Fiesta Learning
Big Ideas Simply Explained

Junior SCIENTIST

CREATING TOMORROW'S INNOVATOR

Solution Manual

Class 1-5

CONTENTS

Junior SCIENTIST 1

1 Things : Living or Non-living

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (a) 3. (a) 4. (c) 5. (c)

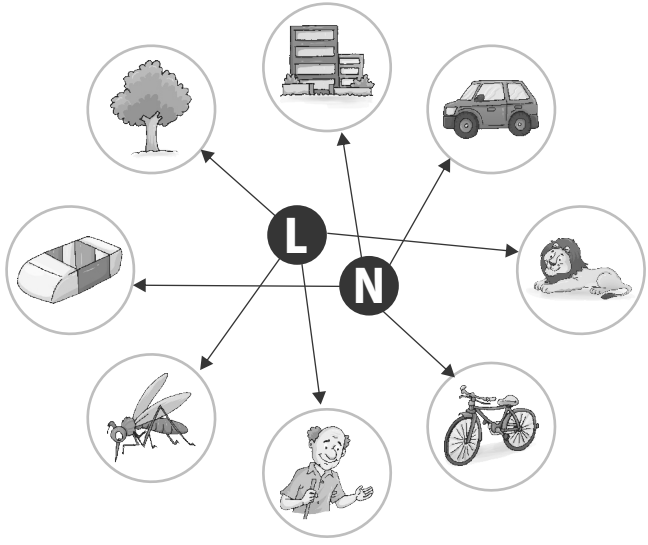
B. State whether the following statements are true or false.

1. True 2. False 3. False 4. False

C. Fill in the blanks with the help of correct words.

1. living 2. feelings 3. non-living
4. natural 5. man-made

D. Match the following. Here L indicates living things and N indicates non-living things.



E. Answer the following questions.

1. Living things are the things that have life. Plants, tree, animals and human beings all are living things.
2. Non-living things are the things that do not have life. Non-living things cannot breathe, move, eat, feel and grow.
3. **Natural non-living things :** Water, wood, air, stones, rocks and soil are natural non-living things.

   Man-made non-living things : Plastic, paper and glass are the non-living things made by man.
4. (i) Living things **Feel** hot, cold and pain.

   (ii) Living things have **feelings**.

Active Learning

- **Make a list of any five living and five non-living things which you see daily.**

Living things	Non-living things
1. Birds	1. Wood
2. Trees	2. Air
3. Animals	3. Stones
4. Rabbits	4. Paper
5. Insects	5. Glass

- **Make a scrapbook on 'Things Around Us'. Paste the pictures of five living and five non-living things. Write their names under the pictures.**

  Do yourself.

Picture Learning

- **Look at the picture given alongside.**

  Do yourself.

2 Getting to Know Plants

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (c) 4. (c) 5. (a)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. False

C. Fill in the blanks with the help of correct words.

1. herbs 2. climber 3. creepers
4. leaf 5. seed

D. Give two examples of each of the following.

Tree	Shrub	Herb	Climber	Creeper
Mango Banyan	Rose Lemon	Mint Coriander	Money plant Grapevine	Pumpkin plant Bottle gourd

E. Answer the following questions.

1. Some plants are big and strong. These are called trees.
2. **Difference between the stem of a tree and a shrub.**

   Stem : The part of the plant which remains above the ground.

   Shrubs : Some plants have thin woody stem with many branches. Such plants are called shrubs.
3. **Different parts of a plant**

   Root, Stem, Leaf, Flower, Fruit, etc.
4. Most of the plants grow from seeds. A seed has a body plant in side it. A seed needs soil, air, water and sunlight to grow into a plant.

Active Learning

- **Arrange the following pictures in correct order to get a healthy plant.**

  Correct order is : B D A C
- **Bhindi Flowers!**

  Do yourself.

Picture Learning

- **What is wrong in the given picture. Do the needful to correct it.**

  Do yourself.

3 Food From Plants

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (b) 3. (b) 4. (b) 5. (a)

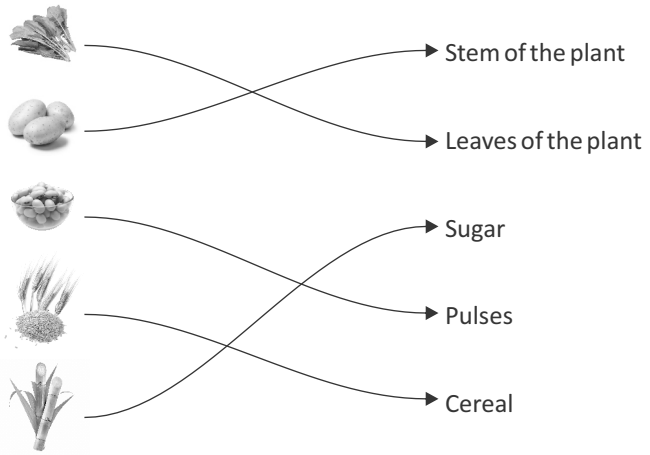
B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True 5. True

C. Fill in the blanks with the help of correct words.

1. Plants 2. Fruits 3. flowers
4. cereals 5. seeds

D. Match the following pictures to their names.



E. Answer the following questions.

1. Fruits are the most juicy and fleshy part of a plant. Apple, mango, grapes, banana, orange, cherries, watermelon, papaya, etc., are some fruits.
2. **Name of Vegetables :** Potato, ginger, carrot, radish, spinach, cabbage, cauliflower, broccoli, etc.
3. A nut is a fruit made of a hard shell and a seed, which can be eaten. These are also called dry nuts. Almonds, cashewnuts, peanuts, pistachios and walnuts are some nuts.
4. We get the following foods from plants :
   (i) Fruits (ii) Vegetables (iii) Cereals
   (iv) Pulses (v) Nuts (vi) Tea, Coffee and Sugar

(vii) Spices and oils

5. **Cereals :** Cereals are seeds of certain plants. Rice, wheat, maize, barley Care some cereals that we eat.

   Pulses : Protein rich seeds of plants are called pulses. Grams, peas, beans, kidney beans are some pulses that we eat.

Active Learning

- **Write (R) if the food is eaten raw and (C) if the food is eaten cooked.**


C


R


R


C


C


R


C


R

- **The food we eat comes to us after crossing many stages. Many people and their hard work is involved in making the food edible. We must never waste or throw the food.**

  Do yourself.

Picture Learning

- **Observe the picture given alongside and name all the foods that we get from plants.**

  Do yourself.

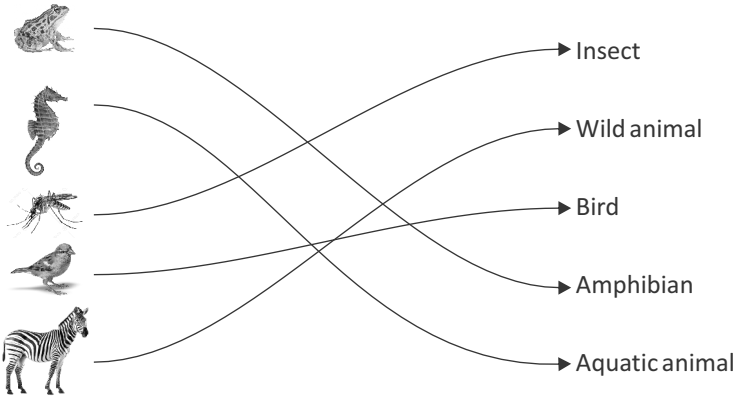
4 Getting to Know Animals

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (a) 3. (c) 4. (a) 5. (c)

B. Match the following pictures with correct words.



C. Fill in the blanks with the help of correct words.

1. Water 2. Tortoise 3. Birds 4 Ostrich 5. six

D. Name the following animals.

Horse	Grasshopper	Sheep	Giraffe

E. Write the names of the following animals and where they live. Also specify whether they are wild, domestic, pet, bird or insect.

Wild animal

Domestic animal

Pet animal

Bird

Insect

Pet animal

Domestic animal

insect

F. Answer the following questions.

1. **Two big animals :** Elephant, Giraffe

   Two small animals : Squirrel, Rat

2. **Three land animals :** Lion, Cow, Deer

   Three water animals : Dolphin, Seahorse, Octopus

3. Some animals can live both in water as well as on land. There animals are called amphibians. Tortoise, frog and crocodile are some amphibians.
4. No, water animals cannot live out of water.
5. An ostrich have wings but they cannot fly because they are too heavy.
6. Insects are tiny animals. They have six legs. Most insects have wings to fly. Mosquito, housefly, cockroach, butterfly, honeybee, ant, etc. are some insects.

Active Learning

- **Let's play a game. This is a time bound game. In five minutes, try to write or draw as many animals as you can. Let's see how many you can do!**

  Do yourself.
- **Which animal would you like to keep as pet and why? What name would you give to your pet?**

  Do yourself.

Picture Learning

- **Observe the steps and make an animal mask.**

  Do yourself.

5 Animals' Needs

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (b) 4. (b) 5. (c)

B. State whether the following statements are true or false.

1. True 2. False 3. True 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. grains
2. nests
3. burrow
4. kennel
5. aquarium

D. Answer the following questions.

1. Some animals like cow, goat, zebra eat grass, green leaves of plants etc. Such animals are called plant eating animals.
2. Some animals like crow, lizard, frog and spider eat insects and worms. They are called insect eating animals.
3. Animals need shelter primarily to protect themselves and their young ones from heat, cold, rain and from other animals.
4. Animals need food to stay alive and grow.
5. Some animals like lion, vulture, fox and tiger eat flesh of other animals. They are called flesh eating animals.

Active Learning

- **Ask a milkman, what food he feeds to his cows, write the names of these foods in the space provided :**

  Do yourself.

- **Take a look around your home. Look for an open space to make a bird feeder where you can keep food and water for birds. Arrange the food material and put them in open vessels. Make them look attractive that the birds feel welcome.**

  Do yourself.

- **Circle the animals that do not live in a burrow, and put them in their own homes by writing their name next to their homes.**

  Do yourself.

Picture Learning

- **Look at the given picture carefully.**

  Do yourself.

6 Our Body

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (b) 4. (a) 5. (a)

B. State whether the following statements are true or false.

1. True 2. False 3. True 4. True 5. True

C. Fill in the blanks with the help of correct words.

1. machine 2. chewing 3. external body parts
4. five 5. adult 6. healthy

D. Name the sense organ used in the following activities.

Eyes

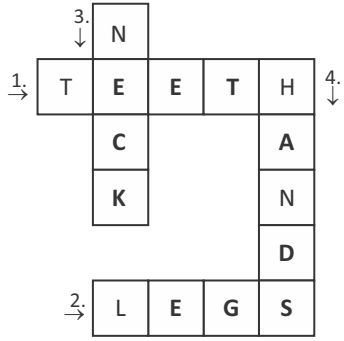
Nose

Ears

Skin

Tongue

E. Complete the crossword with the help of the clues provided.



Active Learning

- **In your family, compare each member with other and find out the persons resembling each other. Also paste their photos.**

  Do yourself.
- **Checklist : Are You Neat?**

  Do yourself.

Picture Learning

- **Look at the picture given alongside.**

  Do yourself.

7 Food for Health

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (b) 3. (c) 4. (b) 5. (c)

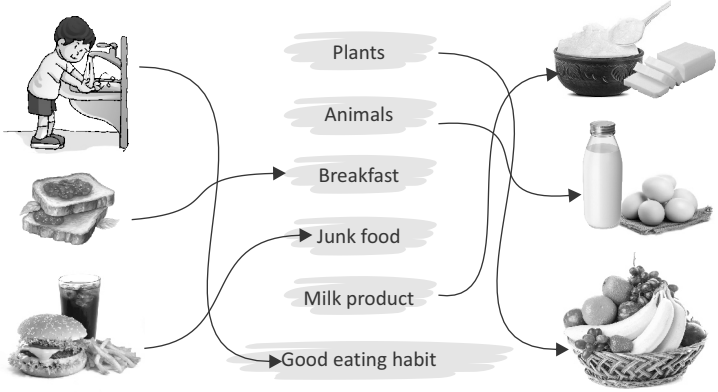
B. State whether the following statements are true or false.

1. True 2. False 3. True 4. True 5. True

C. Fill in the blanks with the help of correct words.

1. food 2. Curd 3. Milk
4. Junk foods 5. wash

D. Match the pictures with correct names.



E. Answer the following questions.

1. We need food to stay alive and grow. Food helps us to become strong and healthy.
2. We get our food from two sources : plants and animals.
3. **Food from Plants :** Plants provide us fruits, vegetables, cereals, pulses, oils, spices, etc.

   Food from Animals : Animals provide us milk, eggs and meat.
4. Butter, ghee, curd and cheese are the different milk products.
5. We have three main meals in a day. These are :

   Breakfast : We eat breakfast in the morning.

   Lunch : We eat lunch at noon.

   Dinner : We eat dinner at night.
6. Our food must contain nutrients such as pulses, rice, roti, vegetables, fruits along with milk and curd.
7. We should drink milk everyday. Milk is a complete food which keeps our bones and teeth strong and healthy.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

8 Safety Rules

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (b) 4. (b) 5. (a)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. strangers 2. run 3. fight 4. window 5. safe

D. Answer the following questions.

1. The word safety means staying away from getting hurt. We must stay away from the things which may harm us.
2. Keeping our things in their proper places is necessary for organisation, efficiency and mental clarity.
3. We should always use zebra crossing to cross the road.
4. We should walk either on the footpath or on your left side.
5. **Safety at school**
   (i) Do not climb or jump from the chairs and desks.
   (ii) Do not fight with your classmates.

Active Learning

- Name the following people who keep us safe from danger.
  PARENTS TEACHER POLICE SOLDIER
- Do yourself.
- Do yourself.

Picture Learning

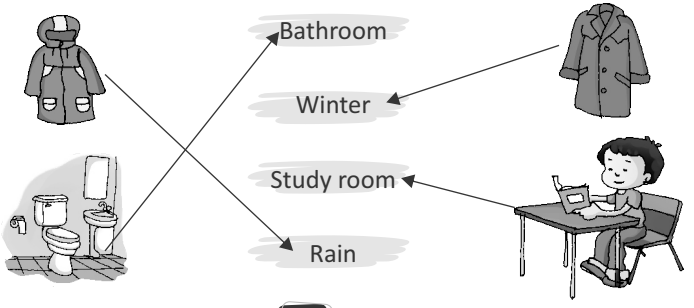
- Do yourself.

9 Housing and Clothing

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (a) 4. (b) 5. (c)

B. Match the pictures with correct words.



C. Fill in the blanks with the help of correct words.

1. thieves
2. Clothes
3. wool
4. rain
5. uniform

D. Look at the picture given below. Write the names of the numbered rooms in the space provided.

1. Bedroom
2. Store room
3. Bathroom
4. Study room
5. Drawing room
6. Kitchen

E. Answer the following questions.

1. Our house is very important to us because :
   - It protects us from heat sunlight, cold, wind and rain.
   - It keeps us safe from wild animals and thieves.
   - We and our things are safe in our house.
   - We feel comfortable in our house.
2. In summers, days are hot, so we prefer to wear cotton clothes. Cotton clothes keep our bodies coal.
3. In winters, days are cold. We wear woollen clothes in winter. Woollen clothes keep us warm.
4. Sweater, jacket, cap, socks, coat, gloves, muffler, etc., are different winter clothes.
5. We use an umbrella in the rain to protect ourselves from getting wet.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

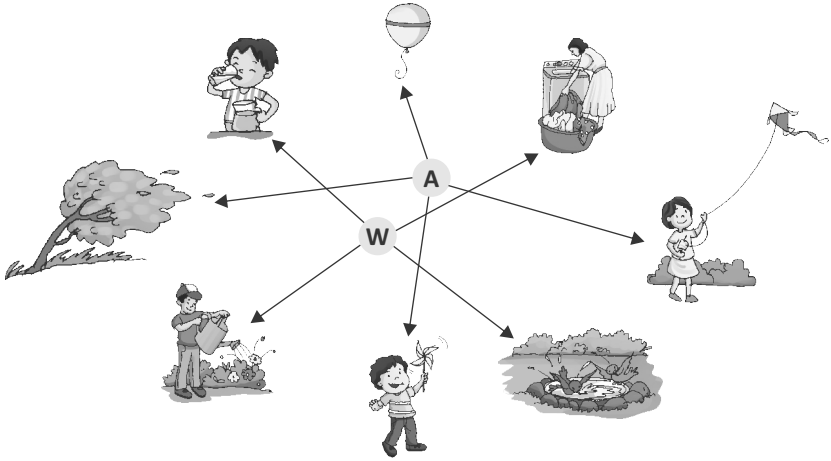
10 Air and Water

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (a) 4. (b) 5. (a)

B. Match the following, here A indicates Air and W indicates water.



C. Fill in the blanks with the help of correct words.

1. Wind 2. breeze 3. Rain
4. clean, pure 5. boiling

D. Put W for those pictures which are related to water and A for those pictures which are related to air :

W

A

W

A

W

W

W

W

E. Answer the following questions.

1. Moving things such as leaves of trees, moving bits of paper, flying kite, floating balloon all show the presence of air around us.
2. The features of air are :
   - Air occupies space
   - Air gives shape to the things
   - Air has weight
   - Air helps in burning
3. We can tore water in many ways. At homes, we store water in buckets, pots or overhead tanks. On large scale, water is stored in dams.
4. All living beings need air to breathe. Breathing keeps us alive.
5. Fast moving air is called wind.
6. **Use of Air :** We breathe through our nose. When you breathe in, you take in air. When you breathe out. you let out the impure air.

