



Things Around Us

Prior Knowledge

In the previous classes, I have learnt that

- All things around us can be grouped into living and non-living things.
- There is immense diversity of living things on the Earth.
- Living things are natural.
- Non-living things are either natural or man-made.

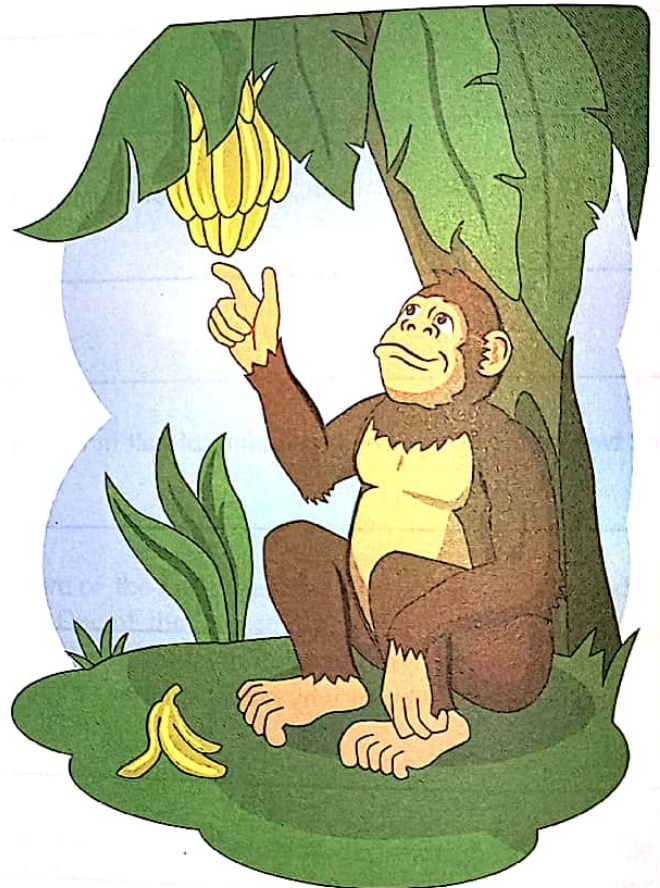
Learning Objectives

In this chapter, I will learn about:

- Characteristics of living things
- Habitat
- Biotic and abiotic components

Let's Get Going

Look at the given pictures. Mention three characteristics that are common to both the monkey and the banana plant.



1. _____
2. _____
3. _____

As studied in previous classes, things around us can be broadly grouped as **living things** and **non-living things**. Human beings, plants and animals are living things. Clouds, rocks, soil, chair and table are a few examples of non-living things.

Let us learn about the characteristics of living things and how do these characteristics make them different from non-living things.

CHARACTERISTICS OF LIVING THINGS

Characteristics of living things are as follows.

Structural Organization

Living things have a definite structural organization (Fig. 7.1).

All living things are made up of millions of cells.

The smallest unit of living things that is able to function independently is called a cell. For example, red blood cells.

A group of similar cells that perform the same function is called a tissue. For example, skin tissues.

A group of tissues that perform a particular function is called an organ. For example, stomach.

A group of organs that work together to perform a particular life process is called an organ system. For example, digestive system.

A living thing made up of one or more organ systems is called an organism. For example, human beings.

Depending on the number of cells, living things are classified into two groups—unicellular and multicellular organisms.

Living things made up of a single cell are called unicellular organisms. Amoeba and Paramecium are unicellular organisms. In these organisms, all life processes are carried out by a single cell.

Living things that are made up of several cells are called multicellular organisms. Human beings, dogs and houseflies are multicellular organisms.

Living Things Need Food

All living things need food for their survival. Food helps organisms to grow and provides energy to do various activities.

Plants can make their own food by a process called **photosynthesis**. So, plants are called **producers** or **autotrophs**.

Animals (including human beings) depend on plants and other organisms for their food. Therefore, animals are called **consumers** or **heterotrophs**. Non-living things and dead organisms do not need food.

