Lesson-13: All About Matter

Theme 9: How Do We Survive?

12 Periods (40 minutes each)

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

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

Affirming better: I can achieve my goals with patience.

Curricular Goals and Objectives (NCF)

To enable the students:

- to understand that matter makes up everything around us and exists in different forms.
- to identify and describe the properties and states of matter through observation and examples.
- to explore how matter changes from one state to another using heat or cooling.
- to differentiate between soluble and insoluble substances through hands-on activities.
- to apply scientific thinking to solve problems related to everyday uses of matter and water conservation.

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?

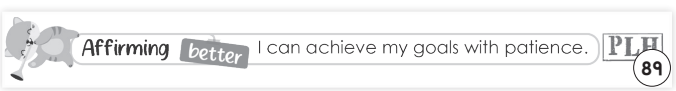
Teacher: Sit comfortably in your chair, with your back straight and feet flat on the ground. Close your eyes gently and take a deep breath through your nose. Hold it for a moment, then slowly breathe out through your mouth.

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 something positive together: 'I can achieve my goals with patience.' Repeat after me: 'I can achieve my goals with patience.'



Teacher: Alright. Today, we are going to begin a new chapter, 'All About Matter.' 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.

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.

MUST DO — 5 MIN.

K	W	L

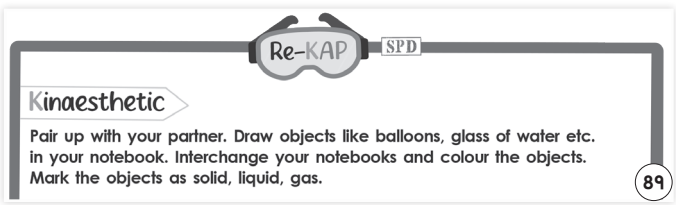
Teacher: Before we start the chapter, we will do a quick Re-KAP, which involves revisiting our previous knowledge through creative activities using Kinaesthetic, Auditory and Pictorial methods to make our learning interactive and engaging.

Kinaesthetic

MUST DO — 10 MIN.

Teacher: Pair up with your partner and draw at least four objects like balloons, a glass of water or anything you see around. Once done, exchange your notebooks.

(Let the students draw the objects and exchange them with their partners.)



Teacher: Now colour your partner's drawings and label each one as solid, liquid or gas.

(Let the students draw and label the objects. Discuss some of them.)

Teacher: Well done, everyone.

Auditory

Teacher: Let us start the auditory activity. Now, it is time to listen carefully. I will read something aloud to you. After that, you will answer a few questions. I want you to pay attention to every detail before answering. Are you ready?

MUST DO
10 MIN.

Auditory*

Listen to your teacher carefully. Answer the questions.

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Teacher: Everything around us is made of matter, which can be solid, liquid or gas. Solids have a fixed shape, like a wooden chair, while liquids take the shape of their container, like water. Gases, like the air we breathe, can fill any space. Matter can change from one state to another, like when ice melts into water or water boils and turns into steam.

What is an example of a solid given in the text?

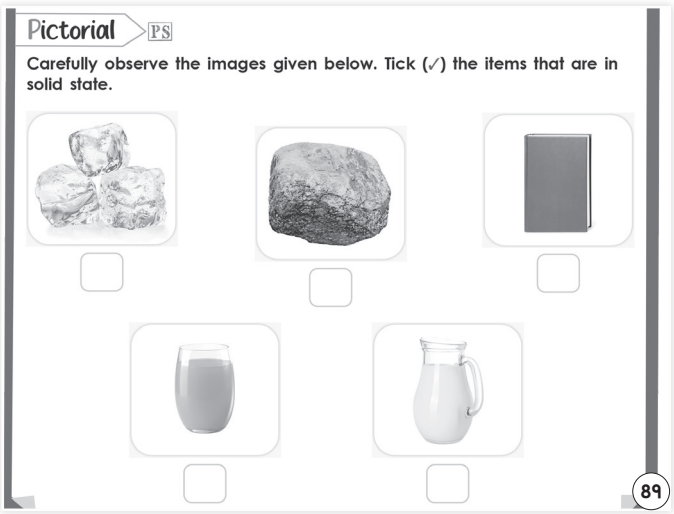
(Waits for student responses.)

Teacher: Fantastic answers. You were all listening carefully. Now, let us try a pictorial task.

Pictorial

Teacher: Look at the pictures carefully. And tick the boxes below the solid objects.

MUST DO
10 MIN.



(Let the students tick below the solid objects. Discuss the correct answers.)

Teacher: Correct. Well done.

Differentiated Activities

110 km/hr

List two properties of solids, liquids and gases each in your notebook.

80 km/hr

Write one example each of a solid, liquid and gas found at home.

40 km/hr

Name any two objects that are in solid state.

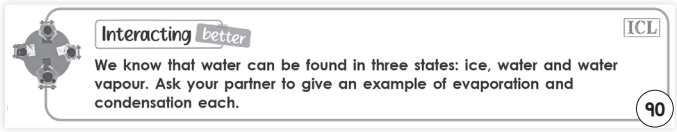
Home Task

Draw one example each of a solid, a liquid and a gas from your kitchen and label them.

Period 2

Interacting better

MUST DO
10 MIN.



Teacher: We know that water exists in three states – ice, water and water vapour. Talk to your partner and ask them to share one example of evaporation and one of condensation.

(Let students interact. Discuss some of the examples randomly.)

(Use CRM signs to settle the class.)

Teacher: Very good. That is exactly right. Well done, everyone.

Teacher: Everyone, open your books and look at the picture story given on page 90 of your Main Coursebook. Read it silently. Observe the expressions of the characters, the setting and what they are saying. Take your time and read each dialogue carefully.

MUST DO
30 MIN.

(Let the students read the story.)

Teacher: Now, let us discuss what you have read. Who can share what Maria saw on the wall?

Teacher: Yes, that is right. She saw a fire extinguisher. A fire extinguisher helps put out small fires and keeps people safe.

Teacher: Who can tell me what Maria asked her mother next?

Teacher: Great. She wanted to know the use of the fire extinguisher. That shows she is curious. Being curious helps us learn more.

Teacher: What did Maria say about the dosa?

Teacher: Good. She said it looked yummy. That is how food attracts us with its appearance. Food gives us energy to do all our activities.

Teacher: What question did her mother ask her about the juice?

Teacher: Yes, she asked if the juice is a solid, liquid or gas. That was a science question. Well done for noticing it.

Teacher: And what was Maria's answer?

Teacher: Correct. Juice is a liquid. Liquids do not have a fixed shape. They take the shape of the container.

Teacher: Excellent. You all have understood this story well. Now, let us move to some interesting tasks.

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

Differentiated Activities

110 km/hr

List one example each of a solid, a liquid and a gas you used today. Write how each one helped you.

80 km/hr

Draw and label one solid, one liquid and one gas from your home.

40 km/hr

Colour and label a picture of a solid and a liquid you saw in the story.

Home Task

Draw a picture showing one solid, one liquid and one gas in your lunch or kitchen at home. Label them clearly.

Period 3

SHOULD DO

5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Which state of matter has a fixed shape and fixed volume? (Solid)

Teacher: What is the state of matter that flows and takes the shape of the container? (Liquid)

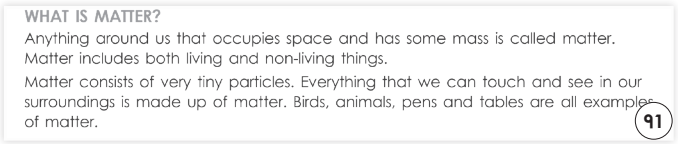
Teacher: What is the process called when ice turns into water? (Melting)

Teacher: Which state of matter spreads out to fill the space it is in? (Gas)

Teacher: What is one property that all three states of matter have in common? (They all occupy space and have mass)

Teacher: Wonderful answers. Let us now begin today's class.

(The teacher will read the first four paragraphs of page 91 aloud and provide explanations to ensure that the students understand the content.)



WHAT IS MATTER?

Anything around us that occupies space and has some mass is called matter. Matter includes both living and non-living things.

Matter consists of very tiny particles. Everything that we can touch and see in our surroundings is made up of matter. Birds, animals, pens and tables are all examples of matter.

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MUST DO

10 MIN.

Teacher: Can someone tell me what matter means?

Teacher: That is right. Anything that takes up space and has mass is called matter.

Teacher: Now, does matter include only living things or non-living things too?

Teacher: Correct, both living and non-living things are included.

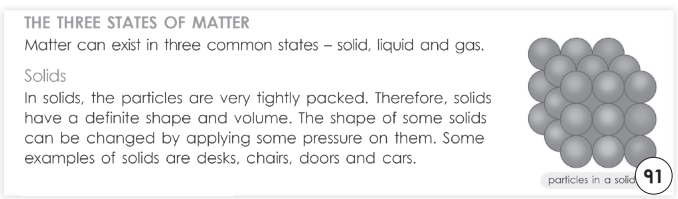
Teacher: What is matter made up of?

Teacher: Excellent. Matter consists of very tiny particles. We cannot see them easily, but they are there.

Teacher: Let us try naming some examples of matter. Can anyone recall them?

Teacher: Wonderful. Birds, animals, pens and tables are all examples. Everything we see and touch around us is made of matter.

Teacher: Well explained. That is what we mean when we say matter is all around us.



THE THREE STATES OF MATTER

Matter can exist in three common states – solid, liquid and gas.

Solids

In solids, the particles are very tightly packed. Therefore, solids have a definite shape and volume. The shape of some solids can be changed by applying some pressure on them. Some examples of solids are desks, chairs, doors and cars.

particles in a solid

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MUST DO

15 MIN.

Teacher: Now let us move to the next topic – The states of matter. Tell me, how many states of matter are there?

Teacher: Yes, three – solid, liquid and gas.

Teacher: We shall first talk about solids. What do we know about the particles in solids?

Teacher: Very good. They are very tightly packed. That is why solids do not change shape easily.

Teacher: Do solids have a definite shape and volume?

Teacher: Correct. They do. That is why things like a desk or a chair stay in the same shape unless we apply pressure.

Teacher: What happens to the shape of some solids when we apply pressure?

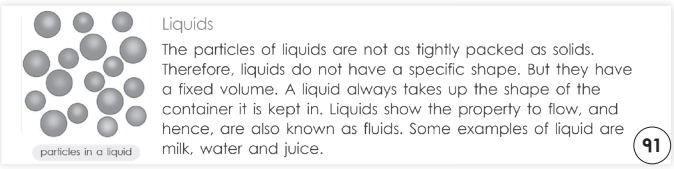
Teacher: Right. The shape can change a little, but they still remain solids.

Teacher: Let us look at the picture of particles in a solid. What do you observe about the way these particles are arranged?

Teacher: Excellent. The particles are arranged very close to each other and in an orderly manner.

Teacher: Can anyone name some examples of solids mentioned here?

Teacher: Yes, desks, chairs, doors and cars are all solids. Well done. Let us now explore liquids.



Teacher: How are the particles in liquids arranged compared to solids?

MUST DO
10 MIN.

Teacher: That is right. They are not as tightly packed. They have space between them.

Teacher: Do liquids have a fixed shape?

Teacher: No, they do not. But they do have a fixed volume. You are absolutely right.

Teacher: What shape does a liquid take?

Teacher: Good thinking. It always takes the shape of the container it is kept in.

Teacher: That is why water looks like a bottle when it is inside a bottle and looks like a glass when it is in a glass.

Teacher: Let us now look at the picture of particles in a liquid. What do you notice here?

Teacher: Very well observed. The particles are scattered and have more space between them than in solids.

Teacher: What do we call liquids because they can flow?

Teacher: Yes, they are also known as fluids. Good work.

Teacher: Finally, name some examples of liquids mentioned here.

Teacher: Correct again. Milk, water and juice are all liquids. You are learning so well.

Differentiated Activities

110 km/hr

How are particles in solids and liquids arranged differently?

80 km/hr

What state of matter takes the shape of its container?

40 km/hr

Name one example of a liquid.

Home Task

Write five sentences about solids and five sentences about liquids. Give one example of each.

Period 4

SHOULD DO
5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is the name given to anything that takes up space and has mass? (Matter)

Teacher: Which state of matter has a fixed shape and volume? (Solid)

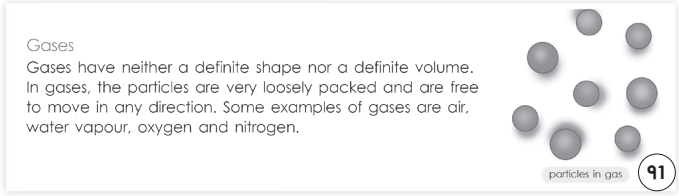
Teacher: What do liquids do when placed in a container? (Take the shape of the container)

Teacher: How are the particles in a solid arranged? (Tightly packed)

Teacher: Give one example of a fluid. (Milk or juice)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

(The teacher will read the last three paragraphs of page 91 aloud and provide explanations to ensure that the students understand the content.)



Teacher: Let us begin today's discussion with the last state of matter – gases. Who can describe the shape and volume of gases based on this part?

MUST DO
10 MIN.

Teacher: That is right. Gases do not have a definite shape or a definite volume.

Teacher: What do you understand about the arrangement of particles in gases?

Teacher: Very good. The particles are very loosely packed and free to move in any direction.

Teacher: Look at the picture of particles in a gas. What do you observe?

