New Oxford General Knowledge

TEACHING GUIDE

For Grade 3

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Introduction

New Oxford General Knowledge is a new series of General Knowledge textbooks. The graded books closely follow the guidelines and recommendations set out in the National Curriculum's 'One Nation, One Curriculum' document produced by the National Curriculum Council of Pakistan in 2020. The themes and concepts covered in the textbooks are from the areas of General Science and Social Studies. The teaching guides have been redesigned to assist teachers to plan their lessons as per their class needs.

Key learning at the beginning of each lesson provides an outline of what would be covered during the course of the lesson.

Background information is for teachers to gain knowledge about the topics in each lesson.

Lesson plans provide a step-by-step guidance with clearly defined outcomes.

Duration of each lesson plan is 40 minutes; however, this is flexible, and teachers are encouraged to modify the duration as per their requirements. If required, teachers can utilise two periods for a single lesson plan.

Outcomes identify what the students will know and be able to do by the end of the lesson.

Resources are materials required in the lesson. Teachers are encouraged to arrange the required materials beforehand. In case students are to bring materials from their homes, they should be informed well ahead of time.

Introduction of the lesson plan sets forth the purpose of the lesson. In case of a new lesson, the teacher would give a brief background of the topic; while for subsequent lessons, the teacher would summarise or ask students to recap what they learnt in the previous lesson. The idea is to create a sense of anticipation in the students of what they are going to learn.

Explanation is the central part of the lesson plan. Its focus is to ensure that the learning outcomes are met through explanation, demonstration, class discussions, and brainstorming. References to the text, illustrations, and images in the textbook will make the lesson engaging and interesting. The teacher is encouraged to elicit responses from the students to determine whether the learning outcomes are being met.

Classwork is based on the questions, Exercise pages, 'Discuss and answer', and group activities in 'Things you can do' section. If there isn't enough time to complete class work, teachers can assign it for homework; or allocate a separate period for the completion of class work.

Homework is assigned to students during the lesson. Research-based tasks and projects are usually to be given as homework.

Conclusion wraps up the topic and usually comprises of a review of the topics covered in a particular lesson.

Suggested activities are given for most of the lessons and only conducted if sufficient time and resources are available.

Answers to Exercise questions are provided, wherever applicable, at the end of the lesson plans.

Appendix worksheets comprises of worksheets that may be printed out beforehand.

Table of

Contents

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Unit 1 Habitat

Key learning

- define the term 'habitat'
- understand that there are different habitats for living things
- describe the main habitats
- name some plants and animals that live in each of the different habitats
- briefly describe what is an ecosystem
- identify the environmental factors that support life in a habitat
- understand the ways plants and animals have features suitable to their habitat
- identify the ways human activities affect the natural habitats

Background information

This chapter talks about various habitats on Earth, based on the core fact that the Earth is the only known planet that can subsist life. The sun is the source of heat and light. Living things need food, water, air, and shelter to survive, and an ideal habitat is one that can provide them all. Different creatures and plants live in different habitats, some are suited to smaller habitats, while others prefer larger habitats. Lions are suited to grasslands, while other animals such as parrots, gorillas, etc. are suited to forests. Phytoplankton, polar bears, penguins live in polar regions and are suited to the extreme cold present in these areas. Camels, cacti, snakes, and antelope survive in the desert, while whales, mangroves, and coral reefs are a few living things that belong to the aquatic habitat. Similarly, ducks, swans, reeds, etc. belong to the rivers and lakes. This chapter talks about ecosystems and how they are a network of living and non-living things living in different habitats, each playing an important role. It is interesting to note that plants and animals typically have special features that make them suited for their habitat and allows them to play their role in an ecosystem. Fish have gills to breathe, polar bears have thick fur to keep them warm, and cacti have a thorny surface that prevents excessive water loss in the hot deserts. The chapter also talks about the impact of human activities such as construction, on natural habitats where waste products and pollution damage the environment.

Lesson plan 1

Duration: 40 minutes

Outcome:

- define 'habitat'
- understand that there are many kinds of habitats
- talk about various habitats and the kind of plants and animals that live in these regions

Resources: textbook pages 1–4, [optional] access to school library/ICT lab.

Introduction: 5 minutes

Draw a brainstorming bubble on the writing board in class. Ask the students to think about what comes to mind when they hear the word 'habitat'. Write down students' responses on the writing board in short phrases around the brainstorming bubble.

If you think they are ready for such a question, ask the students to think about what they consider as the perfect 'habitat' for them. Discuss a few answers in class. Answers can include habitats classified as rural, urban, agricultural lands, etc.

Explanation: 20 minutes

Talk to the students about how a habitat is the natural home or environment of an animal, plant, or other organism. Remind them of how organisms are different depending on their species, and thus have specie-specific requirements related to their survival. You may give the example of mangroves. Mangroves are a kind of plant that requires a lot of salty water to survive. You may talk about why the perfect habitat for mangroves in Pakistan is in the southern part of the country, at the coast of the Arabian Sea. The abundance of salty seawater in this region makes this the perfect habitat for this plant species. To reiterate the idea of the suitability of a habitat to an organism's needs, you may mention that other plants such as an apple tree will not be able to thrive in the same region where the land is dominated by slow-moving, salty water. After giving this example, expand this information by talking about how different organisms require different conditions to survive, and therefore are suited to different habitats. There are many kinds of habitats present across Earth including grasslands (tracts of land with small clumps of trees and rocks), forests (with many tall trees), polar regions (with extremely cold temperatures), deserts (hot and dry places with very little vegetation), aquatic (seas and oceans), and rivers and lakes.

You may divide the class in groups and assign each group a type of habitat that they have to do some research on. They may use their textbooks or any print source from the school library, or online sources that can be accessed through their ICT lab. Ask the students to collect the information, and then combine all their findings so that it forms an encyclopedic booklet that the class can refer to so they expand their knowledge and understanding. Students should also focus their research on the kinds of animals and plants that inhabit a particular type of habitat.

Conclusion: 5 minutes

Follow-up the lesson by asking students to provide a summary on habitats by writing and responding to each of the prompts in their notebooks:

- Write three interesting facts that you learned about habitats.
- What do living things need to survive in their own habitats?

Classwork: 10 minutes

Students could do *Discuss and Answer* on page 7.

Homework: Students could do Exercise 1, 2 on page 8.

Suggested activities

- Students can prepare a play about animals that live in different habitats who are interacting with each other. The characters can also discuss the difficulties they would face if they were forced to live in a different habitat.
- Divide the class into groups. Assign a different habitat to each group of students. Ask them to work together to prepare a diorama of the habitat assigned to them in a shoebox.

Lesson plan 2

Duration: 40 minutes

Outcomes:

- Define 'ecosystem'
- Talk about the specific features of plants and animals highlighting how they are suited to their habitat
- Identify the impact of human activities on natural habitats

Resources: textbook pages 5–7

Introduction: 5 minutes

Launch the discussion by talking to the students about how living organisms are interdependent with their living and non-living surroundings. Ask the students to recall what they have learnt about habitats. Ask them to think about what can influence a certain organism to thrive in a particular habitat. Having great quantities of good quality grass will encourage more cows and goats in that area.

Explanation: 20 minutes

Instruct the students to flip to pages 6 and 7 of their textbook. Ask them to look carefully at the descriptions of the specific features of specific animals and plants given in the book. Talk about the animals and plants mentioned in the textbook and how they are ideally suited to their environment. Ask the students if they can think of any other trait that a particular animal has which makes it suited for the environment. You may discuss the scales of fish which helps them camouflage and move in water.

Ask the students to take out their notebooks and write down at least two examples of plants and animals which have specific traits that makes them suited to their habitats. Encourage them to mention examples that have not been given in the books. Ask the students to write a few lines as given in the textbook. Examples can include chameleons, who can change the color of their skin for camouflage/to hide from predators, big cats like lions and tigers which have sharp 'carnassial' teeth that can help them tear meat off their prey and swallow it. Giraffes have long necks to reach the top-most leaves on tall trees present in the grasslands. Wood frogs can freeze their bodies which helps them survive extremely cold temperatures.

Conclusion: 5 minutes

Talk about the effect humans have on the environment by referring to the pictures given under the heading *Discuss and Answer* on page 7. Discuss how there are many kinds of pollution which degrade different habitats and reduce the quality of living for the organisms in the region. Discuss the ways students can reduce the impact of human activities on natural habitats in their realm of existence. Solutions can include throwing their trash in the dustbins, creating awareness in their social circles about the importance of protecting the environment, organizing cleaning drives for natural places like beaches, etc.

Classwork: 10 minutes

Students could do any one of the activities, 1, 2, or 3, of *Things you can do* given on page 9.

Homework: Students could do Exercise 3 and 4 on page 9.

Suggested activity:

- Arrange a class trip to a local zoo. Talk about the animals they see during the trip. Discuss how these animals have been taken out of their natural environment, and if they think it is justifiable to have animals in such conditions for human sport/entertainment. You may talk about conservation sanctuaries, where animals who are at a risk of extinction are provided a good healthy environment that resembles their original habitat.

Answers to Unit 1

Exercises

1. i. c (forests)
   ii. b (fish)
   iii. a (habitat)
   iv. b (food, water, air, and shelter)
   v. a (desert)

   i. forest
   ii. Polar bear
   iii. feet
   iv. deserts
   v. environment

2. *Sea animals:* whale, dolphin, turtle
   Land animals: giraffe, monkey, lizard

   i. temperature, light, water
   ii. Penguins, Polar bears, arctic wolf, arctic fox, snowy owl, lichens, mosses, etc.
   iii. An ecosystem is a network of living and non-living things that have different habitats in a particular area.
   iv. Ecosystems can be disrupted by natural disasters, eg. storms, floods, fires, volcanic eruptions.

Unit 2 Changes in Living Things

Key learning:

- compare different stages of lifespan of plants and animals
- identify the changes in the lifespan of an animal and a plant

Background information:

This unit covers the way living things change. There are different stages involved in the lifespan of plants and animals, each depending on the specie of each organism. A life cycle typically consists of a living organism being born, undergoing growth/development, reproducing, and then experiencing a decline. A life cycle includes all the stages of life for every plant and animal. This unit further expounds upon various life cycles including that of a frog, which is born through spawn (eggs) which hatch into tadpoles which grow and eventually develop into a mature frog. Similarly, fish hatch from eggs and before maturing are known as 'fry'. Butterflies, like most insects, lay eggs on leaves, which hatch into caterpillars. These caterpillars become larvae from which butterflies stretch out of. Birds also hatch from eggs that are placed in a safe space called a nest. The eggs are kept warm and are rotated every now and then. Once the eggs hatch, the baby birds are blind and bald, and are unable to fly until they grow feathers. The life cycle of a plant begins with a seed which germinates and grows into a mature plant. Mature plants are typically able to produce flowers/ fruits, which typically contain seeds that allow the growth of future plants.

Lesson plan 3

Duration: 40 minutes

Outcomes:

- describe what a life cycle is
- talk about the life cycles of plants

Resources: textbook pages 10–12, four baskets (labelled: seed, sapling, mature plant, fruit/flower), four arrows, cards featuring different plants (e.g., potato, watermelon, apple, sunflower) in different stages of the plant cycle.

Introduction: 5 minutes

Introduce the students to the term 'life cycle'. Ask the students to raise their hands if they understand what the term means. Encourage students to share their opinions concisely in class.

Explanation: 20 minutes

Describe how a life cycle refers to a series of stages that a living thing undergoes during its life. All animals and plants have a particular life cycle. Highlight how it is helpful to use diagrams with arrows indicating the stages in a specific life cycle of an organism. The main stages of a life cycle include birth, growth, reproduction, decline. The life cycles repeat again and again through the offspring produced during the cycle. Talk about the life cycle of a plant. Describe how plants begin life as a seed which germinates and then grows into a mature plant. A fully mature plant will produce fruit or flowers which typically contain seeds that help produce new plants.

Once students have grasped the concept of a life cycle, particularly a plant cycle, explain to them the rules of the sorting activity. The students will arrange each card in a basket which corresponds to the key stage of the plant cycle that it belongs to. To make the activity more interactive, place four baskets in a ring on a flat surface such as a large table. 'Connect' each basket with arrows that could be made of chart-

sheet, card-paper, or even tape. Before this lesson, prepare cards each containing a plant in a different stage of development. Cards can include sunflower seeds, potato spuds, etc. It is a good idea to have the complete cycle of the plants you've chosen in the stack of cards. Bear in mind, there should be enough cards for each student to get at least two cards which they have to sort in the basket. Make sure this activity is a class activity. Ask the students to place their cards in the basket they belong to. If any student gets it wrong, review the life cycle of a plant that you described previously. You may talk to the students about their card itself, describing what is happening.

Conclusion: 5 minutes

After all the cards are sorted, you may ask the students to take up any one plant of their choice and draw its life cycle in their notebooks. Ask them to clearly mark the arrows to show the transition of the stages of each plant.

Classwork: 10 minutes

Watch a documentary about the life cycle of plants as mentioned in the *Discuss and Answer* given on page 12. Encourage the children to talk about what they observed in relation to the overall lesson.

Homework: Students can do *Exercise* 5 on page 13, and Activity 1, 3 of '*Things you can do*' on page 14.

Suggested activity:

- Ask the students to bring beans or seeds to class so that they can do Activity 2 of *Things you can do* on page 14. Place a few seeds in a small container with wool that has been soaked with water. Ask the students to observe the growth they see over the next few weeks, and note down what they see, taking care to use the word 'life cycle' in their descriptions.

Lesson plan 4

Duration: 40 minutes

Outcomes:

- think and critically articulate the concept of life cycles in terms of everyday observations
- describe the life cycles of various kinds of animals

Resources: textbook pages 10–12, notebooks, basic stationery items (pencils, markers, colouring pencils, etc.), [optional] access to online/print sources

Introduction: 5 minutes

Ask the students to recall what they learnt in the previous lesson. A life cycle is a specific series of stages that living things undergo during their life span. The life cycle of a particular organism varies depending upon what specie of organism (plant or animal) it is. The general life cycle of any organism is typically its birth, growth, and decline. The life cycle is continued through the offspring of the original organism.

Explanation: 20 minutes

Give the students two minutes to draw the life cycle of a human being. Ask them to apply what they have learnt about life cycles to their practical experience and observations on living as human beings. Once the students have completed this preliminary activity, make the students pair up for the next activity. Assign an animal to each pair and ask them to make a life cycle for that animal, referring to the textbook pages 10–12 where necessary. If you can arrange material regarding encyclopedias, it may help the students. If possible, teachers can even allow students to access print sources present in the school library

or online sources accessed via the ICT lab. Encourage the students to use particular terms such as 'calf', 'kitten' instead of 'baby' where applicable.

Animals that can be assigned to the pairs can include giraffe, whale, goat, ostrich, penguin, polar bear, lion, praying mantis, honeybee, ant, spider, shark, snake, cat, dog, crocodile, etc.

Conclusion: 5 minutes

Once the students have prepared the life cycle, ask them to arrange them on the classroom softboard so that everyone can see their efforts.

Classwork: 10 minutes

Students can do *Discuss and Answer* given on page 11, and *Exercises* 1, 3, and 4 on pages 13 and 14.

Homework: Students can do *Exercises* 2 and 6 on page 13 and 14.

Answers to Unit 2

Exercises

1. *True s*tatements: [Baby birds] hatch from eggs; have to be fed; have no feathers; are blind; stay in the nest.

2. i. correct
3. ii. correct
4. iii. incorrect
5. iv. incorrect
6. v. incorrect
7. Bird: tadpole [does not belong]
8. Insect: puppy [does not belong]
9. Frog: fry [does not belong]
10. Eggs; fry; adult fish [position as on page 11]
11. Students will do this based on what they have learnt and understood.
12. i. c (all the stages of an animal's or plant's life)
13. ii. c (pupa)
14. iii. b (chrysalis)
15. iv. b (seeds)

Unit 3 The Sun

Key learning:

- identify/place north, south, east, west
- understand that the direction of Sunrise is 'east', and the direction of Sunset is 'west' (on Earth)
- name places towards north, south, east, and west of the school/home
- describe the formation of shadows
- recognise that the size and direction of the shadow can be used to estimate (guess) time

Background information:

This unit is about the Sun, focusing on its interaction with Earth. The Sun is described in terms of what it is made of, as the source of heat and light, and its size, especially in relation to other planets. Earth is described to be a planet which spins anticlockwise, completing one round every 24 hours. The Earth moves around the Sun and takes one year to complete one circulation. There are four primary directions on a compass named north, south, east, and west. These directions use the Sun to help people find directions on Earth. The Sun rises in the east and sets in the west. Shadows are created when something blocks light rays from coming in contact with the surface. People often use shadows to help them estimate the time.

