Weather, Air and Water Notes

INTRODUCTION

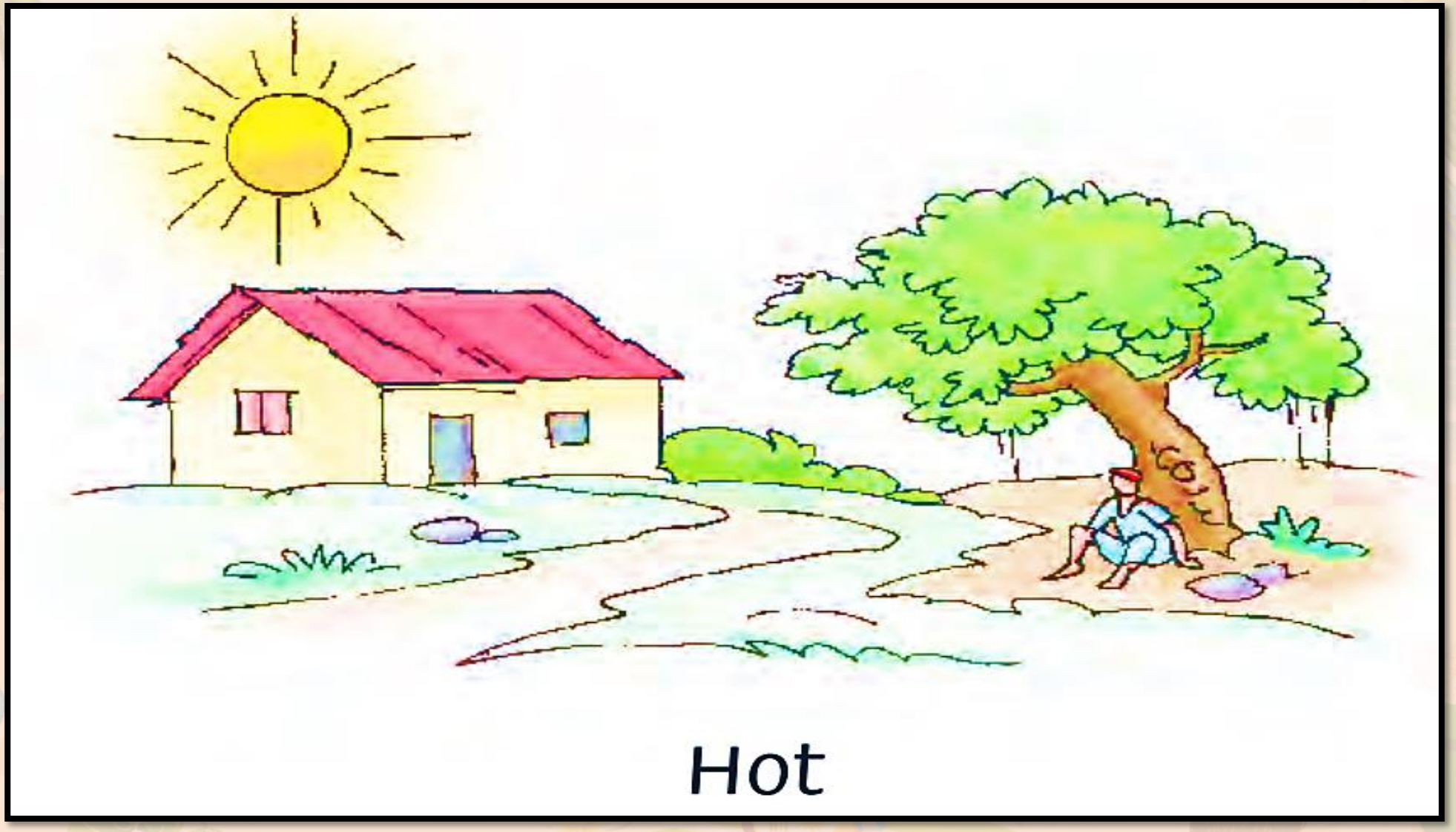
WEATHER

The state of the atmosphere at a place and time as regards heat, cloudiness, wind, rain, etc. is called weather. Weather changes very quickly. It may be bright and sunny in the morning, but may suddenly become cloudy. Weather

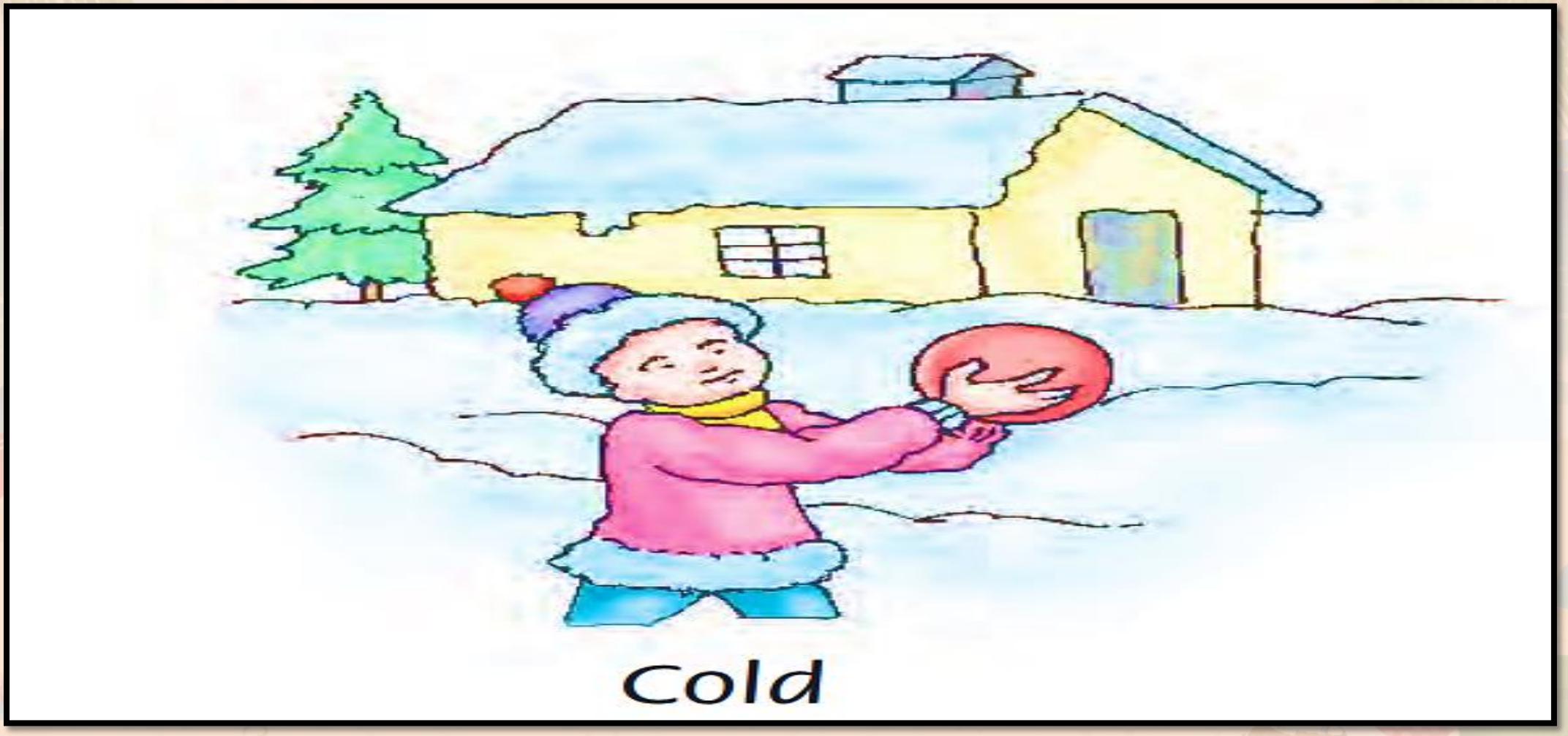
changes from day to day and sometimes from hour to hour. We can feel and see when the weather is windy, rainy, foggy, sunny or cloudy. Weather also changes during the year. It is hot during the summer season. It rains a lot during the rainy season. During the winters, it remains cold.

