Unit 5

8

Air and Water

My Learning PLAN

- Know about air and water
- Understand the water cycle

WARM-UP

1. Look at these pictures. Circle the objects which need air to grow.

AIR

Air is all around us. We cannot see it, but we can feel it. You must have seen leaves on the trees rustling or felt the cool breeze. That proves the presence of air. We use air for lots of things including breathing.

The layer of air surrounding the earth is called the **atmosphere**. Above the atmosphere is vast empty space. There is no air in space.

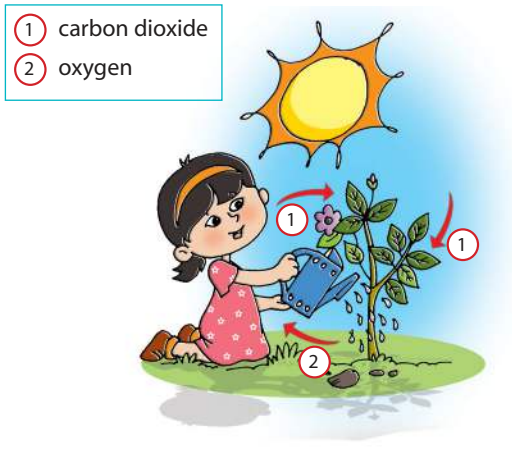
What Air Contains

mountaineer

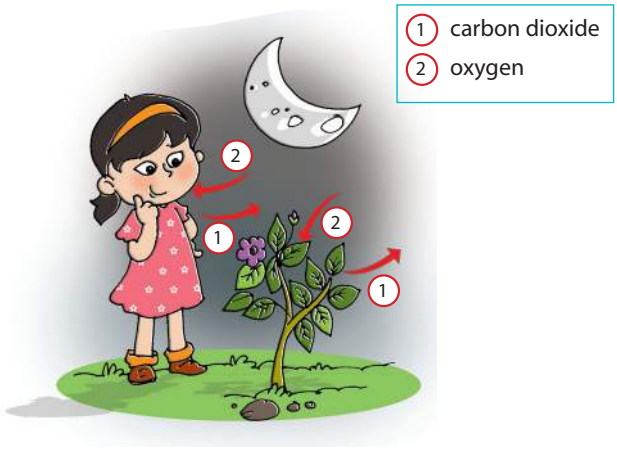
Air is made up of many gases. It has **oxygen**, **carbon dioxide**, nitrogen and water vapour.

Animals need oxygen while planets need both oxygen and carbon dioxide. Have you seen pictures of mountaineers with big cylinders on their back? Do you know what these cylinders contain? They contain oxygen, which is needed for breathing. While climbing mountains, they need to carry oxygen because air becomes less dense as they climb up.

Plants make their own food. Plants use carbon dioxide, water, sunlight and chlorophyll to make food. They give out oxygen when they prepare their own food during the day. All living beings breathe in oxygen and give out carbon dioxide both during the day and night.



during the day time



during the night time

Air also contains water vapour. Do you feel hot and sticky on a rainy day? This is because the amount of water vapour in the air is very high during that time.

Have you seen an object at home or in school that has not been wiped for many days? There is a layer of dust on it. Where did the dust come from? It came from the air. Air contains a lot of dust particles and germs too.

smoke from chimneys make people sick

Air also has a lot of harmful gases. Have you seen chimneys giving out smoke? Smoke makes the air dirty. It causes pollution and makes people sick.

WATER

Water is essential for the survival of all living beings. Plants, animals and human beings need water.

List any three uses of water.

.....

.....

.....

Where does water come from? Water falls from the sky as rain and fill up oceans, seas, lakes and ponds. It is also found deep under the ground.

States of Water

Water has no fixed shape. It takes the shape of the vessel in which it is kept. For example, water kept in a bucket takes the shape of that bucket. Water can exist in three states—as a solid, as liquid and as gas.

What happens when you keep a bottle of water in the freezer? .....

What happens when you heat water? It changes into vapour. You can see steam coming out of a vessel in which water is boiling. Water vapour is a gas. When water vapour cools, it again forms water.

▲ *water vapour*

So **ice**, **water** and **water vapour** are the three states of water.

