

BOOK

4

SCIENCE BASICS



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Living and non-living things

We see different things around us. Some of them are living things. We and our friends are living things. Animals and plants are also living things. There are many things which are non-living. Our toys are non-living things. Our bags and books are also non-living. How can we find out which thing is living and which is not?



Can you find out the living things in this picture?

All living things have a few things in common.

They can move.

They grow.

They need food.

They can feel and respond to any change round them.

They breathe.

They reproduce.

Living things can move

Animals move from place to place in search of food and shelter. They can also move to escape from their enemies. They use their legs, wings or even their bodies, such as the snake which depends upon its many flexible muscles, in its movement.



Plants do not move from place to place. They do not have to search for food since they are capable of making their own food. However, their leaves and flowers may move. If you touch the leaves of the “touch-me-not” plant, they gather together and close.



Living beings grow

All living things grow. Kittens grow into cats. When they become old, they die.



Small plants grow into big plants.

Living beings need food

All living things need energy. They get energy from food. Animals search for food at different places. Plants make their own food.

Food provides us with energy which helps us move round and do all sorts of activity. It also provides us with building blocks needed for our growth and health.



INVESTIGATE

A mosquito is a living thing. Living things breathe. Can you prove by an experiment that the mosquito requires oxygen for breathing? Can insects smell? Can you design and conduct some tests to check it?

Living beings can feel and respond to changes around them.

Most animals feel things around them. They use their sensory organs; eyes, ears, nose, skin and tongue. Some insects have feelers to feel. They respond to these feelings. For example, when an animal feels cold, it tries to find shelter. When they smell a sort of food they like, saliva starts flowing from their mouths.



A butterfly has sensitive feelers



A dog has a very good sense of smell.

Plants do not have sense organs, but they can also feel changes around them. A plant can feel the sun and grow towards it. The leaves of the touch-me-not plant can 'feel' something touching them and react by closing.

A sunflower turns its movement towards the sun during the daylight.



sunflower

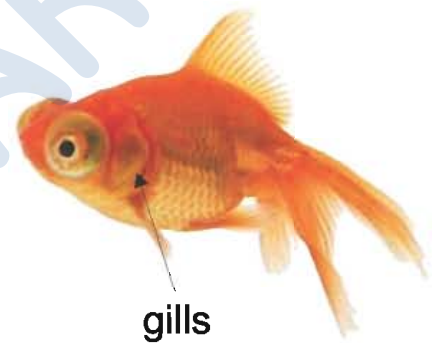
Living beings breathe

All living beings need air. Without air, the food that we eat cannot create energy. That is why we cannot live without air.

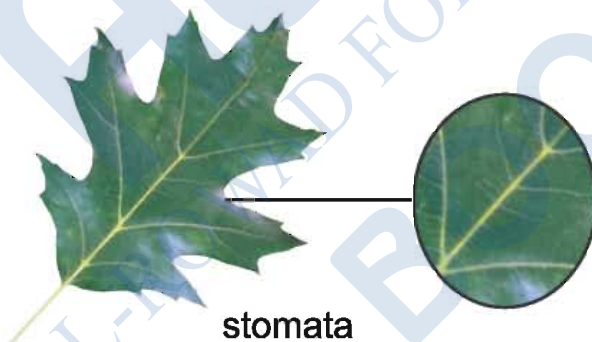
We breathe through our nose. Many other animals also breathe through their noses.

Fish breathe through their gills.

Some animals such as cockroaches, grasshoppers, locusts and butterflies breathe through air holes in their bodies.



