Lesson-9: Our Life Supports

Theme 5: Why Do We Need Systems?

11 Periods (40 minutes each)

Learn Better (Main Coursebook), Stay Ahead (Workbook), Book of Holistic Teaching, Book of Project Ideas, Poster, CRM signs

Animation, Animated Activities, Concept Map, Diagram, Dictionary, eBook, Experiment, I Explain, Infographic, Quiz, Slideshow, Toys from Trash, Test Generator

Affirming better: Together, we can overcome any challenge.

Curricular Goals and Objectives (NCF)

To enable the students:

- to understand the importance, composition and properties of air and water.
- to explore methods to purify water and reduce its consumption.
- to recognise air and water as essential for life and sustainability.
- to document observations and experiments on air properties.
- to develop awareness of SDG-6 and take steps towards clean water and sanitation.

Methodology

Period 1

SHOULD DO — 5 MIN.

Teacher: Good morning, students. How are you all today?

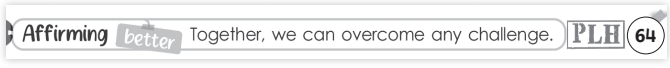
Teacher: Great. Before we dive into our lesson, let us take a moment to relax and focus our minds with a short meditation. Ready?

Teacher: Sit comfortably in your chair, with your back straight and feet flat on the ground. Close your eyes gently and take a deep breath through your nose. Hold it for a moment, then slowly breathe out through your mouth.

Let us do these three more times. Breathe in... and breathe out. As you breathe, imagine your mind becoming clear and ready to learn.

Open your eyes and smile at your friends. Let us start our lesson with positive energy.

Affirming better



Teacher: Before we start the class, let us all affirm together, 'Together, we can overcome any challenge.' Repeat after me: 'Together, we can overcome any challenge.'

Teacher: Alright. Today, we are going to begin a new chapter 'Our Life Supports.' We use a KWL chart to help us organise our thoughts and learning. I have made a KWL format on the blackboard. Please take out your notebooks and draw the same format.

MUST DO — 5 MIN.

K	W	L

Teacher: Let us start by filling out the 'K' and 'W' columns. Take a few minutes to think and write. If you have any questions, feel free to ask.

Teacher: Before we start the chapter, we will do a quick Re-KAP, which involves revisiting our previous knowledge through creative activities using Kinaesthetic, Auditory and Pictorial methods to make our learning interactive and engaging.

Kinaesthetic

MUST DO — 10 MIN.

Teacher: Let us begin with a fun activity. Can you think of different sources of water we use daily?

Teacher: Yes. Rivers, lakes, taps and wells—there are so many. Now, take a sheet of paper and draw one source of water.

Teacher: Once you are done, swap your drawing with your partner.

Teacher: Now, take a moment to colour your partner's drawing.

(Give the students time to complete the activity.)

Teacher: Look at the drawings carefully. What source of water has your partner drawn?

Teacher: Fantastic. Everyone has done a great work. Now, let us move to the next part.

Auditory

Auditory*

Listen to your teacher carefully. Answer the questions. 64

MUST DO 10 MIN.

Teacher: Now, let us use our listening skills. Listen carefully, as I will ask questions based on what I say. I want you to pay attention to every detail. Ready?

Teacher: The atmosphere of Earth is composed of 21% oxygen, 78% nitrogen, 0.9% argon, 0.04% carbon dioxide and trace gases. There are five layers of atmosphere out of which the troposphere is the lowest layer.

Teacher: Now, let us test your listening. I will ask you a few questions and you can answer based on what you just heard.

1. What percentage of nitrogen is present in the atmosphere?
2. Name the lowest layer of the atmosphere.

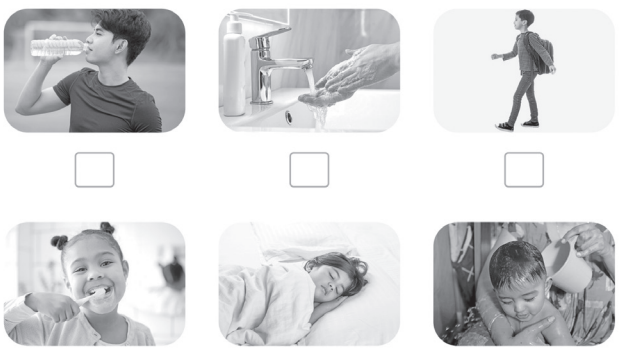
(Ask questions, allowing students to respond.)

Teacher: Brilliant responses. You were all listening very carefully. Now, let us move to our next activity.

Pictorial

Pictorial PS

Observe the pictures given below and tick (✓) the activities which show usage of water.



64

MUST DO 10 MIN.

Teacher: Look at the pictures given on page 64 of your Main Course Book.

Teacher: Observe the images carefully and tick the ones that show water usage.

(Give the students time to complete the activity.)

Teacher: Excellent. Now, let us discuss—what activities in these pictures use water.

(Discuss the correct answer.)

Teacher: Fantastic thinking, everyone. You have done a wonderful work identifying the right images.

Differentiated Activities

110 km/hr

Name one household activity that does not require water.

80 km/hr

Name one household activity that does not require water.

40 km/hr

Name one place where we find water in nature.

Home Task

Observe how water is used in your home. Write three ways your family uses water daily.

Period 2

Interacting better

Interacting better ICL

Circle the vehicles that are used for water transportation.

boat car ship bike

Tell your partner what activities you perform on daily basis using water. 65

MUST DO 10 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin with an interesting task. Think about different vehicles we see around us—on land, in the air and on water. Can you name some?

Teacher: Wonderful. Now, look at the words given in the 'Interacting better' activity on page 65 of your Main Course Book -- boat, car, ship, bike. Some of these vehicles are used for water transportation. Can you identify them?

Teacher: Take your pencils and circle the vehicles that travel on water.

(Give time to the students to complete the task.)

Teacher: Great job. Now, let us discuss something important. We use water in so many ways every day. Can you think of some activities where you use water?

Teacher: Turn to your partner and share the activities you perform daily using water.

(Let the students discuss with their partners.)

Teacher: Fantastic. You have all shared some wonderful ideas. Water is essential for life and it is important that we use it wisely. Well done, everyone.

Teacher: Today, we have an interesting picture story to read. I want all of you to carefully observe the pictures and read the dialogues on your own. Take your time and try to understand what Ryan and Athai are talking about. (Wait for students to read.)

MUST DO 30 MIN.

Teacher: Now that you have finished reading, let us discuss. What is the main topic of their conversation?

Teacher: Very good. They are talking about the importance of drinking water. Why does Ryan say that water is essential for our health?

Teacher: Excellent. Now, Athai compares clean water to clean air. What does she say about this?

Teacher: That is absolutely right. Just like clean air is important for breathing, clean water is necessary to stay healthy. What concern does Ryan have about not drinking enough water?

Teacher: Great thinking. Yes, he is worried about what happens if we do not drink enough water. How does Athai explain dehydration?

Teacher: Well done. Dehydration happens when our body does not get enough water and it can make us feel dizzy and tired or even cause headaches. What decision does Ryan make in the end?

Teacher: That is correct. He realises the importance of water and decides to stay hydrated. Why do you think Athai says that our body is like a system?

Teacher: Brilliant response. Just like a machine needs proper care to function well, our body also needs water to work properly.

Teacher: Fantastic discussion, everyone. Now, tell me one way you will make sure to drink enough water every day.

Teacher: Wonderful. You all have understood the story very well. Remember, drinking enough clean water is very important for our health. Well done.

You may show the **Dictionary** and **eBook** on the digital platform.

Differentiated Activities

110 km/hr

Why is dehydration harmful to our bodies? Give two reasons.

80 km/hr

Name two vehicles used for water transportation.

40 km/hr

What happens if we do not drink enough water?

Home Task

Observe your water consumption throughout the day. Write down how many glasses of water you drink and how it makes you feel. Then, explain one sign of dehydration and how you can prevent it.

Period 3

SHOULD DO 5 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What do we use to clean our hands? (Water and soap)

Teacher: Which gas in the air is most important for breathing? (Oxygen)

Teacher: What happens if we do not drink enough water? (Dehydration)

Teacher: Name two vehicles used for water transportation. (Boat, Ship)

Teacher: How can we save water while brushing our teeth? (Turn off the tap when not needed)

Teacher: Well done, everyone. Now, let us begin today's lesson.

(The teacher will read the last two paragraphs of page 65 and first five paragraphs of page 66 aloud and provide explanations to ensure that the students understand the content.)

We know that to sustain life on the Earth, we need air and water. Let us learn more about these two life supports.

AIR AROUND US

All living organisms need air to breathe. Human beings cannot live without air for more than a few minutes. Air is a mixture of nitrogen, carbon dioxide, oxygen and many other gases. Plants use photosynthesis to prepare their food.

Our Earth is surrounded by a blanket of air called the atmosphere. The atmosphere is a mixture of gases that is held around the Earth by the Earth's gravity*. The atmosphere consists of the air we breathe, the wind, the rain and the clouds in the sky. The atmosphere plays an important role in blocking the harmful rays of the Sun from reaching the Earth's surface. The atmosphere also prevents meteors from reaching the Earth's surface.

65-66

MUST DO 15 MIN.

Teacher: We know that to sustain life on Earth, we need air and water. Let us start with air. Can you tell me why air is important for all living organisms?

Teacher: That is right. All living beings need air to breathe. Now, can human beings survive without air for long?

Teacher: Absolutely. We cannot live without air for more than a few minutes. Air is a mixture of gases. Can you name any gases present in the air?

Teacher: Well done. Air contains nitrogen, carbon dioxide, oxygen and many other gases. Do you know how plants use air?

Teacher: Fantastic. Plants use carbon dioxide from the air to prepare their food through photosynthesis. Air is all around us and is essential for life.