Lesson plan 5

Duration: 40 minutes

Outcomes: Students will be able to:

- describe the Sun
- describe the movement of Earth
- recognise the Sun as a source of light and energy on Earth

Resources: textbook page 15, a regular wall clock (or any other kind of analog clock that is readily available), access to ICT lab (and a stable internet connection)

Introduction: 5 minutes

Ask the students about the sizes of the illustration given on page 15 of the textbook—what do they see? Explain that these pictures cannot show us the actual comparison of the sizes of the Sun and Earth. The Sun is a huge star, roughly 109 times wider than the Earth!

Explanation: 20 minutes

Talk to the students about stars, how they are balls of extremely hot gases. Expand this point by explaining how the Sun is the star closest to the Earth. Discuss the role of the Sun with the class. Talk about its role in providing heat and light. Ask the class what they think this is used for. Answers can include things like plants make food with Sunlight (through a process called photosynthesis), the Sun plays a big role in the water cycle by causing water to evaporate in the first place, without heat from the Sun the Earth would be too cold for survival and would probably freeze over, etc.

Explain the Sun's central position in the solar system. Draw a simple diagram on the board to show the solar system (the Sun is called sol in Latin, an ancient language, hence solar system). Explain that the Sun is at the centre of the solar system and eight planets, including the Earth, revolve around the Sun. You may mention how the planets revolve the Sun due to its gravitational force which ensures they stay within their orbit (their path around the Sun).

Next, shift the discussion to describe Earth, focusing on how it is the third planet away from the Sun. The Earth is not fixed in one place, rather, it spins anticlockwise on its axis. Ask the students to look at the clock present in the class. Ask them to point with their finger and make an imaginary circle outlining the clockwise direction. Explain how the *anti*clockwise direction is one that is opposite in direction to how the hands in a clock move. Pick any two students and ask them to come and stand in front of the class. Ask one child to be the Sun, slowly rotating while standing on one spot. Ask the other student to play the Earth, slowly spinning anticlockwise while also slowly moving around the Sun maintaining the same distance. Guide the students during this demonstration, while making sure the students don't spin too fast or they will get dizzy. This demonstration will help the class visualize the movements of the Earth and the Sun. Highlight how it takes the Earth one year and 6 hours to complete a full rotation of the Earth. Every four years there is a 'Leap year' where the 6 hours add up to form one full day, therefore there are 366 days in a leap year (while the average year has 365 days).

Conclusion: 5 minutes

Wind-up the session by asking the students what else they know about the Sun and the Earth, focusing on their positions in the solar system. They may mention facts about space, and that is okay because it reflects their curiosity and interest in the vast subject.

Classwork: 10 minutes

Ask the students to visit the ICT lab and find out facts about the Sun, using reputable websites such as the one run by NASA. Ask them to write down the most interesting facts they found in their notebooks and share them with the rest of the class.

Homework: Ask the students to write a short paragraph about what they would need to conduct studies on the Sun. Typical answers may include a space shuttle, rocket, heat-proof space suit, heat-resistant sample collector, telescope with anti-glare lens to block out the excessive UV light, etc. Encourage the students to be as creative as they can in their answers.

Suggested activity:

Use a globe to demonstrate the anti-clockwise movements of the Earth—on its axis as well as its orbit around the Sun. Explain the terms clockwise and anticlockwise using a wall clock.

Lesson plan 6

Duration: 40 minutes

Outcomes: Students will be able to:

- understand the directions north, south, east, and west
- understand and explain the phenomena of Sunrise and Sunset
- practically apply their knowledge of north, south, east, and west to help with directions

Resources: textbook page 16

Introduction: 5 minutes

Begin the lesson by asking the students if they have ever gotten lost somewhere. Listen to a few experiences, and then ask the students if they can think of any examples of devices or objects that can help them understand directions. Some answers may include phones, the internet, and even maps.

Explanation: 20 minutes

Once the students start thinking about objects that can provide people with directions, expand the discussion to talk about the compass, which was a device originally used by travelers to give them an indication of which direction was north, south, east, or west. Write down the four directions on the writing board. Ask the students to stand up but keep themselves positioned at their seats. Ask the students to point forward towards the front of the class, tell them that this is the direction called 'north'. Ask the students to turn around (180-degree turn), tell them this is the direction known as 'south'. Similarly, direct the students to turn towards the east and the west. Once this concept has been clarified, ask the students to settle on their seats.

Ask the students if any of them know which direction the Sun rises from. Some may answer correctly based on their existing knowledge, some children may be incorrect. Do not discourage those who have answered incorrectly, rather tell them that the Sun rises from the east and sets in the west. Tell them that this phenomenon has been constant ever since the dawn of time, so if you ever get lost you can easily observe where the Sun is rising from or where is sets to figure out where the direction 'north' lies. When the Sun rises, it means that the day is beginning, and when the Sun sets, it means the day is ending and nighttime is beginning. Ask the students where they think the Sun goes when it sets, and where do they think the Sun comes from when it is rising at dawn? Remind the students how the Earth is constantly rotating at its axis, as explained in the previous lesson, so the Sun only lights up one part of the Earth at a time. This is why if it is morning on one side of Earth, it is nighttime on the opposite side.

Next, ask the students to turn to page 16 of the textbook. Talk about the map given on the page and discuss with the class what direction each place mentioned on the map is located. You can ask the students to verbally relate a few examples based on the same map, for example, the bus stop is south of the school, the mosque is east of the bus stop, etc. Encourage students to respond with statements that are not present in the book.

Conclusion: 5 minutes

Conclude the discussion by testing the students' concepts by asking them to dictate the directions (for you to write on the writing board) starting from the main school gate to their classroom using the key words 'north', 'south', 'east', and 'west'.

Classwork: 10 minutes

Students could do Exercise 3 on page 18.

Homework: Students could do Activity 2 of 'Things you can do' on page 18.

Suggested activity:

Explain the concept of day and night to the students in this way: Light a candle and place it on one side of a globe. Now explain to them that all the countries on that side are experiencing daylight, and all those countries not facing the lit candle are in darkness and are experiencing night. Do this several times, but let the students tell you which side has daylight and which side has night.

Lesson plan 7

Duration: 40 minutes

Outcomes: Students will be able to:

- define shadows
- understand how shadows appear
- learn how to tell time with shadows

Resources: textbook page 17, torch, any small object (ball, doll, etc.), picture of a sundial

Introduction: 5 minutes

Ask the students about how the day changes, based on their observations and what they have learnt during the previous lessons. Remind them that the Earth is not suspended in the solar system, rather experiences a continuous movement by rotating not just on its own axis but also simultaneously around the Sun. Remind them that because of these movements, light does not fall the same way across the Earth at the same time. If one part of the Earth is experiencing daytime, the opposite part of the Earth will be experiencing night, that is, the *shadow* of the light.

Explanation: 20 minutes

Ask the students what they understand by the word 'shadow'. Ask them to talk about how they think it appears. Take the class outside to the school ground, garden, rooftop, or any place where there is direct sunlight. Position the children across the area and ask them to stand with their hands up towards the sky. Tell them to observe their shadow by changing the position of their arms and legs. Encourage them to move around the open area slowly and observe the movement of their shadow. What causes it to lengthen and shorten? Talk about how the length of shadows typically changes depending on what time of day it is. Shadows are long in the morning and in the evening but are short during midday when the sun is at its highest peak. Take the students back to the classroom to demonstrate the changes in shadows in a more controlled environment.

Show the students the differences in shadow with the help of a torch in a darkened classroom. Ask the students to close the classroom door and draw the curtains and dim the lights. Place a ball or any small object on the table. First, shine the torch directly above the object. Ask the students to observe how the shadow is a small one. Slowly move the torch to shine brightly on one side of the object. The shadow will fall on the opposite side and will lengthen. You may move the torch in an arc above the object to show the students how the shadow changes, even if the object remains in the same position.

Expand this concept to highlight how people used shadows to tell them the time. Show them a picture of a sundial and ask students to suggest how they think it would work. Ask them to read the heading 'Telling time with shadows' on page 17. Tell them how they can now always estimate the time based on what their shadow looks like.

Conclusion: 5 minutes

To wind-up the lesson, it is a good idea to end on a note that invites curiosity. Talk to the students about the natural phenomenon of day/night which have been discussed for the past few lessons. Ask them based on their understanding what they think eclipses are. Explain how eclipses are also a kind of shadow, which are called *solar* and *lunar*, based on what causes the shadow and where it falls. A solar eclipse is one where the Moon comes between the Sun and the Earth, thereby blocking the light coming from the Sun (casting a shadow on Earth). A lunar eclipse occurs when the Moon comes under the Earth's shadow, where the Earth is positioned between the Sun and the Moon. It would be a good idea to make a rough

sketch/quick diagram showing an eclipse on the writing board.

Classwork: 10 minutes

Students could do Exercise 1 on page 18, and Activity 1 of 'Things you can do'.

Homework: Students could do Exercise 2 on page 18.

Suggested activity:

Students can watch videos of Chinese shadow puppets in the audio-visual lab/room. They can explore how shadows can be used to make stories. Encourage students to design and make their own shadow puppets to play with and even make stories of!

Answers to Unit 3

Exercises

1. i. east; west
   ii. shadow
2. i. Shadows are longer in the morning and evening, and shorter at midday.
   ii. north, south, east, west
3. (clockwise after 'North'): east; south; west

Unit 4 Matter

Key learning:

- define 'matter'
- understand the main properties of solids, liquids, and gases
- recognize the basic differences between the three states of matter
- identify the physically observable properties that indicate the different states of matter

Background information:

This unit is about 'matter' and the various forms that it appears in. Everything that can be seen around is essentially made up of different forms of matter, including people. There are three states of matter, namely solid, liquid, gas. Each state of matter has distinct properties that determines what form it takes. Matter that exists in a solid state is something that we can touch and interact with physically. Solids are typically hard, though some can be soft as well. Solids have a definite shape and cannot appear in a different form very easily, moreover, solids also take up space. Examples of solids include ice-cubes, rock, pillow, etc. The liquid state is interesting because they can take the shape of whatever container they are placed in. We can see and touch liquids and pour them from one place to another. Examples of liquids include oil, water, milk, etc. The third state of matter is gas, which despite being around us all the time cannot typically be seen, though can be felt as times. Gases don't have any fixed shapes or sizes. Prominent examples of gases include oxygen, water vapour, etc. Matter can change its state depending on the conditions that it is exposed to. To illustrate this concept, the textbook gives a key example of ice which changes its state from solid (ice) to liquid (water), and then to gas (water vapour). When ice melts, it turns to water, which can be heated to form a gas. Contrarily, water vapour condenses to form water, which can be frozen to turn to ice.

Lesson plan 8

Duration: 40 minutes

Outcomes: Students will be able to:

- understand the concept of matter
- identify the three states of matter (solid, liquid, gas)
- learn to distinguish between the properties of solids, liquids, and gases

Resources: textbook page 19, masking tape, access to Audio-visual room or IT lab (for the documentary)

Introduction: 5 minutes

Introduce the topic 'Matter' to the students by asking them to think about what they think things are made up of. Tell the students how different things are made from different materials, and how each material can be fit into the broad categories of either solid, liquid, or gas. Write down the three words in three different brainstorming bubbles on the writing board. Ask the students what things in the classroom (or in the school premises) they think can be classified under those headings. Ask the students to note these down in their notebooks.

Explanation: 20 minutes

Use masking tape to mark one large square on the floor. You can mark the square in a place where there is open space in the classroom, or you can take the students outside where there is more space to do so. The square should be large enough to have multiple students in it at the same time. Once the square has been marked, ask some students to go and stand inside it. Try to fit in as many students as possible so the

students stand shoulder-to-shoulder within the square boundary. Once the students have been positioned inside the square boundary, ask them some questions about how well they can move. Explain how they are moving like solids because they are closely packed together. Ask a few students to leave the square, then request the remaining students to try moving around. They should be able to move further from their original spot, which means that they are moving like particles in a liquid state, which have a little more energy than particles in solids. Next, instruct a few more students to leave the square. Ask the remaining students to move around the marked boundary. Students will be able to move completely freely, only occasionally bumping into each other. Tell everyone that now the students resemble particles in a gas.

Discuss the activity once all the students have come back to their seats. By referring to the textbook page 19, and their experience of the activity, tell students about the concept of solid, liquid, and gas. Describe how solids cannot change form, while liquids and gas can do so because their particles have more energy and can move.

Conclusion: 5 minutes

At the end of the lesson, ask the students to revisit the list of things they made at the start of the class. Students will look at their answers and classifications, and then determine if their responses were correct, based on what they learnt during the lesson.

Classwork: 10 minutes

Students could do Activity 1 of 'Things you can do' on page 21. Instruct them to make notes as they watch the documentary.

Homework: Students can do Exercise 2 on page 21, and Activity 3 of 'Things you can do' on page 21.

Suggested activity:

Print out pictures of various solids, liquids, and gases on different cards. Place the cards in a basket. Ask the students to sort out the cards by placing pictures of solids in one pile, liquids in another pile, and gases in the final pile. Pictures can include rocks, lava, volcano, windmills, hot air balloon, cat, apple, soap bubble, liquid nitrogen, smoke, oil, etc.

Lesson plan 9

Duration: 40 minutes

Outcomes: Students will be able to:

- learn about the changes in the state of matter
- explore the changes of state of ice/water/vapour

Resources: textbook page 20

Introduction: 5 minutes

Ask the students to recall what they have learnt in the previous lesson. Make sure they are able to use the words solid, liquid, and gas with an understanding of what they imply. The particles in solids stay in one position which means that solids maintain their shape and size. Remind the students that some solids are soft while others are hard. Liquids have particles that move a little due to the gaps between the particles, which means that liquids can change their shape and take the shape of any container they are put in. Gases have the greatest amount of space between their particles which means that they do not have any fixed shape or size.

Explanation: 20 minutes

Take the students to the school science lab. Make sure there are smooth transitions and settle the class on their stools in the lab. Make sure the table in the front of the class can be seen by everyone. Talk to the students about exploring the different states of matter since we are surrounded by different solids, liquids, and gases in our everyday lives. Place some ice cubes in a beaker. Ask the students what state of matter they are in. Students should reply by saying "solid state". Once the state of matter of the ice cubes has been determined, place the beaker on top of a Bunsen flame, using a beaker stand. Ask the students to observe what is happening to the ice cubes (due to the heat of the flame, the ice cubes will be melting). Use the term 'Melting' to describe the process of the solid ice cubes turning into the liquid (water). Once the ice cubes have melted completely, swivel the water in the beaker to show the state of matter to the students. Remind them that this water is made up of the same water that made up the ice cube. Place the beaker once more on the Bunsen flame, to continue heating the water. Ask the students to observe the water vapour rising from the liquid. Explain how the water is 'Evaporating' from beaker as it gains more energy from the heat. Cover the beaker with a lid or place a glass stirrer into the beaker. Ask the students to notice the 'Condensation' (small water droplets) present on the inside of the cover/lid, or on the surface of the stirrer. Explain that the water vapor becomes liquid after cooling down and condensing. This water can be frozen in the freezer to form ice cubes once again.

Conclusion: 5 minutes

Once the students are back in the class, ask them to write down their observations for each state of matter in their notebooks. Encourage them to draw illustrations as well.

Classwork: 10 minutes

Students could do Exercise 1 on page 21.

Homework: Students could do Activity 2 of 'Things you can do' on page 21.

Answers to Unit 4:

Exercises

1. i. ice
   ii. water; liquid
   iii. solids
   iv. gas
   v. liquids

Refer to the comparison table given on page 19 of the textbook.

Unit 5 Energy and its Sources

Key learning:

- identify the fact that energy is needed for doing work
- recognise that energy can be used for many different things
- understand what the natural sources of energy are

Background information:

This unit is about energy and its various sources. It begins with a crisp definition of energy as the power to do work. Energy is what is required to make things move and/or change. There are various sources and different forms of energy that are used in the day-to-day lives. Animals and humans get their energy from various food sources. Meanwhile, natural sources of energy include the Sun, flowing water, wind, wood, coal, oil, natural gas, etc. The Sun is the source of energy for plants, helping them grow and develop. As can be expected, there are countless uses of energy. Humans use energy all the time, and without it, cannot do the basic processes such as moving muscles, using the brain, which are needed to survive. Energy is used in multiple processes such as cooking food, heating, or cooling the house. We also need energy to move our bodies during exercise. Machines get their energy from various sources while performing its roles. Sources include fuels such as petrol, natural gas, coal, or even diesel. Other machines make the use of solar, water, or even wind energy. Modern appliances and machines require electricity to function, that is generated with a power generator.

Lesson plan 10

Duration: 40 minutes

Outcomes: Students will be able to:

- define energy
- identify the various sources of energy

Resources: textbook pages 22–23

Introduction: 5 minutes

Introduce the lesson by asking the children about their eating routine. Questions such as 'How many meals a day do you have?' can be a good starter. Students may have a range of different answers; accept them all. Expand your initial question by asking students what would happen if they stopped having food. Students may express that they would get tired or won't have the 'energy' to move. If you get your expected answer (energy) build the discussion on it. Explain that like a car needs fuel to run, living things need fuel for the energy to grow, work, run, play, and to study. This energy comes from eating fresh and nutritious food in moderate quantities.

