth (Figure 5).

Figure 5: Making cotton thread

Cotton cloth absorbs sweat and water well.

Garments made of cotton cloth are light and comfortable to wear. They keep us cool in summer and warm in winter.

Look around you (in your environment) and identify objects made completely or partly of cotton.

Now observe Figure 6.

Figure 6: Objects made of cotton

1. Name the objects made of cotton.

……

……

2. State one property of cotton which makes it a suitable material for making the objects shown in Figure 6.

……

Rubber is obtained from the rubber tree.

A milky liquid, known as latex, is collected from the rubber tree.

The latex is processed into rubber in factories. Rubber is an elastic and tough material. It is also an insulator.

Figure 7: Collection of latex from a rubber tree

DICTIONARY

Processed into: submitted to a series of actions in order to achieve a particular result.

Insulator: material that does not allow electricity to pass through it.

Look around you (in your environment) and identify objects made completely or partly of rubber.

Now observe Figure 8 carefully.

Figure 8: Objects made of rubber

1. Name the objects made of rubber.

.....

2. State one property of rubber which makes it suitable to manufacture the pair of boots shown in Figure 8.

.....

What I have learnt:

- Wood, cotton and latex are natural materials obtained from plants.
- One property of wood is hardness. However, it can be easily shaped and it has a good finish.
- Wood is used to make furniture and houses.
- Some properties of cotton are that it is light. It absorbs sweat and it keeps us warm in winter and cool in summer.
- Cotton is used to make shirts and dresses.
- Some properties of rubber are that it is elastic, tough and it is an insulator.
- Rubber is used to make tyres, gloves, elastic bands, erasers and boots.

Activity 3: Materials obtained from animals

Silk, **wool** and **leather** are obtained from animals.

Silk is a thin thread extracted from the cocoon of the silkworm or larva of the silk moth.

Figure 9: Silkworms producing silk

DICTIONARY

Cocoon: a silk cover that young moths make to protect themselves while they are growing.

Silk is a strong and soft material. It can be stretched and it absorbs sweat better than cotton. The silk thread, just as cotton, is woven into cloth. Silk cloth is more durable than cotton cloth. Clothes made of pure silk are very expensive.

Did you Know?

- The larva of the silk moth is called Bombyx.

Figure 10 shows some objects made of silk.

Figure 10: Objects made of silk

Group discussion

Identify the objects and after discussion with your friends, answer the questions.

1. Name the objects made of silk.

.....

2. State one property of silk which makes it suitable to produce the objects shown in Figure 10.

.....

3. Why do you think people usually wear cotton clothes instead of clothes made of silk?

.....

Wool is obtained from animals such as the sheep, woolly goat and angora rabbit. The material is removed from the skin of the animal by shearing.

Figure 11: Wool from animals

The material is then turned into yarn in factories.The yarn is used to make many objects, such as shirts, blankets and mats.

Wool is a soft, flexible, and durable material. It keeps the body warm.

Look around you (in your environment) and identify clothes made completely or partly of wool.

VALUES EDUCATION

During group discussion, always be nice to your friends. Thank your friends for their views.

DICTIONARY

Shearing: cutting the wool off a sheep.

DICTIONARY

Yarn: long thick thread made of wool or cotton.

Flexible: that can be bent easily.

Now observe Figure 12.

Figure 12: Objects made of wool

1. Name the objects made of wool.

.....

2. State one property of wool which makes it suitable for use as a blanket.

.....

3. When do we usually wear woollen clothes? Why?

.....

.....

Leather is made from the skin of cattle, snakes, camels and crocodiles. Leather is a strong, durable and flexible material. It does not tear easily.

DICTIONARY

Durable: that stays in good condition for a long time even if used a lot.

Figure 13: Leather from animals

Observe carefully the animals and objects shown in Figure 13 and after discussion with your friends, complete Table 4.

Table 4

Animals	Objects

1. Look around you (in your environment) and identify two objects made completely or partly of leather and fill in Table 4.

2. State two properties of leather which make it suitable to manufacture a pair of shoes.

.....

Group discussion

Discuss why a belt is usually made of leather and not of cotton.

What I have learnt:

- Silk, wool, and leather are natural materials obtained from animals.
- Silk has the following properties: it is strong, light, absorbs sweat well and can be stretched.
- Wool has the following properties: softness and flexibility.
- Leather has the following properties: strength, durability and flexibility.

Activity 4: Materials obtained from the earth

Metals are materials that are obtained from the earth. Some common metals are **iron**, **aluminium** and **gold**.

Figure 14 shows some objects made of metal.

Figure 14: Objects made of metal

1. Name each object you see in Figure 14.

……

……

2. Name the metal used to make each object.

……

3. Now complete Table 5.

Table 5

Objects made of iron	Objects made of aluminium	Objects made of gold

Most metals are hard and are good conductors of heat and electricity.

Metals are impermeable materials.

DICTIONARY

Impermeable: that does not allow liquid to pass through it.

Permeable: that allows liquid to pass through it.

Group discussion

Discuss with your friends about the uses and properties of aluminium, gold and iron and complete Table 6.

Table 6

Aluminum / Gold / Iron	Uses and properties
.....	This metal is used to make pieces of jewellery. It is a very soft and rare metal. It is very expensive. When other metals are melted with it, it becomes hard. It does not rust.
.....	This metal is widely used in the building industry. It is very common and cheaper than the other metals.
.....	It is used to make airplanes and utensils. This metal is hard and light. It does not rust.

1. Collect pictures of objects made from the three metals and produce a poster to be displayed in your classroom.
2. Look around you (in your environment) and identify objects made of metal. With the help of your teacher, identify each metal.
   Discuss with your friends why each object is made of that particular metal.
3. Complete Table 7.

Table 7

Objects	Objects made up of which metal/s?

Find Out

- Why is it not advisable to wear valuable jewellery when going to school?

1. Why is aluminum used instead of iron to manufacture airplanes?

.....

2. Why is gold used to manufacture necklaces and rings?

.....

3. State two properties of iron which make it suitable to manufacture a gate.

.....

Did you know?

- One gram of gold can be beaten into a sheet of one square metre.
- Very thin sheets of gold are known as gold leaves.
- Gold leaves are used for decorative purposes on wood, glass and ceramics

Mathematics

Refer to the website to understand about **flat** surfaces.

Activity 5: The rusting of iron

You should have noticed the red-orange-brown colour of a piece of iron when it is left outside for some time.

Figure 15: Iron

Let us find out what happens when iron is in contact with oxygen and water.

You will need:

- Three new shiny iron nails
- Three glass containers (or test tubes)
- Some oil

Your teacher will set up the apparatus.

1. Note the colour of the nails and record it in the **first column** in Table 8.

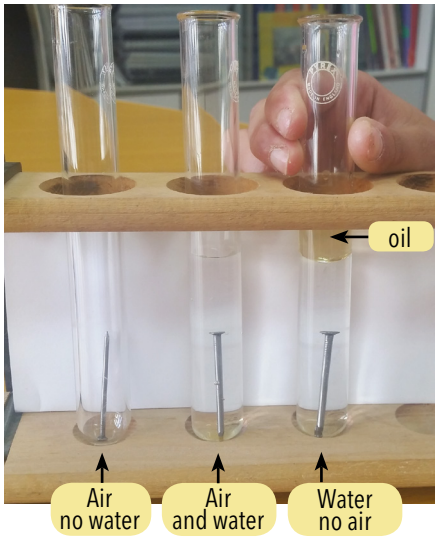
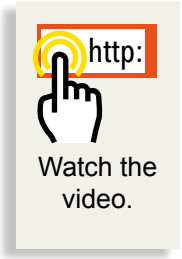


Figure 16: Experiment with iron nails



2. Observe the iron nails everyday and after four days, write your observations in the **second column** of Table 8.

Table 8

	**Colour of the nails at the start of the experiment**	**Colour of the nails after four days**
With air; No water		
With air and water		
With water; No air		

3. Has the colour of the nail changed in the 3rd glass container?

.....

4. What do you think has caused the colour of the nail to change in the water (2nd glass container)?

……

5. What are the conditions necessary for the nail to change colour?

……

……

The red-orange-brown layer formed on the nail is called rust.
Objects made of iron rust when exposed to air and water.

When an object made of iron rusts, it loses its strength and later falls to pieces.

Find out

- Identify some iron objects that are in the process of rusting in the school yard (or in your environment).

Can we prevent iron from rusting?

Observe Figure 17 carefully.

Figure 17: Painting an iron gate

What are the persons doing?

……

What will happen to the iron gate if the persons do not paint it?

.....

Painting prevents iron from rusting.

Did you know?

- Galvanizing or greasing can also prevent iron from rusting.

DICTIONARY

Galvanised iron: iron coated with another metal using electricity.

Processed: submitted to a series of actions to produce gradual change.

Activity 6: Man-made materials

Some materials such as plastic, glass and steel are processed in factories.

They are called **man-made materials**.

Observe Figure 18 carefully.

Figure 18: Man-made materials

1. Identify each object you see in Figure 18.

2. Name the man-made materials which are used to make the objects.

.....

3. Complete Table 9.

Table 9

Objects made of plastic	Objects made of glass	Objects made of steel

Activity 7: Uses and properties of plastic, glass and steel

At the request of the teacher, the pupils have done some research work on plastic, glass and steel.

Figure 19: Researching on the internet

The information on the use and properties of glass, plastic and steel in presented in Table 10.

Group discussion

After discussion with your friends, complete Table 10 by filling the **first column** with the correct material.

Table 10

Material [glass, steel, plastic]		**Uses and Properties**
.....	**Properties**	1. It is impermeable. 2. It is an insulator.
	Uses	1. It is used to make umbrellas or canopies. 2. It is used to make bottles. 3. It is an electrical insulator and is used to insulate electrical wires. 4. Since it can be easily moulded into objects of any shape and size, it can be used to make sheets (soft) or handles (hard) of screwdrivers and utensils.
.....	**Properties**	1. It is a transparent material. It allows light to pass through. 2. It can be moulded into objects of any shape and size.
	Uses	1. It is used to make window panes and mirrors. 2. It is used to make bottles.
.....	**Properties**	1. It is strong. 2. It is durable and stiff.
	Uses	1. It is used to make jet engines. 2. It is used as a building material.

Did You Know?

1. Plastic is a by-product of the petroleum industry. A special type of plastic is nylon. Nylon clothes are cheaper than cotton clothes but they do not absorb sweat well and are uncomfortable to wear.
2. When exposed to strong heat, plastic and nylon melt and can cause severe burns when in contact with the skin. Plastic does not decay and so it is a source of pollution.
3. Glass is made from silica sand.
4. Steel is manufactured by mixing molten iron and carbon in a furnace. Steel rusts.
5. Stainless steel is a special type of steel which does not rust.

Find Out

- The use of certain plastic bags is prohibited in Mauritius since January 2016. Why has the government come up with measures to ban the use of certain plastic bags in the Republic of Mauritius?

Look around you (in your environment) and identify objects made of plastic, glass and stainless steel.

VALUES EDUCATION
Do not interrupt your friend when he/she is speaking. Speak when it is your turn.

Group discussion

Discuss with your friends about the properties of plastic, glass and steel/ stainless steel for each object you have identified. Complete Table 11.

Table 11

Plastic	Glass	Steel/Stainless steel

1. What property of plastic makes it suitable to be used in the manufacturing of electrical appliances and switches?

……

……

2. Many objects that were previously made of wood or metals are now made of plastic. Explain why.

……

……

3. What property of plastic makes it suitable to be used in the manufacturing of water tanks?

……

Do not hang plastic curtains near the oven.
Be careful when using fire if you are wearing nylon clothes.

Just as plastic, glass can be moulded into objects of any shape and size.
Glass allows light to pass through. It is a transparent material.

4. What property of glass makes it suitable for window panes?

……

5. How can you test whether glass is an impermeable material?

……

……

Objects made of glass must be carefully handled. Glass is fragile; it breaks easily.

Glass objects must be handled with care.
Broken glass can cause serious injuries. It must never be left on beaches or under trees. Broken glass should be buried under the ground.

At home, with the help of your parents, identify and name three objects made of stainless steel.

Then complete Table 12.

Table 12

Objects made of stainless steel	Uses

6. Why are knives, forks and surgical tools made of stainless steel instead of iron?

.....

.....

DICTIONARY

Surgical tools: equipment used for medical operations.

What I have learnt:

- Plastic, glass and steel are man-made materials.
- Plastic/nylon is a by-product of the petroleum industry.
- Glass is made from silica sand.
- Steel is made from a mixture of molten iron and carbon.
- A large variety of objects of different sizes and shapes are made of plastic and glass.
- Hard objects that resist wear are made of steel.
- Steel rusts but stainless steel does not.
- Silk, wool, and leather are natural materials obtained from animals.

Multiple Choice Questions

Put a circle around the correct answer.

1. Man-made materials are materials that are produced from/in
   - A plants.
   - B animals.
   - C factories.
   - D the sea.

2. The following materials are used to make chairs.
   - A paper, thread
   - B wood, paper
   - C plastic, paper
   - D wood, iron

3. Wool is obtained from animals, like the
   - A sheep, crocodile, camel.
   - B sheep, angora rabbit, angora goat.
   - C angora rabbit, angora goat, crocodile.
   - D angora goat, angora rabbit, snake.

4. Most metals are
   - A permeable materials.
   - B bad conductors of heat and electricity.
   - C good conductors of heat and electricity.
   - D used to make window panes.

5. The conditions required for iron to rust are
   - A air and water.
   - B air and oil.
   - C air and wind.
   - D air and sunlight.

Structured Questions

6. **A.** **Wood is a useful material to man**

a. From where is wood obtained?

……

b. List two properties of wood that make it useful to man?

(i) ……

(ii) ……

c. Name the material needed to make paper.

……

d. Where is the material mentioned in (c) obtained from?

……

e. What is the effect of excessive tree cutting on the environment ?