Some weather phenomenon

- When the sun shines overhead, sunlight falls directly on the earth and it gets very hot. But, if the sun is low down at the horizon, the sun’s rays are slanting,

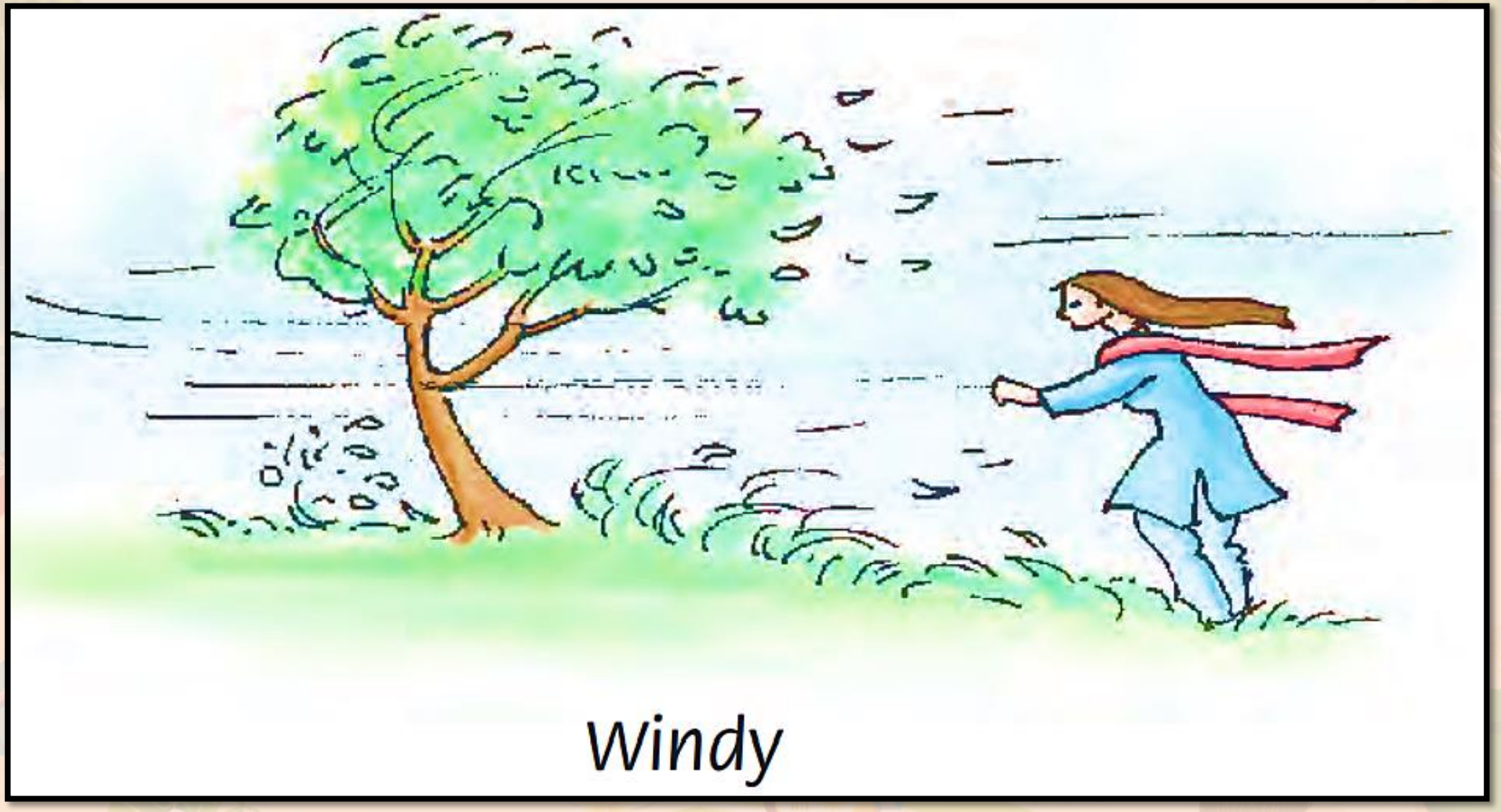


Hot


Cold

they do not heat up the earth as much. This is the reason that it is hot during the summer and cold in the winter.

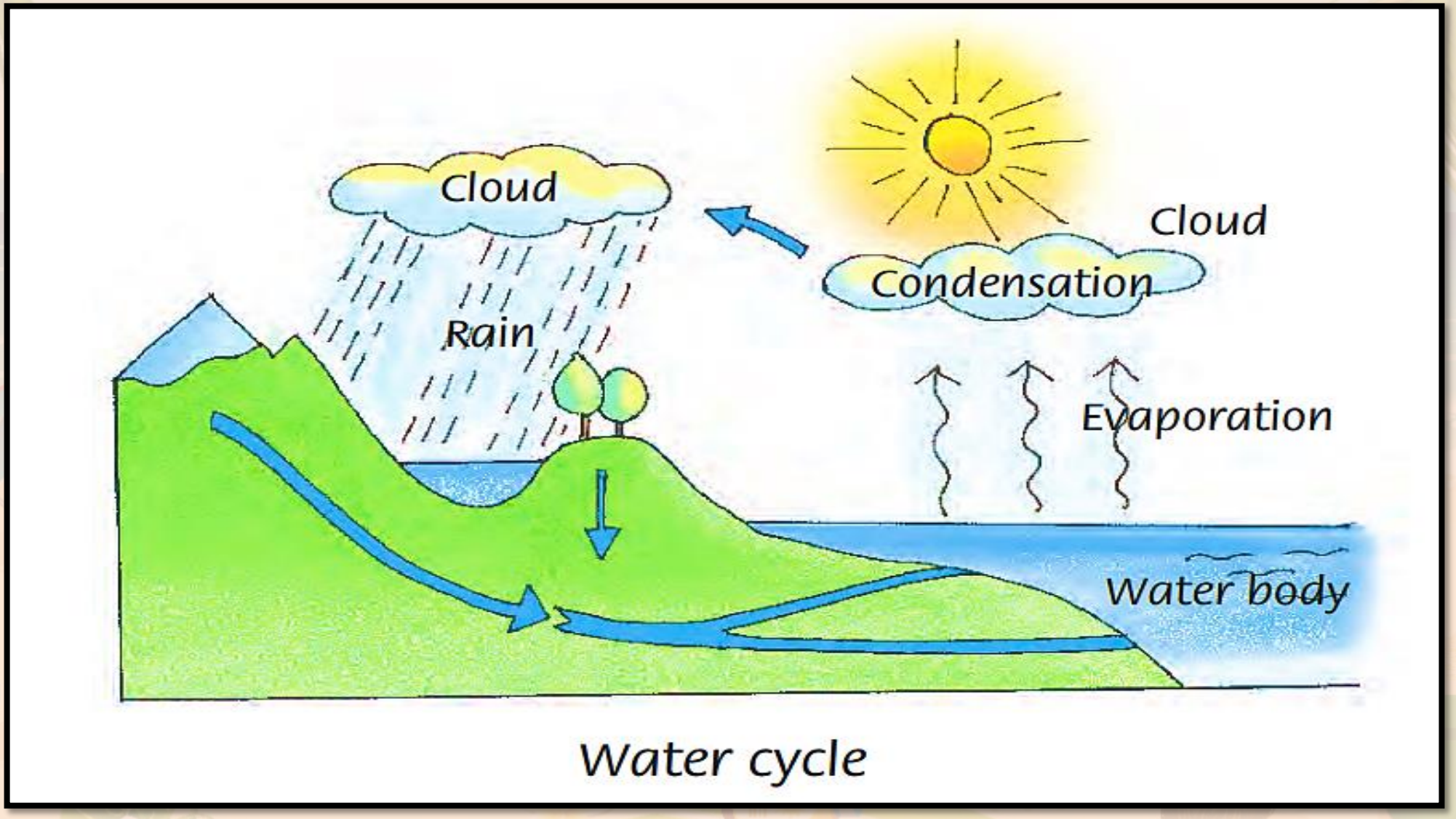
- **When the sun shines brightly, it heats the earth. The air above the earth also becomes hot. Warm air is lighter than the cold air, so it rises up and cool air rushes to take its place. This causes the wind to blow.**