Explanation: 20 minutes

Expand the introduction by centering on the word 'Energy'. Ask the pupils what they think energy is? Do they think they used any energy today? If so, ask them to quickly list the ways they used energy in the morning. Talk about how energy is the force that determines the ability of something (or someone) to move, or change. Remind the students about the need for eating food, that had just been discussed. Tell them how food is not just needed for providing energy for physical processes such as running and walking, but also for mental processes such as thinking. Remind students how just as cars need petrol to run, our bodies need food for energy. Explain how energy is an invisible force that gives the power needed to do work. Define work as something that requires energy, for example, push and pull forces are a kind of work.

Energy is essentially something that allows things to move or change. Ask the students to give a few examples of things that need energy. Examples can include: the moving of the clock's hands, a person walking down a street, the leaves of a tree blowing in the wind, etc. (The possibilities of answers for this question are endless).

Once you are certain that the students have grasped the concept of 'energy' and are able to identify things that are using energy, move on to the second part of lesson, which involves identifying the different sources of energy. Remind the pupils how humans and animals get energy from eating food. Talk to the students about how the Sun is the main source of energy because it provides the energy needed to produce food (plants need the Sun to photosynthesize). Natural sources of energy are those that can be obtained from nature. Examples include the Sun, wind, water (that is flowing/moving), burning wood, coal, oil, natural gas, etc.

Conclusion: 5 minutes

Classwork: 10 minutes

Students could do Exercise 1 and 2 on page 25.

Homework: Students may do the activity given under the heading 'Things you can do' given on page 25.

Suggested activity:

- While talking about the concept of energy, demonstrate some examples by having students run, switch on lights, make different sounds, or play hopscotch. These are everyday examples that showcase energy use. Ask pupils to think of other examples where energy use can be seen. Encourage them to make a list on the writing board, or on a chart-paper to put on the classroom wall.

Lesson plan 11

Duration: 40 minutes

Outcomes: Students will be able to:

- discuss and describe the various uses of energy
- understand where machines get their energy from

Resources: textbook pages 23–24

Introduction: 5 minutes

Ask the pupils to recall what they learnt about energy in the previous lesson. Encourage them to remember what they understand about how energy is transferred from different sources to assist humans in key processes they need to survive.

Explanation: 20 minutes

By this time, students should have a good grasp upon the various sources of energy. This will allow you to help expand their knowledge about the sources of energy by gaining a better understanding of the multiple uses of energy. In the previous lesson, students have learnt how different forms of energy is used by living and non-living things.

Before the lesson begins, prepare cards featuring different kinds of machines. Show each card featuring a machine to the students, ask them to identify what the machine does, and then ask students what kind of fuel they think that machine uses. Your cards can include pictures of rockets, ships, generator, windmill,

water turbine, tube-well, horse cart, stapler, pulley, escalator, etc. Remind the students that there are different sources of energy such as wind energy, water energy (or any kind of kinetic energy), solar energy (light energy), electricity, etc. Animal-driven machines do not require much fuel, but instead need food to give them the required energy to do their work. Ask students what kind of food is required for them to have the maximum energy. You may talk about healthy foods such as vegetables, fruits, and proteins which can help their energy levels, and allows them to live their best lives.

Conclusion: 5 minutes

Ask the students to write down five statements similar to those given on page 23, about things that need energy to work (move/change). Encourage the students to complete this task independently, with very little intervention from you or other classmates.

Classwork: 10 minutes

Pupils could do Exercise 4, 5, and 6 on page 25.

Homework: Pupils could do Exercise 3, and 7 on page 25.

Suggested activity:

- Children can put on their 'Thinking caps' (which can be designed and decorated by them using construction paper) and go around the classroom (or even outside in the garden/ground) to identify things that are either sources of energy, or signs of things using energy. Students can include different lights, animals, plants, etc. in their lists.

Answers to Unit 5:

1. Energy is the power to do work.
2. Sun, wind, water, burning wood, coal, oil, natural gas, etc.
3. Cooking, cleaning, reading, walking, breathing, etc.
4. Sun. Plants make their food using energy from the Sun, while animals either directly or indirectly get their energy from plants.
5. Light and heat energy.
6. d (battery)
7. Fuel (either petrol or gas)

Unit 6: Resources and their Types

Key learning:

- define what resources are
- identify and describe the different types of resources
- recognise key resources of Pakistan
- understand and make the use of the terms: goods, services, buyers, and sellers
- identify services and goods offered in their local area
- pinpoint the need for interdependence due to scarcity of available goods and services in a particular area
- define what scarcity is
- recognise that economic choices often depend on the availability of goods and services

Background information:

This chapter contains information about resources and their various types that are accessible to people. Resources have been defined as the things used to make the vast spectrum of objects that are used in everyday life. There are tree main types of resources namely natural resource, human resource, and capital resources. Natural resources are those which we get directly from nature. These include air, land, fish water, sunlight, plants, minerals, animals, soil, stones, fossil fuels, etc. Different places on Earth have natural resources that are specific to the region. Humans depend on natural resources in various ways. Since natural resources are found in specific regions, this can cause shortages of such resources in those areas. Many materials are formed from different plants and animals, and some are even dug from the ground. All these materials can be classified as natural resources. Next, this unit covers the concept of human resources. Human resources are those which come from the people of a country. In Pakistan, there are skilled as well as unskilled workers, all of whom that contribute to the country's human resources. Examples include painters, doctors, farmers, teachers, etc. Capital resources are those goods which are used to make other goods. These include machines, tools, trucks, computers, factory buildings, etc.

This chapter goes on to define and elaborate upon the meaning of the terms 'goods' and 'services'. Goods refer to materials and objects that are bought and sold to fulfil the needs of people. These include books, food, furniture, etc. Services refer to the work that people do for each other. They are typically specialised. Services are provided by people called barbers, farmers, cleaners, builders, etc. Usually, people must pay to receive services. A buyer is some who purchases goods or services, while a seller is a person who exchanges money for specific goods and services. This chapter goes on to talk about interdependence, which is the idea that people depend upon each other to fulfil their needs. Certain areas are similarly dependent on others for fulfilling their lacks so they can be more productive. There are certain things we need others to do for us such as drilling oil from the ground, flying a plane, etc. Scarcity refers to something being in a short supply. This concept is meant to remind students that they live on Earth with finite resources, that are resources which cannot last forever. Natural resources or even human resources aren't enough to meet the requirements of people and cannot be replaces. Having a lack of sufficient resources impacts daily lives and everyday needs.

This unit also talks about the economic choices where people choose specific goods and services for various reasons. Sometimes the scarcity of resources causes people to choose from the pool of available resources.

Lesson plan 12

Duration: 40 minutes

Outcomes: Students will be able to:

- define resources
- identify and describe the different types of resources
- recognise the key resources in Pakistan

Resources: textbook pages 26–28, cards featuring pictures of various resources (as described in the Explanation)

Introduction: 5 minutes

Initiate the lesson by asking students what they think about resources. What things do they classify as resources? Ask the students to make a list of essential resources they use every day, within their notebooks.

Explanation: 20 minutes

Define the word 'resources' as materials that are available and accessible for us to satisfy our wants and needs. Talk about how valuable resources are for humans because these are a means to an end, which is improved living. Write down the three main types of resources on the writing board. Ask the students to write down three examples of each type of resource in their notebook. Encourage them to mention examples that are not present in the textbook. Explain to the students how natural resources are the ones that are obtained from the natural environment, such as air, water, land/soil, plants, animals, etc. Ask the students to think about what kind of resource derivatives of natural resources are, such as cheese, butter, and other things that need to be processed before they can be used. Tell the students that these are also called natural resources. Next, explain to the students what human resources are. Human resources refer to the skilled and unskilled workers which provide essential services for people. Next, describe capital resources which include the goods that are used to make other goods. These resources include infrastructure, transport, machinery, etc, all of which are used to facilitate the making of different goods.

Once you have defined the three types of resources, ask the students to stay alert and look at each of the cards you show them one-by-one. Ask them what resource each card is, whether it is a natural resource, a human resource, or a capital resource. The cards should contain an assortment of images such as bank buildings, libraries, trees, agricultural fields, ships, farmers, builders, computers, etc. expand the discussion by elaborating on each card. Talk about what the resource on the card is like for Pakistan. For example, an image of a natural resource such as a sugarcane field can launch a short side-discussion about the importance of sugarcane to Pakistan's industry/economy.

Conclusion: 5 minutes

Ask the students to recap what they have learnt during the lesson. Encourage them to use the key words 'human resources', 'capital resources', and 'natural resources'.

Classwork: 10 minutes

Distribute two cards from the pack to each student in the class. Ask them to write a few lines in their notebook about the resource mentioned in the card in respect to Pakistan.

Homework: Students could do Exercise 1 (i, ii) on page 31, and Activity 1 of 'Things you can do' on page 31.

Suggested Activity:

Ask the students to talk about what they want to be when they grow up, and what resource they want to be for their country. Ask them to write a paragraph in their notebooks about their career aspirations and what profession they want to be a part of. What role do they want to play in society.

Lesson plan 13

Duration: 40 minutes

Outcomes: Students will be able to:

- describe goods and services
- talk about buyers and sellers
- understanding the concept of interdependence

Resources: textbook page 29

Introduction: 5 minutes

Introduce the topic by asking the students to talk about their understanding of the terms 'goods', 'services', 'buyer', and 'seller'. Ask them to write their definitions of these terms in their notebooks.

Explanation: 15 minutes

Explain to the students what goods and services are. Goods are physical things that can be bought or sold, while services are human resources that people can provide based on their expertise. Services include specialised skills such as barbers and farmers. We use many services in our daily lives for which we are required to pay a certain amount of money.

Shift the discussion to buying and selling. Talk about the many mediums of transactions such as paper money, credit/debit cards, cheques, etc. Inform the students that a transaction typically occurs between a buyer and a seller where the buyer obtains a good or service from a seller in exchange for money of the same value. Talk to the students about typical statements used by buyers and those used by sellers.

Talk to the students about whether they think it is possible to live in this world without buying or selling anything. Remind them that human beings depend on each other so they can fulfil all their needs. Give examples for basic amenities such as food supplies for which we depend upon the farmers, the shopkeepers, and even the people in-charge of transportation of the food. If any one person in this chain does not do their job, it will be difficult for you to have access to your food supplies.

Conclusion: 5 minutes

Instruct the students to go back to the definitions they wrote in their notebooks at the start of the lesson. How correct were they? Students can review and rewrite their definitions based on what they have learnt during the lesson.

Classwork: 15 minutes

Students could do Activity 2 of 'Things you can do' on page 31. Request that they bring something from home a day before this lesson, and then encourage them to practice 'selling' it to their classmates, and then buy something from them as well. Students should use what are appropriate buying/selling questions, for example, "How much is this for?", "Is this for sale?", "Will you like to buy this from me?", etc.

Homework: Students could do Exercise 1 (iii, iv, v) on page 31, and Activity 3 of 'Things you can do' on page 31.

Lesson plan 14

Duration: 40 minutes

Outcomes: Students will be able to:

- talk about scarcity
- understand what it means to make economic choices

Resources: textbook page 30

Introduction: 5 minutes

Define the term 'scarcity' to the pupils. Tell them that scarcity is when something is in a short supply. Remind them that resources are precious because there is a point after which they will run out. Ask the students to list in their notebooks all the things they think have a chance of running out.

Explanation: 20 minutes

Expound upon the idea of scarcity by talking about 'wants' and 'needs'. Scarcity occurs when there are not enough goods or services to fulfil people's wants and/or needs. Due to scarcity, people make economic choices that allows them to fulfil their requirements. Economic choices include the decisions made on the basis of availability. Explain the students this concept by discussing what would they do if a particular brand of bread is not available. To fulfil their need to have bread (for breakfast, which is an important meal), they would substitute another brand of bread which is available. Ask the students to share their personal experiences about any incident where they made an economic decision based on scarcity.

Conclusion: 5 minutes

Ask the students to go back to the list they made at the start of the lesson. How correct were they in the things they listed? Encourage them to add to the list at the end of the lesson. Ask the students to choose any one thing from their list and make a vow to do their best to save this resource, for example, they can vow to reduce the wastage of water/food in their surroundings.

Classwork: 10 minutes

Activity 4 of 'Things you can do' on page 31.

Homework: Students could do Exercise 2, 3, 4 on page 31.

Answers for Unit 6

1. i. There are tree main types of resources namely natural resource, human resource, and capital resources. Natural resources are those which we get directly from nature. Human resources are those which come from the people of a country. Capital resources are those goods which are used to make other goods.
   ii. Woodcutting equipment, hardwoods, nails, screws, hammers, etc.
   iii. *Goods:* objects that can be acquired to fulfil human wants/needs
   Services: these refer to the work that people do for each other.
   Buyers: are those who purchase goods and/or services.
   Sellers: are those who make goods and/or services available to buyers.
   iv. Buyers are those who purchase goods and/or services, for example when we go to the shops to purchase something, we become buyers. Sellers are those who make goods and/or services available to buyers, for example shopkeepers, etc.
   v. The farmer grows and takes care of the vegetables and fruits until they are ripe and ready for eating. He then arranges for these food items to get transported so they can be sold to people in the market.
2. Students will answer this question based on their understanding and observations.
3. Scarcity is when there is a lack of certain goods and services.
4. Students will answer this question based on their understanding and observations.

Unit 7: Conservation of natural resources

Key learning:

- understand the ways how humans have changed the natural environment
- define pollution
- identify the different types of pollution (land, water, air, noise)
- come up with ways to save natural resources
- list the endangered animals of Pakistan and think of ways they can try to protect endangered animals
- recognise that some animals have become extinct

Background information:

This chapter talks about the conservation of natural resources. It begins with a note on the natural environment, highlighting how the Earth is a planet which is made up of land, forests, soil, and water. These natural resources are needed for plants and animals to survive. Humans initially lived in simple conditions, in homes made up of materials found nearby, doing work mainly with their hands. Since there were few people, there were no big cities, which meant that forests were not chopped down, there were no power stations, and very little to no noise and pollution. Overtime, humans have changed the environment, and though many changes are good, there are some significant changes that are bad. Humans also have affected animals due to their construction of cities, roads, railways, and factories. These have affected the animal and plant habitats and thereby, the ecosystem at large. Humans have cut down many forests for numerous reasons such as for fuel, making furniture, and even clearing tracts of land for large-scale construction activities. Forests produce oxygen and clean the air, so when they are cut down, the air becomes unclean. Human activities have changed the land, causing flooding, which degrades the overall soil quality. Humans also cause different types of pollution including land, air, water, and even noise pollution. There are endangered species in Pakistan such as the Indus Dolphin, Markhor, black buck, etc. Endangered species need human intervention to help protect them. This unit goes on to talk about conservation, it being an act of protecting the Earth's natural resources. There are numerous things that people can do to help save the environment from further degradation. Examples include keeping the environment clean, using cloth bags instead of bags made of plastic, using less water, saving electricity, planting trees and plants, etc. If natural resources such as air, water, fossil fuels, and wood are used up, humans, animals and plants would have trouble surviving. All living things need air and water to survive and being exposed to unhealthy condition would cause many living things to die. If natural resources are not conserved, living things will experience lesser clean air, a loss of habitat, extinction of different species, and even a shortage of food and medicine. To protect endangered animals, it is important that humans take the efforts needed to protect their habitats. Hunting and poaching should be stopped, and pollution needs to be curbed. Dinosaurs, the Dodo bird, and the woolly mammoth are a few species of animals that have become extinct, and don't exist anymore.

Lesson plan 15

Duration: 40 minutes

Outcomes: Students will be able to:

- describe the effect of human activities on the natural environment
- comparison of human interaction with nature many years ago and today
- human interaction with animals over time
- human interaction with forests over time

Resources: textbook pages 32–34

Introduction: 5 minutes

Ask pupils to turn to the picture of the Earth on page 32. Reiterate the fact that we all live on this planet, which is unique in the solar system because of its environment. Highlight how the Earth is made up of land and water, where there is a greater ratio of water on the surface. Earth contains land, forests, soil, and water, and all these natural resources contribute to the way how plants and animals survive.

Explanation: 20 minutes

Have a discussion with the students about the importance of conserving natural resources. During the class discussion focus on the ways humans have interacted with their natural environment. Encourage students to talk about the pictures given on pages 32, 33, and 34, and then write what they think about them in their notebooks. Discuss how humans constantly interact with their environment. Talk about the air we breathe, the water we drink. The environment is all around us and therefore is a resource that helps us survive.

Conclusion: 5 minutes

Encourage the students to recall what they learnt in the lesson and write about what they feel about the topic at hand.

Classwork: 10 minutes

Students could do Exercise 2 on page 38.

