THIRD EDITION

NEW OXFORD PRIMARY SCIENCE

Teaching Guide

LEVEL 3

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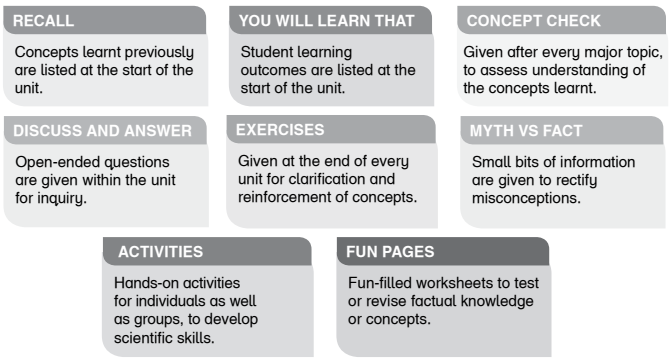
Contents

Introduction

This teaching guide consists of a scheme of work, worksheets, answers to questions in the book, sample assessment paper, and lesson plans. It is designed to support delivery of the National Curriculum effectively. It provides the teachers with teaching strategies to make learning student-centred, with simple and clear instructions for the teachers.

The following key features of the book have been integrated into the lesson plans, making it easier for the teacher to teach the lessons:



The PDF version of this teaching guide (available online at OUP website) allows teachers to adapt and modify lessons to suit the diverse needs of their students. As a result, teachers can focus their efforts on maximising the learning of their students.

A progression map is given to enable department heads and coordinators to plan for the progression of students' learning.

Scheme of work

The division of the syllabus (units) into two terms has been provided. A detailed scheme of work has also been provided according to which the teachers can plan their lessons over the terms. The scheme of work is flexible and adaptable to teachers' needs and school requirements.

Progression chart

This shows how NOPS builds on students' prior knowledge and progresses the topics from basic to more complex across the series.

National Curriculum Alignment

Each teaching guide also includes curriculum maps for that grade. It shows where each SLO of the National Curriculum is covered in the NOPS series.

How to Use this Teaching Guide

Background information

Brief background information has been provided before the lesson plans. It outlines the scientific knowledge necessary to teach a particular unit.

Lesson plan

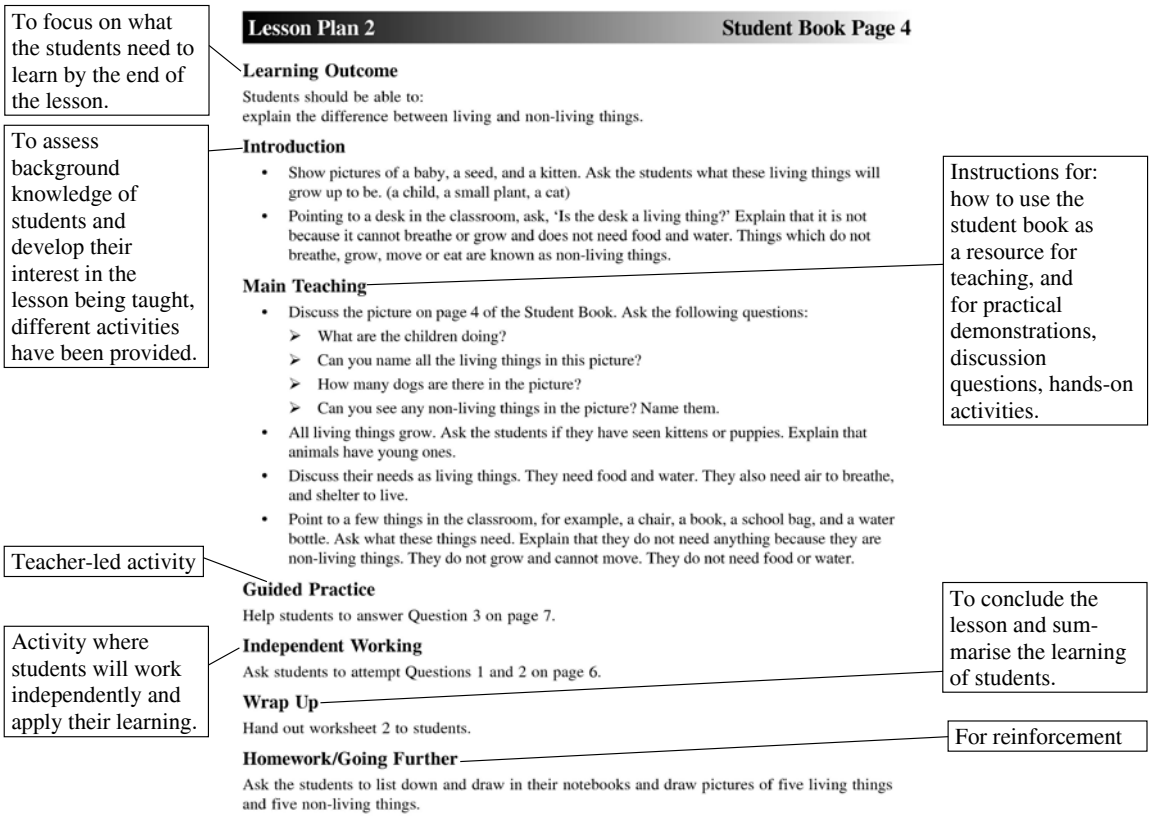
Teachers can use the provided lesson plans for each unit addressing the relevant learning outcomes as is or customise according to their class requirements. Lesson plans can be modified as per available resources.