Windy

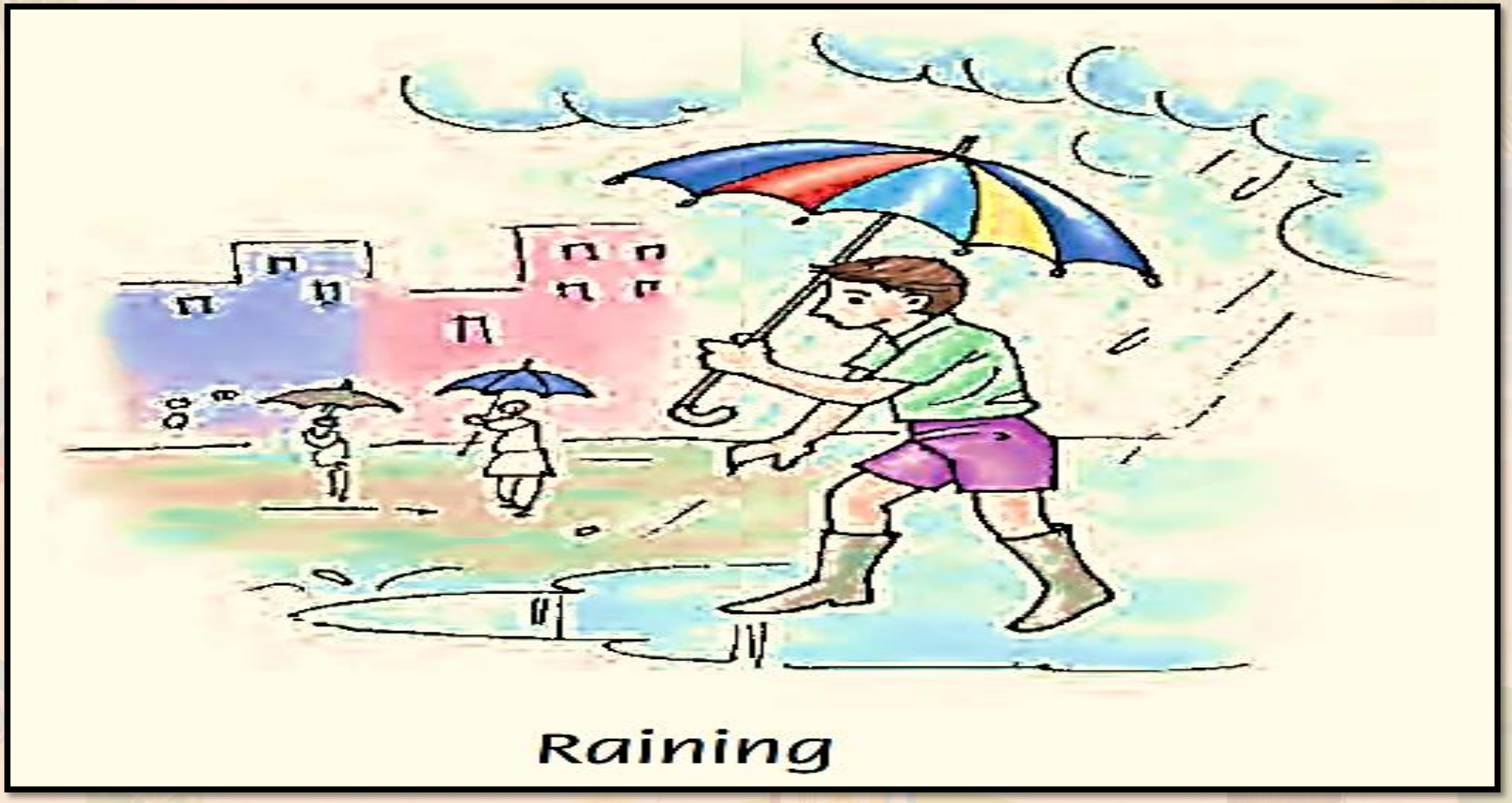
- **Water in lakes, rivers and oceans evaporates as the sun shines. The air, along with the water vapour, gets warmer and rises up. As it rises higher up in the sky, it cools down. The water vapour condenses to form tiny drops of water. Millions and millions of these droplets together form clouds.**

When the clouds pass through cold air, they get further cooled. The water drops become bigger and heavier. When they become very heavy, they fall on the earth as rain.



Water cycle

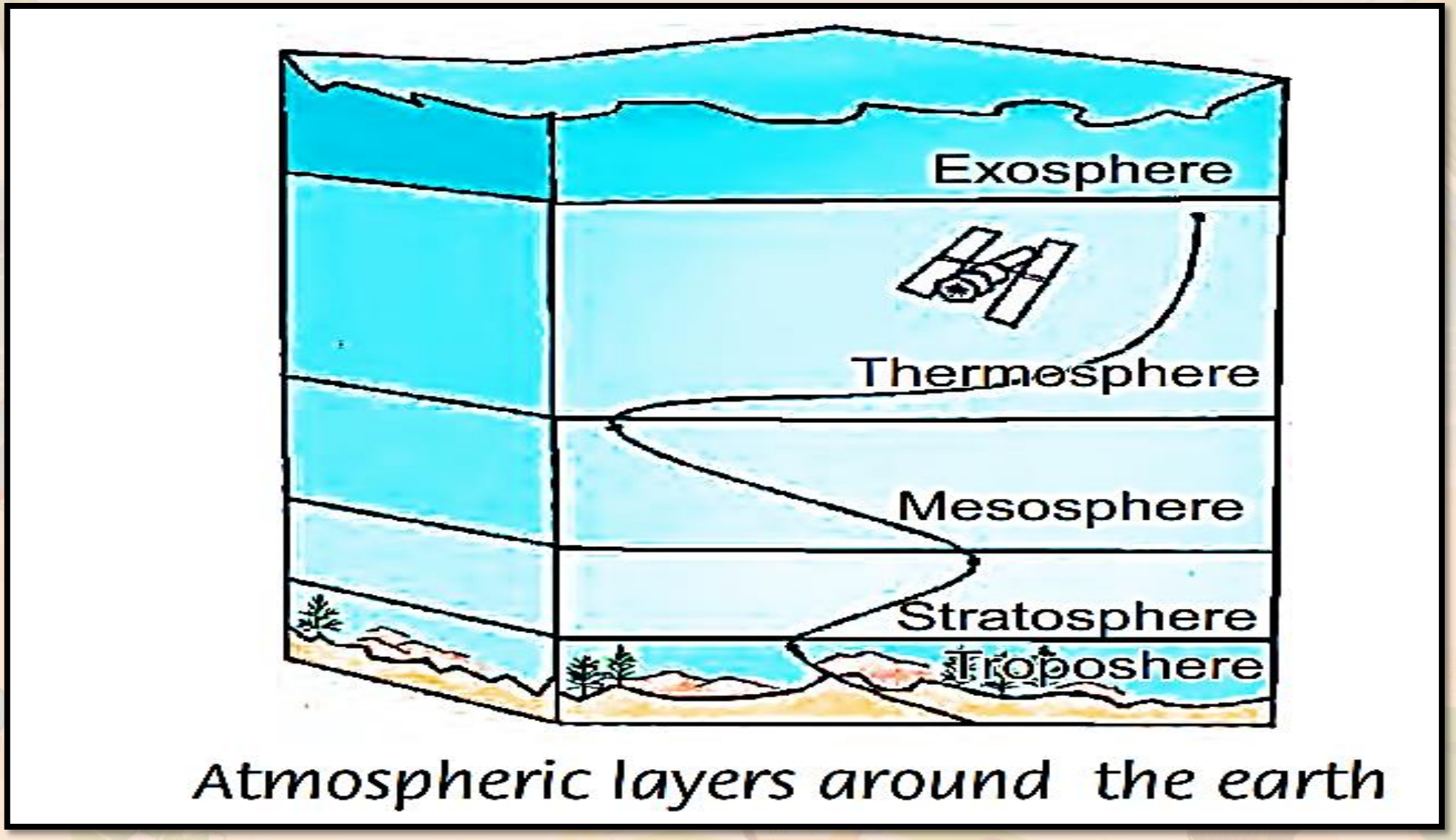
Most of the water that falls on the earth goes back into the lakes, river sand oceans. It again evaporates and again comes down as rain. This goes on repeatedly. This repeated change of water to water vapour and then back to water, is called the **water cycle**.



Raining

AIR

There is a thick layer of air around the earth. The air contains various gases, dust particles, water vapour, smoke and germs. Moving air is called **Wind** .