……

B. Choose an answer from the list below for each blank.

latex **gloves** **elastic** **boots** **impermeable**

a. Rubber is obtained as …… from rubber trees.

b. Two objects made from rubber are …… and …… .

c. Rubber is used to make tyres because it is …… and is a shock absorber.

d. Divers use diving costumes made of rubber because the latter is

…… and flexible.

7. **A.** **Both aluminium and gold are obtained from the earth.**

a. Mention one use of gold.

……

b. Gold is expensive. Give a possible reason for this.

……

c. Why is aluminium used to make electric wires?

……

d. Mention two other uses of aluminium.

(i) ……

(ii) ……

B. Products made of iron are usually painted to protect them from rusting.

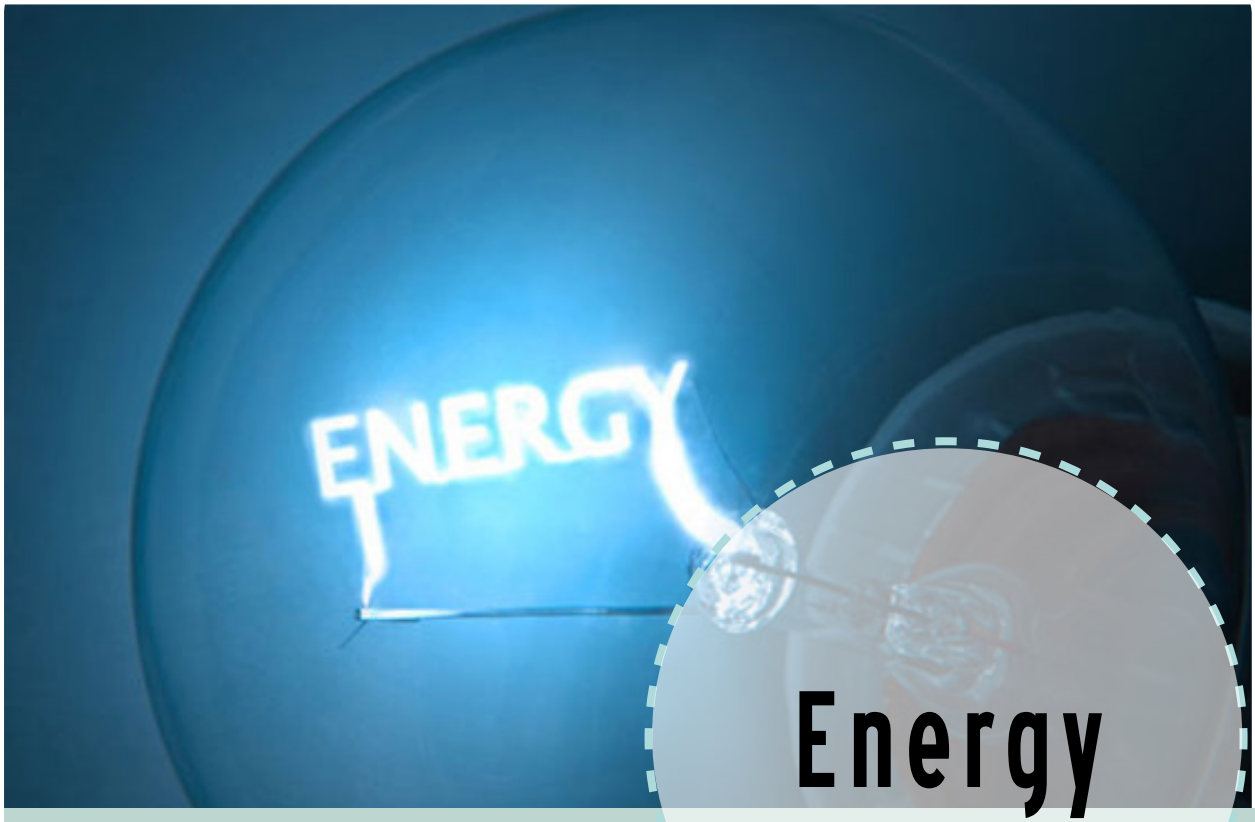
a. What **two** other ways can be used to prevent iron from rusting?

(i) ……

(ii) ……

b. One type of steel does not rust. How do we call it?

……



UNIT 5 Energy

In Grade 5, you learnt that there are different forms and sources of energy.

At the end of this unit, you should be able to

- Explain the meaning of the term ‘fuel’.
- List the fuels that are used in the production of electricity.
- Explain the transformation of energy in thermal and hydro-electric power stations.
- Identify non-polluting sources of energy.
- Demonstrate understanding of renewable and non-renewable sources of energy.
- List and classify renewable and non-renewable sources of energy.
- Demonstrate understanding of green energy.

Activity 1: Forms and sources of energy

Figure 1 shows some pupils discussing about energy at the input and output of a TV set.

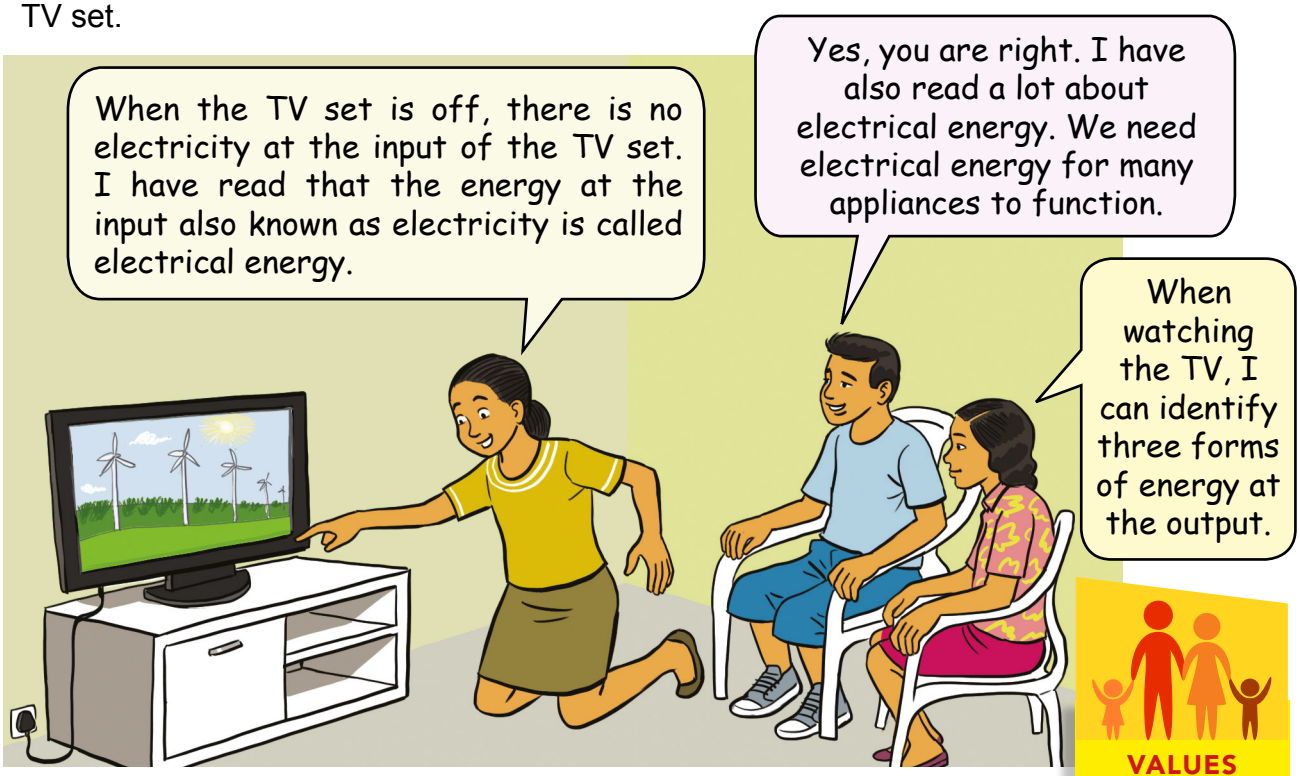


Figure 1: Forms of energy from a TV set

Group discussion

Discuss one form of energy at the input and the three forms of energy at the output of the television set.

1. Complete Table 1.

Table 1

Name of appliance	Form of energy at the input	Forms of energy at the output
- - - - - - - - - - - -	- - - - - - - - - - - - - - - - - -	

VALUES EDUCATION

Listen to your friend when he/she is speaking. Do not interrupt him/her. Thank your friend when he/she has finished speaking. If you are wrong, always excuse yourself.

2. If there were no energy at the input (2nd column of Table 1), would you get energy at the output (3rd column of Table 2)? Why do you think so?

.....

.....

3. Energy at the input has been converted (or transformed) into other forms of energy at the output.

Complete Figure 2.

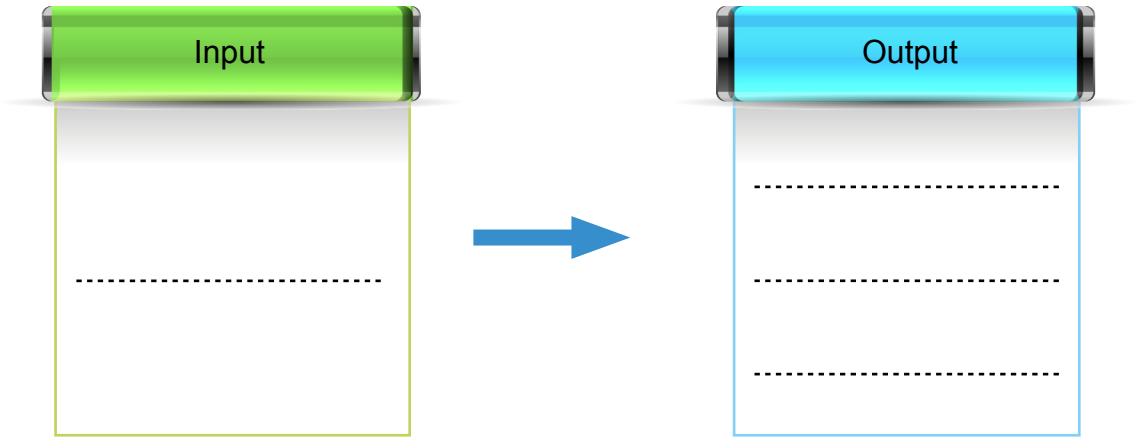
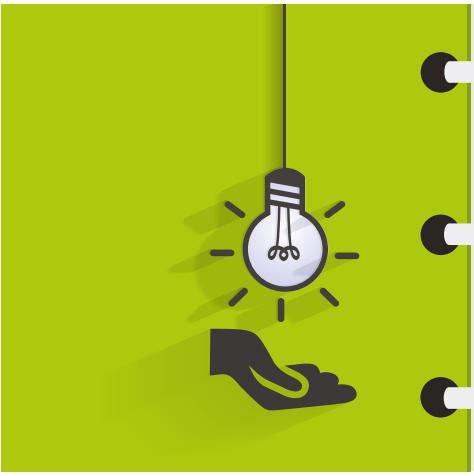


Figure 2: Energy transformation



- Electricity or electrical energy is a very useful form of energy. It can be transformed into many other forms of energy.
- It can be carried along electrical wires to our homes, to schools, to factories and shops.
- But from where do we get electricity? How is it made there?

Activity 2: Production of electricity

In Mauritius, electricity is produced by:

a. Burning of fuels in thermal power stations.

b. Using the energy of falling water in hydro power stations.

c. Using solar panels.

NOTEPAD
Fuels include wood, coal, natural gas and heavy oil.

A. Producing energy by burning fuels

Fuels are materials that are burnt to produce useful heat energy.
In thermal power stations, the heat produced turns water into steam.
The steam spins a turbine which itself turns a generator to produce electricity.

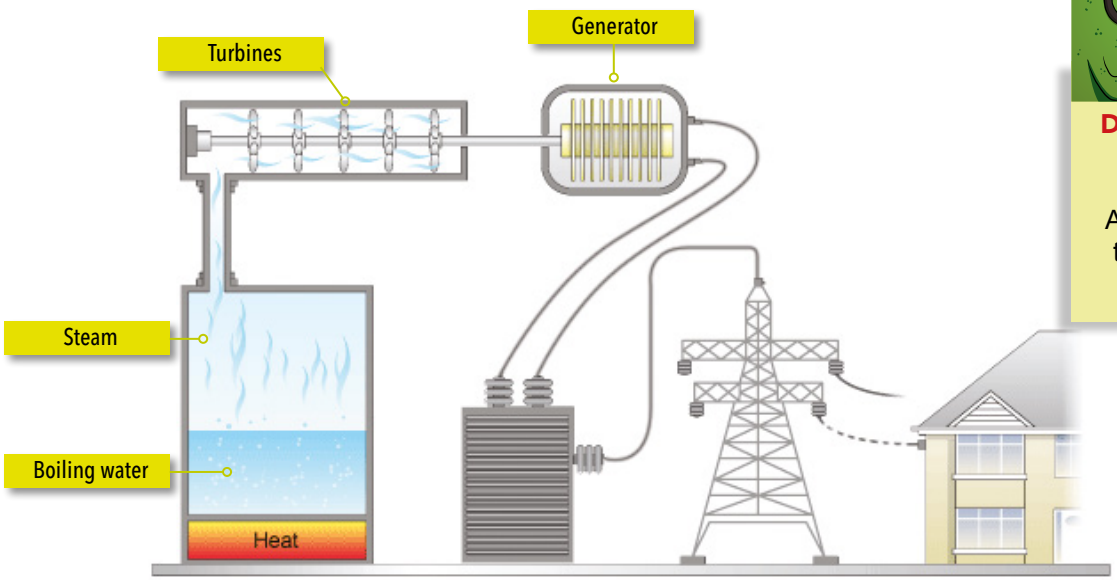


Figure 3: Electricity from the burning of fuels

DICTIONARY

Heavy oil :
A very thick oil that does not flow easily.

Note: 1. Recall lesson on Energy - Grade 5

1. The fuel used to heat water (Figure 3) is heavy oil. From where does Mauritius get heavy oil?

.....

2. What form of energy is stored in fuels?

.....

Group discussion

3. Discuss with your friends the energy transformations that take place from a thermal power station to the house. Complete Figure 4a.