   Use of Water : We need water to drink, wash things and to take bath. we also need water for cooking and for extinguishing fire.
7. **Sources of Water :** Rain is the main source of water. Some other sources of water are ponds, well, rivers, seas and oceans.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

11 Weather

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (a) 4. (b) 5. (c)

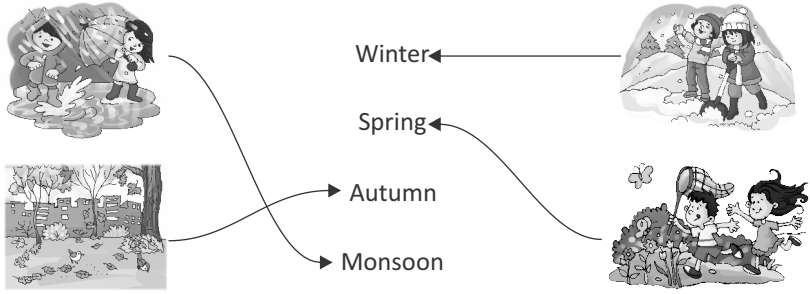
B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. summer 2. Woollen 3. windy 4. cold 5. spring

D. Match the pictures with correct words.



E. Answer the following questions.

1. The day-to-day condition of air at any place is called weather.
2. When the weather remains almost the same for many days, we call it a season. We have five different seasons in a year.
3. Trees shed their leaves during the autumn preparing for the onset of winters.
4. The weather is very pleasant in spring season. Flowers bloom and spread fragrance in air. You can feel cool and nice breeze.
5. We wear woollen clothes in winter to keep our bodies warm.
6. We wear light coloured cotton clothes to keep our bodies cool.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

12 Sun, Moon and Stars

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (a) 3. (b) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. heavenly body 2. rising 3. sun
4. big 5. light

D. Answer the following questions.

1. **The Day Sky :** The Sun shine bright in the day sky.
   The Night Sky : When we look at the night sky, it looks dark.
2. The sun is very important for life on the earth. It rises in east and sets in the west. It gives us heat and light.
3. Stars are very big in size but they look so tiny because they are very far away from us.
4. Spacecrafts are the devices used to travel in space.
5. The moon changes its shape every night. The changing shapes of moon are called phases of the moon.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

Junior SCIENTIST 2

1 Things Around Us

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (c) 5. (c)

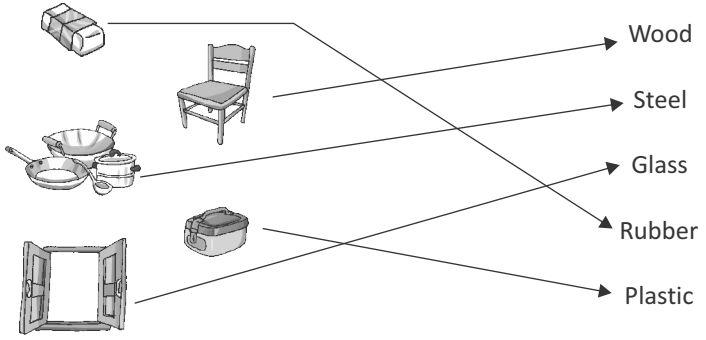
B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. Living things 2. wood 3. Balloons
4. steel 5. grow

D. Match the pictures to the correct words.



E. Answer the following questions.

1. Things that are found in nature and are not made by man are called natural things.
2. **Living Things :** Natural things like plants, animals and human beings are living things.

   Non-living Things : Natural things like air, water, rocks, sand, soil, wood, wool and silk are natural non-living things.

3. Many things that we use are not found naturally they are called man-made things.
4. **Natural Materials :** Wood, rubber, metals and some fibres like silk and cotton are natural materials.

   Man-made Materials : Different types of plastics, chemicals used in medicines, fertilisers and some fabrics like nylon, rayon and palyester, glass, etc., are some man-made materials.
5. Different things around us are made of different types of materials. The substance from which a thing is made is called material.

Active Learning

- **Some materials are given here. Write the names of any two things made of these materials :**

Name of materials	Things
Wood	Chairs, Tables
Rubber	Erasers, Tires
Iron	Cast iron, Stainless steel
Glass	Mirrors, Drinking glasses
Plastic	Juice bottles, Shampoo/Conditioner bottles
Gold	Necklaces, Earrings and Brooches
Silver	Silver coins, Silver jewellery
Cloth	Bedsheets, Towels

- Do yourself.

Picture Learning

- **Look at the pictures given below and write whether the material used is natural or man-made :**

Natural material

Man-made material

Natural material

Natural material

Man-made material

Natural material

2 Types of Plants

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (b) 3. (b) 4. (b) 5. (c)

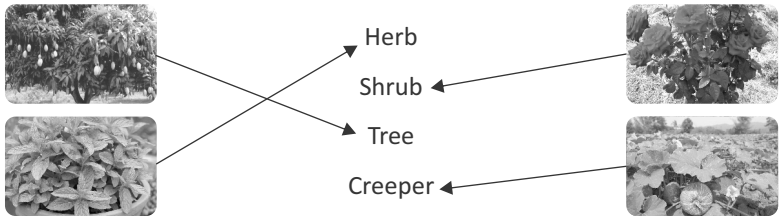
B. Fill in the blanks by choosing the correct words.

1. trunk 2. herb 3. Leaves 4. climber 5. fruits

C. Give two examples of each.

1. Mango, Banyan
2. Rose, Lemon
3. Spinach, Mint
4. Watermelon, Pumpkin
5. Pea plant, Money plant

D. Match the pictures to the correct words.



E. Answer the following questions.

1. The stem of a tree is strong, broad and woody. It is called a trunk.
2. Roots grows under the ground. It helps to fix the plant to the ground. It absorbs water and minerals from the soil for the plant.
3. Leaves grow from the branches or stems. They are the flat green part of the plant. They make food for the plants.
4. Some plants have weak stems. These weak stems cannot bear the weight of plants. They need the support of other things like walls, sticks or other plants to grow upright. Such plants are called climbers.
5. Some plants have very weak and thin steams but they bear heavy fruits. So, the grow along the ground. these plants are called creepers.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

3 Importance of Plants

Test Yourself

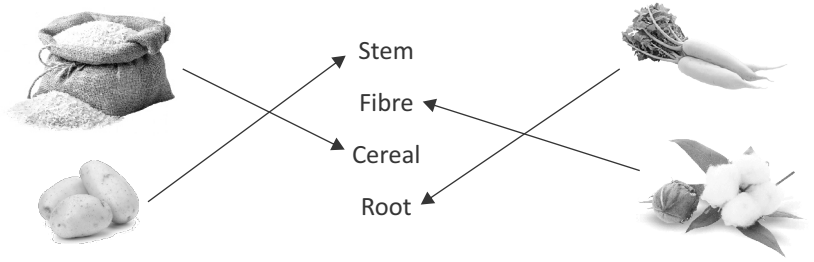
A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (b) 5. (a)

B. Fill in the blanks by choosing the correct words.

1. Wood 2. grains 3. clove
4. spice 5. oil

C. Match the pictures to correct words.



D. Answer the following questions.

1. A nut is a small hard fruit composed of a hard shell. These are also called dry fruits. Almond, cashewnut, walnut and coconut are some examples of nuts.
2. Fibres are natural thread like materials obtained from plants. Cooton and jute are some examples of it.
3. We get rubber from the juice of rubber tree. Rubber is used to make erasers, tyres and pipes.
4. Plants are our green friends. They are important to us in many ways. They give us fresh air to breathe. They keep our environment clean and fresh.
5. We get wood from trees like oak, pine and teak. Wood is used for making doors, pencils, furniture, boats, carts and houses.

Active Learning

- Do yourself.
-

Food item	Is it from plants	Parts of the plant
Rice	Yes	Dry grains
Potato	Yes	Stem
Radish	Yes	Root
Cauliflower	Yes	Flower
Strawberry	Yes	Fruit
Groundnut	Yes	Seed
Chick peas	Yes	Dry grains

Picture Learning

- Do yourself.

4 Animals Our Friends

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (a) 3. (b) 4. (c) 5. (b)

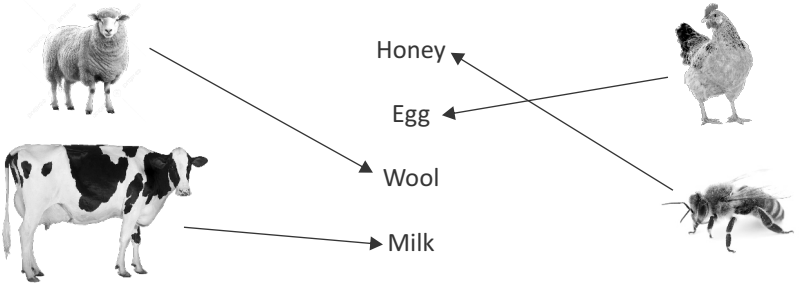
B. State whether the following statements are true or false.

1. True 2. False 3. True 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. wool 2. milk 3. Silk 4. Leather 5. Oxen

D. Match the pictures to the correct words.



E. Answer the following questions.

1. Same animals are trained to live with us. These animals are called domestic animals.
2. The skin of dead animals like buffalo, camel, goat, sheep and ox is used to make leather.
3. Animals that live with us in our homes are called pet animals or pets. Cat, dog, rabbit, fish and parrot are pets. Pets share the same living space with us.
4. Milch animals like cows, goats and buffaloes give us milk.
5. We should treat all animals with care, respect, love, kindness and dignity.

Active Learning

- Do yourself.
- **Animals help us in many ways. Here, some animals are listed. Write one thing you can do to help them :**

Animal	How you can help him?
Dog	You can give him food and milk.
Cow	You can give him green grass and water.
Goat	You can give him grass and green leaves.
Hen	You can give him grains and water.

Picture Learning

- Do yourself.

5 Wild Animals

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (c) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. False 2. False 3. True 4. False 5. True

C. Fill in the blanks with the help of correct words.

1. water
2. wild animals
3. Scavengers
4. den
5. larnivores

D. Write the name of an animal for each home.

1. Lion
2. Bear
3. Rabbit
4. Mole
5. Monkey
6. Crocodile

E. Answer the following questions.

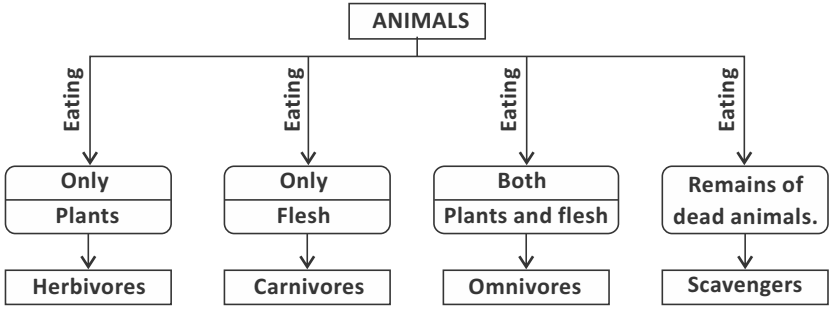
1. Animals that eat plants or plant products are called herbivorous animals or plant-eating animals. Giraffe, elephant, deer, rhinoceros, zebra, etc., are some herbivorous animals.
2. **Names of three small animals :** Hare, Mongoose, Wild Cat.

   Names of three big animals : Lion, Tiger, Bear.

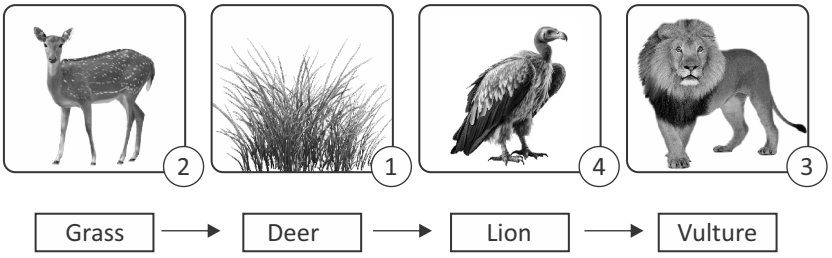
   Names of three very big animals : Elephant, Giraffe, Hippopotamus.
3. Some wild animals eat the flesh of dead animals. These animals are called scavengers. They help to keep the forest clean. Vulture, jackal and hyena, etc., are some scavengers.
4. Animals that kill other animals and eat their flesh are called carnivorous animals or flesh-eating animals. Lion, tiger, crocodile, etc., are some carnivorous animals.
5. Some animals eat both plants as well as flesh of other animals. These animals are called omnivorous animals. Bear, crow, jackal, etc., are some omnivorous animals.

Active Learning

- **Complete the following flow chart :**



- **Parts of a food chain are given below. Number the pictures and write their names in sequence to make the food chain :**



Picture Learning

- Food chain is shown through the picture.
- Animals are shown in the picture– grasshopper, frog, snake, eagle.

6 Bones and Muscles

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (c) 5. (c)

B. Tick (✓) the correct posture.

C. Fill in the blanks with the help of correct words.

1. muscles 2. Joints 3. Exercise 4. bones

D. Answer the following questions.

1. Strong and healthy muscles help us to do many activities like swimming, cycling, running, etc.
2. To keep bones and muscles healthy, we should exercise regularly. Exercise keeps our bones and muscles healthy and strong.

3. Posture is the position of our body when we sit, stand or move. A straight or upright posture keeps our body in good shape. A good posture makes us look smart and keeps us way from many health problems.
4. **Two functions of skeleton :**
   (i) It gives shape and support to our body.
   (ii) It also protects our internal organs like heart, lungs and brain.
5. Three body parts where joints are present– neck, shoulders and elbow.
6. The place where two or more bones are joined together is called a joint.

Active Learning

- Do yourself.

Picture Learning

- Do yourself.

7 Food and Health

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (b) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True

C. Fill in the blanks with the help of correct words.

1. water 2. soft drinks 3. relax
4. Pulses 5. uncovered

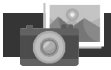
D. Answer the following questions.

1. Some food items keep us healthy by preventing us from falling sick. These food items boost our immunity. These food items are called protective foods.
2. Diet is the amount of food taken by a person at a time. A diet in which all the three types of foods, *i.e.*, energy-giving food, body-building food and protective food are included in proper amount, is called a balanced diet.

3. Our body gets nourishment from different kinds of food that we eat. Some food items are good sources of energy because they help to keep us active. Some food help us to grow. Some foods prevent us from falling ill.
4. The natural power of the body which helps us to fight against diseases is called immunity.
5. **Three healthy eating habits :**
   (i) Wash your hands before and after each meal. Our dirty hands may have germs that can make us ill.
   (ii) Use clean utensils to eat your food.
   (iii) Eat less than your hunger. Do not eat in excess.

Active Learning

- Do yourself.



Picture Learning

- **Look at the picture given below and answer.**
  1. Nuts is shown in the picture.
  2. These food items are called protective foods.

8 Houses and Clothing

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (a) 4. (a) 5. (b)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True 5. False

C. Fill in the blanks with the help of correct words.

1. Kuchcha house 2. house 3. bricks, Iron and cement
4. temporary 5. summers

D. Answer the following questions.

1. **Kuchcha House :** Kuchcha houses are made from mud, bamboo, wood,

stones and straw.

Pakka House : Pakka houses are made from bricks, iron and cement.

2. A place where we live with our family is called a house. A house protects us from heat, cold, rain, dust, robbers and wild animals.
3. The top of a house is called a roof. It may be flat of sloping. People living in plains usually use houses with flat roofs. While people living in hilly areas have sloping roofs on their houses. Snow and water can easily fall off from these roofs. Snow and water can easily fall off from these roofs.
4. We wear cotton clothes in summers because cotton clothes absorbs sweat and keep us cool.
5. Some people keep moving from one place to another. They build houses that can be moved from one place to another. Such houses are called temporary houses.

Active Learning

- Do yourself.

Picture Learning

Look at the picture given alongside and answer.

- Igloo and the Eskimos are shown in this picture.
- This kind of houses are built in the places covered with snow.
- The Eskimos wear boots called mukluks, trousers and hooded jackets called parkas all made of animal skins.

9 Safety and First Aid

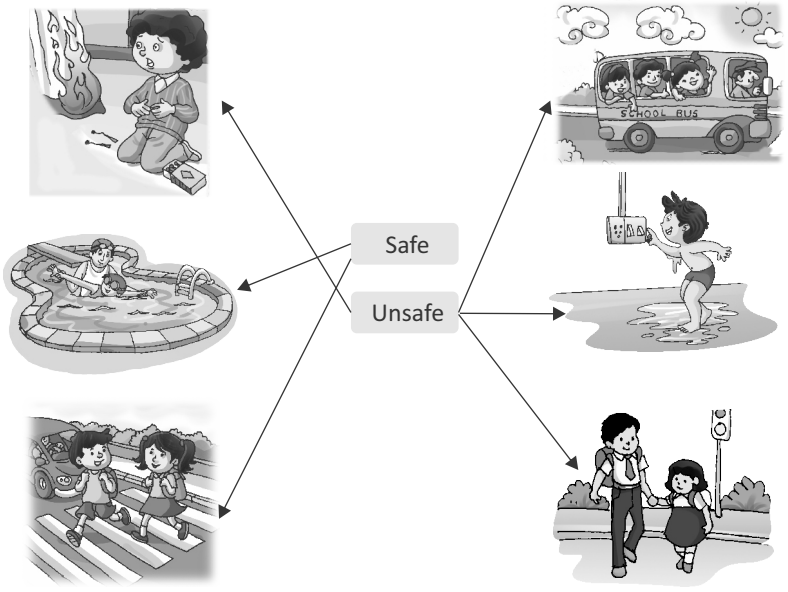
A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (a) 4. (c) 5. (b)

B. Fill in the blanks with the help of correct words.

1. chairs 2. electric switches 3. zebra
4. swimming pool

C. Match the pictures with correct words.



D. Answer the following questions.

1. **Safety Rules at School :**
   (i) Never stand on the chairs or desks.
   (ii) Do not run while using the stairs.
2. **Traffic Lights :**
   - Red light signals stop.
   - Yellow light signals to get ready!
   - Green light signals to go.
3. To prevent getting hurt, you can always listen to you grow-ups, stay away from sharp things like knives and scissors, play carefully, do not run in the street and tell a grown-up if someone or something makes you feel scared.
4. **Safety Rules on the Road :**
   (i) Use zebra crossing to cross the road.
   (ii) Walk on footpath.
   (iii) Do not run or play on the road.
5. An immediate treatment given to an injured person before arrival of a doctor is called first aid.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Look at the picture given below and answer the following questions.