Homework: Students could do Exercise 1 and 3 on page 38.

Lesson plan 16

Duration: 40 minutes

Outcomes: Students will be able to:

- describe pollution
- evaluate the different types of pollution

Resources: textbook page 34

Introduction: 5 minutes

Encourage students to recall what they have learnt about the impact of humans on the natural environment in the previous lesson. Explain the definition of pollution to the students. Pollution is when harmful contaminants/substances are released in the environment.

Explanation: 20 minutes

Tell the students that there are four types of pollution, namely water, air, land, and noise. Define water, air, land, and noise pollution. Water pollution occurs when waste is dumped (untreated) in the water. Air pollution is caused by exhaust fumes emitted by cars, factories, etc. Rubbish thrown on the streets can pollute the land, and noise pollution occurs with loud noises produced by industries, loud transport vehicles etc. Take the students out of the class in a single line. Make sure the students lock their hands during the transition. Ask them to note any instances of pollution that they see in their walk across the school. Encourage students write down their findings in their notebook, and then discuss what they saw with the rest of the class. Students may write down their findings in the form of a report to be submitted to the school administration to rectify any controllable acts of pollution. On the level of a classroom,

students can make a list of goals and put it up on the soft board for them to refer throughout the day. Goals can include things that students vow to do to reduce the pollution they produce. Examples of some goals can include vows to speak softly when interacting with others, avoid wasting water, finishing their snack, avoid the wastage of paper, throwing empty wrappers and scrap material in the dustbin, etc.

Conclusion: 5 minutes

Once the concept of pollution has been dealt with in sufficient depth, encourage the students to go a step further by connecting what they have learnt with their experiences and observations. Ask them to talk about what kind of pollution have they observed outside school.

Classwork: 10 minutes

Instruct the pupils to look at Question 4 of 'Discuss and Answer' on page 37. Students should look at the two pictures given and make notes in their notebook focusing on the questions 'How is the environment being affected?', and 'Which animals and plants will be affected?'. Once they have made their notes, encourage them to share their answers with the class, to be part of the class discussion.

Homework: Students can do Exercise 2, 4 on pages 38–39.

Suggested activity:

- Ask the students to choose a product which causes pollution (plastic, smoke, cars, oil, etc). Assign pairs in class and encourage each pair to write and then act out a short skit explaining how the product can pollute the environment. Make sure each pair gives a solution which outlines how to reduce the pollution caused by the original product.
- Arrange a beach/park cleaning activity, where the students go to a public space and clean it up.
- Students can work as a class to make a large A–Z encyclopaedia featuring vocabulary/phrases about pollution, the environment, and recycling. Encourage each student to participate by coming up with appropriate text and an associated illustration to put in the book. Once the encyclopaedia is ready, the class can donate it to the school library for students in every grade to read.

Lesson plan 17

Duration: 40 minutes

Outcomes: Students will be able to:

- understand the need for conservation of natural resources
- discuss ways to save natural resources (and what will happen if natural resources are used up)
- describe what it means to be an endangered species
- evaluate ways to protect endangered animals
- define extinction, and give examples

Resources: textbook pages 35–37

Introduction: 5 minutes

Ask the students to recall what they have learnt about the importance of natural resources. Review the four different kinds of pollution and how they are responsible for environmental degradation.

Explanation: 20 minutes

Ask the students to read the pages 35, 36, and 37 of the textbook in the class. Ask them to think about the 10 ways of conservation given on page 35. Encourage the students to think of other ways that they can

help save the environment. Students can recall what they have learnt about the three 'R's namely reduce, reuse, and recycle. Ask them to consider what would happen if natural resources are used up. It would make living on Earth very difficult. If there is an opportunity, you can show the students the Disney movie 'Wall-E' which showed what happened to Earth after people did not care for it. Discuss how the plant was able to grow on Earth so many years after the humans left it. Talk about the garbage demonstrated in the movie. Encourage the students to write about their feelings watching particular scenes from the film.

Conclusion: 5 minutes

Ask the students to write in their notebooks what measures they can take to help protect animals and the environment.

Classwork: 10 minutes

Ask the students to make posters in class about conserving nature. Students may put up the posters around school or in their classroom.

Homework: Students can choose an endangered species and prepare a presentation about that specie. Ask the students to refer to print and online sources to find relevant information and pictures.

Suggested activity:

- Read '*The Great Kapok Tree*' by Lynne Cherry in class. What message is the author trying to convey? Ask the students to what they felt about the book in their notebook, and how effectively do they think the book conveyed its message.

Answers to Unit 7

1. i. Any creature that does not have any living members of its specie on Earth.
   ii. Indus Dolphin, Markhor, black buck
   iii. Students will answer this question based on what they have learnt in this unit.
   iv. Students will answer this question based on what they have learnt in this unit.
   v. Conservation is the attempt made to protect existing resources.
2. Students will fill in this table based on their understanding.
3. Students can answer based on their understanding.
4. Students can answer based on their understanding and experiences.

Unit 8 Food

Key learning

- understand that plants make their own food in sunlight
- understand that different animals eat different kinds of food
- organise food into different food groups such as fruits, vegetables, grains, dairy food, dry fruit, and meat
- define what is a balanced diet
- recognise what it takes to live a healthy life (exercising, keeping clean, sleeping well, balanced diet, etc.)

Background information

This unit revolves around food for different living organisms. It begins with a description of the food for plants, highlighting how plants need food to provide them the energy to grow, produce seeds, fruit, and flowers. Green plants are the kinds of plants which make their own food through a process called photosynthesis. This process works when the plant uses its leaves to trap energy from sunlight and take in carbon dioxide, and using water taken up from its roots to form glucose and oxygen. The unit also talks about the food consumed by animals. Different animals eat different foods; carnivores eat meat, herbivores only eat plants, and omnivores eat both meat and plants. Similarly, different kinds of birds have different diets. While many eat grain and insects, others eat meat. Humans eat all kinds of food, typically from one or more of the five food groups namely grains, vegetables, fruits, protein foods, and dairy. To live a good life, it is important that people consume a balanced diet, that would give them all the energy they need for their processes. The factors for healthy living also include drinking enough water, getting ample rest, and regular exercise.

Lesson plan 18

Duration: 40 minutes

Outcomes: Students will be able to:

- recognise that plants make their own food
- understand how plants photosynthesise

Resources: textbook pages 40–41, access to a science lab, freshly plucked leaf, iodine solution, petri dish, boiling water in a test tube/beaker, forceps (for holding the leaf)

Introduction: 5 minutes

Begin the lesson by talking to the students about plants. Remind them that plants are living things because they grow, take in nutrients, and reproduce. To undergo these living processes, plants need energy.

Explanation: 20 minutes

Talk to the students about where they think plants get their energy. Look carefully at the illustration given on page 40 which highlights the core processes experienced by most plants. Highlight the cyclic nature of this process, where plants take in carbon dioxide and give off oxygen, using the energy they receive from the sunlight and the water obtained from the soil (transported into the plant through its roots). The glucose (sugar) produced is used by plants to help it grow (and basically stay alive!).

To make this an interactive activity, take the students to a science lab. Since they know that a photosynthesizing plant will have glucose (sugar) in it, tell students that to check if a plant is

photosynthesizing, they can simply check for sugar within the plant. One of the fastest ways to check for sugar in a plant is to use the iodine test. Instruct a student to go to the garden to pluck a single green leaf from a plant. Ask the student to place the leaf on the petri dish on the teacher's table. Tell the student to go back to their seat. Once the students are all settled in their seats, tell them that iodine is a chemical that changes color, to blue-black in the presence of starch, and yellow/brown in the absence of starch. Tell the students that starch is another word for glucose/sugar. Boil water in a test tube, and then dip a freshly plucked leaf using a forceps in the boiling water for a few minutes. Tell the students that this step is important to denature the membrane on top of the leaf so that the glucose can be exposed. Next, place the leaf in a petri dish and apply a few drops of iodine to the leaf, using a dropper. Ask the students to observe the colour change (it would change to blue-black to indicate the presence of starch, thereby proving photosynthesis took place).

Conclusion: 5 minutes

Ask the students to write a paragraph about their observations in their notebooks. Encourage them to use the words they learnt, such as photosynthesis, glucose, etc.

Classwork: 10 minutes

Students could do Exercise 1 (i) on page 44.

Homework: Students could write a short story from the point of view of any plant of their choosing, and talk about how they spend their days, and what kind of food it likes.

Suggested activity:

- Students could do some research on odd plants that 'eat' bugs. Ask them to add pictures of those plants in their notebooks and write some facts about those plants.

Lesson plan 19

Duration: 40 minutes

Outcomes: Students will be able to:

- understand that animals also require food
- identify how different animals have different diets
- understand and use the words carnivore, herbivore, and omnivore

Resources: textbook pages 41–42, old magazines about animals (such as *National Geographic*), scissors, glue, chart-paper

Introduction: 5 minutes

Remind the students that living things need energy to perform their functions, and energy is typically obtained through food. Animals get their energy by eating other plants and animals, but not all animals eat the same kind of food.

Explanation: 20 minutes

Tell the students that there are different kinds of animals, and each animal has a different diet requirement. Explain how there are three main groups of animals depending on the food they eat. Herbivores are those creatures which only eat plants, for example, cows, goats, deer, rabbit, etc. Carnivores are those that only eat meat, for example, lions, tigers, spiders, crocodiles, sharks, etc. Omnivores are those which eat both plants and meat, for example, bears, squirrels, monkeys, etc. Refer to the information about what animals eat given on pages 41 and 42. Discuss different birds and reptiles, encouraging students to think about

why certain animals eat certain things. You may use vocabulary such as 'prey' and 'predator' when talking about about carnivores or omnivores while they are eating meat. This will help expand students' overall subject knowledge.

Next, distribute some old magazines such as *National Geographic*, which contain many pictures of various animals. Ask the students to work in groups and cut out the pictures of animals and paste them on a chart-paper under the correct classification, either 'herbivore', 'carnivore', or 'omnivore'. Students can conduct research using either print or online sources to figure out the diet for the animals they are uncertain of.

Conclusion: 5 minutes

Once the students have classified all the animals, ask them to think about what traits are specific to herbivores, carnivores, and even omnivores. Herbivores don't need the sharp incisors which carnivores typically have to rip at their prey. The herbivores typically have blunt teeth which are good for chewing. Carnivores have sharp teeth and claws that help them tackle their prey. Omnivores typically have a mix of blunt and sharp teeth to cater to their varied diet. Humans are also examples of omnivores.

Classwork: 10 minutes

Students could do Exercise 1 (ii) on page 44.

Homework: Students could do Activity 3 of 'Things you can do' on page 45.

Lesson plan 20

Duration: 40 minutes

Outcomes: Students will be able to:

- talk about what humans eat
- describe the five different food groups, and understand how the classification works
- understand the concept of the balanced life
- describe the factors for healthy living
- recognise the importance of sufficient exercise

Resources: textbook page 43

Introduction: 5 minutes

Begin the lesson by asking students what they had for breakfast. Some children may answer with things such as eggs, bread, milk, cereal, paratha, etc. Some children may even say they don't have breakfast. Remind those children that they may find it difficult to concentrate on their studies and in class if their body does not have the energy in the morning. Stress the importance of the breakfast meal, which is the first meal of the day, and how it is responsible for kickstarting the body's metabolism and other living processes.

Explanation: 20 minutes

Talk to the students about how important it is to live a healthy life. We are all responsible for ourselves and need to take good care of our bodies so that we can lead a fulfilling life. There are several things that we must take care of to stay healthy. One of these things includes having a balanced diet. Talk to the students about how humans eat all kinds of food, but some people have personal preferences that stops them from eating certain foods. Vegetarians are those who don't eat meat, while non-vegetarians eat meat as well as plant-based foods.

There are five main food groups which include grain, vegetables, fruits, protein foods, and dairy. All of these food groups have their benefits and are needed for humans to stay healthy. Highlight what it means to have a balanced diet. Tell the students to turn to page 43, and carefully look at the chart displayed on the page. Talk to them about the importance of having portions, having carbohydrates (bread, rice, etc.), proteins (meat), eggs, dairy items, and fresh fruits and vegetables in their diet. Having a balanced diet provides your body with all the nutrients it needs to grow.

Another thing to stay healthy is the importance of good exercise. Ask the students to stand up and push their chairs so they don't trip. Tell them to stretch their arms upwards, and then bend down and try to touch their toes. After their stretches, encourage them to form a line, and walk three times around the class. Make sure the students have a clear path and are not at a risk of bumping into things. Once the students have done this physical activity, talk to them about how they feel. They must be feeling less sleepy and more energetic. Tell them that this is the power of exercising. To stay healthy, they must do more physical activities, especially in fresh air.

Other things to help stay healthy is drinking six to eight glasses of clean water each day, sleeping a sufficient amount (eight hours), and regular exercise. Ask the students to think about other things that can be done to live a healthier life.

Conclusion: 5 minutes

As a short winddown activity, ask the students to make a note in their notebook about the things they will do from now on to lead a healthier life. Resolutions can include a vow to go outside the house in the evening to play outdoor sports such as cricket, and other running games in a nearby park. Other resolutions can include a vow to eat healthier food, lesser fast food, and include more vegetables and fruits in their diet, as well as drinking more water. Some students can even vow to sleep at an earlier time, so they can have at least eight hours of sleep. Discourage students to write generic answers and encourage them to think about their lifestyles and write goals that they can achieve.

Classwork: 10 minutes

Students could do Exercise 2 and 3 on page 44.

Homework: Students could do Exercise 1 (iii, iv, v) on page 44, and Exercise 4 on page 45. They can also do a few of the following activities as homework: Activity 1, 2, 4, and 5 of 'Things you can do'.

Suggested activity:

- Arrange a class trip to a local supermarket to show them the different food groups that are available for sale. As you walk through the aisles, talk about different fruits, vegetables, and meat options, and what nutrients they provide the body. You may even talk about where these food items come from; dairy products come from farms, fruits and vegetables come from plants (trees, vines, etc.).
- Conduct an activity about learning about foods from different cultures. Ask the students what kind of foods are made at their place, what are the foods made on special occasions. What are some of the key ingredients?

Answers for Unit 8

1. i. sunlight, water, carbon dioxide
   ii. a meat-eater
   iii. having carbohydrates, vegetables, fruits, protein in the correct proportions
   iv. foods taken in the correct proportions
   v. to help with metabolic processes, to keep us fit and energetic
2. i. potatoes
   ii. cheese
   iii. bread
   iv. corn
   v. rat
   vi. swan
3. i. b (eating the right amounts of healthy food)
   ii. c (grains, fruits, and vegetables)
4. Students will answer this based on their experiences and understanding.

Unit 9 Quaid-e-Azam Muhammad Ali Jinnah رحمۃ اللہ علیہ

Key learning

- recognise Quaid-e-Azam رحمۃ اللہ علیہ as the founder of Pakistan
- describe the major events in the life of Quaid-e-Azam رحمۃ اللہ علیہ
- talk about the major contributions of Quaid-e-Azam رحمۃ اللہ علیہ

Background information

This chapter is about Muhammad Ali Jinnah رحمۃ اللہ علیہ who was awarded the title Quaid-e-Azam رحمۃ اللہ علیہ which translates to 'Great leader'. In this unit, Jinnah رحمۃ اللہ علیہ is introduced as the founder of Pakistan. His early life is described, highlighting how he was born on the 25 December 1876, in the city Karachi. His father Jinnahbhai Poonja and his mother Mithibai moved to the Wazir Mansion, where Jinnah رحمۃ اللہ علیہ spent his early life. He went to the school named Sindh Madrasatul-Islam. When Jinnah رحمۃ اللہ علیہ was born, the Indian subcontinent was ruled by the British. Jinnah رحمۃ اللہ علیہ decided to study law, and soon developed an interest in politics. He was a powerful speaker, and often spoke against the sufferings of the Muslims under the British rule. When he returned to India after qualifying as a lawyer, Jinnah رحمۃ اللہ علیہ soon became a part of the Indian National Congress, which was the political party representing Indians. Soon Muslims felt the need for their separate political party to safeguard their interests, and so the All-India Muslim League was formed in 1906. The Muslim League worked under Jinnah رحمۃ اللہ علیہ to demand freedom for Muslims in the subcontinent. After a long struggle, India was divided into two, and Muslims got their independent nation, which they named Pakistan. Jinnah رحمۃ اللہ علیہ became the first Governor-General of Pakistan, though he managed to hold the title for only an year, till his death in September, 1948. Jinnah's رحمۃ اللہ علیہ mausoleum is in Karachi.

