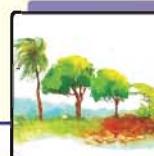


6

AIR

**A Melody in the breeze..**

Air is a mixture - a gaseous mixture!
It's indeed easy to find its measure!!

Oxygen, our friend, supports life on earth,
And Nitrogen fertilizes the earth.

Carbon di oxide makes soft drinks fizz!
while inert gases have been a puzzle!!

Water vapour from sea, river and steam,
And the hot, violent, angry whistling steam,

Into the cool air, they rise so slowly!
Merge as thick, soft clouds drifting so gently!!

Look! How softly they come down aglitter
To fill the earth with life - giving water!!

Like a widely spread blanket in the sky,
The clouds guard us from the heat from on high.

Ceaseless atomic rays and cosmic dust
Assail our earth like an unwelcome guest.

Our dear pal ozone - oxygen, again -
Puts up a valiant defence in vain.

For man pollutes the air, makes little holes
In the umbrella meant to save our souls!!

To save this gracious earth, our own mother,
We've got to act now, dear sister, brother!

Shall we enjoy the breeze!

Do you like to play by making a paper fan?

When does the fan rotate faster?



Have you seen clothes sway along the cords ?



Which are the months suitable to fly kites and why?



There is air around us. We cannot see air, but we can feel it. Air does not have colour or odour. Living organisms need air to breathe.

Water vapour in air.

Water vapour comes out while cooking. Have you seen it? The water vapour that comes out mixes with the air. What else is present in the air?



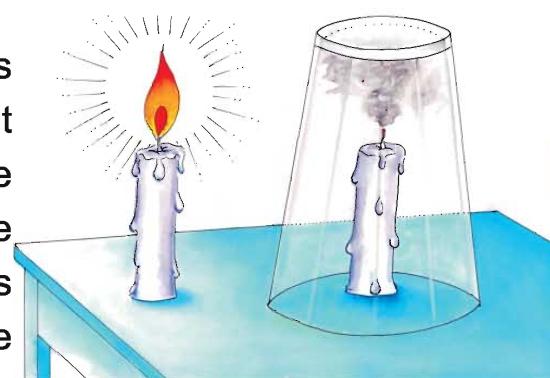
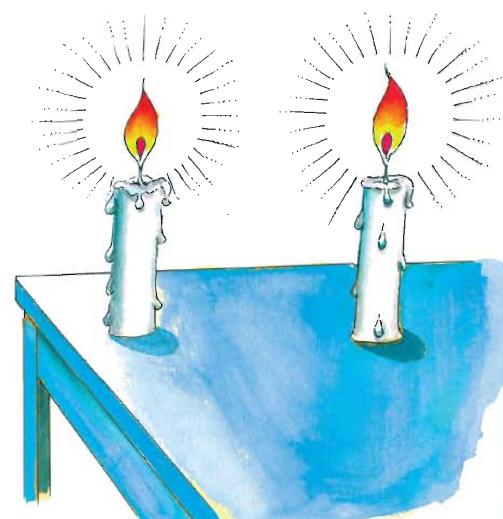
Activity

Life giving Air-Oxygen

Light two candles as shown in the picture. Keep one candle closed by a glass tumbler. What happens?

The candle which is kept closed is put out after a little while. But the one which is not closed, burns continuously, isn't it so?

Oxygen present in the air supports burning of materials. **Oxygen** present inside the tumbler is used up by the candle and hence it is put out. But the candle that is kept outside, still burns by taking the oxygen present in the air.

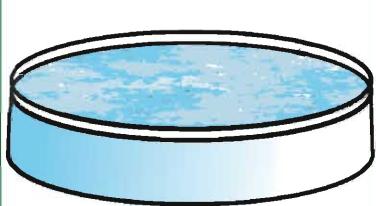


From this experiment we know that...

Oxygen is present in the Air.
The burning of materials require Oxygen

Oxygen present in the air is needed for the respiration of man, animals and plants.

Is oxygen alone present in the Air?



Activity



Take lime water in a wide mouthed vessel. Keep it outside in the atmospheric air. Observe keenly for some time.

A white layer forms on the surface of lime water. Doesn't it? Do you know what turns lime water milky? The carbon dioxide that is present in the air turns lime water milky.

Do you know?



Have you seen gas bubbles coming out from the air tight cool drink bottles while opening? It is nothing but the carbon dioxide which is present in the cool drinks.

carbon dioxide is needed for the plants to prepare food.

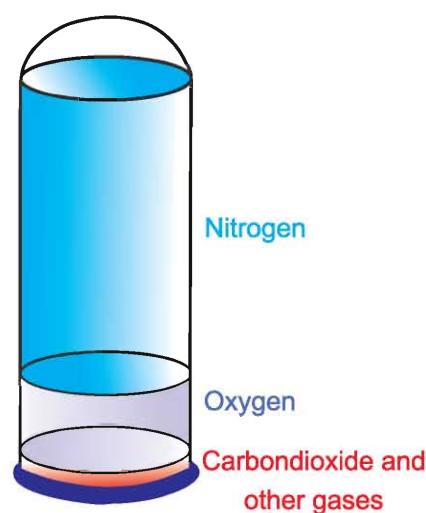
Think it over!



Avoid drinking cool drinks that contain carbon-di-oxide which is harmful to health.

Do you know which gas is mixed in the air in more quantity than oxygen and carbon-di-oxide?

Among the gases present in the air four-fifth of the air consists of Nitrogen. It is necessary for the growth of plants. This requirement is fulfilled by the nitrogen that is in the air. Nitrogen does not support burning.

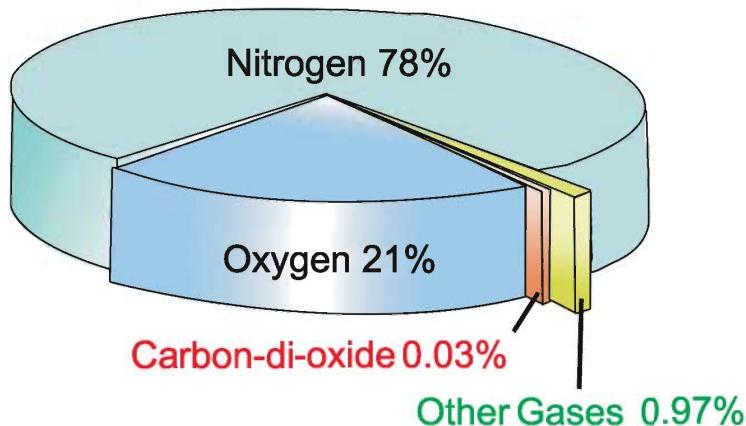


Air

Air is a mixture

Gases like nitrogen, oxygen, carbon-di-oxide, water vapour and dust particles are mixed in the air.

Look at the percentage of gases in the air



Think and write



When we breathe in and breathe out, the percentage of the gases present in the air is given in the table.

Gases	Inpiration	Expiration
Oxygen	21%	18%
Carbon-di-oxide	0.03%	3%
Nitrogen	78%	78%
Water vapour	trace	more

- Which gas is in less percentage during expiration?

- Which gas is in more percentage during expiration? why?

Blanket that covers the earth

Due to the gravitational force of the Earth, there is a blanket of air about 1000 km thick around the earth. This is called the atmosphere. This atmosphere helps the living organisms to live, by providing the suitable temperature on the Earth.

Think it over!



Plants do not grow in the soil found on the Moon's surface. But if the same soil is brought to the Earth, seeds are sown and watered, plants would grow. Why? Astronauts fixed a tin flag on the Moon but not the flag made of cloth. Why?



Do you know?



Poison mixed in the air:

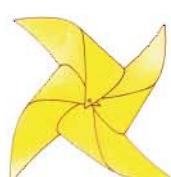
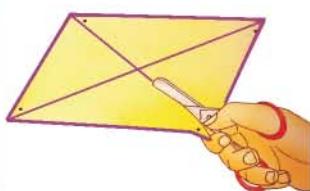
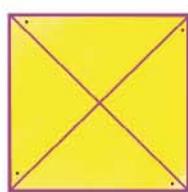
In 1984, at Bhopal, the capital city of Madhya Pradesh, there was a leakage of methyl isocyanide gas from a factory which resulted in the death of thousands of people.

Could this happen again?

Activity



Look at the picture and try to make a paper fan.



Evaluation**(a) Fill in the blanks.**

1. Air is a _____.
2. While breathing, man gives out _____ gas.
3. The percentage of oxygen in the air is _____.
4. The atmosphere provides suitable _____.
5. The _____ gas is present in soft drinks.
6. Burning of materials require _____.
7. Boiling of water resulted in the formation of _____.
8. _____ is the City in Madhya Pradesh, which was affected by poisonous gas in 1984.
9. _____ is needed for the growth of plants.
10. While breathing, the percentage of the _____ gas remains the same.

(b) Match the following:

- | | | |
|------------------|---|----------------|
| 1. Breathing | - | Nitrogen |
| 2. Lime water | - | Water vapour |
| 3. More in air | - | Carbon dioxide |
| 4. Boiling water | - | Oxygen |

(c) Think and answer.

1. Mention the constituents of air.
2. How is nitrogen useful?
3. Mention two uses of oxygen.
4. What is called inspiration?
5. What are the incidents by which we can find out that air is blowing?

Think it over!Banscheer
Kalm

How does the balloon used for advertisement fly high in the air?

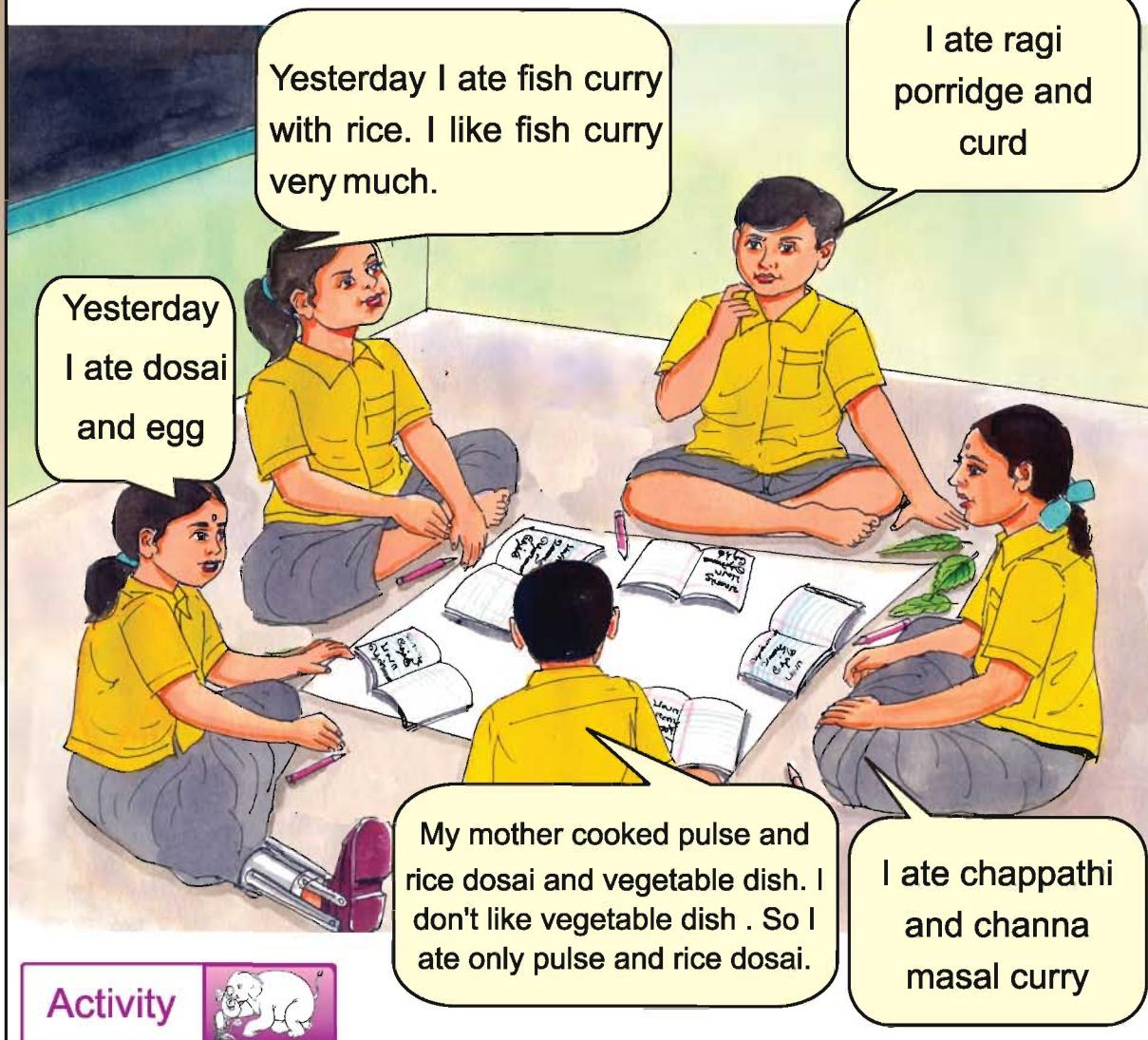
7

FOOD



There was a discussion in the class room
on the topic "What did you eat yesterday?"