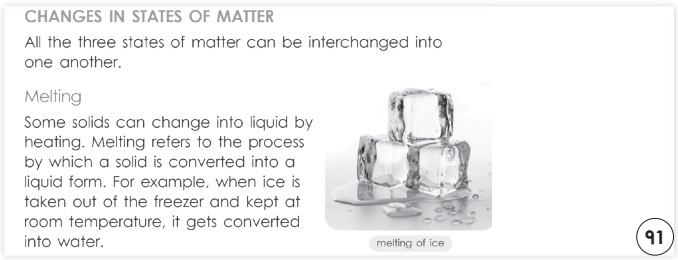
Teacher: Correct. The particles are scattered far apart from each other.

Teacher: Can anyone name the examples of gases mentioned here?

Teacher: Excellent. Air, water vapour, oxygen and nitrogen are all gases.

Teacher: Great answers. That completes our discussion on the three states of matter.

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


CHANGES IN STATES OF MATTER

All the three states of matter can be interchanged into one another.

Melting

Some solids can change into liquid by heating. Melting refers to the process by which a solid is converted into a liquid form. For example, when ice is taken out of the freezer and kept at room temperature, it gets converted into water.

melting of ice

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Teacher: Let us now move to the next section – Changes in States of Matter. Who can tell what this heading means?

MUST DO 15 MIN.

Teacher: Yes, all three states of matter can be changed into one another.

Teacher: Now, let us understand one of those changes – melting. What is melting?

Teacher: Very well explained. Melting is the process of changing a solid into a liquid by heating.

Teacher: Look at the example given. What happens to ice when it is taken out of the freezer and kept at room temperature?

Teacher: Perfect. It melts and turns into water.

Teacher: Look at the image beside the paragraph. What can you see?

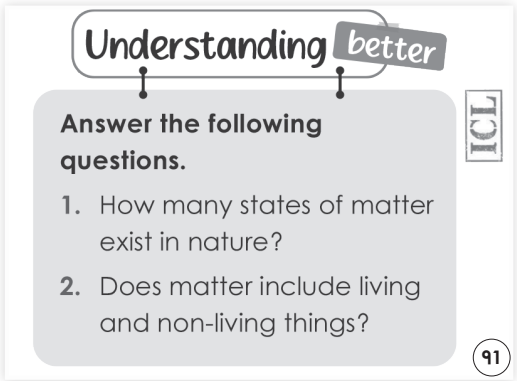
Teacher: Yes, ice cubes are melting. This is a perfect example of how solids can change into liquids.

Teacher: You all are doing a wonderful work. Let us answer some questions now.

Understanding better

Teacher: Now let us move to the 'Understanding better' section. Let us answer the first question. How many states of matter exist in nature?

MUST DO 10 MIN.


Understanding better

Answer the following questions.

1. How many states of matter exist in nature?
2. Does matter include living and non-living things?

ICL

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Teacher: That is correct. Three – solid, liquid and gas.

Teacher: Now, the second question. Does matter include living and non-living things?

Teacher: Good thinking. Yes, matter includes both living and non-living things.

Teacher: You have answered both questions accurately. Let us revise with some quick activities now.

Differentiated Activities

110 km/hr

Why does ice melt when kept at room temperature?

80 km/hr

Which state of matter has particles that move freely?

40 km/hr

Name one example of a gas.

Home Task

Draw a picture of ice melting into water. Write one sentence to describe what is happening.

Period 5

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

SHOULD DO 5 MIN.

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Do gases have a definite shape or volume? (No)

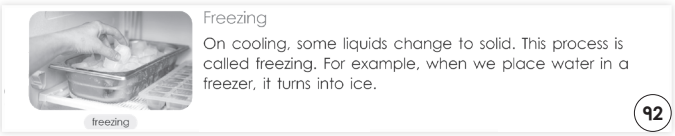
Teacher: What is the process of changing a solid into a liquid called? (Melting)

Teacher: Give one example of a gas from your surroundings. (Air)

Teacher: What happens to ice when left outside the freezer? (It melts)

Teacher: Can the states of matter be changed into one another? (Yes)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.


Freezing

On cooling, some liquids change to solid. This process is called freezing. For example, when we place water in a freezer, it turns into ice.

freezing

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Teacher: Let us begin with the heading 'Freezing'. What happens to some liquids when they are cooled?

MUST DO 10 MIN.

Teacher: Yes, they change into solids. That is correct.

Teacher: What is this change called?

Teacher: Very good. It is called freezing.

Teacher: Let us look at the example given. What happens when we place water in a freezer?

Teacher: Absolutely right. It turns into ice. Now tell me, is this change happening because of heating or cooling?

Teacher: Excellent. It is because of cooling. Cooling turns water into ice, which is a solid.

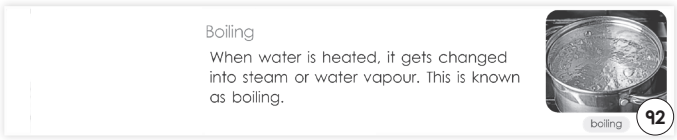
Teacher: Look at the image above the paragraph. What are you seeing in the picture?

Teacher: Yes, someone is placing an ice tray into the freezer. And what will happen after a few hours?

Teacher: Correct. The water in the tray will turn into solid ice cubes.

Teacher: So now we understand that when we cool a liquid like water, it undergoes freezing and becomes a solid like ice.

Teacher: Well explained, everyone. Let us now move to the next change.



Teacher: Now let us talk about the next process – boiling. What do you think happens when water is heated?

MUST DO
10 MIN.

Teacher: Yes, it turns into steam or water vapour. That is the change that happens due to heating.

Teacher: What name is given to this process?

Teacher: Very good. It is called boiling.

Teacher: Now, look at the picture next to the paragraph. What do you see in that vessel?

Teacher: Yes, the water is bubbling. What do these bubbles mean?

Teacher: Correct. It means the water is boiling and turning into steam.

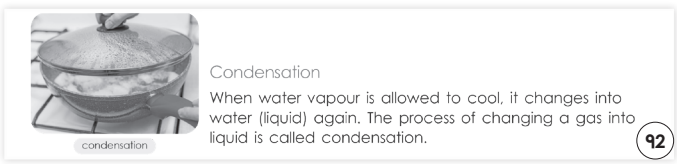
Teacher: So, in boiling, which state of matter is changing into which?

Teacher: Good work. Liquid is changing into gas. That is the key idea here.

Teacher: Now, tell me, what is the difference between freezing and boiling?

Teacher: Exactly. Freezing happens due to cooling and changes a liquid into a solid. Boiling happens due to heating and changes a liquid into a gas.

Teacher: Very nicely discussed. Let us move to the third process now.



Teacher: Let us read about 'Condensation'. What happens to water vapour when it is allowed to cool?

MUST DO
10 MIN.

Teacher: That is right. It changes back into water.

Teacher: What do we call this process?

Teacher: Yes, condensation. It is the process of changing gas into liquid.

Teacher: So, boiling changes water into vapour and condensation brings it back to water. That shows how matter changes its form.

Teacher: Now observe the image. What is happening on the lid of the vessel?

Teacher: Correct. Water droplets are forming. Where did they come from?

Teacher: Excellent. From the steam. When steam touches the cool lid, it cools down and changes into water.

Teacher: So in this process, what two states of matter are involved?

Teacher: Good thinking. Gas is changing back into liquid.

Teacher: Can we say that this is the opposite of boiling?

Teacher: Yes, that is right. Boiling is from liquid to gas and condensation is from gas to liquid.

Teacher: You have understood all three changes well – freezing, boiling and condensation. You were focused and thoughtful.

Poster

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

(Please display and discuss the posters prominently in the classroom to reinforce the learning about changes in states of matter. Encourage students to observe the posters and discuss the different types of changes in states of matter.)

MUST DO
5 MIN.

Teacher: Great observation, everyone.

You may show the **Infographic** and **Experiment** on the digital platform.

Differentiated Activities

110 km/hr

What is the main difference between condensation and freezing?

80 km/hr

What do we call the process of heating water until it changes into steam?

40 km/hr

What does water become when kept in the freezer?

Home Task

Write one sentence each about freezing, boiling and condensation. Also, draw a small picture of any one process.

Period 6

SHOULD DO
5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is the name of the process where a liquid turns into a solid? (Freezing)

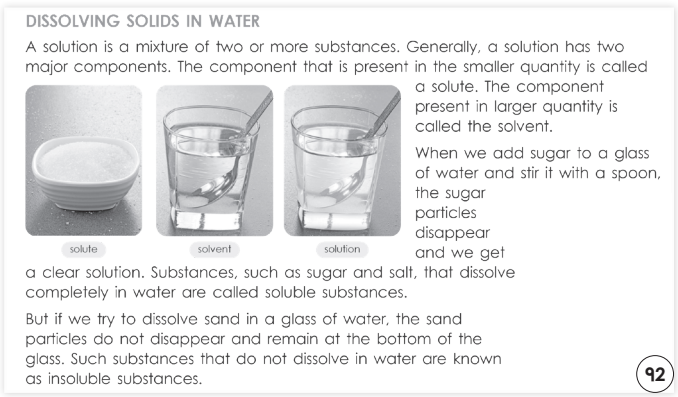
Teacher: What do we call the process where water turns into steam? (Boiling)

Teacher: What forms on the lid when steam cools down? (Water drops)

Teacher: Which process turns a gas back into a liquid? (Condensation)

Teacher: What is the state of water before it boils? (Liquid)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.



DISSOLVING SOLIDS IN WATER

A solution is a mixture of two or more substances. Generally, a solution has two major components. The component that is present in the smaller quantity is called a solute. The component present in larger quantity is called the solvent.

When we add sugar to a glass of water and stir it with a spoon, the sugar particles disappear and we get a clear solution. Substances, such as sugar and salt, that dissolve completely in water are called soluble substances.

But if we try to dissolve sand in a glass of water, the sand particles do not disappear and remain at the bottom of the glass. Such substances that do not dissolve in water are known as insoluble substances.

solute solvent solution

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MUST DO
25 MIN.

Teacher: Let us look at the section titled – Dissolving Solids in Water. Who can tell me what a solution is?

Teacher: Yes, a solution is a mixture of two or more substances. Very well remembered.

Teacher: How many main components does a solution have?

Teacher: Correct. Two components. One is present in a smaller quantity and the other in a larger quantity.

Teacher: What do we call the component that is present in a smaller quantity?

Teacher: Excellent. That is the solute.

Teacher: And the one that is present in a larger quantity?

Teacher: Very good. That is the solvent.

Teacher: Now, let us look at the first image. What do you see in the bowl?

Teacher: Yes, that is the solute–sugar.

Teacher: What is shown in the second glass?

Teacher: You are right. That is the solvent – water.

Teacher: What do you see in the third image?

Teacher: Perfect. That is the solution formed after stirring sugar into water. The sugar disappears and we get a clear liquid.

Teacher: Now, tell me, what kind of substances completely dissolve in water?

Teacher: Great answer. Substances like sugar and salt that dissolve fully are called soluble substances.

Teacher: What happens if we try to dissolve sand in water?

Teacher: Exactly. The sand does not disappear. It stays at the bottom.

Teacher: So, what do we call substances that do not dissolve in water?

Teacher: Yes, they are called insoluble substances. Well done.

Teacher: Can you give me one example each of a soluble and an insoluble substance?

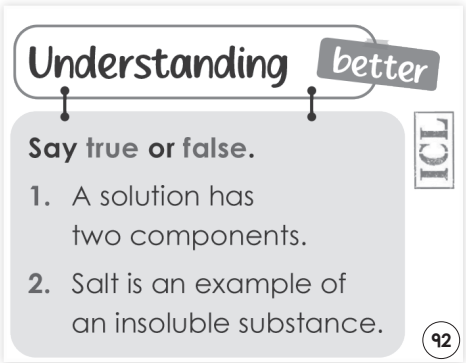
Teacher: Very nice responses.

You may show the **Slideshow** and **Concept Map** given on the digital platform.

Understanding better

MUST DO
10 MIN.

Teacher: Let us complete the 'Understanding better' section. First one – a solution has two components. True or false?



Understanding better

Say true or false.

1. A solution has two components.
2. Salt is an example of an insoluble substance.

ICL

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Teacher: That is correct. It is true. A solution is made up of two main parts – the solute, which is in smaller quantity and the solvent, which is in larger quantity.

Teacher: Now, the second one – salt is an example of an insoluble substance. What do you think?

Teacher: Good work. That is false. Salt is a soluble substance. Great thinking.

Differentiated Activities

110 km/hr

What is the difference between a soluble and an insoluble substance?

80 km/hr

Name one example of a soluble substance.

40 km/hr

What do we call the liquid that forms after mixing sugar in water?

Home Task

Write the definitions of solute, solvent and solution in your own words. Give one example of each.

Period 7

SHOULD DO
5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is a mixture of two or more substances called? (Solution)

Teacher: What do we call the part that dissolves in a solution? (Solute)

Teacher: What do we call sugar in the sugar-water solution? (Solute)

Teacher: What happens to sand when mixed in water? (It settles at the bottom)

Teacher: Name one substance that does not dissolve in water. (Sand)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

Connecting better

MUST DO
10 MIN.

Teacher: Let us begin with the 'Connecting better' section. Read it carefully.

(Let the students read the 'Connecting better' section.)

Teacher: Who can tell me where Maria was walking?

Teacher: Yes, she was walking through a mall.

Teacher: What did she notice in the toy section?

Teacher: That is right. A miniature bridge.

Teacher: What did her mumma ask her?

Teacher: Correct. She asked Maria about the materials used to make a bridge.

Teacher: What was Maria's reply?

Teacher: Very well said. Bridges are made of materials like steel, cement and brick.

Teacher: Why do you think Maria's mumma smiled and patted her?