Lesson plan 21

Duration: 40 minutes

Outcomes: Students will be able to:

- introduce the personality Quaid-e-Azam رحمۃ اللہ علیہ as the founder of Pakistan
- talk about the early life of Muhammad Ali Jinnah رحمۃ اللہ علیہ and his education

Resources: textbook pages 46–47, writing board (and assorted writing materials like chalk/board marker), a documentary about the early life of Muhammad Ali Jinnah رحمۃ اللہ علیہ, access to ICT lab or Audio-visual room to watch the documentary, access to the school library

Introduction: 5 minutes

Ask the students if any of them can remember whose picture is present on any Pakistani currency note. Tell them that there is only one personality whose picture is displayed on all the money notes in the Pakistani currency. Once the students have answered this question and have come to the name of this personality 'Quaid-e-Azam Muhammad Ali Jinnah رحمۃ اللہ علیہ', ask the students to help you brainstorm on the writing board what they know about the personality.

Explanation: 20 minutes

Talk about what it means to write a biography. A biography is a written account about the life of a famous personality. Ask the students to pretend that they are biographers, who will compile a biography about Muhammad Ali Jinnah رحمۃ اللہ علیہ. The point of informing the students at this stage is that the students will take notes throughout the two lessons with the intention of writing a biography at the end.

Draw a simple timeline indicating the early years of Muhammad Ali Jinnah رحمۃ اللہ علیہ on the writing board.

Mark his birth date as 25th December 1876, and the location where he was born (the city of Karachi). After writing these details on the board, talk about where he was born, what were the names of his parents. Show the students a short documentary about the early life of Muhammad Ali Jinnah رحمۃ اللہ علیہ. The students can watch the documentary in an audio-visual lab in school, or in the ICT lab based on room availability. Encourage the students to make notes about what they see in the video.

Conclusion: 5 minutes

Discuss what they discovered about Muhammad Ali Jinnah رحمۃ اللہ علیہ after watching the documentary. Talk about how effective the medium of a documentary is to teach audiences about the lives of various people.

Classwork: 10 minutes

Students can do Exercise 1 on page 50, and Activity 1 of 'Things you can do' on page 50.

Homework: Students can do Activity 2 of 'Things you can do' on page 50.

Suggested activity:

If possible, organize a field trip to Wazir Mansion in Karachi. Ask the students to make careful observations about where it is located, and what the building looks like, and the kind of books that were present in the Wazir Mansion (there are a lot of books on law and politics in the place that reflect Jinnah's رحمۃ اللہ علیہ interests). Ask the students to write about their experiences visiting that historical location in their notebooks. Make sure they also talk about the importance of preserving historical sites for future learning. Talk about how well the Wazir Mansion has been preserved.

Lesson plan 22

Duration: 40 minutes

Outcomes: Students will be able to:

- describe key facts about Jinnah's رحمۃ اللہ علیہ political career
- understand how Pakistan was formed
- discuss the legacy of Quaid-e-Azam Muhammad Ali Jinnah رحمۃ اللہ علیہ

Resources: textbook pages 47–49, writing board (and relevant materials such as board marker, chalk, etc.)

Introduction: 5 minutes

Do a quick recap with the class about what they have learnt about Muhammad Ali Jinnah رحمۃ اللہ علیہ in the previous class. You may ask the class to update the timeline drawn on the writing board in the last lesson. Encourage the students to refer to the timeline during today's lesson as well.

Explanation: 20 minutes

During the lesson talk about Jinnah's رحمۃ اللہ علیہ experience of being a lawyer. Tell the students about how determined he was that the Muslims of the subcontinent get their freedom, and that minorities are always protected. You may add the importance of respecting minorities in society. Remind the students of the atrocities faced by Muslims as the minority in the Indian Subcontinent, and what difficulties they faced. You may mention the importance of demonstrating respect and consideration for different communities in a society to ensure a peaceful political climate in a country. Talk about Jinnah's رحمۃ اللہ علیہ determination and how his dedication to his vision of freedom was achieved over the years. Mention the key events such as the Two-Nation theory, his iconic Fourteen Points, and his role in the Muslim League. Refer to the

textbook as well as online and print sources to find relevant facts. Talk about the creation of Pakistan in 1947, and how Jinnah رحمۃ اللہ علیہ become the first Governor-General of the country. Mention when he died (11 September 1948) and where he was buried (Karachi).

Conclusion: 5 minutes

Update the timeline made on the writing board with the facts learnt about Jinnah رحمۃ اللہ علیہ after this lesson. Once the timeline has been updated, encourage the children to copy it in their notebooks to refer to in the future. Try to make the timeline as comprehensive as possible so that it helps them do a quick review.

Classwork: 10 minutes

Students can do Exercise 2 on page 50.

Homework: Students can do Activity 3 of 'Things you can do' on page 50.

Suggested activities:

- Ask the students to arrange the notes they have acquired over the past two lessons regarding what they have learnt about Muhammad Ali Jinnah رحمۃ اللہ علیہ. Ask them to compile a biography, finding additional information from online and print sources. Students can compile the biography as a PowerPoint presentation, or even as a booklet to be displayed in class. Those who have made a PowerPoint presentation can present it to the class in the Audio-visual room or the ICT lab whenever there is a chance to do so.
- Encourage the students to collect their favourite sayings by Muhammad Ali Jinnah رحمۃ اللہ علیہ. Ask them to write their favourite quote on a piece of chart-paper and decorate it as they see fit. Place these quotes on the softboard for everyone to read and learn from.
- If possible, arrange a field trip to the mausoleum of Quaid-e-Azam رحمۃ اللہ علیہ, located in Karachi. Visit the grave of the great leader, along with the museum displaying his belongings. Ask the students to write a note about their observations and their opinion of the kind of person Muhammad Ali Jinnah رحمۃ اللہ علیہ was in their notebooks.

Answers to Unit 9

1. i. Quaid-e-Azam رحمۃ اللہ علیہ
   ii. Jinnahbhai Poonja and Mithibai
   iii. his parents
   iv. 1893
   v. 14 August 1947

2. i. Governor-General
   ii. Karachi
   iii. Lincoln's Inn
   iv. Turkmenistan, Iran, United Arab Emirates, Turkey, Pakistan

Unit 10 Allama Muhammad Iqbal رحمۃ اللہ علیہ

Key learning

- identify Allama Iqbal رحمۃ اللہ علیہ as a significant personality
- highlight how Iqbal رحمۃ اللہ علیہ expounded the idea of Pakistan
- describe the major events in the life of Allama Iqbal رحمۃ اللہ علیہ
- talk about the legacy of Allama Iqbal رحمۃ اللہ علیہ

Background information

This chapter gives information about the famous personality Allama Muhammad Iqbal رحمۃ اللہ علیہ. It begins by highlighting his early life and education, mentioning how Iqbal رحمۃ اللہ علیہ was born on 9 November 1877, in a place in Punjab called Sialkot. He received an excellent education growing up, with his primary education being Arabic, Persian, and Islamic Studies. He gained many distinctions in his studies, including his first position in Philosophy at the University of Punjab. He went to study at the Cambridge University in England, and later even went for higher studies in Germany. Iqbal رحمۃ اللہ علیہ was a scholar who realized that Muslims had to reclaim their power in the subcontinent by competing with Western civilization through the strength of their education. While he was teaching at the Government College in Lahore, Iqbal رحمۃ اللہ علیہ did not like British control over academic activities, and resigned from teaching to pursue politics. His ideas helped further the Muslim cause, and his poetry helped inspire them to fight for their rights. He received the honorary title of 'Sir' by the British for his excellent poetry. He supported Muhammad Ali Jinnah رحمۃ اللہ علیہ as the leader of Muslims in India. Iqbal's رحمۃ اللہ علیہ legacy today is of a great Muslim nationalist poet, who wrote numerous works that encouraged Muslims to fight for freedom and think positively. His works are widely read even today, and have been translated in multiple languages.

Lesson plan 23

Duration: 40 minutes

Outcomes: Students will be able to:

- talk about Allama Iqbal's رحمۃ اللہ علیہ early life
- describe his education
- recognise and identify Iqbal's رحمۃ اللہ علیہ legacy as a scholar and poet

Resources: textbook pages 51–53

Introduction: 5 minutes

Begin the lesson by asking the students what they know about Allama Iqbal رحمۃ اللہ علیہ. Write the points raised by the students on the writing board. Students may respond with things like he was a philosopher, he is the national poet of Pakistan, he was born in Sialkot, etc.

Explanation: 20 minutes

Once a few points have been written on the board, launch the discussion by telling the students how Allama Iqbal رحمۃ اللہ علیہ is a famous poet and scholar, whose far-thinking insight helped the Muslims of the time recognise their goal of achieving freedom from the oppressive forces of the British and other majorities that ran the political framework of the Indian subcontinent. Arrange a video-watching session in school and show a few videos highlighting the life and legacy of Allama Iqbal رحمۃ اللہ علیہ. Ask the students to make notes and they watch the video/documentary. In the last five minutes of the lesson, instruct the students to make a simple timeline of the life of Allama Iqbal رحمۃ اللہ علیہ, including the important dates such as those of his birth, death, etc.

Conclusion: 5 minutes

Make the students listen to any poem by Allama Iqbal رحمۃ اللہ علیہ. Discuss the meaning in class and ask the students to relate it to his beliefs. Remind the students why having such thoughts was important for Muslims of the time.

Classwork: 10 minutes

Students could do Exercise 2 and 3 on page 54, and Activity 1 of 'Things you can do' on page 54.

Homework: Students could do Exercise 1 on page 54, and Activity 2 of 'Things you can do' on page 54.

Suggested activity:

If possible, arrange a class field trip to the Badshahi Mosque in Lahore. Ask the students to make observations and write about what they learnt about Allama Iqbal رحمۃ اللہ علیہ during their visit.

Answers of Unit 10

1. i. 9 November 1877, in Sialkot, Punjab
   ii. Scotch Mission High School (which later became known as Murray College), University of the Punjab, Cambridge University in England
   iii. England, Germany, Spain
   iv. English literature, Arabic, and Philosophy
   v. He wanted Muslims to think positively, to change their ideas, fight for freedom, and live honourably.
2. i. Poet
   ii. Philosopher
   iii. Scholar
   iv. Politician
3. i. Philosophy, English Literature, Arabic
   ii. British government; 1922
   iii. German Persian, Arabic, French, Russian, Italian, Malay
   iv. they should work for progressing in scientific education (they should explore and educate themselves)
   v. Heidelberg

Unit 11 The Changing World

Key points

- recognise that present time is different from the past in terms of living style, food, communication, clothes, etc.
- identify how schools, communities, and transportation have changed over time (from the given pictures)
- sequence events in a narrative in chronological order

Background information

This chapter is about the changing world. It begins with a description of history being a study of the past, highlighting how it focuses on how people lived in the past, how cities grew, and even the movement of people across the world. Studying history can help people understand the present and therefore plan for the future. The order of historical events is called chronology. Chronology helps identify the cause and effect of certain events. A timeline is a good example of things being placed in a chronology. The present and the past are different in many ways, and these differences can particularly be seen in the differing lifestyles of people living then and now. Our grandparents experienced lives differently from us in terms of the way they communicated, the clothes they wore, and even the food they ate. Long ago, people lived on farms and grew their own crops. They lived in far more simpler conditions, with very few schools and colleges. These days, machines are used so many people have moved to cities where they work in factories and offices. The way they cook food and maintain their homes is different from what life used to be in farms. There are more options for schools, colleges, and universities, and people hold many different kinds of jobs including doctors, pilots, etc. The kind of food eaten has also changed. Increased production of crops due to improved technology has given them the opportunity to try various kinds of food, and even enjoy cooked or frozen food. Improved technology has also changed the way people communicate. First people used to communicate by talking to each other or use pigeons to carry messages. Then they started using post by writing letters to others. Now people use phones, radios and even the internet to communicate with other people. This chapter also talks about the changes observed in transportation. The wheel was invented to improve transportation, and eventually allowed trade between communities. Nowadays people have found many different ways to cross vast distances on land, sea, and even air. Another way that things have changed over time is in the clothes that people wear. Before fabric was invented, people used leaves and animal skins to cover themselves. Over time they learnt how to weave fabric. The styles of clothes made and worn using different fabrics have also changed over time.

Lesson plan 24

Duration: 40 minutes

Outcomes: Students will be able to:

- understand what is meant by history
- define chronology
- define and make the use of timelines

Resources: textbook pages 55–56

Introduction: 5 minutes

Begin the lesson by discussing with the pupils what they understand about the term 'history'. Ask them to write their definitions in their notebooks. Ask students what they think about how history is recorded. Tell them that people who record history are called historians.

Explanation: 20 minutes

Define history as the study of the past. Encourage pupils to think about the ways history is recorded. If things happened so long ago, how can we tell what exactly happened? Inform the students about the various ways we have received information about things that have happened long ago, such as diary entries, books written in the past, studying various remains of the past including bones, artefacts, coins, etc. An archaeologist is a person who studies the past human life by digging and studying objects such as pottery, tools, and buildings, often found at places called archaeologist sites. Similarly, introduce the class to the term anthropology, which refers to the study of humans from the origins, their development, with focus on their customs and beliefs. Talk to the students about how complex the study of history can be, because as young historians it is our responsibility to be fair in our judgement and treatment of past events. Discuss with the class about how different people may report the same experience in different terms. For example, if you pluck a flower from a plant, it may make you happy, but will the plant think the same way. Remind the students that there are always two sides to a story, therefore it is always a good idea to deal with history by thinking about both sides of the story.

Next, talk to the students about chronology. Explain how chronology refers to the sequence of events and can be placed on a timeline to give better clarity, especially regarding the cause and effects of certain events.

Conclusion: 5 minutes

Use the concluding moments of the class discussion to talk about how old the Earth is. The Earth is 4.5 billion years old. We have changed so much in our young lives, so just imagine how much the earth would have changed over the course of its life.

Classwork: 10 minutes

Ask the students to find the exact definitions of each of the 'Key words' mentioned on page 55. Students can use print and/or online sources. Ask them to note down the definitions in their notebooks for them to refer to whenever the need arises.

Homework: Ask the students to make a rough timeline of their lives up till this period. Encourage them to use dates and try to make their timeline look like the example given on page 56. Make sure they include the important moments in their life, such as the time when they started school, their first day of third grade, when they lost their first tooth, etc. Encourage the students to be as creative as possible.

Lesson plan 25

Duration: 40 minutes

Outcomes: Students will be able to:

- compare how present time is different from the past
- evaluate the changes in time in terms of lifestyle, food, communication, transportation, and clothes

Resources: textbook pages 56–58

Introduction: 5 minutes

Remind the students of how far the Earth has come along in age. Tell them that just as they are changing over time, the Earth is changing as well. Tell the students that today they will map the changes experienced by humans over time. To map these changes, historians often look at five things and how they adapted to fit the requirements of the time. Divide the class into five groups, and randomly assign one particular avenue of change to each group.

Explanation: 25 minutes

Once the students have settled in each of their groups, give them 15 minutes to make a timeline of things in the aspect assigned to their group. Each group will organise a timeline on a chart-paper focusing on the niche assigned to their group. This way, at the end of the lesson, you would have five different timelines about the key changes observed in lifestyle, food, communication, transportation, and clothes observed by mankind over the years of recorded history. Children may use print and online sources to learn more about aspect they have been assigned. Encourage students to back their timeline with related illustrations, pictures, and even relevant cut-outs. After each group has prepared their timeline, ask them to present their findings in front of the class.

Conclusion: 5 minutes

Do a quick review of the group presentations and discuss the core changes observed in the five strands of human development across history. Put up the five timelines in the classroom to refer to whenever need be.

Classwork: 5 minutes

Students could do Exercise 1 on page 59.

Homework: Students could do Exercise 2 and 3 on page 59, and Activity 1 of 'Things you can do' on page 59.

Suggested activities:

- Students could do Activity 2 of 'Things you can do' given on page 59. Ask them to write about what they observed in the museum they visited.
- Instruct the students to bring an envelope to class. Ask them to write a letter to anyone they care about, let that be a friend or a loved relative. Encourage them to use the proper letter format, with the date mentioned at the top, followed by an appropriate salutation. Once the students have written the letter you can either arrange for a short class trip to a nearby post-office or ask the students to visit a post-office on their own. Students can then post the letter to the person they have addressed the letter to. Tell the students that this was how many people corresponded before the internet and email.

Answers for Unit 11

1. Students will do this question based on their understanding. Examples include communication, transportation, etc.
2. Students will answer this question based on their understanding. Examples include letters, messenger birds, etc.
3. Students will answer this question based on their understanding. Examples include clothes, food, communication, work, etc.

Unit 12 Inventions

Key learning

- define invention
- describe major inventions of the recent times
- evaluate how recent inventions have affected the lives of people

Background information

This unit expounds upon the topic 'invention'. An invention is described to be something that is new and introduced to the world for the first time. People who make inventions are called inventors. Over time, humans have invented things that have improved their overall quality of living. They have invented words and languages that have helped them communicate better with each other. New tools and machines have also been invented to help them do their work. This chapter also talks about some recent inventions such as bullet trains, the Internet, mobile phones, and even computers. Many inventions have changed lives and made things more comfortable for humans. Examples of such life-altering inventions include electricity, the computer, and the Internet. The mobile phone is also an invention which has helped people communicate, especially over large distances, which was something not seen before. Modern mobile phones are small and can also take photographs.