Teacher: Our Earth is surrounded by a blanket of air called the atmosphere. What do you think holds this layer of air around the Earth?

Teacher: That is correct. The Earth's gravity holds the atmosphere in place. Now, can you tell me what the atmosphere consists of?

Teacher: Excellent. The atmosphere consists of the air we breathe, the wind, the rain and the clouds. It also has an

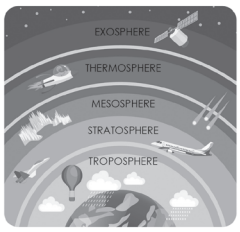
important role in protecting us. Can you guess how the atmosphere protects us?

Teacher: Very good. It blocks harmful rays from the Sun and prevents meteors from reaching the Earth's surface.

Layers of the atmosphere

The atmosphere is divided into five layers.

- **Troposphere:** This is the first layer above the Earth's surface. Types of cloud and changes in the weather occur in this layer.
- **Stratosphere:** This is the second layer of the atmosphere; present above the troposphere. Aircraft and aeroplanes generally fly in the lower layer of atmosphere. The ozone is also present in this layer of atmosphere. Ozone layer absorbs harmful ultraviolet (UV) rays from the Sun.



layers of the atmosphere

- **Mesosphere:** This is the third layer of the atmosphere. It protects the Earth from meteorites. Meteorites, or small rocks, moving in space burn out in this layer.
- **Thermosphere:** This is the fourth layer. Space shuttles move in this layer.
- **Exosphere:** This is the outermost layer of the atmosphere. Satellites move in this layer.

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Teacher: Now, let us move on to the next part. Let us look at the layers of the atmosphere.

MUST DO
10 MIN.

Teacher: The atmosphere is divided into five layers. The first layer is the troposphere. Do you know what happens in this layer?

Teacher: Well done. The troposphere is the closest layer to Earth, where weather changes occur. Above it, we have the stratosphere. Who can tell me what is present in this layer?

Teacher: That is correct. The ozone layer is in the stratosphere and it protects us by absorbing harmful ultraviolet rays from the Sun. Aeroplanes also fly in this layer.

Teacher: Now, we have the mesosphere. Can you guess how this layer protects the Earth?

Teacher: Absolutely. It burns up meteoroids before they reach Earth's surface. Moving further up, we reach the thermosphere. Does anyone know what moves in this layer?

Teacher: Excellent. Space shuttles move in the thermosphere. Finally, we have the exosphere, the outermost layer. What do you think moves in this layer?

Teacher: That is correct. Satellites move in the exosphere. These layers together form our atmosphere, which is vital for life on Earth. Well done, everyone.

Poster

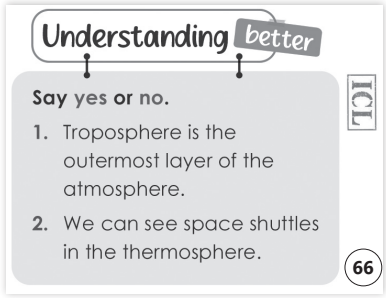
Teacher: Let us take a moment to look at the poster on the wall.

MUST DO
5 MIN.

(Display and discuss the posters prominently in the classroom to reinforce the learning about animal reproduction. Encourage students to observe the posters and discuss the different types of animal reproduction.)

Teacher: Great observation everyone.

Understanding better



Teacher: Now, let us check our understanding of the atmosphere. I will read a statement and you have to answer with 'yes' or 'no'. Are you all ready?

MUST DO
5 MIN.

Teacher: Here is the first statement— The troposphere is the outermost layer of the atmosphere. What do you think? Yes or no?

Teacher: Very good. The answer is 'No'. The troposphere is actually the lowest layer of the atmosphere, not the outermost. Now, let us move to the next statement.

Teacher: We can see space shuttles in the thermosphere. What do you think? Yes or no?

Teacher: Excellent. The answer is 'Yes'. Space shuttles move in the thermosphere, which is one of the higher layers of the atmosphere.

Teacher: Well done, everyone. You all have understood the layers of the atmosphere very well. Keep up the great learning.

You may show the **Animation**, **I Explain** and **Infographic** on the digital platform.

Differentiated Activities

110 km/hr

Name the layer of the atmosphere where the ozone layer is present.

80 km/hr

Which layer of the atmosphere burns meteoroids before they reach Earth?

40 km/hr

What is the name of the air blanket surrounding the Earth?

Home Task

Draw and label the five layers of the atmosphere in order. Then, write one sentence explaining why the atmosphere is important for life on Earth.

Period 4

Teacher: Good morning, students. How are you all today?

SHOULD DO
5 MIN.

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What holds the atmosphere around the Earth? (Gravity)

Teacher: Which layer of the atmosphere is closest to Earth? (Troposphere)

Teacher: What does the ozone layer protect us from? (Ultraviolet rays)

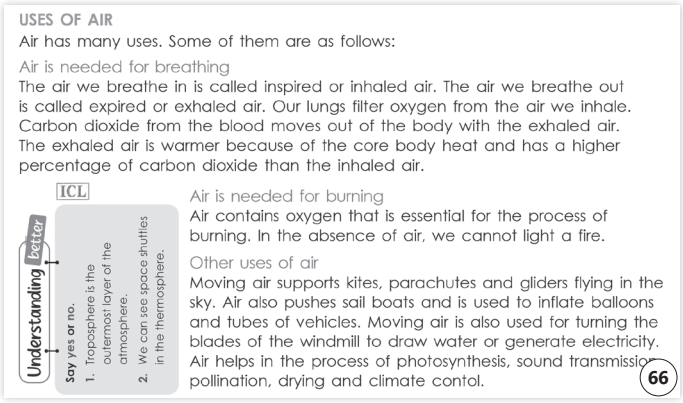
Teacher: Which layer of the atmosphere is the outermost? (Exosphere)

Teacher: In which layer do space shuttles move? (Thermosphere)

Teacher: Well done, everyone. Now, let us begin today's lesson.

Teacher: Today, we are going to learn about the uses of Air.

(The teacher will read the last three paragraphs of page 66 and the first five paragraphs of page 67 aloud and provide explanations to ensure that the students understand the content.)



USES OF AIR

Air has many uses. Some of them are as follows:

Air is needed for breathing

The air we breathe in is called inspired or inhaled air. The air we breathe out is called expired or exhaled air. Our lungs filter oxygen from the air we inhale. Carbon dioxide from the blood moves out of the body with the exhaled air. The exhaled air is warmer because of the core body heat and has a higher percentage of carbon dioxide than the inhaled air.

ICL

Understanding better

Say yes or no.

1. Troposphere is the outermost layer of the atmosphere.
2. We can see space shuttles in the thermosphere.

Air is needed for burning

Air contains oxygen that is essential for the process of burning. In the absence of air, we cannot light a fire.

Other uses of air

Moving air supports kites, parachutes and gliders flying in the sky. Air also pushes sail boats and is used to inflate balloons and tubes of vehicles. Moving air is also used for turning the blades of the windmill to draw water or generate electricity. Air helps in the process of photosynthesis, sound transmission, pollination, drying and climate contol.

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Teacher: Air has many uses. Can you think of some ways we use air in our daily life?

MUST DO

15 MIN.

Teacher: Very good. Let us start with breathing. The air we breathe in is called inhaled air and the air we breathe out is called exhaled air. What do our lungs do when we inhale?

Teacher: That is correct. Our lungs filter oxygen from the air. When we exhale, we release carbon dioxide. Why do you think the air we exhale is warmer than the air we inhale?

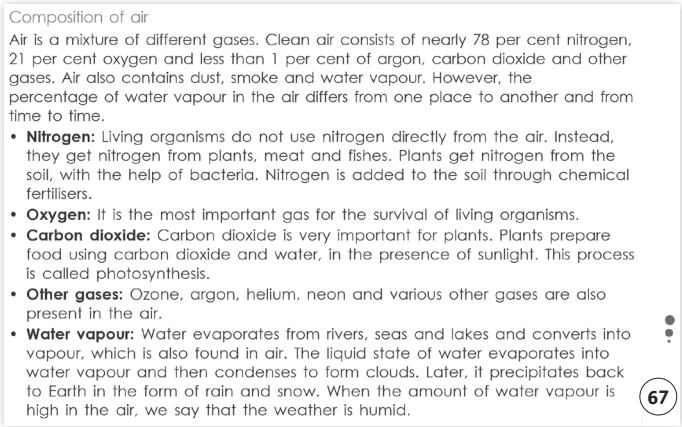
Teacher: Excellent. The air we exhale is warmer because of our body heat. Now, let us talk about another important use of air - -burning. Why is air needed for burning?

Teacher: Absolutely. Air contains oxygen, which is essential for burning. Without oxygen, we cannot light a fire. Now, apart from breathing and burning, air has many other uses. Can you name any?

Teacher: Great thinking. Moving air supports kites, parachutes and gliders in the sky. It also helps sailboats move and inflates balloons. What is another way in which moving air is useful?

Teacher: That is right. Moving air is used to turn the blades of windmills, which help draw water or generate electricity. Can you think of any natural process that needs air?

Teacher: Well done. Air helps in photosynthesis, pollination, drying and even controlling the climate. Air is truly essential for life. Now, let us learn about the composition of air.



Composition of air

Air is a mixture of different gases. Clean air consists of nearly 78 per cent nitrogen, 21 per cent oxygen and less than 1 per cent of argon, carbon dioxide and other gases. Air also contains dust, smoke and water vapour. However, the percentage of water vapour in the air differs from one place to another and from time to time.