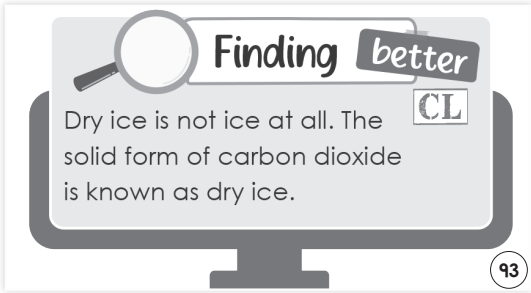
Teacher: Yes, because Maria answered correctly and confidently.

Teacher: Very good. This is how we connect what we see in real life with what we learn in class.

Finding better

MUST DO
5 MIN.

Teacher: Now let us explore the 'Finding better' section. Read the information aloud and tell me, what is dry ice?



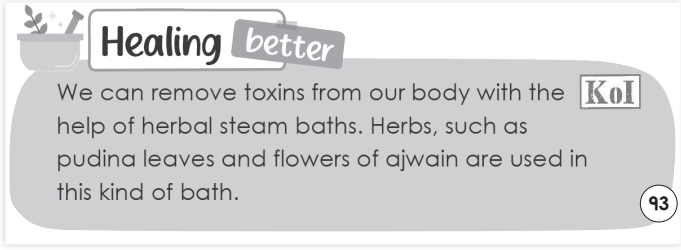
Teacher: That is correct. Dry ice is not actually ice. It is the solid form of carbon dioxide.

Teacher: Very good. That is why it looks like ice but behaves differently.

Healing better

MUST DO
5 MIN.

Teacher: Now let us go to the 'Healing better' box. Read it carefully.



(Let the students read the 'Healing better' section.)

Teacher: What helps remove toxins from our bodies?

Teacher: Yes, herbal steam baths help in removing toxins.

Teacher: What herbs are used for such baths?

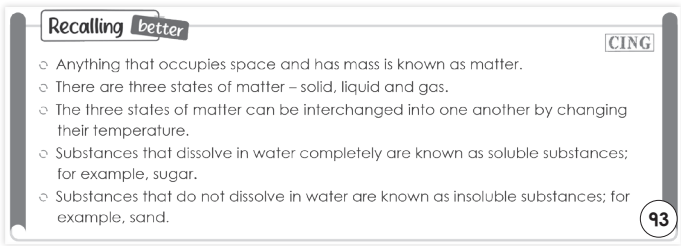
Teacher: Very good. Pudina leaves and ajwain flowers are used.

Teacher: Well done. Let us now quickly revise what we have learnt so far.

Recalling better

MUST DO
15 MIN.

Teacher: What is matter? Who can explain it in simple words?



Teacher: Yes, matter is anything that occupies space and has mass. That means all the things around us – whether they are big or small, living or non-living – are made of matter.

Teacher: Can you give me a few examples of matter from your home or classroom?

Teacher: Very good. You mentioned tables, chairs, water and even air. All of them are matter.

Teacher: How many states of matter do we know?

Teacher: Correct. There are three states – solid, liquid and gas. Can anyone name one example of each?

Teacher: Excellent. Ice is a solid, water is a liquid and steam or air is a gas.

Teacher: Can states of matter change into one another?

Teacher: Yes, they can. Heating and cooling can bring about this change. For example, when we heat ice, it melts and becomes water. And when we heat water further, it changes into steam. Similarly, if we cool steam, it changes back to water and further cooling changes it to ice again.

Teacher: What are substances called if they dissolve completely in water?

Teacher: Correct. They are called soluble substances. Sugar and salt are the most common examples. When you stir sugar in water, it disappears completely.

Teacher: Can you name another soluble substance?

Teacher: Very good. That is right.

Teacher: Now, what do we call substances that do not dissolve in water?

Teacher: Yes, they are called insoluble substances. For example, sand remains at the bottom of the glass even if we stir it. It does not mix with water.

Teacher: So sugar is a soluble substance and sand is an insoluble one. This is how we understand the behaviour of different materials when mixed with water.

Teacher: That was a very thoughtful discussion. I am happy with the way you remembered and explained all the concepts clearly.

You may start the **Animated Activities** and **Quiz** given on the digital platform.

Differentiated Activities

110 km/hr

Why does dry ice look like normal ice but behave differently?

80 km/hr

What is the name of the solid form of carbon dioxide?

40 km/hr

How many states of matter are there?

Home Task

Complete the 'Trying better' activity given on page 92 of the Main Coursebook.

Period 8

SHOULD DO — 5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What are the three states of matter? (Solid, liquid, gas)

Teacher: What materials are used to make a bridge? (Steel, cement, brick)

Teacher: What is dry ice made of? (Carbon dioxide)

Teacher: What helps remove toxins in herbal steam? (Pudina and ajwain)

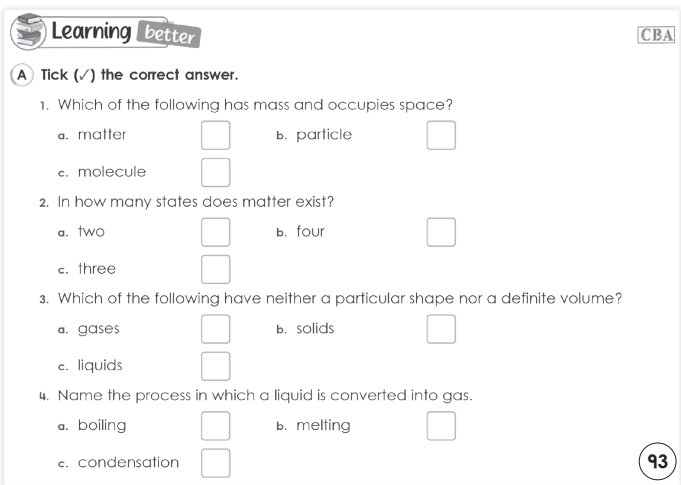
Teacher: What is matter? (Anything that occupies space and has mass)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

Learning better

MUST DO — 10 MIN.

Teacher: Everyone, please open page 93 of your Main Coursebook. In Exercise 'A' of 'Learning better' you have to tick the correct answer. Are you ready to get started?



Learning better — CBA

(A) Tick (✓) the correct answer.

1. Which of the following has mass and occupies space?
   a. matter ☐ b. particle ☐ c. molecule ☐
2. In how many states does matter exist?
   a. two ☐ b. four ☐ c. three ☐
3. Which of the following have neither a particular shape nor a definite volume?
   a. gases ☐ b. solids ☐ c. liquids ☐
4. Name the process in which a liquid is converted into gas.
   a. boiling ☐ b. melting ☐ c. condensation ☐

93

5. What do you call substances that do not dissolve in water?
   a. solid ☐ b. soluble ☐ c. insoluble ☐

94

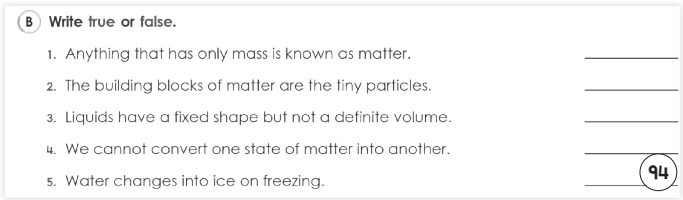
Teacher: Great. Let us begin with the first question. Which of the following has mass and occupies space?

Teacher: The correct answer is matter. Well done.

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

Teacher: In Exercise 'B' of 'Learning better', you have to write true or false. Are you ready to get started?

MUST DO — 10 MIN.


B Write true or false.

1. Anything that has only mass is known as matter. _____
2. The building blocks of matter are the tiny particles. _____
3. Liquids have a fixed shape but not a definite volume. _____
4. We cannot convert one state of matter into another. _____
5. Water changes into ice on freezing. _____

94

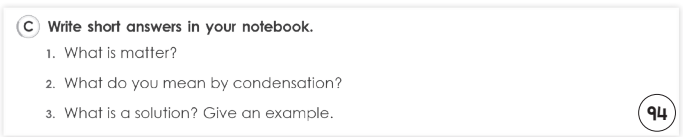
Teacher: Great. Let us begin with the first statement. Anything that has only mass is known as matter. Is it true or false?

Teacher: That is false. Matter is something that has both mass and occupies space. If it has only mass but does not occupy space, it cannot be considered matter. So the correct answer is false.

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

Teacher: 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?

MUST DO
15 MIN.


C Write short answers in your notebook.

1. What is matter?
2. What do you mean by condensation?
3. What is a solution? Give an example.

94

Teacher: Great. Let us begin with the first question. What is matter?

(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.)

(Similarly, complete all three questions and discuss the correct answer with the class.)

Differentiated Activities

110 km/hr

Why does water turn into steam faster when it is boiled in an open vessel?

80 km/hr

What do we call the process when steam touches a cold surface and changes into water?

40 km/hr

Which state of matter flows easily and takes the shape of its container?

Home Task

Write one real-life situation where you have seen matter changing its state. Explain what caused the change and name the new state formed.

Period 9

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

SHOULD DO
5 MIN.

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What happens when you keep a steel spoon in hot water for some time? (It becomes hot due to heat transfer)

Teacher: Why do you see water drops on the outside of a cold glass? (Condensation)

Teacher: What makes sugar disappear when stirred into water? (It dissolves, forming a solution)

Teacher: How is dry ice different from regular ice? (It turns directly into gas)

Teacher: What makes herbal steam useful for the body? (It helps remove toxins)

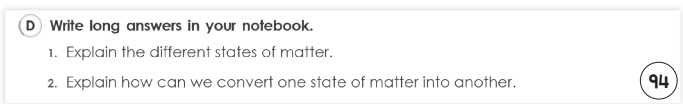
Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

Learning better

Teacher: Everyone, please open page 94 of your Main Coursebook. Let us explore some short-answer questions.

MUST DO
20 MIN.

Let us explore some long-answer questions. In Exercise 'D' of the 'Learning better', you have to write a long answer.


D Write long answers in your notebook.

1. Explain the different states of matter.
2. Explain how can we convert one state of matter into another.

94

Teacher: Let us begin with the first question. Explain the different states of matter.

(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.)

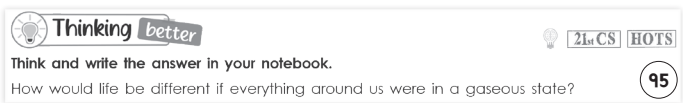
(Similarly, complete the second question and discuss the correct answer with the class.)

(Instruct the students to bring their Little Book to the next class.)

Thinking better

Teacher: Let us move to the 'Thinking better' section. I will ask you a question and I want you to think deeply before writing your answer in your notebook.

MUST DO
15 MIN.


Thinking better

21st CS HOTS

Think and write the answer in your notebook.

How would life be different if everything around us were in a gaseous state?

95

Teacher: Think about this – how would life be different if everything around us were in a gaseous state? Imagine your home, classroom and even your food turning into gas. What problems might we face?

Teacher: Take a moment to think and write your answer in your notebook. Try to explain your ideas clearly and give one or two examples.

(Give the students time to think and write their answers in their notebooks.)

Teacher: Life would be very difficult if everything were in a gaseous state because we would not be able to see, touch or use objects like chairs, books or food, as they would not have any fixed shape or volume.

Teacher: That was a very thoughtful question and you all shared some interesting ideas. It is clear that solids and liquids play an important role in making our world stable and usable. Well done, everyone.

(Instruct the students to bring their Little Book to the next class.)

Differentiated Activities

110 km/hr

Why do you think gases need to be stored in closed containers, while solids do not?

80 km/hr

What would happen if we tried to dissolve chalk powder in water? Would it be soluble or insoluble?

40 km/hr

Which state of matter can change its shape but not its volume?

Home Task

Complete the 'Creating better' activity given on page 94 of the Main Coursebook.

Period 10

SHOULD DO — 5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What do we call a solid that changes into a liquid when heated? (Melting)

Teacher: Which part of a solution is present in the larger quantity? (Solvent)

Teacher: Why does sand settle at the bottom of water instead of mixing in it? (It is insoluble)

Teacher: What makes dry ice different from regular ice? (It turns into gas directly)

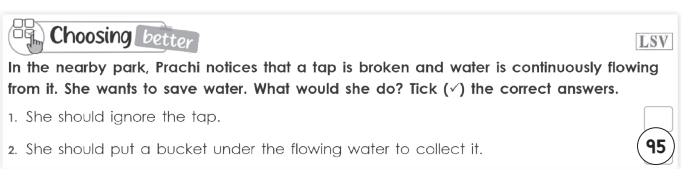
Teacher: Can we survive if oxygen were not present in the air? Why not? (No, because we need it to breathe)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

Choosing better

MUST DO — 5 MIN.

Teacher: Let us look at the 'Choosing better' section. Prachi sees a broken tap with water flowing. She wants to save water. What should she do?


Choosing better — LSV

In the nearby park, Prachi notices that a tap is broken and water is continuously flowing from it. She wants to save water. What would she do? Tick (✓) the correct answers.

1. She should ignore the tap. ☐
2. She should put a bucket under the flowing water to collect it. ☐

95

Teacher: Should she ignore the tap or collect the water in a bucket?

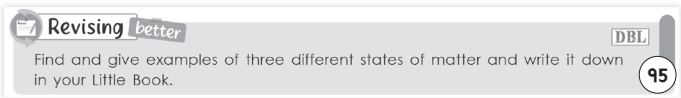
(Let the students choose from the options.)

Teacher: Yes, collecting it is the right choice. Ignoring it would waste water. This shows she is responsible and wants to protect resources.

Revising better

MUST DO — 10 MIN.

