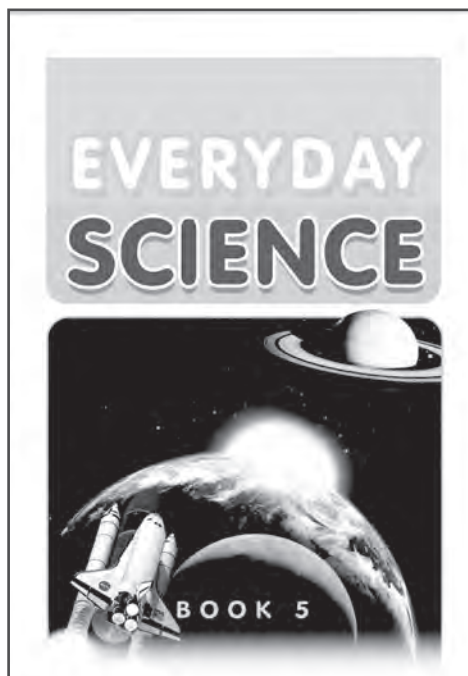


# EVERYDAY SCIENCE

## TEACHER'S GUIDE 5

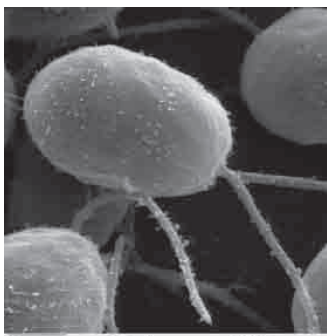
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# Introduction

Children want to know things. Early guidance and varied experiences do much to stimulate the development of their natural intelligence.

A teacher can play a very important role in arousing the interest of students by allowing them to discuss facts and ideas. The teacher can then help students draw conclusions from these facts and ideas as to why and how things happen.

The teacher can stimulate the thinking process of students by asking questions and encouraging them to ask their own.

Experiments allow students to test the facts that have been learnt by them for themselves, thereby clarifying the reasoning behind the activities that are done in class.

This course has been developed to provide information about the world around us, on which students can base their opinion, verify information, come to conclusions, and use the knowledge they have gained in their everyday lives. It will help gain and maintain the curiosity and enthusiasm of students who have just started studying science. Concepts developed at this stage will be of use later in their studies at an advanced level. It will help them develop a better outlook on life.

## **About the Pupil's Book:**

This science series, now completely revised, has been written especially for primary level students. It provides information suitable for each student's level of understanding and has a direct appeal to students who need engaging and easy to read material. Bearing in mind the interests, abilities, curiosities, and needs of student, it provides stimulating learning experiences that offer enjoyable educational motivation, thus serving as a foundation base for future learning.

The keyword in science is curiosity. The material in this series is designed to create in a child the same urge that motivates a scientist; the desire to know the answer to a question. A wide range of topics were carefully selected that will interest and inspire students.

Teachers will come to see that this series deals with those broad areas about which, most students frequently express curiosity; that it provides answers to many of the questions they ask, and offers new and exciting information in many fields.



Everyday Science  
Teacher's Guide 5

The language is simple and easy to read, catering for the students range of abilities in each grade. Together, the text and illustrations motivate children to discuss, question, and explore.

The contents have been selected and presented in such a way as to capture and hold the interest of the students. The objective is to simplify complex ideas and present them in an interesting way. Every effort has been made to keep the language simple.

When it is necessary to use a specialized word, it has been used. When it is not self explanatory within the context, it has been defined. Clear and well-labelled illustrations have been included, which help identify and clarify the topics that are dealt with.

Good pictures and diagrams arouse and develop interest. These make lasting impressions. They help make the text clear. They also appeal to the child's imagination, while satisfying his their curiosity and often provoking a favorable reaction.

Simple practicals interesting and stimulating presentation of factual materials— offer every chance of successful learning experiences. Knowledge of problem-solving techniques, that if acquired can be applied in everyday life.

It is intended, through this series, to introduce children to many of the interesting and enjoyable things in science they can learn about and do for themselves. The series also intends to develop in them a quest for knowledge and an understanding of how science is shaping the world in which they live.

### **The role of the teacher:**

It is up to the teacher to devise ways and means of reaching out to the students, so that they have a thorough knowledge of the subject without losing interest.

The teacher must use his/her own discretion in teaching a topic in a way that he/she feels appropriate depending on the intelligence level as well as the academic standard of the class.

### **To the teacher:**

With your assurance and guidance the child can sharpen his/her skills. Encourage the student to share his/her experiences. Try to relate pictures to real things. Do not rush the reading. Allow students time to respond to questions and to discuss pictures or particular passages. It will enhance learning opportunities and will enable the child to interpret and explain things in his/her own way.

## Introduction

### Method of teaching:

The following method can be employed in order to make the lesson interesting as well as informative.

The basic steps in teaching any science subject are:

- (i) locating the problem
- (ii) finding a solution through observation and experimentation
- (iii) evaluating the results
- (iv) making a hypothesis and trying to explain it

Preparation by the teacher:

Be well-prepared before coming to the class.

- (i) Read the text.
- (ii) Prepare a chart if necessary.
- (iii) Practise diagrams which have to be drawn on the blackboard.
- (iv) Collect all material relevant to the topic.
- (v) Prepare short questions.
- (vi) Prepare homework, tests, and assignments.
- (vii) Prepare a practical demonstration.

The following may also be arranged from time to time.

- (i) Field trips
- (ii) Visits to the laboratory
- (iii) A show of slides or films
- (iv) Projects

This common strategy is easy as well as effective:

- (i) Before starting a lesson, make a quick assessment of the students previous knowledge by asking questions pertaining to the topic. Relate them to everyday observations of their surroundings or from things that they have seen or read about in books, magazines, or newspapers.
- (ii) Explain the lesson.
- (iii) Write difficult words and scientific terms on the blackboard.
- (iv) Ask students to repeat them.
- (v) Help students read the text.
- (vi) Show materials, models, or charts.
- (vii) Make diagrams on the blackboard.
- (viii) Perform an experiment if necessary.



- (ix) Ask students to draw diagrams in their science manuals.
- (x) Students should tackle objective questions independently.
- (xi) Ask questions from the exercises.
- (xii) Answers to questions are to be written for homework.
- (xiii) The lesson should be concluded with a review of the ideas and concepts that have been developed or with the work that has been accomplished or discussed.

### **Conclusion:**

The teacher can continue the learning process not only by encouraging and advising the students, but also by critically evaluating their work.

It is not necessary that the lesson begins with a reading of the textbook. The lesson can begin with an interesting incident or a piece of information that gain interest of the students and they will want to know more about the topic.

The topic should then be explained thoroughly and to check whether the students are following or not, short questions should be asked every now and then.

Sketches and diagrams on the blackboard are an important aspect to the teaching of science, but too much time should not be spent on them as the students lose interest. An alternative to drawing on the blackboard is a ready-made chart or one made by the teacher can be displayed in the class. The use of visual material keeps students interested as well as helps them make mental pictures which are learnt quickly and can be recalled instantly. Pupils should be encouraged to draw with the help of the teacher. Diagrams that are not in the text should either be copied from the blackboard or chart, or photocopied and distributed in the class.