- **Nitrogen:** Living organisms do not use nitrogen directly from the air. Instead, they get nitrogen from plants, meat and fishes. Plants get nitrogen from the soil, with the help of bacteria. Nitrogen is added to the soil through chemical fertilisers.
- **Oxygen:** It is the most important gas for the survival of living organisms.
- **Carbon dioxide:** Carbon dioxide is very important for plants. Plants prepare food using carbon dioxide and water, in the presence of sunlight. This process is called photosynthesis.
- **Other gases:** Ozone, argon, helium, neon and various other gases are also present in the air.
- **Water vapour:** Water evaporates from rivers, seas and lakes and converts into vapour, which is also found in air. The liquid state of water evaporates into water vapour and then condenses to form clouds. Later, it precipitates back to Earth in the form of rain and snow. When the amount of water vapour is high in the air, we say that the weather is humid.

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Teacher: Air is a mixture of different gases. Do you know which gas is present in the largest amount in the air?

MUST DO

20 MIN.

Teacher: Excellent. Nitrogen makes up 78% of the air. But do living organisms use nitrogen directly from the air?

Teacher: That is right. Living organisms get nitrogen from plants, meat and fish, not directly from the air. Plants absorb nitrogen with the help of bacteria in the soil. Now, which gas is the most important for survival?

Teacher: Absolutely. Oxygen is the most important gas for living organisms. What about carbon dioxide? Why is it important?

Teacher: Very good. Carbon dioxide is necessary for plants. They use it to prepare food through photosynthesis. Apart from these, the air also contains other gases. Can you name some?

Teacher: Well done. The air contains ozone, argon, helium, neon and many other gases. There is also something else in the air that changes depending on the weather. Can you guess what it is?

Teacher: That is correct. Water vapour is present in the air and comes from the evaporation of water from rivers, lakes and seas. What happens when water vapour in the air condenses?

Teacher: Excellent. It forms clouds, which later bring rain or snow. When there is a high amount of water vapour in the air, what do we call the weather?

Teacher: Well done. We call it humid weather. So, air is not just a mixture of gases but also contains water vapour and plays an important role in the water cycle. Fantastic discussion, everyone.

You may show the **Experiment** on the digital platform. (Instruct the students to bring a glass tumbler, water, stiff paper or cardboard, an empty plastic bottle, tape and

a needle or pin in the next class to perform experiments demonstrating how air exerts pressure upwards and downwards.)

Differentiated Activities

110 km/hr

Which gas is present in the highest amount in the air?

80 km/hr

Why do we need oxygen for burning?

40 km/hr

What do we call the air we breathe in?

Home Task

Label the different gases present in the air. Then, write one sentence explaining why oxygen is important for living organisms.

Period 5

SHOULD DO
5 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What do we call the air we breathe out? (Exhaled air)

Teacher: Which gas is most important for plants to make their food? (Carbon dioxide)

Teacher: Name one use of moving air. (Flying kites/Sailing boats/Turning windmills)

Teacher: What do we call the moisture present in the air? (Water vapour)

Teacher: Which gas in the air is essential for burning? (Oxygen)

Teacher: Well done, everyone. Now, let us begin today's lesson.

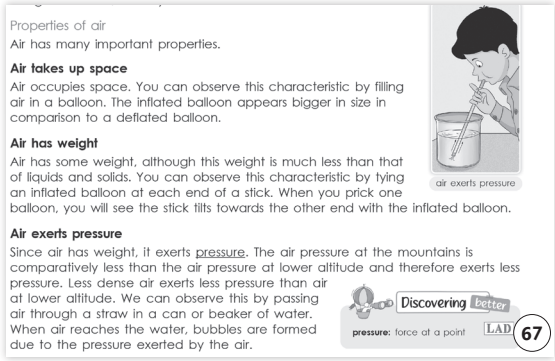
(The teacher will read the last three paragraphs of page 67 and the first three paragraphs of page 68 aloud and provide explanations to ensure that the students understand the content.)

MUST DO
10 MIN.

Teacher: Today, we will explore some important properties of air. Can you tell me whether air occupies space?

Teacher: That is correct. Air takes up space. You can observe this by filling a balloon with air. The balloon expands because air occupies space. What happens when you compare an inflated balloon with a deflated one?

Teacher: Exactly. The inflated balloon looks much bigger because it is filled with air. Now, do you think air has weight?



Properties of air

Air has many important properties.

Air takes up space

Air occupies space. You can observe this characteristic by filling air in a balloon. The inflated balloon appears bigger in size in comparison to a deflated balloon.

Air has weight

Air has some weight, although this weight is much less than that of liquids and solids. You can observe this characteristic by tying an inflated balloon at each end of a stick. When you prick one balloon, you will see the stick tilts towards the other end with the inflated balloon.

air exerts pressure

Air exerts pressure

Since air has weight, it exerts pressure. The air pressure at the mountains is comparatively less than the air pressure at lower altitude and therefore exerts less pressure. Less dense air exerts less pressure than air at lower altitude. We can observe this by passing air through a straw in a can or beaker of water. When air reaches the water, bubbles are formed due to the pressure exerted by the air.

Discovering better

pressure: force at a point

LAD 67

Teacher: Well done. Air does have weight, though it is much lighter than liquids and solids. If we tie an inflated balloon on one side of a stick and a deflated balloon on the other, what do you think will happen?

Teacher: Brilliant observation. The stick will tilt towards the side with the inflated balloon because air adds weight to it. Now, let us discuss another important property of air. Have you ever noticed bubbles forming in water? What do you think causes them?

Teacher: That is correct. Air exerts pressure.

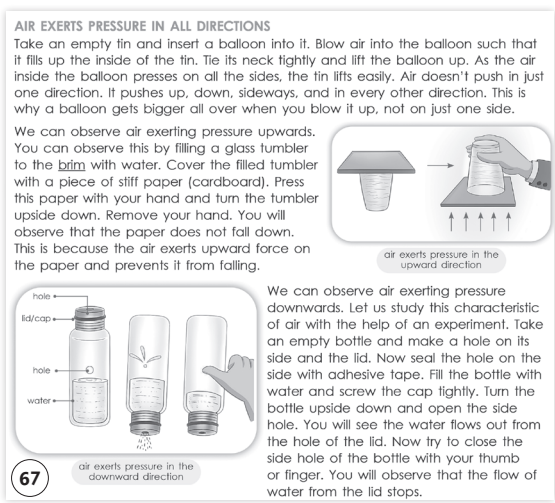
Discovering better

(Explain the term given in the 'Discovering Better' activity and discuss it with the class.)

Teacher: Air pressure is lower in mountains and higher at lower altitudes. Less dense air means lower pressure. We can observe this by blowing air through a straw into a glass of water. What happens when air enters the water?

MUST DO
20 MIN.

Teacher: Exactly. Bubbles are formed because air exerts pressure on the water. Great job, everyone. Now, let us move on to how air exerts pressure in all directions.



AIR EXERTS PRESSURE IN ALL DIRECTIONS

Take an empty tin and insert a balloon into it. Blow air into the balloon such that it fills up the inside of the tin. Tie its neck tightly and lift the balloon up. As the air inside the balloon presses on all the sides, the tin lifts easily. Air doesn't push in just one direction. It pushes up, down, sideways, and in every other direction. This is why a balloon gets bigger all over when you blow it up, not on just one side.

We can observe air exerting pressure upwards. You can observe this by filling a glass tumbler to the brim with water. Cover the filled tumbler with a piece of stiff paper (cardboard). Press this paper with your hand and turn the tumbler upside down. Remove your hand. You will observe that the paper does not fall down. This is because the air exerts upward force on the paper and prevents it from falling.

air exerts pressure in the upward direction

hole
lid/cap
hole
water

air exerts pressure in the downward direction

We can observe air exerting pressure downwards. Let us study this characteristic of air with the help of an experiment. Take an empty bottle and make a hole on its side and the lid. Now seal the hole on the side with adhesive tape. Fill the bottle with water and screw the cap tightly. Turn the bottle upside down and open the side hole. You will see the water flows out from the hole of the lid. Now try to close the side hole of the bottle with your thumb or finger. You will observe that the flow of water from the lid stops.

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Teacher: Air does not push in just one direction—it exerts pressure on all sides. Let us understand this with an example. Imagine placing a balloon inside an empty tin and blowing air into it. What happens to the tin as the balloon fills up?

Teacher: Very good. The tin lifts up because the air is pressing against all its sides. That is why a balloon gets bigger in every direction when you blow it up. Now, let us look at air exerting pressure upwards.

Teacher: Take a glass tumbler filled with water and cover it with a stiff piece of paper. Now, turn the tumbler upside down. What do you observe?

Teacher: Excellent. The paper does not fall and the water stays inside the tumbler. Why do you think this happens?

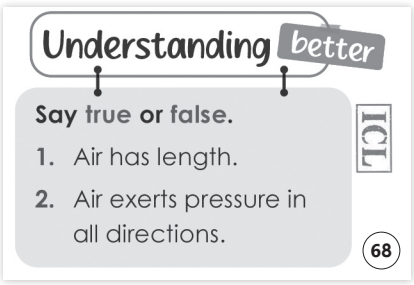
Teacher: That is absolutely right. Air is exerting an upward force, preventing the paper from falling. Great job, everyone. Now, let us move to air exerting pressure downwards.

Teacher: Now, let us observe how air exerts pressure downwards. Let us perform an experiment. Take an empty plastic bottle and make a hole on its side and on the lid. When we fill the bottle with water and open the hole on the lid, what do you think will happen?

Teacher: Fantastic. Water flows out of the hole on the side because air is pushing down on the water inside. What happens if we cover the hole in the lid?

Teacher: Exactly. The flow of water stops because air is no longer pushing down on it. This shows that air exerts pressure in a downward direction. Well done, everyone. You have understood these concepts very well.

Understanding better



MUST DO
5 MIN.