Teacher: We have learnt about solids, liquids and gases. Can you give one example of each from your surroundings?


Revising better — DBL

Find and give examples of three different states of matter and write it down in your Little Book.

95

Teacher: Wonderful. Now observe the things around you and write down one example each of a solid, a liquid and a gas in your Little Book.

Teacher: This will help you connect your learning with real life.

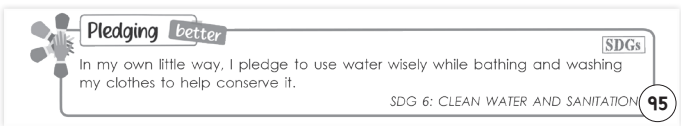
(Let the students revise and write in their little book.)

Teacher: Excellent. You all are doing a great work.

Pledging better

MUST DO — 5 MIN.

Teacher: Let us now take a pledge together. Please repeat after me: 'In my own little way, I pledge to use water wisely while bathing and washing my clothes to help conserve it.'


Pledging better — SDGs

In my own little way, I pledge to use water wisely while bathing and washing my clothes to help conserve it.

SDG 6: CLEAN WATER AND SANITATION

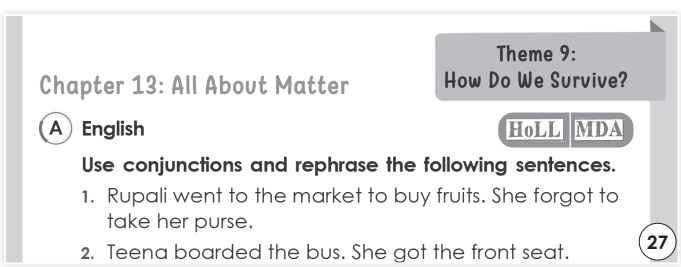
95

Teacher: You are promising to save water while bathing and washing clothes. This is part of being a responsible citizen and supports SDG 6 – Clean Water and Sanitation. Every drop counts.

Book of Holistic Teaching

COULD DO — 15 MIN.

Refer to the Book of Holistic Teaching, page number 27 under the title 'All About Matter.' 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.


Theme 9: How Do We Survive?

Chapter 13: All About Matter

(A) English — HoLL | MDA

Use conjunctions and rephrase the following sentences.

1. Rupali went to the market to buy fruits. She forgot to take her purse.
2. Teena boarded the bus. She got the front seat.

27

(B) Maths

You go out for grocery shopping with your mother. She buys 15 apples, 10 oranges and 25 bananas. Represent this in the form of a pie chart in your notebook.

27

(C) Social Studies

Name any two solid materials from which bridges can be formed. Write your answer in the blank provided.

28

(Instruct students to bring their workbooks to their next class.)

Differentiated Activities

110 km/hr

Why do you think gases are harder to store and transport compared to solids and liquids?

80 km/hr

What would happen if all the water on Earth suddenly became a solid?

40 km/hr

Which state of matter has a fixed shape and volume?

Home Task

The Project Idea, given in the book of Project Ideas, page 21, under the title 'All About Matter.' 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 11

SHOULD DO — 5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: If there were no solids, what changes would you see in your classroom? (There would be no desks or chairs)

Teacher: Why does steam disappear into the air so quickly? (Because it is a gas and spreads fast)

Teacher: If you mix salt in water and still see it, is it soluble or insoluble? (Insoluble)

Teacher: What is one smart way you can reuse water at home? (Use water from washing vegetables to water plants)

Teacher: What is one thing you did recently to save water? (Any personal action – e.g., turned off a tap)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

Worksheet 1

MUST DO — 15 MIN.

Teacher: Let us do some activities from the workbook. Everybody, please open page 47 of your workbook and answer the questions given in worksheet - 1.

Theme 9: How Do We Survive?

13. All About Matter

Worksheet 1

A. Fill in the blanks.

1. Water becomes _____ when cooled down (ice/steam).
2. Ice becomes _____ when heated up (steam/water).
3. Steam becomes _____ when cooled down (water/ice).
4. The particles of a solid are _____ packed (tightly/loosely).
5. The particles of a liquid are _____ packed (loosely/tightly).

B. Write true or false.

1. Matter consists of very tiny particles. _____
2. Pen, table and animals are some examples of matter. _____
3. Matter exists in four states. _____
4. Desk and chair are example of liquids. _____
5. Milk and water are examples of solids. _____

C. Which of these statements about water are correct? Tick (✓) the correct answers.

1. Water exists in liquid state. ☐
2. Ice exists in solid state. ☐
3. Vapour exists in liquid state. ☐
4. Water exists in solid state. ☐
5. Particles of steam are loosely packed. ☐

47

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

Worksheet 2

MUST DO — 20 MIN.

Teacher: Let us do some activities from the worksheet -2. Everybody, please open page 48 of your workbook and answer the questions given in worksheet -2.

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

Worksheet 2

A. Five words related to water and its three states are given in the word search. Find them and colour them with a blue crayon.

I__E
W__T__R
ME__T__ __G
V__P__ __R
FR__ __Z__ __G

T	F	R	E	E	Z	I	N	G	N
H	O	C	N	A	N	I	B	D	W
A	P	S	Y	R	E	E	D	L	V
I	T	L	D	Q	H	H	Z	X	A
C	M	S	E	U	P	R	J	G	P
E	S	W	A	T	E	R	L	R	O
O	N	K	E	L	R	K	X	A	U
N	E	T	D	V	D	R	O	N	R
C	D	W	O	N	K	R	P	T	I
L	M	E	L	T	I	N	G	R	Z

48

B. Fill in the blanks with correct answers.

1. The shape of a solid _____ when some pressure is applied on it.
2. A liquid always takes up the shape of _____ it is kept in.
3. Liquids are also known as _____.
4. Gases are _____ to move in any direction.
5. Boiling the water changes it into _____.

C. Write true or false.

1. A solution is made up of two or more substances. _____
2. The component present in less quantity in a solution is called the solvent. _____
3. The sugar particles disappear in a clear solution. _____
4. Marbles, when dissolved in water, give a clear solution. _____
5. Substances that dissolve in water completely are called insoluble substances. _____

48

Differentiated Activities

110 km/hr

If all substances became soluble in water, how would it affect our lives? Give one example.

80 km/hr

What change would you notice if condensation did not happen in nature?

40 km/hr

Name one thing at home that stays in a fixed shape but cannot flow.

Home Task

Observe your kitchen at home and list one solid, one liquid and one gas you find. Describe how each is used.

Period 12

SHOULD DO — 5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Why is it easier to walk through air than through water? (Air is less dense than water)

Teacher: What might happen if we tried to sit on something made of gas? (We would fall; gas has no fixed shape or support)

Teacher: If you spill water on the floor, why does it spread out? (Because liquids flow and take the shape of the surface)

Teacher: Why should we collect rainwater in buckets or tanks? (To save and reuse it)

Teacher: What is one change you can make in your daily routine to use water more wisely? (Any responsible behaviour)

Teacher: Excellent answers. Let us now move forward to the next part of our lesson.

Book of Project Ideas

COULD DO — 15 MIN.

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

Chapter 13: All About Matter — Theme 9: How Do We Survive?

States of matter

Materials required: chart paper, crayons, glue, a pair of scissors, balloon — ICT PRO 21st CS

- Divide the chart paper into three sections: "Solids," "Liquids" and "Gases." Label each section clearly.
- Find out the picture of ice cubes, glass of water or a balloon using Internet*.
- In the "Solids" section, add a picture of an ice cube.
- In the "Liquids" section, add a picture of a glass of water.
- In the "Gases" section, add a picture of a balloon.
- Write a short description below solid, liquid and gas.
- Add colours, borders or any additional drawings to make the poster more neat and clean.
- Present this poster in your class.

48

Worksheet – 3

Teacher: Let us do some activities from the workbook. Everybody, please open page 49 of your workbook and answer the questions given in worksheet - 3.

COULD DO — 15 MIN.

Worksheet 3

A. Fill in the blanks.

1. All the three states of matter can be _____ into one another.
2. Melting is conversion of a _____ into a liquid.
3. Freezing is conversion of a _____ into a solid.
4. Boiling is conversion of a liquid into a _____.
5. Condensation is conversion of vapours into a _____.

B. Which of these get melted when heated? Tick (✓) the correct answers.

1. juice ☐
2. a stone ☐
3. an ice cube ☐
4. a cup ☐
5. an ice cream ☐

C. Which of these statements about water are correct? Tick (✓) the correct answers.

1. We drink water in vapour form. ☐
2. We can dissolve sugar in water completely. ☐
3. Water is always found in solid form in nature. ☐
4. Water changes shape from one container to another container. ☐
5. The particles of water are less tightly packed in comparison to that of a chalk. ☐

49

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

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

Teacher: Take out your notebook and fill in the 'L' column. Write what you have learnt in this chapter.

SHOULD DO

5 MIN.

(Wait for students to fill in the chart.)

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 does salt disappear in water while pebbles do not? What does this tell us about the nature of different materials?

80 km/hr

If a substance changes its shape but not its volume, which state of matter does it belong to?

40 km/hr

What do you see on a cold water bottle kept outside in warm air?

Home Task

Ask one family member to name one solid, one liquid and one gas they use daily. Write down what each is used for at home.

Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• develop fine motor skills and demonstrate coordination and control while conducting experiments like mixing substances or observing changes in states of matter.
Socio-Emotional and Ethical Development	• show responsibility by discussing ways to conserve water and prevent wastage during everyday activities.
Cognitive Development	• identify, classify and explain states of matter and changes in states based on particle arrangement and properties.
Language and Literacy Development	• describe scientific processes like boiling, freezing, condensation and dissolving using appropriate terminology in speaking and writing.
Aesthetic and Cultural Development	• create visual representations of physical phenomena, like oil-drop paintings, to appreciate the patterns and changes in matter.
Positive Learning Habits	• show curiosity and critical thinking through reflection tasks, problem-solving situations and by drawing real-life connections in matter-related discussions.

Starry Knights

Are you upbeat about your teaching skills? What is the best part of teaching Science to the young learners? Kindly share.

Reward yourself with a STAR.

Lesson-14: Our Environment

12 Periods (40 minutes each)

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

Animation, Animated Activities, Concept Map, Dictionary, eBook, I Explain, Infographic, Quiz, Slideshow, Test Generator

Confirming better: I do not litter.

Curricular Goals and Objectives (NCF)

To enable the students:

- to recognise the significance of the environment and the need for its protection.
- to identify various forms of pollution and classify natural resources.
- to differentiate between biodegradable and non-biodegradable waste.
- to apply the principles of reduce, reuse and recycle in everyday situations.
- to participate in activities that promote environmental conservation and communicate responsible practices with peers.

Methodology

Period 1

SHOULD DO — 5 MIN.

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

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

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.

MUST DO — 5 MIN.

Teacher: Before we start the class, let us all say together, 'I do not litter.' Repeat after me: 'I do not litter.'

Teacher: Alright. Today, we are going to begin a new chapter, 'Our Environment.' 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.

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

Kinaesthetic

Work with your partner. Discuss and draw one material each that can be recycled. (96)

MUST DO — 10 MIN.

Teacher: Students, pair up quickly. With your partner, discuss and draw one material each that can be recycled, such as paper, plastic or glass. Start now, I will visit your tables to see your ideas.

(Let the students discuss and draw.)

Teacher: Excellent work. Who would like to share their recyclable material and drawing with the class?

(Discuss one or two drawings with the class.)

Teacher: Well done, everyone. Recycling helps keep our environment clean, so keep thinking of more recyclable items.

Auditory

Auditory*

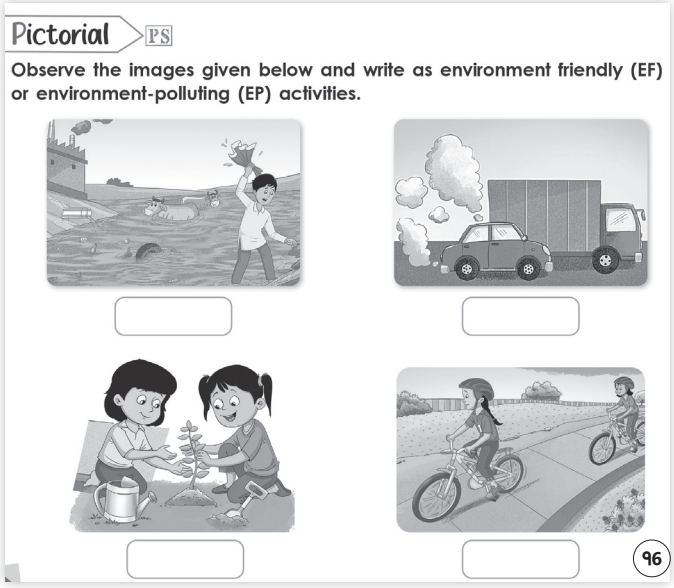
Listen to your teacher carefully. Answer the questions. (96)

Teacher: Now, let us move to the Auditory section. Listen carefully. I will ask some questions and you will answer them. Pay close attention before you respond.

MUST DO
10 MIN.

Teacher: Our environment includes biotic components, like plants and animals and abiotic components, like air and water. Sadly, pollution such as air, water and land pollution—harms both living and non-living things. We must work together to reduce pollution and protect our environment. Can you name some abiotic components mentioned in the text?
(Wait for students to answer)
Teacher: Great listening. Keep it up.

Pictorial



Teacher: Let us now move to a pictorial activity. Look at the four pictures on your textbook page carefully.

MUST DO
10 MIN.