In the discussion, the students said the following.



Activity



Write about what you ate yesterday.

Basic needs of our life are **food**, **clothing** and **shelter**. The most important among these is food. All living things need food.

Splendour of food.

- Food gives us energy to work.
- Food Promotes for growth.
- Food gives us immunity.

Food substances are classified into two categories. They are **raw food** and **cooked food**.

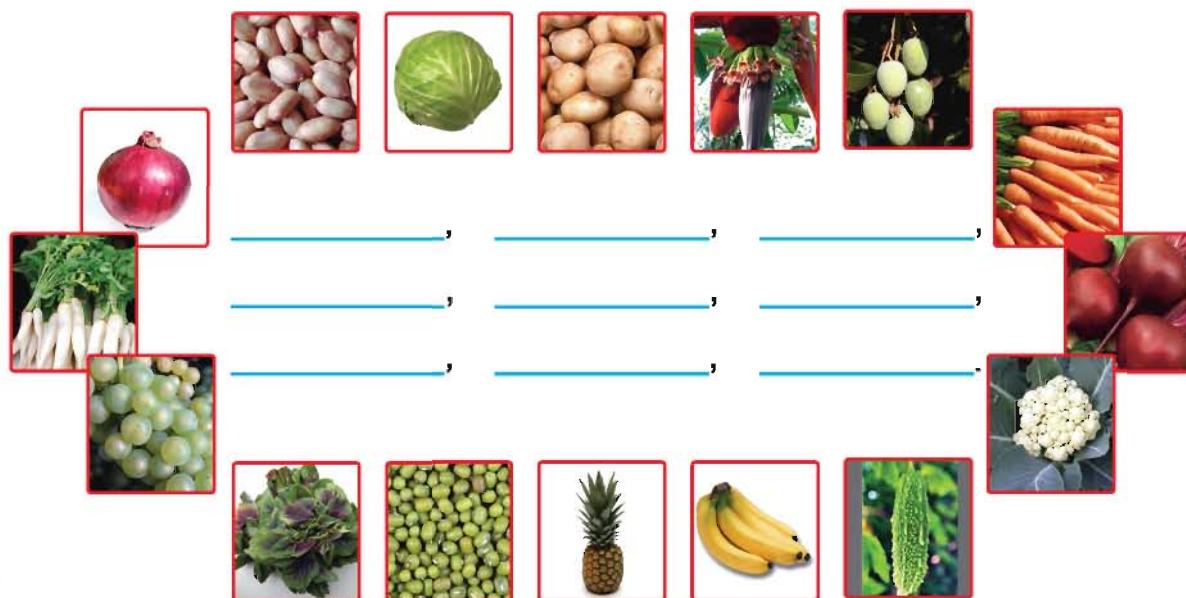
RAW FOOD

When we eat raw fruits, vegetables and tubers, body will get complete nutrients and our immunity increases.

Think it over!



From the pictures, write the food that can be eaten raw:



Activity



Preparation of fruit salad

Take banana, papaya, apple, grapes and pine apple in a vessel. Wash them and cut into small pieces. Add sugar and taste it.



Vegetable Juice

Make juices of carrot, beetroot and cucumber. Add little lime juice, sugar and taste it. Superb taste!

Sprouted grains

Take a little quantity of bengal gram or green gram and wash thoroughly. Soak it in water in the morning. Tie it in a clean wet cloth in the evening. The next day you will find that the grains have sprouted. We can eat them raw or cook them in steam. It contains more protein.



COOKED FOOD

Can we eat all food substances raw? No, we cannot. A few foods can be eaten by cooked only.

When cooked..

- Food gets digested easily.
- Add taste and aroma, germs are killed.
- Food becomes soft.



For Teachers...



Ask each one of the students to bring vegetables, fruits and grains which are easily available at home and to cook them in groups.

METHODS OF COOKING

Are we cooking all the food in the same way ? We cook each food differently.



Cooking in steam



Deep Fry



Roasting



Frying



Cooking in water

Activity



Enter in the table, the methods of cooking for the following food items.

Rice, chapathi, poori, tuber, Thick dosai, murukku, lady's finger, beet root, papad, carrot, spiced pulses, puttus, greens, idly, banana's stem, idiaappam, dosai, vadagam, kozhukattai, parota, porridge, adhirasam and paniaram.

Cooking in water	Cooking in steam	Roasting	Frying	Deep Frying

VARIETIES OF UTENSILS

Observe the cooking utensils at your house. Are they all of the same size and shape? No. Why? According to the method of cooking, the size and shape of the utensils used for cooking will vary.

First whistle
Next meal
Name the utensils

List the utensils used for cooking at your house.



Earlier, earthen pots were used for cooking. Later utensils made of **iron, brass, stainless steel and aluminium** came into existence.



Now-a-days **Pressure cookers** are being used to reduce fuel consumption and to preserve nutrients.

Activity



What? How? Which?

Food item	Method of cooking	Utensils used
Idly		
Poori		
Dosai		
Rice		

Modern utensils are used for fast cooking

It includes, Induction stove, electric cooker, solar cooker and microwave oven.



Healthy food

For a healthy body, nutritious and hygienic food is necessary. So it is necessary to protect the food from spoilage.

- We must wash vegetables, fruits and greens before using them.
- Food materials must be covered in order to protect them from dust and insects.
- It is better to eat the cooked food when it is warm.

Foods required for sick people

For a healthy life, fresh air, clean water and nutritious food are necessary. Lack of any one of these may cause diseases. When we are sick, we cannot eat all types of food, can we?

When we are sick

- Eat food that gets digested easily.
- Liquid food such as porridge, fruit juice and tender coconut are good to drink.
- Eat food that contains less fat.
- Avoid eating pungent food.
- Avoid eating food fried in oil.

Activity



What sort of foods are to be avoided when sick?

What sort of foods can be eaten? Write in the Tabular column.

Bread, meat, milk,
Parotta, Briyani, Fish fry,
Porridge, Energy drinks,
Herbal decoction, Bajji.

To be avoided	To be eaten

Grocery is here

Where is food?

- | | | | |
|---------------------|---|-----------------|--------------------------|
| 1. Rice, moongdal | - | Pongal | <input type="checkbox"/> |
| 2. Bengal gram | - | Payasam (Gheer) | <input type="checkbox"/> |
| 3. Vermicilli | - | Idli | <input type="checkbox"/> |
| 4. Rice, green gram | - | Chappati | <input type="checkbox"/> |
| 5. Wheat | - | Vadai | <input type="checkbox"/> |

Food

Fill in the boxes with proper number

Evaluation**(a) Fill in the blanks.**

1. Food is needed for good _____.
2. We get immunity from _____.
3. By _____, the aroma and taste of food is increased.
4. _____ is used for cooking with less fuel consumption and preserve the nutrients.
5. We should _____ the cooked food.

(b) True or False.

1. Food is not useful for the growth of body.
2. By taking food, we are loosing energy.
3. While cooking, germs in the food are destroyed.
4. Cooking in steam is a method of cooking.
5. When we are sick, we should eat food containing more cholesterol.

(c) Match the following.

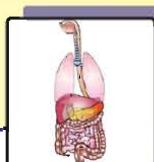
- | | | |
|--------------|--------------------|--------------------------|
| 1. Idly | – Cooking in water | <input type="checkbox"/> |
| 2. Appalam | – Fry | <input type="checkbox"/> |
| 3. Chappathi | – Deep Frying | <input type="checkbox"/> |
| 4. Rice | – Roasting | <input type="checkbox"/> |
| 5. Groundnut | – Cooking in steam | <input type="checkbox"/> |

(d) Answer the following.

1. What are the uses of food?
2. Mention two types of food.
3. Name two food items that can be eaten raw.
4. What is the use of cooking in pressure cooker?
5. Write the name of vegetables and fruits that you like to eat?

8

HUMAN BODY



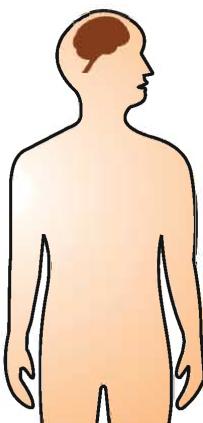
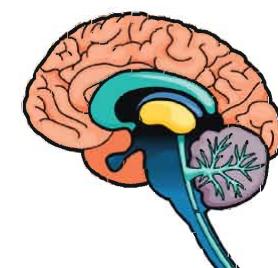
Our body is a wonderful machine. There are various organs present in our body. Eyes, ears, nose, hands and legs are seen outside the body. They are used for various activities.

Organs of the body	Functions
Eyes	To see
Ears	
Nose	
Hands	
Legs	

Organs like brain, heart, lungs, kidneys and liver are inside the body. These are called internal organs. They perform various functions.

BRAIN

Brain is used for thinking, imagining, storing information in memory. Brain is an important organ and it is protected in the head by the skull

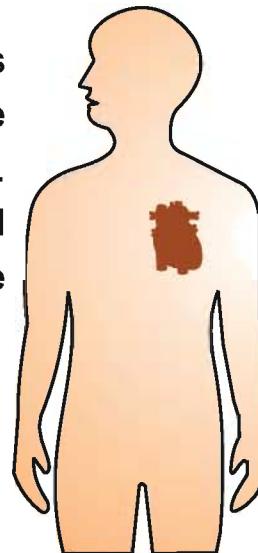


Human brain weighs about 1.36 kg. Standing, walking, running, singing, writing, speaking etc., are controlled by the brain.

HEART



Our heart is made of muscles. It is located in between the lungs in the chest. Human heart has four chambers. The two upper chambers are called auricles and the two lower chambers are called ventricles.

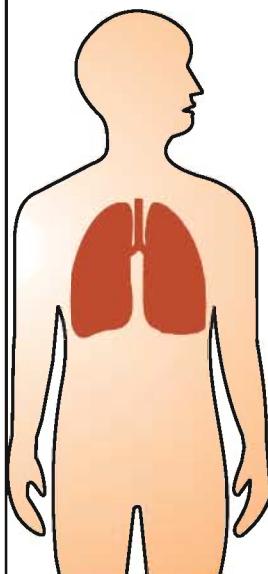
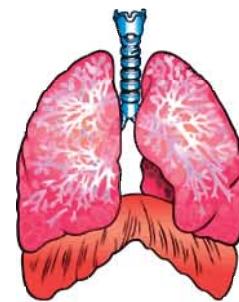


Heart sends oxygenated blood to all parts of the body.

The size of your heart is the size of your fist.