Simple experiments can be performed in class. If possible, children may be taken to the laboratory occasionally and shown specimens of plants and animals, chemicals and solutions, and science apparatus, etc.

Practical work arouses interest in science. Class activities can be organized in such a way that the whole class participates either in groups or individually, depending on the type of work to be done or the amount of material available.

It is hoped that the above guidelines will enable teachers to teach science more effectively, and develop in their students an interest in the subject which can be maintained throughout their academic years, and possibly in their lives as a whole.

These guidelines can only supplement and support the professional judgement of the teacher but in no way can they serve as a substitute for it.



## Reproduction in Living Things

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### **Objectives:**

To know:

- living things reproduce
- how animals reproduce
- the importance of flowers
- the structure of a flower
- the functions of the parts of a flower
- what pollination is
- how pollination takes place
- what fertilization is
- how seeds and fruits are formed
- how seeds are scattered
- the structure of a seed
- how a seed germinates
- the conditions necessary for germination
- the importance of manure and fertilizers
- the relation between crops and population growth

### **Teaching strategy:**

Ask: How do living things continue to live? Where did you come from?

Explain that all living things produce new living things of their own kind.

Ask: How do insects reproduce? What comes out of an egg?

Explain that some animals produce babies while some lay eggs.

Ask: Can a small baby look after itself? Does a fish give its babies milk?

Explain that mammals feed their babies on milk and they look after them till they are strong enough to find food for themselves. Show models and charts of the life cycles of a butterfly and a cockroach.

## Unit 1 Reproduction in Living Things

Explain the stages of the life cycles.

With the help of charts and models explain the life cycles of frogs, fish, birds, and mammals.

Explain that birds and mammals look after their babies till they become independent.

Bring some flowers to the class. Give each student a flower. Tell them to study the flower carefully. Tell them to touch the centre of the flower.

Ask: What is the yellow powder on your finger? Why does a plant have flowers? Are all flowers brightly coloured?

Show the students a wheat or a grass spike. Explain the importance of flowers.

Tell the students to study the flower, starting from the outermost whorl.

Explain the structure and function of each part, with diagrams or a chart.

Cut a longitudinal section of a flower and show the students the ovules in the ovary.

Ask: Why are petals brightly coloured? Why do flowers have a scent and nectar?

Explain pollination and how it is brought about by insects and birds. With the help of diagrams and charts, explain the growth of the pollen tube and the process of fertilization.

Ask: What is a fruit? Are tomatoes and green capsicum fruits?

Explain that a fruit is a part of the flower which has seeds inside.

Ask: Where do seeds come from?

Explain seed and fruit formation.

Ask: Is pea pod a fruit?

Explain dry and juicy fruits.

Ask: Why are seeds enclosed in a fruit?

Explain the importance of dispersal of seeds. With actual specimens, charts, and diagrams explain the various methods of dispersal of seeds and fruits.

Soak some bean seeds overnight.

Distribute the seeds to the students. Tell them to open the seeds, after removing the testa.

Explain the various parts with the help of a diagram and describe their functions.

Ask: Will seeds grow in the freezer? Will boiled seeds grow? Can seeds grow without water?

Explain the conditions necessary for germination. Tell students to grow some seeds on moist sawdust or cotton wool.

Show them the various stages of seed germination.

Ask: Can new plants grow from leaves? How can we find out?

Explain that some plants are capable of producing new plants if their leaves are





placed in water. Roots start to form at the base of the leaf, and then a new plant can grow.

Give the students leaves from a geranium plant. Place each of the leaves in small paper cups filled with water. Leave the paper cups on a sunny window for a few weeks. Small roots will begin to grow, and new leaves will be formed.

Show the students an onion bulb, a potato, a ginger rhizome, and a gladiolus corm. Show them the buds on potato and ginger. Slice the onion longitudinally.

Show them the bud inside. Have the children plant some potato eyes in a pot of loose soil. Show them the sprouting plants. Explain that there are tiny plants inside the corm and bulb. Bulbs are leaves that store food in their centre. Tubers are swollen stems. The eyes on the potato are where the buds grow. If a potato is cut up and planted in the ground, each eye can produce a new potato plant.

Ask: Why do we add manure to plants? What is a fertilizer? How is manure made?

Discuss the importance of adding manure and fertilizers to plants and crops.

Ask: Why do we need to grow more crops?

Explain the increasing need of food for growing populations.

### Answers to Exercises in Unit 1

1. a) Bringing new living things of one's own kind into this world is called reproduction.
- b) i) The life cycle of a butterfly has four stages. The female lays eggs. An egg hatches into a caterpillar. The caterpillar produces a ne thread and forms a shell, called a cocoon, around its body. Inside the cocoon the insect becomes a pupa. A complete buttery forms inside the pupa. The pupa splits and the newly-formed buttery emerges from it.  
ii) The life cycle of a cockroach has three stages. The female lays eggs. A tiny nymph hatches from each egg. The nymph grows to form a complete insect.
- c) fish, frog, bird.
- d) The female frog lays eggs. A tiny tadpole comes out of each egg. The tadpole grows to form a complete frog.
- e) The female stickleback fish lays eggs in a nest. The male fish looks after the eggs for 10 days. When the fry hatch, they are kept in the nest for a month.  
Then they leave the nest and begin to feed themselves.
- f) Baby birds are covered with small feathers and their eyes are closed. Therefore, their parents have to look after them until they become strong enough to fly.

## Unit 1 Reproduction in Living Things

- g) A mammal is an animal that gives birth to babies. It feeds its babies on the mother's milk.
  - h) Flowers are important because they produce fruits and seeds from which new plants grow.
  - i) Sepals protect the flower before it opens. Petals attract insects for pollination.
  - j) A stamen has a stalk. At the tip of the stalk, there is an anther, which contains pollen.
  - k) The parts of a carpel are stigma, style, and ovary.
  - l) Pollination is when the pollen of a flower is taken to the stigma.
  - m) The joining of the male and female cells is called fertilization.
  - n) The ovary of the flower makes the fruit and seeds.
  - o) Seeds are scattered by wind, water, and animals. Some fruits burst open and scatter their seeds.
2. Parts of a flower: Refer to page 20 of the Pupil's Book.
3. Stages of germination of a bean seed: Refer to page 24 of Pupil's Book.
4. Life cycles of a butterfly and fish: Refer to pages 17 and 18 of Pupil's Book.
5. a) ovary            b) whorls            c) nectar            d) pollen            e) ovule  
f) fruit            g) testa            h) cotyledons    i) germination    j) root cap

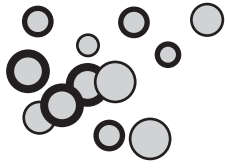
### Additional Exercise:

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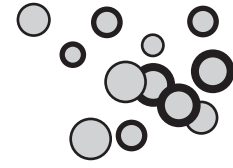
- a) Making new living things of their own kind is called \_\_\_\_\_.  
reproduction    replication    reduction    [reproduction]
- b) A caterpillar spins a coat of silk around its body and forms a \_\_\_\_\_.  
cocoon            pupa            butterfly    [pupa]
- c) Baby fish are called \_\_\_\_\_.  
caterpillars    spawn            fry            [fry]
- d) A tadpole takes \_\_\_\_\_ months to change into a complete frog.  
2            3            4            [3]
- e) Pollen is made in the \_\_\_\_\_ of a flower.  
sepal            petal            anther            [anther]