Teacher: Each picture shows a different activity. Some are good for the environment and some are harmful. We call the good ones 'environment-friendly' or EF and the harmful ones 'environment-polluting' or EP.
Teacher: Take two minutes to observe each picture. Then, write EF or EP in the box below each image.
(Let the students observe and write. Discuss the correct answer.)
Teacher: Great job, students. You now know how our daily actions can help or harm the environment.

Differentiated Activities

110 km/hr

Explain in detail how recycling paper, plastic and glass helps the environment. Then, name another item that can be recycled and describe the process involved.

80 km/hr

Name one material that can be recycled. Discuss how recycling that material can help reduce pollution in your community. Then, suggest one way people can recycle at home.

40 km/hr

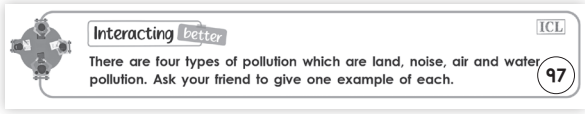
Name one recyclable material. Then, talk about one simple action you can take at home to help recycle that material.

Home Task

Find and write about one recyclable material you use at home. Describe how you can recycle it and why it is important to recycle that material to protect the environment.

Period 2

Interacting better



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

MUST DO
10 MIN.

Teacher: Great. Today, we are going to discuss pollution. You will work with a partner. Ask your partner to give one example of each type of pollution. Take turns asking each other for an example of each type of pollution: land, noise, air and water.
Teacher: Remember to take turns asking each other and listening carefully. After that, I will ask a few of you to share your answers. Let us start.
(Give students time to discuss and ask a few of them to share their answers.)
(Use CRM signs to settle the class.)
Teacher: Wonderful. Great discussion, everyone.

Teacher: Everyone, open your books and look at the picture story given on page 97 of your Main Coursebook.

MUST DO
30 MIN.

Read it silently. Observe the expressions of the characters, the setting and what they are saying. Take your time and read each dialogue carefully.

(Let the students read the story.)

Teacher: Now, let us discuss what you have read. I will ask a few questions to check your understanding.

Teacher: What did Maria ask her Mumma about the water in the river?

Teacher: That is right. Maria was curious about why the water in the river was so dirty. And Mumma explained it was because of industrial waste being discharged into the river.

Teacher: Mumma says that we should not pollute water. Why do you think it is important not to pollute water?

Teacher: Very good. It is because clean water is very important for all living beings to survive. Polluting water harms life on Earth.

Teacher: What did Maria notice in the garden? What was made from recycled materials?

Teacher: Yes, Maria noticed a big sculpture that was made from recycled clothes and bottles. That is a great example of how we can reuse old materials.

Teacher: Maria then asked her Mumma if they could make something similar at home. What do you think she meant by that?

Teacher: That is right. Maria was thinking about how we can use old materials at home to create new things. Recycling helps reduce waste and is good for the environment.

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

Differentiated Activities

110 km/hr

Describe how recycling helps in reducing pollution. Then, come up with an example of something that can be made using recycled materials. Finally, discuss how this can help the environment.

80 km/hr

List three things that can cause water pollution and one thing we can do at home to reduce it. Then, explain why it is important for people to work together to reduce pollution.

40 km/hr

Give one example of a place where pollution is common. Then, explain one simple action you can take to reduce pollution in your own home or school.

Home Task

Find and write about one place in your community that is affected by pollution. Describe what type of pollution is happening there and suggest one simple action that can be taken to reduce it.

Period 3

SHOULD DO
5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is one example of a recyclable material we can use at home? (Plastic)

Teacher: Can you name one type of pollution that harms our water? (Water pollution)

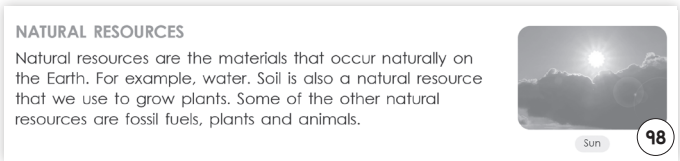
Teacher: Why is it important to recycle materials like plastic and glass? (To reduce waste and protect the environment)

Teacher: What is one item you have at home that can be made using recycled materials? (For example, a recycled paper notebook or a plastic bottle plant holder)

Teacher: What is one simple action we can take to reduce pollution in our community? (Reduce, reuse and recycle)

Teacher: Wonderful answers. Let us now begin today's class.

(The teacher will read the first three paragraphs of page 98 aloud and provide explanations to ensure that the students understand the content.)


NATURAL RESOURCES

Natural resources are the materials that occur naturally on the Earth. For example, water. Soil is also a natural resource that we use to grow plants. Some of the other natural resources are fossil fuels, plants and animals.

Sun

98

Teacher: Today, we are going to talk about natural resources. Can anyone tell me what natural resources are?

MUST DO
10 MIN.

Teacher: That is right. Natural resources are materials that occur naturally on Earth. For example, water, soil, plants and animals are all natural resources. These are things that we use every day.

Teacher: Can someone give me an example of a natural resource that we use to grow plants?

Teacher: Yes, soil. Soil is a natural resource that we need to grow plants. It is important for growing food, which helps us survive.

Teacher: Now, can anyone think of another example of a natural resource?

Teacher: Well done. Fossil fuels like coal and oil are also natural resources, though we need to be careful with how we use them.

Teacher: Great work. Natural resources help us in many ways, but we need to use them wisely.

Renewable Resources

Some natural resources are available in unlimited amounts. They do not deplete and can be used again and again. Such resources are continuously renewed through natural processes. Air, plants and sunlight are examples of renewable resources.

coal

98

Teacher: Let us move on to renewable resources. What do you think renewable resources are?

MUST DO

10 MIN.

Teacher: Renewable resources are those that are available in unlimited amounts. They do not deplete and can be used again and again.

Teacher: Who can tell me one example of a renewable resource?

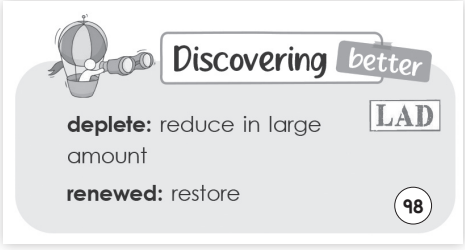
Teacher: Yes, air is a renewable resource. It is always available and can be used again and again without running out.

Teacher: Another example is sunlight. Can someone explain why sunlight is considered a renewable resource?

Teacher: Well done. Sunlight is constantly renewed through natural processes. It is a resource that we can use every day and it never runs out.

Teacher: Remember, renewable resources like air, plants and sunlight help us without depleting them.

Discovering better



(Explain the terms given in the 'Discovering better' section given on page 98.)

Non-renewable Resources

Non-renewable resources are the natural substances that are available in limited amounts only. Such resources deplete with time. Their renewal will take millions of years as it took millions of years for their formation. Some examples of non-renewable resources are coal, fossil fuels (petrol, diesel, natural gas) and so on.

water

98

Teacher: Now, let us discuss non-renewable resources. Can anyone tell me what non-renewable resources are?

MUST DO

15 MIN.

Teacher: Correct. Non-renewable resources are natural substances that are available in limited amounts. Once we use them, they cannot be replaced in our lifetime.

Teacher: Can you think of an example of a non-renewable resource?

Teacher: Yes, coal is a non-renewable resource. It took millions of years for coal to form and we cannot replace it in a short time.

Teacher: Another example is petrol. What do you think happens when we use all the petrol on Earth?

Teacher: You are right. If we use all the petrol, it will be gone. That is why it is important to conserve non-renewable resources like coal and petrol.

Teacher: So, non-renewable resources, such as coal, petrol and natural gas, are limited and we need to be careful not to use them too quickly.

Differentiated Activities

110 km/hr

Explain in detail why renewable resources are more sustainable than non-renewable resources.

80 km/hr

Name two examples of renewable resources. How are they different from non-renewable resources?

40 km/hr

Give one example of a non-renewable resource.

Home Task

Write about one renewable resource and one non-renewable resource. Describe how each resource is used and why it is important for the environment.

Period 4

SHOULD DO

5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is the difference between renewable and non-renewable resources? (Renewable resources can be used again and again, while non-renewable resources are limited and cannot be replenished in a short time.)

Teacher: Name one renewable resource. (Sunlight)

Teacher: What happens when non-renewable resources are used up? (They are gone and cannot be replaced in a short time.)

Teacher: Can you think of a natural resource that we use to grow plants? (Soil)

Teacher: Why is sunlight considered a renewable resource? (Because it is constantly replenished and is available in unlimited amounts.)

Teacher: Wonderful answers. Let us now begin today's class.

(The teacher will read the fourth and fifth paragraphs of page 98 aloud and provide explanations to ensure that the students understand the content.)

POLLUTION

Pollution is decreasing the purity of the environment by increasing the harmful substances in the air, water and on land. These harmful substances are known as pollutants. For example, burning coal increases the smoke (a pollutant) in the air. Pollution causes harmful effects on the health of all living things.

98

Teacher: Good morning, students. Today, we will discuss pollution. Let us begin by understanding what pollution is. Can anyone tell me what pollution means?

MUST DO
10 MIN.

Teacher: Pollution is the decrease in the purity of the environment caused by harmful substances in the air, water and land. These harmful substances are called pollutants.

Teacher: For example, burning coal creates smoke, which is a pollutant in the air. This pollution can harm the health of all living things.

Teacher: Now, let us think about some ways that pollution affects our world. Who can share how pollution can harm living beings?

Teacher: Great. Pollution can cause serious health problems, such as breathing difficulties and it can also harm animals and plants.

Air Pollution

The decrease in the purity of the air is called air pollution. It occurs because of the burning of coal, diesel, petrol in vehicles and factories. When these substances burn, they release smoke that pollutes the air. Polluted air is unfit for breathing.

98

Teacher: Now, let us talk about air pollution. What do you think air pollution is?

MUST DO
15 MIN.

Teacher: Yes, air pollution is when harmful substances like smoke, gases and dust are released into the air. These pollutants can come from many sources. Can anyone think of what might cause these pollutants to be released?

Teacher: Great. When substances like coal, diesel and petrol are burned, they release harmful smoke and gases into the air. This is called air pollution. Do you think this is good or bad for our health?

Teacher: Yes, it is bad. Polluted air makes it difficult to breathe and can cause serious health issues, such as asthma, bronchitis and other breathing problems. What else do you think air pollution might harm?

Teacher: That is right. Air pollution can also harm plants, animals and even the entire environment. It affects everything around us. Can anyone name a source of air pollution in your local area?

Teacher: Yes, vehicles are a big source of air pollution, especially in cities. The smoke from cars, buses and trucks pollutes the air. What else could be causing air pollution?

Teacher: Exactly. Factories, power plants and even activities at home like burning wood or using certain chemicals can contribute to air pollution. What do you think happens when we breathe in polluted air?

Teacher: Polluted air can harm our lungs and make it harder for us to breathe. It can cause long-term health problems, like lung disease. Do you think there are any other sources of air pollution we should be aware of?

Teacher: Yes, wildfires and farming activities can also release pollutants into the air. Even the burning of waste contributes to air pollution. So, what can we do about it? What are some ways to reduce air pollution?

Teacher: Those are some great ideas. Using public transport, carpooling and walking or cycling instead of driving cars can reduce the amount of pollution from vehicles. What else can we do?

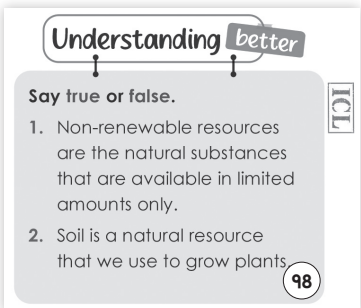
Teacher: Yes, we can encourage the use of renewable energy sources, like solar or wind power, instead of burning fossil fuels. How else can we help reduce air pollution in our communities?

Teacher: Fantastic. Planting trees is an excellent way to help. Trees absorb carbon dioxide and give us fresh oxygen. Can anyone think of another way to reduce air pollution?

Teacher: Using energy-efficient appliances, recycling and reducing waste can all help reduce the pollution in the air. By making these small changes, we can all help keep our air clean.

Teacher: Well done, everyone. You have great ideas and together, we can make a difference in reducing air pollution.

Understanding better



Teacher: Now, let us move on to the 'Understanding Better' section. In this part, we will check whether some statements are true or false. Ready?

MUST DO
10 MIN.

Teacher: The first statement is: "Non-renewable resources are the natural substances that are available in limited amounts only." Do you think this statement is true or false?

Teacher: Yes, It is true. Non-renewable resources, like coal, oil and natural gas, are limited and cannot be replaced in a short period of time.

Teacher: The second statement is: "Soil is a natural resource that we use to grow plants." Is this statement true or false?

Teacher: Yes, That is true as well. Soil is indeed a natural resource. It is essential for growing plants and providing us with food.

Teacher: Great job, everyone. You are really grasping these concepts well. Keep it up. Let us move on to the next part of our lesson.

Differentiated Activities

110 km/hr

Explain in detail how air pollution affects both human health and the environment. Then, discuss two methods to reduce air pollution from factories and vehicles.

80 km/hr

Name two sources of air pollution. Discuss how air pollution affects our breathing and the environment. Then, suggest one way we can reduce air pollution in our community.

40 km/hr

Give one example of air pollution. Explain why it is harmful to our health and one simple action that can help reduce it.

Home Task

Write about one source of air pollution in your local area. Describe how it affects the environment and suggest one action that can be taken to reduce it. Make sure to explain why this action is important for the community.

Period 5

SHOULD DO

5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What happens when non-renewable resources are used up? (They are gone and cannot be replaced in a short time.)