i. **Learning outcome:** Each lesson plan is according to the lesson outcomes which are closely related to the student learning objectives from the National Curriculum.

ii. **Introduction:** Introduces the various techniques that are used in this teaching guide:

- Questions can be asked to check background knowledge or misconceptions about the concept being taught. This teaching guide gives interesting ways to encourage brainstorming and asking questions.
- For early years, pictures (flashcards) or videos can be shown to initiate introductory discussion.

- If resources are available, experiments or hands-on activities can be arranged. The teacher can ask questions before an experiment to elicit responses from students. After the results have been observed and recorded, ask what was done in the experiment and what happened. Do the results answer the questions posed at the start of the experiment? How do they explain what happened?



iii. **Main teaching:** After introducing the lesson, teachers can utilise the techniques suggested in the 'main teaching' section to lead the students through the lesson in detail. Use different techniques to make learning of the lesson as interesting for the students as possible. Demonstrations, hands-on activities, model-making, drawing diagrams, videos, field trips, reading, etc., can be used to teach the topic in detail.

iv. **Guided practice:** Activities requiring teacher guidance have been provided in this section.

v. **Independent working:** Suggestions on how to encourage students to work independently using the activities mentioned in the lesson plans.

vi. **Wrap up:** Conclude the lesson and summarise the learning of students by using wrap activities given in the lesson plans.

vii. **Worksheet:** Photocopiable worksheets have been provided with lesson plans, which can be used in the class or for homework.

Answers

Answers to all the questions given in exercises, fun pages, 'concept check', and 'discuss and answer' have been provided at the end of the lesson plans.

Assessment:

Sample Assessment Paper has been provided at the end of the teaching guide, based on the standard board format. The format of the sample paper can be used to design assessment papers.

Concept Check boxes given in the student book can be used for assessing learning during the class.

Topic Progression Across NOPS Series

Starter		Book 1		Book 2	
Unit	Ourselves	Unit	Ourselves	Unit	Ourselves
1	My Body	1	The Human Body - parts of the body and their functions - growth of living things	1	The Human Body - bones - muscles and joints - internal organs ((brain, heart, lungs, stomach) - sense organs
2	Healthy Habits	2	The Senses - senses and sense organs - movement	2	Health and Safety - looking after body - staying safe
		3	Healthy Habits - food for energy - health habits - illness		
	Living Things		Living Things		Living Things
3	Animals	4	Plants - plants and living things - parts of plants	3	Plants and Their Parts - types of plants - parts of plants - parts of a fruit - seeds
4	Plants	5	Animals and How They Live - basic characteristics of animals - animal food, importance of animals	4	Uses of Plants
5	Living and Non-Living Things			5	Animals - animals live in different places - special body parts - wild and domestic animals - animals and their young ones
	Materials and Matter		Materials and Matter		Materials and Matter
6	Materials	6	Materials and Object - shapes, size, texture and weight of objects - natural and man-made materials	6	Solids, Liquids, Gas - natural resources and man-made materials - solids, liquids, and gases - materials can change shape - more about rocks
				7	Measuring Instruments - measuring length - measuring weight - measuring time - measuring temperature - measuring liquids