- f) Ovules are made in the \_\_\_\_\_ of a flower.  
sepal            petal            ovary            [ovary]
- g) The process by which a seed grows into a plant is called \_\_\_\_\_.  
pollination    fertilization    germination    [germination]
- h) New strawberry plants grow by \_\_\_\_\_.  
runners        corms            bulbs            [runners]
- i) A short swollen stem which stores a lot of food is called a \_\_\_\_\_.  
bulb            corm            runner            [corm]
- j) A \_\_\_\_\_ is made up of thick overlapping leaves which contain stored food.  
tuber            corm            bulb            [bulb]



# UNIT 2



## Food and Diet

---

### **Objectives:**

- The importance of food
- How do plants make food?
- How does the plants storage food?
- What are the primary food substances?
- What is food?
- What is a balanced diet?
- What are the sources of each substance?
- Why are vitamins important?
- What is fibre?
- What is a complete diet?

### **Teaching strategy:**

Ask: How many meals do you eat everyday? Does all living things eat?

Explain the importance of food. What happens to the food after it is taken into the body?

Ask: How do the plants eat ? How do they make their own food ?

Explain that plants make their own food, and how different kinds of plants store extra food in different parts of their bodies.

Ask: How do animals eat ?

Explain what is food and what are the primary food substances ?



Explain the meaning of welfare food and the meaning of a balanced diet.

Discuss what would happen if someone ate too much food and what would happen if they didn't eat enough.

Bring foods from different categories and explain the primary substances that each of them has.

Explain the importance of each primary substance.

Bring other kinds of food and make the students put them into groups. Let them explain the importance of every group.

Ask : What is fibre?

Explain the importance of eating fibre.

Explain the meaning of a complete diet.

## Answers to Exercises in Unit 2

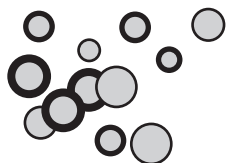
- All living things need food because it gives energy to their bodies.
  - Food that is taken into the body is first changed into simple soluble substances, so that it can go into the cells to be used by the body.
  - Most green plants make their food from materials that are taken from the air and soil.
  - Plants become weak and unhealthy without minerals.
  - Food can be stored in underground roots, underground stems, stems and seeds.
  - Proteins, fats and carbohydrates.
  - Mineral salts and vitamins are called welfare food.
  - To eat the right kind of food, in the right amount is called a balanced diet.
  - Fiber is that part of fruits, vegetables and food grains which cannot be absorbed or digested by our bodies.
- Meat, eggs and fish
  - Carbohydrates
  - Milk, butter and cheese
  - Carrots, milk and green vegetables
  - Vitamin B
  - Oranges, lemons and green vegetables
  - good for the body and teeth
  - Calcium
  - Liver and spinach
- If we eat too much food our body becomes fat.
  - If we eat too little food we become thin and weak.

## Unit 2 Food and Diet

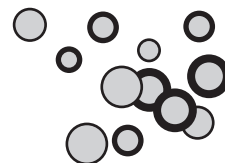
### Additional Exercise:

Choose the best answer:

- a) Plants take \_\_\_\_\_ from the air and water.  
Oxygen      Carbon dioxide      Nitrogen      [Carbon dioxide]
- b) The extra food in carrots is stored in the \_\_\_\_\_.  
Stems      Underground stems  
Underground roots      [Underground roots]
- c) The extra food in cactus is stored in the \_\_\_\_\_.  
Stems      Underground stems  
Underground roots      [Stems]
- d) Mineral salts and \_\_\_\_\_ are called welfare food.  
Proteins      Carbohydrates      Vitamins      [Vitamins]
- e) Vitamin \_\_\_\_\_ is found in orange and lemon.  
a      b      c      [c]
- f) We should drink at least \_\_\_\_\_ glasses of water every day.  
2 - 3      4 - 6      6 - 8      [6 - 8]
- g) \_\_\_\_\_ helps in making blood cells.  
Iron      Water      Vitamin D      [Iron]
- h) Fats and oil give us \_\_\_\_\_.  
A complete diet      Energy      Minerals      [Energy]



# UNIT 3



## A Healthy Body

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### **Objectives:**

To know:

- we should look after our bodies
- what we should do to stay healthy
- what we should eat to stay healthy
- why we should exercise
- why we should keep clean
- how we become ill
- what germs are
- what bacteria and viruses are
- how we can get diseases
- how we can protect ourselves from diseases
- how doctors help us to fight diseases
- what immunity is

### **Teaching strategy:**

Ask: Why should we keep clean? Why should we eat proper hygienic food?

Why should we exercise?

Explain the importance of health and what we should do to stay healthy.

Ask: How do you become ill?

Explain the ways in which we catch diseases, and the importance of bacteria and viruses in spreading diseases.

Ask: How Can we protect our bodies against diseases?

Explain the ways in which we can prevent most diseases. Explain how white cells help to kill germs. Explain how doctors can prevent diseases by vaccinations. Help the students to make charts and banners bearing slogans for preventing diseases.



### Answers to Exercises in Unit 3

1. a) We should look after our bodies so that all the parts of our body healthy
  - b) To stay healthy we must:
    - i) eat a balanced diet      ii) exercise daily
    - iii) rest      vi) keep ourselves and our surroundings clean
  - c) Exercise keeps the body strong and fit. It keeps the muscles and joints healthy. It makes the blood reach every part of the body and helps the body to use up the food consumed.
  - d) Washing and bathing keeps the body free from dirt and disease. The bathroom and kitchen should be kept clean. The rubbish of the house should be kept in a covered bin. Drains around the house should be covered.
  - e) We become ill when disease, germs, and worms live inside our bodies.
  - f) Bacteria and viruses are germs. They are tiny living things that live in our bodies. They make us ill.
  - g) i) cholera, typhoid      ii) measles, chickenpox
  - h) i) Always wash your hands with soap and water before touching food.  
ii) Keep food covered to protect it from flies.  
iii) Cover cuts and scratches on the body with a plaster.
  - i) White blood cells attack and kill germs. They also produce chemical substances which can kill germs.
2. a) true      b) false      c) true      d) false      e) false
  3. Eat a balanced diet. Exercise regularly. Keep yourself clean.

### Additional Exercise:

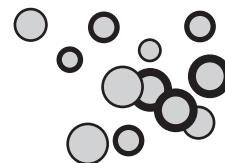
Choose the best answer:

- a) All parts of the body \_\_\_\_\_ together so that the body functions properly.  
eat                      work                      stay                      [work]
- b) We must eat a \_\_\_\_\_ diet for the proper growth of the body.  
fatty                      balanced                      salty                      [balanced]
- c) Growing children need a lot of \_\_\_\_\_.  
fats                      sweets                      proteins                      [proteins]



## Unit 3 A Healthy Body

- d) \_\_\_\_\_ keeps your muscles and joints healthy.  
Sleeping      Exercise      Eating      [Exercise]
- e) Many diseases are caused by tiny living things called \_\_\_\_\_.  
insects      worms      germs      [germs]
- f) When people cough and sneeze germs from their bodies are pushed out into the \_\_\_\_\_.  
air      water      land      [air]
- g) The \_\_\_\_\_ blood cells protect the body from germs.  
red      white      blue      [white]
- h) Germs found in \_\_\_\_\_ and water can cause food poisoning.  
food      soil      air      [food]
- i) \_\_\_\_\_ can also help your body to fight against disease germs.  
Teachers      Engineers      Doctors      [Doctors]
- j) Vaccinations can make the body immune to many \_\_\_\_\_.  
diseases      reactions      bodies      [diseases]



## Atoms and Molecules

### **Objectives:**

To know:

What matter is.