Teacher: Let us check our understanding of air. I will read a statement and you have to answer with 'true' or 'false'. Let us begin.

Teacher: Air has length. What do you think? Is this statement true or false?

Teacher: Well done. The answer is 'False'. Air does not have length, but it has properties like weight, volume and pressure. Now, let us try the next one.

Teacher: Air exerts pressure in all directions. What do you think? True or false?

Teacher: Excellent. The answer is 'True'. We have seen how air pushes in all directions, like when a balloon inflates evenly or when air supports objects from different angles.

Teacher: Fantastic work, everyone. You are all thinking critically and answering well. Keep it up.

Differentiated Activities

110 km/hr

Why does a balloon expand when air is blown into it?

80 km/hr

What happens when air enters the water through a straw?

40 km/hr

Which force prevents the paper from falling in the upside-down tumbler experiment?

Home Task

Blow up a balloon and observe its shape. Then, write one sentence explaining how this demonstrates that air takes up space and exerts pressure.

Period 6

SHOULD DO
5 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What happens to a balloon when you blow air into it? (It expands)

Teacher: Why does a deflated balloon weigh less than an inflated one? (Air has weight)

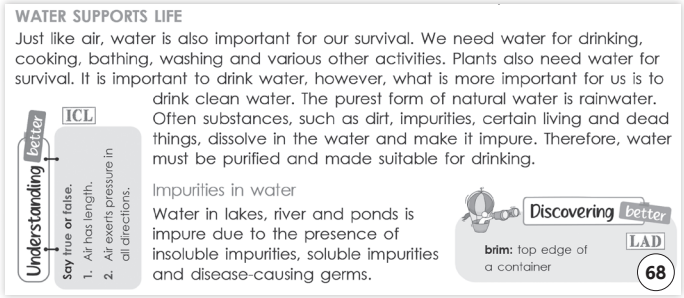
Teacher: What do we call the force air applies on objects? (Air pressure)

Teacher: Why do bubbles form when we blow air into water? (Air exerts pressure)

Teacher: What happens to water when we cover the hole on the lid of a bottle? (Water flow stops)

Teacher: Well done, everyone. Now, let us begin today's lesson.

(The teacher will read the last two paragraphs of page 68 and the first three paragraphs of page 69 aloud and provide explanations to ensure that the students understand the content.)


WATER SUPPORTS LIFE

Just like air, water is also important for our survival. We need water for drinking, cooking, bathing, washing and various other activities. Plants also need water for survival. It is important to drink water, however, what is more important for us is to drink clean water. The purest form of natural water is rainwater. Often substances, such as dirt, impurities, certain living and dead things, dissolve in the water and make it impure. Therefore, water must be purified and made suitable for drinking.

Understanding better
Say true or false.
1. Air has length.
2. Air exerts pressure in all directions.
ICL

Impurities in water

Water in lakes, river and ponds is impure due to the presence of insoluble impurities, soluble impurities and disease-causing germs.

Discovering better
brim: top edge of a container
LAD
68

Teacher: We know that air is essential for survival, but water is just as important. Can you name some activities for which we need water?

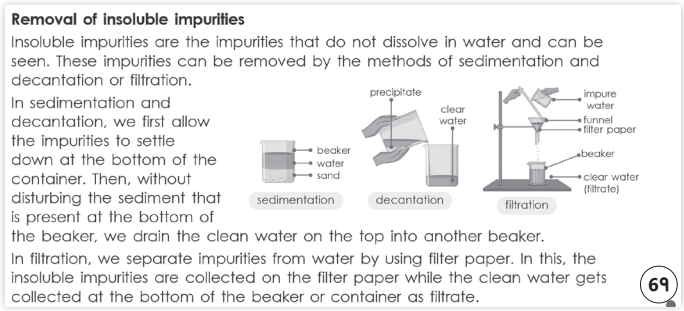
Teacher: Very good. We need water for drinking, cooking, bathing, washing and many other activities. Even plants need water to grow. But is all water safe for drinking?

MUST DO
15 MIN.

Teacher: Exactly. Drinking clean water is essential for our health. The purest form of natural water is rainwater. However, many substances mix with water and make it impure. Can you think of some impurities that might be present in water?

Teacher: Well done. Water can contain dirt, living and dead organisms and other impurities. Do you think the water in lakes, rivers and ponds is safe to drink?

Teacher: That is correct. Water in natural sources is often impure. This is because it contains insoluble impurities, soluble impurities and disease-causing germs. We must purify water before drinking it. Now, let us learn how insoluble impurities can be removed.


Removal of insoluble impurities

Insoluble impurities are the impurities that do not dissolve in water and can be seen. These impurities can be removed by the methods of sedimentation and decantation or filtration.

In sedimentation and decantation, we first allow the impurities to settle down at the bottom of the container. Then, without disturbing the sediment that is present at the bottom of the beaker, we drain the clean water on the top into another beaker.

In filtration, we separate impurities from water by using filter paper. In this, the insoluble impurities are collected on the filter paper while the clean water gets collected at the bottom of the beaker or container as filtrate.

69

Teacher: Water can have insoluble impurities that do not dissolve and can be seen easily. Can you think of an example of something that does not dissolve in water?

MUST DO
20 MIN.

Teacher: That is right. Sand, dirt and small particles are examples of insoluble impurities. We can remove them by sedimentation, decantation or filtration. Let us explore how each method works.

Teacher: In sedimentation and decantation, we first allow the impurities to settle at the bottom of a container. What do you think happens to the clean water?

Teacher: Correct. The clean water stays on top. Without disturbing the impurities, we carefully drain the clean water into another container. This is decantation.

Teacher: Another method to remove impurities is filtration. Have you seen a tea strainer? How does it help in making tea?

Teacher: Exactly. Just like a strainer separates tea leaves, in filtration, we use filter paper to separate impurities from water. What happens to the impurities when we pour the water through the filter paper?

Teacher: Well done. The insoluble impurities remain on the filter paper, while the clean water, called filtrate, collects in the beaker. This is how filtration helps purify water.

Teacher: Excellent learning today. Now, let us move on to some activities.

Differentiated Activities

110 km/hr

Name the method in which filter paper is used to remove insoluble impurities.

80 km/hr

Which impurities settle at the bottom in sedimentation?

40 km/hr

What is the purest form of natural water?

Home Task

Draw and label the process of filtration. Then, write one sentence explaining why filtration is useful in daily life.

Period 7

SHOULD DO
5 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What do we call impurities that do not dissolve in water? (Insoluble impurities)

Teacher: Which method of water purification involves allowing impurities to settle? (Sedimentation)

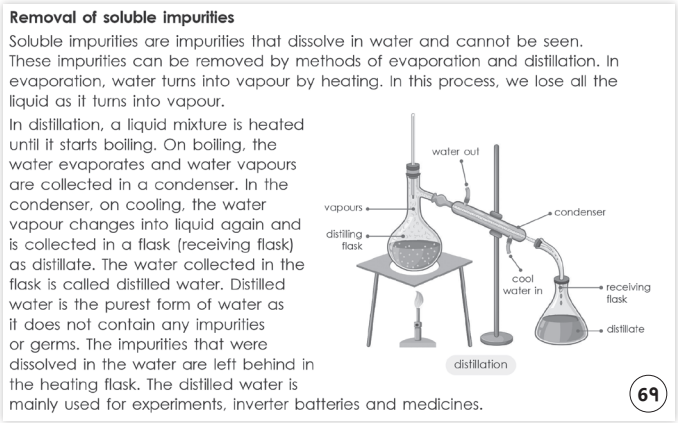
Teacher: What is the clean water collected after filtration called? (Filtrate)

Teacher: Why is rainwater considered the purest form of water? (It is free from impurities)

Teacher: Which object is used in filtration to separate impurities from water? (Filter paper)

Teacher: Well done, everyone. Now, let us begin today's lesson.

(The teacher will read the last three paragraphs of page 69 and the first two paragraphs of page 70 aloud and provide explanations to ensure that the students understand the content.)


Removal of soluble impurities

Soluble impurities are impurities that dissolve in water and cannot be seen. These impurities can be removed by methods of evaporation and distillation. In evaporation, water turns into vapour by heating. In this process, we lose all the liquid as it turns into vapour.

In distillation, a liquid mixture is heated until it starts boiling. On boiling, the water evaporates and water vapours are collected in a condenser. In the condenser, on cooling, the water vapour changes into liquid again and is collected in a flask (receiving flask) as distillate. The water collected in the flask is called distilled water. Distilled water is the purest form of water as it does not contain any impurities or germs. The impurities that were dissolved in the water are left behind in the heating flask. The distilled water is mainly used for experiments, inverter batteries and medicines.

69

Teacher: We have learned how to remove insoluble impurities from water. But what about impurities that

dissolve in water and cannot be seen? Can you think of a way to remove them?

MUST DO
15 MIN.

Teacher: That is right. Soluble impurities can be removed by evaporation and distillation. Let us first talk about evaporation. What happens when we heat water?

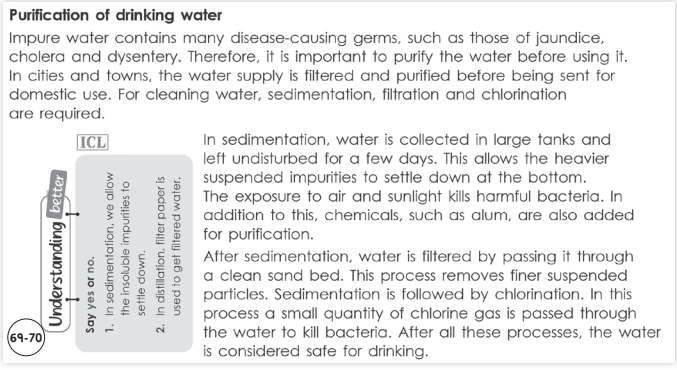
Teacher: Excellent. Water turns into vapour. This process is called evaporation. However, when water evaporates, we lose the liquid. So, to get clean water back, we use distillation. Do you know what distillation is?