Atmospheric layers around the earth

Sea Breeze and Land Breeze

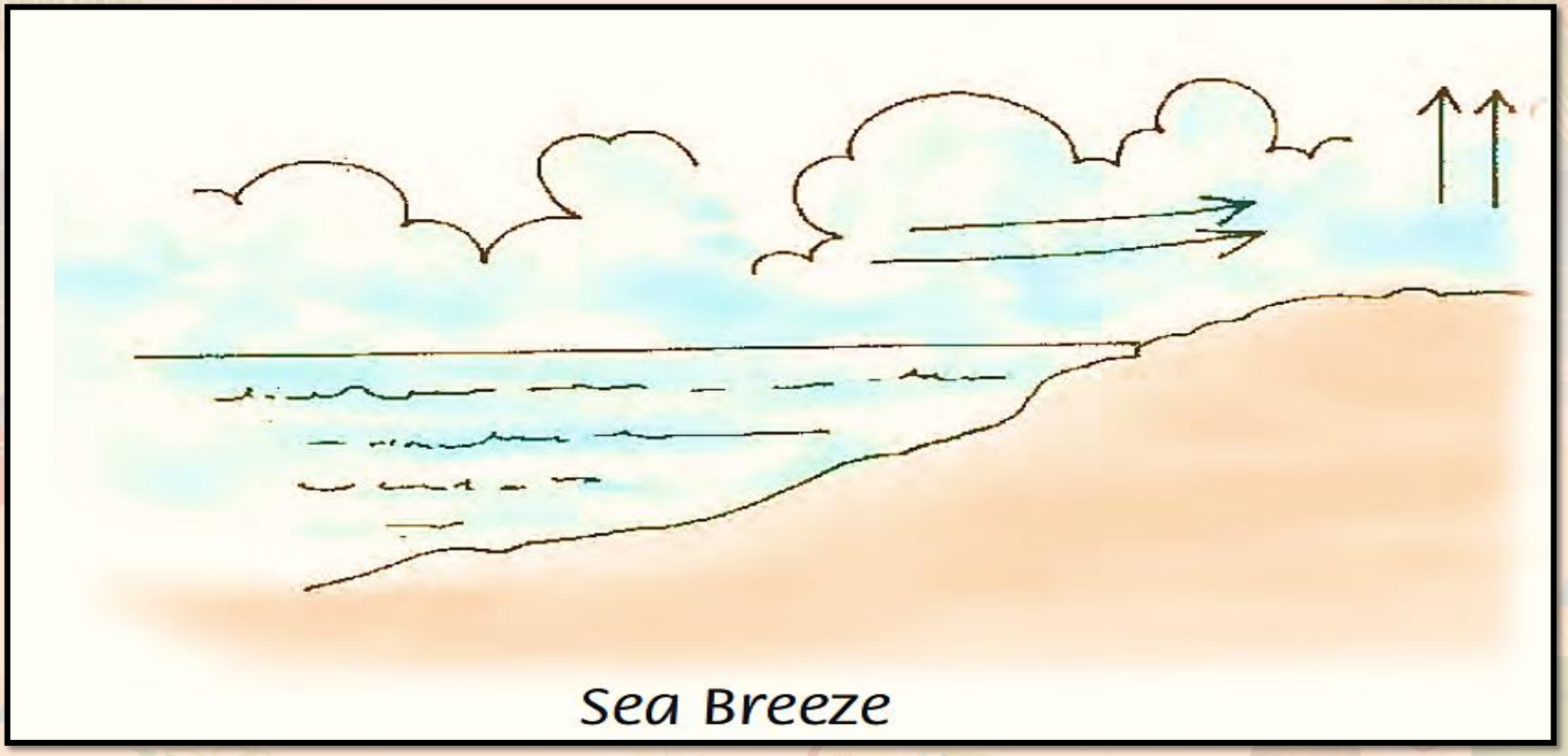
Sea Breeze

During the day, land gets heated quickly. It heats up the air above it. As the hot air is lighter, it rises up in the sky. But the water in the sea does

INTERESTING FACTS

- Air is a physical substance which has weight and is made of molecules which are constantly moving.

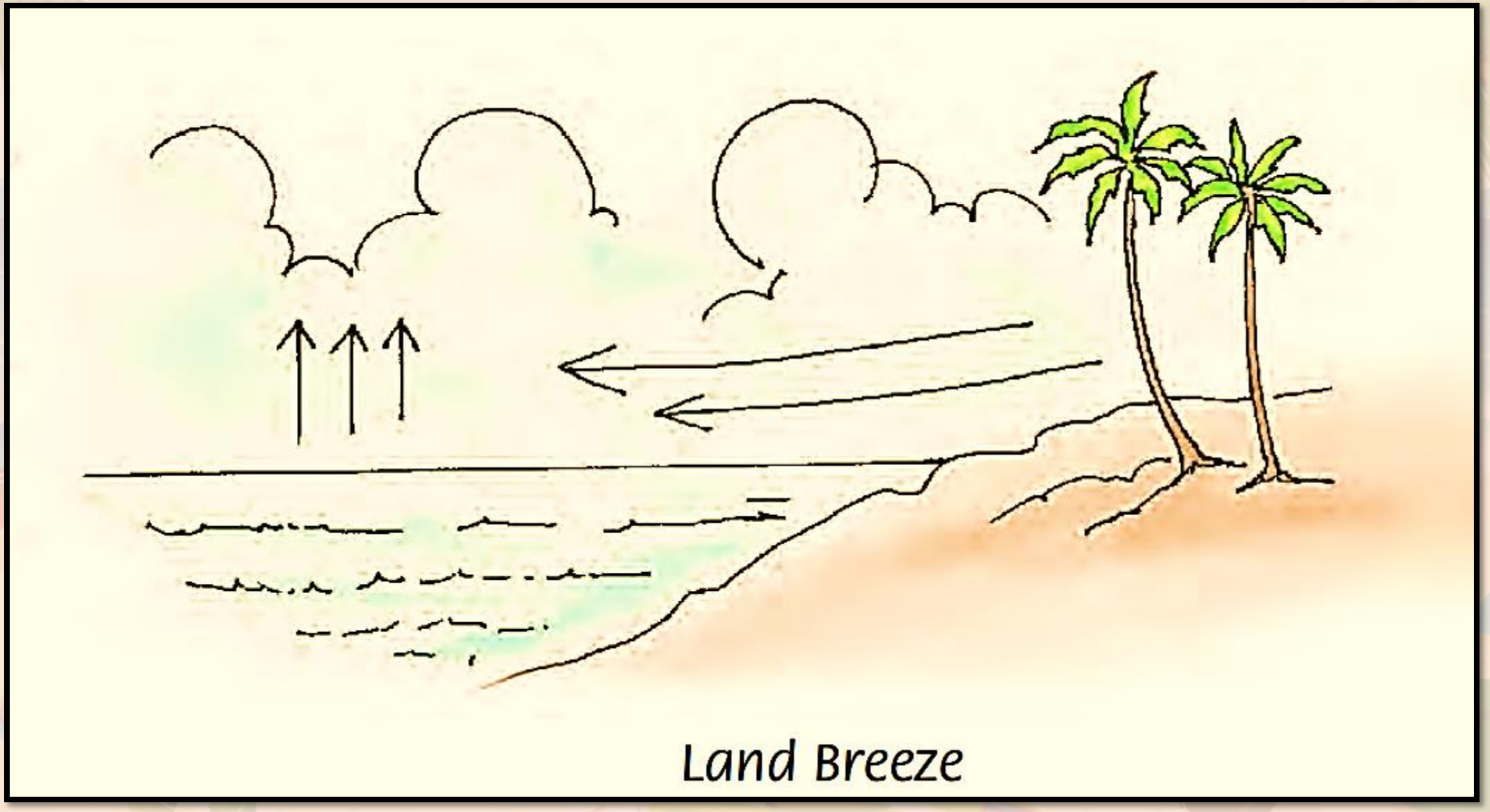
not get heated quickly. So, the air above it is cold. Cold air from the sea rushes to occupy the space of the warm air. This cool breeze blowing towards the land from the sea during the day is called the **Sea Breeze**.



Sea Breeze

Land Breeze

During the night, land cools down quickly. The air above it also cools down. But the water in the sea is warm. Water takes time to cool down as well as to get warm. The air above the sea water is also warm

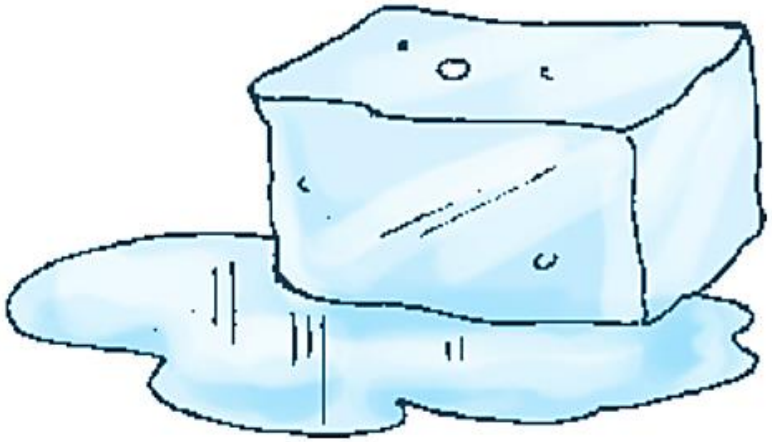


Land Breeze

so it rises up in the sky. Cold air from the land rushes to occupy the place of the warm air. So, a cold breeze blows from the land to the sea during night. This is called the **Land Breeze**.