Book 3		Book 4		Book 5	
Unit	Ourselves	Unit	Ourselves	Unit	Ourselves
1	The Human Body - brain - sense organs - skeletal system, muscular system,digestive system, circulatory system, respiratory system, nervous system, excretory system	1	The Human Body - cells - tissues - organs - skeletal system - muscular system	1	The Brain and Nerves - nervous system - sense organs
2	Health and Safety - exercise for body - balanced diet - sleep and rest - staying safe	2	Food and Balanced Diet - importance of food - food groups - food pyramid	2	Microorganisms, Health, and Disease - microrganisms - microorgansims and disease - keeping healthy
		3	Digestion - teeth and its type - taking care of teeth - digesting food - pancreas, liver, and gall bladder - eating habits		
	Living Things		Living Things		Living Things
3	Living on Earth - characteristics of living things - movement of animals and plants - growth - feeding - feeling - breathing - reproduction - habitats - ecosystems - extinct animals	4	Characteristics of Living Things - animal vs plant cells - characteristics of living things - dependency on eachother - life cycles	3	Life Functions - movement - growth - food - respiration - sensitivity - reproduction
4	The Life Cycles of Animals - life cycle of fish,insect, birds	5	Environments and Food Chains - environment components - classification of animals and plants - herbivores, carnivores,omnivores - food chains	4	Classification of Living Things - animals: vertebrates and invertebrates - friends or enemy
5	The Life Cycles of Plants - flowers, fruits, and seeds - germination - vegetables - life cycle of plant			5	Plants - non-flowering plants - flowering plants - comparing a monocot and a dicot - germination
	Materials and Matter		Materials and Matter		Materials and Matter
6	Materials - types of materials - properties of materials - kinds of materials	6	Solids, Liquids, and Gas - matter and its forms - changes of state	6	Soil - what is soil made up of? - layers of the soil - types of soil
		7	The Study of Matter - introduction to chemistry - mixtures, solutions - methods of seperation	7	Matter And the Water Cycle - solid, liquid, gas - comparing states of matter - changes of states - water cycle - reversible and irreversible changes

Starter		Book 1		Book 2	
	Forces, Energy, and Machines		Forces,energy, and Machines		Forces,energy, and Machines
7	Movement	7	Movement - introduction of movement - force is needed to move - use of machines to move	8	Electricity - mains electricity and batteries - batteries and cells
8	Sounds	8	Sounds - introduction to sound - loud and soft sound - different ways of producing sound	9	Light and Shadow - light is energy - sources of light - brigh and dim light - properties of light - what makes a shadow big or small - materials and light
9	Light and Colours	9	Light and Shadow - use of light - sources of light - bright and dim light		
	The Earth and the Atmosphere		The Earth and the Atmosphere		The Earth and the Atmosphere
10	The Earth and The Atmosphere	10	The Weather - types of weather - seasons	10	Water - importance of water - sources of water - uses of water - saving water
11	Air			11	The Environment - what environment is - protecting animals - three R's - looking after natural resources - deforestation
12	Water And Its Uses				
13	The Weather				
	Sky and Space		Sky and Space		Sky and Space
14	The Sky	11	The Earth, Sun,Moon, and Stars - shapes of earth - Sun - Earth travel round the Sun - Moon travel round the Earth	12	The Earth, Sun, Moon, and Stars - introduction to Earth and Sun - day and night - Moon its shape, life on Moon, and its rotation