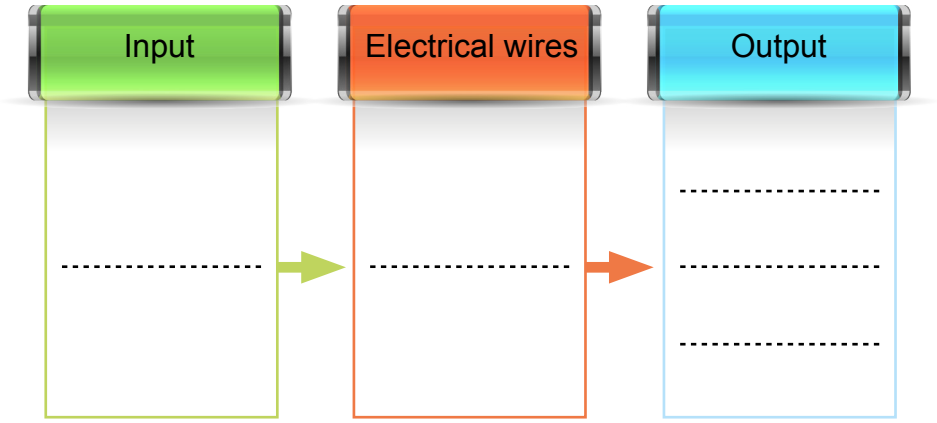


Figure 4a: Energy transformations – Thermal power station

NOTEPAD
Recall lesson on Energy - Grade 5

4. In the thermal power station, the steam spins the turbines and causes the generator to produce electricity. When the turbines are rotating, they possess **movement energy**. Now complete Figure 4b.

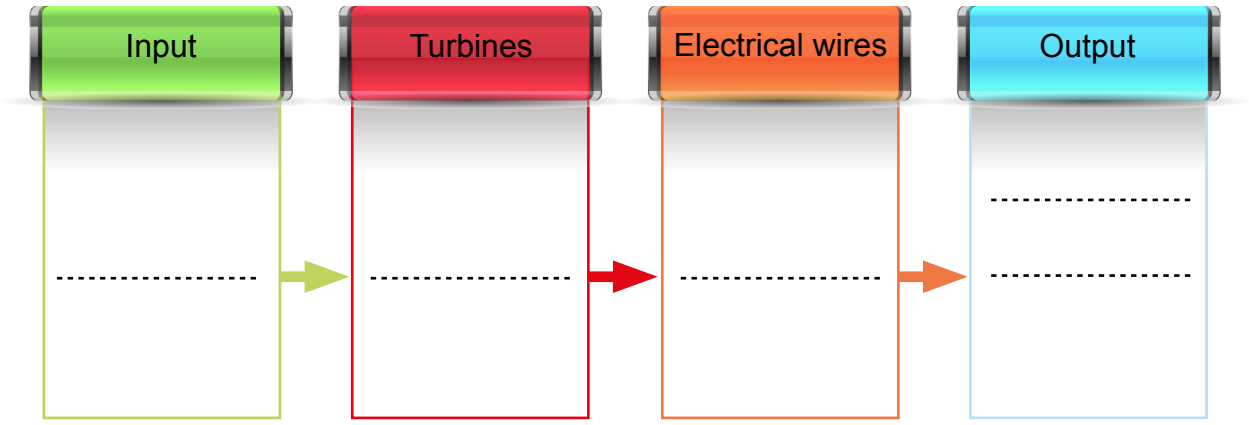


Figure 4b: Energy transformations – Thermal power station

Most of the electricity produced in Mauritius is from thermal power stations.

Figure 5: A thermal power station at St. Louis

One advantage of such a station is that electricity can be produced there all year round.

5. State two disadvantages of producing electricity in thermal power stations.

   i. .....

   ii. .....

6. In Mauritius, bagasse is also used as a fuel in the production of electricity in thermal power stations. From where is bagasse obtained?

   .....

B. Producing energy from falling water

In a hydro power station, the force of falling water spins a turbine which itself turns a generator to produce electricity.

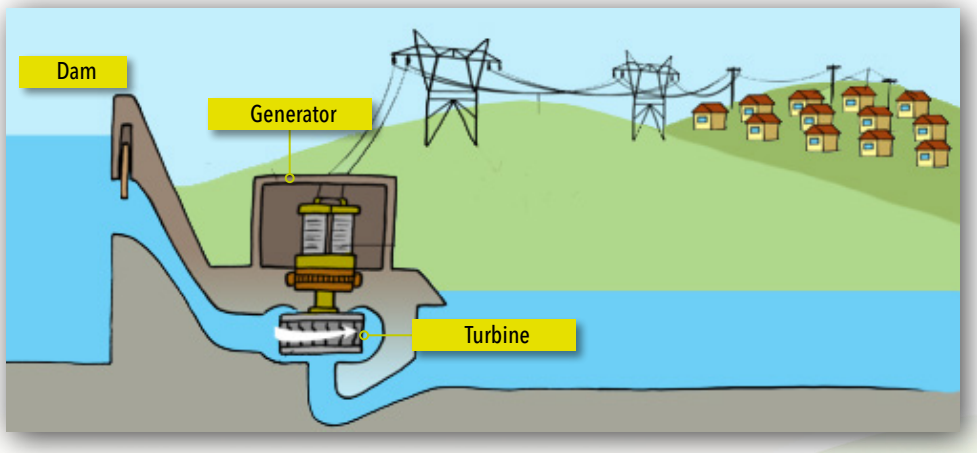


Figure 6: Hydro power station

7. State two advantages of producing electricity in a hydro power station.

.....

.....

8. Where should hydro power stations be located?

.....

.....

9. Why should they be located there?

.....

.....

10. State two disadvantages of producing electricity in a hydro power station.

i. .....

ii. .....

11. Discuss with your friends about the energy transformations that take place in a hydro power station and complete Figure 7.

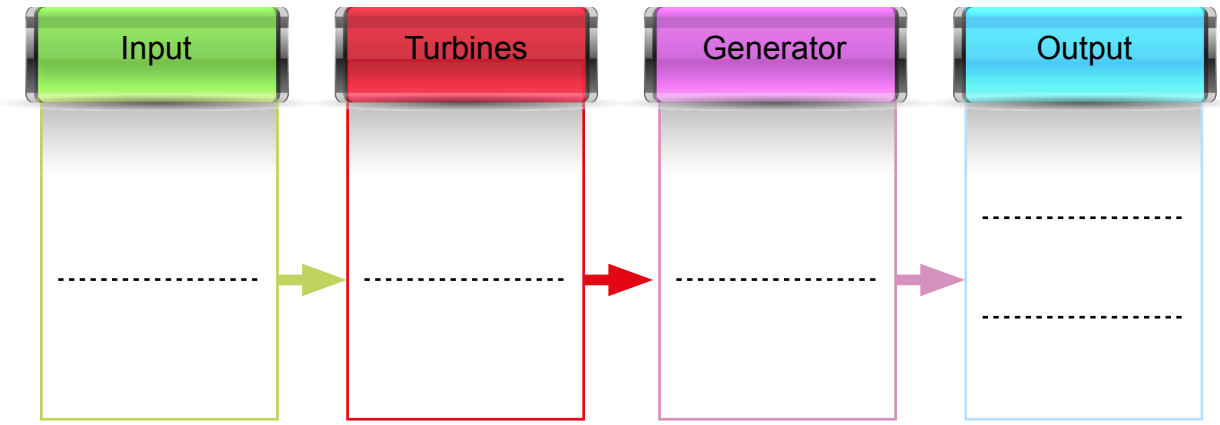


Figure 7: Energy transformations – Hydro power station

NOTEPAD

The generator makes a lot of noise. Some of the electrical energy is converted into sound energy.

Figure 8: A hydro power station

12. Observe Figure 6 carefully. How does water from the dam flow into the station?

.....

C. Producing energy from solar panels

The use of solar panels for the production of electricity in Mauritius has become a reality. With governmental support, more people are turning towards this form of energy.

Figure 9: Solar panels in Mauritius

Group discussion

Discuss with your friends two advantages and two disadvantages of using of solar panels for the production of electricity. Complete Table 2.

Table 2

Advantages of using solar panels	Disadvantages of using solar panels

Activity 3: Renewable and non renewable sources of energy

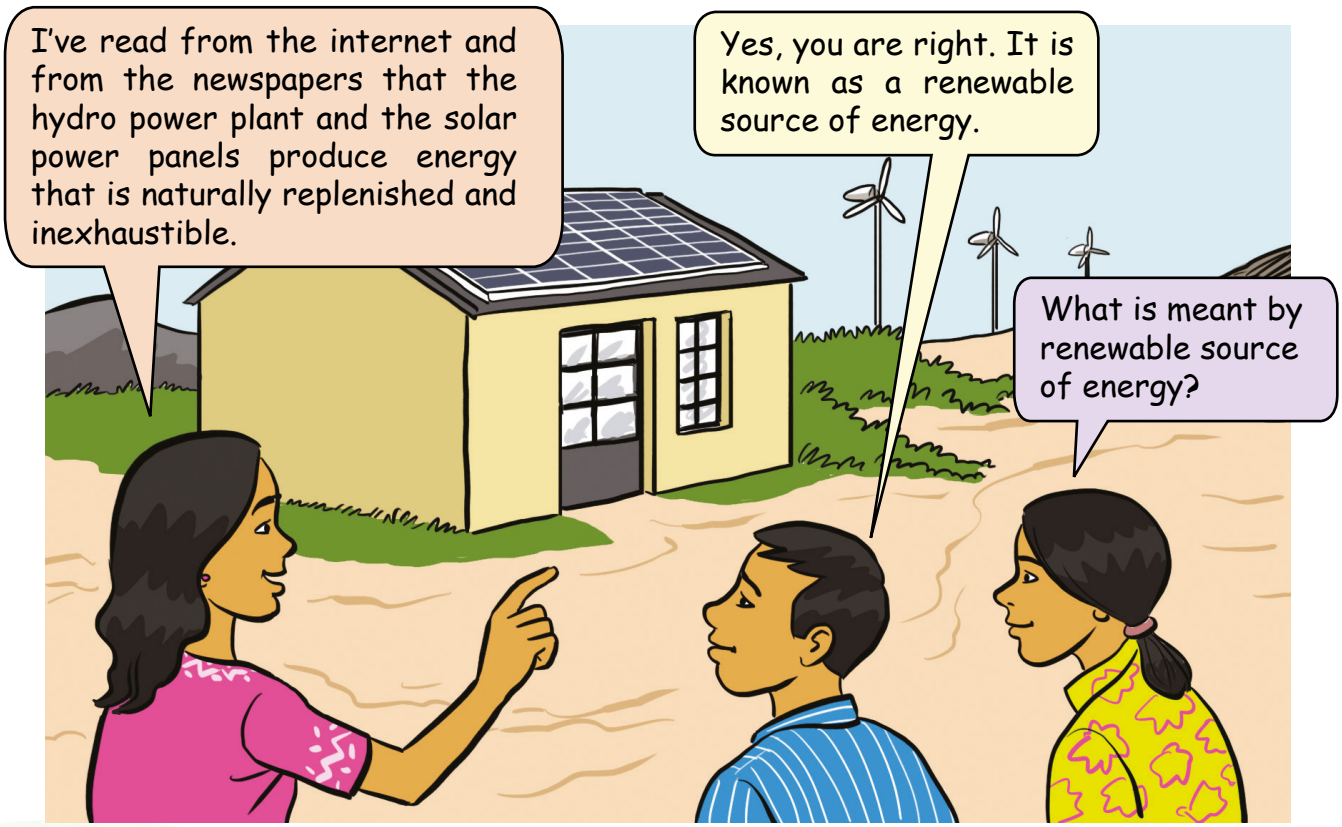


Figure 10: Renewable sources of energy

1. In the case of the hydro power plant, what is the source of the energy?

.....

DICTIONARY

To replenish: To always provide for something.

Inexhaustible: That will never finish.

Water is naturally replenished and is inexhaustible. The energy of the falling water in the hydro power station is known as a renewable source of energy.

2. Is solar energy a renewable source of energy? Explain.

.....

.....

NOTEPAD

A renewable source of energy is energy generated from natural resources, such as sunlight, wind, tides, water.

On the other hand, a non-renewable source of energy is not replenished in a short period of time.

3. Give some examples of non-renewable sources of energy.

.....

4. Complete Table 3.

Table 3

Renewable sources of energy	Non-renewable sources of energy

5. Discuss with your friends whether each of the sources of energy (Table 3) is polluting or non-polluting and complete Table 4.

Table 4

Renewable and Non-renewable sources of energy	Causes pollution	Does not cause pollution
Bagasse	☑	☐
Sunlight	☐	☑
----------	☐	☐
----------	☐	☐
----------	☐	☐
----------	☐	☐

6. Most of the electricity produced in Mauritius is from thermal power stations. Air pollution is caused due to large amounts of ash, smoke and carbon dioxide which are released into the air.

What are the harmful effects of air pollution on living things?

a. .....

b. .....

c. .....

7. The high level of carbon dioxide increases the temperature of the Earth, thus contributing to global warming.

List three harmful effects of global warming.

a. .....

b. .....

c. .....

NOTEPAD
Global warming refers to the gradual increase in the average temperature of the Earth's atmosphere and its oceans.

Did you know?

- Because of global warming and pollution, government is encouraging the setting up of more hydro power stations, e.g. the Bagatelle dam.

- Government is also looking for other sources of energy that are non-polluting, do not give off carbon dioxide and are renewable. We call them green energy sources, as they come from natural sources.

- Government is encouraging people to set up solar panels and solar water heaters as measures to reduce the harmful effects of global warming .

Group discussion

1. Discuss with your friends some green energy sources that we can use to produce electricity in Mauritius.

.....

.....

2. Prepare a poster on three green energy sources that can be exploited (or are presently being exploited in Mauritius/Rodrigues). You should identify at least two advantages for each green energy source.

Present your work to the whole class.