Lesson plan 26

Duration: 40 minutes

Outcomes: Students will be able to:

- define invention
- describe major recent inventions
- evaluate how recent inventions have affected the lives of people

Resources: textbook pages 60–61

Introduction: 5 minutes

Begin the lesson by talking about inventions. Inventions are things that have been created and are unique. People invent things for different reasons, particularly with the intent to improve the quality of life, streamline processes, and make things easier to get done. People who make inventions are called inventors.

Explanation: 20 minutes

Talk to the students about how people invent new things. People usually invent new things to help them in their lives, and even fulfil their creative urges/desires. Engage the students in a discussion about why people invent things, listen to what they have to say. Talk about the tools present on page 60. Ask the students to imagine what life would have been like before these basic tools were invented.

Jump forward in time and talk to the students about important recent inventions. You may mention how it was Benjamin Franklin who discovered the properties of electricity in the mid-1700s and helped make it accessible to people. The invention of electricity

Conclusion: 5 minutes

Have a discussion based on Activity 1 of 'Things you can do' on page 62.

Classwork: 10 minutes

Students could do Activity 2 of 'Things you can do' on page 62.

Homework: Students can do Exercise 1 on page 62, and Activity 3, 6 of 'Things you can do' on page 62.

Suggested activities:

- Instruct the students to come up with an idea for an invention that would change a part of how society works (as described as Activity 4 and 5 of 'Things you can do' on page 62). Encourage the students to be as creative as they can be. Students can draw an illustration and write a paragraph about the invention in their notebooks, or on a piece of chart-paper so that it can be displayed in class.
- Ask the students to write a short story about what things were like before any one of the tools illustrated on page 60 were invented. Ask the students to be creative in their responses. Students may even refer to online and print sources to help them do the relevant research to be able to write the short story.

Answers for Unit 12

Exercises

1. i. Students will answer this question based on their understanding of the word 'invention'.
   ii. Computers have changed the way people study and work in offices. They allow the storage of large amounts of information and made communication far faster than before. The internet has allowed people to stay connected and given them access to news and all sorts of information.
   iii. Students will answer this question based on their understanding and opinion.

Things you can do

	Inventor	Country	Year
Aeroplane	Wilbur and Orville Wright	America	1903
Computer	Charles Babbage	United Kingdom	1822 (it wasn't built till 1991)
Telephone	Alexander Graham Bell	Canada	1875

Unit 13 Forces and Machines

Key learning

- define tools as instruments to help make people's work easier
- name and identify different types of simple machines
- identify that push and pull are forces that move things fast or slow
- understand use of force to move vehicles in the past and compare with the present
- observe and describe the motion of vehicles based on the force applied to them

Background information

This chapter covers the concept of forces and machines. It begins with a description of tools, which are instruments that aid us in our work. It is highlighted how the term 'work' in science refers to the force that moves an object by pushing or pulling. Similarly, simple machines or tools such as hammers, axe, pliers, etc., are used to help people move objects by lifting, pushing, pulling them when the work is too difficult to do unaided. Some machines change the direction of the force, while others alter the speed of the work. Types of simple machines include the wheel and the axle, pulley, lever, wedge, inclined plane, and screw. Wheels are attached to axles and thus allow things to move around, especially for long distances. An inclined plane is a flat surface such as a ramp where one side is higher than the other. A screw is a flat rod with a pointed end that allows people to raise, lower, and fasten things. A pulley is a combination of wheels and rope which help people raise, lower, or move a load. Levers are rods balanced on fixed points which can help move heavy weights with relatively less effort. A wedge is made of two inclined planes which can be used to push objects apart. Typically, a wedge has a pointed edge on one side, and a wide edge on the other.

A force is something which changes position, falls, flies up in the air, turns, stops, etc. Any change made upon an object's position is typically a result of some force being applied to it. Forces can be produced by animals, people, and machines. Wind and flowing water can also act as forces, for example, a boat usually moves with the help of the force provided by wind. There are many kinds of forces, the two main categories are push and pull forces. The act of writing occurs as a push or pull force. An invisible force called gravity ensures that things are pulled down and secured on Earth. Forces can do a lot of things such as allow objects to change their shape. Forces also change the speed of objects and can even alter the direction of moving objects. Forces thus effect the way things move. Greater forces cause greater changes in the movements of objects. Forces can also allow moving things to stop or slow down. This unit also covers the concept of friction, which is a force that is present when two surfaces/things rub together. This motion slows down moving objects.

In the past, vehicles such as bullock carts, cycles, push carts, and even *tongas* moved due to the various forces applied to them. Typically, this force was provided by animals or humans. Transportation in the modern world has changed, and now vehicles move with the help of machines that provide the force needed to alter its motion. Modern means of transportation include cars, buses, motorcycles, and even helicopters.

Lesson plan 27

Duration: 40 minutes

Outcomes: Students will be able to:

- define tools as essential instruments to help in work
- understand the term 'work' as a force to move an object

- identify simple machines
- describe the six types of simple machines

Resources: textbook pages 63–66

Introduction: 5 minutes

Begin the lesson by talking about tools. Explain how tools are things that can help us do our work. Introduce the word 'work'. Ask the students what they think this word means. Explain how work is the act of using force to move an object.

Explanation: 20 minutes

Ask the students to look at the textbook page 64 and read about the types of simple machines and tools that help people do their tasks. Divide the class in six groups and assign one type of simple machine to each group, so there will be one group dealing with wheel and axle, another group dealing with inclined plane, and so on. Ask each group to look around the classroom (or if it's convenient, the whole school) to find examples of each of the simple machines in the school setting. Encourage each group to make a list and ask them to look at different objects in the area selected critically. Stairs are an example of an inclined plane, scissors make the use of a lever and a wedge, clocks have wheels that help the three hands move to tell the time, many curtains and window blinds make the use of pulleys to open and close, the ends of lightbulbs typically have screws, etc. Make sure each group makes a comprehensive list of objects, and the type of simple machine present in the object/mechanism used by the object. Encourage the students to use the word 'work' to explain their choice of objects in the list.

Conclusion: 5 minutes

When the students come back to the class, ask each group to present their findings to the class. Encourage the class to think of any other everyday object that they can think of which is not in the list made by the group. The group may add to their list. Remind the students of how important all these objects are for everyday functioning.

Classwork: 10 minutes

Students could do Activity 3 of 'Things you can do' on page 71.

Homework: Students could do Activity 4 of 'Things you can do' on page 71.

Suggested activity: Students can create/construct a working model of a toy or a system to show the mechanics of any simple machine that they have read about. Encourage them to use recycled material and easily available resources to make their models. Encourage them to be as creative as they can. Display their projects in the class once they are done.

Lesson plan 28

Duration: 40 minutes

Outcomes: Students will be able to:

- define force
- understand and talk about the different types of forces
- identify forces in everyday settings
- describe what forces can do to the way things move
- describe the forces used to move vehicles in the past and in the modern times
- compare the vehicles used in the past and those used now

Resources: textbook pages 67–69

Introduction: 5 minutes

Ask the students to recall the definition of 'work' which was discussed in the previous class. Remind them that work is the use of force upon an object to make it move. Tell the students that today we will discuss the nature of the word 'force' mentioned in the definition of work. Ask the students to write down their definition of the word 'force' in their notebooks. Encourage them to think out of the box, and to use a critical approach to write the definition based on their experiences and personal observations.

Explanation: 20 minutes

Discuss with the class the meaning of the words 'push' and 'pull'. Reiterate the fact that these two forces are at the core of every movement they see around them. Ask the class if they think pressing on a wall a pushing or a pulling force? Ask them to explain their answer? Listen to the students, particularly for the answer along the lines that pressing on a wall is a pushing force because it means that we are trying to push something away from our bodies. Ask the students to raise their hand and name a few pushing forces and pulling forces seen in their everyday life.

Once the students have grasped the concept of push and pull forces, expand the discussion to include details about what they think a force can do. A force causes motion, stops motion, changes the speed of the motion, and can even change the direction of a motion. Some forces can even change the shape of objects. Ask the students to give examples of the various instances where forces are used in relation to motion.

Introduce the students to the concept of friction, as something which opposes motion/force. Friction occurs when two surfaces rub with each other. The frictional force is something which slows down moving objects. Rough surfaces produce more friction. Remind the students that friction is an important thing. People need friction to perform everyday actions such as holding things. The tiny grooves on our finger pads called fingerprints create the necessary friction that helps us hold/grasp things without them slipping from our hands. That's why we have to be careful when we are holding wet dishes or glasses because the water reduces the friction, making it easier for the objects to slip out of our hands. Ask the students to think of more examples where friction is necessary in our everyday lives.

After the discussion, divide the class into two sides. Name one side the past and the other as the present. Ask the students in the group called 'past' to talk about the vehicles used at their time. Ask the students what simple machines and tools helped vehicles move in the past. Students may refer to any vehicles used in the past, or even those pictured on page 69, focusing on the image of the bullock cart and the *tonga*. Ask them to evaluate what forces are being used to make the vehicle move. After this group is done talking about the vehicles of the past, the students in the other group will talk about the vehicles used in modern times. Students may use the examples given on page 69 or other examples such as motorcycles and airplanes. Make sure the students talk about the kind of forces used that help these vehicles move. Which modes of transportation are more powerful? Ask the students to carefully evaluate based on their experiences and observations. For a more interactive lesson, you may conduct any activity from the list of 'Suggested activities' given below.

Conclusion: 5 minutes

Instruct the students to go back to their definition of the word 'force' that they wrote at the start of the lesson. How close were they to the definition they learnt in the class? Ask them to update their definition to be in sync with the official definition they learnt during the lesson.

Classwork: 10 minutes

Students could do Exercise 1 and 2 on page 70, and Activity 5 of 'Things you can do' given on page 71.

Homework: Students could do Exercise 3 on page 70, and Activity 1 and 2 of 'Things you can do' given on page 71.

Suggested activities:

- Arrange a visit to a park (or any place that has swings, slides, etc.). Ask the students to make two columns, one labelled 'push' and the other 'pull'. The students will then fill out the columns based upon what force they use/notice while they are playing on the swings and slides ('pushing' makes the swings go, the frictional force is present on slides, etc.). Students should observe their surroundings carefully.
- Students could do Activity 6 of 'Things you can do' on page 71, where they play a friendly game of tug-of-war to explore and explain the forces of push and pull.

Answers to Unit 13

1. i. d (light)
   ii. d (all of these)
   iii. b (friction)
   iv. b (speed up)
2. i. Students will answer this based on their understanding. (Answers can include: change the speed of objects, change the shape of objects, change the direction of objects, etc.)
   ii. This is due to the force of gravity, which pulls objects down towards the Earth's surface.
3. i. Wind
   ii. horse
   iii. push
   iv. push
   v. friction

Unit 14 The Role of Government and Citizens

Key learning

- define community and understand its importance
- talk about the activities done for the welfare of the community
- describe key issues experienced in their local area
- understand that citizens must play their own role to meet their needs
- describe what the government does to fulfil its peoples' needs
- describe the traits of good citizens
- understand how they can be good citizens

Background information

This chapter is about the role of a government and subsequently that of the citizens. The unit begins with the term 'community', defining it as what is formed when a group of people inhabit one particular place. The term community can refer to a village, town, or even a city. The significance of a community is highlighted since a community is where individuals work together for common goals such as maintaining peace or keeping the neighbourhood clean. There are numerous activities that are done by individuals for the welfare of the community. People living in a community tend to share things, which means that they also share the responsibility for them. The problems that arise in a community can likewise be solved if the people living in a community work together. There are some key problems that occur in communities including overpopulation (when there are too many people living close to each other), poor sanitation, shortage of clean water, lack of educational institutions, and lack of healthcare facilities. This chapter talks about the traits of good citizens which includes trustworthiness, respect for the law, sense of responsibility, honesty, tolerance, gender equality, and respect for the rights of others around them. This unit also highlights the role of the government to meet the needs of its citizens. Citizens have the right to elect their government by casting their votes, and in return the government provides services and opportunities for its citizens to improve their lifestyles. It is the government's responsibility to provide its citizens with essential services such as health facilities and education. The government and the people must work together to ensure a harmonious community. The people must pay their taxes, which is a fund that is used by the government to provide their essential services. To be a good citizen, people should follow the rules and laws set by the government and help one another by being fair and honest in their dealings with others.

Lesson plan 29

Duration: 40 minutes

Outcomes: Students will be able to:

- define community
- understand the importance of a community
- identify the activities/roles of individuals for maintaining the welfare of a community
- list and explain the key problems of a community

Resources: textbook pages 72–73

Introduction: 5 minutes

Begin the lesson by asking your pupils to talk about what the term 'community' means to them. Once you've listened to what they have to say, define community as a group of people living in the same locality, who help each other when needed. They also share the same basic needs which are housing,

jobs, goods (clothing, food, etc.), recreation, and services (health, education, transport and security). Population is the number of people located in one community. Talk about different communities. Write 'school community' on the board and ask the students who are part of this community? Teachers, students, staff, management—people who work together to ensure that the students get the best education.

Explanation: 20 minutes

This lesson highlights the importance of living in a community i.e. amongst a group of people from various walks of life. These are our neighbours as well as the different people we deal with daily.

Write 'you' or any one of the students' name in the centre of the board. Make a circle around it. Explain that after a person's own identity starts the circle of the community or communities that one is a part of. Make another circle around it and write 'family'. Talk about the family and its members. Make yet another circle and write 'neighbourhood'. You can keep adding circles till you reach 'the world'; however, for now 'neighbourhood' is enough for the students. Next, talk about sharing. Write 'things we share with the family' on the board and ask the students to suggest what they share with their families. The list includes house, food, entertainment, love, happiness, and even worries. After this, write 'things we share with the neighbourhood (community)' on the board. Let the students suggest things we share with people in the neighbourhood—space, water, air, transport, roads, parks, security, etc. List the items.

Through this elaboration of the term 'community', students will be able to see how interconnected things are, and thus you would be able to branch out the discussion to talk about the significance a community has for the overall wellbeing of people. Communities help give people a sense of social connection, and strong communities would try to reduce people's loneliness. Actively participating in community events can help bond people based on their attitudes, goals, allowing them to deepen their relationships and lead more fulfilling lives.

Carry a discussion about the roles of people in a community. Community members have to follow the rules of the community, make sure they do their part in keeping it clean and safe for others. Good communities are made when people focus on and are able to resolve the key problems of most communities. These problems include that of overpopulation where there are too many people living in a certain area which causes a significant drain in resources. Poor sanitation is also a key concern that arises where there isn't good drainage or even an efficient garbage disposal system, thereby causing problems like poor hygiene and bad smells. Shortage of clean water is also a huge problem that effects the daily working of a community. Many communities in Pakistan also face a lack of key resources such as educational and healthcare facilities.

Conclusion: 5 minutes

Ask the students to think of the problems faced by the community of their school. Make sure the discussion has the tone of problem-solving, where students actively try to resolve the key problems of their school. Students may even write letters to their city administration to improve the general wellbeing of their community.

Classwork: 10 minutes

Students could do Exercise 1 (i and ii) on page 76.

Homework: Students could do Activity 1 and 2 of 'Things you can do' on page 76.

Suggested activities:

- You may talk to your pupils about what community service is and discuss the acts people can do to help others without expecting anything in return. Examples of acts of community service which we

can do include teaching someone who has not had the chance to go to school or helping someone who is too old to do their daily chores.
- Students could imagine being in charge of a community. Ask them to think about questions such as what it would be like? How would they govern it? Ask them to write about it in their notebooks.

Lesson plan 30

Duration: 40 minutes

Outcomes: Students will be able to:

- describe the role of the government to meet the needs of the citizens
- talk about the importance of the government and people working together
- identifying the traits of good citizenship
- describe the traits of good citizens

Resources: textbook pages 74–75

Introduction: 5 minutes

Ask the students to recall what they learnt about community in the previous lesson. Encourage them to talk about the ideal community, which would be where there is good sanitation, availability of water, etc. These things require participation by the government as well as the citizens. Ask the students to reflect on what is required from them to be good members of the community.

Explanation: 20 minutes

Evaluate the workings of the first places which students will know in great detail, such as their home. The next place is the neighbourhood and the people around them. Just as we share things in the home with our family, and have particular rights and duties there, we also share facilities with our neighbours and have particular rights and duties towards them since we all share living space, water, etc. Highlight how everyone has a right to be loved and cared for, to be clothed, fed, and educated; everyone has a right to be respected; parents have a right to be obeyed.

Inform the students about the rights specified by the Universal Declaration of Human Rights, which have been adopted by the UN General Assembly, focusing particularly on the following articles:

- **Article 1:** All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience, and should act towards one another in a spirit of brotherhood.
- **Article 2:** Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, gender, language, religion, property, birth, or other status.
- **Article 3:** Everyone has the right to life, liberty, and security of person.
- **Article 7:** All are equal before the law and are entitled without any discrimination to equal protection of the law.
- **Article 29:** Everyone has duties to the community and people should protect the rights and freedom of others.