Book 3		Book 4		Book 5	
	Forces,energy, and Machines		Forces,energy, and Machines		Forces,energy, and Machines
7	Force - introduction to force - kinds of force - friction - gravity	8	Heat - atoms - temperature - heat - thermometer	8	Forces In Action - measuring force - inertia - friction - ways to reduce friction - gravity - balanced and unbalanced forces - mass and weight - simple machines
8	Electricity - electric current - conductors and insulators - circuits - flow of current - complete circuit	9	Forces and Machines - speed - machines and types of machines	9	Electricity - atoms - electric charge - two types of electricity - electricity in nature - circuits and fuses
9	Simple Machines - work - tools or machines - transport	10	Circuit and Switches - complete and incomplete circuits - switches - series and parallel circuits - conductors and insulators	10	Magnets And Electromagnets - magnetic field - demagnetism - creating an electromagnet - electromagnets in use
10	Sound and Light - how is sound produced - how are sounds useful - loud or soft sound - sources of light - speed of light	11	Magnetism - what is a magnet? - magnetic materials - magnetic field - poles - making magnets	11	Light - pinhole camera - reflected light - shadows - eclipses
		12	Sound - sound waves - frequency - sound medium - noise, echoes		
	The Earth and the Atmosphere		The Earth and the Atmosphere		The Earth and the Atmosphere
11	The Earth - structure of Earth - how Earth was formed - rocks, minerals, soil	13	Movement of Earth - rotation - revolution - equator - seasons	12	Air - air has mass - the atmosphere - uses of air
				13	Environmental Pollution - biodegradable waste - non-biodegradable waste - causes of pollution - types of pollution - the three R's - environment watch
	Sky and Space				Sky and Space
12	The Earth - introduction to Solar system - objects in space - difference and similarities between a planet and a moon - satellites and space			14	Solar System - the solar system - space probes

Curriculum Map for Grade III

Themes	SLOs (incl. Knowledge, Skills,Attitudes and STSE)	covered in unit:
Habitats	Recognise that heat and light of the Sun help to sustain life on Earth.	unit 3
	Define the term habitat.	unit 3
	Describe the different habitats for living things (Polar Regions, desert, forest, sea and rivers).	unit 3
	Define the term eco system.	unit 3
	Identify the environmental factors (temperature, light, water) that support life in a habitat.	unit 3
	Name plants and animals that live in each of the different habitats.	unit 3
	Identify the ways plants and animals adapt to their habitat (camel, fish, polar bear, cacti, lotus, pine trees etc.).	unit 3
	Identify the ways human activities affect the Natural habitats.	unit 3
	Describe the effects of human activity on the habitats.	unit 3
Changes in Living Things	Compare young plants and animals with their parents (from pictures, through observation etc.).	unit 4 & 5
	Identify the changes that animals and plants undergo during their life (hen, sunflower).	unit 4 & 5
	Interpret diagrams of the life cycles of animal and plant to identify the different stages.	unit 4 & 5
	Sequence the stages of the life cycle of a plant/animal.	unit 4 & 5
	Illustrate the life cycle of an animal and a plant.	unit 4 & 5
Sun	Recognise that while living on the Earth we see the sun rising in the East and setting in the West.	unit 12
	Describe the size of the shadow with the position of the sun.	unit 10
	Recognise that the size of the shadow created by the position of the sun was used to tell the estimated time.	unit 10
Food and Feeding	Recognise that healthy living requires eating a balanced diet, keeping clean, getting a good night sleep and exercising regularly.	unit 2
	Classify foods into the basic food groups.	unit 2
	Define a balanced diet.	unit 2
	Identify foods for the three meals of a day to prepare a balanced diet.	unit 2
	Prepare a flyer to educate others of the importance of cleanliness for healthy living.	unit 2
	Recognise the importance of appropriate rest and a good night's sleep for healthy living.	unit 2
	Identify the ways to get sufficient exercise to stay healthy.	unit 2