Water Cycle

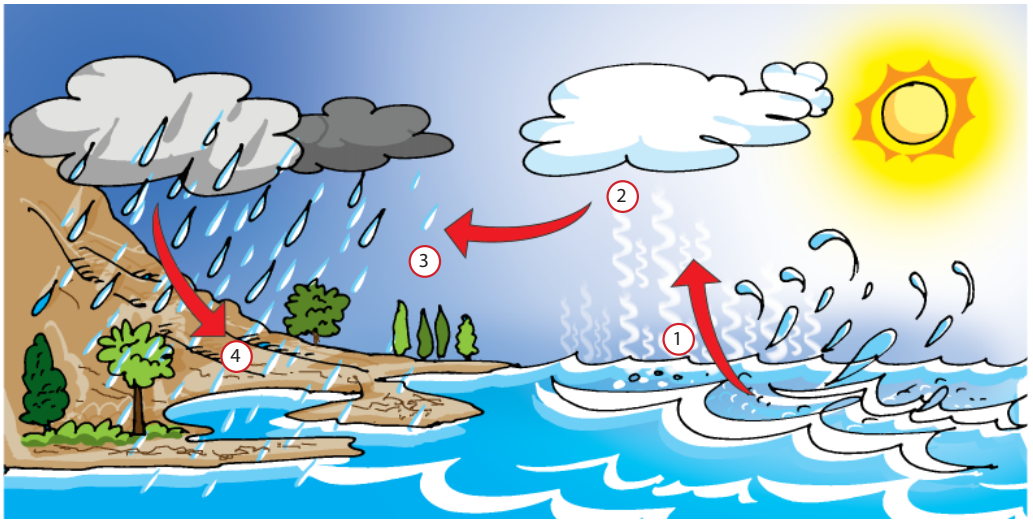
In nature also, the form of water keeps changing. The rays of the sun fall on seas, rivers and ponds. This makes the water warm. It changes into water vapour and rises up. This is called **evaporation**. In the atmosphere, the water vapours get mixed with the cool air and form tiny water droplets. This called **condensation**. These water droplets form **clouds**.

Info Bits

About two-thirds of an adult's body is made up of water.

When more water goes into the clouds, they become heavy and cannot hold anymore water vapour. The water then falls as **rain**.

This change of water from one state to another is a continuous process and never stops. This process is called the **water cycle**.



1. Water gets heated by the sun and rises up as water vapour.
2. Water vapour forms clouds.
3. Water droplets from clouds fall as rain.
4. Rain water fills rivers, ponds, lakes etc.

▲ *water cycle*

What will happen to the water cycle if water bodies, such as rivers, dry up?

.....

atmosphere: the layer of air surrounding the earth

oxygen: the gas we breathe in

carbon dioxide: the gas we breathe out

evaporation: the process by which water changes into water vapour

condensation: the process by which water vapour changes into water

water cycle: water gets heated and goes up as vapour. It then cools down and falls to earth as rain. This continuous process is called water cycle.

- We are surrounded by air. We cannot see it but we can feel it.
- Air contains gases, dust, smoke and water vapour.
- There are three forms of water—ice, water and water vapour.
- The water vapour in the atmosphere mix with cool air and form water droplets. These water droplets form clouds.
- When more water goes into the clouds, they become heavy. It rains when the clouds cannot hold anymore water vapour.

REVIEW ZONE

A Tick (✓) the correct answer.

1. Which of the following is not a state of water?

   a. ice b. oxygen c. water d. water vapour

2. Which of following is not required by a plant for making its food?

   a. sunlight b. water c. oxygen d. carbon dioxide

3. Air contains the following gases.

   a. oxygen b. carbon dioxide c. nitrogen d. all of these

B Choose the most suitable word from the following to fill in the blanks.

smoke	clouds	nitrogen	space	oxygen	atmosphere

1. The layer of air surrounding the earth is called .....
2. The place beyond the atmosphere where there is no air is known as .....
3. ..... is the gas that we breathe in.
4. Water droplets join together to form .....
5. ..... coming out of chimneys make people sick.

C State whether the following statements are TRUE or FALSE.

1. Water is not essential for the survival of living things. .....
2. Water has no fixed shape. .....
3. Smoke makes the air clean. .....
4. Water exists in four states. .....
5. Air contains a lot of germs and dust particles. .....

D Give reasons to explain these statements.

1. While climbing a mountain, mountaineers carry oxygen cylinders.
2. Our body feels sticky during the rainy season.
3. The water in the clouds falls down as rain.
4. A layer of dust gets formed on the furniture at home.

E **Write 'A' next to the activity that requires air and 'W' next to the activity that requires water.**

paragliding _____

scuba diving _____

rafting _____

swimming _____

parasailing _____

skiing _____

F **Answer the following questions.**

1. What happens to water when you heat it?
2. Why do plants take in oxygen?
3. How can you say that water cycle is a continuous process?
4. Draw the water cycle in the way you have understood.

HOTS CORNER

1. Why do clothes take longer to dry on a rainy day?
2. Vivek is a scuba diver. He carries a cylinder with him whenever he goes for diving. What does the cylinder contain?
3. Why do you have an exhaust fan in your house?

ENHANCE YOUR LIFE SKILLS

1. Water Sense

All living things use water. It is an important part of our lives. We should use it wisely. Take help from your elders at your home and answer the following:

How much water do you use for

a. brushing your teeth? ..... mugs of water.

b. washing your car? ..... buckets of water.

c. cleaning the utensils? ..... buckets of water.

d. taking a bath? ..... buckets of water.

e. run the washing machine? ..... buckets of water.