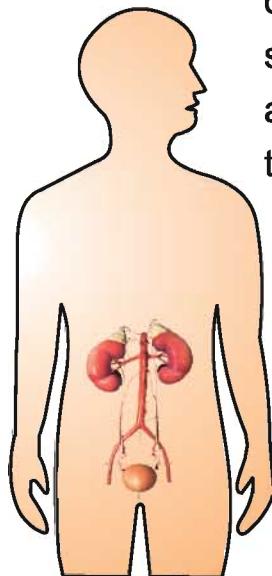
LUNGS

There are a pair of short foam like lungs within our thoracic cavity. It consists of thousands of air sacs called alveoli. During respiration exchange of gas takes place in alveoli.

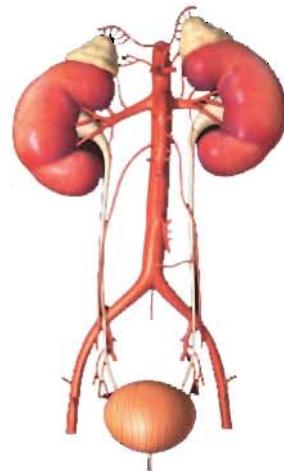


A healthy man respires about 12 to 15 times per minute. More amount of oxygen is needed for the function of muscles. Respiration takes place continuously during day and night.

KIDNEY



Two bean shaped and pale red coloured, kidneys are present in our body. They are located on either side of the spinal cord in the abdominal region. Their function is to excrete waste from the blood in the form of urine.



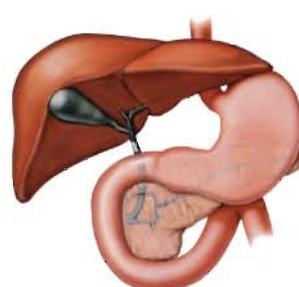
The amount of urine excreted from the human body per day is about **1.5 to 2 litres**.

STOMACH

Stomach is a 'J' shaped organ found after the food pipe. It is found in the left side of our body. This organ helps in the digestion of food.



LIVER



Liver is the largest internal organ of our body. Liver is one of the organs of the digestive system. It is dark reddish in colour. It lies above the stomach. It secretes bile. Bile helps in the digestion of fat.

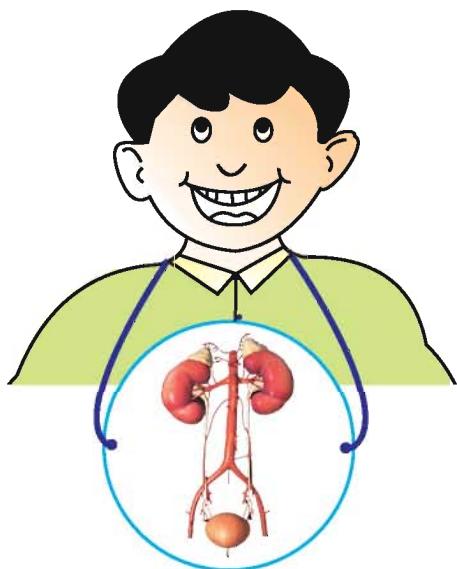
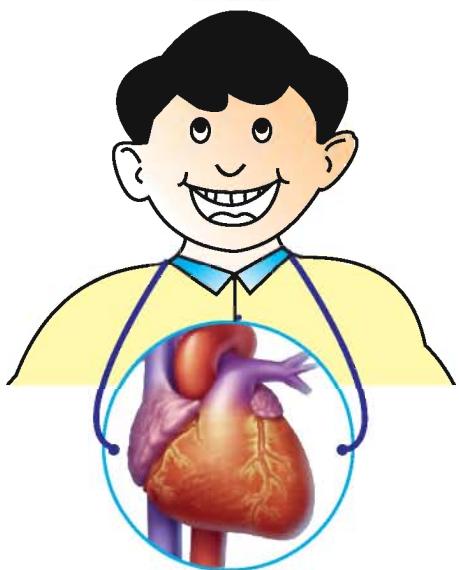
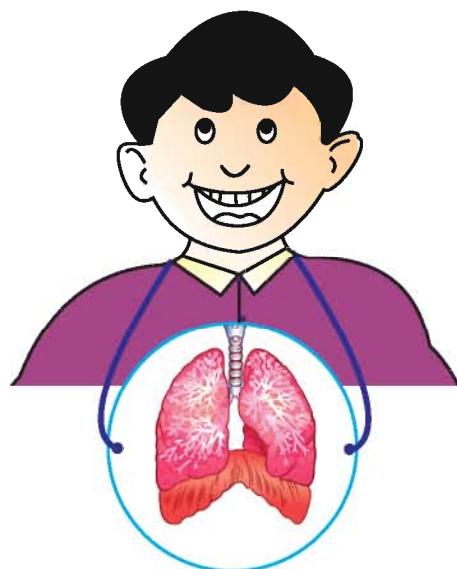
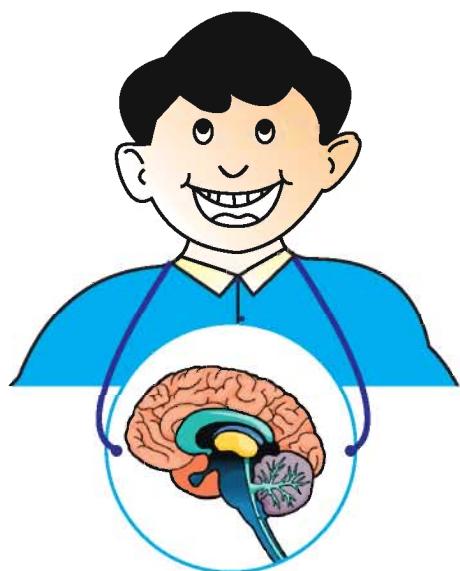
Liver of an adult man weighs about 1.5 kg.

Since the internal organs coordinate and function properly we are able to lead a healthy life. These organs keep us healthy by working without rest even when we are asleep. We should take care of them.

Activity



Hang the pictures of the internal organ around your neck. Imagine that you are that organ and enact it.

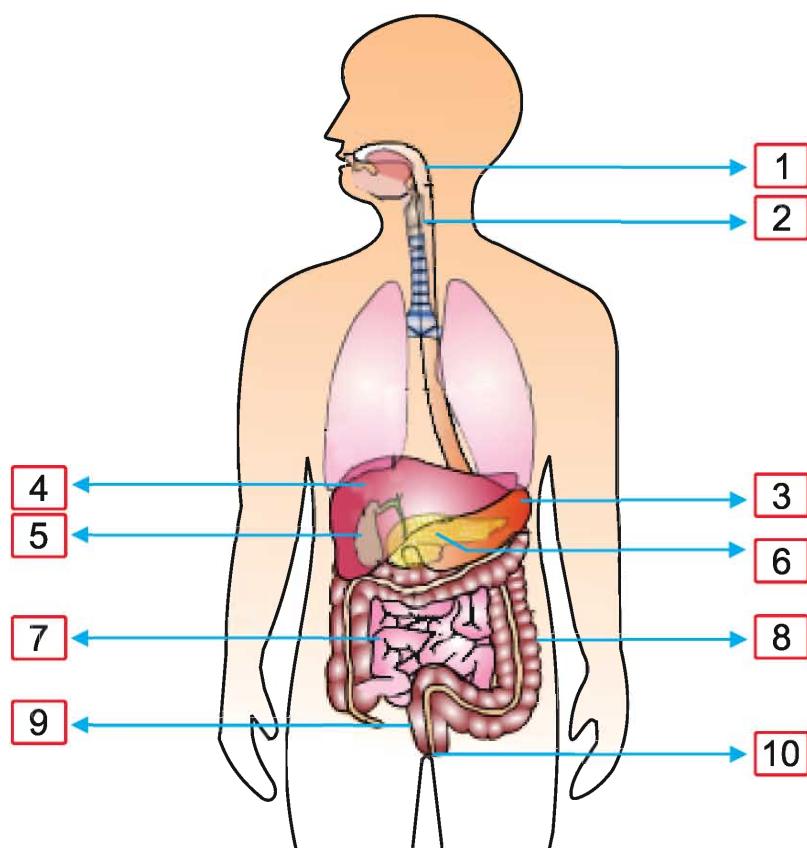


DIGESTIVE SYSTEM

Our body cannot absorb the food as what we eat. The digestive system helps in breaking the food into simple ones. The process of breaking down food to simple and easily soluble one is called digestion.

Disgested food mixes with the blood stream and gets stored in the muscles and liver. Energy for the body growth is obtained from food.

Digestive system consists of the following parts.



- | | | |
|--------------------|--------------------|-------------|
| 1. Mouth | 2. Food pipe | 3. Stomach |
| 4. Liver | 5. Gall bladder | 6. Pancreas |
| 7. Small intestine | 8. Large intestine | 9. Rectum |
| 10. Anus | | |

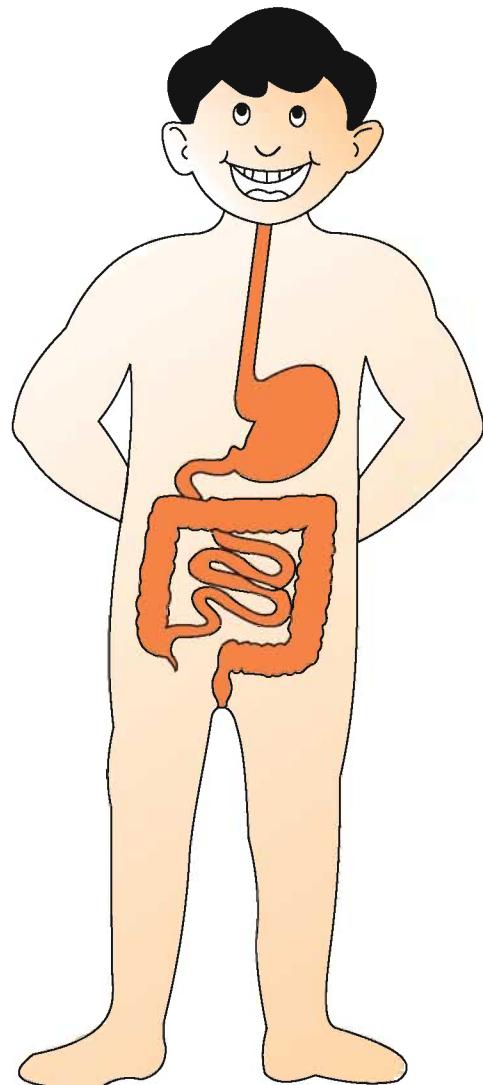
PROCESS OF DIGESTION

Digestion starts from the mouth. Teeth grind the food we eat. There are three pairs of salivary glands. Saliva secreted from these glands mixes with the food and makes the digestion easier.

Partially digested food is sent through the food pipe to the stomach. When the muscles of the stomach contract and relax, the food in the stomach will get churned and the glands in the wall of the stomach secretes digestive juices and hydrochloric acid to make the food digestible.

Digestion takes place in the first part of the small intestine. The digestible food passes through the small intestine, mixes with the bile juice, pancreatic juice and enzymes secreted in the small intestine there by digestive process comes to an end.

Villi absorb the digested food as it passes through the small intestine. The absorbed food is converted to nutrients and transported to various parts of the body through blood.



Undigested waste products are excreted at the end of the digestive system through large intestine, rectum and anus.