gills



stomata

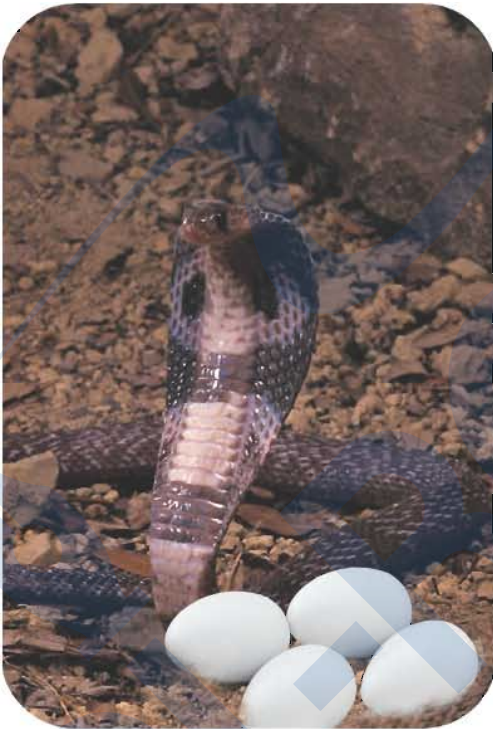


air holes

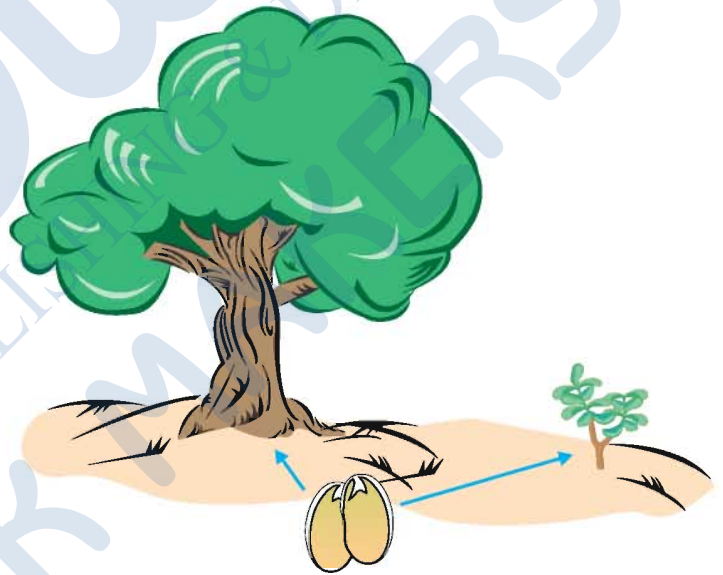
Plants have small holes in their leaves, called stomata, through which they breathe.

Living beings reproduce

All living things have a circle of life. Birth, growth, reproduction and death are natural parts of our natural world.



Female animals give birth to young ones or lay eggs from which babies hatch.



Many plants produce seeds. These seeds grow into new plants.

Remember



1. All living beings move, grow, need food, feel, breathe, reproduce and respond to the changes round them.
 2. Living things do all these in different ways.
 3. Plants and animals differ in many ways.
- The major differences are:
 Plants make their own food but animals get and eat their food.
 Plants remain fixed at one place whereas animals move round.

1. Put a for true and a for false. (Give reason if the answer is false).

a): All animals use legs to move.

Correct _____

b): Plants do not move from place to place, but their bodies may move.

Correct _____

c): Living beings get energy from food.

Correct _____

d): Air is necessary for living beings.

Correct _____

e): When you feel cold you wear a sweater. But a cow cannot do this.
Therefore a cow is not a living being.

Correct _____

f): Plants cannot breathe.

Correct _____

g): All plants reproduce from seeds.

Correct _____

h): Plants do not have sense organs, so they cannot feel.

Correct _____

2. What body parts do different animals use for breathing?

3. Think and answer.

(a) Why do animals move from place to place?

(b) Why is there no need for plants to move round?

(c) Give one major difference between animals and plants.

4. Discuss these in class and then answer.

(a) A car moves. it 'eats' petrol. it 'breathes' air to burn the petrol and gets energy to move. Is the car a living being ?

(b) A cricket bat comes from a tree. Is it a living being ?

AWARENESS BEYOND THE CLASSROOM

Plants that eat insects

The venus flytrap is a plant that can move leaves fast to catch an insect; it can digest the soft parts of its body. This plant is found in soil which is not very good. By catching insects for food it is able to live in bad soil.

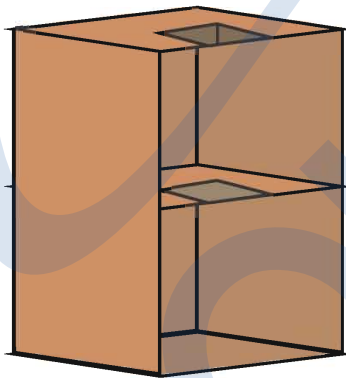


The search for light

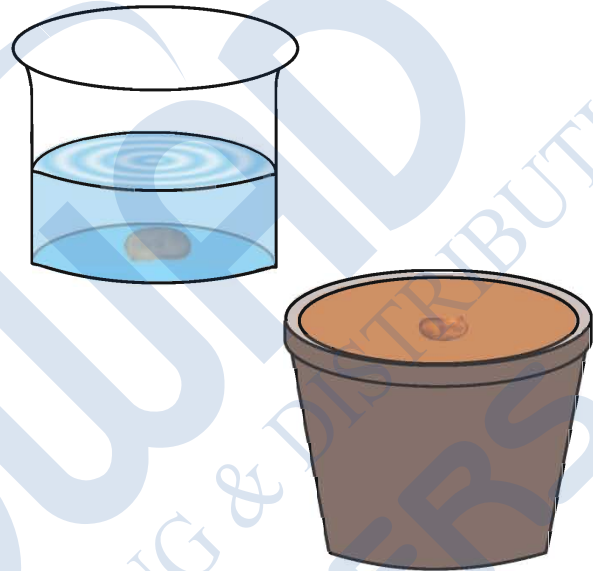
You need:

Cardboard shoe box, bean seed, cutter, small pot, and water.

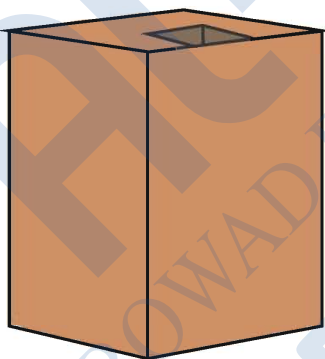
1. Take a cardboard shoe box. Cut a window at one of its ends. Take two pieces of cardboard and cut windows in them also. Fix the cardboards in the box as shown.



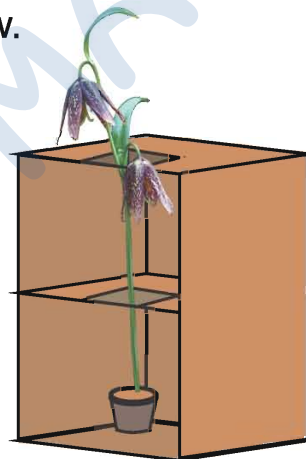
2. Soak a bean seed overnight in water. Plant it in a small pot which can fit into the box.



3. Keep the pot in the box and put the lid on. Keep the box outside.



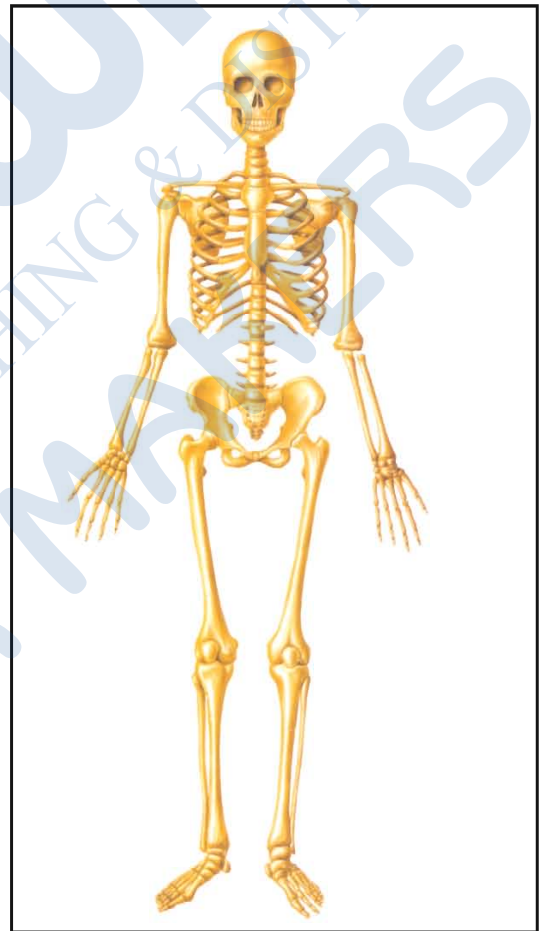
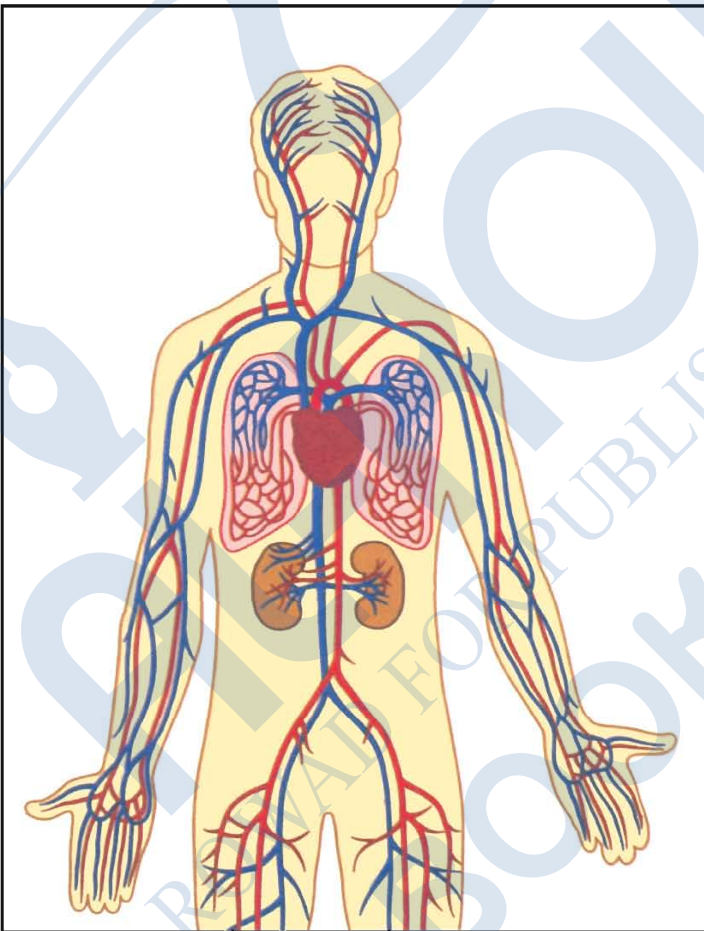
4. After few days you will find the plant growing out of the top window.