What an atom is.

What a molecule is.

What an element is.

What evaporation is.

What condensation is.

### **Teaching strategy:**

Bring different things and ask the students about their shape, size and colors.

Ask them whether it's rough or smooth, wet or dry.

Explain what matter is.

Ask: when you mix sugar with tea what do you taste? When you bring a flower close to your nose what do you smell ?

Explain what an atom is and what happens when they join up.

Draw an atom on the board and explain its structure.

Ask: How many kinds of atoms are there? Do all the substances have the same kind of atom ?

## Unit 4 Atoms and Molecules

Explain the meaning of an element and the difference between it and a compound.

Give examples for each one of them.

Ask: Do you know the differences between metals and non-metals?

Explain that elements are divided into two groups metals and non-metals, give an example for each one of them.

Ask: What are the three states of matter?

Explain them and give examples.

Discuss how matter can change its state.

Explain the status of the molecules in each state.

Ask: What do we do to melt something. What do we do to freeze something?

What do we do to boil something?

Explain how change of state occurs.

Ask: What happens if we leave water on a stove in an uncovered pan?

Explain what evaporation means.

Ask: What happens to the glass if we put ice cubes in a glass ?

Explain what does condensation mean.

### Answers to Exercises in Unit 4

- Anything which takes up space and has weight.
  - Matter is made up of very tiny particles called atoms.
  - Atoms join up to form molecules.
  - A substance which has the same kind of atoms is called an element.
  - Substances which have atoms of more than one kind are called compounds.
  - Metals are usually hard and shiny. Heat and electricity can easily pass through them, non-metals are not hard. They do not have a shine. Heat and electricity cannot pass through them.
  - Solid, liquid, gas.
  - When water is heated, it changes to gas.



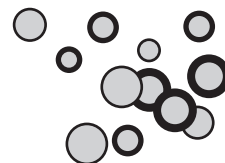
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4. a) Matter      b) atoms      c) molecules      d) neutron      e) nucleus  
f) element      g) oxygen      h) Metals      i) non-metals      j) gases
5. a) Melting b) Boiling  
c) Condensation d) Freezing

**Additional Exercise:**

Choose the best answer:

- a. The change of water into a gas is called \_\_\_\_\_.  
condensation      evaporation      freezing      [evaporation]
- b. Which of these elements is metal? \_\_\_\_\_.  
oxygen      nitrogen      iron      [iron]
- c. A \_\_\_\_\_ can flow. It takes the shape of the vessel it is put in.  
solid      liquid      gas      [liquid]
- d. The melting point of ice is \_\_\_\_\_.  
4 C      5 C      1C      [4 C]
- e. Carbon, silver, gold, iron and oxygen are \_\_\_\_\_.  
atoms      compounds      elements      [elements]



## Water

---

### **Objectives:**

To know:

- three-fourths of the Earth is covered with water
- water exists in three states
- water finds its level by the force of gravity
- the impurities in water
- how water is supplied in towns and villages
- how water is purified for drinking purposes
- the uses of water

### **Teaching strategy:**

Show the students a relief map of the world. Explain that the blue parts are water. The ice caps at the North Pole and South Pole are frozen water. Show the students a glass with cold water and ice inside it.

Ask: Why have water droplets formed on the outside? Where did the water come from?

Explain that there is water vapour in the air.

Partially fill a clear plastic bottle with water. Slowly tilt the bottle.

Ask: Does the water fall?

Explain that water keeps its level due to the force of gravity.

Ask: Which is the purest form of water? How does rainwater become dirty?

Explain that as rain falls, many gases, dust particles, and germs mix with it. When it flows along the ground, it dissolves many soluble salts and soil particles. Dead plants and other insoluble particles also mix with it.

Ask: Can we drink this water?

Explain that this water has to be cleaned before we can drink it.

## Unit 5 Water

Explain that water exists in three states and that it can be changed from one form to another.

Ask: Where does water come from in our houses? Is tap water fit for drinking?

With the help of pictures, explain how people get water in villages.

Show the students a picture of a water filtration plant.

Ask: Can we clean dirty water?

Explain that water can be purified by filtering it through clean muslin cloth and by boiling it.

Ask: What do we use water for?

Explain the uses of water. Also explain the properties of polluted water. Discuss how water pollution can be reduced.

Ask: How can we increase the amount of clean water?

Discuss the increasing need for clean water for the increasing population.

### Answers to Exercises in Unit 5

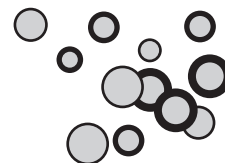
- Three-fourths of the surface of the Earth is covered with water. It is found in oceans, seas, rivers, lakes and streams, and as ice caps at the poles.
  - The three states of water are gas, solid and liquid.
  - People in villages store river water and rainwater in pools. They also dig wells and draw up groundwater by buckets or pumps.
  - Drinking water is purified in a water filtration plant.
  - We use water for drinking, washing, and cooking. It is also used in factories and industries.
- springs
  - water vapour
  - ice
  - water
  - water
  - hail
  - reservoirs
  - chlorine
- The students will draw their own drawings.



### Additional Exercise:

Choose the best answer:

- a) Three-fourths of the surface of the Earth is covered with \_\_\_\_\_.  
water            land            air            [water]
- b) Water is found at the North and South Pole in the form of \_\_\_\_\_.  
water            water vapour            ice caps            [ice caps]
- c) Water in our homes comes from huge stores called \_\_\_\_\_.  
reservoirs            springs            wells            [reservoirs]
- d) Air contains water in the form of \_\_\_\_\_.  
ice            water vapour            steam            [water vapour]
- e) Natural water found close to cities and farms contains harmful chemicals and \_\_\_\_\_.  
germs            animals            fish            [germs]
- f) As rain falls through the air many \_\_\_\_\_ dissolve in it.  
gases            solids            liquids            [gases]
- g) When a river flows along it carries with it mud and \_\_\_\_\_ particles.  
clay            rocks            stones            [clay]
- h) \_\_\_\_\_ from farms and house contains a lot of bacteria.  
Chemicals            Acids            Sewage            [Sewage]
- i) Spring water has a chemical called \_\_\_\_\_ which helps prevent tooth decay.  
chlorine            iodine            fluorine            [fluorine]
- j) \_\_\_\_\_ water has the highest amount of dissolved and suspended impurities.  
Spring            Sea            River            [Sea]



## Energy

### **Objectives:**

To know:

- The importance of energy.
- Forms of energy.
- Uses of energy.
- Sources of energy.
- What kinetic energy is.
- How energy is formed.
- Different kinds of stored energy.
- What fuel is.
- The essential things needed to burn something.
- How energy causes changes in matter.