What I have learnt:

- Fuels are burnt to produce useful heat energy.
- Fuels are burnt in thermal power stations to produce electricity.
- The burning of fuels causes air pollution.
- Air pollution causes global warming.
- Some non-polluting and renewable sources of energy are water, sun and wind.
- The energy we get from non-polluting and renewable sources is called green energy.

Multiple Choice Questions

Put a circle around the correct answer.

1. When a torch is switched on, the energies at the output are

A solar energy and wind energy.

B sound energy and heat energy.

C light energy and heat energy.

D movement energy and heat energy.

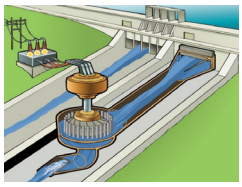
2. In a hydro power station, the energy transformation in the production of electricity is

A movement energy of water and turbines ⟶ electrical energy.

B electrical energy ⟶ movement energy of water and turbines.

C heat energy ⟶ electrical energy.

D electrical energy ⟶ movement energy.



3. Some examples of green energy are

A solar energy, energy from heavy oil, wind energy.

B wind energy, energy from coal, solar energy.

C waves energy, solar energy, wind energy.

D energy from coal, energy from heavy oil, solar energy.

4. Wind energy is a renewable source of energy because

A it will end up after some time.

B it causes pollution.

C it does not cause pollution.

D it will forever be available.

5. The gradual rise in the Earth's average temperature and its seas is called

A renewable energy.

B green energy.

C global warming.

D non-renewable energy.

Structured Questions

6. Figure 11 shows solar panels being used to produce energy.

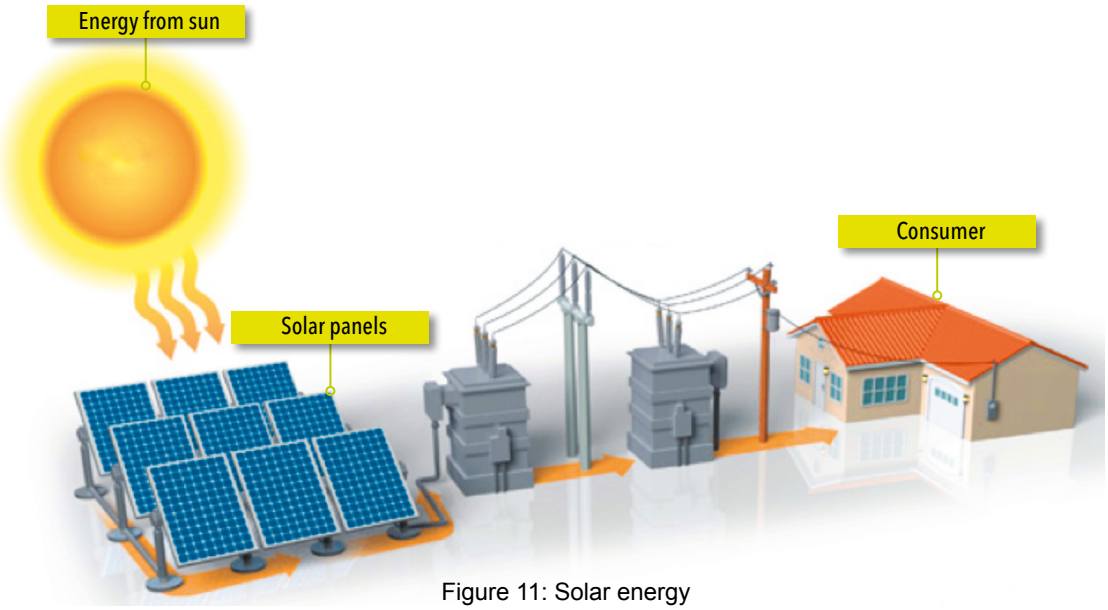


Figure 11: Solar energy

a. What form of energy from the sun is used by the solar panels?

.....

b. Name the energy used by the solar panels.

.....

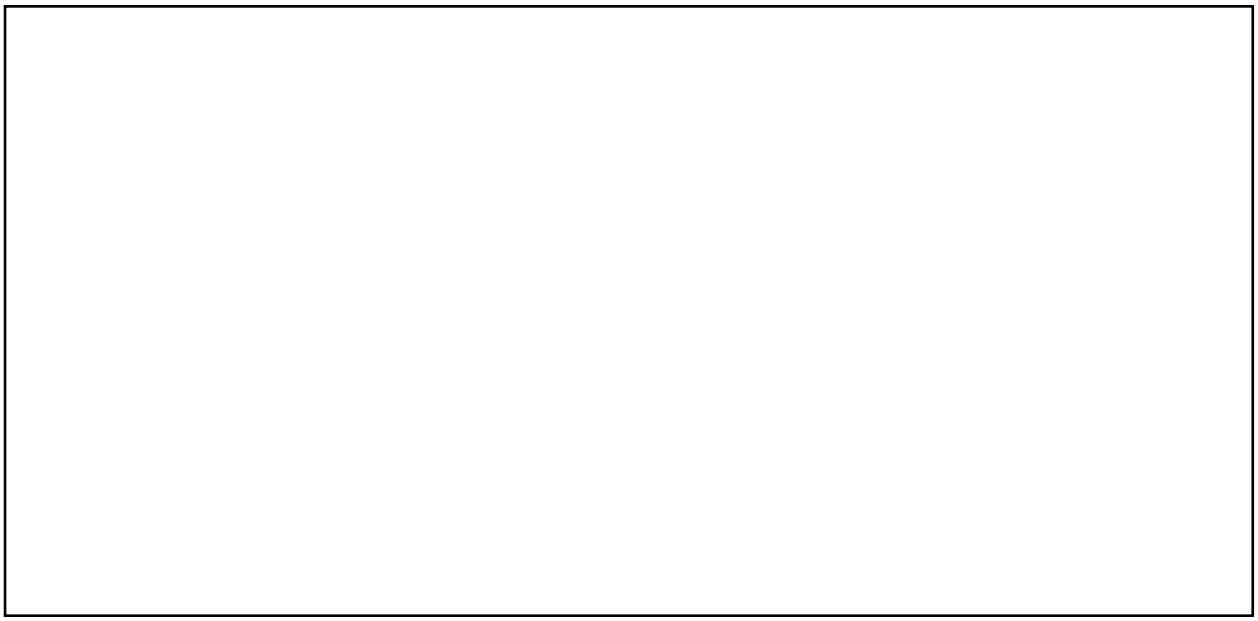
c. Name the energy flowing in the wires.

.....

d. Name some forms of energy used at home.

.....

e. Show the energy transformation for Figure 11 in the space below.



NOTEPAD
Hydroelectrity is electricity produced from hydro power stations.

7. Hydroelectricity is a renewable source of energy.

a. Explain what is meant by the term 'renewable source of energy'.

.....

.....

b. Give two disadvantages of producing electricity in a hydro power station.

1. .....

2. .....

c. Give two advantages of producing electricity in a hydro power station.

1. .....

2. .....

d. Draw the energy transformation for a hydro power plant in the space below.

8. a. Explain what is meant by a non-renewable source of energy.

.....

.....

b. Explain why government should invest more in the use of green energy in Mauritius and Rodrigues.

.....

.....

.....

c. Explain why are there no hydro power stations in Rodrigues.

.....

.....

.....

d. List three renewable and three non-renewable sources of energy.

Complete Table 5.

Table 5

Renewable sources of energy	Non-renewable sources of energy

9. Figure 12 shows a thermal power station.

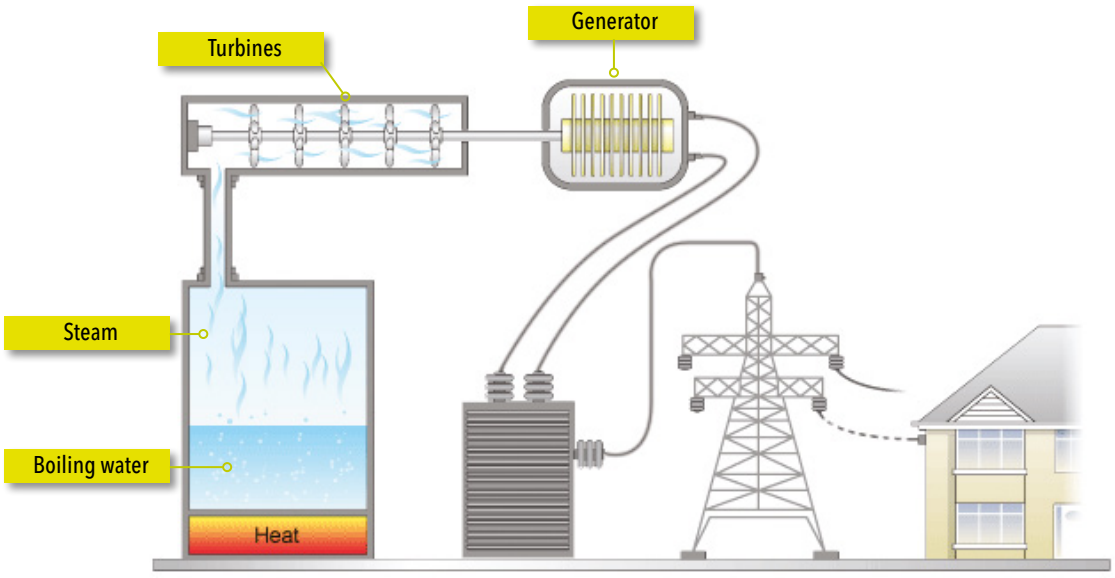


Figure 12: Hydro power station

a. What energy transformation takes place in a thermal power station?

.....

b. What is the energy input to the thermal power station?

.....

c. What causes the turbines to spin ?

.....

d. What form of energy is produced in the turbines?

.....

e. Complete Figure 13.

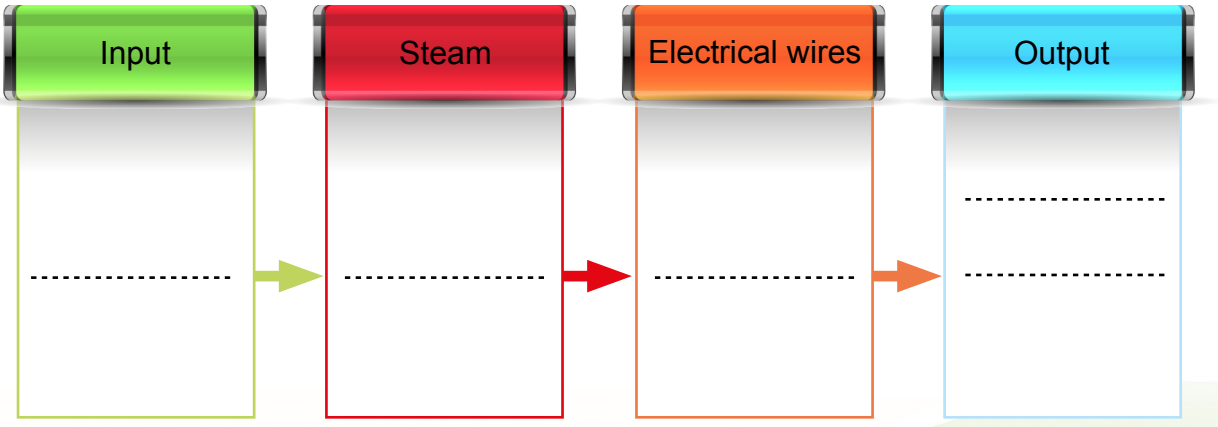
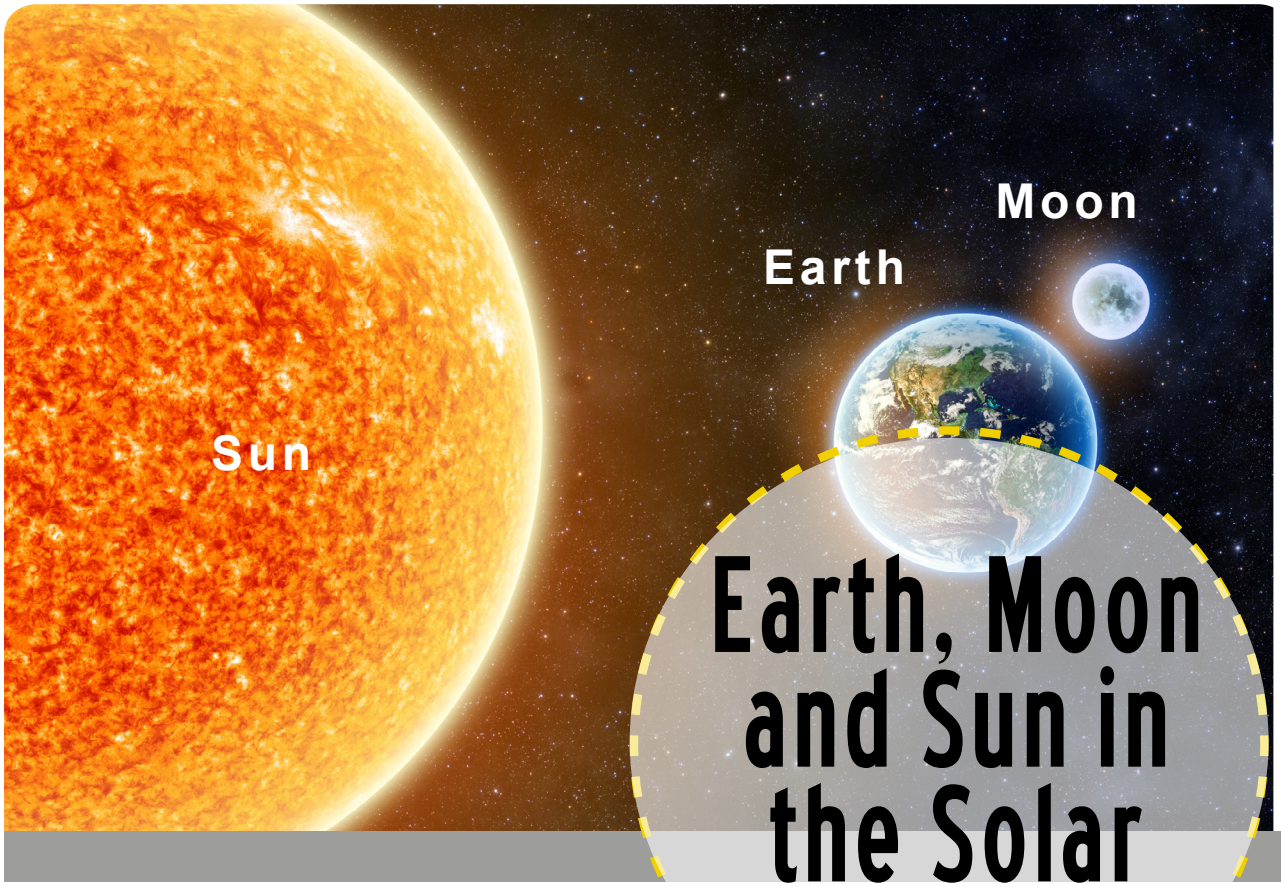


Figure 13: Transformation of energy



UNIT 6 Earth, Moon and Sun in the Solar System

At the end of this unit, you should be able to

- State the presence of the Earth, Moon and Sun in the solar system.
- Explain the occurrence of night and day.
- Relate the movement of the Sun and Earth to day and year.
- Explain the consequences of global warming.
- Explain how to care for planet Earth.