Teacher: Can you name one pollutant that is released when coal is burned? (Smoke or carbon dioxide)

Teacher: How can trees help in reducing air pollution? (Trees absorb carbon dioxide and release oxygen.)

Teacher: What do you think is the main cause of air pollution in cities? (Vehicles and industrial activities)

Teacher: Why is it important to reduce the use of fossil fuels? (They contribute to air pollution and global warming and they are non-renewable.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

(The teacher will read the last paragraph of page 98 and first paragraph of page 99 aloud and provide explanations to ensure that the students understand the content.)

Water Pollution

The decrease in the purity of water is called water pollution. It occurs due to the washing of clothes and utensils in rivers or lakes. During heavy rain or flood, chemicals, such as fertilisers and other factory wastes, enter the nearby water bodies and pollute them. Polluted water affects fish and other aquatic life. Drinking polluted water also affects us as it causes diseases, such as typhoid and diarrhoea. (98)

MUST DO

10 MIN.

Teacher: Good morning, students. Today, we will discuss water pollution. Can anyone tell me what water pollution is?

Teacher: That is correct. Water pollution happens when the purity of water decreases due to harmful substances like waste, chemicals and detergents.

Teacher: For example, washing clothes or utensils in rivers or lakes can pollute the water. What other activities do you think can pollute water?

Teacher: Exactly. During heavy rains or floods, chemicals like fertilizers from fields or even factory waste, can flow into nearby water bodies, making the water polluted.

Teacher: Polluted water can affect fish and other aquatic life. But do you know how polluted water can also affect us?

Teacher: Yes. Drinking polluted water can cause diseases like typhoid and diarrhoea.

Teacher: Now, can anyone think of a way we can reduce water pollution in our community?

Teacher: Those are great ideas. We can reduce water pollution by ensuring that waste is properly disposed of, not dumping chemicals in water bodies and using eco-friendly detergents.

Recalling better

Land and Soil Pollution

When harmful substances mix with soil and decrease its purity, it causes land and soil pollution. This type of pollution can occur due to agricultural (fertilisers), industrial (colouring of fabric) and domestic wastes (garbage).

Biodegradable wastes	Non-biodegradable wastes
Wastes that can decompose easily and mix with the soil are called biodegradable wastes. For example, vegetable peels, fruit peels and newspapers are biodegradable wastes.	Wastes that cannot decompose and mix with the soil are called non-biodegradable wastes. Such wastes remain in the environment for long periods of time. For example, plastic, glass and rubber are non-biodegradable wastes. (99)

MUST DO

15 MIN.

Teacher: Let us now talk about land and soil pollution. Can anyone tell me what land and soil pollution is?

Teacher: Yes, land and soil pollution occurs when harmful substances mix with the soil and decrease its purity. This can happen due to agricultural activities, like using too many fertilizers or even industrial activities like dyeing fabrics.

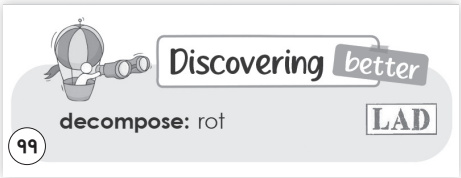
Teacher: What do you think happens when harmful chemicals mix with the soil?

Teacher: Yes. These chemicals can damage the soil and make it unfit for plants to grow. It also harms the environment.

Teacher: Now, there are two types of waste that contribute to soil pollution: biodegradable and non-biodegradable wastes. Can anyone tell me what biodegradable wastes are?

Teacher: That is right. Biodegradable wastes are those that can decompose and mix with the soil. Examples include vegetable peels, fruit skins and newspapers.

Discovering better



(Explain the term decompose given in the 'Discovering better' section on page 99.)

Teacher: And what about non-biodegradable wastes? Can anyone explain that?

Teacher: Yes. Non-biodegradable wastes cannot decompose and mix with the soil. Examples include plastic, glass and rubber. These wastes remain in the environment for a long time, causing pollution.

Teacher: It is very important for us to reduce both biodegradable and non-biodegradable waste to protect our land and soil. What can we do to reduce soil pollution?

Teacher: Excellent. We can recycle, use less plastic and reduce the amount of waste we produce. Planting more trees is another great way to prevent soil pollution.

THE 3Rs – REDUCE, REUSE AND RECYCLE

To reduce wastes and keep our surroundings clean, we should follow the three R's – reduce, reuse and recycle.

Reduce: This R means using less. If we use anything in lesser amount, it will create less waste. For example, we can reduce the use of plastic bags and limit our purchases to only what we need.	**Reuse:** This R stands for using again. For example, we can use empty bottles and cans for storing things at home. We can also donate our clothes to those in need.	**Recycle:** This R means to make new things from old or used things. For example, we can recycle old newspapers and make paper from them.

99

MUST DO
10 MIN.

Teacher: Let us discuss the 3 Rs – reduce, reuse and recycle. Can anyone tell me what reduce means?

Teacher: Yes, reduce means using less. If we use less of something, like plastic or paper, we create less waste. For example, we can reduce the use of plastic bags and only buy what we really need.

Teacher: What about reuse? Can someone explain what reuse means?

Teacher: Exactly. Reuse means using things again instead of throwing them away. For example, we can use old bottles and cans to store things or donate clothes we no longer need.

Teacher: Now, what do we mean by recycle?

Teacher: Yes. Recycle means turning old or used things into new products. For example, we can recycle newspapers and make new paper from them.

Teacher: Wonderful. By following the 3 Rs – reduce, reuse and recycle – we can help keep our environment clean and reduce waste.

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

Differentiated Activities

110 km/hr

Explain in detail how water pollution affects aquatic life and human health. Then, discuss one way in which biodegradable and non-biodegradable waste impact soil quality.

80 km/hr

Name one cause of water pollution. How does land pollution affect plants and animals? Suggest one way we can reduce soil pollution.

40 km/hr

Give one example of water pollution. What is one type of waste that harms the soil?

Home Task

Write about one example of biodegradable waste and one example of non-biodegradable waste. Explain how each type of waste affects the environment and suggest one way we can manage each type to reduce pollution.

Period 6

SHOULD DO
5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What happens when water is polluted? (It harms aquatic life and makes the water unsafe to drink.)

Teacher: Can you name one type of waste that harms the soil? (Plastic)

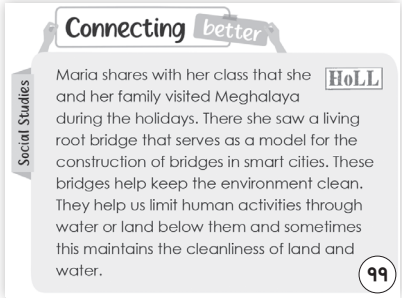
Teacher: How does water pollution affect fish and other aquatic life? (It harms their health and it can kill them if the water becomes too polluted.)

Teacher: What are biodegradable wastes? (Wastes that can decompose naturally, such as vegetable peels and paper.)

Teacher: What is one way we can reduce water pollution? (By properly disposing of waste and not dumping harmful substances in water bodies.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

Connecting better



Teacher: Today, we are going to explore an interesting way that environmental cleanliness is maintained through the construction of bridges. Read the 'Connecting better' activity given on page 99 of the Main Coursebook.

MUST DO
10 MIN.

(Let the students read the 'Connecting better' section given on page 99.)

Teacher: Maria shared with the class that during her holidays, she visited Meghalaya. Can anyone tell me what she saw there that caught her attention?

Teacher: Yes, she saw a living root bridge, which serves as a model for the construction of bridges in smart cities. These bridges are quite unique because they are made from the roots of trees.

Teacher: Now, let us connect this to what we have learned in Social Studies. Why do you think these living root bridges are important for the environment?

Teacher: Exactly. These bridges help keep the environment clean. They limit human activities, especially those that would harm the water or land below them. By doing this, they help maintain the cleanliness of both land and water.

Teacher: Can anyone think of how bridges like these might be a good model for future cities?

Teacher: That is right. In smart cities, bridges like these can be constructed to support both transportation and environmental protection. By using natural resources like tree roots, we reduce the impact on the environment.

Teacher: So, as we see, the living root bridges Maria observed in Meghalaya are a wonderful example of how traditional methods can be adapted for modern needs, especially in maintaining our environment. This connects to our Social Studies topics where we study the relationship between human activities and the environment.

Teacher: Great work, everyone. Let us move on to our next part of the lesson.

Healing better

Teacher: Now let us go to the 'Healing better' box. Read it carefully.

MUST DO
5 MIN.

(Let the students read the 'Healing better' section.)

Teacher: Can anyone tell me how we can get rid of pollutants on our skin and hair?

Teacher: That is right. Bathing in warm water with neem leaves can help remove pollutants. Neem has natural healing properties, which help protect the skin.

Teacher: This method has been used for generations. It connects us to natural remedies that people have used for centuries to stay healthy.

Teacher: It's wonderful how we can use plants like neem to cleanse ourselves without harmful chemicals. Let us think about other natural resources that help us stay healthy.

Laughing better

Teacher: Students, take a moment to read the conversation between Roli and Diley.

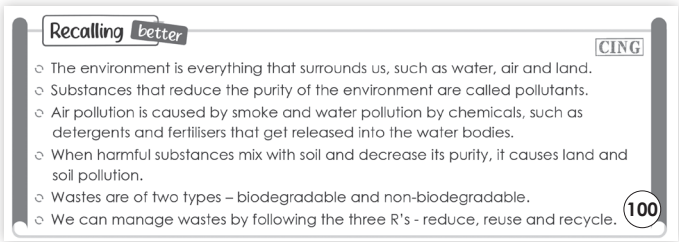
MUST DO
5 MIN.

Teacher: Now, who can tell me what makes this joke a clever way to think about recycling?

Teacher: Yes, exactly. The joke uses a pun with the word "can", which refers both to a recyclable item (a can) and the ability to dance ("can-dance"). The phrase "recycling good time" also refers to having a fun time at the party while linking it back to the recycling theme. The humour comes from combining the idea of a can going to a party with the concept of recycling in a playful and clever way.

Teacher: Recycling is important, but it can also be fun. This playful approach helps us remember how small actions can make a big difference for the environment.

Recalling better



Teacher: Let us move on to the 'Recalling Better' section. I will ask you some questions based on the chapter. Ready?

MUST DO
15 MIN.

Teacher: What is the environment?

Teacher: The environment is everything that surrounds us, such as water, air and land. Can anyone give me an example of how each part of the environment can be polluted?

Teacher: Wonderful. Yes, water can be polluted by chemicals, air by smoke and gases and land by waste and harmful substances.

Teacher: What do we call substances that reduce the purity of the environment?
Teacher: These substances are called pollutants. Can anyone give me an example of a pollutant?
Teacher: Exactly. Pollutants can include smoke, chemicals and waste. They harm the air, water and land, which we rely on for life.
Teacher: How is air pollution caused?
Teacher: Air pollution is caused by smoke, which comes from things like burning coal, fuel or waste.
Teacher: What about water pollution? How is water pollution caused?
Teacher: Water pollution is caused by chemicals, such as detergents and fertilisers, which get released into water bodies, polluting them.
Teacher: When harmful substances mix with soil, what happens?
Teacher: It causes land and soil pollution. Can anyone tell me how we can know if the soil is polluted?
Teacher: Correct. Polluted soil does not support plant growth and can harm animals and people who come into contact with it. It can be caused by waste, chemicals and pesticides.
Teacher: Wastes are of two types. What are they?
Teacher: They are biodegradable and non-biodegradable wastes. Can anyone explain the difference between them?
Teacher: Well done. Biodegradable wastes decompose naturally, like vegetable peels and fruit skins. Non-biodegradable wastes, like plastic and glass, cannot decompose and stay in the environment for a long time.
Teacher: How can we manage waste?
Teacher: We can manage waste by following the three Rs: reduce, reuse and recycle. Can anyone give me an example of reducing waste?
Teacher: Excellent. Using fewer plastic items and avoiding single-use products are great ways to reduce waste. What about reusing? Can anyone share something that can be reused?
Teacher: Yes. Things like glass jars, old clothes and containers can be reused. Now, how can we recycle?
Teacher: Great. Recycling involves turning materials like paper, plastic and glass into new products, which helps reduce the need for new raw materials.
Teacher: Wonderful. You all did a fantastic work recalling these important concepts. Remember, reducing waste, reusing items and recycling can all help protect the environment.

You may show the **Concept Map** and **I Explain** on the digital platform.

Differentiated Activities

110 km/hr

Explain how land pollution affects both human health and the environment. Then, discuss two strategies that could be used to reduce both biodegradable and non-biodegradable waste in our communities.

80 km/hr

Name one source of land pollution and explain how it affects the soil. Suggest one action we can take to reduce land pollution.

40 km/hr

Give one example of biodegradable waste and one example of non-biodegradable waste. How can these wastes harm the environment?

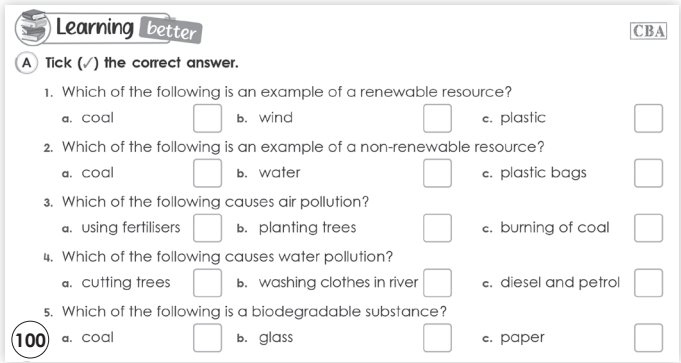
Home Task

Complete the 'Trying better' activity given on page 99 of the Main Coursebook.