### **Teaching strategy:**

Ask: How does an airplane move? How do we move?

Explain how all living things and machine need energy to move.

Mention the different forms of energy.

Ask: How does a boat sail in the sea? What about the blades of a windmill?

Explain the uses of mechanical energy.

Ask: How do a car and an airplane move ?

Explain the uses of chemical energy and the importance of petrol.

Ask: How do we use heat energy ? What are the sources of heat ?

Explain heat energy and electrical energy.



## Unit 6 Energy

Ask: What is the main source of energy ?

Explain What is light energy, and how does the Sun provide energy to green plants.

Discuss the process of producing atomic energy.

Ask: Do sounds produce energy?

Explain how sound waves are produced, give examples of sound energy.

Ask: Do you know the name of source of energy?

Mention the sources of energy and their uses.

Explain the kinetic energy in atoms and molecules, and how the changes in the form of objects happen?

Explain how energy can change from one form to another.

Ask: Can energy be stored ? Give examples of stored energy. How do animals store energy?

Ask: How do we use energy at home ?

Explain what fuel is with examples.

Ask: How do things burn ?

Mention the three essential things needed to make something burn.

Bring a photo of a fire extinguisher and ask students what it is used for.

What gases does it contain?

Bring an iron ball, a wooden ring. Show the students that the ball will pass easily through the ring once the iron ball is heated it won't pass.

Explain what happens to solids when they are heated.

### Answers to Exercises in Unit 6

1. a) i) Mechanical energy    ii) Chemical energy    iii) Heat energy  
iv) Electrical energy    v) Light energy    vi) Atomic energy  
vii) Sound energy

We need energy to make machines work. We need it in our homes for cooling, heating and cooking things.

b) The Sun is the source of all energy.

## Unit 6 Energy

- c) Candles, oil, natural gas are all sources of energy.  
d) Kinetic energy is the movement of atoms and molecules in an atom.  
e) Kinetic energy separates atoms from each other which changes their form.  
f) Energy can be stored. Animals store energy in their bodies as fats.  
It to keep them warm during cold weather.  
g) A fuel is something that once burned makes light and heat.  
h) i) fuel      ii) oxygen      iii) heat  
2. a) Sun's      b) kinetic      c) potential energy      d) fats  
e) energy  
3. a) Solar energy      b) Wind energy      c) Electric energy  
d) Kinetic energy      e) Chemical energy      f) Heat energy  
g) Light energy      h) Potential energy      i) Chemical energy  
j) Chemical energy  
4. a) No, it will not pass through the ring.  
b) It proves that solids expand when they are heated.  
5. Milk boils over when heated because liquids expand when heated.  
6. The rubber balloon bursts because gases expand when they are heated.

### Additional Exercise:

Choose the best answer:

- a) A jet engine is an example of \_\_\_\_\_ energy.  
heat energy      chemical energy      kinetic energy      [chemical energy]
- b) Coal, oil and \_\_\_\_\_ are all fuels.  
gas      carbon dioxide      solar energy      [gas]
- c) Natural gas gives off \_\_\_\_\_ energy when burnt.  
electrical      mechanical      heat      [heat]



## Assessment

### Units 1-6

1. Answer the following questions:

- a) Why do all living things need food?
- b) Describe the life cycle of i) a frog ii) a butterfly.
- c) How can doctors help you to fight diseases?
- d) What is ground water?
- e) What is kinetic energy?
- f) What is condensation?

2. Fill in the blanks:

- a) The nucleus is made up of particles called protons and \_\_\_\_\_. ( neutrons )
- b) \_\_\_\_\_ is a mineral which is found in liver and spinach. It helps in making blood cells. ( Iron )
- c) When living things create new living things of their own kind it is called \_\_\_\_\_. ( reproduction )
- d) Flowering plants have \_\_\_\_\_ which produce fruits and seeds. ( flowers )
- e) Regular \_\_\_\_\_ helps your body stay strong and fit. ( exercise )
- f) Growing children need to eat foods that contains a lot of \_\_\_\_\_.  
( protein )
- g) Air contains water in the form of \_\_\_\_\_. ( water vapour )
- h) Ice is \_\_\_\_\_ water. ( solid )
- i) In a power station, the chemical energy of the fuel is changed into \_\_\_\_\_.  
( electrical energy )
- j) When a substance is heated, its particles gain energy and start moving \_\_\_\_\_.  
( faster )



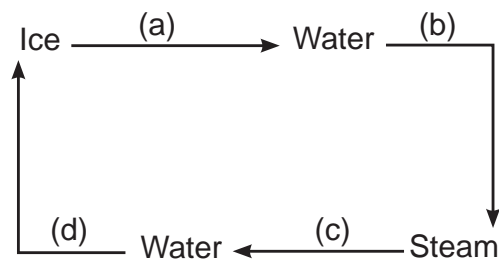
3. Match the items of the lists A and B:

A	B
petal	male cell
stamen	female part
pollen	brightly coloured
carpel	male part
ovule	sticky tip
stigma	fruit
ovary	female cell
seed	coat germination
growth of seed	embryo
baby plant in the seed	testa

4. Write True or False next to each statement:

- Exercise makes you fat. \_\_\_\_\_
- Sleeping is the best exercise. \_\_\_\_\_
- The rubbish of the house should be thrown onto the street. \_\_\_\_\_
- We should not use things that have been used by a sick person. \_\_\_\_\_
- If you have a disease that can spread, stay away from people till you are better. \_\_\_\_\_

5. Write the name of the processes.



## Answers

- a) All living things need food to stay healthy, to grow and to have energy.

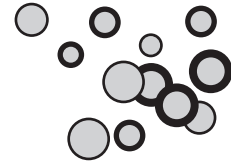
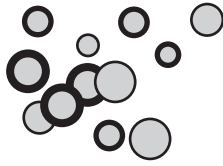


- b) i) The female frog lays eggs. A tiny tadpole comes out of each egg. The tadpole grows to form a complete frog.
- ii) The female butterfly lays eggs. After a week a small larva called caterpillar hatch from eggs. It produces a fine thread and forms a shell, called cocoon around its body. Inside the cocoon the insect becomes a pupa. The pupa splits and the newly formed butterfly emerges from it.
- c) Doctors inject vaccines of different diseases in our bodies, which help our bodies to become immune to germs of different diseases.
- d) Water that has soaked through the soil is called groundwater. It fills the spaces in the rocks, and comes out in the form of springs and wells.
- e) Atoms and molecules move about all the time. They have energy called Kinetic energy
- f) When water vapour in the air touches a cold surface, it changes into water droplets. This change of water vapour into liquid water is called condensation.

3.

<u>A</u>	<u>B</u>
petal	brightly coloured
stamen	male part
pollen	male cell
carpel	female part
ovule	female cell
stigma	sticky tip
ovary	fruit
seed coat	testa
growth of seed	germination
baby plant inside the seed	embryo

- 4. a) false      b) false      c) false      d) true      e) true
- 5. a) melting                      b) evaporation
- c) condensation                d) freezing



## Simple Machines

### **Objectives:**

To know:

- we use machines all the time
- machines need force to work
- machines need energy
- what a simple machine is
- the kinds of simple machines

### **Teaching strategy:**

Show the students a tin cutter, a bottle opener, a screwdriver, a pair of scissors, and a knife.