1. The different children are doing in the picture putting your hand or head out of the moving bus.
2. No, their actions are not unsafe.

10 Air

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (c) 5. (b)

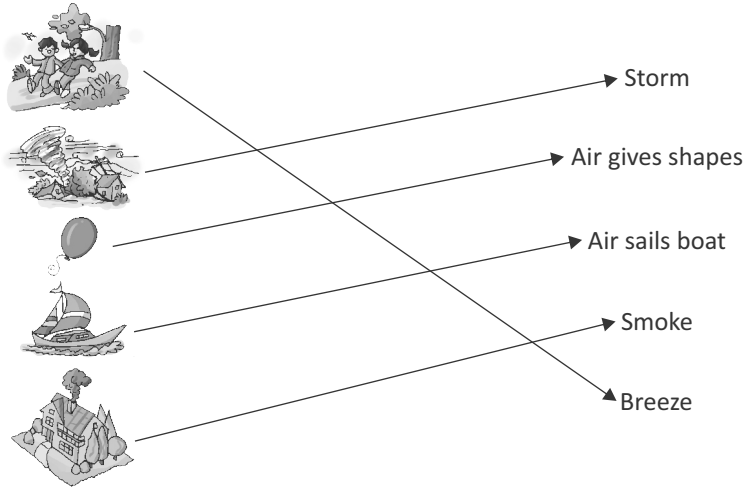
B. State Wether the following statements are true or false.

1. False 2. True 3. False 4. False 5. True 6. True

C. Fill in the blanks with the help of correct words.

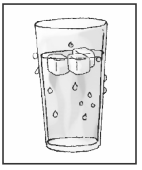
1. Germs 2. air 3. Sun 4. Dust 5. trees

D. Match the pictures to correct words.



Answer the following questions.

1. Two Effects of Storm :
   (i) Storm causes damage to life and property.
   (ii) Many trees are uprooted due to storm.
2. Water, air and food are required to keep us alive.
3. Air is all around us. It is a mixture of gases. Air contains water vapours, dust particles and germs.
4. Air has following properties– Air has weight, air gives shape to things, Air fills space.
5. **To show that water vapour is present in the air.**
   Take a glass filled with water and ice. Wait for a minute.
   You will see water droplets on the outer surface of the glass. These droplets are formed due to the cooling down of water vapour present in air.



Active Learning

- Do yourself.

Picture Learning

- Do yourself.

11 Water

Test Yourself

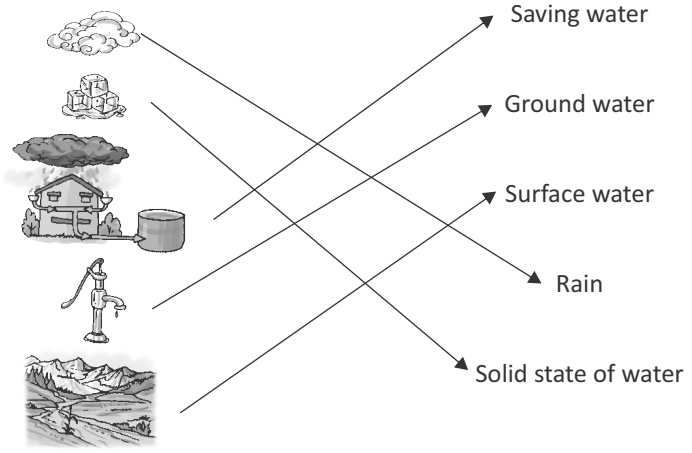
A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (c) 4. (b) 5. (c)

B. Fill in the blanks with the help of correct words.

1. potable 2. surface 3. gaseous
4. taps 5. Rain

C. Match the pictures with correct words.



D. Answer the following questions.

1. When it rains, the rainwater gets collected in oceans, seas, rivers, lakes and ponds. This water is called surface water.
2. Some of the rainwater seeps under the ground and form groundwater. This underground water is drawn by digging wells and tubewells.
3. The water safe for drinking is called potable water. This water is free from any types of impurities and germs.

   We can boil or filter water to make it fit for drinking. RO, water purifiers and filters use different techniques for purifying water.
4. The rotation of water in the atmosphere is known as water cycle.
5. Rain is the main source of water on earth. We use water for drinking and cooking.

Active Learning

- Do yourself.

Picture Learning

- There was a small waterdrop living in the river one day it was evaporated by the sun along with others drops. It was condensed and become a part of a cloud. Soon the cloud drop it down in the form of raindrop after which it again get mixed with the river water.

12 Sun, Light and Shadow

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (b) 4. (a)

B. State whether the following statements are true or false.

1. True 2. False 3. True 4. True

C. Fill in the blanks with the help of correct words.

1. noon 2. Sun, moon 3. opposite
4. light 5. sources

D. Answer the following questions.

1. A shadow is formed when an object comes in the way of light and light does not pass through it. A shadow can be formed on the wall, ground, floor, etc. Shadow is always formed on the opposite side of the source of light.
2. During morning and evening shadows are long because the positions of rising and setting sun is low in the Sky, At noon, shadows become short because the position of sun is right overhead.
3. Natural objects that give out light are called natural sources of light. The sun and the moon are the natural sources of light.
4. Objects made by human beings that give out light are called artificial sources of light. Torches, candles, light bulbs, tube lights and oil lamps are artificial sources of light.

- **Go out and observe your shadow on a sunny morning, at noon and in the evening.**
  - **When is it the longest?**
    The shadow is the longest in the morning and evening.
  - **When is it the shortest?**
    The shadow is the shortest at noon.
- Do yourself.

Picture Learning

Look at the picture given alongside and answer.

1. Street lights are shown in the picture.
2. Street lights are artificial sources of light.
3. No, It is a artificial source of light.

13 Rocks and Minerals

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (a) 4. (b) 5. (c)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. False 5. True

C. Match the pictures with correct words.



Sandstone

Coal

Marble

D. Fill in the blanks with the help of correct words.

1. china clay 2. Diamond 3. Quartz
4. Marble 5. minerals

E. Answer the following questions.

1. Granite, marble and sandstone are some hard rocks.
   For example— (i) Tajmahal in Agra is made of marble.

(ii) Red Fort in Delhi is made of sandstone.

2. Coal, slate and chalk are some soft rocks.

   For example— (i) Slate is used to make roof of houses in hilly areas.

   (ii) Chalk is white in colour. It is used to write on blackboard.

3. Rocks are found under the soil, on riverbeds and seabeds. Rocks are also found on mountains, hills and in valleys. Some rocks are soft while some are hard.

   Two hard rocks : Granite, Marble

   Two soft rocks : Coal, Slate

4. Gemstones are precious stones. These stones are used for making jewellery. Gemstones are hard Substances that are cut into various shakes and are polished before using them. Polishing and cutting give them a unique spark.

   Two precious stones : Ruby, Diamond.

Active Learning

- Do yourself.

Picture Learning

Look at the picture given alongside and answer.

1. Diamond is shown in the picture.
2. Yes, it is a gemstone.
3. These stones are used for making jewellery.

Junior SCIENTIST 3

1 Living and Non-living Things

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (a) 3. (c) 4. (c) 5. (b)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. False 5. False

C. Fill in the blanks by choosing the correct words.

1. reproduction 2. nose 3. oxygen
4. carbon dioxide, water 5. spiracles

D. Answer the following questions.

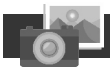
1. Things which have life are called living things.
2. Different animals have different organs for breathing.
   - **Skin :** Earthworms, frogs.
   - **Nose :** Human beings.
   - **Spiracles :** Cockroach, butterfly, mosquito.
   - **Gills :** Fish.
3. Plants breathe through stomata.
4. The process by which living things produce their young ones is called reproduction. Plants reproduce through seeds and animals give birth to their babies. Some animals lay eggs.
5.

S.N.	Living things	Non-living things
1.	Living things breathe.	Non-living things do not breathe.
2.	Living things grow with time.	Non-living things do not grow with time
3.	Living things eat food.	Non-living things do not eat food.
4.	Living things reproduce.	Non-living things do not reproduce.

S.N.	Living things	Non-living things
5.	Plants, animals and human beings are living things.	Buses, cars, trains, water, soil, rocks etc.

Active Learning

- 1. eye 2. arms 3. hands 4. legs 5. teeth 6. neck
- Do yourself.



Picture Learning

1. It breathes through gills.
2. It reproduces by laying eggs.

2 Parts of a Plant

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (b) 4. (b) 5. (c)

B. State whether the following statements are true or false.

1. True 2. True 3. True 4. False 5. False

C. Fill in the blanks by choosing the correct words.

5. Carrot 1. veins 2. flower
3. upright 4. carbon dioxide

D. Match the following.

1. (iii) 2. (iv) 3. (i) 4. (v) 5. (ii)

E. Answer the following questions.

1. Taproot has a single main root and many small roots grow from it. Taproots are found in carrot, mustard, cotton, hibiscus, etc.
2. Fibrous root has many tiny, bushy roots, Plants like grass, wheat, rice, onion etc., have fibrous roots.
3. (i) Root fixes the plant to the soil firmly. This helps the plant to bear strong winds.
   (ii) Root absorbs water and nutrients from the soil required by the plant for making food and healthy growth.

(iii) Stem holds up branches that leaves, flowers and fruits on them.

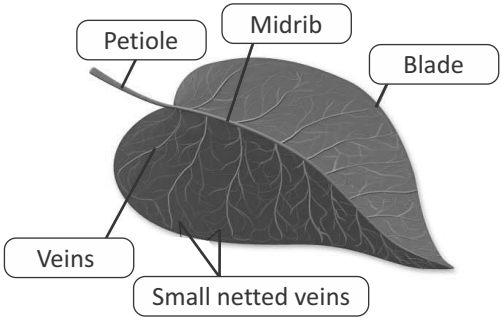
5. Leaves are called kitchen of a plant because leaves make food for the plants.
6. The growth of a seed into a health adult plant is called germination. Soil, water and sunlight help seeds to germinate.

Active Learning

- Do yourself.
- 1. Adarak 2. Lahsun 3. Kali-mirch
  4. Haldi 5. Pudina 6. Laung

Picture Learning

Label the different parts of a leaf.



3 Birds

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (a) 4. (c) 5. (b)

B. One word answer .

1. Peacock 2. Penguin 3. Parrot 4. Flight feathers

C. Fill in the blanks by choosing the correct words.

1. Duck 2. upstroke 3. looked
4. wading 5. kingfisher

D. Match the following.

1. (iv) 2. (v) 3. (i) 4. (ii) 5. (iii)

E. Answer the following questions.

1. Birds have three types of feathers : down feather, body feather, and flight feather.
2. Birds use their beaks to catch and eat food. They also use their beaks to Protect themselves from their enemies.
3. Birds fly by their wings.
4. (i) **Perching Birds :** Some birds like crow, parrot, sparrow and pigeon perch on the branches of trees. They curl their claws to hold a tree branch and sit on them. Their claws have three toes in front and one at the back.
   (ii) **Scratching Birds :** Birds like hen, peacock and sparrow use their claws to scratch the earth for removing out seeds and worms. These birds are called scratching birds. These birds have sharp and hard nail-like claws with three toes in front and one at the back.
   (iii) **Wading Birds :** Birds like cranes and herons can walk in shallow water for searching their food. These birds are called wading birds. They have long legs with wide spread out toes which help them to walk in soft mud without sinking.
   (iv) **Swimming Birds :** Birds which can swim in water are called swimming birds. Duck, goose and swan are swimming birds. They have three toes in front and one toe at the back. These birds have webbed feet which help them to paddle and push water while swimming.
5. (i) **Tailor Bird's Nest :** It uses its beak like a needle to sew big leaves together to build its nest. It uses materials like wool or thread to sew leaves.
   (ii) **Weaver Bird's Nest :** Weaver bird uses its beak to weave its nest using dry leaves, grass or twigs. Its nest is seen hanging on trees. The nest has an opening at the end through which the weaver bird enters.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

1. Bird with its nest is shown in the picture.
2. The bird build this nest by weaving using dry leaves, grass or twigs.

4 Eating Habits of Animals

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (b) 3. (c) 4. (b) 5. (c)

B. Answer in one word/phrase.

1. Carnivores 2. Omnivores 3. Herbivores
4. Gnawing animals 5. Plants

C. Fill in the blanks by choosing the correct words.

1. Carnivores 2. sticky 3. gulp 4. Butterflies 5. giraffe

D. Select the correct word for the given animals :

1. Cud-chewing animals
2. Gnawing animals
3. Sucking animals
4. Gulp-feeding animals

E. Answer the following questions.

1. Carnivores have sharp biting teeth which help them to tear flesh food. The broad and flat teeth present in their mouth help them to chew the flesh.
2. Frog uses its long and sticky tongue for catching its prey.
3. Animals need food to stay alive and to grow. Different animals have different types of feeding habits : herbivores, carnivores, scavengers and omnivores.
4. Plants are called producers because they make their own food.
5. Food chain is a sequence followed by living things to fulfill their food requirement.

Active Learning

- Find the names of animals from the given puzzle box. Put them in the correct columns.

A	B	C	A	M	E	L	T
G	F	O	X	N	Q	R	R
O	R	W	L	O	P	Z	A
A	O	R	A	B	B	I	T
T	G	K	W	I	L	P	S
M	O	S	Q	U	I	T	O
S	N	A	K	E	O	Y	I
L	E	E	C	H	N	A	V

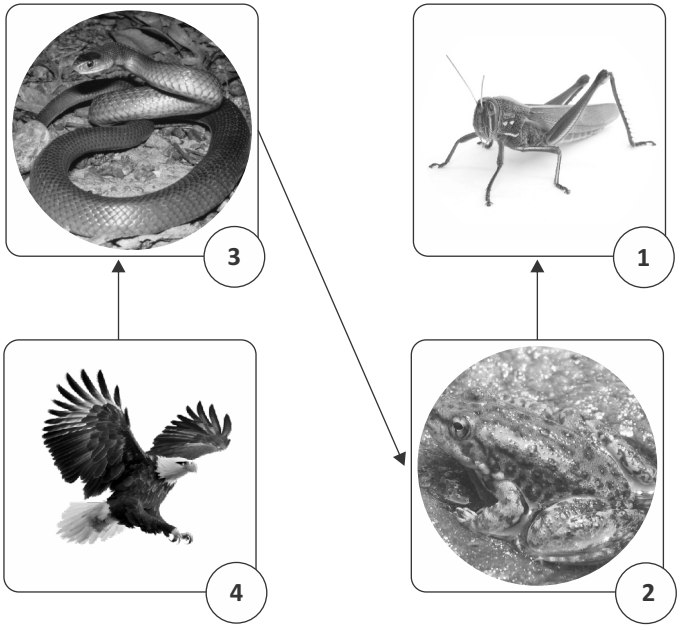
Chewing food	Tearing food	Sucking food	Gnawing food	Swallowing food
Cow Goat Camel	Fox Lion	Mosquito Leech	Rat Rabbit	Frog Snake

- **Make groups of students and assign a food chain to each group. Ask the members of the group to select an animal of the food chain and speak about it with regard to its food and feeding habit. Also make a chart to represent it.**

  Do yourself.

Picture Learning

Arrange the following animals as they come in a food chain by numbering 1, 2, 3, 4 or by using arrow :



5 Systems of Human Body

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (c) 4. (a) 5. (c)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True 5. False

C. Fill in the blanks by choosing the correct words.

1. heart 2. tissues 3. anus
4. Skeleton 5. Spinal cord

D. Match the following.

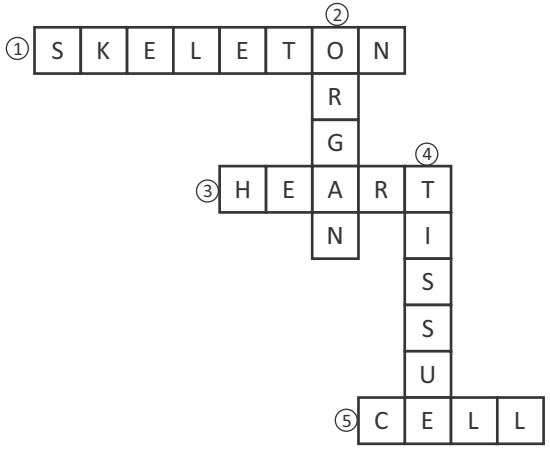
1. (iv) 2. (vi) 3. (i) 4. (ii) 5. (iii) 6. (iv)

E. Answer the following questions.

1. Our sense organs are connected to the brain by nerves and they convey external information to our brain.
2. Digestion is the process of breaking down the food into simple form. We eat food through the mouth. It is chewed and broken down into smaller pieces by our teeth. The food is mixed with saliva to make it soft. Then, it passes through the food pipe to our stomach, where it mixes with the digestive juices. After this, the food is sent into the small intestine. From near, the useful part of food or nutrients are taken up by blood and sent to the whole body.
3. The smallest unit of our body is cell. A number of cells of same type combine together to form a tissue. Many similar tissues are joined together to make an organ and many organs are combined together to form an organ system.
4. Respiratory system helps to supply oxygen to each and every cell of our body. We inhale and exhale air through our nose. The inhaled air goes down the windpipe and reaches the lungs. Lungs extract the oxygen from the air and release carbon dioxide which is exhaled.
5. Muscles help in body movement.