Period 7

Teacher: Good morning, students. How are you all today?
Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?
Teacher: How does burning waste contribute to land pollution? (It releases harmful gases and leaves behind non-biodegradable materials that contaminate the soil.)
Teacher: What is one example of a pollutant that harms our water bodies? (Chemicals like pesticides or fertilizers)
Teacher: Why is it important to separate biodegradable and non-biodegradable waste? (So that biodegradable waste can decompose naturally, while non-biodegradable waste can be recycled or properly disposed of to avoid harming the environment.)
Teacher: Can you think of one way we can stop soil pollution from pesticides? (By using organic farming methods and reducing the use of harmful chemicals.)
Teacher: How can recycling help reduce the amount of waste in landfills? (It reduces the need to create new products from raw materials and lowers the amount of waste that ends up in landfills.)
Teacher: Wonderful answers, everyone. Let us now begin today's class.

Learning better


Learning better

CBA

A Tick (✓) the correct answer.

1. Which of the following is an example of a renewable resource?
   a. coal ☐ b. wind ☐ c. plastic ☐
2. Which of the following is an example of a non-renewable resource?
   a. coal ☐ b. water ☐ c. plastic bags ☐
3. Which of the following causes air pollution?
   a. using fertilisers ☐ b. planting trees ☐ c. burning of coal ☐
4. Which of the following causes water pollution?
   a. cutting trees ☐ b. washing clothes in river ☐ c. diesel and petrol ☐
5. Which of the following is a biodegradable substance?
   a. coal ☐ b. glass ☐ c. paper ☐

100

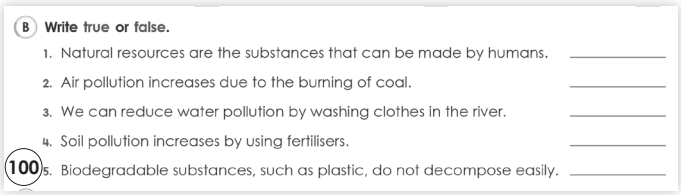
Teacher: Everyone, please open page 100 of your Main Coursebook. In Exercise 'A' of 'Learning better' you have to tick the correct answer. Are you ready to get started?

MUST DO
10 MIN.

Teacher: Great. Let us begin with the first question. Which of the following is an example of a renewable resource?

Teacher: The correct answer is wind. Well done.

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


B Write true or false.

1. Natural resources are the substances that can be made by humans. _____
2. Air pollution increases due to the burning of coal. _____
3. We can reduce water pollution by washing clothes in the river. _____
4. Soil pollution increases by using fertilisers. _____
5. Biodegradable substances, such as plastic, do not decompose easily. _____

100

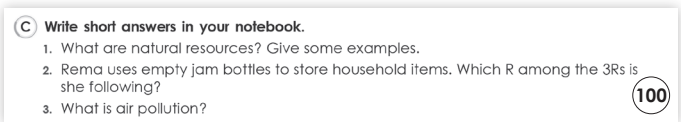
Teacher: In Exercise 'B' of 'Learning better', you have to write true or false. Are you ready to get started?

MUST DO
10 MIN.

Teacher: Great. Let us begin with the first statement. Natural resources are the substances that can be made by humans. Is it true or false?

Teacher: That is false. This statement is false because natural resources are substances that occur naturally in the environment, like water, soil and minerals and are not made by humans.

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


C Write short answers in your notebook.

1. What are natural resources? Give some examples.
2. Rema uses empty jam bottles to store household items. Which R among the 3Rs is she following?
3. What is air pollution?

100

Teacher: 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?

MUST DO
15 MIN.

Teacher: Great. Let us begin with the first question. What are natural resources? Give some examples.

(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.)

(Similarly, complete all three questions and discuss the correct answer with the class.)

You may show the **Animated Activities** and **Quiz** on the digital platform.

Differentiated Activities

110 km/hr

Explain in detail the impact of land and soil pollution on the environment and human health. Then, discuss how recycling and waste management can help reduce soil pollution.

80 km/hr

Name two examples of pollutants that harm our water bodies and explain how they affect aquatic life. What can be done to prevent these pollutants from entering our water bodies?

40 km/hr

What is one example of biodegradable waste and one example of non-biodegradable waste? How can both types of waste harm the environment?

Home Task

Write about one natural resource in your local area. Describe how it is used by people and why it is important for the environment. Include one suggestion for conserving or protecting that resource.

Period 8

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

SHOULD DO
5 MIN.

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is one example of a renewable resource used for energy production? (Solar energy)

Teacher: How does soil pollution affect plant growth? (It makes the soil infertile, preventing plants from growing properly.)

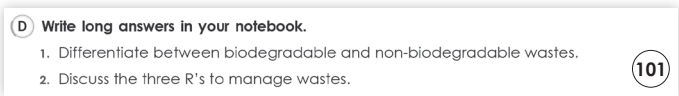
Teacher: What is one example of waste that can be recycled? (Paper or glass)

Teacher: How does air pollution harm human health? (It can cause respiratory problems like asthma and lung diseases.)

Teacher: Why is it important to reduce plastic waste in our environment? (Plastic waste harms wildlife and takes a long time to decompose.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

Learning better


D Write long answers in your notebook.

1. Differentiate between biodegradable and non-biodegradable wastes.
2. Discuss the three R's to manage wastes.

101

Teacher: Everyone, please open page 101 of your Main Coursebook. Let us explore some long-answer questions. In Exercise 'D' of the 'Learning better', you have to write a long answer.

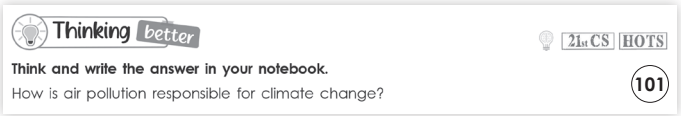
MUST DO
20 MIN.

Teacher: Let us begin with the first question. Differentiate between biodegradable and non-biodegradable wastes.

(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



Teacher: Let us move to the 'Thinking better' section. I will ask you a question and I want you to think deeply before writing your answer in your notebook.

MUST DO
15 MIN.

Teacher: Now, take a moment to think and write in your notebooks: "How is air pollution responsible for climate change?"

(Give the students time to think and write their answers in their notebooks.)

Teacher: Air pollution, especially from burning fossil fuels like coal, petrol and diesel, releases harmful gases like carbon dioxide and methane into the atmosphere. These gases trap heat from the sun, which leads to global warming, a major factor in climate change. This trapped heat causes the Earth's temperature to rise, leading to changes in weather patterns, melting ice caps and rising sea levels. These effects can disrupt ecosystems and harm both humans and animals.

(Instruct the students to bring their Little Book to the next class.)

Differentiated Activities

110 km/hr

Explain in detail how the burning of fossil fuels contributes to both air pollution and climate change. Then, discuss the long-term impacts of air pollution on global ecosystems, including potential solutions that could mitigate these effects.

80 km/hr

How does air pollution directly affect human health? Discuss at least two diseases caused by air pollution. Afterward, suggest one lifestyle change that could help reduce exposure to polluted air.

40 km/hr

What are two sources of air pollution that affect the environment? How does air pollution impact the air we breathe? Write down one simple way to reduce air pollution in your daily life.

Home Task

Complete the 'Creating better' (Let us make a colourful mini ocean) activity given on page 101 of the Main Coursebook.

Period 9

SHOULD DO
5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is one way we can reduce water pollution in our community? (By not dumping waste into rivers, lakes or oceans.)

Teacher: What is biodegradable waste? (Waste that can decompose naturally, like vegetable peels and fruit skins.)

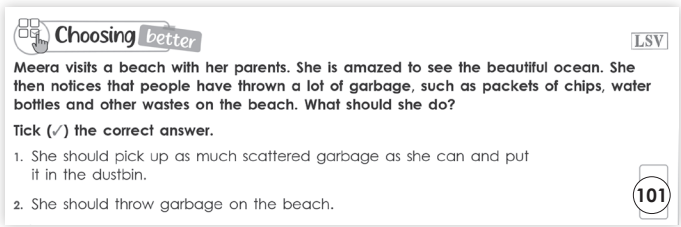
Teacher: Name one example of a non-biodegradable waste. (Plastic or glass)

Teacher: How does soil pollution affect plant growth? (It can make the soil infertile and harm plant growth.)

Teacher: Why is recycling important for reducing pollution? (It helps reduce the amount of waste that ends up in landfills and uses fewer natural resources.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

Choosing better



MUST DO
5 MIN.

Teacher: Let us now move on to the "Choosing Better" section. Meera is visiting a beach with her parents and she notices that the beach is covered with garbage like chip packets, water bottles and other waste.

Teacher: Now, we need to think about what Meera should do in this situation. What do you think she should do to help keep the beach clean?

Teacher: Option 1: Should Meera pick up as much scattered garbage as she can and put it in the dustbin?

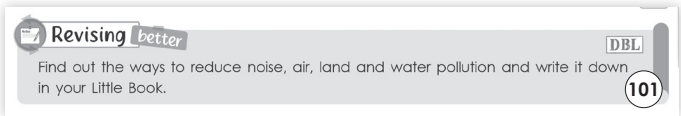
Teacher: Or Option 2: Should she throw more garbage on the beach? Let us think carefully. Which option do you think will help keep the environment clean and safe for everyone?

(Let the students choose the correct option.)

Teacher: Yes, it's option 1. Meera should pick up the garbage and dispose of it properly to help keep the beach clean.

Teacher: This is a great example of how small actions, like picking up trash, can make a big difference in protecting our environment. Well done, everyone.

Revising better



Teacher: Let us move on to the "Revising Better" section. I want you to think about how we can reduce noise, air, land and water pollution. For example, we can reduce air pollution by using public transport and reduce land pollution by recycling and disposing of waste properly.

MUST DO
10 MIN.

Teacher: Now, take a moment to write down ways to reduce each type of pollution in your Little Book. Think about what we've discussed and how we can all make a difference.

(Let the students revise and write it in their Little Book.)

Teacher: Well done, everyone.

Book of Holistic Teaching

Chapter 14: Our Environment

(A) English HoLL MDA

Fill in the blanks with correct conjunctions.

1. We should not throw any garbage in the water bodies _____ (because/and) it pollutes the water.
2. Washing clothes _____ (and/when) utensils in the river or lakes pollutes the water.

(B) Maths

The given table shows the annual consumption of diesel for various cities.

Cities	Chennai	Bhopal	Delhi	Ranchi	Indore
Consumption of diesel (in thousand litres)	40	45	55	65	70

Draw a bar graph using the information given above.

(C) Social Studies

Bridges are made up of steel, cement, stone, bricks, asphalt, iron, aluminium, whereas some are made up of roots of living trees. Underline the materials that are biodegradable and are used to make bridges.

28

Refer to the Book of Holistic Teaching, page number 28 under the title 'Our Environment.' 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.

COULD DO
20 MIN.

(Instruct students to bring their workbooks to their next class.)

Differentiated Activities

110 km/hr

How can we implement sustainable practices in both urban and rural areas to reduce the impact of pollution? Discuss how these practices can be scaled on a global level to reduce the effects of climate change and improve health outcomes.

80 km/hr

Why is it important to balance economic growth with environmental protection? Think about how the use of renewable resources can help achieve this balance and reduce the harmful effects of pollution.

40 km/hr

How does recycling help reduce pollution? Can you think of one example where recycling has helped the environment in your community or at home?

Home Task

The Project Idea, given in the book of Project Ideas, page 21, under the title 'Our Environment.' 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. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is one simple action you can take to reduce air pollution in your daily life? (By using public transport or walking instead of driving a car.)

Teacher: How does land pollution affect plants and animals? (It harms plant growth and can kill animals that ingest or get caught in waste.)

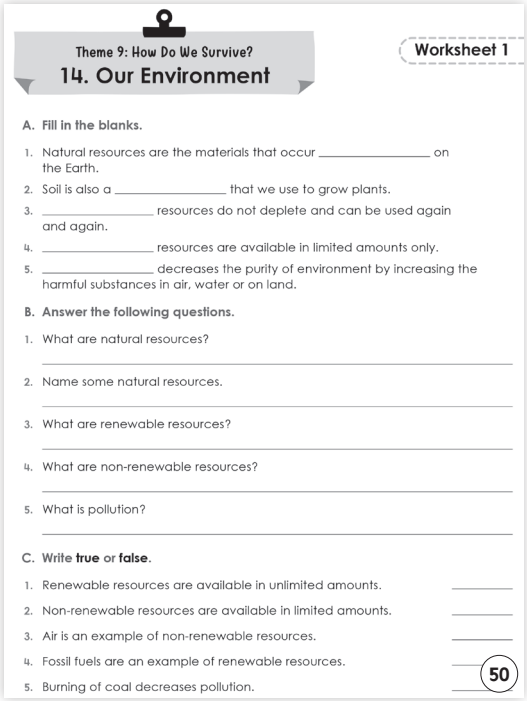
Teacher: What is one way to stop water pollution from household waste? (By not throwing chemicals or oils down the drain and using eco-friendly cleaning products.)

Teacher: Why is it important to dispose of non-biodegradable waste properly? (Because non-biodegradable waste takes a long time to decompose and can harm the environment.)

Teacher: How does recycling help reduce pollution? (It reduces the amount of waste in landfills and decreases the need for new raw materials.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

Worksheet 1



Theme 9: How Do We Survive?

14. Our Environment

Worksheet 1

A. Fill in the blanks.

1. Natural resources are the materials that occur _____ on the Earth.
2. Soil is also a _____ that we use to grow plants.
3. _____ resources do not deplete and can be used again and again.
4. _____ resources are available in limited amounts only.
5. _____ decreases the purity of environment by increasing the harmful substances in air, water or on land.