Ask: What are these used for? Can you open a bottle cap with your fingers? Can you cut cloth with your hands?

Explain that anything which makes our work easy is called a machine.

Ask: Can you name some machines that we use at home, in school, or on the roads?

What does a machine need to work?

Explain that machines need some kind of energy to make them work.

Ask: What do you use a knife and scissors for? How can you cut a thick log of wood?

How can you lift a heavy object?

Explain the uses of simple machines and how they make your work easier.

## Unit 7 Simple Machines

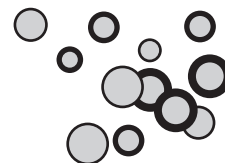
### Answers to Exercises in Unit 7

1. a) Washing machine, printer, car  
b) All machines need energy to work  
c) It can turn the force of your hand into some kind of movement which helps you to do work.  
d) A pulley is a simple machine which is made up of wheels. When it is pulled it lifts heavy loads.
2. a) Lever  
b) Wheel and axle  
c) Wedge  
d) Wedge  
e) Wheel and axle

### Additional Exercise:

Choose the best answer:

- a) You need less force to lift a heavy object by using an \_\_\_\_\_.  
thread      wedge      inclined plane      [inclined plane]
- b) A sea-saw, a wheelbarrow and a \_\_\_\_\_ are all levers.  
scissor      knife      screw      [scissor]
- c) A lever has an arm that can move about on a point called  
a \_\_\_\_\_.  
wedge      fulcrum      thread      [fulcrum]
- d) A \_\_\_\_\_ is a simple machine that is used to hold two things together.  
wheels      pulley      screw      [screw]
- e) A sewing machine is an example of \_\_\_\_\_ simple machine.  
Lever      wheel and axle      pulley      [wheel and axle]



## Light

---

### Objectives:

To know:

- light is a form of energy
- light travels in straight lines
- the forms of light
- how a shadow is formed
- how eclipses are formed
- what a spectrum is
- why objects appear coloured
- the kinds of colours

### Teaching strategy:

Ask: What is light? Where do we get light from? What is the speed of light?

Do we see lightning first or do we hear the clap of thunder? Why?

Explain that light is a form of energy which travels in the form of waves.

It's speed is 300,000 km per second, which is faster than the speed of sound.

Ask: Can we see around corners? Why?

Explain that we cannot see around corners because light can only go straight, it cannot bend. Perform the experiment given in the book to prove that light travels in straight lines.

Help the students to construct a pinhole camera and show them how it is used to make an inverted image of a distant object. Show pictures of some sources of light like the Sun, candle, fire, etc. Explain that burning gives out heat and light.

Light a torch and shine it on the board. Show the students a beam of light. Explain that it is made up of many rays. Show the students a laser torch.





Ask: What is the colour of the light?

Explain that a laser is a very strong ray of light of any one colour. Light a torch and hold a book in its beam.

Ask: What is this dark patch called? Why has it formed? Why does it appear dark?

Explain how shadows are formed. Explain that light coming from a point source produces a sharp shadow called umbra. Draw a shadow with an umbra and penumbra.

Ask: Why is the lighter shadow formed outside the dark shadow?

Explain that the outer lighter shadow is called penumbra. A penumbra is formed when the light comes from a bigger source.

Show the students a chart of the solar and lunar eclipses.

Ask: What is an eclipse? How is it formed?

Explain the movements of the Earth and Moon around the Sun and the formation of eclipses.

Hold a prism in the path of a beam of light coming in the room.

Ask: What do you see on the opposite side?

Explain the formation of the spectrum due to dispersion of light through a prism.

Ask: What is a rainbow? When do you see a rainbow? How is a rainbow made?

What are the colours of the rainbow?

Show the students a chart of the colours of the rainbow. Explain that a rainbow is formed in the same way as light is dispersed through a prism. The raindrops act as tiny prisms which disperse sunlight to form a rainbow.

### Answers to Exercises in Unit 8

1. a) When the light is on, electricity runs through a tiny wire inside the bulb.  
This makes the wire get hot. The electrons in the wire absorb energy.  
Anything that is hot enough gives off light.
- b) The bundles of energy are called photons.
- c) The moon shines only because the Sun shines on it. Some of the Sun's light bounces off the moon and is reflected to the Earth.
- d) The range of rainbow colours is called a spectrum.
- e) Red, blue and green.
- f) White, yellow, magenta and cyan.
- g) A colored opaque object looks colored because it absorbs all the colours of the spectrum and reflects only the light of its own color.

## Unit 8 Light

- h) White objects reflect all colours.  
i) A filter is a colored piece of glass or plastic, which allows some colors to pass through.
2. a) light      b) photons      c) The Sun's light      d) luminous bodies  
e) transparent materials      f) Air      g) opaque  
h) primary      i) secondary      j) red
3. a) white  
b) yellow  
c) magenta  
d) cyan

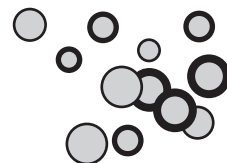
### Additional Exercise:

Choose the best answer:

- a) Things which do not give off light but only reflect the light falling on them are called \_\_\_\_\_.  
luminous body      non-luminous body  
opaque      [non-luminous body]
- b) \_\_\_\_\_ absorbs all colours and reflects none.  
Red      White      Black      [Black]
- c) A red filter absorbs green and \_\_\_\_\_ light.  
blue      yellow      white      [blue]
- d) Wood, metals and \_\_\_\_\_ are opaque.  
glass      air      cardboard      [cardboard]
- e) Air, water and glass are \_\_\_\_\_ materials.  
translucent      transparent      opaque      [transparent]
- f) To get the colour white we have to mix red, green and \_\_\_\_\_.  
blue      white      yellow      [blue]



# UNIT 9



## Magnetism

### **Objectives:**

To know:

- what a magnet is
- the properties of a magnet
- the types and shapes of magnets
- what a magnetic force is
- that the force of a magnet is strongest at the poles of a magnet
- how to locate the poles of a magnet
- how to plot a magnetic field of a magnet
- that the Earth has a magnetic field
- the magnetic nature of a magnet
- how a piece of iron or steel can be made into a magnet
- how a magnet can be demagnetized

### **Teaching strategy:**

Ask: Have you seen a magnet? What can a magnet do?

Show different types of magnets to the students. Demonstrate the poles of a magnet with the help of iron filings. Explain the method of plotting a magnetic field with the help of a compass needle. Ask the students to plot magnetic field in a laboratory. Explain the lines of magnetic force from the magnetic field that has been plotted. Demonstrate the magnetic field of the Earth by suspending a bar magnet with a string. Explain the magnetic nature of magnetic material.

Demonstrate the method of making a magnet.

Demonstrate the method of demagnetizing a magnet by heating it. Explain why keepers are kept with magnets when they are stored.