WATER

About three-fourth of the earth is covered with water . Most of our body weight is due to water. Water is also found under the ground and in the air. Here are some other forms of water present in our environment:



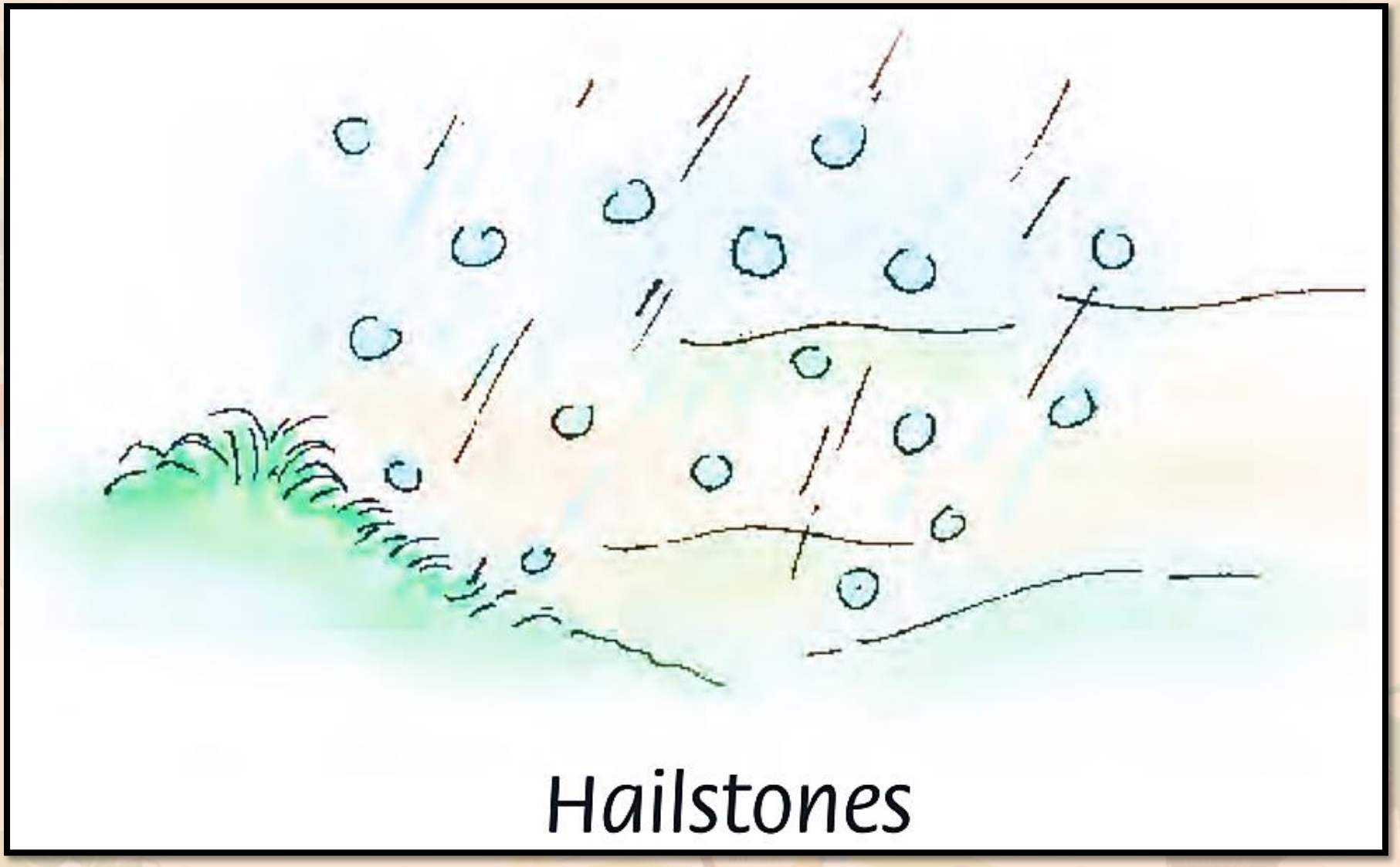
Solid

Liquid

Gaseous form of water

Hailstones

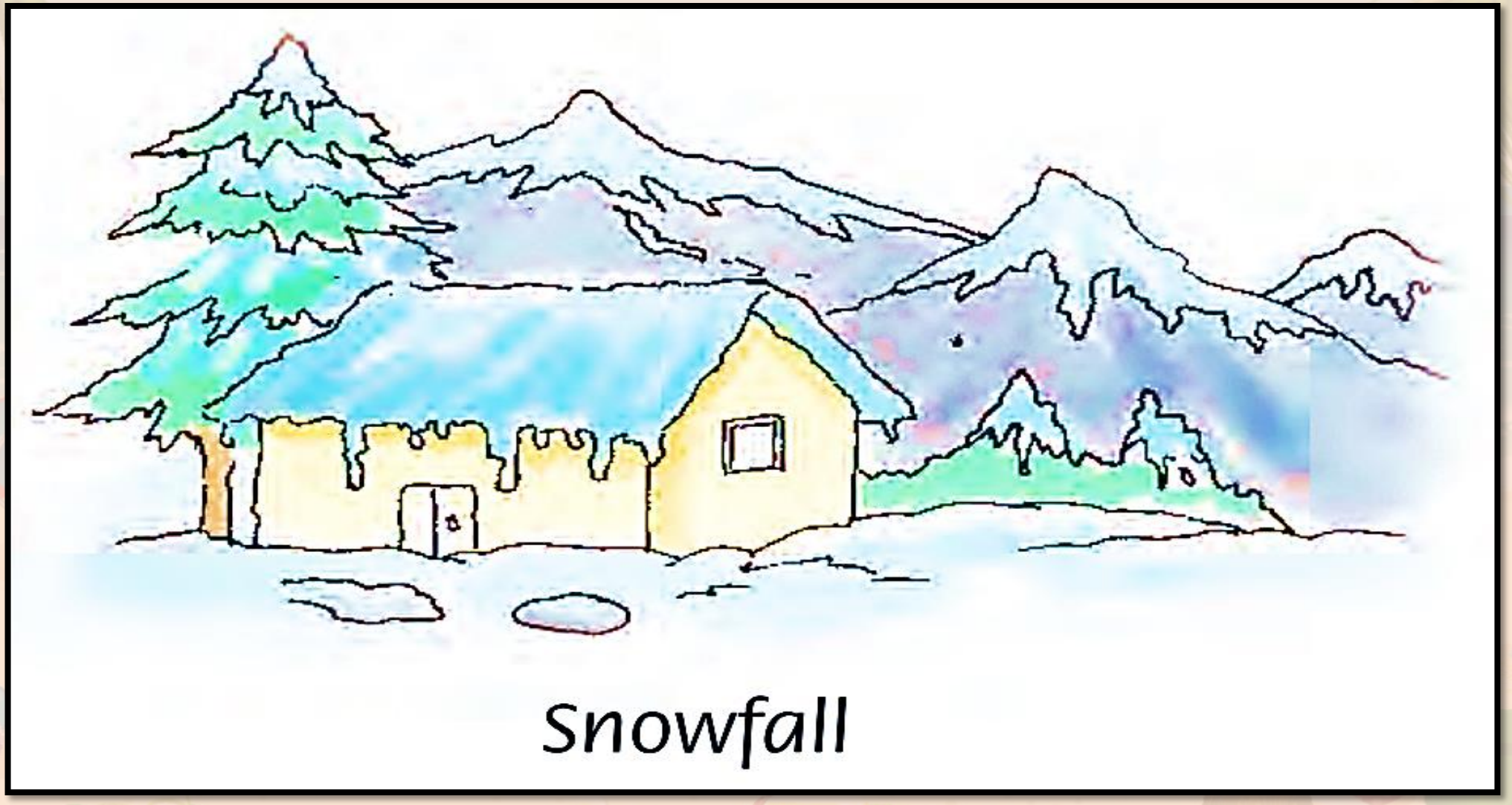
Sometimes, on their way down, raindrops pass through very cold air. They freeze to form small balls of ice, which fall on the ground. These balls of ice are known as **Hailstones**.