Activity 1: Earth, Moon and Sun in the Solar System

Planet Earth is one of the eight planets that rotate around the Sun.
The Sun and the eight planets form the Solar System.

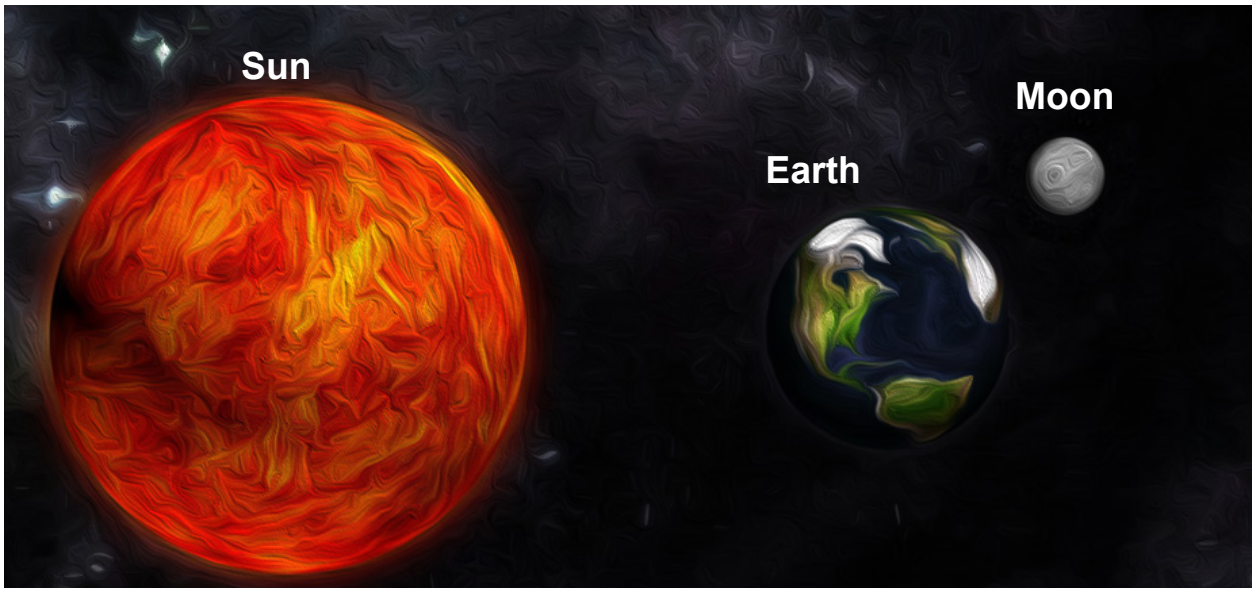


Figure 1: The Sun, Earth and the Moon

NOTEPAD

The Moon is a satellite of the Earth and is not a planet. Go to the website to find out about the eight planets. http:

Group discussion

Day and Night

Some pupils have been discussing about what causes day and night.

DICTIONARY

To emit: to send out heat/light
To rotate on itself: to spin

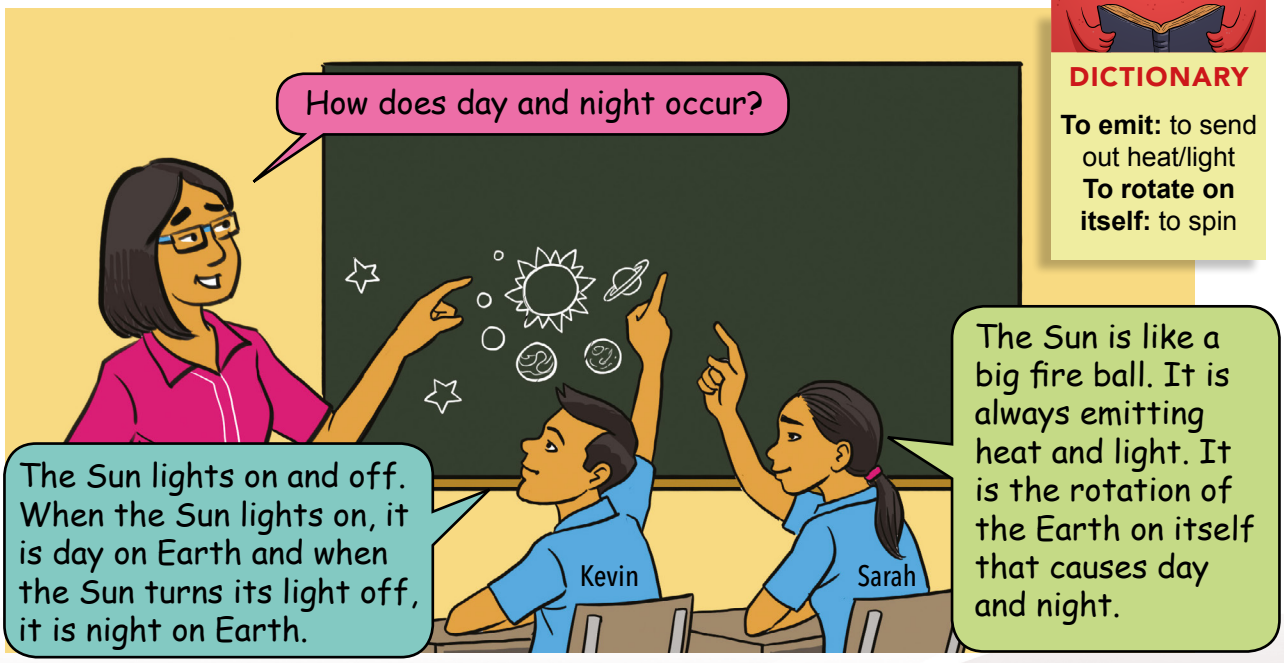


Figure 2: Day and night

1. a. Who is right, Kevin or Sarah?

.....

NOTEPAD
Think well before you answer.

b. After discussion in your group, explain your reasoning.

.....

.....

.....

2. During the group discussion, the pupils were of the view that Sarah was right. After careful thinking and some advice from the teacher, they decided to carry out an experiment to confirm their views.

They brought the following equipment to perform the activity in a dark corner in the classroom:

- A torch to represent the Sun.
- The globe.

Mathematics

Refer to the website to learn about 24 hours in a day.

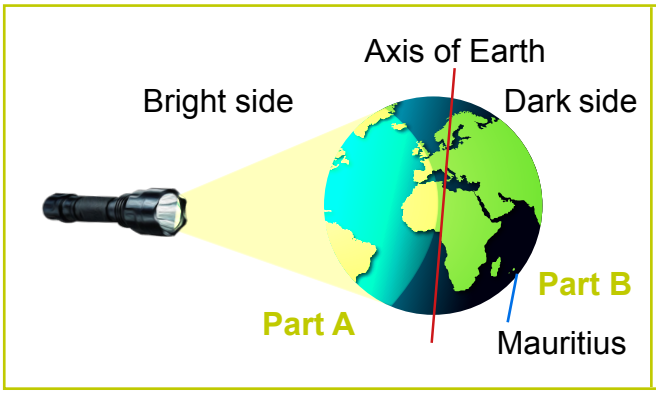


Figure 3a: Day and night

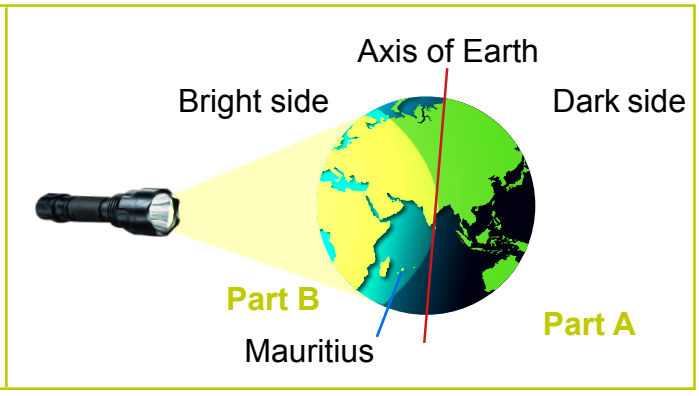


Figure 3b: Day and night

3. When the torch (representing the Sun) is switched on to illuminate Part A of the globe, as shown in Figure 3a, is it day or night in Mauritius? Explain.

.....

.....

.....

4. When the globe is rotated so that Mauritius faces the torch (Sun) as shown in Figure 3b, is it day or night in Mauritius? Explain.

.....

.....

.....

5. What can you conclude about what causes day and night?

.....

.....

.....

6. Now, go back to question No. 1 and improve your answer. Put a cross (X) on the wrong statement in Figure 2.

7. When do you feel the heat (energy) from the Sun: at night or during the day? Explain.

.....

.....

.....

NOTEPAD

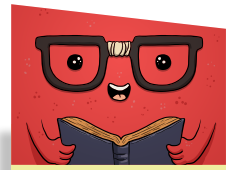
You have learnt about heat energy in Unit 5.

Find out

What would have happened if the Earth did not turn on its own axis?

Activity 2: What causes a year?

You have learnt that day and night are caused by the rotation of the Earth on its axis. It is day in one hemisphere when that hemisphere is facing the Sun and night in the other hemisphere.



DICTIONARY

Hemisphere: a half of the Earth

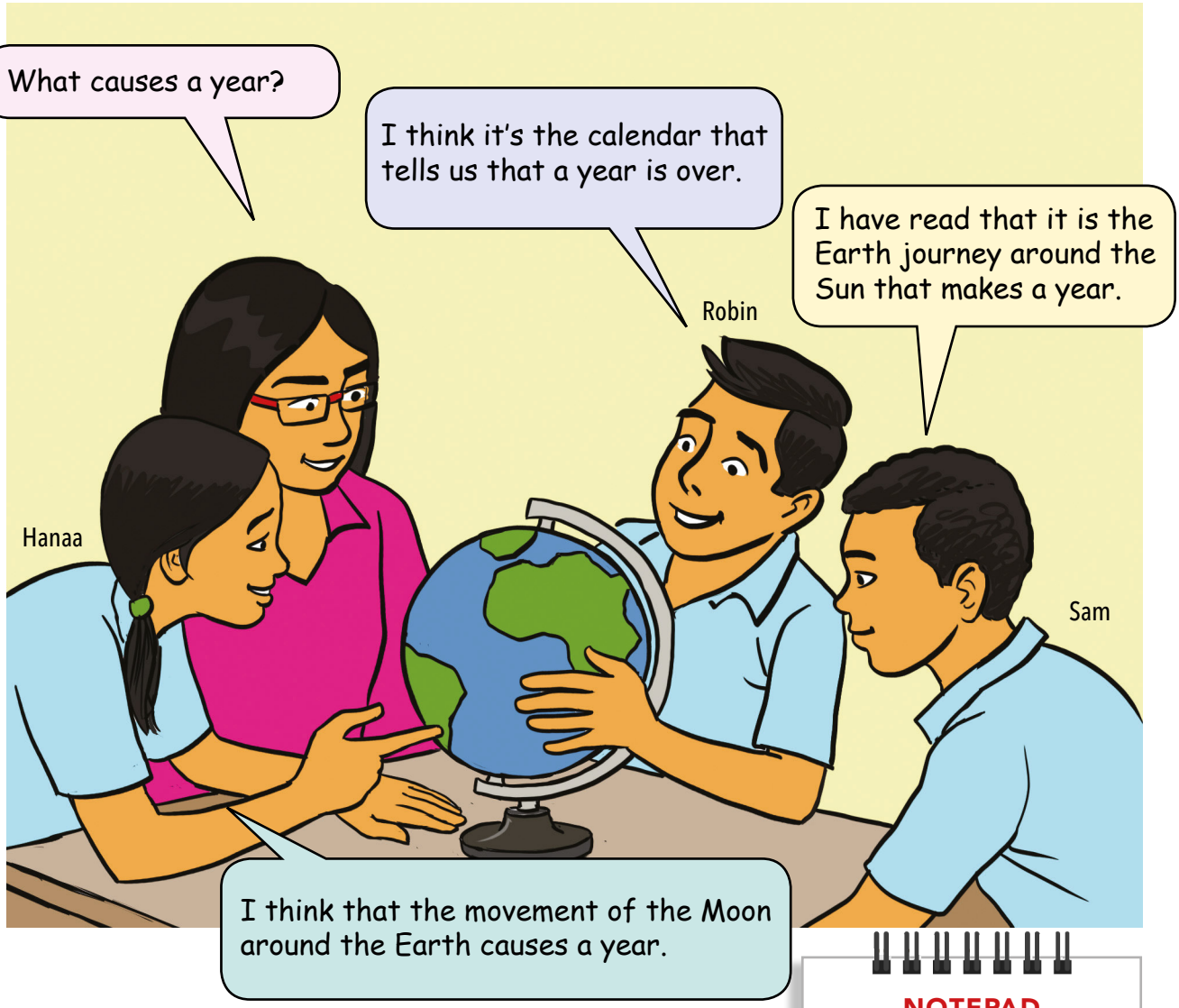


Figure 4: A year

NOTEPAD
It is important to read books to further develop your knowledge.