How can you save water? Make groups of five to six students each. Each group can design a poster which can be put up in the school corridors for everyone to see.

You can take help from the elders in your home.

2. Air Power

How will you do the following actions?

a. You have to go to your friend's house on the bicycle. But there is no air in the bicycle tyres. What object will you use to fill in the air in the tyres?

b. It is your best friend's birthday party. He wants you to help him in blowing up the balloons. What will you use to blow up the balloons?

ONLY A CLICK AWAY

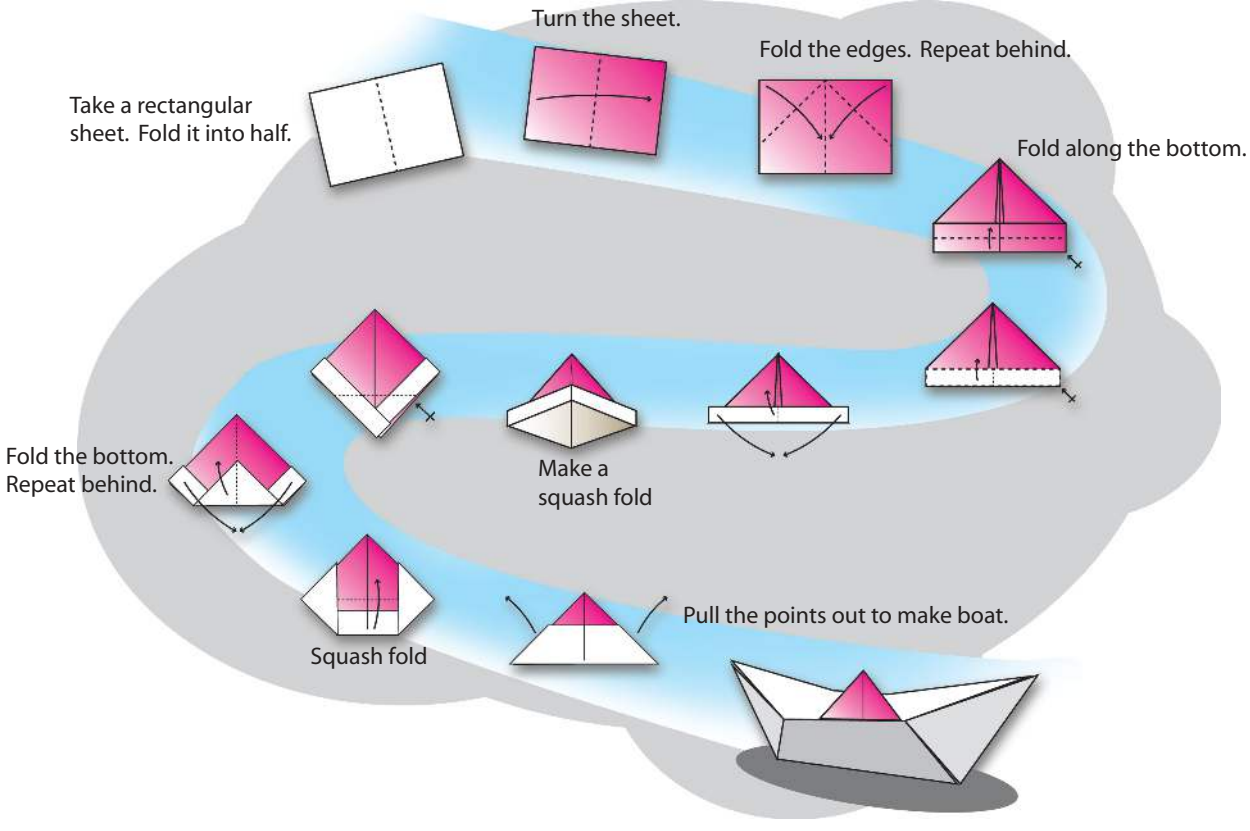
1. If you wish to play some fun games, do some colouring or take a quiz on water on the Internet, go to the following link.

http://www.nwwater.com/index.cfm/nodeID/9CD4EE1F-54D8-4B56-8659-35F1EE4A0AC7/fuseaction/showContent.page

ACTIVITY BAG

1. Take a handkerchief. Dip it in water. Hang it out in the sun. What happens to the handkerchief after some time? Where did the water go?

2. Moving water helps a boat sail. Let us do a paper craft and learn how to make a boat.



Teacher's Notes

- Teacher can explain the students that air is a mixture of gases.
- Teacher can demonstrate the states of matter to the students. Bring an ice cube to class and show the students how it melts into water. Boil some water and cover it with a plate. After some time show them the droplets of condensed water on the plate.
- Answers to Warm-up: **1**. mouse; tree; dog.