Hailstones

Snow

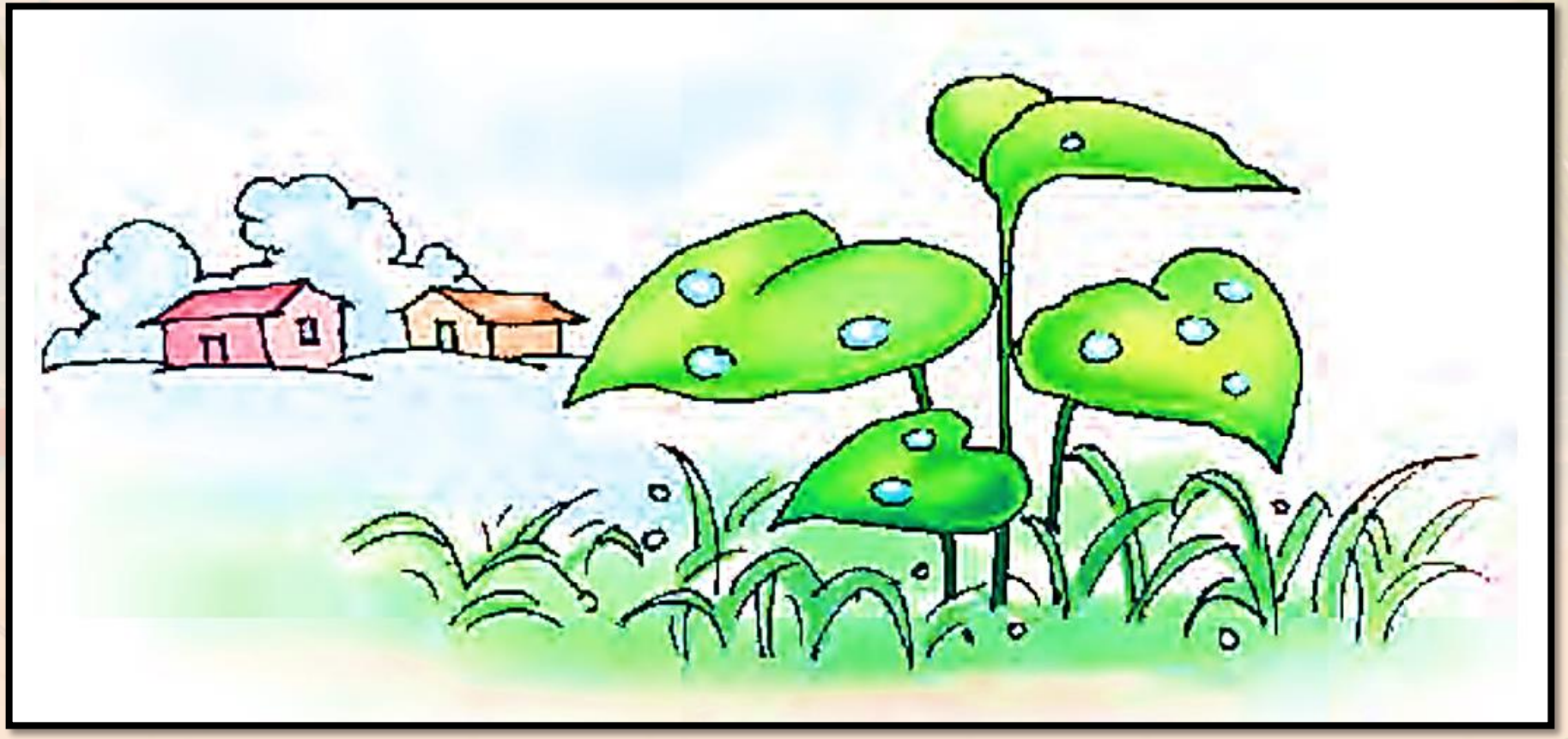
If the clouds themselves are very cold, the water vapour condenses to form ice instead of water. The ice so formed is in the form of soft snowflakes. They are needle or star shaped.



Snowfall

Dew

During the night, when it is cold in winter season, things like grass and leaves also get cold. Thus, the water vapour present in the air condenses on them in the form of tiny water droplets called **dew**.



Dew

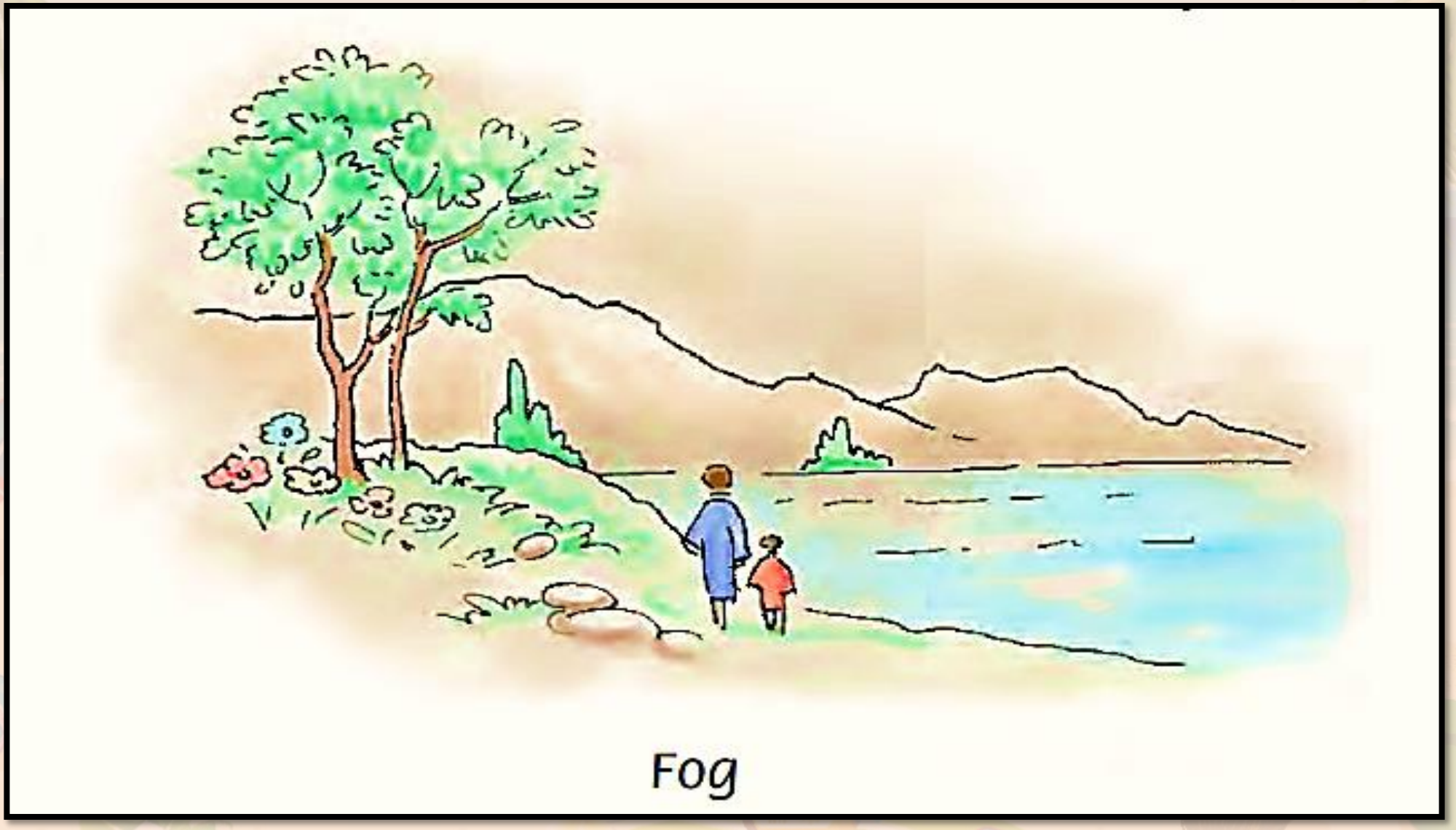
Frost

In some extremely cold places the ground temperature falls below 0° Celsius. This causes the water vapour, present in the air, to freeze and deposit itself on grass or leaves in the form of white powdery mass called **frost**.