Teacher: Great. In distillation, we heat the liquid until it starts boiling. The water evaporates and the vapours rise up. Where do you think these vapours go next?

Teacher: Absolutely. The vapours go into a condenser, where they cool down and turn back into liquid. The purified water is collected in a receiving flask. This water is called distilled water. Can you guess why distilled water is considered the purest form?

Teacher: That is correct. Distilled water does not contain any impurities or germs. The impurities remain in the heating flask. Now, where do you think distilled water is used?

Teacher: Well done. It is mainly used for experiments, inverter batteries and medicines. Fantastic learning so far. Now, let us move to the next part.



Purification of drinking water

Impure water contains many disease-causing germs, such as those of jaundice, cholera and dysentery. Therefore, it is important to purify the water before using it. In cities and towns, the water supply is filtered and purified before being sent for domestic use. For cleaning water, sedimentation, filtration and chlorination are required.

ICL

Understanding better

Say yes or no.

1. In sedimentation, we allow the insoluble impurities to settle down.
2. In distillation, filter paper is used to get filtered water.

69-70

In sedimentation, water is collected in large tanks and left undisturbed for a few days. This allows the heavier suspended impurities to settle down at the bottom. The exposure to air and sunlight kills harmful bacteria. In addition to this, chemicals, such as alum, are also added for purification.

After sedimentation, water is filtered by passing it through a clean sand bed. This process removes finer suspended particles. Sedimentation is followed by chlorination. In this process a small quantity of chlorine gas is passed through the water to kill bacteria. After all these processes, the water is considered safe for drinking.

Teacher: We know that impure water contains many disease-causing germs. Can you name some diseases caused by drinking impure water?

MUST DO
10 MIN.

Teacher: That is right. Diseases like jaundice, cholera and dysentery are caused by impure water. That is why it is important to purify water before drinking it. Do you know how drinking water is purified in cities and towns?

Teacher: Excellent. Water is first filtered and purified before being sent for domestic use. Let us understand how this is done.

Teacher: The first step is sedimentation. Water is collected in large tanks and left undisturbed for a few days. What do you think happens to the heavier impurities?

Teacher: Exactly. The heavier impurities settle at the bottom of the tank. Exposure to air and sunlight also kills harmful bacteria. What else do you think can be added to purify the water further?

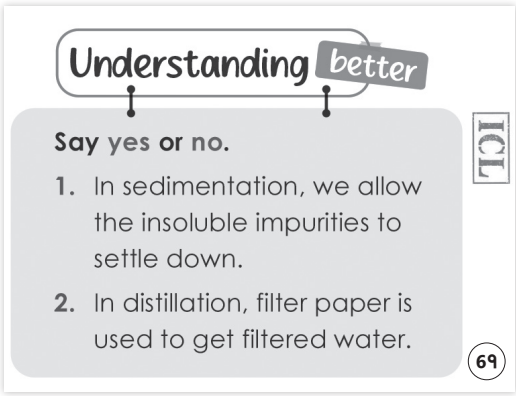
Teacher: Well done. Alum and other chemicals are added to help in purification. After sedimentation, the water is passed through a sand bed for filtration. What do you think filtration removes?

Teacher: Yes. It removes finer suspended particles. But is filtration alone enough to make the water safe?

Teacher: That is right. The final step is chlorination, where a small amount of chlorine gas is passed through the water to kill bacteria. After all these processes, the water is safe for drinking.

Teacher: Fantastic work, everyone. You have understood how water is purified before it reaches our homes. Let us now move on to some activities.

Understanding better



Understanding better

ICL

Say yes or no.

1. In sedimentation, we allow the insoluble impurities to settle down.
2. In distillation, filter paper is used to get filtered water.

69

Teacher: Let us check our understanding of water purification. I will read a statement and you have to answer with 'yes' or 'no'. Let us begin.

MUST DO
10 MIN.

Teacher: In sedimentation, we allow the insoluble impurities to settle down. What do you think? Yes or no?

Teacher: Well done. The answer is 'Yes'. In sedimentation, we let the heavier impurities settle at the bottom of the container before carefully draining the clean water. Now, let us try the next one.

Teacher: In distillation, filter paper is used to get filtered water. Yes or no?

Teacher: Excellent. The answer is 'No'. In distillation, water is heated, turned into vapour, cooled and collected as distilled water. Filter paper is used in filtration, not distillation.

Teacher: Fantastic work, everyone. You have answered correctly and understood the concepts well. Keep up the great learning.

You may show the **Animated Activities**, **Concept Map** and **Diagram** on the digital platform.

Differentiated Activities

110 km/hr

Name the process in which water vapour is cooled and collected as distilled water.

80 km/hr

Which chemical is added to kill bacteria in drinking water?

40 km/hr

Which method allows heavier impurities to settle in large tanks?

Home Task

Draw and label the process of distillation. Then, write one sentence explaining why distilled water is the purest form of water.

Period 8

SHOULD DO 5 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What do we call the process where water is heated and turns into vapour? (Evaporation)

Teacher: Which method is used to obtain distilled water? (Distillation)

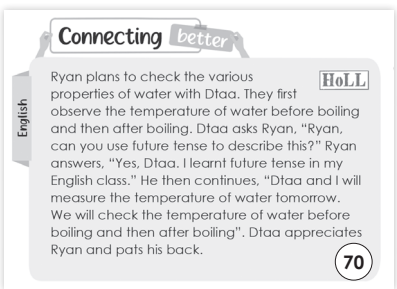
Teacher: What is the final step in making drinking water safe? (Chlorination)

Teacher: Which substance is added to water to help purify it during sedimentation? (Alum)

Teacher: What do we call the clean water collected after distillation? (Distilled water)

Teacher: Well done, everyone. Now, let us begin today's lesson.

Connecting better



MUST DO 10 MIN.

Teacher: Let us begin by exploring the properties of water. Ryan and Dtaa are investigating how water changes before and after boiling. What do you think happens to water when it is boiled?

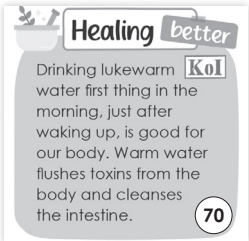
Teacher: That is correct. The temperature of the water increases and it eventually turns into steam. Ryan also uses future tense to describe their activity. Can anyone tell me how we express something that will happen in the future?

Teacher: Well done. We use the future tense. Ryan says, 'Dtaa and I will measure the temperature of water tomorrow.' This means that the action will take place in the future. Now, how do they check the temperature of the water?

Teacher: Yes. They measure it before and after boiling. Why do you think Dtaa appreciates Ryan?

Teacher: That is right. Ryan uses what he has learned in English class in a real-life situation. Fantastic observations, everyone.

Healing Better



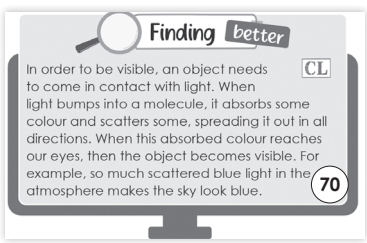
MUST DO 5 MIN.

Teacher: Drinking lukewarm water in the morning is good for our health. Do you know why?

Teacher: Very good. Warm water helps flush toxins from the body and cleanses the intestine. How do you feel after drinking warm water?

Teacher: Excellent. It makes you feel fresh and helps your body function well. Great thinking.

Finding Better



MUST DO 5 MIN.

Teacher: Let us talk about how objects become visible. What do you think happens when light hits an object?

Teacher: That is right. Light gets absorbed and scattered in different directions. When this scattered light reaches our eyes, we can see the object. Can you think of an example where light scattering makes something look different?

Teacher: Excellent. The sky looks blue because blue light scatters the most in the atmosphere. Well done.

Grasping Better

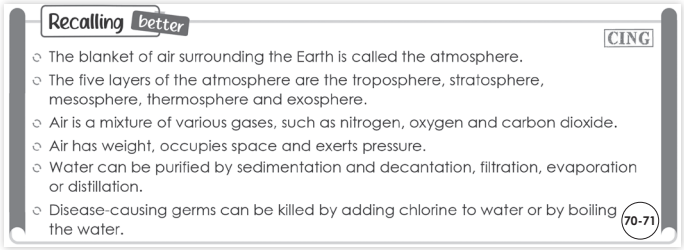
Teacher: We have talked about how gravity affects objects. Can anyone define gravity?

MUST DO
5 MIN.

Teacher: That is correct. Gravity is the force by which the Earth pulls an object towards itself. What happens when we throw a ball up in the air?

Teacher: Absolutely. It comes back down because of gravity. Well done.

Recalling Better


Recalling better

CING

- The blanket of air surrounding the Earth is called the atmosphere.
- The five layers of the atmosphere are the troposphere, stratosphere, mesosphere, thermosphere and exosphere.
- Air is a mixture of various gases, such as nitrogen, oxygen and carbon dioxide.
- Air has weight, occupies space and exerts pressure.
- Water can be purified by sedimentation and decantation, filtration, evaporation or distillation.
- Disease-causing germs can be killed by adding chlorine to water or by boiling the water.

70-71

Teacher: Let us recall what we have learned about air and water. What do we call the blanket of air surrounding the Earth?

MUST DO
10 MIN.

Teacher: Yes. It is called the atmosphere. How many layers does the atmosphere have?

Teacher: Correct. There are five layers—troposphere, stratosphere, mesosphere, thermosphLere and exosphere. Now, can you name the three main gases found in the air?