Tools and Machines	Name some simple machine they see/use at home (scissors, hammer, pliers).	unit 9
	Explain how simple machines make work easier.	unit 9
	Recognise that the position and shape of an object can be changed by a force (push and pull).	unit 9
	Recognise that push and pulls move things fast or slow.	unit 9
	Recognise from pictures of the past that force applied by humans and animals moved vehicles while today vehicles are moved by machines (Tonga, bullock cart, cycle, pushcart, bus, motorcycle and car.	unit 9
	Observe and describe how motion of vehicles can be changed by applying force (speed up, slow down, change direction etc.).	unit 9
	Recognise that greater the force, the greater the change in the motion of an object.	unit 9
NATURAL, HUMAN AND CAPITAL RESOURCES	Define the terms natural resources and human resources.	unit 6
	Identify natural resources (plants, animals, water, air, land, forests and soil) and human resources (farmers, builders, painters etc.).	unit 6

Scheme of Work

1st Term	2nd Term
Unit 1: The Human Body	Unit 3: Living on Earth
Unit 2: Health and Safety	Unit 4: The Life Cycles of Animals
Unit 5: The Life Cycle of a Plant	Unit 7: Force
Unit 6: Materials	Unit 9: Simple Machines
Unit 8: Electricity	Unit 11: The Earth
Unit 10: Sound and Light	Unit 12: The Solar System

Unit	Lesson plan number	Topic wise allocations of periods	Learning outcome
1 The Human Body	Lesson 1	1 period	The body contains many organs.
	Lesson 2	1 period	The organs enable the systems of the body to function.
	Lesson 3	2 periods	The brain is the control centre of the body.
2 Health and Safety	Lesson 1	1 period	We need to look after our bodies. Healthy living requires eating a balanced diet, keeping clean, getting a good night sleep, and exercising regularly.
	Lesson 2	1 period	Food is classified into basic food groups.
	Lesson 3	1 period	Accidents can be avoided if we think and act sensibly. An adult should be called in an emergency.
3 Living on Earth	Lesson 1	1 period	All living things move, grow, take in food, feel, breathe, and reproduce.
	Lesson 2	2 periods	Habitats are the natural homes of plants and animals. There are different types of habitat. Plants and animals are adapted to their habitats.
	Lesson 3	2 periods	Plants and animals depend on each other to survive. A group of interacting living things and their environment is called an ecosystem.
	Lesson 4	2 periods	Some animals are endangered and others are extinct. We can help to protect the environment.
4 The Life Cycles of Animals	Lesson 1	1 period	The life cycle of an animal comprises of the stages in its life.
	Lesson 2	2 periods	Different animals have different life cycles.
5 The Life Cycle of a Plant	Lesson 1	1 period	Plants are producers. Flowers help plants reproduce.
	Lesson 2	2 periods	There are many different vegetables; they come from different parts of a plant.
	Lesson 3	2 periods	Seeds are dispersed in different ways. Plants have a life cycle.

6 Materials	Lesson 1	2 periods	Materials are used to make things. Materials have different properties.
	Lesson 2	2 period	Materials of different kinds are used for different purposes. Natural resources are useful and need to be preserved.
7 Force	Lesson 1	2 periods	Forces make things move, change direction, slow down, speed up, or change shape. Forces are pushes and pulls.
	Lesson 2	2 periods	Friction slows down moving objects. Gravity pulls everything down towards the Earth.
8 Electricity	Lesson 1	1 period	Materials that conduct electricity are called conductors; materials that do not conduct electricity are called insulators.
	Lesson 2	2 periods	A circuit needs to be complete and have a power source to work.
9 Simple Machines	Lesson 1	2 periods	In science, work means using force to move an object by pushing or pulling. Humans and animals use force to move objects.
	Lesson 2	1 period	There are six types of simple machines.
10 Sound and Light	Lesson 1	2 periods	Sounds are made by vibrations. Sound travels in waves in all directions. Sounds can travel through air, solids, and water.
	Lesson 2	1 period	Sounds can be soft or loud; high or low. Sound and light become less intense as they travel away from a source.
	Lesson 3	2 periods	Light travels in straight lines at very high speeds. The position of an object in relation to the source of light and the surface onto which a shadow is cast affects the size of the shadow.
11 The Earth	Lesson 1	2 periods	The Earth is made up of different layers. The Earth's surface is cool but the centre is very hot.
	Lesson 2	1 period	There are many kinds of rocks. Some rocks contain minerals.
	Lesson 3	1 period	Soil is formed by erosion and the action of the weather on rocks. There are different kinds of soils.
12 The Solar System	Lesson 1	1 period	Earth is one of the eight planets of the solar system. The planets orbit the Sun.
	Lesson 2	2 periods	Day and night are caused by the rotation of the Earth on its axis.
	Lesson 3	2 periods	Stars are huge balls of very hot gases; they form constellations. The Moon is a satellite of the Earth; it has different phases. Man-made satellites give us information about space and the atmosphere.