### Answers to Exercises in Unit 9

1. a) A magnet is a material that can attract metals such as iron.  
b) An electromagnet is a temporary magnet. It behaves like a magnet only when an electric current is flowing through it.  
c) The power that pulls the material together  
d) The force of magnet is strongest at the poles.  
e) The area around a magnet where the force of magnet can be felt.  
f) A needle can be made into a magnet by stroking it in one direction many times with the pole of a strong bar magnet.  
g) You can demagnetize a magnet by heating, striking or beating.
2. a) Iron, steel      b) Copper      c) poles      d) loses  
e) electromagnet      f) Compass      g) bar magnet  
h) Disc      i) temporary
3. a) Horseshoes      b) U-shaped      c) Cylindrical  
d) Rectangular      e) Electromagnet
4. a) repel      b) repel  
c) attract      d) attract

### Additional Exercise:

Choose the best answer:

- a) Metals that are attracted by magnets are called \_\_\_\_\_.  
magnetic materials      non-magnetic materials  
neutral materials      [magnetic materials]
- b) \_\_\_\_\_ magnetic materials are easy to magnetize but lose their magnetism quickly.  
Soft      Hard      Non      [Soft]
- c) The area around a magnet where it can attract magnetic materials called \_\_\_\_\_.  
attractive field      magnetic field      polar eld      [magnetic eld]

## Unit 9 Magnetism

- d) The force of a magnet is strongest \_\_\_\_\_.  
at the poles      in the centre      all over      [at the poles]
- e) A \_\_\_\_\_ is an instrument that helps us find directions.  
barometer      microscope      compass      [compass]
- f) When an electric current is passed through a coil of wire, it behaves like a \_\_\_\_\_.  
battery      magnet      torch      [magnet]
- g) A piece of soft \_\_\_\_\_ can become magnetized if it is placed inside a coil carrying a current.  
wood      iron      plastic      [iron]
- h) An electromagnet can be made stronger by passing a \_\_\_\_\_ current through it.  
weaker      stronger      softer      [stronger]
- i) An electric bell uses an \_\_\_\_\_ which is switched on and off by a contact breaker.  
electromagnet      fuse      switch      [electromagnet]
- j) Electromagnets are used to separate \_\_\_\_\_ in a scrap yard.  
wires      tools      metals      [metals]



### **Objectives:**

To know :

- sound is produced by vibrating bodies
- how vibrations produce sound
- how vibrations produce loud and soft sounds
- sound needs a medium to be produced
- sound travels better through solids than through liquids and gases
- sound travels at different speeds
- how musical sounds and noise are produced
- what an echo is
- how echoes are used in echo detection and echolocation

### **Teaching strategy:**

Ask: What sounds can you hear right now? How are these sounds produced?

Name a loud sound. How is music produced by a guitar?

Explain the production of sound by vibrations. Explain how vibrations make the particles of air bump into each other and are pressed and spread to produce sound waves.

Ask: Will a loud or soft sound be produced if we strike a drum hard?

Explain loud and soft sounds.

Ask: Can sound travel through materials?

Explain that sound travels fastest in solids.

Ask: Can we hear the sound of explosions taking place on the Sun?

Explain that sound cannot travel in space because there are no particles to produce sound waves.



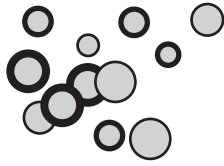


**Additional Exercise:**

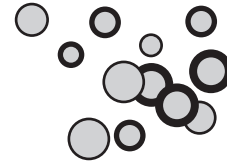
Choose the best answer:

- a) Vibrations caused by the shaking movements of the air help to produce \_\_\_\_\_.  
sound                  heat                  electricity                  [sound]
- b) When particles pass their energy from one molecule to the next the movement is called a \_\_\_\_\_.  
water wave                  sound wave                  electrical wave                  [sound wave]
- c) A \_\_\_\_\_ sound is heard when the vibration is small.  
low                  high                  noisy                  [low]
- d) Sound cannot travel through space because there is no \_\_\_\_\_.  
water                  land                  air                  [air]
- e) Sound travels better through \_\_\_\_\_ than liquids.  
air                  water                  solids                  [solids]
- f) Unpleasant sounds are called \_\_\_\_\_.  
noise                  music                  vibrations                  [noise]
- g) Sound waves bounce off \_\_\_\_\_, hard surfaces.  
smooth                  shiny                  rough                  [smooth]
- h) Sound that is \_\_\_\_\_ is called an echo.  
dispersed                  reflected                  refracted                  [reflected]
- i) Bats can catch insects in the dark by \_\_\_\_\_.  
echo sounders                  echo detection                  echo location                  [echo location]
- j) Very loud sounds can damage the \_\_\_\_\_.  
eyes                  ears                  teeth                  [ears]





# UNIT 11



## The Earth's Movements

### **Objectives:**

To know:

- The types of the earth's movement.
- What folding is.
- What faulting is.
- What weathering is.
- What erosion is.
- What sediment is.
- What sedimentary rocks are.
- The contents of the soil.
- The importance of the soil.
- The importance of soil erosion.
- How soil erosion can be controlled?
- The effects of pollution.
- What acid rain is.
- The effects of the acid rain.

### **Teaching strategy:**

Ask: How do earthquakes happen?

Explain the types of the earth's movements.

Ask: Have you ever seen a broken rock? Have you ever seen a moving sand, soil or rocks?

Discuss the meaning and the differences between erosion and weathering.

Ask: What happens to the small pieces of a rock? Where do they go?

Explain the meaning of sediment and sedimentary rocks.

## Unit 11 The Earth's Movements

Bring some soil, ask the students what is soil made up of?

Explain the contents of soil.

Discuss the meaning of soil erosion and how it is caused?

Mention and explain how can soil erosion be controlled?

Ask: What causes air pollution?

Explain how pollution causes changes in the weather.

Discuss the effects of cutting trees down, and the meaning of the green house effect.

Ask: What happens when the atmosphere becomes warmer?

Explain the effect of changes in the weather.

Ask: Do the gases that come out of the factories affect the atmosphere?

Explain the meaning of acid rain and how it damages many things.

### Answers to Exercises in Unit 11

- i) Folding ii) Faulting
  - In the Earth's crust the pushing of two forces towards each other causes folding.
  - A fault is the crack between the rocks.
  - The process that makes the rocks break down.
  - The process by which sand, soil and rocks move from one place to another.
  - Water which seeps into cracks in rocks, may freeze and become ice. The ice splits the rocks and breaks them into smaller pieces. These pieces are washed away by water or blown away by wind.
  - Small pieces of rock that are washed or blown away are called sediment.
  - The soil has particles of different shapes and sizes. It also contains air, water, mineral salts...etc.
  - If plants and trees are removed from the soil by too much animal grazing or grasslands, soil erosion takes place.
- |              |           |             |         |
|--------------|-----------|-------------|---------|
| a) new       | b) rain   | c) humus    | d) Soil |
| e) Pollution | f) moving | g) sediment |         |



**Additional Exercise:**

Choose the best answer:

- a) The \_\_\_\_\_ layer protects the Earth from the harmful ultraviolet rays of the Sun.  
acid                  ozone                  organic                  [ozone]
- b) Plants use \_\_\_\_\_ to make their food.  
oxygen                  mineral salts                  carbon dioxide                  [carbon dioxide]
- c) Poisonous gases dissolve in rainwater and fall as \_\_\_\_\_.  
acid rain                  rain                  snow                  [acid rain]
- d) \_\_\_\_\_ means the loss of soil from the land.  
Sediment                  Sedimentary rocks                  Soil erosion                  [Soil erosion]
- e) Rocks can be broken down by a process called \_\_\_\_\_.  
erosion                  weathering                  sediment                  [weathering]
- f) The fault of the rocks form block mountains and \_\_\_\_\_.  
ridges                  fold mountain                  rift valleys                  [rift valleys]



**UNIT 12**

Oceans

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**Objectives:**

To know:

- What an ocean is.
- The names of the oceans in the world.
- How oceans were formed.
- Parts of an ocean.
- What trenches are.
- What ridges are.
- The importance of continental shelves.