5. It grows through the windows searching for light. Make more windows in the box. Can the plant still feel where the light is coming from?

Understanding ourselves

Our body is like a machine. It has many different parts. They work together to keep us alive. They enable us to see, hear, taste, feel, smell, play, study and do so many other things. Some parts are outside and can be easily seen. Many parts are inside. The inside parts are just as important as the outer ones even though we cannot see them.

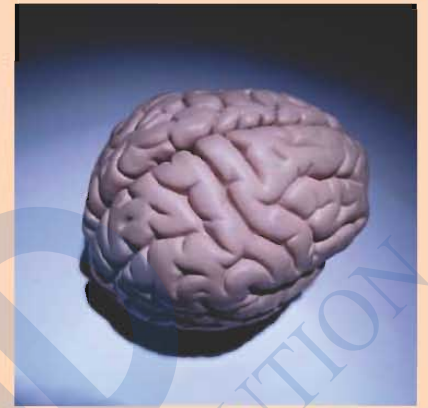


Some parts of our body are integral to stay alive. Without brain, or heart, we die. Some of our parts help us to live, but they are not essential to life. You could continue to live without your eyes or ears.

Some important parts of our body

The Brain

Our brain is the part of our body that controls all other parts and their functions. Our brain is linked to the other parts of our body by nerves. These are like telephone lines. Through nerves brain sends and receives messages from all parts of our body.



The Blood

Blood is the transport system of our whole body. Water, food and oxygen are all carried by the blood. It also collects waste material from all parts of the body. Blood travels through pipes called blood vessels.

INVESTIGATE

What would happen if you have only one ear instead of two?
Would you have any difficulty in listening?
Why does tickling make you laugh?
Do other animals also have heart and blood?

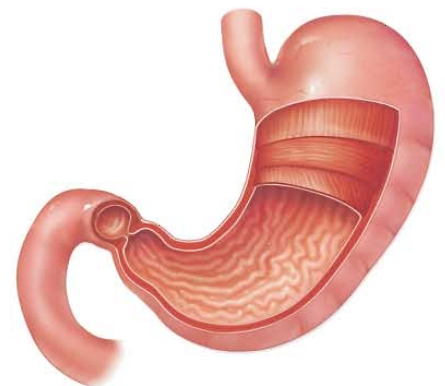
The Heart

Our heart is like a machine. It pumps blood to every part of our body. Our heart is a powerful muscle. It works all the time. It never rests. When we exercise, our heart pumps faster. The heart is at the centre of our blood system. It pumps blood through blood vessels.



The Stomach

Everything we do needs a supply of energy. Walking, running and even sleeping, all need a supply of energy. Energy comes from the food we eat. Our stomach helps to digest food. When food is digested it provides energy to our body.



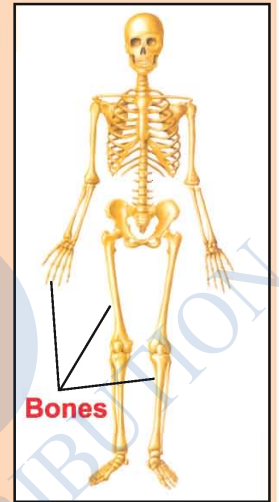
Bones

That framework of bones is called the skeleton that supports and gives shape to our body. It protects our brain, heart and other soft parts. Bones are solid like metal bars.