Frost on grass

Mist and Fog

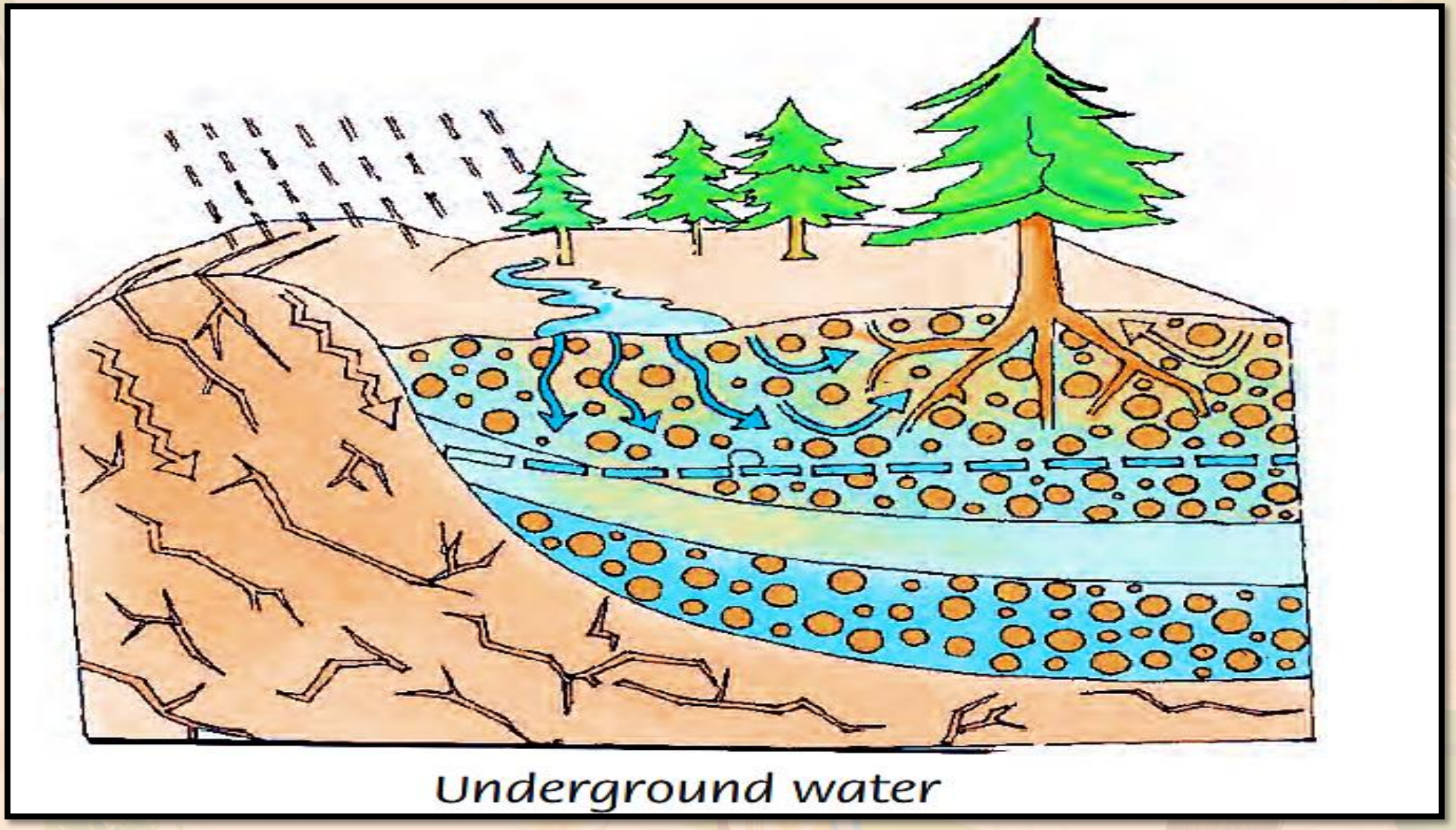
In cold weather, water vapour condenses into fine droplets and settle down on dust particles present in the air. These condensed droplets hang in the air and make it difficult for us to see clearly. This is called **mist**. When the mist is very thick, it is called **fog**.



Fog

Underground Water

When it rains, some of the water seeps into the ground. This water passes through the soil and the porous rock below it. It collects over the hard rocks that do not allow it to seep through them. This water is called **underground water**. The level of water at a place is called watertable.



Underground water

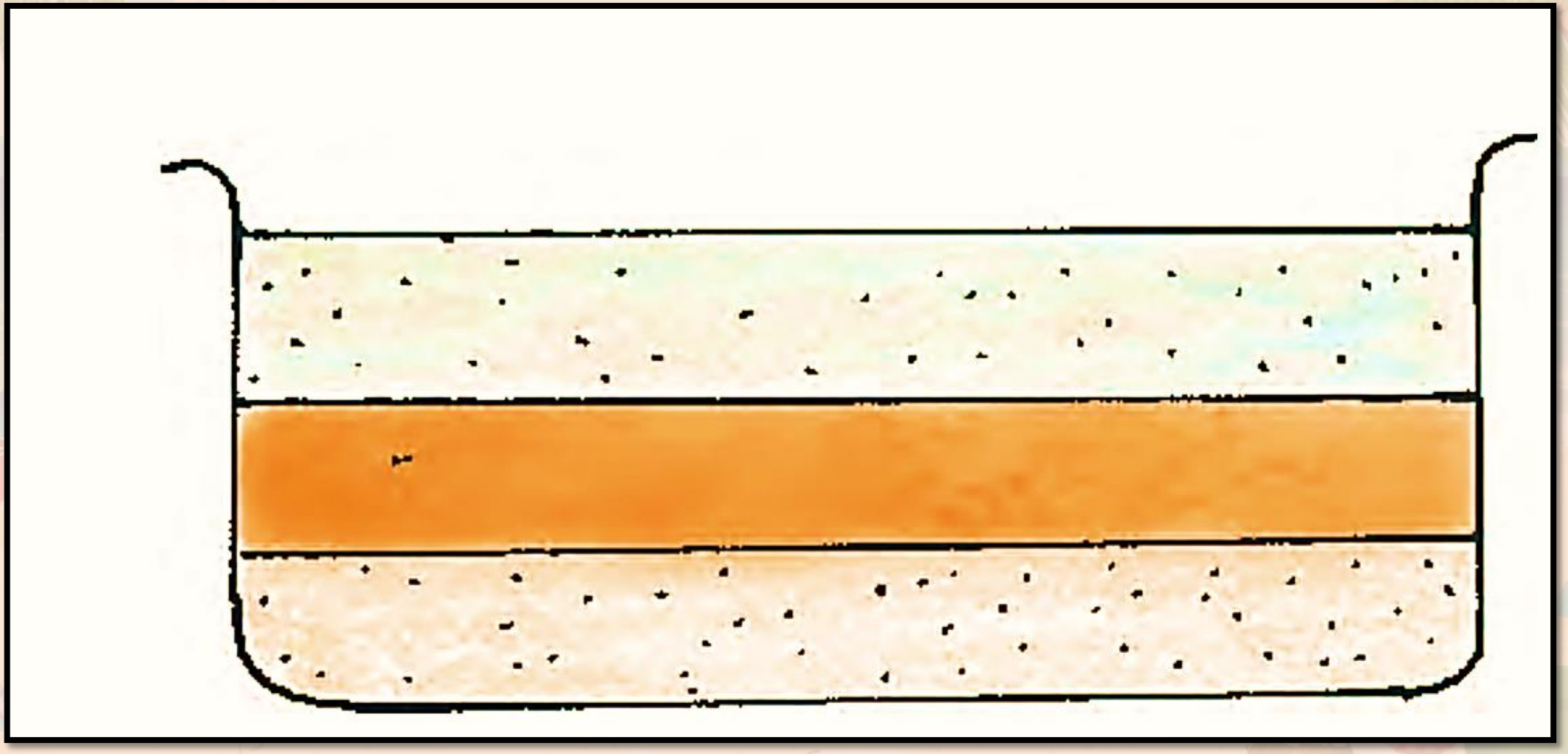
Check Your Knowledge

Fill in the blanks.

1. About _____ of the earth is covered with water.
2. The _____ rises up in the sky.
3. The condensed droplets hanging in the air is called _____.

CLEAN DRINKING WATER

The most important use of water is for drinking. It is very necessary to ensure that the water is clean and pure for drinking without impurities. Impurities in water can be of two types. Those that are dissolved and those that are not.



Flowing water has many impurities such as mud, germs, minerals, sand etc. These impurities have to be removed before it is used for drinking.

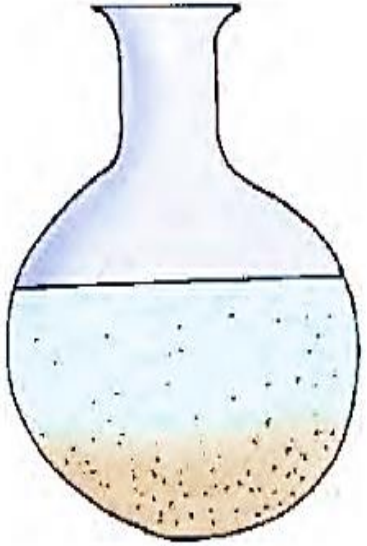
Purification of Water

There are some simple ways of purification of water.

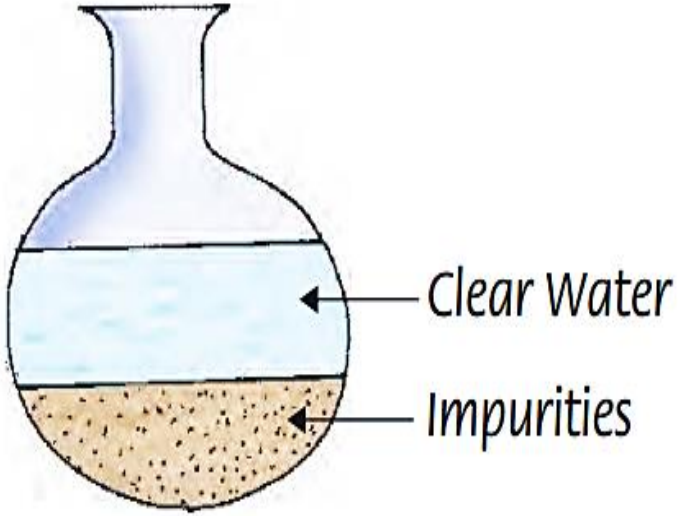
Sedimentation

Take some muddy water in a beaker. Leave it undisturbed for sometime. After sometime, the heavy particles like mud, sand will settle down at the bottom, leaving clear water on top. The process in which the impurities settle down at the bottom is called **Sedimentation**.