This activity will help you understand what makes a year on the Earth.

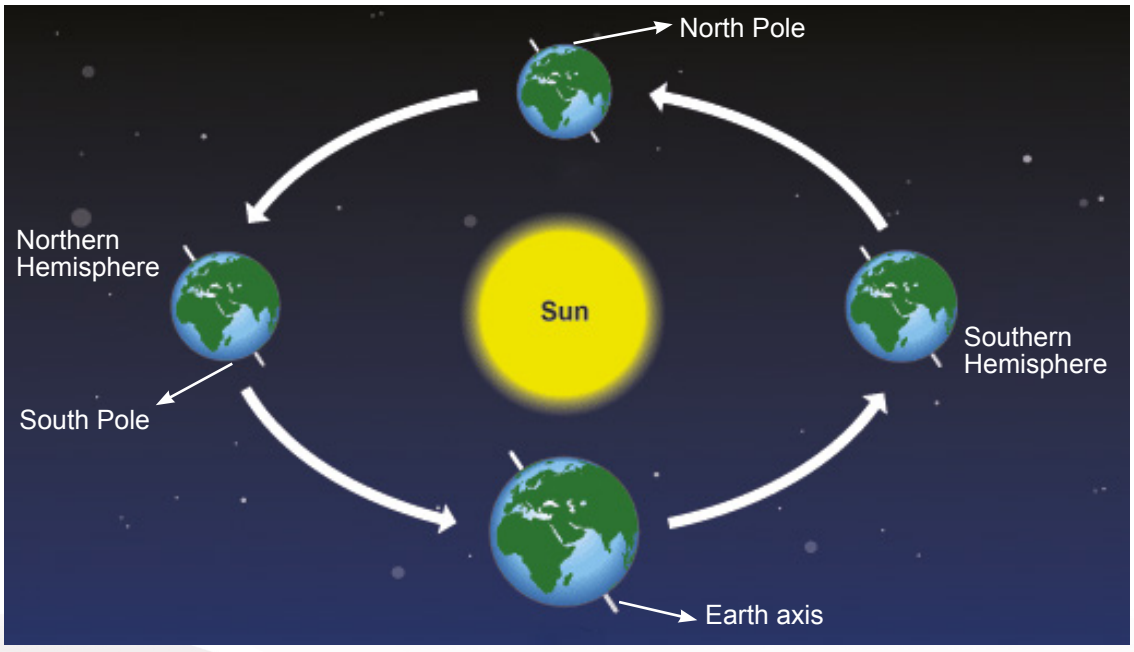


Figure 5: Position of the Earth and the Sun

Observe Figure 5 carefully and after discussion with your friends, answer the following questions.

1. Is the Earth situated in the same position with respect to the Sun at different periods of the year? Explain.

.....

.....

.....

2. Complete Table 1. Tick (✓) the correct answer(s).

Table 1

The rotation of the Earth on its axis causes	☐ day ☐ night
The complete rotation of the Earth around the Sun causes	☐ a year ☐ a century

Mathematics

Refer to the website for explanation about a century.

Now cross out (X) the incorrect statement(s) in Figure 4.

3. It takes the Earth 365¼ days to complete a rotation around the Sun. However, in the **common year** calendar, 365 days are considered.
Explain why one additional day has to be added to the calendar every four years (known as a **leap year**).

.....

.....

.....

Mathematics

Go to the website to learn more about the calculation.

4. Does the Moon rotate around the Earth? Explain your reasoning.

.....

.....

.....

Find out

How long does the Moon take to make a complete rotation around the Earth?

Activity 3: Life on Planet Earth

When astronauts from outer space observe our planet, they see a sphere with beautiful colours as shown in Figure 6. This is planet Earth.

Figure 6: Planet Earth

Earth is the only planet in the solar system on which life is known to exist.

Life on our planet is possible because:

1. The Earth is just at the right distance from the Sun so that it is neither too hot nor too cold.
2. Water, air and soil are present.

Life exists almost everywhere on the planet.

Observe Figure 7 carefully. It shows places where we can see living things.

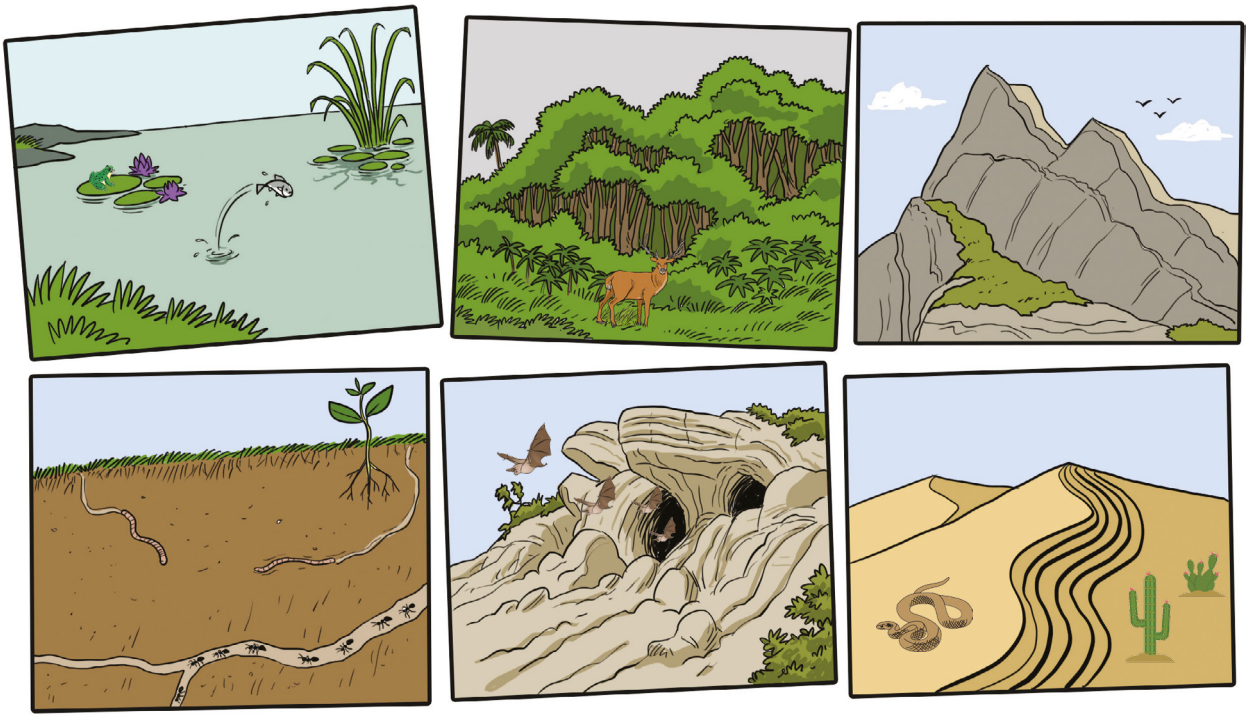


Figure 7: Life on Earth

Identify the places and discuss with your friends the forms of life present there. Complete Table 2 with the names of a plant and an animal you can see in each place.

Table 2

Living things	Place					
	Lake	Forest	Desert	Soil	Cave	Mountain
Plants					Fern	
Animals					Bats	

All living things depend on each other for their survival. People and animals depend on plants.

NOTEPAD
You will learn about the dependence of living things on each other in Unit 7 (Ecosystem).

1. State two ways in which we depend on plants.

a. .....

b. .....

2. Plants also depend on animals.
State two ways in which plants depend on animals.

a. .....

b. .....

Find out

1. How bees are useful to plants.
2. How birds are useful to plants.
3. How worms are useful to plants.
4. How plants are useful to monkeys, insects and lizards.

Activity 4: Caring for planet Earth

Our beautiful planet is in great danger. Living things are facing a serious environmental problem - **pollution**.

Human beings, through certain activities, are polluting the air, water and the land.

Group discussion

Observe the various activities taking place in Figure 8 and after discussion with your friends, identify the sources of pollution.

Figure 8: Sources of pollution

Now complete Table 3.

Table 3

Activities	Harmful effects on animals	Harmful effects on plants
Air pollution		
Water pollution		
Dumping on land *(land pollution)*		

Discuss what can be done to decrease the level of pollution in each case.

Explain how you can help to:

1. Reduce air pollution.

.....

.....

2. Reduce water pollution.

.....

.....

3. Protect our rivers, lakes and seas.

.....

.....

4. Stop dumping and littering.

.....

.....

Activity 5: Global warming

Global warming refers to the gradual increase in the average temperature of the Earth's atmosphere and oceans.

What is causing this gradual rise in average temperature?

Mathematics

The average of the following temperatures 20˚C, 21˚C, 25˚C is

$$\frac{20 + 21 + 25}{3}$$

= 22˚C

Group discussion

Refer to Figure 9 and after discussion with your friends and some careful thinking, answer the questions below.

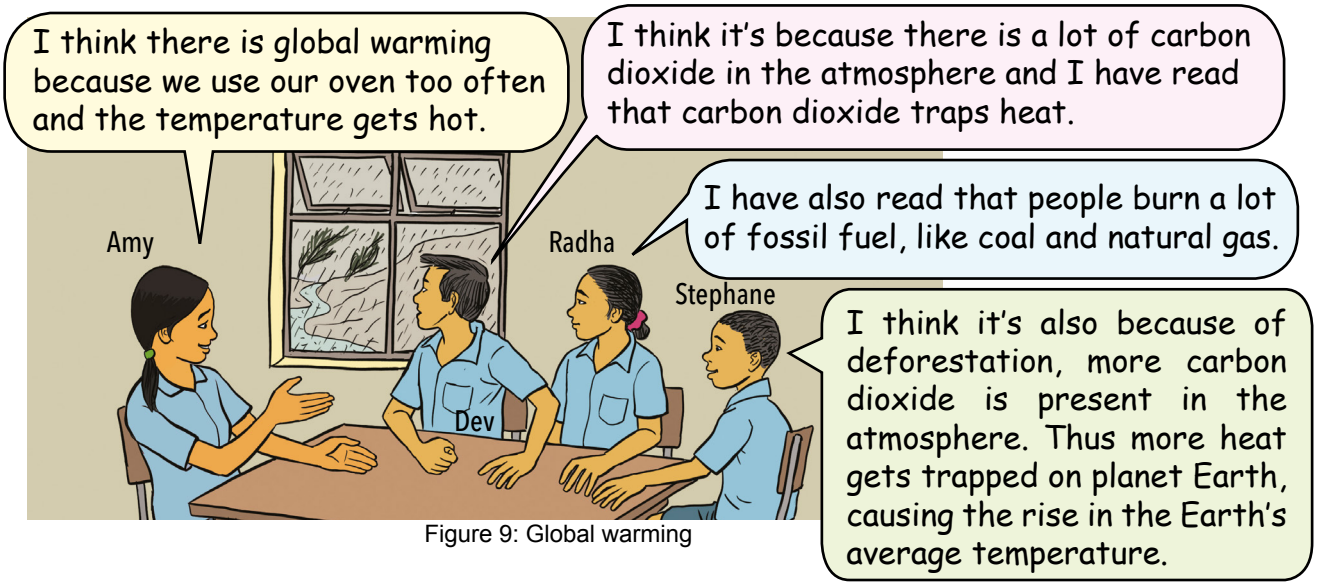


Figure 9: Global warming

1. Of the four pupils who is/are correct about global warming?

.....

.....

2. Use the information from Figure 9 and after discussion with your friends and teacher, complete Table 4.

Table 4

Causes of global warming	Effects of global warming
.....	.....
.....	.....
.....	.....
	.....

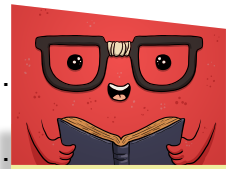
3. What can you do at your level to sensitise your friends and parents about how to contribute to reduce global warming? List four measures.

1. .....

2. .....

3. .....

4. .....

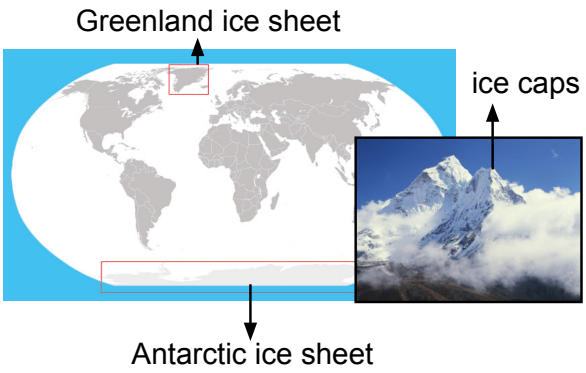


DICTIONARY

To sensitize: to make people (more) aware of a particular situation.

Did you know?

The rise in sea level is due to the melting of the ice caps and the Greenland and Antarctic ice sheets.



Activity 6: Saving planet Earth

In Unit 'Materials' you learnt that materials are used to manufacture different useful objects.
Sometimes these objects are worn out or broken. When they cannot be repaired, they become waste. What do you do with the waste?

You can help save planet Earth by adopting certain good practices concerning waste disposal, as shown in Figure 10.

Figure 10: Different types of waste

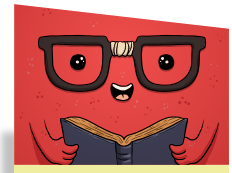
When the bins are full, some of the wastes are sent to factories which turn them into useful objects. This process is called **recycling**.

Complete Table 5 to show how the waste is recycled.

Table 5

Waste	Sent to	Recycled into
Empty tin cans		
Used paper		
Empty plastic bottles		
Used glass objects		

Waste from plants can be turned into compost.
Waste from animals such as cows, goats, etc. decay easily to become manure. Compost and manure are used to enrich the soil.



DICTIONARY

To enrich: to improve the quality of something.