They also need a blood supply. We are actually born with more bones, but many fuse together as a child grows up.

The average adult has about 200 bones.

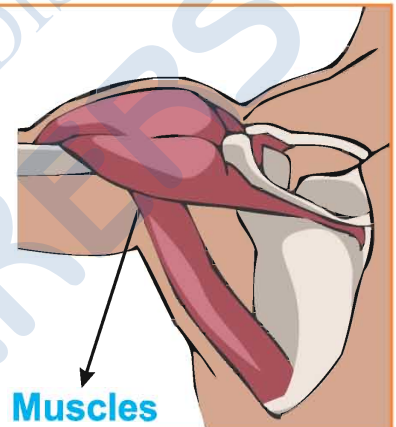
Our height depends upon the size of our skeleton.



Muscles

Whenever we move we make use of our muscles.

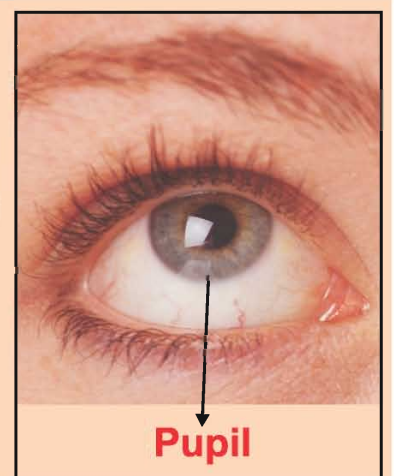
We use them to bend, run, walk, and even to open and close our eyes. There are more than 650 muscles in our body. The bones in our skeleton are connected at the joints. Muscles are attached to the bones by elastic tissue called tendons.



Eyes

We use our eyes to look round. When light goes in through the black part of our eye, we can see.

This black part is called (the pupil). The white part is called (the sclera) which has the important job of covering most of the eyeball. Our eye is about as big as a ring-pong ball. Eyes work like a camera. Each part plays very important and lively role in providing clear vision.



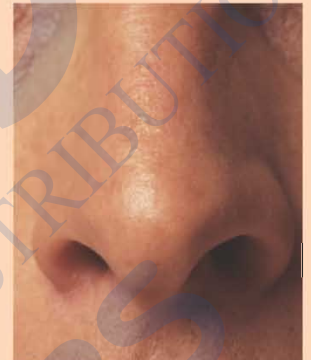
Ears

We hear sounds with our ears. We have two ears. We hear different sounds when they reach our ears. Our ear is made up of three main sections called the outer, middle and inner ear. We can see only the outer ear. The main job of the outer ear is to collect sounds whether they are your friend's whisper or a yell from the outside.



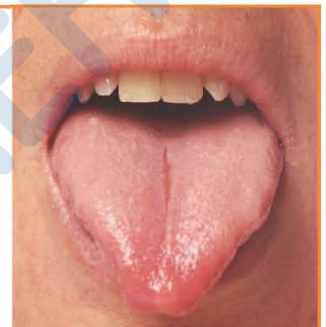
Nose

We can smell different things with our nose. And it's a big part of why we are able to taste things. Our nose is also used to breathe air in and out (inhale and exhale). When we breathe, air passes over a sensitive area known as the lining that removes dirt from the air. This area contains fine hair and nerves.



Tongue

Our tongue helps us to chew, swallow and sing besides talking and tasting. When we eat something, we can instantly tell if it is sweet, salty, bitter or sour. Our tongue is very sensitive to these four tastes.



Skin

Our skin is the largest part of our body. This is why it covers up everything. Without skin people's muscles, bones and organs would be hanging out all over the place. It is water-proof. It bends and stretches. It sweats when we are feeling hot. Sweating helps us to cool down.



Remember

1. Our body is like a machine and it has different parts.
2. All parts join together and enable us to do lots of work.
3. The important parts of our body are the brain, heart, stomach, bones, muscles, eyes, ears, nose, tongue and skin.



1. Name these:

- (a) A sensitive area present in the nose _____
- (b) Brain is linked to other parts with _____
- (c) Transport system of the body _____
- (d) Frame-work of bones _____
- (e) Black part of the eye _____
- (f) Largest part of the body _____
- (g) We can feel pain, hot or cold through our _____

2. What are the functions of our muscles?

3. What are the functions of our skin?