Teacher: Well done. Nitrogen, oxygen and carbon dioxide. What are the three main properties of air?

Teacher: Fantastic. Air has weight, occupies space and exerts pressure. Now, tell me one method used to purify water.

Teacher: Great answer. Water can be purified using sedimentation, filtration, evaporation or distillation. Can you name one way to kill disease-causing germs in water?

Teacher: Excellent. Adding chlorine or boiling water can kill germs. Well done, everyone.

(Instruct the students to bring their workbook in their next class.)

You may show the **Slideshow** and **Quiz** on the digital platform.

Differentiated Activities

110 km/hr

Why does the sky appear blue?

80 km/hr

What force pulls objects towards the Earth?

40 km/hr

What is the name of the blanket of air surrounding the Earth?

Home Task

Complete the 'Trying better' activity given on page 70 of the Main Coursebook.

Period 9

Teacher: Good morning, students. How are you all today?

SHOULD DO
5 MIN.

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What happens when water is heated? (It turns into vapour)

Teacher: What is the name of the process by which water changes into steam? (Evaporation)

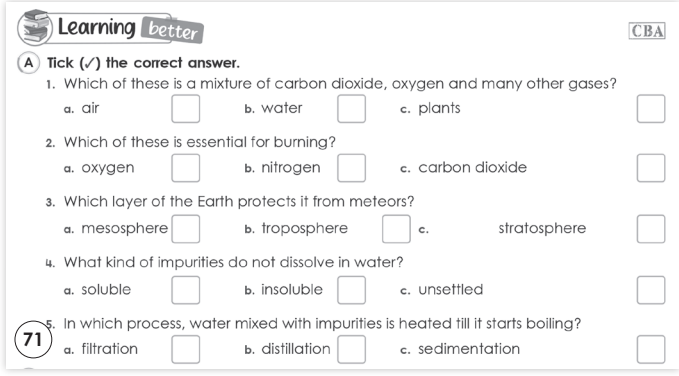
Teacher: Why does the sky appear blue? (Because blue light scatters the most)

Teacher: What do we call the force that pulls everything towards the Earth? (Gravity)

Teacher: Name one way to purify drinking water. (Filtration/Sedimentation/Boiling)

Teacher: Well done, everyone. Now, let us begin today's lesson.

Learning Better


Learning better

CBA

A Tick (✓) the correct answer.

1. Which of these is a mixture of carbon dioxide, oxygen and many other gases?
   a. air ☐ b. water ☐ c. plants ☐
2. Which of these is essential for burning?
   a. oxygen ☐ b. nitrogen ☐ c. carbon dioxide ☐
3. Which layer of the Earth protects it from meteors?
   a. mesosphere ☐ b. troposphere ☐ c. stratosphere ☐
4. What kind of impurities do not dissolve in water?
   a. soluble ☐ b. insoluble ☐ c. unsettled ☐
5. In which process, water mixed with impurities is heated till it starts boiling?
   a. filtration ☐ b. distillation ☐ c. sedimentation ☐

71

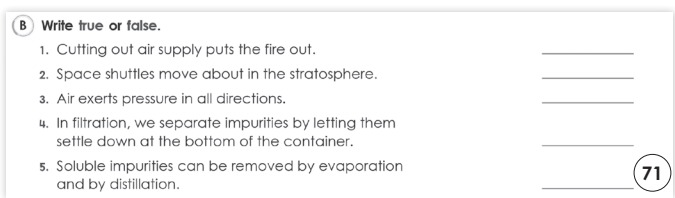
Teacher: Everyone please open page 71 of your Main Coursebook. In Exercise 'A' of 'Learning better' you have to tick the correct answer. Are you ready to get started?

MUST DO
5 MIN.

Teacher: Great. Let us begin with the first question. Which of these is a mixture of carbon dioxide, oxygen and many other gases?

Teacher: The correct answer is air. Well done.

(Similarly complete all five questions. And discuss the correct answers.)


B Write true or false.

1. Cutting out air supply puts the fire out. _____
2. Space shuttles move about in the stratosphere. _____
3. Air exerts pressure in all directions. _____
4. In filtration, we separate impurities by letting them settle down at the bottom of the container. _____
5. Soluble impurities can be removed by evaporation and by distillation. _____

71

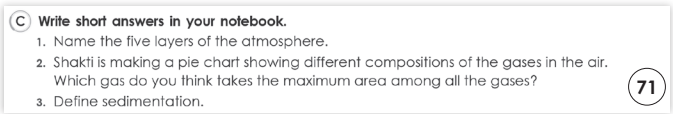
Teacher: Let us start Exercise 'B' of the 'Learning better' section, you have to either true or false in the space provided. Are you ready to get started?

MUST DO
5 MIN.

Teacher: Great. Let us begin with the first question. Cutting out air supply puts the fire out. Think carefully and fill in the blanks.

Teacher: It is true. Cutting out the air supply puts the fire out because fire needs oxygen to burn. Without oxygen, combustion cannot take place and the fire is extinguished.

(Similarly complete all five questions)


C Write short answers in your notebook.
1. Name the five layers of the atmosphere.
2. Shakti is making a pie chart showing different compositions of the gases in the air. Which gas do you think takes the maximum area among all the gases?
3. Define sedimentation.
71

Teacher: Now, let us explore some short-answer questions. In Exercise 'C' of the 'Learning better' section, you have to write a short answer. Are you ready to get started?

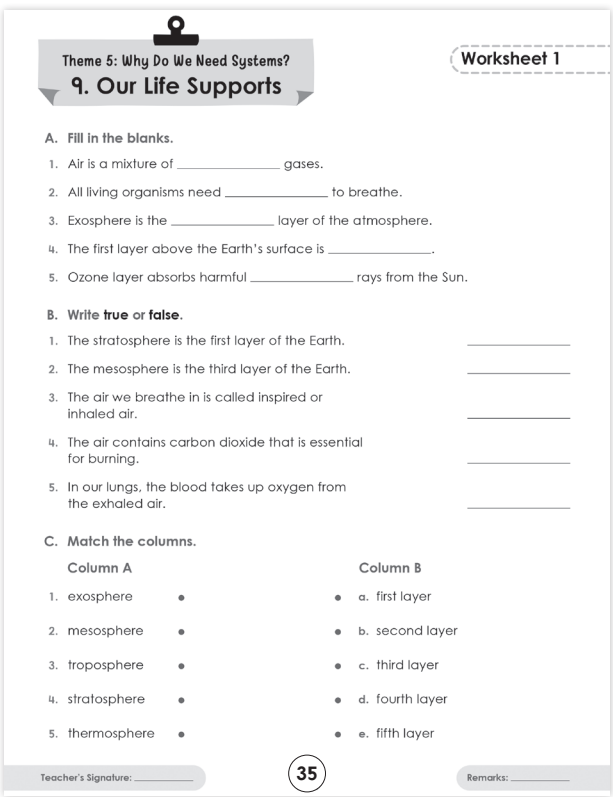
Teacher: Great. Let us begin with the first question. Name the five layers of the atmosphere.

(Students have to write the answers for the given questions in about 40 to 50 words in their notebook. Wait for the students to write the answers.)

MUST DO
10 MIN.

(Similarly, complete all three questions)

Worksheet 1


Theme 5: Why Do We Need Systems?
9. Our Life Supports
Worksheet 1

A. Fill in the blanks.
1. Air is a mixture of _____ gases.
2. All living organisms need _____ to breathe.
3. Exosphere is the _____ layer of the atmosphere.
4. The first layer above the Earth's surface is _____.
5. Ozone layer absorbs harmful _____ rays from the Sun.

B. Write **true** or **false**.
1. The stratosphere is the first layer of the Earth. _____
2. The mesosphere is the third layer of the Earth. _____
3. The air we breathe in is called inspired or inhaled air. _____
4. The air contains carbon dioxide that is essential for burning. _____
5. In our lungs, the blood takes up oxygen from the exhaled air. _____

C. Match the columns.

Column A		Column B
1. exosphere	•	• a. first layer
2. mesosphere	•	• b. second layer
3. troposphere	•	• c. third layer
4. stratosphere	•	• d. fourth layer
5. thermosphere	•	• e. fifth layer

Teacher's Signature: _____
35
Remarks: _____

Teacher: Let us do some activities from the workbook. Everybody, please open page 35 of your workbook and answer the questions given in worksheet 1.

MUST DO
15 MIN.

(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

You may show the **Toy from Trash** on the digital platform.

Differentiated Activities

110 km/hr

What happens to a candle flame when it is covered with a glass jar?

80 km/hr

Which gas is necessary for a fire to keep burning?

40 km/hr

What happens when the air supply is cut off by a fire?

Home Task

The Project Idea, given in the book of Project Ideas, page 16 under the title 'Our Life Supports.' This project should be assigned to the students as a home task to work on. Ensure that the students understand the project requirements and provide any necessary guidance or materials they might need.

Period 10

Teacher: Good morning, students. How are you all today?

SHOULD DO
5 MIN.

Teacher: Great. Before we begin today's lesson, let us have a quick warm-up game. I will ask questions and you need to answer. Ready?

Teacher: What do we call the process of removing insoluble impurities by allowing them to settle? (Sedimentation)

Teacher: Which method is used to kill germs in drinking water? (Chlorination)

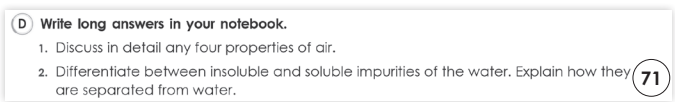
Teacher: What happens when we cover a burning candle with a glass jar? (It goes out)

Teacher: Which gas supports burning? (Oxygen)

Teacher: Why does distilled water not contain any impurities? (It is collected after evaporation and condensation)

Teacher: Well done, everyone. Now, let us begin today's lesson.