Active Learning

- **Complete the crossword with the help of the clues provided :**



- **When you eat an apple, it passes through different organs of your digestive system. Using numbers, write the correct sequence of the organs through which it will pass when eaten.**

[4]	Small intestine	[1]	Mouth
[2]	Food pipe	[3]	Stomach
[6]	Anus	[5]	Large intestine

Picture Learning

1 Kidney.
2. It helps to clean our body.
3. Excretory system

6 Housing and Clothing

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (a) 3. (c) 4. (c) 5. (c)

B. Fill in the blanks by choosing the correct words.

1. cocoons 2. Wire netting 3. fibres
4. sheep 5. Nylon

C. Match the following.

1. (iv) 2. (v) 3. (i) 4. (ii) 5. (iii)

E. Answer the following questions.

1. Wire netting on doors and windows do not let insects like mosquitoes and house-flies come inside the house.
2. Keeping your house clean is important because it helps maintain good health by reducing the spread of germs and allergens.
3. Clean and fresh air, sunlight, potted plants are important for a good house.
4. Some fibres are made by man, these fibres are called man-made fibres.
5. Those fibres that are obtained either from plants or animals, are called natural fibres.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

1. Kuchcha house
2. Rural and semi-urban areas

7 States of Matter

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (a) 5. (b)

B. State whether the following statements are true or false.

1. False 2. True 3. False 4. True 5. False

C. Fill in the blanks by choosing the correct words.

1. heating 2. flow 3. microscope

4. evaporation 5. Freezing

D. Match the following.

1. (v) 2. (iv) 3. (i) 4. (ii) 5. (iii)

E. Answer the following questions.

1. Liquids are substances that flow and take the shape of their container. For example, water.
2. Solids are substances that have a definite shape because molecules present in solids are closely packed with one and other. For example, table and book.
3. Everything around us which occupies space and has weight , is called mater. Matter is composed of very small substances called molecules.
4. Gases are substances that do not have any shape. We do not generally see gases but we can feel or smell them. Molecules in gases are very far away from one another. For example, air and oxygen.
5. (i) **Melting :** The process by which a solid changes into a liquid is called melting. For example, ice melts and converts into water.

   Freezing : The process by which a liquid changes into solid is called freezing. For example, when water is kept in freezer, it converts into ice.

   (ii) **Evaporation :** The process by which a liquid changes into gas on heating is called evaporation. For example, when water is boiled, it evaporates into steam.

   Condensation : The process by which a gas changes into a liquid on cooling is called condensation. For example, when steam is cooled, it condenses into water.

Active Learning

- Do yourself.

Picture Learning

Melting and **Freezing**

Evaporation and **Condensation**

8 Soil and Rocks

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (a) 4. (c) 5. (a)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True

C. Fill in the blanks by choosing the correct words.

1. earthen pots 2. beaches 3. Clayey
4. Soil 5. Marble

D. Answer the following questions.

1. (i) Plants grow in the soil.
   (ii) The roots of plants absorb water and nutrients from the soil.
   (iii) Soil is the habitat of many small animals like earthworm, soil, etc.
   (iv) Soil is used in making earthen pots.
2. The top most layer is covered with dead and decayed leaves and plants. This constituent of soil is called humus.
3. Dew to the action of heat, rain, water and wind, rocks began to break into small pieces called pebbles. These pebbles gradually rubbed against one another and finally converted into tiny particle of soil.
4. Rocks are big stone like structures which cover almost the whole of the earth.

   Properties of rocks

   (i) Some rocks have tiny spaces in between its molecules. These spaces are called pores. Rocks with pores are called porous rocks. These rocks can absorb water. For example, limestone.
   (ii) Some rocks are non-porous. They do not absorb water. For example, granite.
   (iii) Some rocks are used as gemstones. These are precious rocks. For example, diamond.
5. There are four types of soil : gravel, sandy soil, clayey soil, loamy soil.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

1 Diamond

2. Gemstone

9 Air, Water and Weather

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (b) 3. (b) 4. (b) 5. (a)

B. Name the following.

1. Precipitation 2. Season 3. Weather
4. Storm

C. Fill in the blanks by choosing the correct words.

1. Air 2. water 3. precipitation
4. breeze 5. water vapours

D. Answer the following questions.

1. Gases, water vapours, dust, smoke and germs are the constituents of air.
2. Changes in weather are caused by the sun, wind, rain and water vapour present in the air.
3. Gently moving air is called breeze. When breeze moves fast, it is called wind. Strong winds along with rain or snow is called storm.
4. Water from the water bodies evaporates due to the heat of the sun. The water vapour rises in the sky and forms clouds. In clouds water vapour condenses into water droplets. When clouds become too heavy and are unable to hold these water droplets. When clouds become too heavy and are unable to hold these water drops, the water drops fall as rain.

   The water cycle is important because it enables the availability of water for all living organisms and regulates weather patterns on our planet.
5. Our earth revolves around the sun. Due to this revolution of the earth around the sun, season are caused.

   There are five main seasons in our country : summer, winter, monsoon, autumn and spring.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

1. Water cycle
2. Water cycle occurs in the following processes :

   Evaporation : Water evaporates from earths surface and water bodies due to the heat of the sun. This process is called evaporation.

   Condensation : The water vapour rises in the sky and form clouds. In clouds water vapour condenses into tiny water droplets. These tiny water droplets combine to from big drops.

   Precipitation : When clouds become too heavy and are unable to hold these water drops, the water drops falls as rain, snow or hail. This process is called precipitation.

10 Measurement

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (b) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. False 2. False 3. False 4. True 5. True 6. True

C. Fill in the blanks by choosing the correct words.

1. stride 2. kilometres 3. material
4. Capacity 5. estimate

D. Match the following.

1. (ii) 2. (iii) 3. (iv) 4. (i)

E. Answer the following questions.

1. Mass of an objet is the amount of material that object contains. Kilogram (kg.), gram (gm.), milligram (mg.) are the units used for measuring mass.
2. Capacity tells us how much liquid a container can hold. Capacity of a container is measured in litre or millilitre.

3. Measurement is helpful to us to find size or quantity of a thing.
4. Length of a thing tells us how long it is. Hand span, cubit, footspan, stride are non-standard units of length. Metre, centimeter, inch, millimetre are standard units of length.
5. Hotness and coldness of a body is termed as temperature. Degree Celsius and degree Fahrenheit are its units.

Active Learning

- **See the pictures given below. Write which unit of measurement you will use to measure these things. Write your answer in the space given below :**

  Centimetre, inch

  Millimetre

  Litre

  Centimetre, inch

  Centimetre, inch, feet

Picture Learning

1. Weighing balance.
2. It is used to measure weight or mass.

11 Light and Sound

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (c) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. False 2. False 3. True 4. True 5. True

C. Fill in the blanks by choosing the correct words.

1. shadow 2. artificial 3. visible
4. luminous 5. soft

D. Write whether the given things are luminous or non-luminous.

Non-luminous

Luminous

Non-luminous

Luminous

Luminous

Non-luminous

E. Answer the following questions.

1. Shadow is a dark patch formed when an opaque objects blocks the light.
2. Light is a form of energy required for seeing objects. The sun is the ultimate source of heat and light on the earth.
3. Luminous objects are the objects that give out light. For example, sun, star, etc.

   Non-luminous objects are the objects that do not give out light. For example, chair, pen, etc.
4. Noise is the loud and unpleasant sound. To much noise disturbs us and is bad for our health.
5. Sound is important for conversation.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

1. LED bulb
2. Yes
3. It is a source of light.

12 The Sun, Moon and Stars

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (b) 5. (c)

B. State whether the following statements are true or false.

1. False 2. False 3. False 4. False 5. True

C. Fill in the blanks by choosing the correct words.

1. eight 2. satellite 3. fire
4. planets 5. largest

D. Match the following.

1. (iv) 2. (i) 3. (ii) 4. (v) 5. (iii)

E. Answer the following questions.

1. The shape of Moon seems to change every night. These different shapes of Moon are called phases of the Moon.
2. The stars are huge balls of fire. A group of stars that forms a shape of pattern in the sky and has a name is called constellations.
3. Solar system is the family of the sun. It consists of the sun together with eight planets.
4. The sun is a huge ball of fire. It gives us heat and light.
5. A planet is a round object that revolves around the sun in a fixed path. The eight planets of solar system are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
6. A satellite is an object that moves around a planet. For example, Moon is a Natural satellite of the planet Earth.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

1. Moon
2. Gibbous Moon

13 Our Planet : Earth

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (b) 4. (c) 5. (b)

B. Match the following.

1. (iii) 2. (v) 3. (iv) 4. (ii) 5. (i)

C. Fill in the blanks by choosing the correct words.

1. west to east 2. revolution 3. 365
4. bulging 5. 24

D. Answer the following questions.

1. With the development of science and technology, it was found that the shape of the Earth is spherical. Actually, it is not a perfect sphere; rather, it is shaped like an orange; slightly flattened at the top and the bottom and bulging at the sides.
2. The movement of the earth around the sun is called revolution. Revolution of the earth around the sun causes changes in the seasons.
3. The rotation of earth about its own axis is called spinning of the earth. The rotation of earth about its own axis causes day and night.
4. It was believed that many years ago, a part of the sun was separated from it. It was very hot when it was formed. There were no plants and animals. After many years, there was rain and thunderstorms which cooled it down. The water of the rain was collected in the craters of the Earth. These were later known as oceans and seas. Slowly, life started on the Earth as plant and animals.

Active Learning

- Do yourself.
- ☒ ☑ ☑ ☑ ☒

Picture Learning

1. Earth rotating on its own axis.
2. This movement of earth results in formation of day and night.

Junior SCIENTIST 4

1 The Green Plants

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (b) 4. (c) 5. (b)

B. Fill in the blanks by choosing the correct words.

1. breathing 2. oxygen 3. Chlorophyll
4. photosynthesis 5. solar energy

C. Match the following.

1. (iv) 2. (v) 3. (i) 4. (ii) 5. (iii)

D. Answer the following questions.

1. The part by which leaf is attached to the stem is called leaf stalk or petiole. The tip of the leaf is called leaf apex. The broad and flat part of the leaf is called leaf blade or lamina. The underside of lamina of a leaf has many tiny openings. These tiny openings are called stomata. The tube-like structure, running through the middle of leaf is called mid-rib. Many veins emerging from the midrib, spread out on the lamina of a leaf. These veins are called side veins.
2. The process by which green plants make their own food with the help of carbon dioxide, chlorophyll and water, in the presence of sunlight is called photosynthesis.
3. Most of the plants are green in colour due to be the presence of a green pigment called chlorophyll. It helps a plant to make its food.
4. Stomata are tiny openings or pores that enables gaseous exchange. It also releases excess water into the air as water vapour.
5. As sunlight falls on the leaves, it is trapped by chlorophyll present in leaves. Leaves start the process of photosynthesis by converting water and carbon dioxide in simple sugars like glucose with the help of the solar energy trapped by chlorophyll. In this process oxygen gas is produced which is released into the air by stomata.

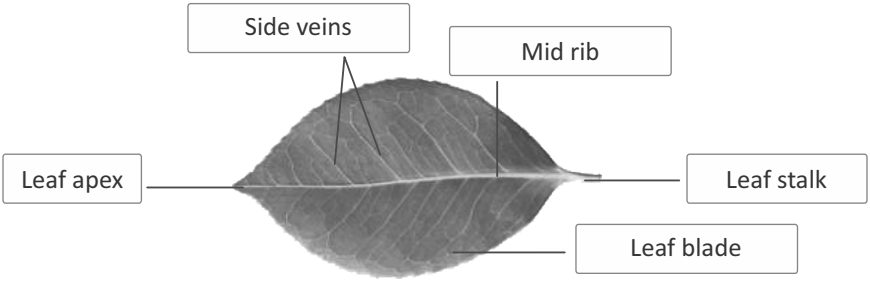
6. The food produced by leaves of a plant is utilised by the plants as follow:
   (i) Plants receive energy from this food. This energy is used by the plants in their daily activities like absorption of water, transportation of minerals salts and water, etc.
   (ii) Some part of this energy is used by the plant for its growth that is formation of new leaves, branches and flowers, etc.
   (iii) Extra food is stored by the plants in its various parts such as roots, stems, leaves, fruits or flowers. This energy is stored in the form of starch.
7. The solar energy is converted into food by plants during the process of photosynthesis. When food is consumed by other living organisms, they receive this energy. Thus, it is the solar energy which is transported to all living organisms as food.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Label the different parts of the leaf:



2 Plant Habitats and Adaptation

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (b) 3. (c) 4. (a) 5. (b)

B. State whether the following statements are true or false.

1. True 2. True 3. True 4. False 5. True

C. Fill in the blanks by choosing the correct words.

1. Amarbel 2. Mould 3. Pitcher
4. needle 5. Xerophytes

D. Match the following.

1. (iii) 2. (iv) 3. (v) 4. (i) 5. (ii)

E. Answer the following questions.

1. The features that help a plant or an animal to survive in its natural surrounding are called adaptations.

   The pine and cedar trees have adapted themselves for surviving in harsh cold and snowy conditions. They have following adaptations :

   (i) These are tall, straight and cone shaped. These features allow the snow to easily slide of their branches.

   (ii) The leaves of these trees are needle shaped and have a waxy coating to prevent any damage from snow.

2. Same plants grow in hilly areas which receive plenty of rainfall. Tea plant grows well in hilly areas where rainwater flows down the slopes.

3. Plants that grow on land are called terrestrial plants.

4. Some plants eat insects as food. Their leaves are modified to trap insects. Thus, these plants are called insectivorous plants.

   Pitcher Plant : Its leaves are modified to form a pitcher with a lid to cover its mouth. When an insect sits on the mouth of the pitcher, lid drops trapping the insect inside.

5. Aquatic plants are of the following types:

   (i) Floating plants : Some aquatic plants are seen floating on the surface of water in lakes and ponds. These plants are called floating plants. For example, duckweed, water hyacinth, etc.

   (ii) Fixed plants : The aquatic plants which have roots fixed in the soil at the bottom of pond or lake are called fixed plants. For example, water lily, lotus, etc.

   (iii) Underwater plants : Some aquatic plants completely grow under the water. These plants are called underwater plants. For example, pondweed, tape grass, etc.

6. **Parasitic plants :** Some plants depend upon other plants for their food because they do not have chlorophyll. Amarbel is an example of parasitic plants.

   Saprophytic plants : Some non-green plants absorb nutrition from dead and decaying plants. These are called saprophytic plants. For example, mushrooms and moulds.

7. Plants growing in deserts have adapted themselves as follows:
   (i) The leaves of xerophytes are either very few or reduced to spines for reducing water loss.
   (ii) The stem of these plants is green and fleshy. The process of photosynthesis is carried out by the stem.
   (iii) The extra food and water are stored in the fleshy stem.

Active Learning

- Do yourself.
-

Habitat	Name the Plant	Suitable Climate	Adaptations
Plains	Neem	Hot as well as cold climate	Its extensive, deep root system is presumably an adaptation to seasonally dry sites.
Hilly Region	Tea plant	Moderately warm and humid	Tea plants grows well in hilly areas where rainwater flows down the slopes.
Hot-humid Region	Rubber plant	Hot and Humid	These plants are adapted to have broad and flat leaves. So that they can keep themselves cool by evaporating more water in transpiration.
Desert	Cactus	Dry and arid	Cacti store water in their stems to survive in desert conditions.
Cold Region	Pine	Harsh cold and snowy	The leaves of these tree are needle shaped and have a waxy coating to prevent any damage from snow.
Swampy Region	Mangroove tree	Tropical climate	This plant growing have special breathing roots that come out of the soil for breathing.
Aquatic Plant	Lotus	Warm to tropical climate	The leaves of the plants are broad and flat with a waxy coating on the surface to prevent them from rotting in water.

Picture Learning

Look at the picture given alongside and answer:

1. Yes, this is pine cone.

2. It belongs to the pine tree.

3. Cold region

3 Reproduction in Animals

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (a) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. True 2. False 3. False 4. False 5. True 6. False

C. Fill in the blanks by choosing the correct words.

1. tadpoles 2. life span 3. Eggshell, albumen
4. yolk 5. incubation

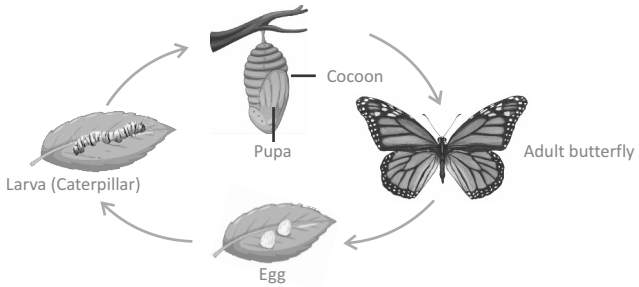
D. Match the following.

1. (v) 2. (iv) 3. (i) 4. (vi) 5. (iii) 6. (ii)

E. Answer the following questions.

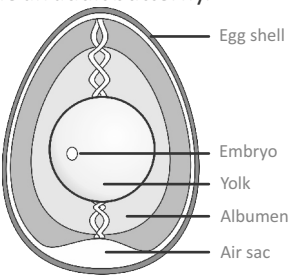
1. The animals which give birth to young ones are called mammals. For examples, dog, cat, cow, buffalo, monkey and human beings. Whale and dolphin are mammals living in water. Bat is the only flying mammal.
2. When some eggs are laid by a hen, the mother hen sits on the eggs for many hours in a day to keep them warm. During hatching, embryo starts developing in each egg. When an embryo converts into a fully developed chick, it comes out by breaking the shell or hatches from the eggs.
3. The ability by which living beings produce young ones of their own kind is called reproduction.

   The process of keeping the eggs warm and protecting them is called hatching the eggs.
4. No. most of the eggs of these animals are eaten by other animals. Only a few grow into young ones. Again some other animals eat many of these young ones. Those who survive become adult to continue the process of reproduction.
5. Butterfly is an insect, it lays eggs which on hatching convert into larva. The



larva feeds and grows rapidly. It stops eating after a while and builds a cover like structure around it, which is called cocoon. This stage is called pupa. Pupa sheds its skin many times to become an adult butterfly.

6. Eggs are covered by a protective hard covering called eggshell. Eggshell has a white jelly like substance called albumen. Albumen protects the inner yellow part of the egg called the yolk. Egg yolk contains the food for embryo or a baby animal growing inside the yolk.