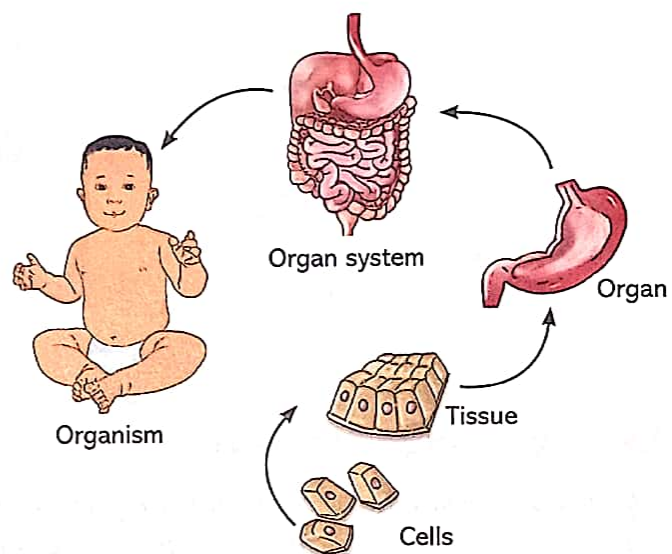


Fig. 7.1 Structural organization in humans

Living Things Grow

All living things grow. Life begins from a single cell. The cell grows, enlarges in size and then divides to form new cells. The size of an organism increases with the increase in the number of cells. The growth of an organism occurs in different stages. A seed grows into a sapling and then into a large tree (Fig. 7.2). Animals and human beings grow from an infant stage to an adult stage (Fig. 7.3). Growth in living things is irreversible.

My Dictionary

Sapling: A young plant

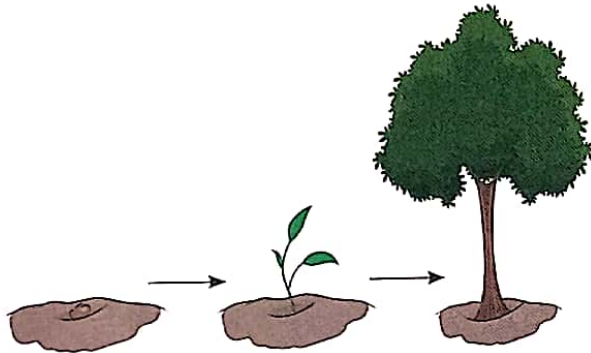


Fig. 7.2 Growth in plants

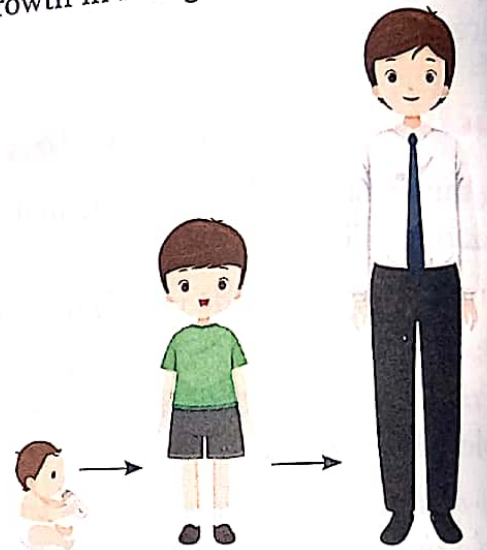


Fig. 7.3 Growth in human beings

Living Things Respire

The process by which living things utilize oxygen to release energy stored in the food eaten by them is called respiration.

Respiration and breathing are different. Breathing is a part of respiration.

The process of taking in oxygen and giving out carbon dioxide is called breathing.

During respiration, oxygen (breathed in) reacts with food and breaks it down to release energy stored in the food. Carbon dioxide produced during respiration is breathed out. Thus, respiration is an essential feature of all living things.

Different organisms have different organs for respiration. Most terrestrial animals respire with the help of lungs. Fish respire through gills. Earthworms breathe through their moist skin. Insects such as grasshoppers breathe through tiny holes called spiracles present at the sides of their body (Fig. 7.4). Plants respire through tiny holes called stomata (singular: stoma) that are present on the underside of their leaves (Fig. 7.5).