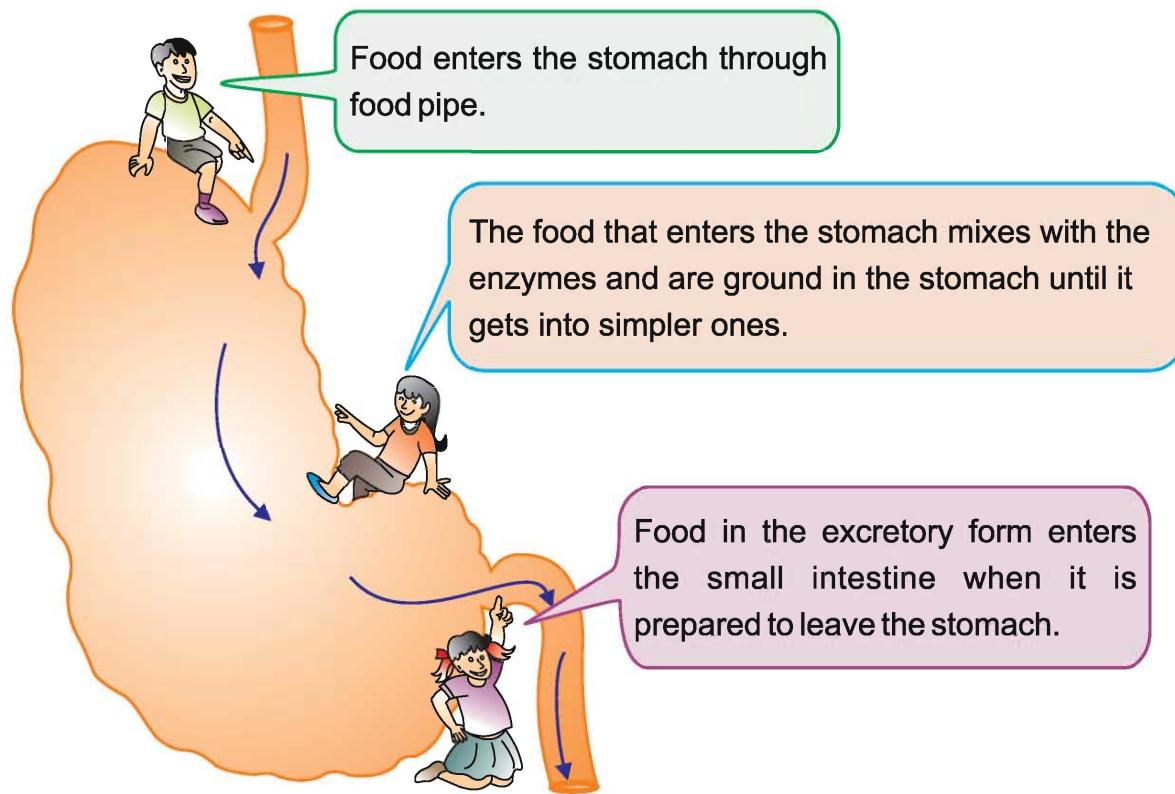
We should eat food rich in fibre such as fruits, greens and Vegetables for better excretion.

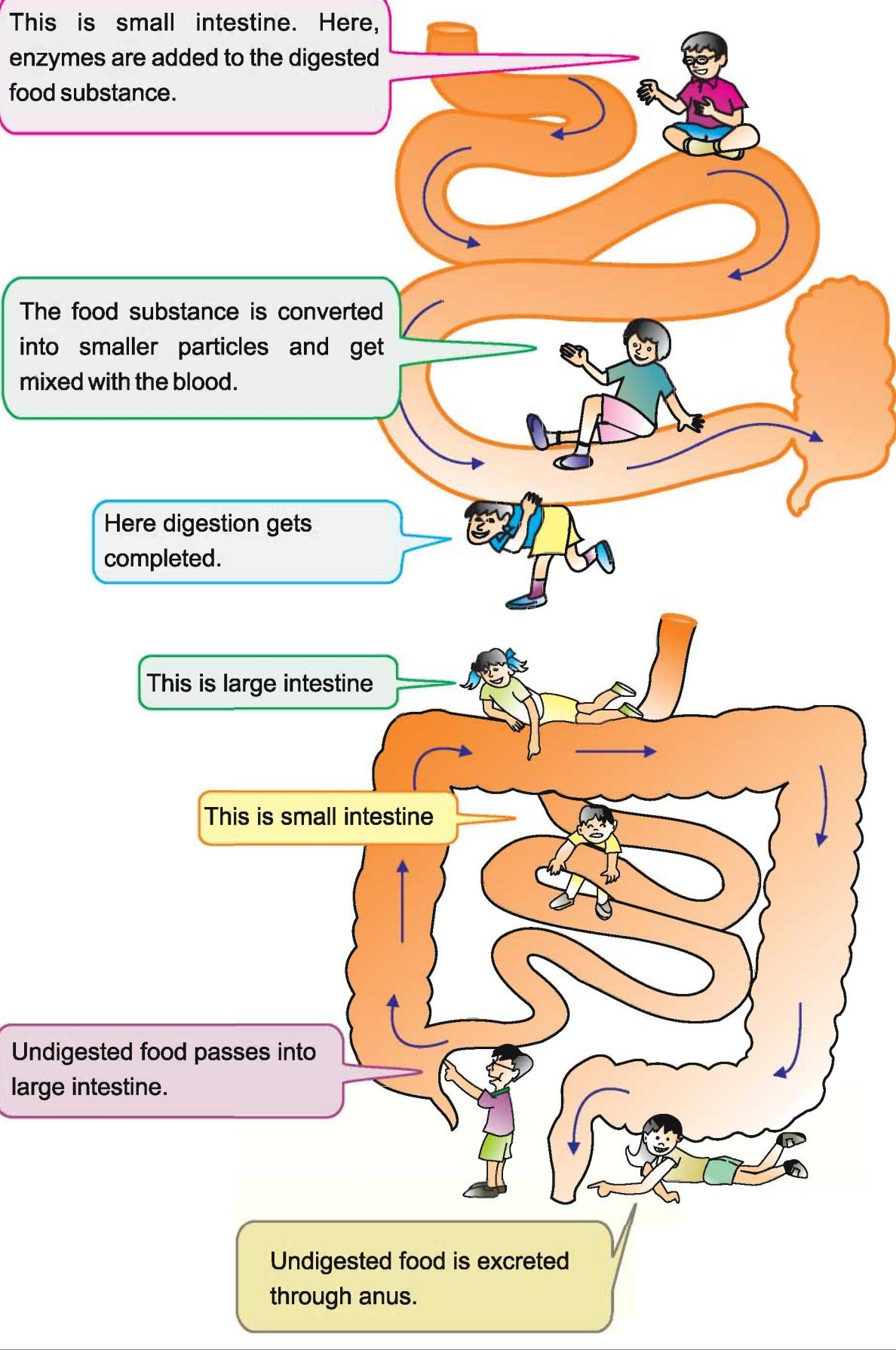
Do you know?



Drink around 2.5 litres of water daily.

Digestive Park

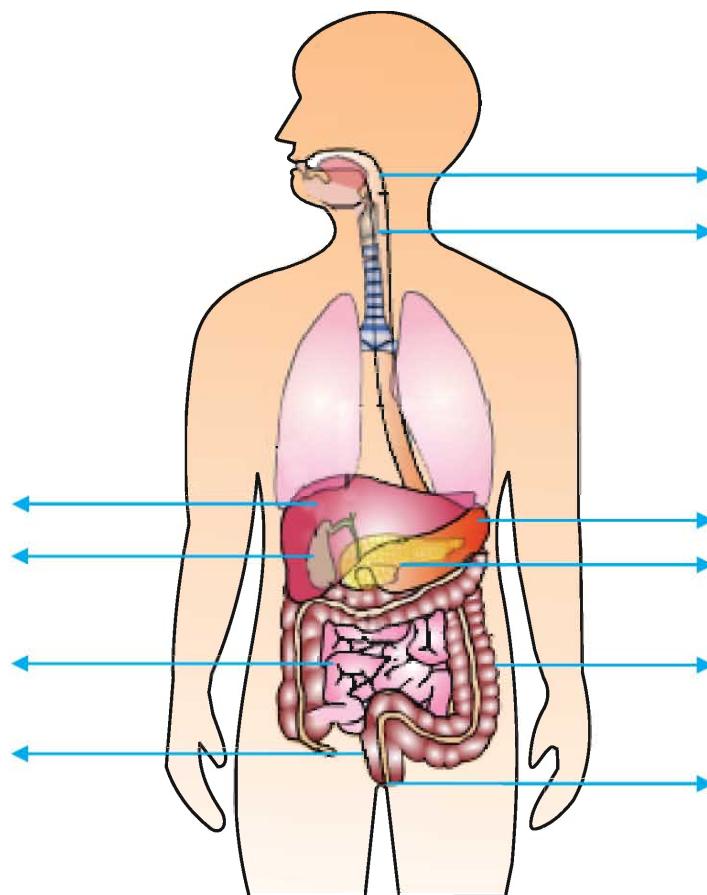




Evaluation



(a) Identify the various parts of the digestive system and name them.



(b) Fill in the blanks.

1. Chambers of the heart are _____ and _____.
2. Liver is _____ in colour.
3. Kidney is _____ shaped.
4. Man has _____ lungs.
5. Brain of man weighs _____ kg.

(c) Match the following.

- | | | |
|------------|---|-------------------------|
| 1. Heart | - | breathing |
| 2. Kidney | - | simpler food substances |
| 3. Lungs | - | bile juice |
| 4. Stomach | - | four chambers |
| 5. Liver | - | excretion |

(d) Answer the following.

1. What are internal organs?
2. Name some internal organs in the human body.
3. What are the functions of brain?
4. What is the function of kidney?
5. How does breathing takes place in man?
6. What is called digestion?

(e) Who am I ?

1. I sound lubb ... dub. _____
2. I expand when I take in ... and contract when eliminate. _____
3. I will make you think and work. _____
4. I excrete waste. _____
5. I digest the food. _____

Activity



Let us make a model of lungs.

Make a model of lungs using plastic bottle Y shaped tube, two balloons of the same size and one big balloon are fixed to the bottom of the bottle. Pull the balloon at bottom of the bottle downwards. What changes will take place to the balloons inside the bottle?



9

PERSONAL SAFETY



We read about many accidents in newspapers. Most of the accidents take place due to carelessness. We can avoid such accidents and deaths by following some simple safety rules.

SAFETY AT HOME

- Do not throw toys, slippers and other things everywhere.
- Keep them in their proper places.
- Clean the water, oil and other liquids spilt on the floor.



For Teachers...



Make students to write additional information about the safety rules to be followed at home, road, school and in public places.



If you smell leakage of cooking gas

- Open the kitchen windows.
- Do not use the electrical switches.
- Close the regulators of the gas cylinders.



While handling electric appliances

- Do not touch the electrical appliances with wet hands.
- Avoid using electrical appliances with ruptured insulations.
- Avoid using cell phone while it is being charged.



To avoid being poisoned

- Keep paints, insecticides and medicines away from the reach of children.
- Do not take any medicine without consulting the doctor.
- Do not eat decayed and spoiled food.



ROAD SAFETY

Most of the accidents take place due to carelessness and inefficiency of the drivers. Strictly follow traffic rules while walking and crossing the roads.

Road rules

- Must walk only on the platform.
- Do not play on the road.
- Before crossing, look on both sides of the road in turn for any vehicles .
- Do not cross in the space between the parked vehicles.
-

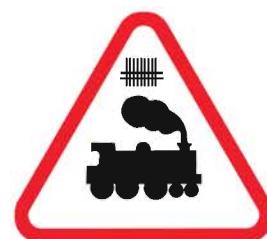


Activity



Identify the sign and write its explanation.

Do not park vehicles, railway crossing, hospital, do not horn, turn left, stop, go slow, turn right, listen, go, narrow path.



SAFETY AT SCHOOL

Children may fall down and get injured while playing in the play ground.

To avoid that

- Do not play with sharp tools.
- Do not ignore the games rules.
- Do not involve in rough games.
- _____



SAFETY AT PUBLIC PLACES

- Handle crackers with the help of elders.
- Do not go to the deep waters.
- To avoid stampede, follow the queue system.
- _____
- _____

First Aid

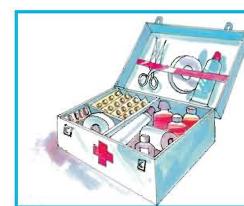
- First control bleeding from an injury and then take the injured to the hospital.
- If a fracture happens, avoid further movements and tie a support to the fractured part. Then go to the hospital.
- Do not approach a non medical practitioner.