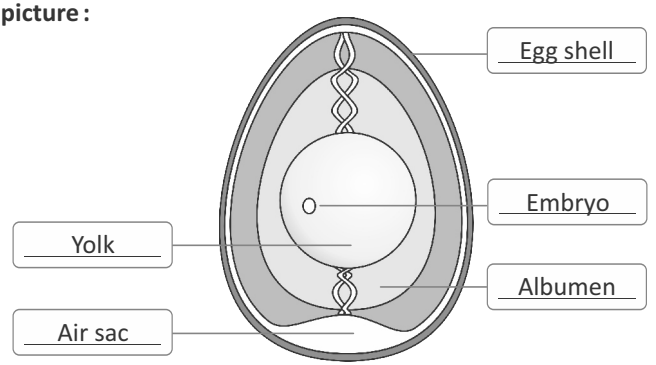


Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Label the picture :



4 Adaptations in Animals

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (c) 4. (a) 5. (a)

B. Fill in the blanks by choosing the correct words.

1. Frogs 2. Cud 3. grassland
4. blubber 5. Camel

C. Answer the following questions.

1. The way in which animal's colour or shape merges with the surroundings so that it becomes a part of its surroundings is called camouflage. For example, the polar bear is difficult to find in snow because of its snowy white colour. Chameleon has ability to change its body colour according to its surroundings.
2. Terrestrial animals are animals that live on land. For example, horse, lion, tiger, cow, dog, etc. Here are some different types of terrestrial animals depend upon the weather conditions they face :
   - Many animals such as polar bear and yaks have thick fur on their bodies to keep them warm.
   - Some animals such as buffalo and elephant live in hot places have a thick skin. This skin prevent loss of water from their bodies.
3. Different animals are adapted to eat different kinds of food. According to their food habits animals are divided into five groups:
   (i) Herbivores : Animals that eat plants as their food are called herbivores. For example, cow, goat, deer, bull, horse, etc.
   (ii) Carnivores : Animals that eat flesh of other animals as their food are called carnivores. For example, lion, tiger, fox, etc.
   (iii) Omnivores : Animals that eat both plants as well as animal flesh are called ominivores. For example, bear, hen, crow, human beings, etc.
   (iv) Parasites : Some small animals receive their food from other animals indirectly by harming them are called parasites. They may live in or on the bodies of other animals. For examples, lice, leech, roundworm, tapeworm, etc.
   (v) Scavengers : The animals which feed on the dead and decaying animals are called scavengers. For example, hyena and vulture.
4. Camels store fat in their humps to break down and use the energy when needed. Hence, a camel can go without food for many days. They have thick skin and coarse hair to protect themselves from the extreme heat and cold.
5. (i) **Aestivation :** Some frogs and fish in the desert go into a sleep-like state called aestivating to escape the extreme heat of the summer.

   (ii) **Hibernation :** Some animals such as bats and squirrels become inactive and go into a sleep-like state called hibernation.

   (iii) **Migration :** Many birds cannot survive during winter months. So they fly towards warmer places. The entire community of these birds leaves the place together. This mass movement of birds from a colder to a warmer place is called migration.
6. Animals which live in hot places have a thick skin. This skin prevents loss of

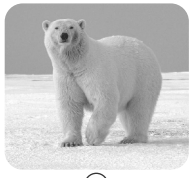
water from their bodies. The skin of these animals have less hair to prevent them from hot weather.

7. Aquatic animals have fin like limbs which help them in swimming. Fish use fins to swim while turtles have paddle like legs that help them to push water back as they swim.

Active Learning

- **Match the animals to their adaptations by writing the correct numbers next to them.**






3	1	4	2

1	2	3	4
Has a hump that stores fat; can go without food for many days.	When threatened, it curls into a ball of quills.	Has curved beak and talons to catch and eat its prey.	Has a thick layer of fat under its skin to keep warm.

- Do yourself.

Picture Learning

Write the names of the animals given below and also write the groups to which they belong to :

Frog

Amphibians

Polar Bear

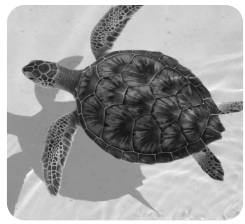
Terrestrial

Vulture

Aerial

Camel

Terrestrial



Turtle

Aquatic

Seal

Aquatic

Bird

Aerial

Squirrel

Arboreal

Bat

Aerial

5 Food

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (c) 5. (c)

B. Fill in the blanks by choosing the correct words.

1. preservation 2. Cooking 3. balance diet
4. Butter 5. three-fourth

C. Match the following.

1. (iv) 2. (iii) 3. (ii) 4. (vi) 5. (i) 6. (v)

D. Answer the following questions.

1. A diet that has all the nutrients in the right amount with proper roughage and water is called a balanced diet.
2. The nutrients required by our body are following :

   Carbohydrates : Carbohydrates are energy giving nutrients.

Proteins : They are body building nutrients. They help in growth and repairing worn-out body tissues. For example, milk, eggs, etc.

Fats : Fats provide us much more energy as compared to the same amount of carbohydrates. It keep the body warm and make our skin smooth. For example, butter, ghee, etc.

Vitamins : These are the nutrients which keep our body safe from diseases. A, B, C, D, E and K are main vitamins required by our body.

Minerals : Minerals are also called protective nutrients. They are required in a very small quantity by our body. For example, calcium, iron, iodine, etc.

3. Roughage is also known as dietary fibres. It is the undigested part of carbohydrates provide by plant products in our foods. It help our body to get rid of undigested food and regulate our digestive system.
4. Cooking of food helps to make the food tasty, soft and easy to digest. It also kill harmful germs present in food items.

   Some healthy ways of cooking are as follow:

   (i) Do not overcook the food as it can destroy the nutrients present in it.

   (ii) Use just enough water for cooking.

   (iii) Vegetables must be washed before cutting them.

   (iv) Frying of food items, improves the taste of the food items but destroys the nutrients present in it.
5. Food helps us to grow and keeps us healthy. It protect us from diseases. It provides us energy for doing various activities like studying, playing, walking and talking. Food keeps us warm and helps to repair damaged cells and tissues.

   The components of food that are essential for energy, growth, health and fitness are called nutrients.
6. The proteins help in:

   (i) Growth and repairing worn-out body tissues.

   (ii) Forming new cells.

   (iii) Growing hair and nails.
7. The different methods of preventing food from getting spoil is called food preservation. The different methods for preserving the food are : cooling or chilling, freezing, drying or dehydration, boiling and canning, adding a lot of sugar or salt.

Active Learning

- **Complete this table of nutrients :**

Name of the Nutrient	Sources	Functions
Proteins	Pulses, meat, cheese, peas, eggs, fish	help us to grow

Carbohydrates	Potato, rice, sugar, bread	energy giving food
Fats	Butter, ghee, oil, nuts	help us to keep body warm
Vitamins	Fruits, vegetables, milk	keep our body from diseases
Minerals	Fish, sea food, salt, vegetables	help in healthy bones.

- Do yourself.

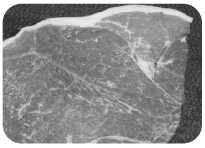
Picture Learning

Write the nutrients present in the following food items :

Protein

Carbohydrates

Fats



Protein

6 Teeth and Digestion

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (b) 4. (b) 5. (c)

B. State whether the following statements are true or false.

1. False 2. False 3. True 4. False 5. True

C. Fill in the blanks by choosing the correct words.

1. large intestine 2. deciduous 3. roughage
4. Anus 5. microscope 6. incisors

D. Math the following.

1. (iii) 2. (v) 3. (iv) 4. (ii) 5. (i)

E. Name the following.

1. Canines teeth.
2. Intestinal juice, bile juice and pancreatic juice
3. Deciduous teeth, Permanent teeth
4. Incisors, canines, premolars, molars

5. Premolars and molars teeth

F. Answer the following questions.

1. **(i) Mouth :** Food is taken into our mouth. Food is chewed with the help of teeth. The paste formed is mixed with saliva.

   (ii) Food pipe : Food from the mouth passes through the thin long tube and reaches the stomach.

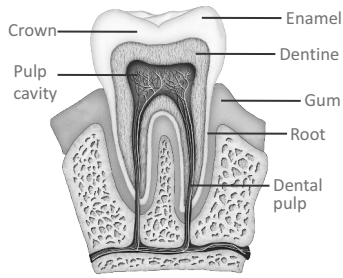
   (iii) Stomach : Food stays in the stomach for several hours. The wall of the stomach secrete digestive gastric juices. These juices are mixed with food. Food is converted into a semi-solid paste.

   (iv) Small intestine : From the stomach, the liquid food passes into the small intestine. Here, the process of digestion is completed by mixing three more juices intestinal juice, bile juice and pancreatic juice. The digested food is absorbed by the wall of intestine and moved to the different blood vessels.

   (v) Large intestine : The undigested part of the food reaches large intestine. The large intestine absorbs the water from it and forms semi-solid waste products called faces.

   (vi) Anus : Faeces are removed from the body through the anus.

2. Each tooth has two parts, crown and root. The part of the tooth visible to us is the crown while root lies inside the gum. Tooth is made-up of a tough material called dentine. In the crown, the dentine is covered by white and hard substance called enamel. Inside the dentine is the pulp. It is very soft and full of nerves and blood vessels.



3. **Milk teeth :** Milk teeth are also called temporary teeth or deciduous teeth. They appear slowly, one or two at a time, when the baby is about six months old. A child usually has a set of 20 teeth by the age of two and a half years.

   Permanent teeth : When the child is about six years old, milk teeth start falling out one by one. Larger teeth, called the permanent teeth take their places slowly. A human adult has 32 permanent teeth. This set of teeth is called permanent because it remains throughout the human life.

4. To take care of our teeth we should follow the following habits:
   (i) Brush your teeth twice a day, once in the morning and once before going to bed.
   (ii) Brush your teeth up and down and in and out.
   (iii) Gargle your mouth after every meal.

(iv) Avoid having too many sweets, sugary snacks or soft drinks.

(v) Include calcium rich food like cheese, curd, milk, etc., in your diet for healthy teeth.

5. Teeth help in breaking down of food into smaller pieces. Apart from digestion, clean and healthy teeth add charm into the personality by making our smile beautiful. Teeth also help us to speak properly.

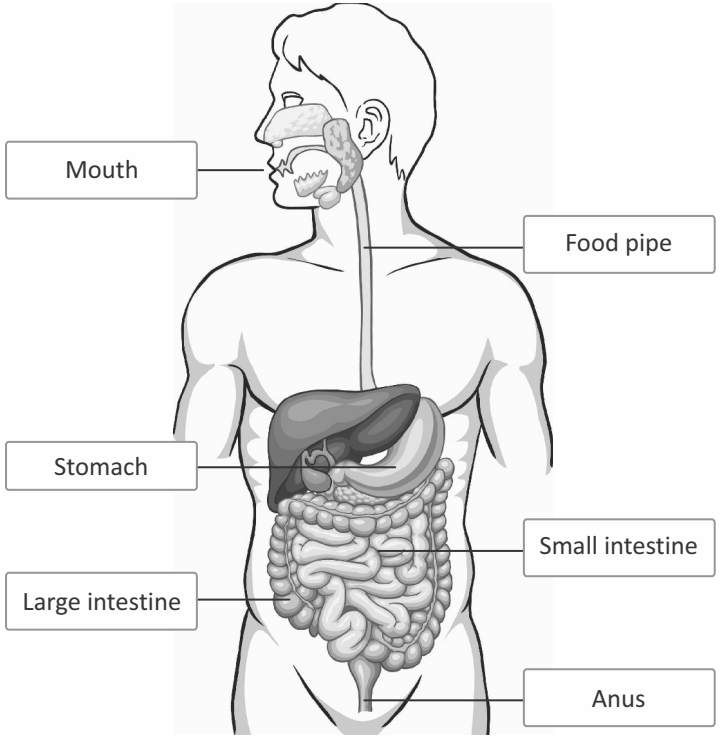
   Sometimes, germs grow an tiny bits of food left between teeth and forms a sticky yellow layers called plaque. If plaque is not removed regularly it may cause tooth decay. Cavities are also produced due to tooth decay. A cavity is a small hole in a tooth.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Label the following picture.



7 Circulatory and Excretory System

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (c) 4. (a) 5. (c)

B. Fill in the blanks by choosing the correct words.

1. uric acid 2. veins 3. nephrons
4. Arteries 5. blood

C. Match the following.

1. (iv) 2. (v) 3. (vi) 4. (iii) 5. (ii) 6. (i)

D. Name the following :

1. Capillaries
2. Blood vessels, blood, heart
3. Nutrients, blood, digested food, water
4. Kidney, ureter, urinary bladder, urethra
5. Arteries, veins, capillaries

E. Answer the following questions.

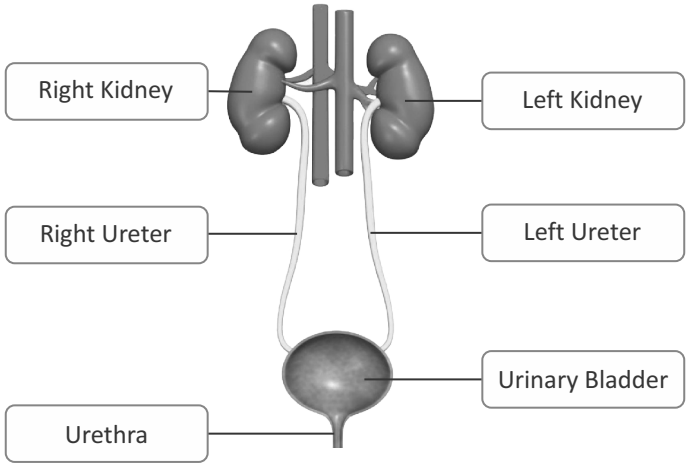
1. Heart works like a pump. The left side of our heart receives blood from our lungs and pumps it to all the parts of the body through the blood vessels. The right side of our heart receives blood from the rest of the body and pumps it back to the lungs.
2. Blood is a red coloured fluid that flows inside the blood vessels. Blood vessels are thin tube like structures that run throughout our body.
3. Our digestive system breaks down food into simpler substances. These substances are transported to different parts of our body by the circulatory system. It helps in the transportation of nutrients, blood, digestive food and water inside our body.
4. Excretory system helps to remove the waste produced inside our body. Human excretory system consists of a pair of kidneys, a urinary bladder, a pair of tubes called ureters and a urethra. Harmful wastes like urea and uric acid, produced inside our body are expelled out of the body as urine.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Label the following picture.



8 States of Matter

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (b) 5. (b)

B. Name the following.

1. Clay, metal
2. Wool, silk
3. Wood, rubber
4. Salt, water
5. Liquid

C. Fill in the blanks by choosing the correct words.

1. solute 2. Solid 3. fluids
4. petroleum 5. water

D. Match the following.

1. (iv) 2. (iii) 3. (ii) 4. (i)

E. Answer the following questions.

1. **(i) Melting :** When a solid converts into a liquid, it is called melting.
   (ii) Freezing : When a liquid converts into a solid, it is called freezing.
   (iii) Evaporation : The process by which a liquid is converted into its vapour on heating is called evaporation.

(iv) **Condensation :** When water vapour gets cooled, it is converted into liquid again. This process is known as condensation.

2. **Solids :** The molecules in solids are closely packed. The distance between any two adjacent molecules is very small because of this their shapes remain fixed.

   Liquids : Molecules in liquids are loosely packed. The distance between any two adjacent molecules in liquids is greater than that of solids.

   Gases : Molecules in gases are far apart. They are free from one another.

3. Everything around us is made up of matter. Matter is any substance that has mass and occupies space. Air, water, soil, wood, living being, etc., all are matter.

4. Different types of a matter are called materials. For example, plastic, wood, iron, paper, fibre, etc., are called materials.

5. Solids such as sugar and salt dissolve completely in water. The substance that dissolves in water is called a solute. The liquid in which the solid dissolves is called the solvent. The liquid that we get after a solid dissolves in a liquid is called a solution.

   For example, when chocolate powder is added to milk, the chocolate powder is the solute, milk is solvent and chocolate milk is the solution.

Active Learning

- **How are solids, liquids and gases different from each other. Fill the table with suitable points.**

Solids	Liquids	Gases
They have definite shape.	They do no have any definite shape.	Gases also do not have any definite shape.
The shape of a solid does not change easily.	They acquire the shape of the container in which they are kept.	They occupy all the available shape in a container.
The molecules in solids are closely packed.	Molecules in liquids are loosely packed.	Molecules in gases are far apart.

- **Collect different solids like salt, sugar, chalk powder, sand, mud, paper, powder blue, flour, etc. Now, mix each of it in water. Observe whether the given solid dissolves in water or not. Record your observation in the given table.**

Solids	Dissolves in water	Does not dissolves in water
Salt	Yes	---
Sugar	Yes	---
Chalk powder	---	Yes
Sand	---	Yes
Mud	---	Yes

Paper	---	Yes
Power blue	Yes	---
Flour	---	Yes

Picture Learning

Describe the picture given alongside in your own words.

In the given picture we can see water and its molecules. The particles in a liquid are more loosely packed than in a solid and are able to flow around each other, giving the liquid an indefinite shape. Hence, the liquid will conform to the shape of its container.

9 Air, Water and Soil

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (b) 4. (b) 5. (c) 6. (a)

B. State whether the following statements are true or false.

1. False 2. False 3. True 4. True 5. True

C. Fill in the blanks by choosing the correct words.

1. faster 2. storm 3. atmosphere
4. condensation 5. humus

D. Match the following.

1. (iii) 2. (v) 3. (iv) 4. (i) 5. (ii)

E. Answer the following questions.

1. Water is an important part of our food. Water keeps us hydrated. We use water in washing clothes, utensils, cleaning things, etc. Water is used for making electricity. The ways for purification of water as following:

   Boiling : The easiest way to purify water is to boil it for 10 to 15 minutes. It kills all the germs.

   Chlorination : Chlorination is a process in which chlorine gas or chlorine tablets are added to kill germs and make the water fit for drinking.