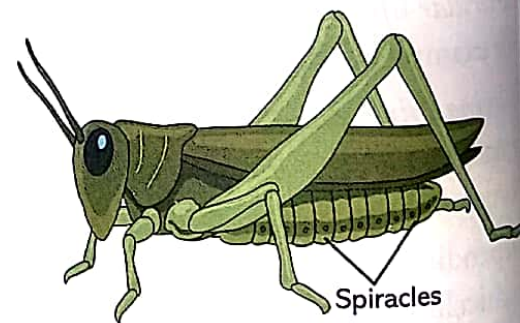


Fig. 7.4 Spiracles in a grasshopper

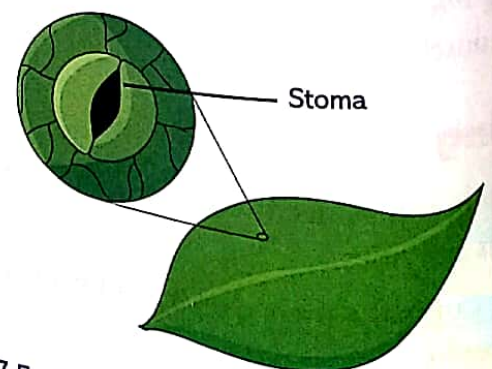


Fig. 7.5 Stoma present on the underside of a leaf

Living Things Move

Except plants, most living things move. Animals move from one place to another in search of food, shelter and to escape from being hunted by predators. Plants remain fixed to the soil. However, parts of plants such as leaves, stems and roots show certain movements. For example, roots of a plant grow towards gravity (geotropism), while the stem grows towards the light (phototropism).



Fig. 7.6 Phototropism: Stem grows towards light

Living Things Respond to Stimuli

Reacting to a change in the surroundings is called a **response**. Change around us that makes us respond to it is called a **stimulus** (plural: **stimuli**). All living things respond to stimuli. For example, touch-me-not or *Mimosa* plant (Fig 7.7) immediately closes its leaves when touched. Animals respond to stimuli such as heat, cold, touch, smell and sound.



Fig. 7.7 *Mimosa* plant folds its leaves when touched

Living Things Reproduce

The process by which living things produce young ones of their own kind is called **reproduction**. Most plants reproduce through seeds. Animals reproduce either by giving birth to young ones or by laying eggs.

Remember

Animals that lay eggs are called **oviparous**, whereas animals that give birth to young ones are called **viviparous**.



Fig. 7.8 Human family

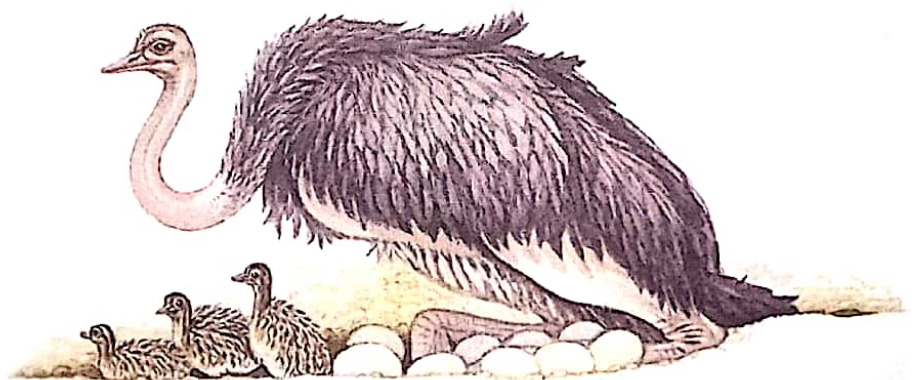


Fig. 7.9 Ostrich with nestlings and eggs

Living Things Excrete

The process of getting rid of waste by living things is called excretion.

These waste products have to be removed regularly as they can be harmful if allowed to accumulate in the body. Animals excrete wastes such as undigested food, carbon dioxide formed during respiration, urine and sweat from the body. Lungs, skin and kidneys are some of the body organs that help in excreting waste products.

Plants excrete in the form of secretions such as gum, rubber and resins and excess water as water vapour.

Real World

Plants such as eucalyptus, lemon and tulsi produce waste in the form of essential oils. These essential oils are very useful to human beings due to their medicinal properties.

Living Things have a Lifespan

All living things take birth, grow into adults, become old and finally die. The time of an organism from its birth to death is called **lifespan** and this entire process is called the **life cycle** of an organism.



Fig. 7.10 Living things have a definite lifespan

Differences between Living Things and Non-living things

All living things show some common characteristics. Non-living things do not show any of these characteristics. Table 7.1 lists some differences between living and non-living things.