- Crawl and come out of the place of a fire accident.
- Pour cold water on the fire injury.
- Incase of fire accident happens necessary measures should be taken to avoid further spreading of fire in that area.
- Tie tightly just above the place of bites of poisonous insects like scorpion and consult the doctor immediately.

●

First Aid Box

It is very important to have a first aid box in every school. Following things should be available in the first aid box:



1. Hot water bottle / hot water bag
2. Cotton roll
3. Sterilized white cloth
4. Gauze bondage
5. Pair of scissors
6. Plaster
7. Forceps
8. Soap
9. Antiseptic lotion
10. Antiseptic ointment
11. Rubber belt
12. Candle and match box
13. Hand towel
14. Sodium bicarbonate
15. Sodium chloride
16. Spirit lamp / Stove
17. Tincture iodine bottle
18. Tincture Benzoin bottle

Evaluation



(a) Answer the following.

1. Mention four road rules.
2. Name some common accidents that take place at home.
3. Mention the first aid given to a fractured person.
4. How can one leave from the place of a fire accident?
5. How will you help a blind boy to cross the road while going to school?

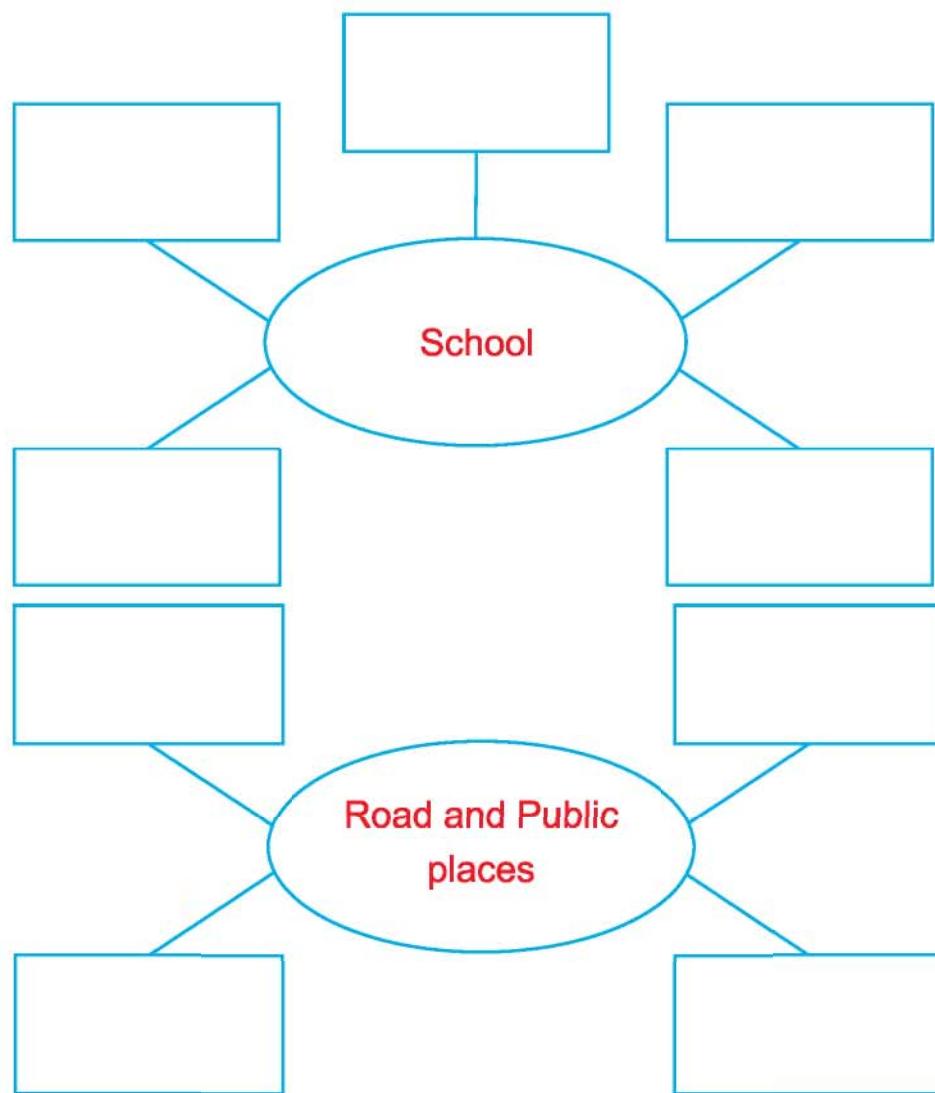
(b) Fill in the blanks.

1. Do not eat contaminated _____.
2. Do not touch _____ appliances with wet hand.
3. While walking on the road we must walk on the _____.
4. Students should learn to go in _____.
5. We must wear _____ for safety walking.

(c) Discuss the results that may happen due to the wrong activities given in the picture.



(d) Mention some common accidents at School, on Road and in Public places.



(e) What are the first-aid methods for the following accidents? Write.

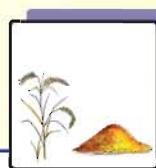
1. For bone fracture

2. For fire accident

3. For injury

10

USES OF NATURAL RESOURCES



Have you played with these things?

Do you know how they are made?

When coconut is peeled we get coconut fibre. It is used for making ropes. Likewise, we get many things from waste products. We use them for different purposes.

Activity



S.No.	Waste	By-product
1.	Bark of banana tree	Plate
2.	Bark of the coconut tree	rope
3.	Dried tree	
4.	Worn out tyres	
5.	Repaired electrical appliances	

Resources from nature are called natural resources. Plants, animals, aquatic animals, minerals, water and air are natural resources.

The rice we get from paddy plant is used as food.

PADDY

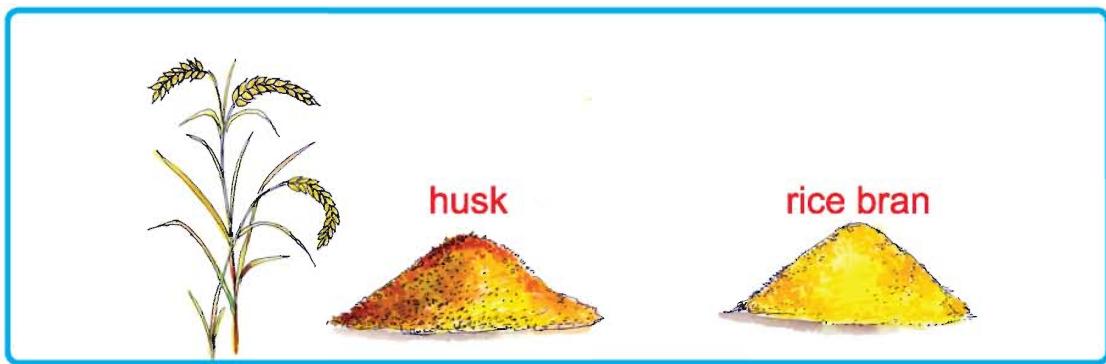
Next to corn, rice is cultivated on large scale in the world. After China, India stands second in the world in the cultivation of rice.

TWO TYPES OF RICES

Raw rice is obtained by removing the husk from the unboiled rice. While removing the husk some of the nutrition are removed. **Boiled rice** is obtained by removing the husk from the boiled and dried rice. In this, nutrition is not lost.

We get rice by removing the husk from the paddy. The things we consider as waste such as husk and rice bran are also useful to us.

Let us see how they are useful.



BATTERY FROM HUSK

Look at the car in the picture. These cars do not run on petrol or diesel. They use sunlight through solar cells to run. How solar cells are made ? Silicon is required for making solar cells.

Pure silicon is extracted from the husk to make the solar cells.



Further, they are used to manufacture computers.

HUSK AS A FUEL

Husk is used as fuel in houses and industries.

HUSK AS BRICK

The bricks made from husk and cement are light in weight and protect us from heat. Buildings built out of these bricks have low temperature radiation.



MANURE FROM HUSK

The manure (vermicompost) is obtained when the earthworms are allowed to grow in the husk. This manure is very good for flowering plants.



HUSK AS AIR PURIFIER

Activated carbon from the ash of husk is used to purify water. This will kill the germs causing diseases.

GOLDEN RICE

This type of new rice has vitamin A. This improves the eye sight.



OIL FROM RICE BRAN

Oil is extracted from the rice bran of the raw rice. It is suitable for cooking because this oil has vitamins and fats that prevent heart diseases. The by-products of this oil is used as food for fish and other animals.



HAY AS FOOD FOR CATTLE

The by-product of the paddy is hay, a fodder for cattle.



Card boards are made from the
paste of hay pulp.

Do you know?



Methane gas released from the paddy fields pollutes the atmosphere and increases the temperature.

STORY OF PAPER

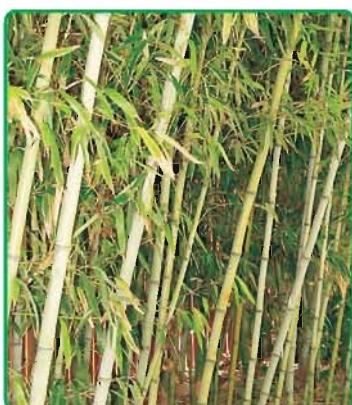
Many centuries ago the Egyptians used a grass variety called Papyrus for writing. Palm leaves were used in our country. The Chinese were the first to invent paper.

PAPER FROM BAMBOO

Papers are made from bamboo. It is easy to prepare. Grind the bamboo, add water and boil it to get the pulp. This pulp is passed on thin wire mesh to filter the water and is dried by pressing. Now the paper is ready.



- Do you know which plant purifies the air?



It is bamboo. Bamboo has the best purifying capacity in the world. It grows faster than other plants. Micro organisms and fungi cannot destroy bamboo plants.

Activity



How are natural resources like rocks, water, minerals useful?

Rocks : Gravel—To make road

Water :

Minerals :

PRODUCTION OF WASTAGES

Things that are not useful for us are called as waste.

What are the wastes present in the dustbin in your house.

Activity



Write the wastes from places given in the table.

S.No.	Place	Waste
1.	House	
2.	Vegetable shop	
3.	Building construction site	
4.	Office/ school	
5.	Hospital	
6.	Automobile shop	
7.	Nearby industries	
8.	Marriage hall	
9.	Electric goods repair place	

Torn clothes, plastic, glassware, unused vessels, food, old medicinal bottles, broken electrical lamps, used cotton, syringe, syringe tubes, smoke, chemical waste, broken bricks, rubber tube, worn out tyres, torn leaves, smashed paper tumblers, rotten vegetables, lime stone pieces.

TYPES OF WASTE

Bio-Degradable Waste

Bury the vegetable wastes under the soil. See after a month. You can see that they are decomposed with the soil. Aren't they? These are called **bio-degradable waste**.

Non Bio-Degradable Waste

Bury polyethene cover under the soil. After a month it will be in the same form. The things which are non decomposable are called **non bio-degradable waste**.

Project:



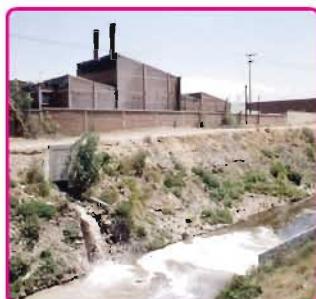
Collect tomato, brinjal, banana leaves, glass, flowers, plastics, iron pieces, ceramic, wood, cotton cloth, a piece of brick and small aluminum vessels. Put them in a pit and cover with sand. After few weeks dig the pit and see.

Note down what you have observed in the given table.

S.No.	Things not found in the pit (Bio-Degradable)	Things found in the pit (Non Bio-Degradable)
1.		
2.		
3.		
4.		
5.		
6.		