B. Answer the following questions.

1. What are natural resources?
2. Name some natural resources.
3. What are renewable resources?
4. What are non-renewable resources?
5. What is pollution?

C. Write true or false.

1. Renewable resources are available in unlimited amounts. _____
2. Non-renewable resources are available in limited amounts. _____
3. Air is an example of non-renewable resources. _____
4. Fossil fuels are an example of renewable resources. _____
5. Burning of coal decreases pollution. _____

50

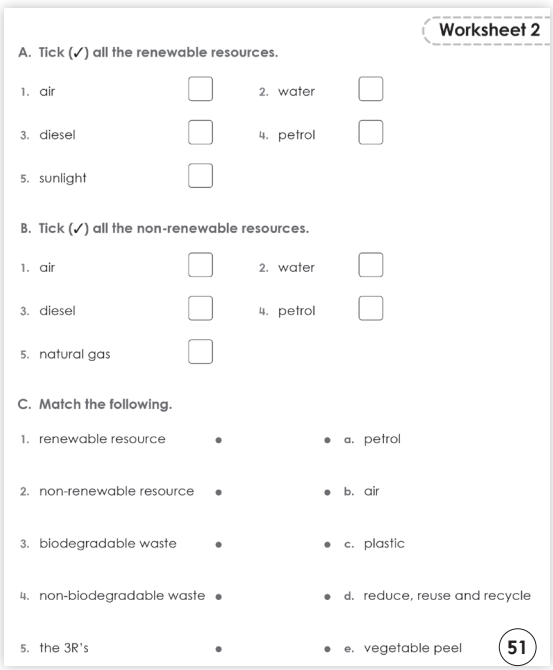
Teacher: Let us do some activities from the workbook. Everybody, please open page 50 of your workbook and answer the questions given in worksheet 1.

MUST DO

20 MIN.

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

Worksheet 2



Worksheet 2

A. Tick (✓) all the renewable resources.

1. air ☐ 2. water ☐
3. diesel ☐ 4. petrol ☐
5. sunlight ☐

B. Tick (✓) all the non-renewable resources.

1. air ☐ 2. water ☐
3. diesel ☐ 4. petrol ☐
5. natural gas ☐

C. Match the following.

1. renewable resource	•	•	a. petrol
2. non-renewable resource	•	•	b. air
3. biodegradable waste	•	•	c. plastic
4. non-biodegradable waste	•	•	d. reduce, reuse and recycle
5. the 3R's	•	•	e. vegetable peel

51

Teacher: Let us do some activities from the worksheet 2. Everybody, please open page 51 of your workbook and answer the questions given in worksheet 2.

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

Differentiated Activities

110 km/hr

How can the implementation of renewable energy sources in cities contribute to reducing pollution and mitigating the effects of climate change? Discuss how these solutions can be scaled in urban and rural areas globally.

80 km/hr

Why is it important to balance industrial growth with environmental sustainability?

40 km/hr

What is one simple way we can reduce the pollution in our community? How does this action help the environment?

Home Task

Find and list three biodegradable items and three non-biodegradable items from your home. Explain why each item is classified as either biodegradable or non-biodegradable and suggest one way to manage them responsibly.

Period 11

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

SHOULD DO

5 MIN.

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What are some common sources of air pollution in cities? (Vehicles, factories and burning of fossil fuels are common sources of air pollution.)

Teacher: How can waste from factories pollute the water in nearby rivers? (Wastewater from factories can contain harmful chemicals and toxins, which contaminate the water and harm aquatic life.)

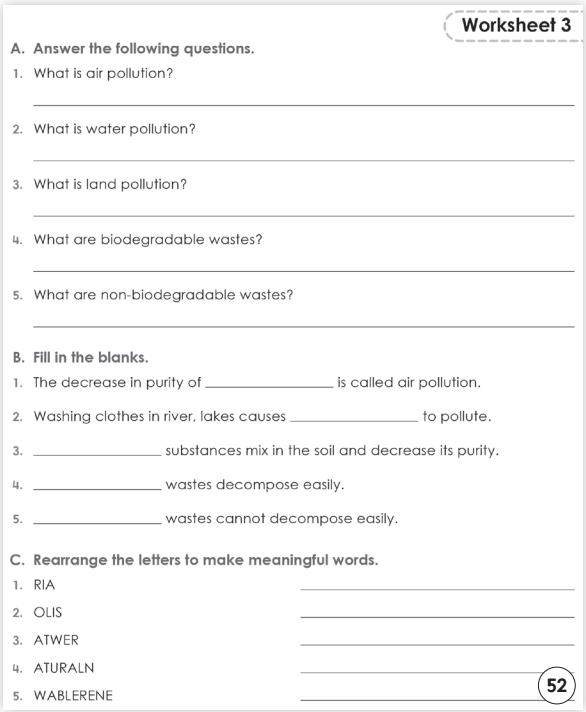
Teacher: Can you think of one way we can reduce plastic pollution in our community? (By reducing the use of single-use plastic and encouraging recycling.)

Teacher: Why is it important to use renewable resources like solar and wind energy instead of fossil fuels? (Because renewable resources are cleaner, reduce pollution and help fight climate change.)

Teacher: How does recycling contribute to saving natural resources and reducing pollution? (Recycling reduces the need for raw materials, helps conserve energy and keeps waste out of landfills.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

Worksheet 3



Worksheet 3

A. Answer the following questions.

1. What is air pollution?
2. What is water pollution?
3. What is land pollution?
4. What are biodegradable wastes?
5. What are non-biodegradable wastes?

B. Fill in the blanks.

1. The decrease in purity of _____ is called air pollution.
2. Washing clothes in river, lakes causes _____ to pollute.
3. _____ substances mix in the soil and decrease its purity.
4. _____ wastes decompose easily.
5. _____ wastes cannot decompose easily.

C. Rearrange the letters to make meaningful words.

1. RIA
2. OLIS
3. ATWER
4. ATURALN
5. WABLERENE

52

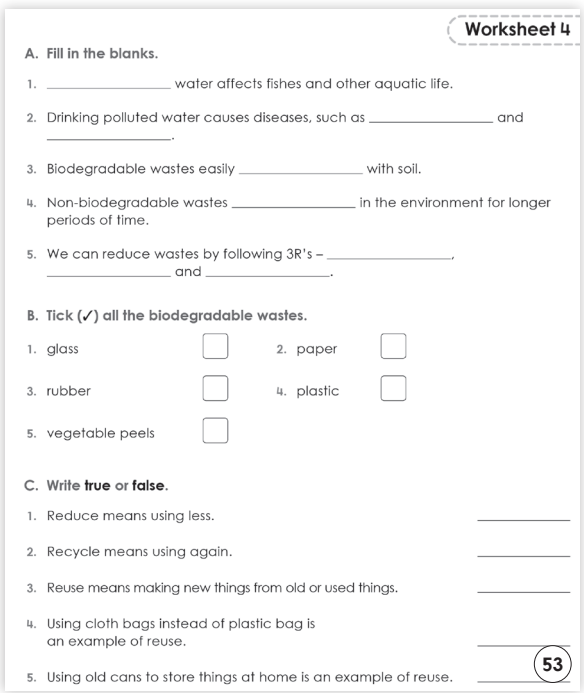
Teacher: Let us do some activities from the workbook. Everybody, please open page 52 of your workbook and answer the questions given in worksheet 3.

MUST DO

20 MIN.

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

Worksheet 4



Worksheet 4

A. Fill in the blanks.

1. _____ water affects fishes and other aquatic life.
2. Drinking polluted water causes diseases, such as _____ and _____.
3. Biodegradable wastes easily _____ with soil.
4. Non-biodegradable wastes _____ in the environment for longer periods of time.
5. We can reduce wastes by following 3R's – _____, _____ and _____.

B. Tick (✓) all the biodegradable wastes.

1. glass ☐ 2. paper ☐
3. rubber ☐ 4. plastic ☐
5. vegetable peels ☐

C. Write **true** or **false**.

1. Reduce means using less. _____
2. Recycle means using again. _____
3. Reuse means making new things from old or used things. _____
4. Using cloth bags instead of plastic bag is an example of reuse. _____
5. Using old cans to store things at home is an example of reuse. _____

53

Teacher: Let us do some activities from the worksheet 4. Everybody, please open page 53 of your workbook and answer the questions given in worksheet 4.

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.)

Differentiated Activities

110 km/hr

How can the government and businesses work together to make our cities cleaner? Think about how using cleaner energy, reducing waste and using less fuel in cars can help lower pollution.

80 km/hr

Why do you think it is important for people to learn about pollution and how it can hurt our health? How can schools or local groups help teach people about pollution?

40 km/hr

What are some things you can do at home to reduce waste and stop pollution? How can small actions, like throwing trash in the bin, help the planet?

Home Task

Find out how pollution is affecting a nearby river, lake or beach. Write a short paragraph explaining how pollution is harming the water and what we can do to help clean it up.

Period 12

SHOULD DO

5 MIN.

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

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: How do you think pollution can change the weather? (Pollution can make the Earth warmer by trapping heat in the atmosphere, which can lead to more extreme weather.)

Teacher: What happens to animals when rivers or oceans are polluted? (Polluted water can harm animals by making them sick or even killing them and it affects their habitats.)

Teacher: How can we stop so much plastic from getting into the ocean? (We can reduce plastic use, recycle more and make sure we dispose of plastic properly.)

Teacher: Why do some people not understand how bad pollution is? (Some people might not know how harmful pollution is or they might not see its effects immediately.)

Teacher: If everyone started recycling, what would happen to the Earth in the future? (Recycling would

reduce waste, save energy and help protect our natural resources, making the Earth cleaner.)

Teacher: Wonderful answers, everyone. Let us now begin today's class.

Book of Project Ideas

Theme 9: How Do We Survive?

Chapter 14: Our Environment

Biodegradable substances and their use in our daily life

ICT PRO 21st CS

Materials required: notebook, pen, coloured paper, markers, crayons, a pair of scissors, glue

- Gather information using Internet* about a few biodegradable substances and their use in our daily life.
- Write down key points and interesting facts about those substances.
- For each biodegradable substance, create a page with a title, description and diagrams.
- Use markers or coloured pencils to make your pages colourful and engaging.
- Put your pages together and add a cover page with the title "Biodegradable Substances and Their Use in Our Daily Life" and your name.
- Present to your class.
- Share the information you learned about biodegradable substances with your classmates. 21-22

Teacher's Note: *Guide the students to refer only to .edu or .org websites to gather information.

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.

COULD DO 10 MIN.

Outdoor Activity

Teacher: Today, we are going to do a fun outdoor activity: a nature scavenger hunt.

Teacher: I will give you a checklist with items to find and observe around the school garden or playground. Here's what you need to look for:

COULD DO 25 MIN.

- A healthy plant
- A tree
- Soil that looks polluted (look for trash or unnatural items)
- Evidence of animal life (like a bird or insect)
- A piece of trash that can be recycled (plastic, paper, etc.)

Teacher: You will work in pairs or small groups. Take your checklists with you and remember to look closely at the plants, trees, soil and animals around you. If you find any litter, please pick it up and place it in the appropriate bin. Make sure you only take a moment to observe and then move on to the next item.

Teacher: You have 15 minutes to explore, find these items and make your observations. After that, we will all gather together to discuss what you found.

Teacher: Once you're done, we'll talk about how pollution affects our environment. Think about how pollution harms plants, animals and even the soil. We'll also discuss how we can prevent pollution in our school and local area.

Teacher: Ready?

Teacher: Let us head outside and get started.

(Let the students share what they found during the scavenger hunt. Ask them to explain the items they observed and any interesting details they noticed. After each group shares, guide the discussion by writing key points on the blackboard. Discuss how pollution impacts the environment, focusing on the harm it causes to plants, animals and soil. Encourage students to suggest ways we can reduce pollution in our school and local area.)

Differentiated Activities

110 km/hr

Discuss in detail the long-term effects of air and water pollution on both the environment and human health. How can governments, industries and communities work together to reduce pollution and promote sustainability? What roles do education and technology play in this process?

80 km/hr

How does pollution in the air and water affect plants, animals and humans? Can you think of a solution to reduce pollution in your local community? Explain why your solution would be effective.

40 km/hr

What are two types of pollution? How do they harm the environment? What is one simple thing you can do to help reduce pollution?

Home Task

Write a paragraph about one type of pollution (air, water or land) that you think is the most harmful. Explain why you think it is the most harmful and suggest one way to reduce it in your community.

Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• enhance fine motor skills and spatial organisation by performing hands-on activities such as creating a mini ocean model using jars, sand and recycled items.
Socio-Emotional and Ethical Development	• demonstrate environmental responsibility by identifying polluting behaviours and discussing ways to reduce pollution and protect natural resources.
Cognitive Development	• differentiate between renewable and non-renewable resources, identify types of pollution and classify wastes as biodegradable or non-biodegradable using examples.
Language and Literacy Development	• explain environmental concepts such as air, water and land pollution and describe the 3Rs (reduce, reuse, recycle) using correct scientific vocabulary in both oral and written formats.
Aesthetic and Cultural Development	• create eco-friendly art projects using recyclable materials and appreciate cultural practices like the use of living root bridges in Meghalaya that support sustainable living.
Positive Learning Habits	• show curiosity by asking environment-related questions, participating in experiments like checking air pollution and applying environmental knowledge to daily life decisions.

Starry Knights

As we come to the close of this session, share the sense of accomplishment that you have.

Reward yourself with a STAR