Muddy Water



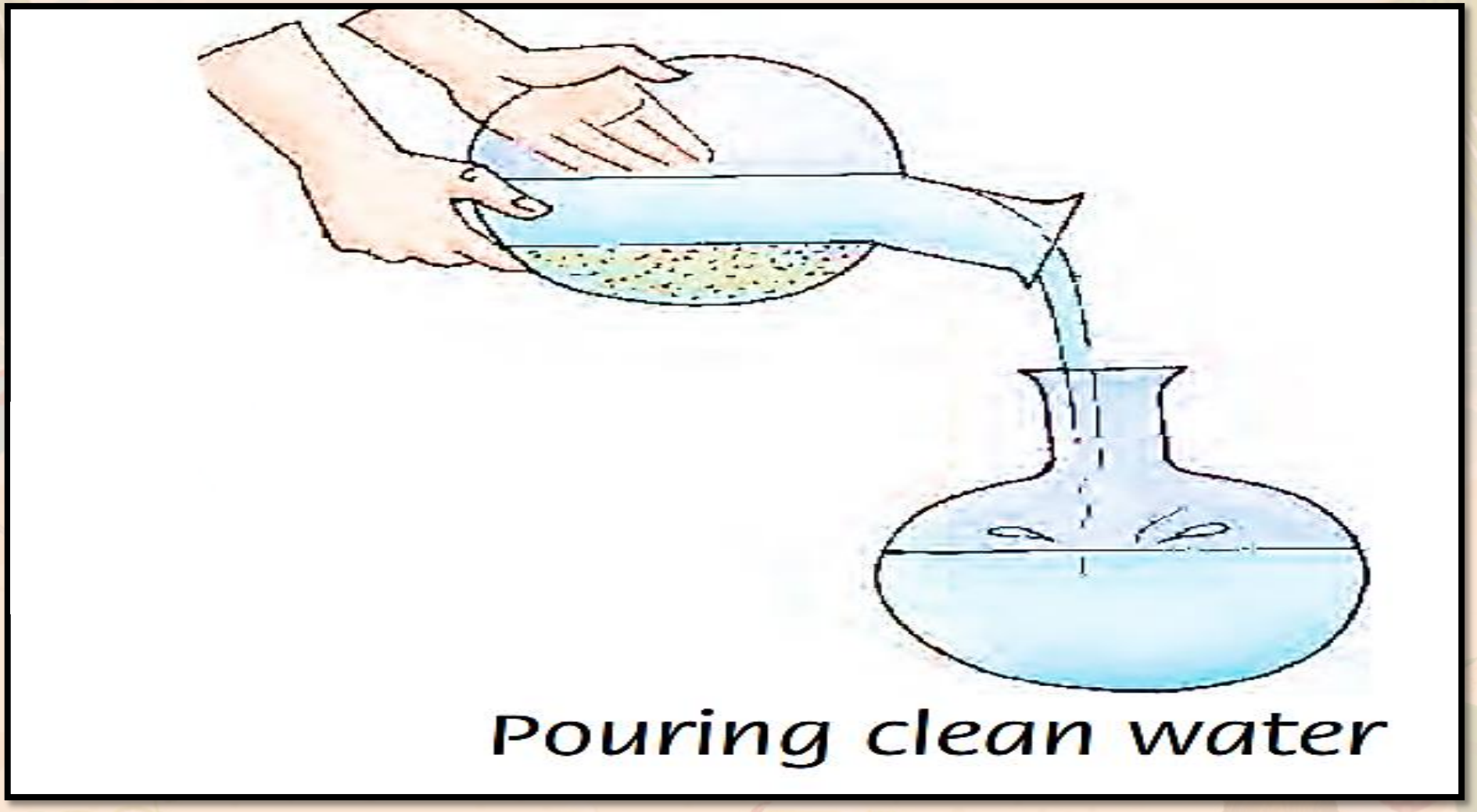
Heavy particles settling at bottom



Process of sedimentation

Decantation

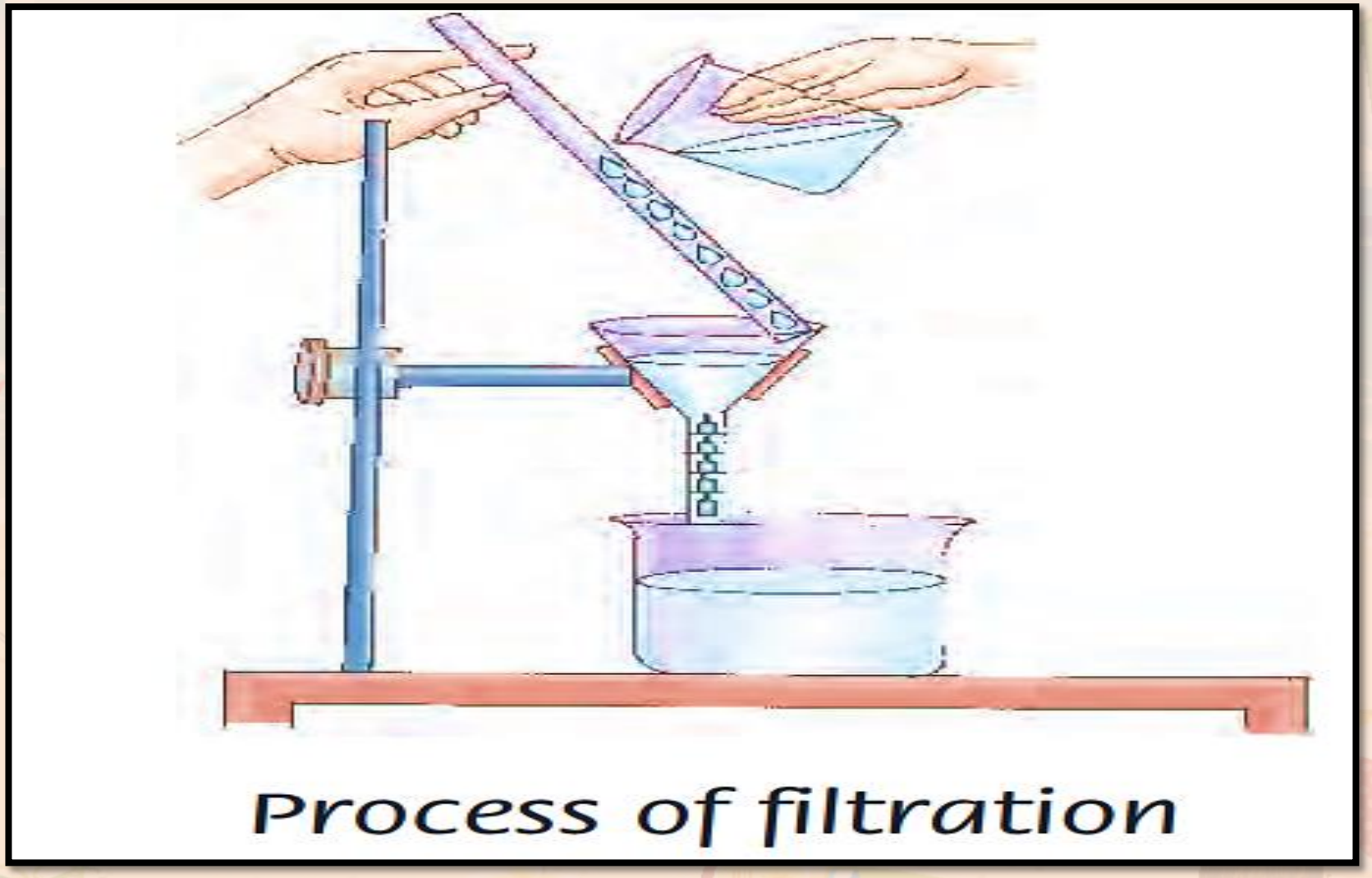
Pour off the clear water in another beaker. This method of collection of clear water is called Decantation. Sedimentation and decantation are done together.



Pouring clean water

Filtration

In this process, the impurities are removed by filtering water through filter paper. This process of removing impurities is called **Filtration**.



Process of filtration

Fact File

- Sun is the ultimate source of energy.
- Bleaching powder and potassium permanganate are used to purify drinking water.

Things to Remember

- Heat of the sun causes change in weather.
- Heat of the sun causes wind to blow. It causes land and sea breeze.
- A continuous cycle of evaporation and condensation of water causes rain.
- Condensation of water causes dew, frost, hail or fog in the air.
- Water is cleaned and made fit for drinking, at the water treatment plants

Method :

Fill the bottle with hot water. You will see steam coming out. Now pour out half of the water from the bottle. Cover the mouth of the bottle with a plate. Place ice cubes on the plate. Place the chart behind it to give an impression of clouds. Observe the bottom of the plate carefully.

The hot air full of water vapour, rises up and the ice cubes cool it down. The water vapour condenses to form water droplets.