Learning better


D Write long answers in your notebook.
1. Discuss in detail any four properties of air.
2. Differentiate between insoluble and soluble impurities of the water. Explain how they are separated from water.
71

Teacher: Everyone please open page 71 of your Main Coursebook. Let us explore some long-answer questions.

MUST DO
10 MIN.

In Exercise 'D' of the 'Learning better', you have to write a long answer. Let us begin with the first question. Discuss in detail any four properties of air.

(Students have to write the answers for the given questions in about 100 to 150 words in their notebook. Wait for the students to write the answers.)

(Similarly, complete the second question and discuss the correct answer with the class.)

Thinking better


Thinking better

21st CS HOTS

Think and write the answer in your notebook.

We know that hot air moves up and the cold air from the surrounding takes its place. It means that hot air is lighter than the cold air. Why?

72

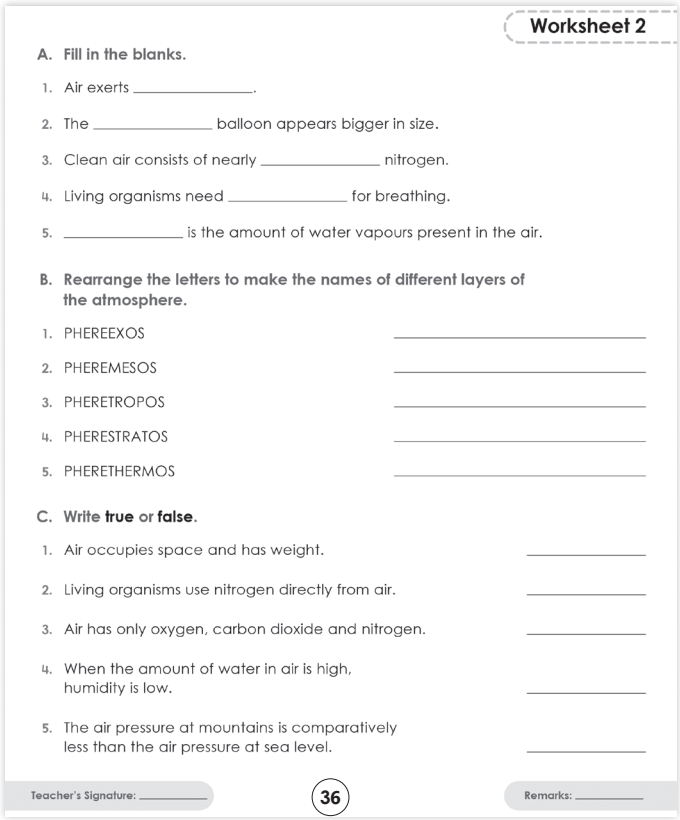
Teacher: We know that hot air moves up and cold air takes its place. Why do you think hot air is lighter than cold air? Take a moment to write your answers in your notebook.

MUST DO

5 MIN.

(Discuss the correct answer with the students.)

Worksheet 2


Worksheet 2

A. Fill in the blanks.

1. Air exerts _____.
2. The _____ balloon appears bigger in size.
3. Clean air consists of nearly _____ nitrogen.
4. Living organisms need _____ for breathing.
5. _____ is the amount of water vapours present in the air.

B. Rearrange the letters to make the names of different layers of the atmosphere.

1. PHEREEXOS _____
2. PHEREMESOS _____
3. PHERETROPOS _____
4. PHERESTRATOS _____
5. PHERETHERMOS _____

C. Write true or false.

1. Air occupies space and has weight. _____
2. Living organisms use nitrogen directly from air. _____
3. Air has only oxygen, carbon dioxide and nitrogen. _____
4. When the amount of water in air is high, humidity is low. _____
5. The air pressure at mountains is comparatively less than the air pressure at sea level. _____

Teacher's Signature: _____ 36 Remarks: _____

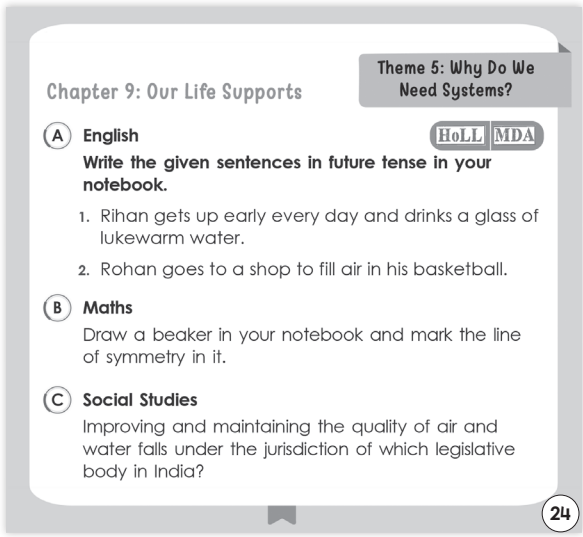
Teacher: Let us do some activities from the workbook. Everybody, please open page 36 of your workbook and answer the questions given in worksheet 2.

MUST DO

10 MIN.

(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

Book of Holistic Teaching


Chapter 9: Our Life Supports

Theme 5: Why Do We Need Systems?

(A) **English** HoLL MDA

Write the given sentences in future tense in your notebook.

1. Rihan gets up early every day and drinks a glass of lukewarm water.
2. Rohan goes to a shop to fill air in his basketball.

(B) **Maths**

Draw a beaker in your notebook and mark the line of symmetry in it.

(C) **Social Studies**

Improving and maintaining the quality of air and water falls under the jurisdiction of which legislative body in India?

24

Refer to the Book of Holistic Teaching, page number 24 under the title 'Our Life Supports.' Complete the activities mentioned in this section and ensure that the students complete them. These activities are designed to enhance their holistic understanding and engagement with the topic. Provide any necessary support and materials to help the students successfully finish the activities.

MUST DO

10 MIN.

Differentiated Activities

110 km/hr


Why does hot air rise above cold air?

80 km/hr


What happens to air when it is heated?

40 km/hr


Which air is heavier—hot air or cold air?

Home Task

The 'Creating better' activity (Let us Make a boat) on page 72 of the Main Coursebook.

Period 11

SHOULD DO

5 MIN.

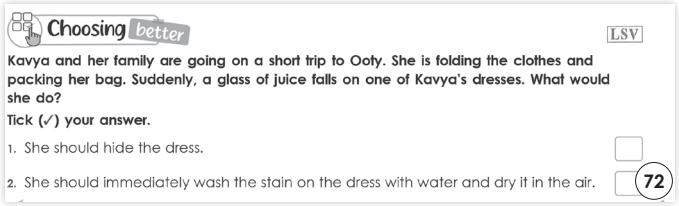
Teacher: Good morning, students. How are you all today?

Teacher: What happens when air expands? (It becomes lighter)

Teacher: Why do hot air balloons rise? (Hot air is lighter than cold air)

Teacher: What do we call the process of heating water until it turns into vapour? (Evaporation)
Teacher: What happens to a candle flame when we cut off its air supply? (It goes out)
Teacher: Name a method used to remove insoluble impurities from water. (Sedimentation/Filtration)
Teacher: Well done, everyone. Now, let us begin today's lesson.

Choosing Better

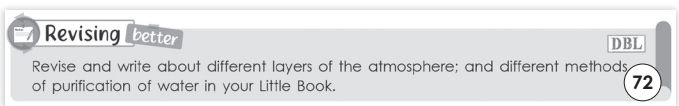

Choosing better LSV
Kavya and her family are going on a short trip to Ooty. She is folding the clothes and packing her bag. Suddenly, a glass of juice falls on one of Kavya's dresses. What would she do?
Tick (✓) your answer.
1. She should hide the dress.
2. She should immediately wash the stain on the dress with water and dry it in the air.
72

Teacher: Let us read about Kavya's situation. She and her family are packing for a short trip to Ooty. While folding her clothes, a glass of juice spills on her dress. What do you think she should do?

MUST DO 5 MIN.

Teacher: Here are two options—should she hide the dress or should she immediately wash the stain and dry it in the air?
Teacher: Very good. The correct choice is to wash the stain with water and dry it. Why do you think this is the best option?
Teacher: Exactly. Cleaning the stain immediately prevents it from setting and keeps the dress fresh for the trip. Fantastic thinking, everyone.

Revising Better


Revising better DBL
Revise and write about different layers of the atmosphere; and different methods of purification of water in your Little Book.
72

Teacher: We have learned about the different layers of the atmosphere and methods of water purification. Let us quickly revise. Can you name the five layers of the atmosphere?

MUST DO 5 MIN.

Teacher: Excellent. The troposphere, stratosphere, mesosphere, thermosphere and exosphere. Now, what are some ways to purify water?
Teacher: Well done. Water can be purified using sedimentation, filtration, evaporation, distillation and chlorination. You will now write about these topics in your Little Book.