TYPES OF WASTES AND THEIR SOURCES

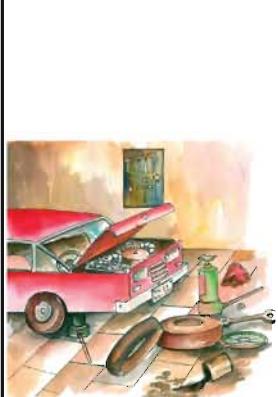
- Rotten fruits, broken gravels from building construction, bricks are the **solid wastes**.
- Waste water from factories, gutter water wastages in liquid forms, are the **liquid wastes**.
- Smokes from vehicles, industries and poisonous gases are the **gaseous wastes**.



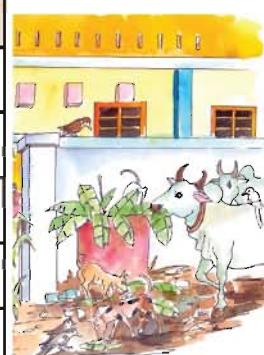
Activity



List out the waste produced from house, vegetable shop, building construction, school, automobile shop, marriage hall, electrical shop and hospital.



Sl. No.	Solid Waste	Liquid Waste	Gaseous Waste
1.			
2.			
3.			
4.			
5.			



RECYCLING

Have you ever seen a person who buys old paper and old things from your house?

List out the things taken by him.

How are these things changed and reused?

Changing the used products into new useful products is called recycling.

You can make papers and products out of pulp made from the waste papers. By doing so, number of trees cut down can be reduced.

Iron, gold, silver, and copper could be melted and used again.

Things which are marked  can be recycled.

These are the things which can undergo recycling.

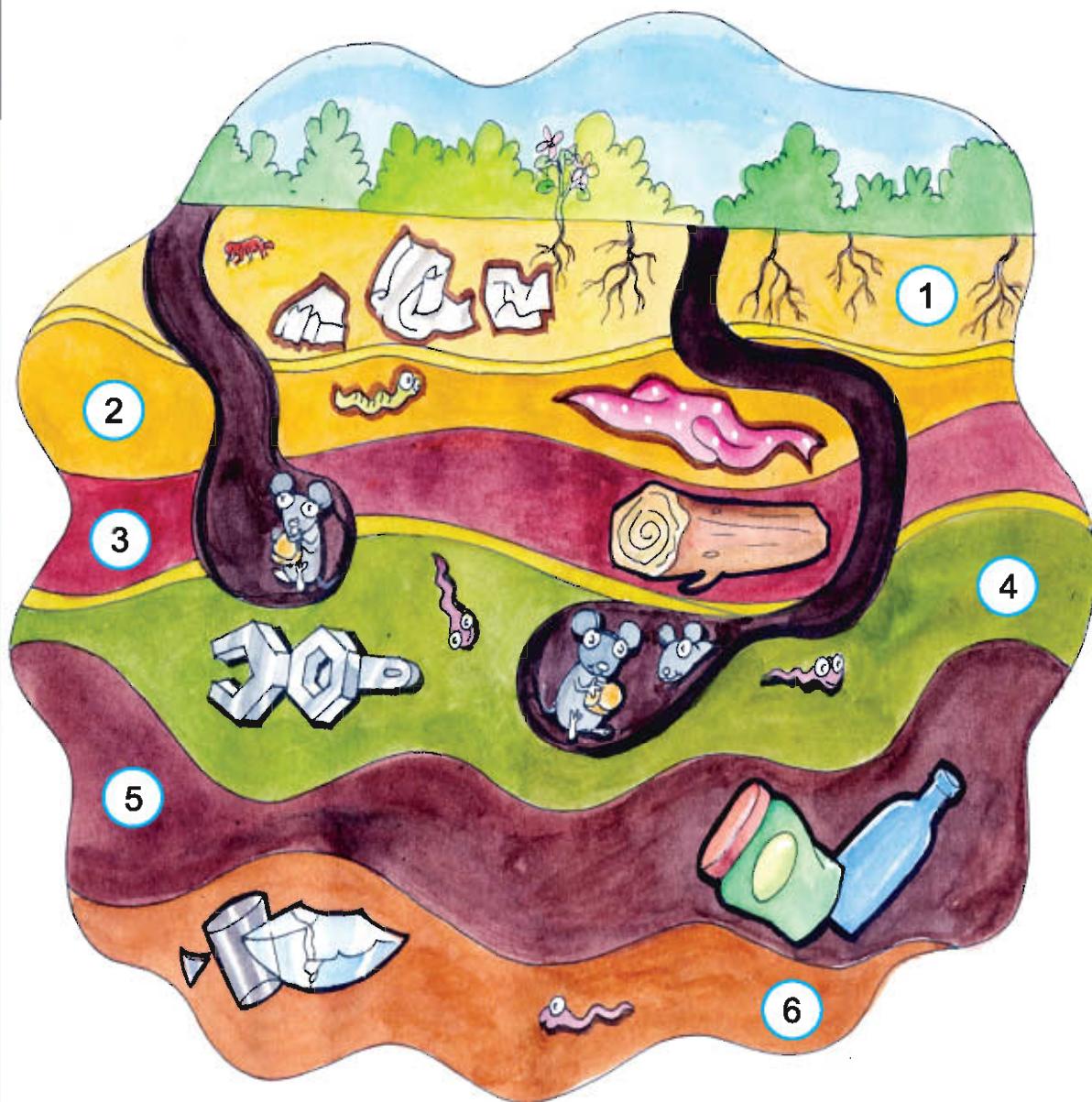
Things that are not marked with  cannot undergo recycling. They mostly will pollute the environment.



Do you know?



Time taken by the things to undergo decomposition.



- | | |
|------------------|-----------------------|
| 1 2 to 5 weeks | 4 50 to 500 years |
| 2 2 to 5 months | 5 50 to 10 lakh years |
| 3 10 to 15 years | 6 uncountable years |

Evaluation



(a) Fill in the blanks.

1. _____ is used as an important food.
2. _____ and _____ are the countries that use rice as food.
3. Outer covering of the paddy is called _____.
4. Oil got from rice bran is _____.
5. Wastes from broken bricks is _____.

(b) Match the following.

- | | |
|------------------|-----------|
| 1. Paddy | - Silicon |
| 2. Hay | - Food |
| 3. Rice bran oil | - Paper |
| 4. Solar cell | - Cooking |

(c) Answer in detail.

1. Give two examples for each
 - a) Solid wastes b) Liquid wastes
2. What are the uses of husk?
3. How is paper recycled?
4. What are the uses for silicon?
5. What are the advantages of growing bamboo trees?
6. Why should we use natural resources in limited quantity?

Project:



Organize a group discussion to find ways and means to clear the bio-degradable and non bio-degradable wastes in your school.

11

WORK AND ENERGY



Observe the picture given above and list down the activities in the given table

PULL	PUSH	PULL, PUSH

FORCE

Objects will not move from one place to another on their own. To move an object or to stop a moving object, a force is required. Depending upon the quantity of the **force** the object moves either faster or slower.



WORK

Work is said to be done when force acts on a body and moves it in the direction of force.

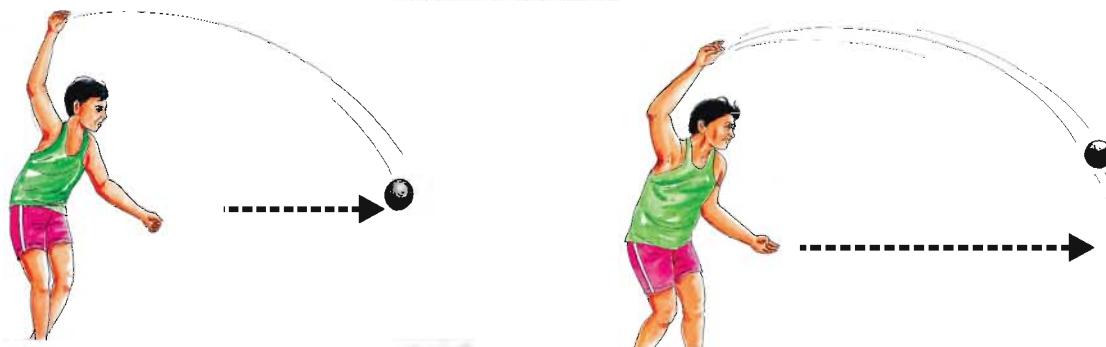
When an object moves to a distance due to a pull or a push, then it is said to be work done. If an object does not move by a push or a pull, then work is not said to be done.

Put tick for work done and for work not done to the given activities.

1. Leaning on a wall
2. Lifting up the books
3. Fetching water from the well
4. Reading books
5. Pushing the vehicle
6. Watching television programme
7. Swimming
8. Drawing
9. Talking over the phone
10. Rowing boat

ENERGY

Shotput competition
in the school.



Shotput competition was held in the school. Prabu and Arul took part in the game. Prabu threw the shotput. Since he used less energy, it fell at a shorter distance. Arul threw the shotput with more energy. The work done by him brought him victory. Hence

The capacity to do the work is called as **Energy**.

From where did Prabu and Arul get the energy? They got the **energy** from the food they ate.

We get energy from food.

From where did the running bus, steam engine, lorry get their energy?

Let us try to answer the questions.

Shall we listen to them

I get energy from
Coal.



We get our energy from diesel.



We get our energy from Petrol



TYPES OF ENERGY

Heat Energy

Coal is used as fuel. The energy obtained by the combustion of coal is known as the **heat energy**. Its energy converts water into water vapour. The engine of a train functions due to energy of steam.



Write about the uses of heat energy.

Electric energy

Electric energy is the main cause for the working of lights and fans in our houses. Electric energy is produced from **hydro electric plant, thermal power plant, atomic plant** and **wind mills**.



Write about the uses of electric energy.

Hydro electric energy



During rainy season you can see stones, sand, things, plants, trees and animals are washed away by rain water. This shows **water also has energy**. Water is stored in big drums and used to run the turbines to produce electricity

Solar Energy

The energy received from the sun is called solar energy. **Solar water heater, solar stove, road lights, solar vehicles, etc.** work on solar energy. Name the places where solar energy is used.

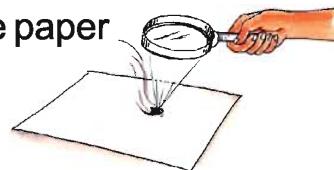
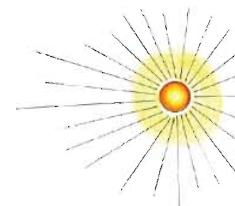


Activity



Smoke without fire

Take one thin sheet of paper and place it in direct sunlight. Hold a reading lens above the paper in such a way that more rays focus on it, without shaking. What happens after some time? The paper turns black and smoke comes out.



Chemical Energy

We get energy from the food we eat. The energy present in the food is chemical energy.

Mechanical Energy



Look at the toy merry-go-round in the picture. Does it rotate on its own? When we turn the key it rotates. It gets the energy from the turning of the key. This is called **mechanical energy**.

MOTION

When an object change its position continuously called **motion**. When objects move in the straight path continuously, it is called as **linear motion**. When objects move in circular path continuously, this is called **circular motion**. If the motion is to and fro about a fixed point, it is called oscillatory motion.

Let us know about the type of motion for activities given below



Coconut falling from the coconut tree. It is said to be in **linear motion**. The movement of a seconds hand in a clock is said to be in **circular motion**. Movement of a simple pendulum is said to be an oscillatory motion.