Unit 1: The Human Body

The students will learn about the parts of human body: bones, joints, muscles, and organs. Students will learn about the important functions performed by the different parts of the body. The students have already been introduced to senses in the previous class and now they will learn further about the five senses like sight, smell, hearing, taste, and touch. Students will also learn the importance of rest, air, water, food, and exercise.

Lesson Plan 1 — Student Book Pages 2–4

Learning Outcomes

Students should be able to:

explain that the body contains many organs.

Introduction

Show the students a ballpoint pen and take it apart in front of them.

Demonstrate that the pen has many parts, all of which are important. Put the pen back together a couple of times, with a different part missing each time, to show that it is not working. Re-assemble the pen, using all the parts. State that the human body similarly requires all parts to properly function.

Main Teaching

- Detail to the students that they will be learning about parts of the body and how they make up a system.
- Explain that many things have parts, and that each part of a toy, a game, a machine, or a person has an important job to do. Explain that the human body is also made up of different parts.
- Emphasise that each part works together with the other parts to make a whole toy, car, or person. This combination of parts is called a system.
- Invite a volunteer and point out the different locations of some external and internal organs, such as the eyes, nose, stomach, heart, lungs, and brain.
- Discuss the working and importance of each organ.

Guided Practice

Help the students to do the Discuss and Answer on page 2.

Independent Working

The students should attempt Question 1 on page 8.

Wrap Up

Instruct the students to complete Activity 1 on page 21.

Homework/Going Further

Ask the students to glue pictures of five organs in their notebooks and write about their working.

Lesson Plan 2 — Student Book Pages 5–6

Learning Outcome

Students should be able to:

explain how the organs enable the systems of the body to function.

Introduction

Show the students posters with diagrams of different systems.

Main Teaching

- Show the students a skeleton (model or poster) and explain that the skeletal system is a framework of bones. The bones support the body and give it strength, and protect the internal organs. All of the bones of the body make up the skeleton.
- Explain the different parts of the skeleton.
- Ask the students to read about the skeletal system on page 5.
- Explain that the muscles make up the muscular system that enables us to move different parts of the body.
- Explain that the muscular system works along with the skeletal system and forms part of the body's framework. The muscles are attached to the skeleton.
- Ask the students to read about the muscular system on page 5.
- Explain how the food we eat is digested in the digestive system. The stomach and the channels through which food passes are called the digestive system.
- Show that the digestive system starts from the mouth. Explain that the main organ of this system is the stomach. The liver and the channels through which the food passes, are also parts of the digestive system.
- Ask the students to read about the digestive system on page 6.
- Explain that the heart is the organ that pumps blood to all parts of the body and it is the most important organ of the circulatory system. The blood circulates around the body through tubes called veins and arteries.
- Ask the students to read about the circulatory system on page 6.
- Explain that the lungs are used to push and pull air through body and are part of the respiratory system.

Guided Practice

Divide the students into groups of three. Each group will represent one organ system. Give each group the set of organ system cards and explain that one student in each group will play the role of:

- a guide explaining the organ system.
- a visitor asking questions about the parts of the system.

Independent Working

Ask the students to do the Concept Check on page 7.

Wrap Up

Each group will present one organ system in front of the class.