2. Soil is the uppermost layer of earth's crust. Soil is formed, when big pieces of rocks are broken down by the action of heat, wind and rain. As time passes, the broken pieces of rocks convert into five powder called soil.
3. Various layers of soil are called soil profile. The types of soil are as follow:

   Gravel : The soil consisting of tiny pieces of stone is called gravel soil. Gravel

soil cannot hold water.

Sand : Sand consists of very tiny particles of rocks. Infact sand is the powdered rocks obtained by weathering.

Clay : Soil which has extremely five particles is called clay. It is smooth to touch and can retain water. It becomes very heavy and sticky when wet.

Loam : Soil, which is the mixture of sand, clay and humus is called loam. Loamy soil can hold water and supports plant growth.

4. Air is present all around us. Air is a mixture of several gases, water vapour, dust, smoke, etc.

Importance of air :

(i) We all need oxygen from the air for breathing.

(ii) Carbon dioxide from the air is used by plants during photosynthesis for making their food.

(iii) Air is required for burning.

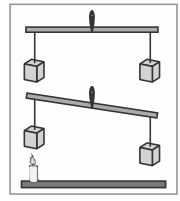
5. **Land breeze :** A cool breeze that blows towards the sea from the land during at night. This breeze is called land breeze.

Sea breeze : A cool breeze that blows towards the land from the sea during the day. This breeze is called sea breeze.

6. **Aim :** To show that hot air is lighter than cool air.

Materials required : Two paper boxes, ruler, candle and match box.

Procedure :



1. Tie the two paper boxes at the ends of a ruler with the help of thread so that boxes are balanced on either side.
2. Light the candle under one of the boxes. Make sure, candle should be at a proper distance so that paper boxes do not catch fire.
3. Wait for a while and observe what happens.

Observation : The box with the candle underneath moves up.

Explanation : By the heat of candle, air present in paper box becomes warm and lighter, thus the paper box moves up.

Conclusion : It is proved that hot air is lighter than cool air.

7. The wearing away of topsoil by the actions of wind, rain or human activity is called soil erosion. Prevention of soil from erosion is called soil conservation. Here are some ways we can conserve soil:

- Plant more trees in place of the ones being cut down because the plants help to hold the soil in place.
- Avoid overgrazing by cattle.
- Practise crop rotation by growing different kinds of crops on the same field in different seasons.
- Build embarkments along the river banks.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Describe the given picture in your own words.

In the given picture we can see the soil profile. There are three main layers of soil.

Top soil : It is the uppermost dark coloured layer of soil.

Sub soil : The layer below the top soil, is called sub soil. It is light in colour and full-of broken pieces of rocks due to weathering.

Bed rock : It is the bottom layer of the soil. It lies deep inside the earth. It consists of solid rocks. It does not have much water.

10 Force, Work and Energy

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (b) 3. (a) 4. (b) 5. (b)

B. State whether the following statements are true or false.

1. True 2. False 3. True 4. False 5. False 6. False

C. Fill in the blanks by choosing the correct words.

1. cooking 2. Friction 3. machine
4. solar 5. movement

D. Match the following.

1. (vi) 2. (iv) 3. (v) 4. (iii) 5. (i) 6. (ii)

E. Answer the following questions.

1. Work is said to be done when force applied on a thing makes it move through a distance.
2. A push or a pull applied on a thing is called a force. A force can have following effects on a thing:
   - Force can move a thing.
   - Force can stop a moving thing.
   - Force can change the direction of a moving thing.
   - Force can change the shape of a thing.

3. A downward pull applied by the earth, This downward pull is called gravity.
4. Energy is the ability of doing work. It can be found in the following forms:

   Solar energy : Energy received from the sun is called solar energy. Plants use solar energy to make their food.

   Electrical energy : Energy received from the electricity is called electrical energy. Fan, bulb, televisions, etc., use electrical energy to work.

   Mechanical energy : Energy produced from the movement of a thing is called mechanical energy. Spring of watch or pen, scissors, etc., work by moving.

   Chemical energy : Energy produced from the chemicals stored in cells and crackers is called chemical energy.
5. Friction is the kind of force that slows down and finally stops a moving object.

   Advantages : It allows us to walk on the road, it helps us to write on paper, it helps to insert nail in a wall, it makes matchstick lighted by rubbing and so on.

   Disadvantages : Due to friction, heat is produced which damages the machine parts. A significant amount of energy is washed in friction. Due to friction, tyres of vehicles and soles of our shoes are damaged.
6. A simple machine is a device or a tool which helps us to do work by reducing the amount of force or by increasing the speed of work.

   There are two types of simple machines as follow:

   Lever : A lever is a simple machine that is used to lift or move heavy things, cut things and open the lid of a container. For example, bottle opener, see-saw, a pair of scissors, etc.

   Screw : A screw is a modified version of an inclined plane. It is actually an inclined plane wrapped around a cylinder. For example, screwjack, screw, etc.

Active Learning

- 1. Muscular force and Frictional force
  2. Frictional force
  3. Gravitational force
  4. Gravitational force
  5. Gravitational force
  6. Muscular force and Mechanical force
- Do yourself.

Picture Learning

Look at the picture given alongside and answer.

1. In the picture, we can see children playing on a see-saw.
2. It is also a type of lever.

11 The Solar System

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (c) 3. (c) 4. (a) 5. (c)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True 5. True

C. Fill in the blanks by choosing the correct words.

1. Jupiter 2. two 3. Venus
4. Russia 5. blue planet

D. Match the following.

1. (iv) 2. (v) 3. (vi) 4. (i) 5. (ii) 6. (iii)

E. Answer the following questions.

1. The solar system has eight planets, these are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

   Mercury : It is the closest and smallest planet of the solar system.

   Venus : It is the brightest planet among all the planets. Venus is often called a 'morning' or an 'evening' star.

   Earth : It is also called the blue planet because almost 70% of its surface is covered with water.

   Mars : It is also called red planet because soil and rocks of this planet are red.

   Jupiter : It is the fifth and largest planet from the Sun. It spins very fast on its own axis.

   Saturn : It appears unique because of the several beautiful rings around it.

   Uranus : It is the coldest amongst all the eight planets. Uranus has very faint rings around it.

   Neptune : It is also a cold planet but it is less colder than Uranus. Neptune also has faint rings system around it.

2. The solar system is made up of all the planets that move around the Sun. It

has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

3. The eight planets move around the Sun in their fixed path. This fixed path is called their orbit.
4. An object that revolves around a planet in an orbit is called a satellite. Satellites are of two types: natural satellite and artificial satellite.

   Natural satellite of our Earth-Moon : The moon is the only natural satellite of the Earth. There is not atmosphere and no water on the Moon. Hence, there is no life on the Moon. Moon does not have its own light, it shines with the light of the Sun.

Active Learning

- Do yourself.

Picture Learning

Look at the picture given alongside and answer.

1. Yes, it is a Jupiter.
2. It is a gas giant planet.

12 Our Planet : Earth

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (b) 3. (b) 4. (c) 5. (a)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True 5. False

C. Fill in the blanks by choosing the correct words.

1. northern 2. core 3. rotation
4. revolution 5. axis

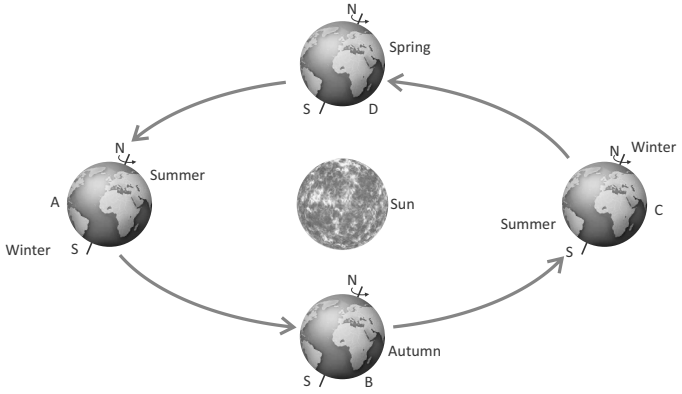
D. Match the following.

1. (ii) 2. (iv) 3. (i) 4. (v) 5. (iii)

E. Answer the following questions.

1. Deforestation is the process of cutting down trees in large number. If there would be less trees than the population, the life on the earth would become impossible.

2. Earth is consists of three main layers. The outermost layer of the Earth is called crust, the middle layer is called mantle while the inner most layer of the Erth is called core. The crust is the thin layer of solid rocks, soil and humus. Crust is very important for plants. Mantle is made up with hot rocks. The core of the Earth is made up mostly of iron and nickel.

3. 

As shown in the figure, at point A, the northern hemisphere is tilted towards the sun, thus it has summer while southern hemisphere is away from the sun thus it has winter. Days are longer in summer because the northern hemisphere receives more sunlight as it is tilted towards the sun while days are shorter in winter because southern hemisphere receives less sunlight because it is away from the sun.

In position B, days and night are equal, thus, it is autumn season. At point C, southern hemisphere is tilted towards the sun, thus, it has summer while northern hemisphere has winter. At point D, again days and nights become equal, so it represents spring.

4. The Earth was once a ball of burning gases. Slowly, it cooled down in millions of years by raining. The craters present on Earth's surfaces converted into sea and oceans. Slowly life began on the Earth.

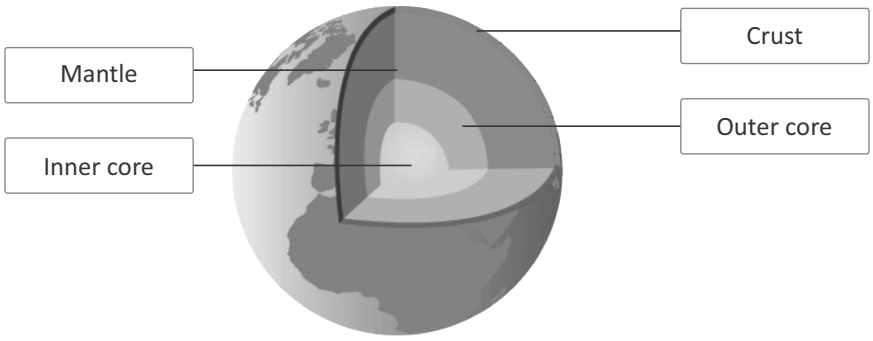
5. The Earth spins around its own axis. The Earth's axis is an imaginary line passing through the centre of the Earth from north pole to the south pole. The axis of the Earth is tilted at an angle of 23.5°. The spin of the Earth around its own axis is called rotation. The rotation of the Earth causes day and night. One complete rotation of the Earth takes 24 hours. Earth rotates west to east on its axis.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Label the picture:



Junior SCIENTIST 5

1 Reproduction in Plants

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (a) 4. (b) 5. (c) 6. (c)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. False 5. False 6. True

C. Match the following.

1. (iii) 2. (v) 3. (vi) 4. (iv) 5. (ii) 6. (i)

D. Fill in the blanks by choosing the correct words.

1. spongy 2. eyes 3. agriculture
4. Cotyledons 5. germination

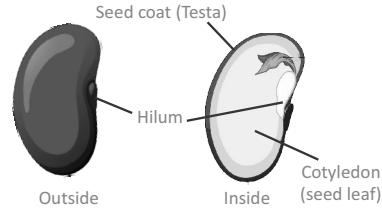
E. Answer the following questions.

1. The process by which seeds are scattered away from the parent plant is called dispersal of seeds.
2. Apart from seeds, some plants reproduce from their vegetative parts like roots, stems or leaves. This method of reproduction in plants is called vegetative reproduction.
   - **(i) Reproduction from Roots :** Reproduction of some plants such as carrot, beetroot, etc., can produce new plants.
   - **(ii) Reproduction from Underground Stem :** Onion, ginger and potatoes are underground stems having buds on their surfaces. Each bud grows into a new plant under suitable conditions.
   - **(iii) Reproduction from Stems :** Some plant like rose, hibiscus, etc., can reproduce from stem cuttings. Each cutting has one or two buds on them. When these cuttings are planted into the soil, they grow into new plants.
   - **(iv) Reproduction from Leaves :** Plants like bryophyllum reproduce from their leaves. Leaves of this plant have buds along their edges. When any of its leaf is kept in moist soil, new plants grow from its edges.

3. The process by which seeds grow into young plants is called germination.
4. The seed has following parts:

   Seed coat : The thick outer cover of a seed is called the seed coat. It protects the seed from harmful microorganisms and insects.

   Cotyledons : On removing the seed coat, we find two parts of the seed called cotyledons. These are the fleshy leaves which store food for the baby plant. Baby plant lies between cotyledons.



   Embryo : The embryo is the baby plant which lies between cotyledon. Embryo is made up of :

   (i) Plumule : The upper part of an embryo grows above the soil and develops into shoot system.

   (ii) Radicle : The lower part of an embryo grows below the soil and develops into root system.

   Various Agents of Seed Dispersal

   Dispersal by Wind : Seeds of some plants like cotton, madar, etc., are very light in weight. When wind blows, these seeds are easily carried away by the wind.

   Dispersal by Water : Seeds of some plants like coconut, lotus, etc., which grow in and around the water bodies have fibrous and spongy structure. This type of structure enables them to float on water.

   Dispersal by Animals : Animals and human beings eat the fleshy part of the fruits of plants like, mango, orange, etc., and throw away their seeds. On getting favourable conditions, these seeds grow into new plants.

   Dispersal by Explosion : Fruits of some plants like pea, balsam, etc., burst open on drying. So, the seeds present in the fruit scatter in all directions.

5. **Kharif crops :** The crops grown in rainy season (from June to September) are called Kharif crops. These crops require monsoon rains. For example : rice, maize, etc.

   Rabi crops : The crops grown in winter season (from October to March) are called rabi crops. For example: Wheat, gram, etc.

6. For fulfilling the need of food for entire population, crops and grown at large scale. This practice is called crop production.

   Steps involved in crop production:

   Ploughing : It loosens the soil and increases the circulation of air in the soil.

   Manuring : These are added to the soil to ensure the supply of nutrients to the soil for the healthy growth of plant.

Sowing seeds : Carefully selected healthy seeds are then sown at appropriate depths.

Irrigation : Regularly watered to the field keep the soil moist.

Crop protection : Crops are protected from insects, pests and weeds by spraying, insecticides, pesticides and weedicides.

Harvesting : When the crop is ripen, it is cut and gathered.

Storage : After harvesting crops are dried properly and then stored in metal or earthen containers, gunny bags and grains silos or in godowns.

7. The practice of growing crops is known as agriculture.

Steps involved in agriculture : (See the solution of Q.6)

Active Learning

- Do yourself.
- Do yourself.
- (a) Rose : Stem cutting
  (b) Sugarcane : Stem cutting
  (c) Lily : Bulb
  (d) Sweet potato : Roots

Picture Learning

Look at the picture given alongside and answer.

1. Irrigation is shown in the picture.

2. Ths process keeps the soil moist.

2 Animals : Living and Surviving

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (c) 4. (a) 5. (c)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. False 5. True

C. Fill in the blanks by choosing the correct words.

1. blowholes 2. flippers 3. gills
4. moist skin 5. six

D. Answer the following questions.

1. For comfort and protection, animals have different coverings. These are:
   - **(i) Scales :** Bodies of most animals such as snakes, lizards and crocodiles are covered with scales. Body of a fish is also covered with scales. Snakes shed their old skin periodically replacing it with a new one.
   - **(ii) Fur/hair :** The body of sheep, bears, rabbit, etc., is covered with fur or hair. This covering protects them from heat, cold and rain.
   - **(iii) Shell :** Animals such as turtles, tortoise, snails, etc., have shells on their body to protect them. When they are in danger, they withdraw their head and feet into the shell.
   - **(iv) Feathers :** Birds have feathers on their bodies. They help them fly and protect them from heat and cold.
2. **Spiracles :** All insects e.g., mosquitos

   Gills : Fish, tadpole

   Moist skin : Frogs, earthworms

   Lungs : Human beings

   Blowholes : Dolphin, whale
3.

Aquatic Animals	Terrestrial Animals
They move in water. They have fins to move. The fins are used to move forward and tail fin helps to change the direction of movement. Turtle have paddle- like limbs to move and frogs have webbed feet to move in water.	They move on land. They have four limbs (two forelimbs and two hindlimbs) to move. They move through their muscles. Snakes do not have legs at all, they crawl without limbs.

4. Migration is the mass movement of animals to another place in response to the changing climate conditions. For example :
   - (i) Siberian crane and Mallard duck come to Indian during winter because in winters their natural habitats become too cold.
   - (ii) An eel is one of the best known migratory fish. It spends its early life in fresh water bodies. When it becomes adult, it travels to the Sargasso Sea in North Atlantic.
5. Terrestrial habitat, Aquatic habitat, Aerial habitat.
6. The ability of an animal to survive in a particular habitat by developing special body features is called adaptation.
7. A tadpole breathes through gills while a frog breathes through moist skin, when it is in water and a frog breathes through lungs when it is on land.

Active Learning

- **Write down the names of two animals for each of the following groups.**

S.No.	Animals with Shell	Animals with Scale	Animals with Fur
1.	Turtle	Snake	Sheep
2.	Snail	Lizard	Rabbit

- Do yourself.
-

Body Surface	Spiracles	Gills	Lungs
Earthworm	Grasshopper Lady bird	Tadpoles Fish	Whale (blowholes) Tiger Human Dolphins (blowholes)

Picture Learning

Look at the picture given alongside and answer.

1. A snail is shown in the picture.

2. Turtle, oysters

3 The Skeletal System

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (c) 4. (b) 5. (b) 6. (b) 7. (c)

B. State whether the following statements are true or false.

1. True 2. True 3. True 4. False 5. True 6. True

C. Fill in the blanks by choosing the correct words.

1. tibia 2. Cartilage 3. spinal cord
4. bone marrow 5. sternum

D. Match the following.

1. (iii) 2. (iv) 3. (v) 4. (vi) 5. (i) 6. (ii)

E. Answer the following questions.

1. The skull of an adult human being is consisted of 22 bones. The upper portion of the skull is made up of 8 flat bones. Remaining 14 bones give shape to our face and jaws.