Evaluation

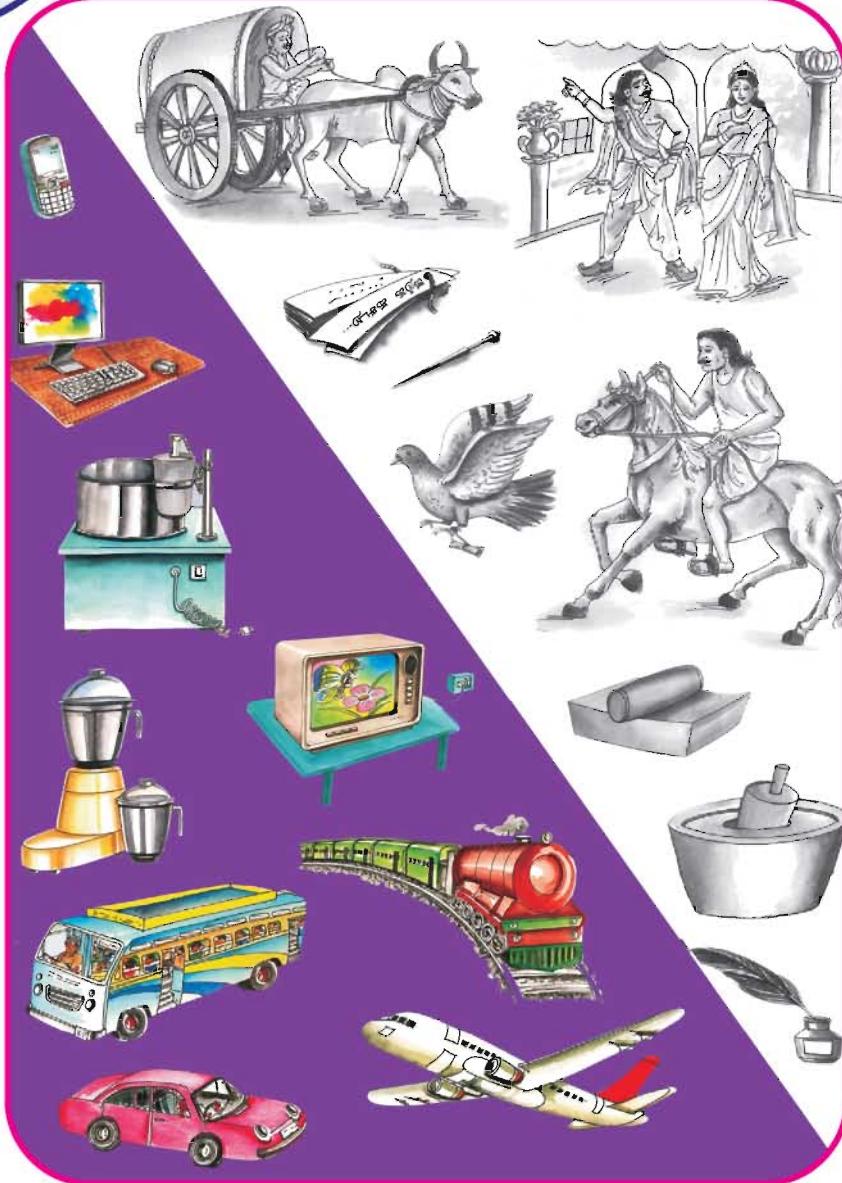


Answer the following.

1. Write about the incidents taking place in a Hospital which involves work?
2. What will you do to make a paper fan to rotate?
3. What are the different types of energy and explain any one?
4. What are the fuels used to light lamps?
5. What are the fuels used to run the vehicles?
6. Which type of energy is used for cooking food?
7. Name the instruments which work with the help of solar energy?
8. Write the object that works by means of mechanical energy?
9. List the objects moving in a linear motion that you see while coming from the school?
10. Name the objects that move in circular motion?

12

SCIENCE IN DAILY LIFE



Compare the two pictures.

How have the objects in the black and white pictures changed now?

On what basis have these changes taken place?

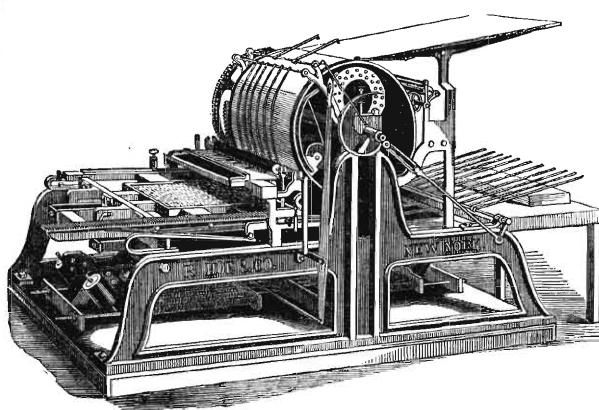
Do you know who invented the Television, the Telephone, Computer and Printing machine?

In ancient days man observed nature and reflected. As his thinking capacity grew science also developed. He questioned the changes that happens in nature as Why? What? How? and When?. These questions led to the new inventions.

The moment you close your eyes you can see a quite number of inventions.

How were they invented?

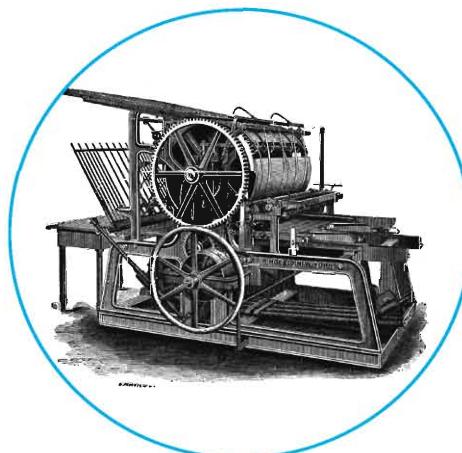
Scientists from their experience in life invented all these things. The printing machine is one among them.



PRINTING MACHINE

Where have you seen manuscripts and stone sculptures?

Which machine is used to make the books, news papers and text books?



First, man wrote on sand and clay. Then he carved on the stones. Later he used sharp pointers to write on palm leaves. He had to use lot of time and effort. To make this work easier and faster a printing machine was required.

Johane Guttenberg, a German, invented the printer.

Today the printer has revolutionized the world.

Johanne Guttenberg was a goldsmith and a merchant. He lived in Main city in South Germany. He produced books out of the letters made of wood and metals in 1436. He is the inventor of the printing machine.



Johanne Guttenberg



Activity



Find out the information about printing press which published your text book.

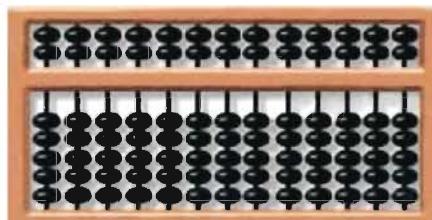
In which district in Tamilnadu is printing job carried out extensively?

COMPUTER

Man, right from his origin, used small stones, pebbles, small sticks, lines drawn on the wall, and his fingers to calculate. Then he formed numbers to calculate. Later he invented calculating devices operated by hand.

e.g. **Abacus**, **Napier equipments**, **Pascal device**, etc.,.

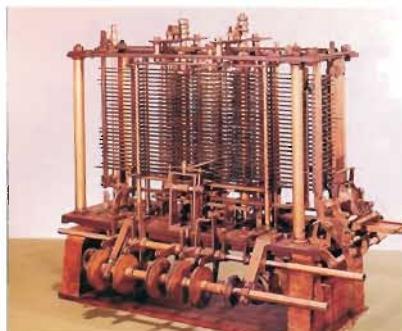
Charles Babbage invented **Difference Machines** in 1882. The principle of computer was already implemented in those days in this machine.



Abacus



Pascal device



Difference machines

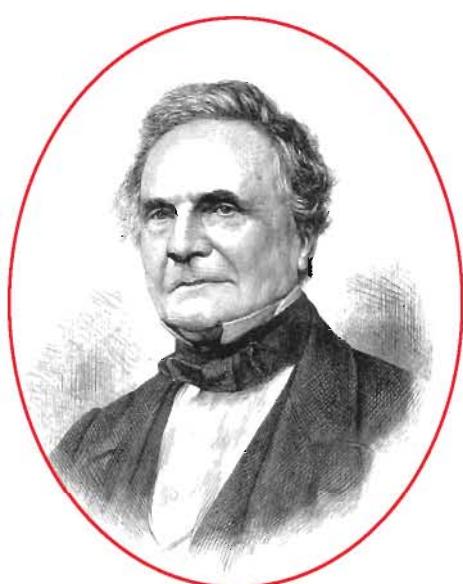


Napier equipments

He wanted the calculations to be error free, faster and the calculated values to be stored and retrieved when needed. As a result **computer** was invented by him.

Charles Babbage designed the computers. Where have you seen the computer being used?

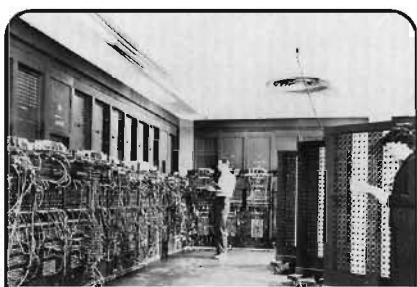
Computers are used in Departments of Defence, Education, Police, Research and Development, Health, Commerce, Communications, etc., Computer is very much used in all the fields throughout the world.



Charles Babbage

Charles Babbage was born in London in England in the year 1791. He did his higher studies in the Cambridge University in England. He was very much interested in Mathematics. He invented a device to calculate at a faster rate. This was the first computer. Apart from computer, he also invented speedometer and eye testing equipment.

The computer invented by him is very big in size. It can be found in London Science Museum even today.



First Computer designed by Charles Babbage

In what way is computer useful in your school?



Latest Computer

TELEPHONE

How will you send a message to your friend from Kanyakumari District to Trichy? Telephone has become very essential for long distance communication. Do you know how the telephone was invented?



Alexander
Graham Bell



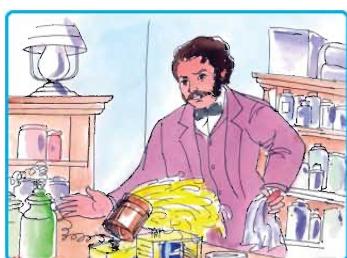
Alexander Graham Bell was born in Edenberg city at Scotland in the year 1847. His mother was deaf. His father was a teacher for the deaf. Graham Bell had his elementary education only for 5 years.

He worked as a teacher for deaf children. While he was teaching he started his research. Once he tried to send some messages at a time through a wire. This did not succeed. However he continued his research. As a result he succeeded in sending human voice through wire in 1876. The telephone was invented. His friend Watson helped him in his research. Do you know what was the first message spoken by Graham Bell in his telephone?

He said "Watson, come here. I want to see you".

Do you know how the telephone was invented?

Graham Bell was working with sound carrying equipment in his Research Laboratory at Boston in America.



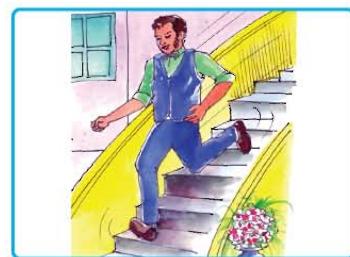
Accidently acid from the equipment fell on his dress.

Immediately he called his assistant "Watson."



"Watson. please come here."

Watson who was working in a room in the first floor was shocked to hear Graham Bell's Voice through the equipment.



He immediately ran to the ground floor.



He entered Graham Bell's room and shouted. "The equipment is working".

This is how the telephone was invented.

SCIENTIFIC QUESTIONS

One day **Sir Issac newton** saw an apple falling down from a tree. At that time, he thought why the apple did not go up. That is how he was able to discover about the gravitational force.

The question such as **Why**, **When** and **How** are called scientific questions.



- Do you know why the hind leg of frog is **long**?
- **Why** does magnet attract only iron?
- **How** are bees attracted towards flowers?

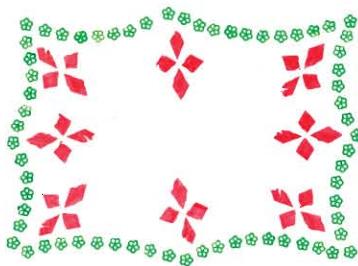
Observe the pictures. How many questions can you form out of these? List them.



Activity



Carve your name on a potato or carrot and apply ink and press it on a paper. Cut a lady's finger and apply ink on that and prepare greeting cards.