Used cell disposal

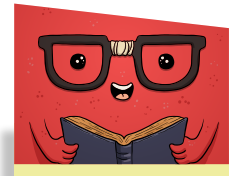
Used cells must never be thrown in the environment. They will pollute the soil and rivers as they contain poisonous substances.

Did you know?

Government has taken actions to collect and properly dispose of used cells and batteries.

Find out

Where can you dispose of used cells and batteries?



DICTIONARY

To Dispose: to get rid of something.

Schools are also provided with a special box for the collection of used cells.

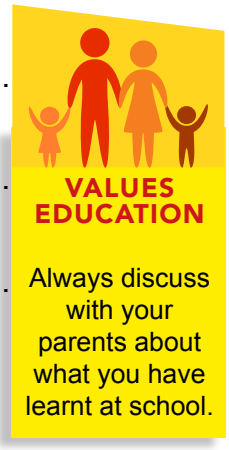
Do you have one at your school? If not, ask the Head Master to do the needful.

What can you do at your level to sensitise your parents to help save planet Earth? List three measures.

1. .....

2. .....

3. .....



What I have learnt:

- The Earth, Sun and Moon form part of the solar system.
- The rotation of the Earth on its axis causes day and night.
- The complete rotation of the Earth around the Sun causes a year.
- Life exists on planet Earth only.
- Certain human activities cause harm to the planet.
- Waste must be disposed of properly.

Multiple Choice Questions

Put a circle around the correct answer.

1. The Earth rotates around the

   A Moon.

   B Sun.

   C Planets.

   D Sun and Planets.

2. Day and night are caused by the rotation of the

   A Sun.

   B Planets.

   C Moon.

   D Earth on its axis.

3. The complete rotation of the Earth around the Sun causes

   A day.

   B night.

   C a year.

   D a century.

4. Global warming is caused by

   A an increase in the level of carbon dioxide.

   B an increase in the use of the oven at home.

   C too many sunny days.

   D heavy rains.

5. We should never throw used cells in the environment because they

A contain useful substances.

B contain poisonous substances.

C are cheap.

D are expensive.

Structured Questions

6. Figure 11 shows part of a conversation between two pupils about what causes day and night.

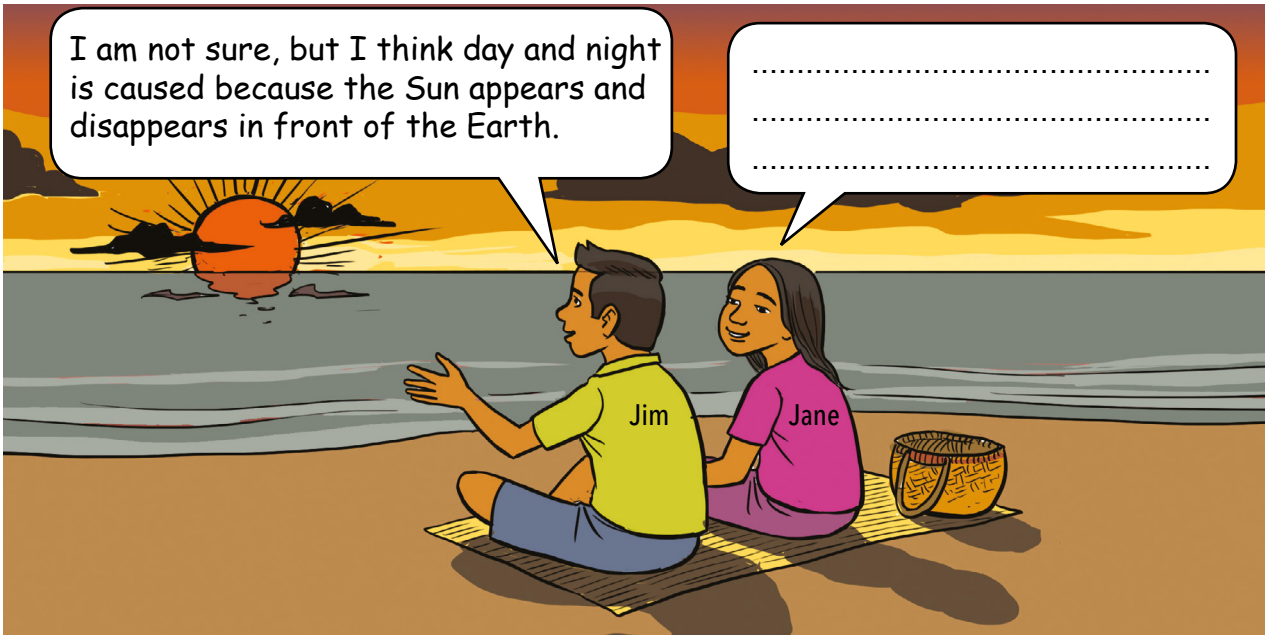


Figure 11: Discussing about day and night

a. Explain why Jim is wrong.

.....

.....

b. Write in the bubble (Figure 11) the correct answer for Jane.

.....

.....

c. Which experiment would you conduct to prove that Jane is correct?

.....

.....

7. Global warming is causing a lot of environmental problems.

   a. Explain what is global warming.

   .....

   .....

   b. Give two causes of global warming.

   .....

   .....

   c. List four effects of global warming.

   1. .....

   2. .....

   3. .....

   4. .....

8. Each one of us can contribute towards saving planet Earth by disposing wisely of our wastes.

   a. List three ways to avoid polluting the environment.

   1. .....

   2. .....

   3. .....

   b. Explain how you can sensitize your parents to help save planet Earth.

   .....

   .....

   .....

UNIT 7 Ecosystems of forests & lagoons

In Grades 3 and 4, you have learnt about:

(i) Problems in the environment affect living things.

(ii) Endemic and exotic plants in the environment.

(iii) Protection and conservation of the environment.

At the end of this unit, you should be able to

- Develop understanding of the existence of different types of ecosystems.
- Identify the processes within forest and lagoon ecosystems.
- Explain the importance of ecosystems.
- Discuss the consequences of beach and soil erosion and how to prevent this.

Activity 1: The Ecosystem

Figure 1: The ecosystem

Group discussion

Observe Figure 1 carefully. It shows an environment in which living and non-living things are present.

A. Identify all the living things and fill in the **first column** of Table 1.

B. Identify all the non-living things and fill in the **second column** of Table 1.

http: Interact with Figure 1.

VALUES EDUCATION

One pupil speaks at a time. Talk softly so as not to disturb the other groups.

Table 1

Living things	Non-living things

Living things depend on **non-living things** to live.

For example, plants depend on the Sun to manufacture their food.

Group discussion

After discussion with your friends, give two other examples where a **living thing** depends on a **non-living thing** to live.

(i) .....

(ii) .....

Some **living things** depend on other **living things** to live.

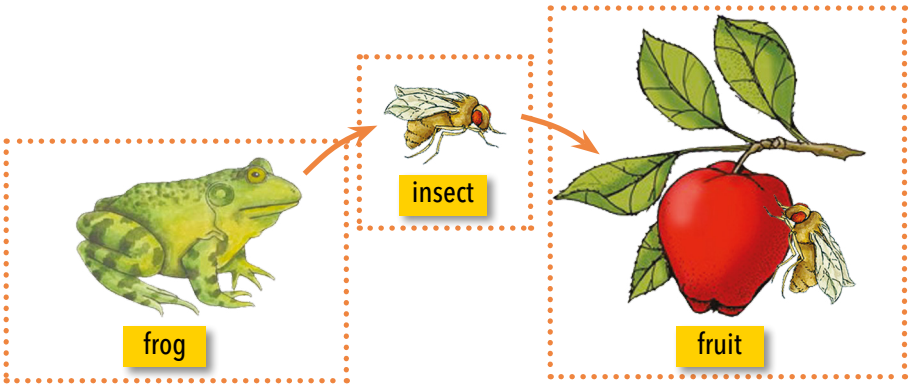
For example, frogs eat insects found in the environment around them to live.

After discussion with your friends, give two other examples of living things that depend on another living things to live.

(i) .....

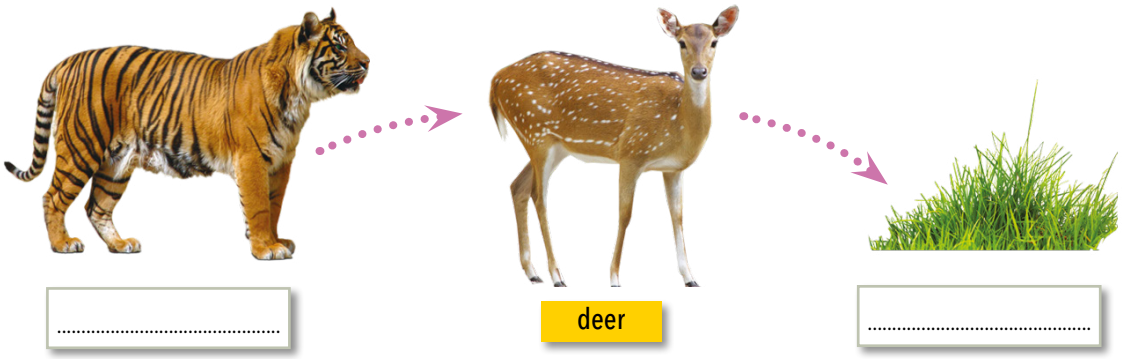
(ii) .....

Frogs eat insects and insects feed on fruits. This can be represented as follows:



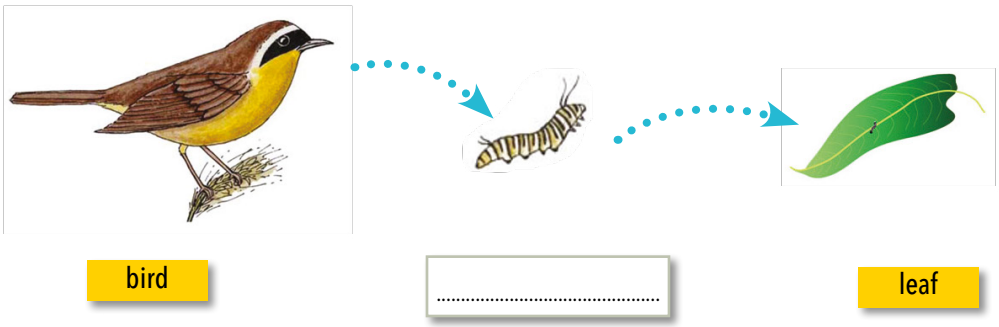
After discussion with your friends and with the help of your teacher, fill in the boxes and write sentences to explain each process.

a. Living things depending on living things.



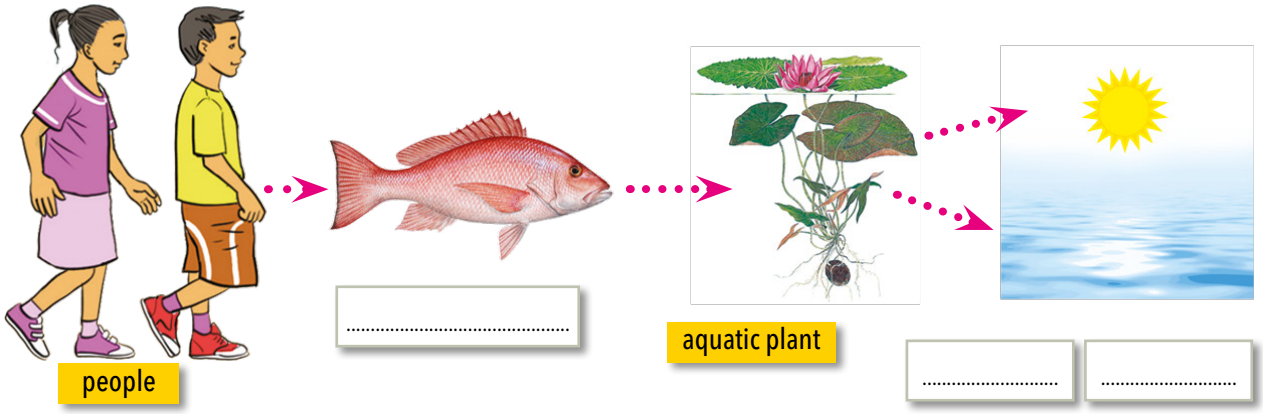
.....

b. Living things depending on living things.



.....

c. Living things depending on both living and non-living things.



.....

.....

Figure 1 is an example of a situation where both living things and non-living things **exist together** in an environment to form an **ecosystem**.

Activity 2: Learning about the ecosystem

Figure 2 shows two pupils discussing about living and non-living things in an ecosystem.

Study Figure 2 carefully.

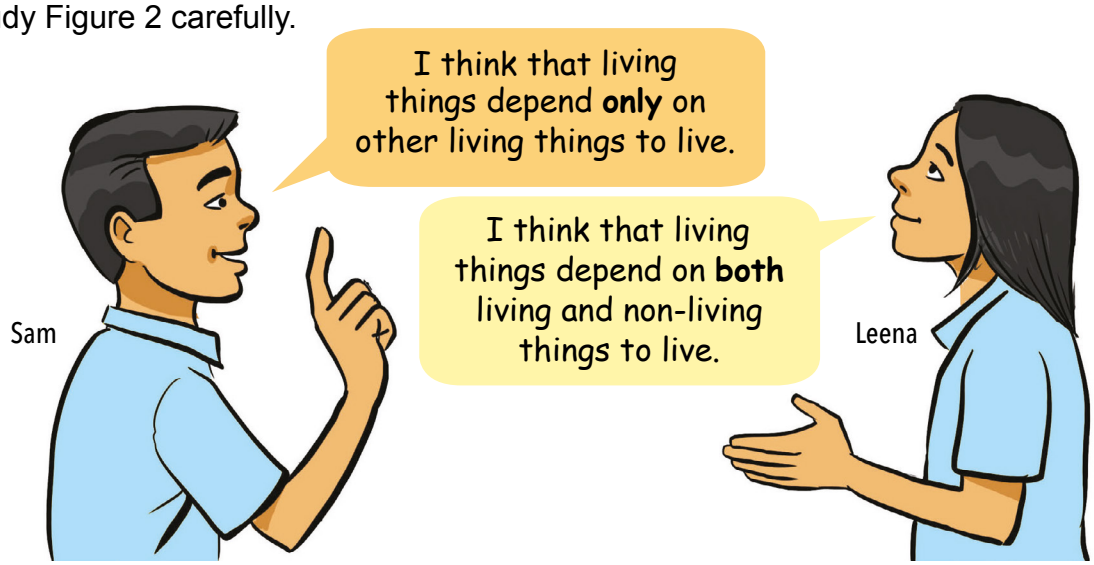


Figure 2: Living, non-living things and the ecosystem

1. With reference to the discussion between Sam and Leena, who do you think is right? Explain.

……

……

Now, refer to Figure 1, on page 122 again.