Expand the discussion to include the idea of the role of the government in terms of ensuring that their citizens have these rights. Governments are typically elected to run the country. Pakistan is a democracy; thus the government is elected when people vote for their preferred political party during the General Elections. Tax is what we pay is used for providing community services. This is the way towns and cities are organised, and the way the government runs the country. Tax is the collection of a certain percentage of income from the people so that essential services can be made available to them by the government.

Launch the discussion on the role of the government by pointing out how some facilities are free for all, like the air we breathe, the rain that falls, and the sunshine that brightens the day, but there are other places and facilities which are services, meaning that they are not free—we have to pay 'charges' for them. Explain that some of the services are for all of us to use, such as the security provided by the police, water supplied to our homes, telephone and gas, government hospitals, post offices, state-run schools, bus stops, airports, railways, etc. These are called public services. Other services like private security firms, schools, hospitals, and courier companies are private services and their charges are higher than the public service charges. The expenses of running public services are covered by the taxes we pay the government and the yearly charges we pay for these services. Some examples are the telephone, gas, and electricity bills that we pay every month. The community helpers such as street cleaners, postman, firefighters, phone lineman, etc. are given salaries by the government from these funds. We should appreciate the work done by public service organisations and we should act responsibly to keep them working by paying our dues regularly, following the organisations' rules, and not misusing the facilities. These are traits of good citizens. Emphasise that as responsible and law-abiding citizens we should know and do our civic duties. The responsibilities of a citizen are laid out in the rules made by the government. Ask the students if they can think of any other ways they can be good citizens. Ask the students to refer to print and online sources and make a comprehensive list in their notebooks. Mention certain traits of good citizens as well, focusing on traits such as trustworthiness, honesty, tolerance, unbiased, respectful, etc. Ask the students to discuss what they can do to be good citizens. They may write a short resolution in their notebooks to look at from time-to-time and remember what responsibility they have to do their best for their community and country at large.

Conclusion: 5 minutes

At the end of the lesson, make two columns on the writing board. Label one column 'government' and the other 'citizens'. Basing their answers on the lesson and the information in the textbook ask the students to list down the roles and responsibilities of both. Students can copy these lists in their notebooks for their future reference.

Classwork: 10 minutes

Students could do Exercise 1 (iii and iv) on page 76, and Activity 4 of 'Things you can do' on page 76.

Homework: Students could do Activity 3 and 5 of 'Things you can do' on page 76.

Suggested activity:

Ask the students to prepare a short skit in which two students, role-playing as neighbours, are seen quarrelling about the way the street cleaner has dumped the garbage in front of their houses. A third student can be the cleaner, who denies that he has done the dirty deed. It could become a very humorous dialogue at this point! Then choose another group of three students, representing the same two neighbours and the cleaner, communicating rationally with each other and behaving as good neighbours should. Now tell the students what you have described could happen in the community they live in where everybody shared the services of people and organisations, to keep the community running efficiently.

Answers to Unit 14

1. i. A community is a group of people living together with some similar traits. They are important for giving people a sense of social connectivity, security, and support.
   ii. People should listen to each other, work with each other and also interact with the government. (Students can expand this answer based on their understanding).
   iii. The government is responsible for providing people with essential services. (Students can expand this answer based on their understanding).
   iv. Trustworthiness, honest, unbiased, respectful, etc. (Students can expand this answer based on their understanding).

Unit 15 Working out Disagreements

Key learning

- describe how disagreements and conflicts occur at home, in school, and in the local community
- identify feelings of people in different conflicting situations
- talk about the various reasons for disagreements with family members and friends
- list and discuss the ways in which people resolve conflicts/disagreements at home, in school
- apply discussion and problem-solving methods to work out disagreements

Background information

This chapter centres around working out disagreements. The unit begins with a description of what is disagreement, which is when people have different ideas and even differing likes and dislikes. This unit highlights how it is natural to not always agree with other people because of our ideas, beliefs, and customs. These differences often result in what is called a disagreement. This chapter goes on to discuss the feelings of people in conflicting situations, which refers to when people disagree by starting a fight. A fight is another term for conflict, and sometimes serious conflicts can have dire consequences such as leading to war. Conflicts can happen anywhere, and usually end in feels of sadness and loneliness, or even anger. There are many causes of disagreements such as when people refuse to share things. It is important to remember that irrespective of the reasons of the conflict, it can be resolved through evaluating different ways. This unit highlights how the best way to resolve a conflict is to talk about it. Once people properly talk about the nature of their conflict, they can understand each other better, and develop a greater sense of respect for the other's opinion. A good discussion during a conflict can help people resolve their disagreements, since discussion is a great method for problem solving. Problem solving typically occurs when people are ready to listen to the viewpoint of others, even though it is something that you don't necessarily agree with.

Lesson plan 31

Duration: 40 minutes

Outcomes: Students will be able to:

- identify and describe what is a disagreement
- evaluate and talk about the feelings of people in conflicting situations

Resources: textbook page 77

Introduction: 5 minutes

Write the word 'disagreement' on the writing board. Ask the students what they think this word means. A disagreement happens when there are two people with conflicting points of view that causes them to differ in their opinion of a particular thing.

Explanation: 20 minutes

Ask the students if they have ever experienced a disagreement with someone. Perhaps they witnessed their parent disagreeing with the greengrocer over the price of some vegetables, or they experienced a child disagreeing with another child over the possession of a particular toy or over who gets to play on the swing at a certain time, etc. Ask the students what they think happens to the feelings of people when they disagree.

Different people feel different things, especially over differing experiences. Some disagreements may make some people angry others might even make some cry because they became so distressed. Many

people report feeling lonely and isolated after a disagreement. This is because humans are social, and generally tend to be impacted by how they treat people and are treated in return. Disagreements are natural since no two people are the same, but it is important that they are dealt with mindfully to ensure that other people's feelings don't get hurt, and they feel respected, irrespective of their opinions and thoughts.

Conclusion: 5 minutes

Ask the students to recall what they have learnt over the years about respecting one another. Remind the students of the famous motto 'Unity, faith, and discipline', where all three are needed for a nation to be successful. When dealing with disagreements, it is important to discipline your emotions and think rationally before saying or doing something you may regret later on.

Classwork: 10 minutes

Students could do Exercise 1 and 3 on page 79.

Homework: Students could do Exercise 2 on page 79.

Lesson plan 32

Duration: 40 minutes

Outcomes: Students will be able to:

- evaluate the various causes of disagreements
- understand the importance of resolving conflicts
- evaluating the significance of discussion and problem solving
- discuss the art of problem solving using key terms such as disagree, resolved, and viewpoint

Resources: textbook page 78

Introduction: 5 minutes

At the beginning of the lesson, write down the three key terms 'disagree', 'resolve', and 'viewpoint' on the writing board. Ask them what they think the terms mean. Define the terms; a disagreement is when two people do not agree with the other and are in conflict with the other. Resolving something means to solve a problem so that the conflict can be dissolves. Viewpoint refers to the point of view of someone, thus during conflicts it is essential to take a moment to consider the viewpoint of others.

Explanation: 20 minutes

Have an activity called a 'mock court scene', performed in class i.e. to have the students imitate a court scene in the class. Ask the students if they have ever seen a court scene being played on TV. Who were the main characters? A judge or magistrate, lawyers, the accused person, and the police. Selected students would play the roles of a policeman, the accused person, and a judge. The rest of the students could be witnesses, court attendants, and spectators. The dispute could be about short-changing a customer in a shop, or a customer paying with a forged note. A short dialogue could be prepared beforehand, and the scene acted out in class. This activity will give the students the experience of public speaking, accepting responsibility for their actions, and will contribute to their overall confidence. Ask the students if they enjoyed the skit? What did they learn? Explain that when a serious conflict arises, we should approach the concerned authority to take action according to the law, instead of taking the law into our own hands.

Once the script is acted out, ask the students to identify the root of the disagreement and think about the way the lawyer and the judge attempted to resolve the conflict by finding out the details about the facts

and then helping both parties solve their issue. Expand the discussion by talking about how disagreements can happen anywhere and at any time, since no two humans are the same, so no two people will have the same perspectives. Even siblings who grew up together and had more or less similar experiences will have different points of views. Remind the students that the key to healthy community living is to master the art of problem solving and be accepting of other people's differences. This is the way they can learn and grow.

Talk about common causes of conflicts such as sharing supplies in class, sharing toys, books, and other playthings, differences in personality and choices, poor communication with each other, misunderstandings, etc. Ask the students to be calm during conflicts and figure out how to solve the problem so it doesn't grow to become an issue.

Conclusion: 5 minutes

At the end of the lesson make sure you remind students that it is important to always be respectful even if you don't agree with someone. Treating each other well is an essential part, and sometimes very large conflicts can be solved if people just treat each other civilly. Ask them to think of any example they have seen where a conflict got resolved just because people treated each other with respect. Ask the students to write down an example of a conflict that they experienced, using the terms written on the writing board. Ask them to mention the cause of the conflict, and how it was resolved. As a wind-down activity, ask the students to do Exercise 4 on page 79.

Classwork: 10 minutes

Students could do the activity given in 'Things you can do' on page 79.

Homework: Ask the students to write a small script about a conflict that got resolved because both parties treated each other with respect and made the effort to understand the other's viewpoint.

Answers to Unit 15

1. Disagreement is when there is a difference of opinion between people or groups of people
2. Students will answer this based on their understanding and experiences.
3. Listening and talking with respect for each other's viewpoint are good ways to understand people and help resolve disagreements and conflicts.
4. i. conflict
   ii. listening
   iii. viewpoint
   iv. respectful

Unit 16 Safety

Key learning

- understand the need for personal safety
- talk about personal safety in terms of the risk and danger associated with the use of various daily-use objects and appliances
- learn how to practice the use of saftery measures while using electrical appliances
- outline the various hazards typically presented at home
- identify and describe some common disasters and evaluate ways on how to stay safe
- recognise the importance of not concealing things from parents/teachers/guardians especially when it comes to staying safe in the face of unexpected situations

Background information

This is an importance chapter which talks about safety. It begins with a detailed description on the need for safety, highlighting the various areas at home and in the neighbourhood that can pose a serious risk to the safety of an individual. Though accidents can happen anywhere and at any time, it is a good idea to always take measures to secure your safety and that of others around you. Some safety measures are outlined which encompass the idea of knowing your full name, telephone number, and other key contact details that can help you get to safety, especially in an emergency. Another key safety measure is to not talk to strangers and refuse to eat anything given to you by a stranger. Students should also take care not to let other people touch them, and to understand the difference between a good touch and a bad touch. Other safety measures include avoiding climbing walls and fences or dealing with sharp objects, using safety gear, and knowing your emergency contact. It is also important to know what to do in an emergency at school, and the measures you should take if ever in an emergency. Students are also cautioned to never go wandering alone, and if they get lost, to stay calm and avoid panicking. When going to the outdoors, it is also a good idea to ensure your safety by familiarising yourself with dangerous animals and plants, all the better to avoid them.

Another aspect of safety is road safety. There are many people who live in large cities, thereby it is important to take care of one's safety by learning how to navigate the traffic. Everyone must follow the road rules, such as looking both ways before crossing the street, wearing helmets while riding bikes and motorbikes, etc. Obeying traffic rules is essential for ensuring safety. People who don't follow these rules can be punished by the law. Pedestrians should also take care to walk along a footpath and not on the road itself. There are several rules that need to be followed by pedestrians to ensure their safety such as only crossing the road at a zebra crossing and taking care to look both ways before crossing the street. No one should play on or near a road, and never try to get on a moving vehicle.

Another aspect of safety is taking care of oneself during natural disasters. Natural disasters are defined as forces of nature such as wind and rain which have the potential to cause massive destruction. There are many types of natural disasters, and each have their own set of precautions. During an earthquake, people can ensure their safety by taking shelter under strong surfaces, staying away from tall objects and windows, and moving to open spaces. In case of flooding, it is advisable to move to higher ground, avoid using electrical appliances, and keep away from dirty water.

Lesson plan 33

Duration: 40 minutes

Outcomes: Students will be able to:

- understand the need to be mindful about personal safety
- describe and understand some general safety measures
- think about some safety measures they should/could take in their daily life to improve their quality of living

Resources: textbook pages 80–81

Introduction: 5 minutes

Talk to the students about what they think about safety. Ask them to write down a definition of safety in their notebooks and discuss it with the student sitting next to them. Focus on questions such as what the importance of following safety rules is, why it is necessary to be safe, etc.

Explanation: 20 minutes

After the pair discussion, ask the students to talk about what they discussed with the rest of the class. Introduce them to the concept of 'personal safety', expanding the discussion to include the general safety rules around them. Ask the students to explain the importance of having those rules in place, and why following them is the right thing to do.

After the students have understood the concept of rules and the importance of following general safety rules, discuss the general safety rules of the classroom. These rules can include stowing the school bags away in their correct positions, not spilling water on the classroom floor, tidying up after themselves to avoid tripping hazards, not pushing one another during transitions, etc. If there is time, arrange material such as chart-paper, crayons, markers, and colouring pencils to make posters about classroom rules to display in the class.

Conclusion: 5 minutes

Remind students that different places have different rules that need to be followed. These rules are in place for our safety so we must respect them as well as the institutions and people who put those rules in place.

Classwork: 10 minutes

Students can do Exercise 2 on page 85.

Homework: Students can do Exercise 3 on page 85.

Suggested activity:

Students can make a list of the rules present at different places they go to everyday such as their home, or public places such as parks and supermarkets.

Lesson plan 34

Duration: 40 minutes

Outcomes: Students will be able to:

- discuss road safety
- identify traffic rules

- evaluate the need for traffic rules
- recognise the consequences of not obeying traffic rules
- understand the different rules for pedestrians that must be followed

Resources: textbook pages 82–83, pictures of policemen and policewomen, traffic police performing their duties

Introduction: 5 minutes

Ask the class if they know any of the traffic and road safety rules. Their responses may include keeping to the left on the road, no turning left on a red light at a traffic intersection, no overtaking when there is a yellow line in the middle of the road; and, using the indicators to signal a turn, avoiding unnecessary sounding the horns. Emphasise that all these traffic rules are part of the laws that citizens must follow. Explain that laws are made by the government to ensure that everyone gets his/her rights, and no inconvenience or harm is suffered by others. Remind the students of how it is an important duty of the police to make sure that everyone follows the laws of the country, and those who do not do so, or repeatedly break the laws, are dealt with firmly.

Explanation: 20 minutes

Ask the students if they have noticed that when the traffic lights are out of order, a traffic policeman usually wearing a white uniform and white gloves will direct the traffic. Otherwise, there would be a traffic jam and chaos on the roads. Ask students if they have been in such a situation and what happened then—you'll have a lively interactive discussion. Emphasise that this is why rules are made for citizens to follow. If everyone obeys traffic rules and regulations, traffic will be smooth and orderly and there will be peace and safety on the roads.

Though many of the students in the school are transported to school and back in their personal cars or school vans, and rarely walk to school nowadays, awareness of traffic hazards is vital for all students. Accidents can happen right outside their homes, caused by speeding, careless drivers of cars racing down the street. Unfortunately, very few roads have pavements or footpaths for people to walk on. Where pavements do exist, shopkeepers and vendors encroach on payments against the law, forcing pedestrians to walk along the street. A book called The Highway Code is kept in the car's glove compartment (this has to be kept in the car, by law). It has all the road signs and symbols printed inside. If possible, bring a copy of the Highway Code to class and show it to the students.

Some traffic rules that the students should be aware of:

- If an area is declared a 'silent zone' by the authorities, only drivers of fire engines, ambulances, and police cars are allowed to sound their horns.
- No one should overtake a car from the left. Overtaking can only be from the right.
- Zebra crossings on the streets are a pathway for pedestrians to cross to the other side of the road, when the traffic stops at a traffic signal. Ask students why zebra-crossings have that name. That is because it has black and white stripes like a zebra. It is compulsory for drivers to stop for pedestrians at a zebra crossing.
- If an ambulance, fire engine, or police car sounds its siren, vehicles should move to the left to allow it to pass. This is because all three types of vehicles are usually speeding due to an emergency situation.
- It is mandatory for transport vehicles to be road-worthy, i.e. their brakes, engine, tyres, and the body are required to be in good enough condition, so that they do not break down on the road or cause accidents.

- Above all, on no account should vehicles be driven by underage drivers or people who do not have a driving license.

If there is time, you may take the students outside the class and use chalk to make a zebra crossing in the school ground or any available open space. Demonstrate basic traffic rules for pedestrians, especially those that they have learnt about during the lesson. Remind the students of the importance of following the rules and laws of a country.