Evaluation



Answer in one or two words.

1. Who designed the printing press first? Which is his native land?
2. In what type of letters did Johanne Gutterberg write his book?
3. Write any three uses of the printing press.
4. Write any two equipments used to calculate with hands.
5. Name the equipment designed by Charles Babbage.
6. Which country did Charles Babbage belong to? In which University did he do his higher studies?
7. Write any two purposes for which computer is used in your school.
8. When was the telephone invented?
9. Name Graham Bell's friend who helped him in his research.
10. What do you mean by scientific question?

13

VISIT TO FARM

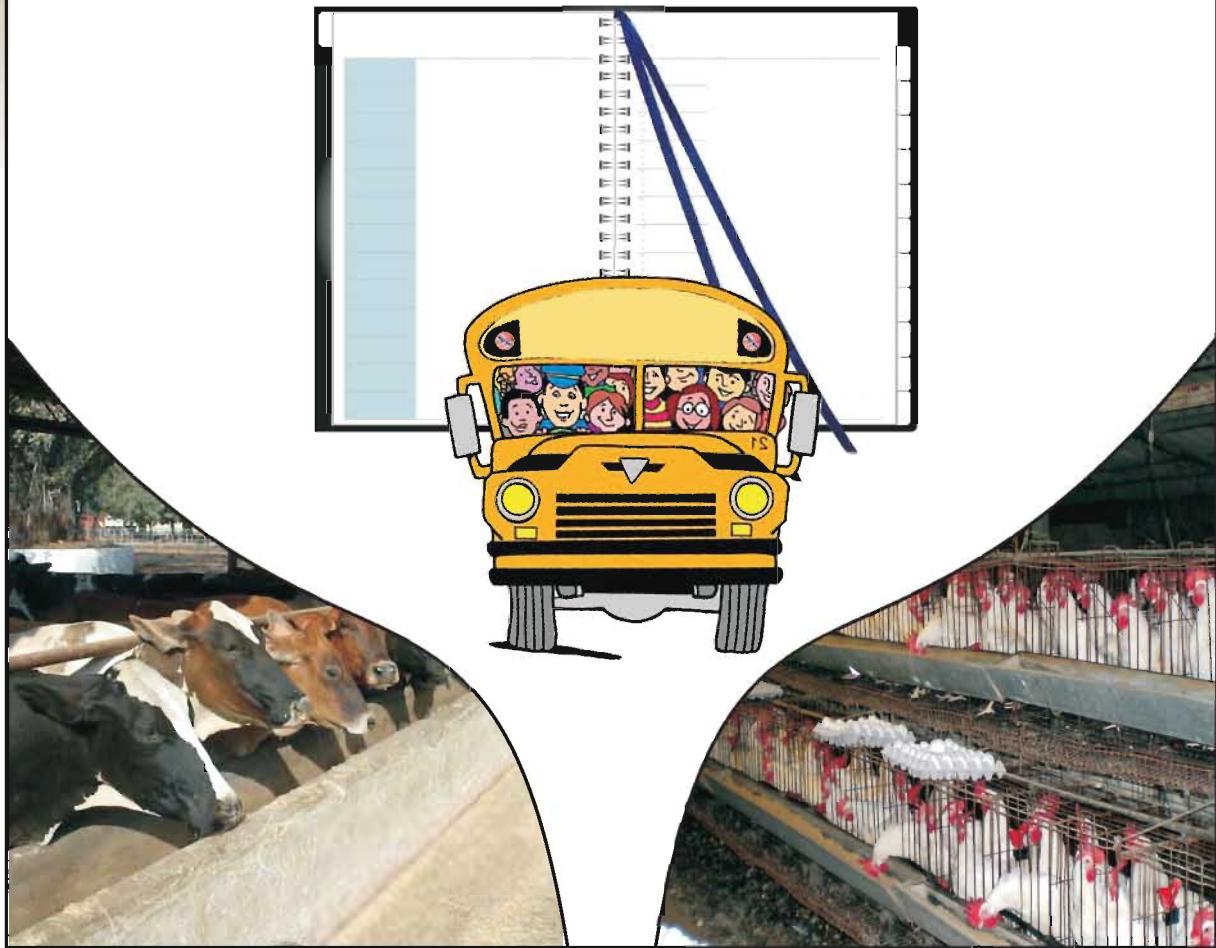


Mary and Bharathi were to be very excited. The reason was that they had planned to visit the agricultural farm on an educational tour.

There were only 2 more days to go. Teachers had given some instructions regarding the visit.

Next day Mary had fever. Doctor had advised her to take rest for two days.

So Mary said to Bharathi "You note down in your diary all that you see in the tour and read out to me and share your experience after coming back."





My diary

Date:

Today.....

A happy day of new experience in my life.

We 39 students were ready at 8.00 a.m. for the tour. As soon as the bus arrived we got into the bus one by one. Our tour started towards Anaimalai. After one hour journey we reached Muthu's Agricultural farm. Mr. Muthu invited us heartily.

The farm was a beautiful sight. Green fields, tall trees, bushes, plants and vines seemed to go on and on.

There were a lot of coconut trees and banana trees. Some workers were gathering tomato, brinjal and lady's finger in baskets. There was good fragrance from the Jasmine garden. Some were plucking the jasmine buds. Paddy was planted in a large area and the whole area looked green. It looked very pleasant to see the paddy swaying in the breeze. We all walked on the field path one after the other. Crabs scampered hurriedly away from us.

A rat ran and hid itself.



Some were plucking coconuts from the coconut trees. Some were peeling the coir from coconuts.

Mr. Muthu asked them to give us tender coconuts. We all drank the tender coconut water and quenched our thirst.

Suddenly some of the students started shouting. There were some monkeys were jumping from the near by trees. Students took sticks to chase the monkeys.

Mr.Muthu came running and shouted “Don't chase the monkeys”. Mr.Muthu, added gently, **“Do not scare the animals which are living around us”**, which I liked very much.

On seeing him some dogs came to him wagging their tails. We were frightened and thought of running away.

But he said, “Do not run and don't be afraid. They will not harm us if let them be . These are night guards for my farm.”

In which vehicle did Bharathi go for the tour?

What are the plants seen in Muthu's farm?

What will you do when someone torture animals?

He invited us to his banana groove.

There were bunches of bananas cut from the banana tree and arranged in order.



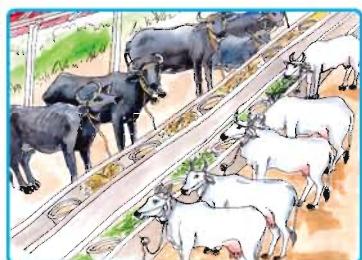
As it was time for lunch, we went to a shady place where there were lot of trees. We sat in groups and ate our food. After eating they started throwing leaves and papers everywhere.

Teacher noticed that and said "Dear students, we have to keep our surroundings clean. See, there is a dust bin. Put them in that." Only then we noticed the dust bin and also that the farm was very clean.

After lunch some people were loading rice bags into vehicles. Some were carrying the hay on their heads.

We asked them where they were carrying the hay.

They replied that they were going to the nearby cattle field. We also went behind them. In the cattle farm, cows and the calves were tied in neat rows.



There were cows, calves, ox, **murrah** type buffaloes and goats in the cattle farm. We wondered seeing cows of different types like **Gir, Sindhi, Jersey and Caronswiss**.

Do you know?



India stands first in milk production.



murrah



sindhi

The worker at the cattle farm said “Jersey cows give around 25 to 30 litres of milk. If we give required quantity of hay, grass, cotton seeds, cake fodder, we will get more milk. Murrah type of buffalo alone gives 30 litres of milk.”

“Is it so ?”, We were all surprised to hear it.

1) What types of cows are seen in the cattle farm?

2) How many litres of milk a Jersey cow can give?

3) What feed should be given to the cow to get more milk?

4) How many litres of milk are required in your house per day?

We visited the nearby poultry. Some hens were pecking at the food. Rice, broken rice and rice bran are given as food for poultry. There were hundreds of hens there.

Do you know?



- * Sharp edge of an egg should point downward in a refrigerator.
- * Now Emu is grown in Government animal husbandry farms. Emu hen's meat is 98% fat free.



Hens seen in white colour are called white leghorns. White leghorns lay around 200 eggs in a year. They are the egg laying hens.

Tamilnadu Government is supplying eggs for 5 days along with their mid-day meals in a week to the school children.

On another side we saw broiler hens. They are used for getting meat. They are called broilers.

- 1) White Leghorns may lay approximately _____ eggs per year.
- 2) Hens reared for meat are _____.

It was around, 3 'o' clock in the evening. We all sat in groups under the tree, In each group fruits like banana, papaya, apple, grapes and pineapple which we had brought, were cleaned and cut into small pieces and taken in a vessel. Then some sugar was added and mixed thoroughly. We all enjoyed the delicious fruit salad.



When we were returning from the farm in the evening some people collected cow dung, branches and leaves, vegetables, wastes and put them into a pit. We peeped inside the tank and saw some worms.

They are preparing manure by adding waste, cow dung, earthworm and soil. If we use them for the plants, we will get better yield of cereals, vegetables and fruits. They did not waste even the waste. This activity attracted me a lot.

We thanked Mr.Muthu for allowing us to visit the farm and also for his valuable advice.

On the way back some people were distributing pamphlets. It was printed as follows.

- ☛ Do not beat the animals with stones, sticks or whip.
- ☛ Do not overload the animals or the vehicles pulled by these animals.
- ☛ Do not burst crackers near the animals.
- ☛ While going to sanctuaries, animal parks, bird sanctuaries, etc., do not feed the animals with what we have.
- ☛ Do not throw plastic materials in such places.



Do not harm the animals!



Do you know?



Blue cross does the service of helping and saving animals.

When we were coming out with the pamphlets, we saw a wall poster.

In that...

Let us save our environment!

- * Keep the public places such as parks, sanctuaries, hospitals, bus stand, railway stations, schools, etc., clean.
- * Do not throw wastes in public places.
- * Throw the waste into dust bin and see that it does not spill out.
- * Do not spit in public places.
- * Do not smoke in public places.
- * Plant trees to protect the environment.



Activity



Write your answers for the questions asked about your pets.

1. Which is your pet animal?
2. What is the name of your pet?
3. What does it like to eat?
4. When does it go to sleep?
5. What are the qualities you like in it?
6. Draw your pet animal and colour it.

Bus came to school at 6 pm in the evening. All returned home. Bharathi had noted down her experiences in a diary.

She shared that with her friend Mary. Mary was also happy and thanked Bharathi.

When you go to a rabbit farm as a field trip, list out the questions that are to be asked.

- 1) What are the types of rabbits grown in a rabbit farm?
- 2) What are the methods to be followed for rearing the rabbit?
- 3) Write about the temperature needed for the growth of rabbit?
- 4) Write about the measurement of the rabbit's cage.
- 5) How many rabbits can be grown in a cage?
- 6) What are the foods to be given to the rabbit?
- 7) What is the approximate weight of an adult rabbit?
- 8) In general, how many young ones a rabbit can give birth at a time?
- 9) Name the diseases that affect rabbit.
- 10) How you will clean the rabbit farm?

For a field trip when you visit a cattle farm, list out the questions that are to be asked.

Evaluation



(a) Fill in the blanks.

1. In the farm _____ and _____ are the plants seen in the garden.
2. _____ and _____ are the types of cows seen in the farm.
3. Murrah type buffalo gives _____ of milk .
4. _____ and _____ are mixed together to form natural manure.
5. Don't throw _____ in the public places.

(b) Answer the following.

1. Write down the names of the trees seen in the agricultural farms.
2. Mention some milk products.
3. Which type of buffalo will give us more milk? How many litres of milk can it give?
4. List the food products that we get from Agricultural Farms.
5. Write about the farms seen in your place.

(c) Answer in detail.

Visit an agricultural farm and write about your experience.