2. List two things on which the aquatic plants depend to live.

(i) …… (ii) ……

3. On what does the deer depend to live?

(i) …… (ii) ……

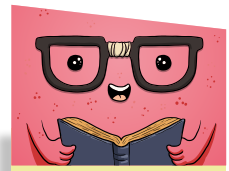
4. What will happen to the living things if the water in the river and pond dries up completely?

……

……

5. The deer is prey to which animal?

……



DICTIONARY

Prey: an animal that is hunted by another animal or by a person.

6. How are the plants useful to the animals?

.....

7. How are the animals useful to the plants?

.....

8. What can we conclude about an ecosystem?

.....

9. Refer again to question No.1 and improve your answer. Put a cross on the wrong statement in Figure 2.

Activity 3: Threats to our forest and Conservation issues

Group discussion

1. Observe Figure 3 carefully.

Figure 3: Threats to forests

Discuss with your friends what is happening in the different situations, as illustrated in Figure 3.

2. Identify the various situations illustrated in Figure 3. After discussion with your friends, write in the **first column** of Table 2 five ways in which human activities constitute a danger to the forests.

Table 2

	Threats to forests	Measures to reduce threats to forests
a		
b		
c		
d		
e		

3. For each of the threats you have identified, write in the **second column** of Table 2 about measures to reduce the identified threats.

4. Figure 4 illustrates a discussion among three pupils on the need to protect and conserve our forests. Study Figure 4 carefully.

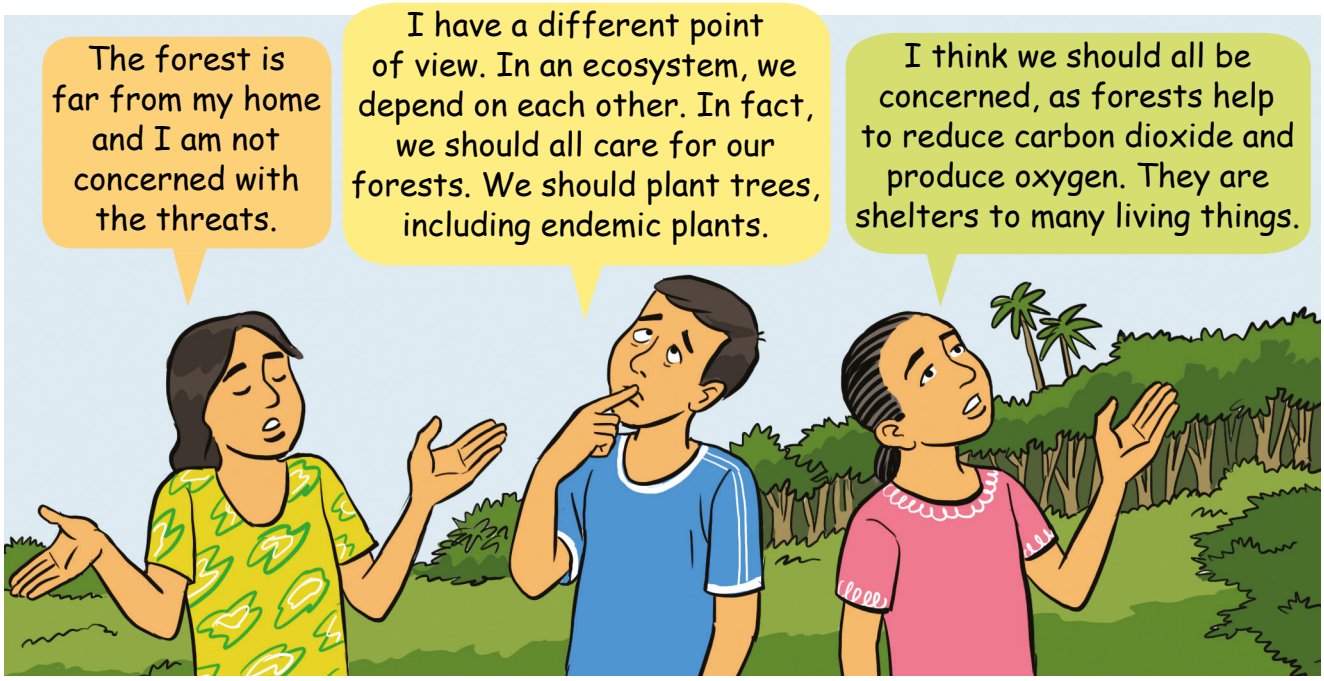


Figure 4: Protecting and conserving our forests

a. From the discussions among the pupils, put a cross on the wrong argument(s). Explain why we should care for our forests.

(i) .....

(ii) .....

b. On what do the living things (animals and plants) in the forest depend to live?

Animals: ……, ……, ……, ……

Plants: ……, ……, ……, ……

c. Explain how forests help to improve the quality of air.

(i) ……

(ii) ……

d. What will happen if our forests (in Mauritius and Rodrigues) are destroyed?

(i) ……

(ii) ……

(iii) ……

What I have learnt:

- Forests help to reduce the amount of carbon dioxide. Plants in the forests provide living things with oxygen. Forests are shelters to many animals and are habitats to many varieties of plants.
- Forests form part of an important ecosystem. We must conserve our forests.

Activity 4: Threats to our lagoons

Group discussion

Observe Figure 5 carefully. It shows Samantha and her family at the seaside. Discuss about the threats to the lagoon and how they affect Samantha and her family.

Figure 5: Pollution in the lagoon

a. Observe the lagoon. How has the lagoon been polluted?

(i) .....

(ii) .....

(iii) .....

b. What are the consequences of pollution on:

(i) The marine life?

……

(ii) The coral reefs?

……

(iii) The leisure activities of people at the seaside?

……

c. What must be done to protect the lagoon ecosystem?

……

……

……

……

……

……

……

……

Activity 5: Beach and soil erosion

Observe Figure 6 carefully.

Figure 6: Beach erosion

DICTIONARY

Erosion: gradual removal of a material (e.g. sand) from an environment.

Group discussion

1. Discuss with your friends your observations on the situation at the beach.

   a. List all your observations in the **first column** of Table 3.

Table 3

My observations	Measures to address these situations

2. Such a situation, as illustrated in Figure 6, is called **beach erosion**.

   What could have caused this situation?

.....

3. What will happen if this situation prevails?

.....

.....

4. List some measures to address the beach erosion (of Figure 6) in the **second column** of Table 3.

Observe Figure 7 carefully. It shows soil erosion.

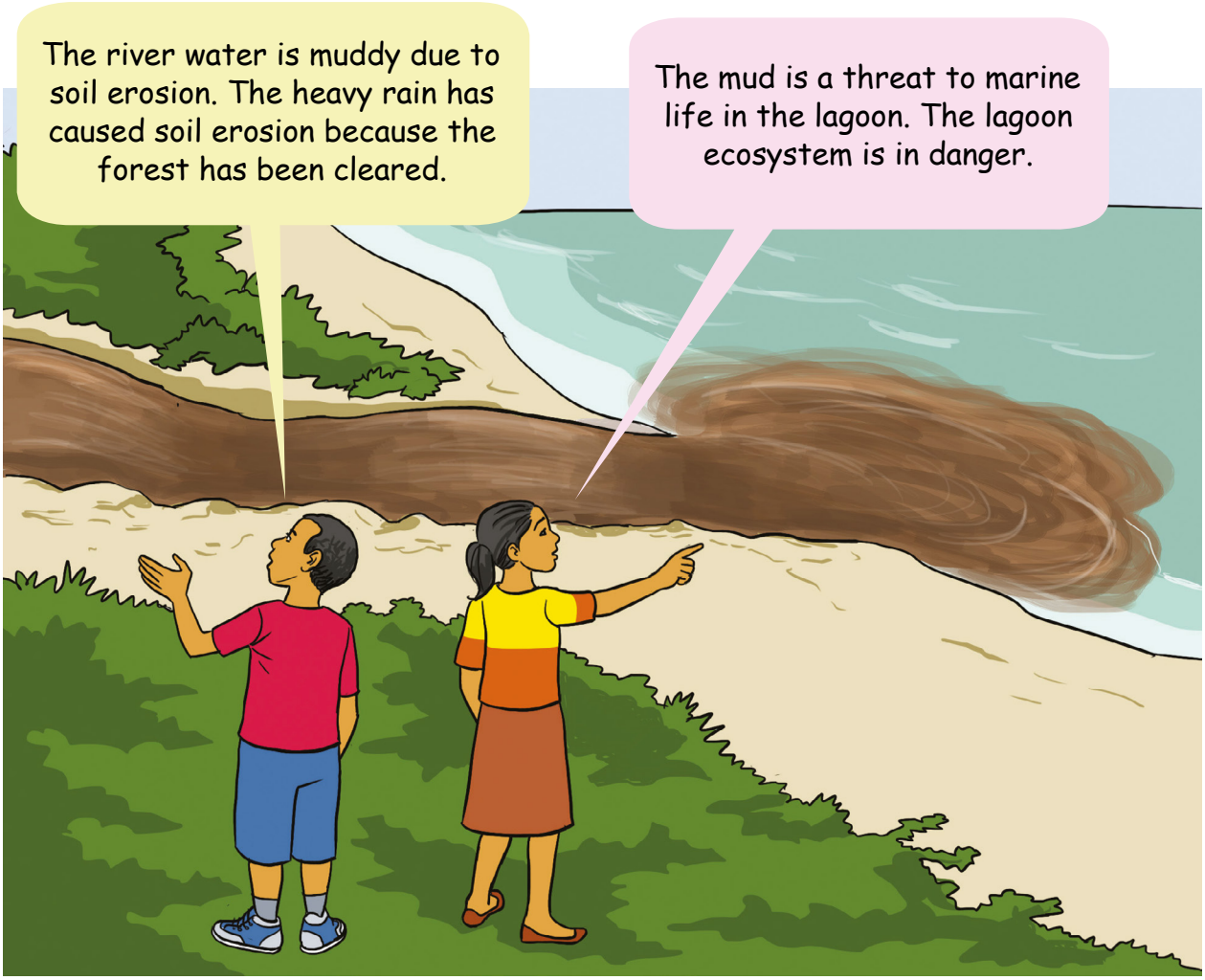


Figure 7: Soil erosion in the lagoon ecosystem

Discuss with your friends the threats to marine life and the measures to address the problem. Complete Table 4.

Table 4

Threats to marine life	Measures to address the problem

What I have learnt:

- Beach erosion is caused when soil or sand is removed or washed away from the beach.
- The lagoon ecosystem is threatened due to soil and sand erosion.

Activity 6: Protection of beaches

As part of their homework, pupils have been requested to collect information on the methods to protect our beaches.

The pupils have prepared three posters showing three ways (methods) to protect our beaches.

They are:

1. Gabions
2. Mangroves
3. Rock revetment

Discuss with your friends the different ways in which the beach is protected. Write the methods in the appropriate boxes .

Poster 1

.....

Poster 2

.....

Poster 3

.....

Figure 8: Protection of beach

Now, complete Table 5.

Table 5

Poster 1/2/3	Methods	How they prevent beach erosion	Places they can be seen in Mauritius
.....	.....	• They protect the beach and the seabed from erosion with their roots. • They protect the shore from strong waves and winds. • They restore the ecosystem of the lagoon.	....
.....	.....	• They decrease wind, tidal and wave energy. • They prevent sand erosion.	....
.....	.....	• It decreases the energy of the waves before they reach the coastline. • It prevents sand and soil erosion.	....

What I have learnt:

- Mangroves protect the beach.
- Mangroves help to restore the lagoon ecosystem.
- Gabions and rock revetment decrease the energy of the waves before they reach the coastline, thus preventing soil and sand erosion.

Multiple Choice Questions

Put a circle round the letter showing the correct answer.

1. In an ecosystem, we can find
   - A only living things.
   - B only non-living things.
   - C both living and non-living things.
   - D neither living nor non-living things.

2. An example of a living thing which depends on a non-living thing is
   - A a deer eating grass.
   - B a plant taking up water.
   - C a frog catching an insect.
   - D a tiger killing a zebra for food.

3. Plants also depend on animals. One example is
   - A goat eating grass.
   - B pollination of flowers by insects.
   - C lion eating a giraffe.
   - D trees producing fruits that animals eat.

4. Which one of the following is not a threat to our lagoon?
   - A Oil spilling in the lagoon.
   - B Pesticides and fertilisers carried to the sea by river water.
   - C Liquid wastes from hotels flowing into the sea.
   - D A man catching a fish in the lagoon.

5. One reason why we should protect our forest is that
   - A domestic animals live in the forest.
   - B we get much carbon dioxide from the forest.
   - C it is an important part of our ecosystem.
   - D people can freely cut down trees there.

Structured Questions

6. a. Plants are living things that depend on the Sun to ……

   b. In an ecosystem living things depend on other …… and …… to live.

   c. Water is essential in an ecosystem. Write a sentence to explain why.

……

7. A. Write down three reasons why forests are cleared by man.

(i) ……

(ii) ……

(iii) ……

   B. Clearing of forests has a negative effect on the ecosystem.
   Mention two such effects.

(i) ……

(ii) ……

8. a. What is an ecosystem?

……

   b. Refer to Figure 1 page 122. What would happen to the ecosystem if hunters had killed all the deers?

……

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SCIENCE - GRADE 6

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