2. Inside a bone, a jelly-like substance is present, which is called bone marrow.
3. Ribs are the thin, flat and round bones which are joined together to form a cage around our chest. This cage is called ribcage. Ribcage is formed by 12 pairs of curved bones called ribs. In front, these pairs of ribs are attached to long and flat bones present at centre of the chest. This bone is called sternum. At the back ribs are attached to the backbone. The last two pairs of the ribs are free and joined only to the backbone. These pairs of ribs are called floating ribs.
4. **Hinge joint :** These joins are like hinges in a door. These joints allow movement in one direction only, *i.e.*, up or down, bak or forth, For example: fingers, knee, elbow, etc.

   Pivot joint : In this type of joint, the rounded end of a single bone is fitted into the ring of the other with the help of connective tissues. For example: Neck. This joint in neck allow head to move upwards, downwards and sideways.
5. **Ball and Socket joint :** In this type of joint, one end of a bone is round like a ball and the other bone has a cup-shaped socket. Ball of one bone is fitted into socket of other bone. These joints allow maximum movement in many direction. For example : hips, shoulders.

   Gliding joint : In this joint, bones can slide over each other, but cannot move in a circular direction. This type of joint is found in the wrists, ankles and between the two vertebral.
6. The backbone or spine is called the vertebral column. It is made up of 33 small bones called vertebrae. The joints of vertebrae allow slight movements due to which we can move forward and backward.
7. Two muscles called biceps and triceps work in pairs to move our arm up and down. They work by repeated contraction and expansion. When you pull your arm, biceps contract and become shorter and pull the lower arm. When you lower you arm, the triceps contract and become shorter to lower the arm.

Active Learning

- Do yourself.
-

			
Name	Skull	Backbone	Ribcage
Number of bones	22	33	12 pairs of curved bones
Organs it protects	Brain	Spinal cord	Heart, Lungs

Picture Learning

Look at the pictures of different types of joints. Name the types of joints shown in the pictures.

Hinge joint	Gliding joint	Pivot joint	Ball and Socket joint

4 Nervous System

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (b) 4. (a) 5. (a) 6. (b)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True 5. True 6. True

C. Fill in the blanks by choosing the correct words.

1. neurons 2. Retina 3. sweat
4. cranium 5. cerebrum

D. Match the following.

1. (iv) 2. (v) 3. (ii) 4. (i) 5. (iii)

E. Answer the following questions.

1. Eyes, ears, nose, tongue and skin are our sense organs.
2. Spinal cord is a bundle of nerves that connects entire body to the brain through nerves.
3. The brain is the master of our body. Every action (sending or receiving messages) of the body is in its control.

   The human brain has three main parts:

   (i) Cerebrum : It is the largest part of the brain. It controls speech, memory, and intelligence. It also controls the working of sense organs of our body.

   (ii) Cerebellum : It is present below cerebrum. It helps to maintain the balance and posture of our body. It regulates and co-ordinates the movements of muscles.

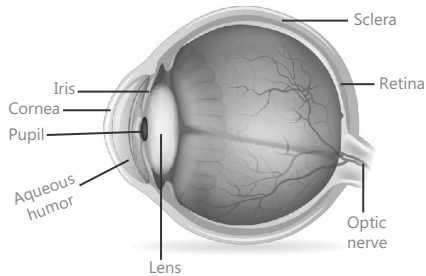
   (iii) Medulla oblongata or Brainstem : It is the lower portion of the brain. It joins brain to the spinal cord. It controls the basic life functions such as breathing, digestion, heartbeats, blood pressure, etc. It also controls the movements of involuntary muscles.

4. A reflex action is an automatic reaction of the body to a stimulation. For example: on touching a hot object, we pull our hand back immediately.
5. Different types of nerves are :
   (i) Sensory nerves : These nerves bring messages from the sense organs and carry to the brain and spinal cord. These messages are interpreted by the brain or spinal cord and we are able to see, hear, smell, taste and touch.
   (ii) Motor nerves : These nerves carry messages from the brain or the spinal cord to the different muscles and glands. These messages result in the movement of muscles or secretion of glands.
   (iii) Mixed nerves : These nerves carry messages to the brain as well as carry orders from the brain.
6. Tongue helps in detecting the tastes of different food items. Another kind of receptors present on the tongue, report about heat, cold, pain and texture. Skin protects our body from injuries and germs. Skin gives us sensation to touch, heat or cold, pressure, pain and tickling. Skin has tiny pores on its surface which allow waste water to come out as sweat.
7. Human eye has following parts :

   Cornea : It is a transparent membrane that protects the front part of the eye.

   Iris : It is the coloured part of the eye. It adjusts automatically to control the amount of light entering the eye.

   Pupil : The black spot in the centre of the iris is the pupil. Light enters the eye through pupil.



   Eyelens : Eyelens lies behind the pupil. It forms the image of the object you see.

   Retina : Retina serves as a screen. Image formed by eyelens is obtained on the retina. Retina contains many nerve cells which are connected to the brain through the optic nerves. As the brain receives the message, it interprets this message and object can be seen.
8. Ears help us in hearing the various sounds around us. The part of ear we can see is the outer ear. It works as a funnel that collects the sound waves and passes them to the eardrum which lies in the middle ear. Ear drum starts vibrating when strikes through these waves. The vibrations produced pass into the inner ear where auditory nerve cells are present. These nerve cells send signals to the brain and brain interprets the sound.

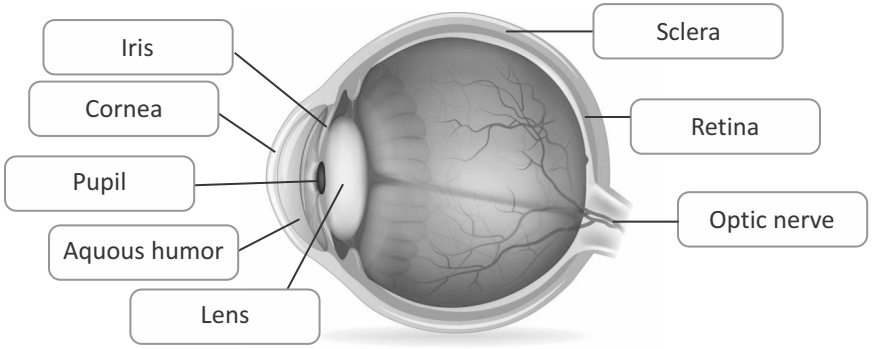
Active Learning

A	C	N	2. C	K	L	5. S	G	H	O	F
D	1. M	V	E	X	S	P	L	G	M	B
H	E	B	4. R	E	T	I	N	A	T	N
A	D	R	E	U	M	N	V	Z	S	G
C	U	K	B	H	Y	E	C	D	E	O
A	L	B	R	C	6. P	U	P	I	L	Q
Z	L	X	U	Y	W	V	U	T	S	R
D	A	E	M	F	G	H	J	K	L	V
M	3. C	E	R	E	B	E	L	L	U	M

- Do yourself.

Picture Learning

Label the picture of human eye:



5 Food and Health

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (a) 3. (b) 4. (c) 5. (a)

B. State whether the following statements are true or false.

1. False 2. True 3. True 4. True 5. False

C. Fill in the blanks by choosing the correct words.

1. anaemia 2. virus 3. Sugar
4. Vitamin 5. malnutrition

D. Match the following.

1. (v) 2. (iii) 3. (iv) 4. (ii) 5. (i)

E. Answer the following questions.

1. Diseases which are not passed from one person to another are called non-communicable diseases. For example : kwashiorkor, rickets, goitre, etc. Diseases which are passed from one person to another are called communicable diseases. For example : typhoid, polio, malaria.
2. **Kwashiorkor :** It is caused by deficiency of proteins in a diet. Children of 1-5 years of age become victims of this diseases. A child suffering from this diseases has a loss of appetite. He has swollen legs and belly, enlarged liver, discolouration of hair and stunted growth.

   A child suffering from kwashiorkor disease should be given protein and carbohydrate rich diet.

   Marasmus : It is caused by the deficiency of proteins and carbohydrates both. Children below 1 year are affected by this diseases.

   The child suffering from this disease becomes extremely thin. His skin get dried with wrinkled. His bony face, sunken eyes and ribs can be seen. Marasmus can be cured by giving high protein and carbohydrate rich diet.
3. Nutrients are the essential substances required by our body for growth, energy and maintenance.

   A diet that contains right amount of each nutrient with sufficient roughage and water is called balanced diet.
4. Roughage is important for us. These help in proper bowel movement therefore help us getting rid of undigested food.

   Water is also important fo us. Water helps to regulate the body temperature. It also help us to remove toxic substance out of the body through sweat and urine.
5. Goitre and anaemia are mineral deficiency diseases.

   Goitre : It is caused due to lack of iodine in the diet. In this disease, there is a swelling in the throat. Iodine rich food items like fish, seafood and iodized salt can cure goitre.

   Anaemia : It is caused due to the lack of iron in the diet. In this disease, the colour of the person turns pale and he/she feels fatigue and weak very soon. Green leafy vegetables, fruits, jaggery dried fruits, etc., can cure anaemia.
6. Communicable diseases can be controlled by adopting following ways :
   - Do not eat or drink anything without washing hands properly.

- Keep the patient in separate room. Don't allow others to touch his articles.
- Wash patient's clothes and utensils in a disinfectant. Change his clothes regularly.
- Use RO water or boiled water for drinking.
- Keep the food items covered.
- Keep your surroundings clean. Garbage should be thrown in the dustbin.

7. Night blindness, beri-beri, scurvy and rickets are vitamin deficiency diseases.

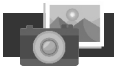
Vitamins	Deficiency Diseases	Sources
Vitamin A	**Night blindness :** Vision is not clear in dark.	Green leafy vegetables, carrots, butter, papaya, curd, tomato
Vitamin B	**Beri-beri :** Loss of appetite, affects nervous system	Peas, pulses, unpolished rice
Vitamin C	**Scurvy :** Swollen gums and frequently bleeding of gums	Orange, lemon, cabbage, amla
Vitamin D	**Rickets :** Softening of bones and bow legs	Milk and milk products, eggs

8. Regular exercise keeps our muscles active and improve circulation of blood inside our body. When we do exercise, more oxygen is supplied to our brain which makes our brain active. Exercise also helps to remove extra fat deposits from our body. Proper exercise makes our body fit and active.

   Proper rest refresh us. It increases efficiency and strength of our body for doing work. During rest, our heartbeats and breathing slow down which reduces the extra pressure from heart and lungs and let them relax.

Active Learning

- Scarlet Fever; Communicable disease | Cold; Communicable disease | Anaemia; non-Communicable disease
- Do yourself.



Picture Learning

Look at the pictures given alongside and answers.

1. Goitre is shown in the picture.

2. It is caused due to lack of iodine in the diet.

3. Iodine rich food items like fish, sea food and iodized salt can cure goitre.

6 Safety and First Aid

A. Put a tick (✓) mark for the correct option.

1. (c) 2. (b) 3. (a) 4. (b) 5. (a)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. False 5. False

C. Fill in the blanks by choosing the correct words.

1. Chemical 2. first aid 3. Splint
4. antiseptic 5. fracture

D. Match the following.

1. (iii) 2. (iv) 3. (v) 4. (i) 5. (ii)

E. Answer the following questions.

1. When clothes of a person catch fire, ask him to roll on the ground. Cover him with a blanket as it cuts off the supply of air.
2. In case of bleeding, use an ice pack which can be made by keeping crushed ice into a towel. It prevents bleeding.
3. First aid is the immediate medical help given to an injured person before the arrival of a doctor.

   In case of a fracture in arm, following first aid tips can be followed:

   (i) Keep the patient calm and comfortable, and send for the doctor.

   (ii) Apply a splint to give support to the broken bone and try to avoid unnecessary movement. Any easily available article like sheets of news paper, magazines, a piece of cardboard or a pillow around the injured bone can also act as a splint. This will prevent movement and help broken bone to heal.

   (iii) A sling made from a triangular piece of cloth can be used for support.
4. **(a) Cuts and wounds**
   - Clean the cut or wound with an antiseptic solution. Antiseptic solution kills the microbes.
   - Apply antiseptic cream and cover the wound with bandage.
   - In case of bleeding, use an ice pack which can be made by keeping crushed ice into a towel. It prevents bleeding.
   - Bleeding can be stopped by putting a tight bandage over the wound.

   (b) Burns
   - Let running cold water flow over on the burn until the pain subsides.

- Apply an antiseptic lotion or cream to prevent infection.
- If an antiseptic lotion is not available apply a paste of baking soda and water.

(c) Sprain

- Apply ice packs to the affected area. This helps to reduce pain and swelling.
- Apply some pain-relieving ointments to reduce the sensation of pain.
- Tie the affected area with an crepe bandage.

(d) Dog Bite

- Wash the bitten portion with running water and cover it with a clean bandage.
- Take the victim immediately to a doctor.

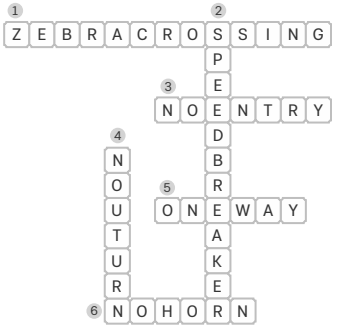
(e) Chocking

- In case of choking, stand behind the victim and place a clenched fist below his/her ribcage, just above the navel. Then, hold the fist with the other hand and give an inward push.
- Ask the victim, to look up and cough. Repeat this two to three times.

5. (i) Cross the road at the zebra crossing.
   (ii) Follow the traffic lights.
   (iii) Look at the both sides carefully before crossing the road.
6. (i) First of all, tie the safety belt, then drive.
   (ii) Do not talk on mobile while driving.
   (iii) Always use the indicator to change the lane.

Active Learning

- Do yourself.
- Do yourself.
- **Complete the names of the following traffic signs in the crossword puzzle.**



Picture Learning

Look at the pictures given alongside and answers.

1. A wound on knee of a person is shown in the picture.

2. (i) Clean the wound with an antiseptic solution. It kills the microbes.

(ii) Apply antiseptic cream and cover the wound with bandage.

7 States of Matter

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (b) 3. (c) 4. (b) 5. (a) 6. (b)

B. State whether the following statements are true or false.

1. True 2. True 3. True 4. False 5. True 6. False

C. Fill in the blanks by choosing the correct words.

1. solution 2. solute 3. solvent
4. flow 5. molecules

D. Match the following.

1. (v) 2. (ii) 3. (iv) 4. (i) 5. (iii)

E. Classify the following as chemical or physical changes.

1. Physical change 2. Chemical change
3. Physical change 4. Chemical change

F. Answer the following questions.

1. The solid which dissolves in the liquid is called a solute. The liquid in which a solid dissolves is called solvent.
2. Liquids which mix in water, are called miscible liquids. Liquids which do not mix in water are called immiscible liquids.
3. **(i) Solids :** The molecules are very closely packed. They attract each other with strong force, so molecules cannot move from one position to another.

   (ii) Liquids : The molecules are less closely packed. The attraction between the molecules in liquids is less as compared to those in solids. Molecules can move around freely.

   (iii) Gases : The molecules are separated by large empty spaces among them. Molecules attract each other with very less or weak force as

compared to those in solids and liquids. Molecules of gas are free to move in any direction.

4. (i) A solid is hard, rigid and has a definite shape and volume.
   (ii) We cannot compress solids much.
5. **(i) Evaporation :** When water changes into water vapour by the heat of the sun, it is called evaporation.
   (ii) Condensation : Conversion of gas into a liquid is called condensation.
   (iii) Melting : The process in which a solid converts into a liquid is called melting.
   (iv) Freezing : The process in which a liquid converts into a solid is called freezing.
6.

Physical Changes	Chemical Changes
1. Only state of the substances is changed. No new substance is formed.	1. Entirely different substance is formed, with all the new properties.
2. It is a temporary change.	2. It is a permanent change.
3. This change can be reversed.	3. This change cannot be reversed.
4. Melting ice, boiling water, stretching spring, etc., are physical changes.	4. Burning paper, rotten fruits, formation of curd from milk, etc., are chemical changes.

7. The mixture of solute and solvent is called a solution. For example, when few crystals of sugar are added to water and stir, the crystals of sugar disappear. This mixture of sugar and water form a solution.

Active Learning

- Do yourself.
- Do yourself.
- **Tabulate the differences in the characteristic of the three states of matter on the following heads.**

Property	Solid	Liquid	Gas
(a) Rigidity	Rigid	Not so rigid	Not rigid
(b) Compressibility	Cannot be compressed	Easily compressed	Easily compressed
(c) Fluidity	Cannot flow	Can flow	Can flow
(d) Shape	Definite shape	No definite shape	No definite shape
(e) Volume	Definite volume	Definite volume	No definite volume

(f) Movement of Molecules	Cannot move	Can move easily	Can move easily in all directions.
(g) Attraction between Molecules	Attraction is strong	Attraction is less as compared to those in solids.	Attraction is very less or weak.

Picture Learning

Look at the pictures given alongside and answers.

1. Burning of paper is shown in the picture.

2. It is a chemical change.

3. When a paper is burnt, it involves the formation of a new substance, ash. This ash cannot be changed back into the original substance.

8 Rocks and Minerals

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (b) 3. (a) 4. (c) 5. (a)

B. State whether the following statements are true or false.

1. False 2. False 3. True 4. True 5. True 6. True

C. Fill in the blanks by choosing the correct words.

1. quartz 2. Pumice 3. Basalt
4. Emerald 5. zinc

D. Match the following.

1. (v) 2. (iii) 3. (iv) 4. (i) 5. (ii)

E. Answer the following questions.

1. Igneous rock are rich in mineral like mica, feldspar an magnesium. When a volcano erupts, the magma comes out and reaches the surface of Earth. This molten material called lava, cools down and later solidifies to form igneous rocks.

   Three igneous rocks are :

   (i) **Basalt :** It consists of fine grains. It is dense and dark in colour.