**Teaching strategy:**

Ask: How many seas do we have? What are their names?

Explain that three-fourths of the Earth's surface is covered with water.

Explain what is an ocean.

Bring a map and show the students the 4 oceans and their names.

Explain how oceans were formed.

Draw the parts of the ocean on the board.

Explain the meaning of a continental shelf, submarine plain, trenches and ridges

Ask: What kinds of sea food do we eat?

Explain which part of the ocean has fish, the methods of catching them, and also the benefits of eating fish.

Mention what other kinds of sea food we eat.

Explain the importance of the continental shelves of the oceans.

## Unit 12 Oceans

### Answers to Exercises in Unit 12

1. a) An ocean is a huge body of water.  
b) The oceans were formed 4,000 million years ago, when rain filled the low places in the Earth's crust.  
c) The edge of a continent, which slopes towards the seabed is called the continental shelf. The continental shelves of oceans are full of fish and other marine animals.  
d) Away from the shelf, the seabed drops sharply into a flat area, this is called a submarine plain.  
e) Deep cuts in the ocean floor are called trenches.  
There are places in the ocean floor from where molten rocks have pushed their way up from ridges.
3. a) Three-fourths                      b) five                      c) 4,000 million  
d) continental shelf                      e) trenches



## Assessment

### Units 7-12

1. Answer the following questions:

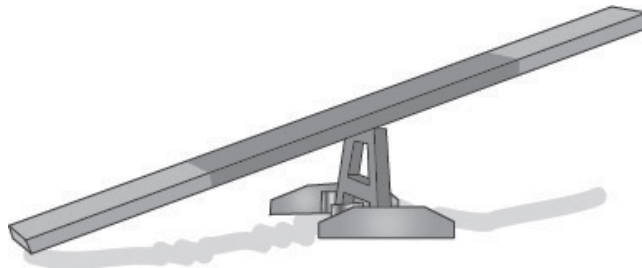
- What is a sound wave?
- What is the difference between transparent, translucent, and opaque materials?
- What is lightning?
- What is a magnetic field? What will happen to materials like iron and steel if they are placed in the magnetic field?
- What is soil erosion? How can soil erosion be controlled?
- What is an ocean?

2. Fill in the blanks:

- The edge of a continent which slopes towards the seabed is called a \_\_\_\_\_. (continental shelf)
- Light travels very fast in the form of \_\_\_\_\_. (waves)
- Bodies that have their own light are called \_\_\_\_\_. (luminous)
- If we like a sound we call it \_\_\_\_\_. (musical)
- Poisonous gases and chemicals from factory chimneys dissolve in rainwater and fall as \_\_\_\_\_. (acid rain)
- A \_\_\_\_\_ is an instrument which is used to find directions. (compass)
- The Earth is like a huge bar of \_\_\_\_\_ with a weak magnetic field around it. (magnet)
- \_\_\_\_\_ break down dead plants and animal to form humus. (Micro-organisms)
- A \_\_\_\_\_ is a simple machine which is made up of wheels. (pulley)
- Red, blue and green are called \_\_\_\_\_. (primary colours)

3. Name each of the following simple machines:

- a) \_\_\_\_\_





b) \_\_\_\_\_



4. Name the following types of magnets:



(a)



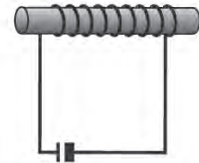
(b)



(c)



(d)



(e)

a) \_\_\_\_\_

d) \_\_\_\_\_

b) \_\_\_\_\_

e) \_\_\_\_\_

c) \_\_\_\_\_

### Answers

1. a) A vibrating body, first makes the molecules of air press together and then spread apart.

The vibrations pass from molecule to molecule to make a sound wave.

b) Transparent materials allow all the light to pass through. Translucent materials allow some light to pass through. Opaque materials do not allow any light to pass through.



- c) When clouds become highly charged due to rubbing against each other, a large number of electrons jump from one cloud to another or to the Earth.  
This flow of electrons produces a flash of lightning.
- d) The area around a magnet in which it is effective is called its magnetic field. If a magnetic material such as iron or steel is placed in the magnetic field, the magnet will pull it towards itself.
- e) If the top layer of the soil is washed away by rainwater or wind, no plants can grow in the remaining soil. The removal of the fertile top layer of soil is called erosion. Plant roots help to hold soil particles together. Trees, plants, and grass should be planted to prevent erosion.
- f) Oceans are huge bodies of water.
3. a) lever  
b) Wheel and axle
4. a) horseshoe magnet                      b) U-shaped magnet                      c) rod magnet  
d) bar magnet                                      e) electromagnet





Assessment answer

2. petal – brightly coloured  
stamen – male part  
pollen - male cell  
carpel - female part  
ovule - female cell  
stigma - sticky tip  
ovary - fruit  
seed coat - testa  
growth of seed – germination  
baby plant in the seed – embryo
3. We must eat a balanced diet to remain healthy.
5. A doctor injects us with vaccinations. They make the body immune to many kinds of disease germs.
6. a) F  
b) F  
c) F  
d) T  
e) T
7. By heating.
8. Condensation is the change of water vapour (or gas) into liquid.
9. Groundwater is water drawn from the ground by buckets or pumps.
10. Water in cities comes from huge stores called reservoirs.
11. A fire extinguisher is used to put out fires in buildings.
12. We use fire extinguishers.
13. lever, inclined plane, wedge, screw and pulley.
14. A pulley is a simple machine which is made up of wheels.



Assessment answers

15. Materials that allow light to pass through are called transparent materials. Translucent materials only allow some light to pass through them. Opaque materials do not allow any light to pass through them.
16. A red filter absorbs green and blue light.
17. Permanent, temporary and electromagnets.
18. A compass is a small instrument that helps us to find directions.
19. Yes, because you can hear sounds in the water when you are swimming under water.
20. Bats make high squeaking sounds and use their ears to pick up the echoes from objects around them. This helps bats find their way in the dark and to catch food such as flying insects.
21. a) Trees should be planted on steep slopes.  
b) Grass should be planted on slopes.  
c) Sloping fields should be cut into terraces.
- 22) a) carbon dioxide      b) greenhouse      c) ozone      d) Trees and grass
- 23) a) Oceans are full of fish and marine life.  
b) They are home to many creatures.  
c) Ships travel through oceans.