Conclusion: 5 minutes

Ask the students to review what they have learnt in the lesson, particularly the rules for road and traffic safety.

Classwork: 10 minutes

Students could do Questions 1 and 2 of Discuss Your Answer given on page 83.

Homework: Students could do Exercise 1 on page 85.

Lesson plan 35

Duration: 40 minutes

Outcomes: Students will be able to:

- talk about different natural disasters
- understand that there are different protocols that need to be taken to ensure safety in differing weather conditions
- describe the rules to be followed for emergencies such as earthquakes and floodings
- talk about other natural disasters and the relevant safety measures which should be taken during that time

Resources: textbook pages 84, newspapers containing articles about natural disasters

Introduction: 5 minutes

Talk to the students about natural disasters. Natural disasters are by natural phenomenon over which people have little to no control. If you think students are receptive, you may mention how sometimes humans are an indirect cause of natural disasters due to the pollution they have caused which has caused global warming, which results in an increased number of floods and tsunami threats.

Explanation: 25 minutes

Ask the students to sit in a circle within the class. You may even take them out of the class to sit under the open sky in the school ground or an open terrace or even the school rooftop. This will allow students to realise the connection to nature. Natural disasters can happen anytime and cause much destruction and devastation. You may take the opportunity to describe different natural disasters such as earthquakes, floods, coastal flooding, heat waves, and even avalanches. Ask the students if they have experienced any natural disaster first-hand, or if they know someone who has. Encourage students to respond and make this an interactive session. You may show students newspaper articles highlighting the destruction caused by various natural disasters. Non-graphic pictures may also be shown to highlight the damage to infrastructure.

Talk about ways the risk of natural disasters can be minimised. Ask the students to give their ideas and opinions about essential measures to ensure their safety in emergencies.

Conclusion: 5 minutes

Ask the students to recall what they have learnt during the lesson.

Classwork: 5 minutes

Instruct the students to write about the different natural disasters they learnt about during the lesson.

Homework: Students could write about any natural disaster across the world, and do some research on what measures were taken by the country's government to minimise the damage and distruction. Examples can include the earthquake-proof buildings constructed in Japan, the dikes constructed in Holland to prevent against coastal flooding, etc.

Suggested activities:

- Arrange for a demo of an earthquake drill in school. First ask the students to review what steps they need to take, go under their desks, stand under door frames, or go to the nearest open space. Keep reminding the students that if they are ever facing the threat of a natural disaster they must stay calm and think rationally about ways to save themselves.
- If the opportunity arises, encourage students to arrange a fundraiser to raise funds for providing relief to victims of any natural disasters in the country. Students can be creative in the ways they generate the funds. Make sure the money collected is used to buy clothes, food, and other basic necessities for victims of natural disasters such as flooding or even those suffering from a horrible heatwave.

Answers to Unit 16

1. i. correct
   ii. correct
   iii. incorrect
   iv. incorrect
   v. incorrect

2. i. they might use the information to abduct you or take you away from your family.
   ii. you may get burnt due to the high heat.
   iii. you may find it difficult to find your parents and get to safety. Other people may take advantage of you being lost and abduct or harm you, etc.
   iv. you may cut yourself.
   v. you may make yourself seriously sick or cause an adverse reaction in your stomach that is painful.

3. *Cricket pads*: they protect your knees and legs from fast-flying hard balls

Gardening gloves: they protect your hands from exposure to pesticides and chemicals in the ground. They also provide protection against thorns and sharp gardening tools.

Helmet: it would help protect your head from injury if you fall while riding a bike, or using roller-skates, etc.

Cycle trouser clips: these make sure your pants/trousers do not get stuck in the spokes of the wheel while riding a bike.

Worksheet 1—Habitat

1. What four things do animals need to survive?

_____

2. Animals live in many different places such as grasslands, forests, polar regions, aquatic habitats, etc. If you were an animal, what would you be based on the habitat you would like to live in. Give reasons for your answer.

_____

_____

_____

3. Find the words related to habitat in the word search given below.

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

aquatic	atmosphere	burrow	community	conditions
deforestation	desert	disrupt	ecosystem	environment
forest	grassland	lake	mangrove	marshland
phytoplankton	polar	prey	river	survive

Worksheet 2—Changes in living things

1. Why do you think living things change during their lifetime? Is change a necessary thing? Give reasons for your answer.

2. Unscramble the words given below.

   FIEL YCLCE _____

   ETPADLO _____

   UFYBTETRL _____

   THCAH _____

   SGEG _____

   MIGRAENET _____

3. In the space below, stick a picture of yourself when you were a baby, and a picture of you in grade 3. Write about what stayed the same, and what changed.

Picture of you as a baby	Picture of you in Grade 3

4. Looking at the pictures you have pasted above, write about what stayed the same, and what changed.

Worksheet 3—The Sun

1. Why is the Sun important for life on Earth?

2. From where does the Moon get its light?

3. How long does it take the Earth to go around the Sun?

4. Read these sentences and mark them as True (T) or False (F).

   The Sun is a planet. _____

   The Sun is a huge ball of very hot gases. _____

   The Sun goes around the Earth. _____

   The Sun gives off heat and light. _____

   The Earth gets its light from the Sun. _____

5. List the directions shown by a compass.

6. If you face the setting sun (west), what will be the directions on your right and left?

7. Who sits on your right and left in class?

8. Who sits in front of you and who sits behind you?

9. Briefly describe what a shadow is, and how it appears.

Worksheet 4—Matter

1. Complete the following table which describes the three different states of matter.

Solid	Liquid	Gas
Solids are things that can be seen, _____, and _____.	Liquids are things that can be _____, and _____.	Gases cannot be _____, but can be felt sometimes.
Solids have a _____ shape.	Liquids can be _____, and take the shape of the _____ they are in.	Gases have no fixed shape or _____.
Examples of solids include _____, _____, and _____.	Examples of liquids include _____, _____, and _____.	Examples of gases include _____, _____, and _____.

2. Write "True" or "False" for each of the following statements.

   Solids, liquids, and gas have different _____.

   Matter can change its _____ in specific conditions.

   Ice changes from _____ to _____ when it melts.

   Water vapour is formed when water is _____.

   Water becomes ice when it _____ at the temperature _____ °C.

3. Unscramble the following words.

   RPTOPRESIE _____

   MROF _____

   CSBASUNTE _____

   QIDLUI _____

   NOTDICNOI _____

Worksheet 5—Energy and its sources

1. What is Energy and why is it important for living things?

2. Illustrate and colour where the following things can get their energy from.

Thing	Source of Energy
Rose plant	
Cat	
Airplane	
Light bulb	
Sailboat	

Worksheet 6—Resources and their types

1. Complete the table given below.

Type of resource:	**_____ resource**	**_____ resource**	**_____ resource**
Where does it come from?			
What is it used for?			
Examples:			

2. Identify whether the following are goods or services.

   Clothes _____

   Hair styling _____

   Plumbing _____

   Shoes _____

   Mowing _____

3. What do people do if there is a shortage of goods or services?

   _____

   _____

   _____

4. Describe what is meant by interdependence, referring to the terms "buyer" and "seller".

   _____

   _____

   _____

5. Choose the best word or phrase for each of the blanks below.

   Scarcity is what is called when a good or service are in _____ (ample/short) supply. Humans should be mindful that the resources on Earth are _____ (limited/infinite). Resources need to be _____ (used up/replaced) to make sure there is no scarcity.

Worksheet 7—Conservation of natural resources

1. Pick the term that best describes the statement from the words given below.

   conservation deforestation flooding endangered extinct renewable

   The cutting down or burning of trees in an area. _____

   The careful or wise use of natural resources. _____

   To restore, or make like new. _____

   Those seriously at a risk of not existing any longer. _____

   The overflowing of water onto land. _____

   Having no living members. _____

2. What effect have people had on the environment?

   _____

   _____

   _____

3. Colour the boxes green which contain actions that can help conserve natural resources.

Carpooling	Feeding the birds	Using energy-saving lightbulbs
Driving hybrid cars	Using plastic bags	Turning on the air conditioners
Hunting animals for sport	Planting more trees	Reusing glass bottles
Using bicycles, not motorcycles	Tearing pages from notebook	Using public transport
Using strong pesticides	Switching to paper straws	Leaving the tap water running
Have a daylight-saving policy	Leaving food on the plate	Maintaining a kitchen garden

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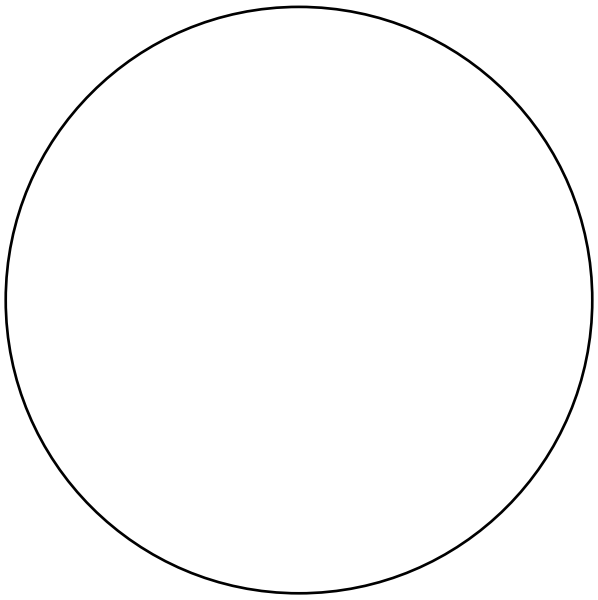
Worksheet 8—Food

1. Name three traditional foods of Pakistan.

2. Do you know which foods are good for you?

3. What is your favourite food? Give reasons why you like it.

4. Plan a meal for yourself, taking care that it is balanced. Draw and label your meal in the plate below.



5. On the timetable given below, schedule your exercise for this week to help you stay fit and energetic. Try to follow this schedule for a whole year.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Worksheet 9—Quaid-e-Azam Muhammad Ali Jinnah رحمۃ اللہ علیہ

1. Choose the best answer from the options given below.

   i. Muhammad Ali Jinnah رحمۃ اللہ علیہ was born on:

   a. 24th December 1876 b. 25th December 1876
   c. 24th December 1867 d. 25th December 1867

   ii. Jinnah رحمۃ اللہ علیہ was a practicing _____.

   a. Businessman b. Chief Executive Officer
   c. Doctor d. Lawyer

   iii. Jinnah رحمۃ اللہ علیہ joined the Muslim league in _____, and later become its _____.

   a. 1914; Governor-General b. 1914; President
   c. 1913; Governor-General d. 1913; President

   iv. "Quaid-e-Azam رحمۃ اللہ علیہ" means:

   a. Father of the Nation b. Founder of the Nation
   c. Great leader d. Leader of the Nation

   v. How old was Jinnah رحمۃ اللہ علیہ at the time of his death?

   a. 70 years b. 65 years
   c. 71 years d. 82 years

2. Find and write down some quotes related to Muhammad Ali Jinnah رحمۃ اللہ علیہ.

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Worksheet 10—Allama Muhammad Iqbal رحمۃ اللہ علیہ

1. Write about what you understand about the term philosopher?

2. In your words, write about why Allama Muhammad Iqbal رحمۃ اللہ علیہ is referred to as a philosopher, focusing on Iqbal's رحمۃ اللہ علیہ vision for the Muslims of the subcontinent.

3. Read a poem written by Iqbal رحمۃ اللہ علیہ. Explain through illustration what you think is the meaning of the poem. Use this space to be as creative as you can.

Worksheet 11—The changing world

1. "History is the study of the past". Referring to this statement, explain why it is important to study about the past.

_____

_____

_____

_____

2. Complete the table below to compare what things were like in the past with what things are like in today's world.

The Past	The Present
People lived on _____ and grew their own crops. They lived in _____ and used to _____ things to earn money.	People have houses made of _____, and usually live in cities. They earn money by working in _____ and _____.
People had a _____ diet, mostly eating _____ meals.	There is a high food production, so many people eat _____ food or buy cooked food.
The invention of the _____ in 4th century BC improved transportation.	Newer ways of transportation such as _____ and _____ allowed people to travel fast across the globe.
People wore simple clothes, initially covering themselves with _____ and animal _____. They soon learnt how to make cloth by _____ fabric from materials like wool, _____, and _____.	Over time, people learnt newer skills to make their clothes better suited to their _____ , and even their personal preferences.

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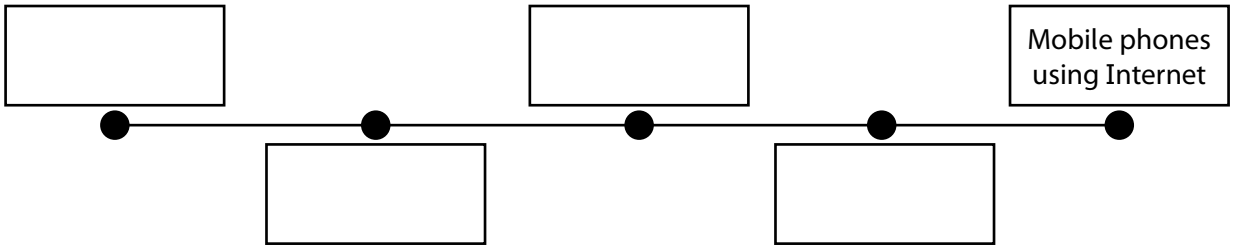
3. Complete the timeline given below to show the chronology of communication over the years.



4. Do you think you are better suited to a life in the past or that in the present? Explain your answer.

Worksheet 12—Inventions

1. Match the following with the best-fit answer options.

A person making something new for the first time	TOOLS
Something new that no one has made before	ELECTRICITY
This stores a huge amount of information	INVENTOR
The first inventions to be made were	COMPUTER
Modern heating and lighting relies on	INVENTION

2. Use the space given below to make an illustration of an invention of your own. Describe what your invention can do, and how it can help people.

3. Complete these sentences.

_____ were invented to carry heavy goods across the sea.

Short distances can be covered by air in a _____.

Machines that help us travel over land are called _____.

The fastest way to get anywhere is by _____.

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Worksheet 13—Forces and machines

1. Fill in the blanks with the best-fitting answer from the word bank given below. Some words may not be used.

wheel	**axle**	**inclined**	**screw**	**pulley**	
lever	**force**	**push**	**pull**	**gravity**	**exert**
direction	**motion**	**friction**	**slow down**	**speed up**	

   a. The _____ can be used with a wheel to help things move over longer distances.

   b. A _____ can help raise, lower, or fasten things.

   c. A ramp can help lift things because it is a surface with an _____ plane.

   d. A _____ is different from a lever because it features a rod balanced on a fixed point, which helps it lift weight from the ground.

   e. When something changes position, it is said that a _____ is applied to it.

   f. To climb up a rope ladder, you apply a _____ force.

   g. When you rub your hands together, the heat you feel is due to _____.

   h. Pedaling harder on a bicycle will create a force that will make you _____.

2. Mark if the activity mentioned makes use of which force or work:

	Force			
Activity	**Push**	**Pull**	**Gravity**	**Work**
Press on a wall				
Roll a ball				
Feel magnets repel				
Drop a ball				
Lift a water bottle				
Walk to the front of the class				
Knead the dough				

Worksheet 14—The role of government and citizens

1. What are the services that are provided to your house for which payment has to be made?

2. Find out which service among these is the most expensive and which is the cheapest.

3. Write about four things you can do to improve your neighbourhood.

4. Complete these sentences.
   a. People living in one locality form a _____
   b. Services for everyone to use are _____ services.
   c. We pay _____ to the government so that it can provide public service facilities, such as _____, _____, _____, _____, etc., to the people.

5. What are your roles or responsibilities as a student? Explain you answer.

6. If you would run a government, what would you focus on while making policies and decisions. Give reasons for your answer.

Worksheet 15—Working out disagreements

1. List the choices you have for each of the following scenarios and choose the best choice. Explain why you think doing so is the best idea. The first one has been done for you.

   A classmate took your pencil and won't give it back.
   - shout at the classmate
   - take away something belonging to your classmate
   - discuss with the classmate about why he took the pencil, emphasizing that you need it for doing your work

   I would pick Option 'c' because it will help me understand why my classmate took my pencil in the first place. Maybe they took it because they forgot their own pencil at home and needed it to do their classwork.

   i. Your sibling doesn't share their new toy with you.

   I would choose: _____

   ii. Your mother doesn't let you to watch TV because you haven't done your homework.

   I would choose: _____

   iii. Your friend said something rude about your new haircut in front of everyone.

   I would choose: _____

Worksheet 16—Safety

1. Why is it important to keep ourselves and our surroundings clean?

2. Name three insects that spread diseases. How can we get rid of them?

3. How can we be safe from injury on the road?

4. Name two safety rules we should follow at home and describe why they need to be followed.

5. Make warning signs for the following:

Potential hazard	Warning sign
Slow down – school or playground nearby	
Be careful – learner driver driving car	
Be aware – Z-bend in the road ahead	