Pledging Better

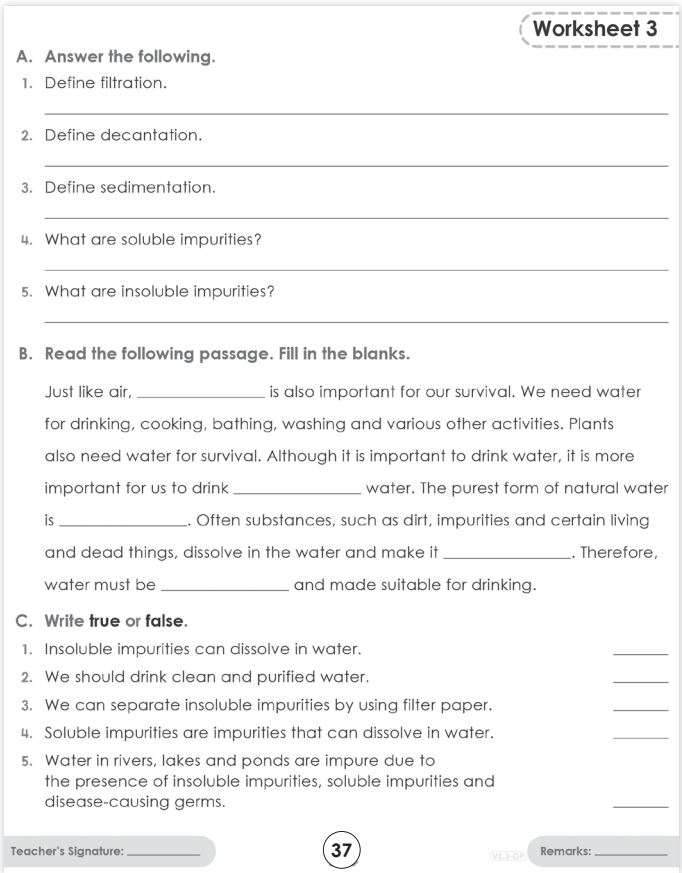

Pledging better SDGs
In my own little way, I pledge to take short showers/baths.
SDG 6: CLEAN WATER AND SANITATION
72

Teacher: Water is a precious resource and we must use it wisely. Let us take a small pledge today. Repeat after me—' In my own little way, I pledge to take short showers and baths.'

MUST DO 5 MIN.

Teacher: Well done. By doing this, we contribute to SDG 6—Clean Water and Sanitation. Every small effort helps in saving water. Keep up the good work.

Worksheet 3


Worksheet 3
A. Answer the following.
1. Define filtration.
2. Define decantation.
3. Define sedimentation.
4. What are soluble impurities?
5. What are insoluble impurities?

B. Read the following passage. Fill in the blanks.
Just like air, _____ is also important for our survival. We need water for drinking, cooking, bathing, washing and various other activities. Plants also need water for survival. Although it is important to drink water, it is more important for us to drink _____ water. The purest form of natural water is _____. Often substances, such as dirt, impurities and certain living and dead things, dissolve in the water and make it _____. Therefore, water must be _____ and made suitable for drinking.

C. Write true or false.
1. Insoluble impurities can dissolve in water. _____
2. We should drink clean and purified water. _____
3. We can separate insoluble impurities by using filter paper. _____
4. Soluble impurities are impurities that can dissolve in water. _____
5. Water in rivers, lakes and ponds are impure due to the presence of insoluble impurities, soluble impurities and disease-causing germs. _____

Teacher's Signature: _____ 37 V1.3-DP Remarks: _____

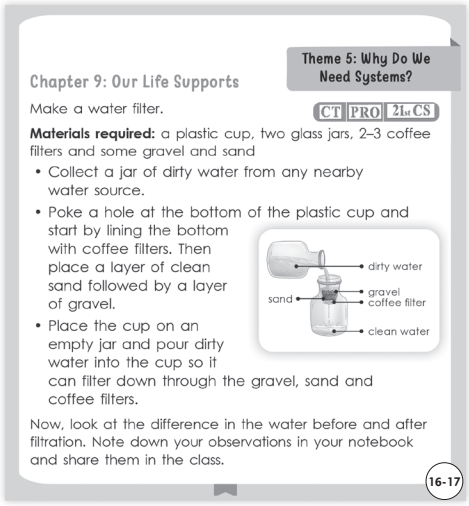
Teacher: Let us do some activities from the workbook. Everybody, please open page 37 of your workbook and answer the questions given in worksheet 3.

MUST DO 10 MIN.

(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

You may generate additional practice worksheets using the **Test Generator** given on the digital platform.

Book of Project Ideas



Theme 5: Why Do We Need Systems?

Chapter 9: Our Life Supports

Make a water filter. CT PRO 21st CS

Materials required: a plastic cup, two glass jars, 2–3 coffee filters and some gravel and sand

- Collect a jar of dirty water from any nearby water source.
- Poke a hole at the bottom of the plastic cup and start by lining the bottom with coffee filters. Then place a layer of clean sand followed by a layer of gravel.
- Place the cup on an empty jar and pour dirty water into the cup so it can filter down through the gravel, sand and coffee filters.

Now, look at the difference in the water before and after filtration. Note down your observations in your notebook and share them in the class.

16-17

Discuss the project assigned as the home task in the ninth period, focusing on helping students understand the objectives and addressing any challenges they face.

Teacher: Now, let us complete the 'KWL' activity.

Teacher: Take out your notebook and fill in the last column. Write what have you learned in this chapter.

(Wait for students to fill in the chart.)

SHOULD DO

5 MIN.

Teacher: Let us all give a huge round of applause to everyone for their hard work and creativity. Great work, everyone. See you in the next class. Have a wonderful day ahead.

Differentiated Activities

110 km/hr

Why is it important to save water?

80 km/hr

Name one method of purifying water.

40 km/hr

Which layer of the atmosphere is closest to Earth?

Home Task

Observe how you use water at home. List two ways you can reduce water wastage in your daily routine.

Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• develop fine motor skills by engaging in hands-on activities such as drawing and labelling the layers of the atmosphere, creating water filtration models and demonstrating air pressure experiments.
Socio-Emotional and Ethical Development	• demonstrate responsibility towards natural resources by making conscious choices to conserve air and water in daily life.
Cognitive Development	• analyse and explain the composition, properties and role of air and water in sustaining life, including methods of purification.
Language and Literacy Development	• communicate scientific ideas effectively by reading, discussing and writing about air and water using appropriate terminology.
Aesthetic and Cultural Development	• appreciate the significance of air and water through creative expressions such as storytelling, drawing or project-based activities.
Positive Learning Habits	• develop scientific curiosity by conducting simple experiments on air and water, making observations and drawing conclusions.

Starry Knights

How do you organise yourself for a hectic teaching schedule? Share a few tips.

Give yourself a STAR.

Answers

Theme 5: Why Do We Need Systems?
Lesson-9: Our Life Supports

Main Coursebook

Re-KAP

Kinaesthetic:

Accept all relevant responses

Auditory:

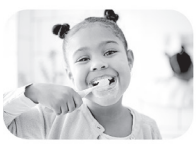
1. There is 78% nitrogen present in the atmosphere.
2. Troposphere is the lowest layer of Earth.

Pictorial


✓


✓


☐


✓


☐


✓

Interacting better:

boat ship

Accept all relevant responses

Understanding better: (Page 66)

1. No 2. Yes

Understanding better: (Page 68)

1. False 2. True

Understanding better: (Page 70)

1. Yes 2. No

Learning better:

A. 1. a 2. a 3. a
4. b 5. b

B. 1. True 2. False 3. True
4. False 5. False

C. 1. Troposphere, stratosphere, mesosphere, thermosphere and exosphere.
2. Nitrogen
3. In sedimentation, we allow the impurities to settle down at the bottom of container.

D. 1. i. Air has weight

Air has some weight, although this weight is comparatively less than that of liquids and solids.

ii. Air takes up space

Air occupies space. An inflated balloon appears bigger in size in comparison to a deflated balloon.

iii. Air exerts pressure

Since air has weight, it therefore, exerts pressure. The air pressure at the mountains is comparatively less than the air pressure at sea level.

iv. Air exerts pressure in all directions.

2. Insoluble impurities are the impurities that do not dissolve in water and can be seen. These impurities can be removed by the methods of sedimentation, and decantation and filtration. Soluble impurities are impurities that dissolve in water and cannot be seen. These impurities can be removed by methods of evaporation and distillation.

Creating better:

Accept all relevant responses

Thinking better:

Hot air is lighter than cold air because when air is heated, it spreads out and takes up more space, making it less dense. Since lighter things rise, hot air moves up and cold air, which is heavier, takes its place.

Choosing better:

2. She should immediately wash the stain on the dress with water and dry it in the air.

Students' Worksheets

Worksheet 1

A. 1. different 2. oxygen
3. outermost 4. troposphere
5. ultraviolet (UV)

B. 1. False 2. True 3. True
4. False 5. False

C. 1. → e 2. → c 3. → a
4. → b 5. → d

Worksheet 2

A. 1. pressure 2. inflated 3. 78 per cent
4. oxygen 5. Humidity

B. 1. EXOSPHERE 2. MESOSPHERE
3. TROPOSPHERE 4. STRATOSPHERE
5. THERMOSPHERE

C. 1. True 2. False 3. False
4. False 5. True

Worksheet 3

A. 1. In filtration, we separate impurities from water by using filter paper. In this, the insoluble impurities collect on the filter paper while the water collects in beaker or container kept below the filter, as filtrate.

2. In decantation, we first allow the impurities to settle down at the bottom of container. Then, without disturbing the sediment that is present at the bottom of the beaker, we drain the clean water on the top into another beaker.

3. In sedimentation, we allow the impurities to settle down at the bottom of container.

4. Soluble impurities are impurities that dissolve in water and cannot be seen.

5. Insoluble impurities are the impurities that do not dissolve in water and can be seen.

B. water; clean; rainwater; impure; purified

C. 1. No 2. Yes 3. Yes
4. Yes 5. Yes

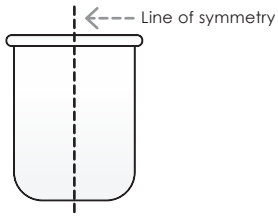
Book of Holistic Teaching

Developing better:

A. **English**

1. Rihan will get up early every day and will drink a glass of lukewarm water.
2. Rohan will go to a shop to fill air in his basketball.

B. **Maths**



C. **Social Studies**

In India, the responsibility for improving and maintaining the quality of air and water primarily falls under the Central Government and State Governments.

Book of Project Ideas

Making better:

Accept all relevant responses.