Table 7.1 Differences between living and non-living things

S. No.	Characteristic	Living things	Non-living things
1.	Structural organization	Made up of cells	Not made up of cells
2.	Need for food	Need food to stay alive	Do not need food
3.	Growth	Grow	Do not grow
4.	Respiration	Respire	Do not respire
5.	Movement	Move on their own	Do not move on their own
6.	Response to stimuli	Respond to stimuli	Do not respond to stimuli
7.	Excretion	Excrete and get rid of wastes	Do not excrete
8.	Reproduction	Reproduce new offspring	Do not reproduce new offspring
9.	Birth and death	Take birth, grow and finally die	Do not take birth and die

Knowledge Check



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

1. A group of cells forms an organ.
2. Plants can be called consumers as they consume the nutrients from the soil.
3. Growth is reversible.
4. Both plants and animals respire.
5. Every living organism responds to stimuli.

HABITAT

The natural place where an organism lives and reproduces is called its **habitat**. The habitat provides food, air, water and shelter to the organisms. Different animals and plants live in the same habitat.

Plants and animals that live on land are said to be in **terrestrial habitat**. Deserts, forests, grasslands and mountains are a few terrestrial habitats. Plants and animals living in water are said to be in **aquatic habitat**. Ponds, lakes, rivers, seas and oceans are a few aquatic habitats.

Components of a Habitat

A habitat has two components—biotic and abiotic.

*Living things such as plants and animals are called **biotic components**.*

*Non-living things such as air, water, soil and sunlight are called **abiotic components**.*

Biotic components

Plants, animals, scavengers and decomposers make up the biotic component of a habitat.

Plants: Plants are called **producers** as they make their own food by a process called **photosynthesis**.

Leaves of most plants contain a green pigment, chlorophyll. Chlorophyll enables plants to make their own food using sunlight, water and carbon dioxide (Fig. 7.11).

*The process by which plants make their own food using carbon dioxide and water in the presence of sunlight and chlorophyll is called **photosynthesis**.*

Animals: As studied in Chapter 1, animals feed on plants or other animals to obtain energy. Based on the food habits, animals can be classified as—herbivores, carnivores and omnivores.

Animals that feed only on plants are called **herbivores**. Cow, horse and deer are a few examples of herbivores.

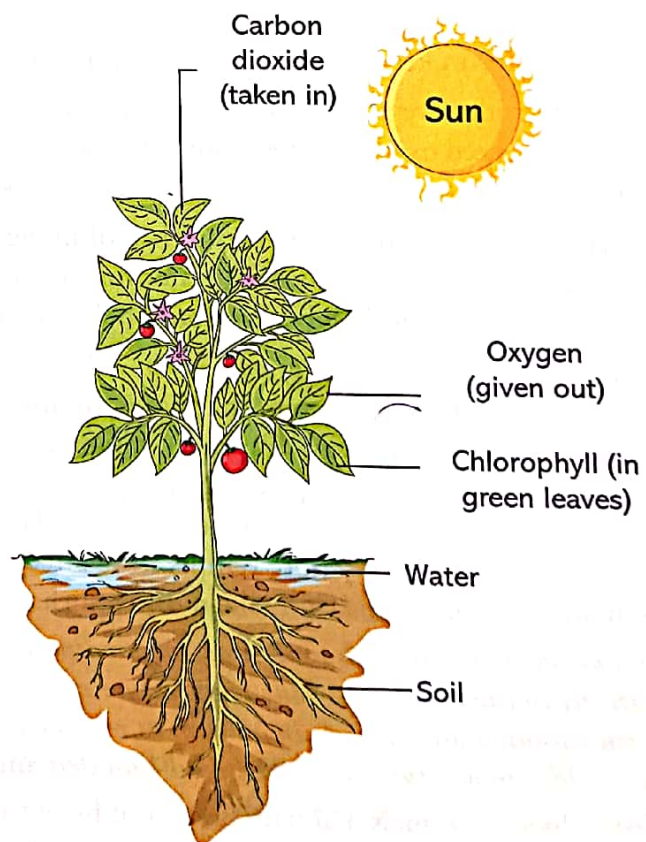


Fig. 7.11 Photosynthesis in a plant