Uses : It is used as a building a building material and for road constructions.

(ii) **Granite :** The three main minerals in granite are quartz, feldspar and mica. It is found in black, grey, white and pink colour.

Uses : It is used for flooring of houses, making statues and pawing roads.

(i) **Pumice :** It is so light that it can float on water. It is found in light grey or cream colour.

Uses : It is used as scabbing stone to remove rough and dead skin from the body. Dentists use pumice for polishing teeth.

2. In sediments, the heavier particles such as stones and pebbles settle down first, then the lighter particles like sand and silt and at last lightest particles like clay settle down. Thus, sediments settle down in various layers. The upper layer of sediments press down the lower one every time which in due course of time are hundred to form sedimentary rocks.

Three sedimentary rocks are :

(i) **Sandstone :** It mostly consists of a mineral called quartz. it is found in various colours like yellow, brown, red or pink.

Uses : It is used in making buildings.

(ii) **Conglomerate :** It is rich in minerals like silica and calcium carbonate. It is generally found in orange and grey colours.

Uses : It is used in constructions and as building materials.

(iii) **Gypsum :** It is a soft rock which is rich in sulphate minerals.

Uses : It is used to make plaster of peris, casts, moulds and false ceilings.

3. When igneous and sedimentary rocks are subjected to immense heat or pressure inside the earth, a number of physical and chemical changes take places. As a result, the mineral contents of theses rocks change. The changed rocks thus formed are called metamorphic rocks.

Three metamorphic rocks are :

(i) **Marble :** It is the transformation of limestone. It is found in different colours. It can be carved and polished easily.

Uses : It is used in making buildings and statue.

(ii) **Slate :** It is formed from shale. It is dark grey in colour and can be split easily into thin slices.

Uses : It is used to make writing slates, blackboard and for making roof tiles in hilly areas.

(iii) **Quartzite :** It is rich in mineral quartz. It is so hard that it can even scratch steel. It has night resistance to weathering.

Uses: It is used to make statues and glass. It is also used in ceramic industry.

4. Minerals are natural chemical substances found abundantly in rocks.

Uses :

(i) Uranium is a non-metallic mineral used to produce nuclear energy.

(ii) Many minerals are found in the form of crystals like diamond, ruby, emerald, etc. These are used to make jewellery.

5. Some minerals contain metals like copper, gold, etc. These metal containing minerals are called ores. For example : Bauxite is an ore of aluminium, haematite of iron, copper pyrite of copper, etc.

6. Many minerals are found in the form of crystals. They are cut and polished into beautiful stones called gemstones. For example : diamond, ruby, emarald, sappire, etc. These are used for making jewellery.

7. Coal, petrol, diesel, kerosene, LPG, CNG, etc., are extracted from rocks.

Coal : It is a hard, black-coloured rock like substance. It is formed from the dead plants and animals, buried in sedimentary rocks millions of years ago. Due to high pressure and temperature inside the earth, these animals and plants remain converted into coal.

Uses :

(i) It is used as a fuel in cooking, thermal power plant for producing electricity.

(ii) It is used to manufacture coal gas, coaltar, etc.

Petroleum : Millions of years ago, when plants and animals got buried under the sea, petroleum was formed. Due to the high pressure and temperature, their dead bodies were converted into petroleum under the crust of the earth.

Uses :

(i) Petrol and diesel used as fuel in automobiles.

(ii) Petroleum products are also used for making cosmetics, medicinal ointments, candles, etc.

8. We can conserve coal and petroleum by adopting following practices:

(i) Use public vehicles like buses and trains for transportation.

(ii) Use alternative sources of energy like solar energy, wind energy and water energy.

(iii) Save electricity and other source of energy at individual level.

Active Learning

-

Igneous Rocks	Sedimentary Rocks	Metamorphic Rocks
Pumice	Sandstone	Quartzite
Basalt	Shale	Marble
Granite	Gypsum	Slate

- Do yourself.
- Do yourself.

Picture Learning

1. Yes, it is famous fort of Rajasthan. It is Jaisalmer Fort.
2. Limestone and sandstone are used to build the fort primarily.
3. This fort was built by King Rawal Jaisal.

9 Air and Water

A. Put a tick (✓) mark for the correct option.

1. (b) 2. (c) 3. (a) 4. (a) 5. (c)

B. State whether the following statements are true or false.

1. False 2. True 3. False 4. True 5. False 6. True

C. Fill in the blanks by choosing the correct words.

1. Sediment 2. Exosphere 3. stratosphere
4. Humidity 5. Chlorine

D. Match the following.

1. (iii) 2. (iv) 3. (v) 4. (ii) 5. (i)

E. Answer the following questions.

1. Different layers of atmosphere are as following :

(i) **Troposphere :** It is the lowest layer of atmosphere. Almost 80% of all

the air of the atmosphere is present in the troposphere. All the changes in the weather occur in this layer.

(ii) **Stratosphere :** There is no weather in stratosphere. Jet planes fly in this layer. Ozone layer is also present in it.

(iii) **Mesosphere :** This layer receives meteorites from the space.

(iv) **Thermosphere :** Satellites move in this layer of atmosphere.

(v) **Exosphere :** It is the outermost layer of the atmosphere. It contains very little air. In this layer, atmosphere of the Earth merges with the space.

2. Air is a mixture of following gases :

(i) **Nitrogen (78%) :** It is important for the growth of plants.

(ii) **Carbon dioxide and other gases (1%) :** It is used by green plants for photosynthesis and also keeps the Earthworm. It is also used in fire extinguishers.

(iii) **Oxygen :** All living beings breathe in oxygen and it supports burning.

(iv) **Water vapour :** The amount of water present in air called humidity, prevents drying up of substances.

3. The blanket of air around the Earth is called atmosphere.

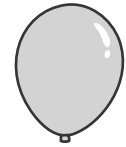
4. The major component of air is nitrogen. It is important for the growth of plants. Leguminous plants absorb nitrogen from the atmosphere for protein synthesis.

5. **Aim :** To show that air occupies space.

Materials required : A balloon.

Procedure : Take the balloon and fill air in it. The balloon will increase in size.

Conclusion : Increase in the size of balloon shows that air occupies space.

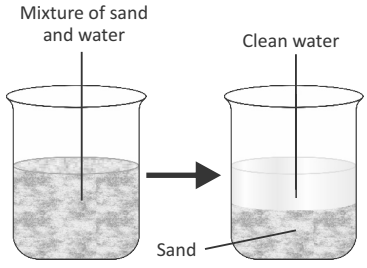


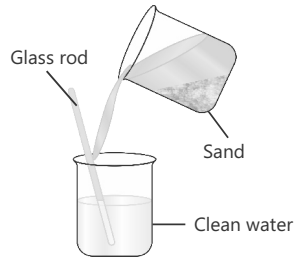
Inflated ballon

6. **Sedimentation :** In this method, the impure water is allowed to stand for sometime without disturbing. The heavy insoluble impurities settle down at the bottom of the container. This layer of impurities is called sediment. This method of settling down of impurities is called sedimentation.

Decantation : To obtain clear water by sedimentation, the upper clear water is poured gently into another container without disturbing the impurities. This process is called decantation. In this method, a glass rod is

used to separate clear water.





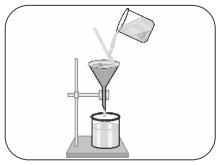
7. Impurities mixed in water are of two types :
   (i) **Soluble impurities :** The impurities which dissolves in water are called soluble impurities. For example : salts of potassium and calcium.
   (ii) **Insoluble impurities :** The impurities which do not dissolve in water are called insoluble impurities. For example : sand and mud.
8. Three techniques of purifying water at small level are as follows :
   (i) **Boiling :** Boil the water at last for 10 minutes. It helps to kill the germs present in water.
   (ii) **Water purifier :** Water filters and RO are the some very useful techniques to get pure water.
   (iii) **Chlorination :** The process of purifying water by adding chlorine is called chlorination. it kills germs present in water.

Active Learning

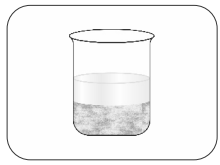
- Do yourself.
- Do yourself.

Picture Learning

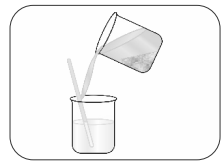
Name the processes shown in the picture given below.



Filtration



Sedimentation



Decantation

10 Force, Work and Energy

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (b) 3. (c) 4. (c) 5. (c)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. True 5. False 6. False

C. Fill in the blanks by choosing the correct words.

1. work 2. charge 3. light
4. shape 5. force

D. Match the following.

1. (v) 2. (iv) 3. (i) 4. (ii) 5. (iii)

E. Answer the following questions.

1. When position of an object is changed by applying force, work is said to be done. For example : a person is applying force on the table as a result table is shifted. Thus, force applied here is causing the movement to pull the table. Therefore, work is said to be done.
2. Friction is important for us in many ways :

Merits of Friction

- Friction helps to hold onto objects. The friction between our hands and the object that we are holding onto helps us to grip the object.
- Friction helps in walking. The smooth or wet surfaces have very low friction, therefore we cannot walk over them. On the other hand, rough and less smooth surfaces have more friction, therefore we can walk over them easily.
- You can write on paper with the pen because of friction. However, you cannot write on oily paper.

Demerits of Friction

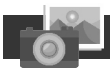
- Due to friction, heat is produced which damages the machine parts.
- A significant amount of energy is wasted in friction.
- Due to friction, tyres of vehicles and soles of our shoes are damaged.

3. According to principle of conservation of energy, "energy can neither be created nor be destroyed but it can be converted from one form to the other". Therefore, entre energy of the universe remains constant.

4. Energy is the ability to doing work. Four forms of energy are discussed below:
   (i) **Heat Energy :** Heat energy is produced by burning fuels like coal, LPG, kerosene etc. This energy is generally used in cooking food.
   (ii) **Light Energy :** It is produced by bulb, tubelight, CFL, Candle etc. But, Sun is the prime source of light energy on our Earth.
   (iii) **Electric Energy :** It is obtained from electric current. It is used to run electric appliances like bulb, iron, refrigerator, etc. It is generated at power stations and supplied to our homes.
   (iv) **Sound Energy :** It is produced by a vibrating body. Vibration of the strings of guitar produce sound.
5. A push or a pull acting on an object is called force. Three kinds of force are as follows :
   (i) Magnetic force : The force applied by a magnet on an iron object is called magnetic force.
   (ii) Buoyant force : The upward push of water on a floating object is called buoyant force or upthrust. For example : if we push a mug floating on water, we feel upward thrust.
   (iii) Frictional force : It is the force that slows down the movement of objects on a surface. It always acts between the object and the surface on which it is moving, for example : when you stop peddling the cycle, it gradually come to the rest.
6. (i) A force causes motion in a stationary object, for example : When you paddle your cycle, it starts moving.
   (ii) Force can stop a moving object, for example : a moving cycle can be stopped by applying brakes.
   (iii) Force can change the shape of an object, for example : your mother makes chapatis by applying force.

Active Learning

- Do yourself.
- Do yourself.



Picture Learning

1. Electric, sound
2. Electric, light
3. Electric, heat

11 Simple Machines

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (a) 3. (a) 4. (c) 5. (b)

B. State whether the following statements are true or false.

1. False 2. False 3. False 4. True 5. False 6. False

C. Fill in the blanks by choosing the correct words.

1. second 2. Axe 3. axle
4. Grooves 5. fulcrum

D. Match the following.

1. (iii) 2. (iv) 3. (v) 4. (vi) 5. (i) 6. (ii)

E. Write three examples of each of the following.

1.	Ramp,	Sloping wooden planks,	Slides
2.	Axe,	Blade,	Knife
3.	Drill,	Screw-drive,	Door knob
4.	Scissors,	Nut cracker,	Knife
5.	Cranes,	Modern elevators,	Weight lifting machine

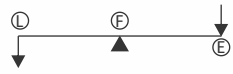
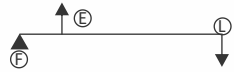
F. Answer the following questions.

1. Wheel and axle together make a simple machine. Wheel is a circular disc while axle is a rod. When we turn wheel, axle also turns.
2. A screw is derived from an inclined plane by wrapping it around a cylinder it is like a nail with grooves cut in it. These grooves lying on the screw hold things tightly together. That is why a screw is always better than a nail because it is not easy to pull the things apart which are hoed together with screw.
3. An inclined plane is a simple machine with slopping surface. It is used as ramp outside the homes to bring the car or other objects or vehicles inside the homes. In hospitals, inclined planes are used for taking the patients to the higher floors with the help of wheelchairs and stretchers.
4. In wedge, two inclined planes are joined together to form a sharp cutting edge. These two inclined planes are made up of metals. Two examples of wedges are knife and axe.
5. Machines need care and maintenance, if we want them to work for a longer time.

6. A machine is a device that makes our work easier and faster. Simple machines are the tools which reduce our efforts in performing a work and makes it easier and fast. While complex machine is a combination of two or more simple machines. Complex machines require either no or very less manpower. Pair of scissors, knife, screw, etc., are simple machines and washing machine, refrigerator, car, etc., are complex machines.

7. A pulley a circular disc made up of iron or wood with a groove cut along its rim. It has a hole at its centre, from which a rod is inserted. It can turn about this rod. This rod is called axle. A pulley changes the direction of the effort or force applied, thus making it easier to lift a load.

8.

S.N.	Machine	Kind of lever used	Line diagram
1.	Scissors	**First Class Lever** In this kind of lever, fulcrum (F) lies between the load (L) and effort (U)	
2.	Wheel barrow	**Second Class Lever** In this kind of lever, load lies between the fulcrum and effort.	
3.	Knife	**Third Class Lever** In this kind of lever, the effort lies between the fulcrum and the load.	

Active Learning

- **Look around yourself and make a list of five simple machines and five complex machines.**

Simple Machines	Complex Machines
Scissors	Washing machine
Knife	Refridgerator
Stapler	Cooler
Nut cracker	Television
Bottle Opener	Car

- Do yourself.

Picture Learning

1. A crane is shown in the picture.
2. Third class lever

12 Natural Disasters

Test Yourself

A. Put a tick (✓) mark for the correct option.

1. (a) 2. (c) 3. (b) 4. (c) 5. (b)

B. State whether the following statements are true or false.

1. True 2. True 3. False 4. False 5. True

C. Fill in the blanks by choosing the correct words.

1. Dams 2. epicentre 3. earthquake
4. soil erosion 5. Seismologists

D. Write at least two safety measures that should be taken during the event of natural disasters given in the following table.

During	Safety measures that should be taken
Earthquake	1. Buildings can be constructed by using earthquake resistant techniques. These types of buildings can withstand jerks or shocks. 2. By educating people how to save themselves in case of an earthquake. This can be done by conducting mock drills in schools and offices.
Flood	1. Building dams and embankment on the rivers can help to prevent floods. 2. Construction of temporary dams can stop or divert the flow of water from residential areas.
Drought	1. Growing more trees can reduce the risk of drought. As trees help in rain by the process of transpiration. Also, roots of trees have the capacity to hold water. 2. Rainwater harvesting can be very useful to fight against drought. Because, harvested rainwater can be used in case of drought.

E. Match the following.

1. (iii) 2. (i) 3. (iv) 4. (ii)

F. Answer the following questions.

1. **Safety measures taken against flood**

   (i) Building dams and embankment on the rivers can help to prevent floods.

(ii) Construction of temporary dams can stop or divert the flow of water from residential areas.

(iii) Growing more trees can help to reduce the floods. As roots of trees binds the soil and increase its water retaining capacity.

Safety Measures taken against drought

(i) Growing more trees can reduce the risk of drought. As trees help in rain by the process of transpiration. Roots of trees have the capacity to hold water.

(ii) Rain water harvesting can be very useful to fight against drought.

2. **Focus :** The starting point of the earthquake inside the earth is called focus.

   Epicentre : The area lying above the focus on the surface of the Earth is called epicentre. Maximum effect of earthquake is seen in this area.

   Aftershocks : After the first big shaking, smaller shaking or tremors occur. These are called aftershocks. In many cases, aftershocks may continuous for several days.

3. Tsunami is generated when the sea floor suddenly suffers a shock. The reason for the shock under the sea can be an earthquake, a volcanic eruption or a cyclone.

4. When it rains heavily and continuously for several days, water does not seep through the soil and rain water accumulates over the land rivers overflow. As a result, water flows to the nearby land and the whole land nearby a river submerges. So, the flood is caused.

   Effects of flood :

   (i) Flood damages the crops as water logging harms the roots of the plants.

   (ii) Small animals living in the soil are washed away.

   (iii) The fertile layer of soil is washed off by the water.

5. Earthquake is caused by the strong vibrations produced inside the surface of earth. These vibration generate shock waves, which travel through solid rocks present under the ground to the surface of the earth. These waves are so strong that they cause the underground rocks to break. Due to this, enormous amount of energy is released. This enormous energy spreads in all the directions and cause the ground to shake and move.

   Effects of Earthquake :

   (i) High intensity earthquakes cause a lot of damage to life property.

   (ii) Building collapse, roads and bridges get damaged and trees get uprooted.

   Safety measures against Earthquake :

   (i) Building can be constructed by using earthquake resistance technique.

(ii) A strong community system helps to alert the people of our country. for the coming earthquake.

6. When a particular area receives very little rain or no rain for a very long period of time. It is said to be affected by drought.

Effects of drought :

(i) It drought, water bodies like ponds, lakes gets dried which results in water shortage.

(ii) Due to shortage of water, crops get destroyed which leads to the shortage of food.

(iii) The land become barren and develops cracks which causes dust storm and give rise to soil erosion.

7. (i) Have patience and do not pay attention to rumours .

(ii) Motivate yourself and other people to face this situation.

(iii) Whatever one can contribute, food, clothes, cash, etc., must be contributed for the help of affected people.

Active Learning

- Do yourself.
- Do yourself.

Picture Learning

Look at the pictures and name the organizations which are represented by these symbols.

UNICEF

WHO

Red Cross Society