Homework/Going Further

The students should attempt Questions 5 and 6 on page 9.

Lesson Plan 3 — Student Book Page 7

Learning Outcome

Students should be able to:

explain that the brain is the control centre of the body.

Introduction

Give each student a strawberry and ask them to taste it while holding their noses. Then ask them to release their noses and experience how different the strawberry tastes. Discuss how foods can taste different when you have a cold.

Main Teaching

- Show a picture of a human brain and explain that the brain is the control centre of the body; it controls all the systems and organs.
- Explain that we have five senses, and write their names on the board.
  - Sight is related to the eyes.
  - Hearing is related to the ears.
  - Smell is related to the nose.
  - Taste is related to the tongue.
  - Touch is related to the skin.
- Explain that the sense organs take in information and send it to the brain so that we are aware of our environment.
- Talk about how the senses are related to each other.
- Explain that sense organs help to keep us safe from danger.

Guided Practice

Ask the students to go to the different sections in the different corners of the room and do as directed.

- Section 1 seeing:

  Display pictures of varying sizes showing different organs.
- Section 2 hearing:

  In 4 small containers, place a marble, a paper clip, coins, and sand. The containers should not be transparent and should be sealed and labelled. Blindfold the students before they attempt this section.

- Section 3 smelling:

  Put in small unlabelled containers flavour or extract of the following: cloves, orange, garlic, pickle juice, lemon. Close the lids tightly between student visits. When the students reach the station, help them smell what is in inside the containers.

- Section 4 tasting:

  Put out different, small tasting samples. Plan to have enough for each student to taste each sample. Food choices may include crackers, lemon drops, sweets, and mint. Blindfold the students before they go to this section.

- Section 5 touching:

  In opaque bags place different materials for students to feel. These materials could include pipe cleaners, sandpaper, silk, pom-poms, feathers, plastic straws, modelling clay, and so on.

Independent Working

While doing the above activity, ask each student to independently identify the things at the different sections and fill the following table.

Section 1				
Section 2				
Section 3				
Section 4				
Section 5				

Wrap Up

Ask the students to share their results with the whole class.

Homework/Going Further

Ask the students to do the Concept Check on page 4.

Worksheet 1-1

Q1. Identify the senses related to these following organs:

a. _____ b. _____ c. _____ d. _____ e. _____

Q2. Name the senses being used by the child in the picture:

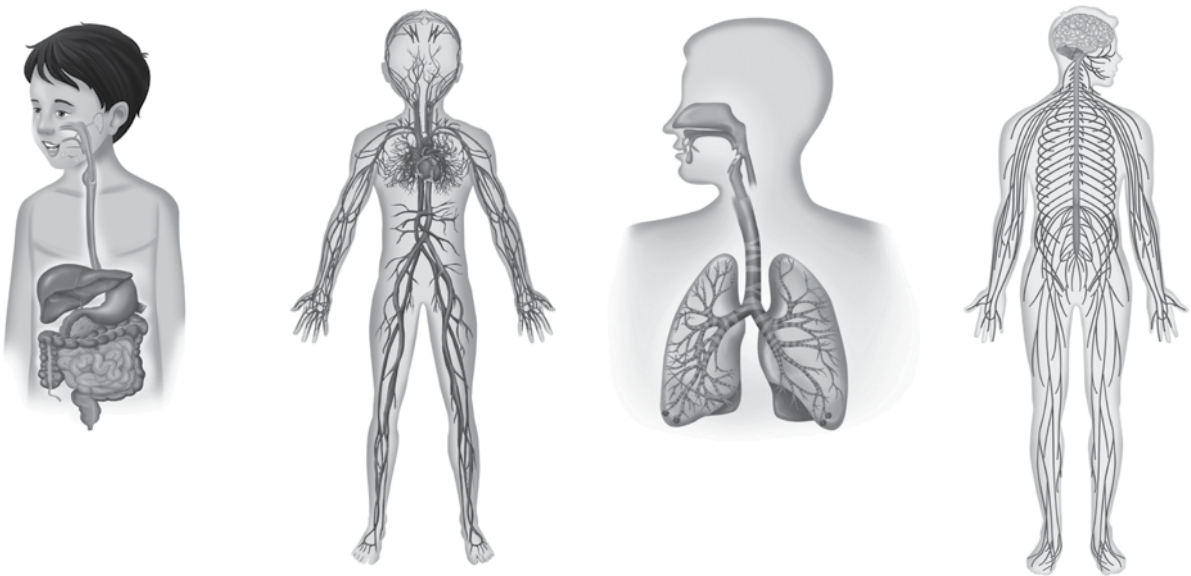
_____

_____

_____

Q3. Identify the organ systems in following diagrams:

a. _____ b. _____ c. _____ d. _____



Unit 2: Health and Safety

In this unit the students will learn about hygiene rules such as, washing hands before eating and drinking. They will learn safety rules such as being careful when using machines and electricity. Students will learn that loud noises can damage hearing while very bright lights can damage our sight. They will learn to look after their bodies and healthy living requires eating a balanced diet, keeping clean, getting a good night sleep, and exercising regularly. Students will learn that accidents can be avoided if we think and act sensibly and an adult should be called in an emergency.

Lesson Plan 1 — Student Book Pages 12–14

Learning Outcomes

Students should be able to:

- explain that we need to look after our bodies.
- identify eating a balanced diet, keeping clean, getting enough sleep, and exercising regularly as important factors in living healthily.

Introduction

Ask the students what are healthy habits and write their responses on the board.

Main Teaching

- Explain that keeping healthy means doing things that are good for your body.
- Explain that germs live in dirty places. Discuss why it is important to keep our nails, teeth, body, and hair clean.
- Share the enclosed cards with the students and discuss each point with the students.
- Emphasise that once a tooth has decayed, it begins to hurt. This happens because the tooth cannot be replaced naturally. To prevent decay, it is important to clean our teeth at least twice a day.
- Explain that exercise makes the bones and muscles strong. It also leads to better health and makes people feel good.
- Explain that some forms of exercise, such as walking or playing in the playground, require little effort, while others, like football and swimming, require more effort.
- Explain that having enough sleep is important to staying healthy.
- Explain that staying up late at nights can leave you feeling tired the next morning.

Guided Practice

Make groups consisting of 4 students and ask each group to make a 'Healthy Habits' display. Some habits could be shown as labelled pictures, while others could be shown by displaying objects, such as below:

- a picture of someone washing his/her hands
- toothbrush and toothpaste
- shampoo and comb

- nail clippers
- rubbish disposal (bins)
- pictures of people swimming

Independent Working

Ask each group to present their display in front of the class.

Wrap Up

Ask the students to do the Concept Check on page 14.

Homework/Going Further

The students are to do Activity 3 on page 20.

Lesson Plan 2 — Student Book Page 13

Learning Outcome

The students should be able to:

explain how food can be classified into basic food groups.

Introduction

Show the students a plate containing different types of food. Point to each item and ask them to name it. Cover the food with a cloth, then take away one of the items and remove the cloth. Invite the children to guess which one is missing.

Main Teaching

- List the five basic groups of food on the board.
  - fruit and vegetables
  - grains, cereals, and potatoes
  - dairy products
  - meat, fish, nuts, and eggs
  - fats and sugars
- Ask examples of items belonging to different food groups from the pupils.
- Discuss the importance of different types of food.
- Ask students about their favourite food.
- Tell students about junk food being bad for their health.
- Ask the names of junk food.
- Ask students about their breakfast and mention the types of healthy breakfast.
- Explain the importance of dairy products like milk, butter, and cheese.
- Remind students to take each type of food for good health.
- Encourage pupils to eat vegetables and fruits.

Guided Practice

Write on the board the names of some foods such as, nuts, mango, chicken, potato, rice, mutton, cereals, fish, chicken, etc.

Ask the students to classify the foods in two columns on a sheet of paper: Foods from plants and Foods from animals.

Independent Working

Ask the students to work by themselves, then share their lists and ideas with each other.

Wrap Up

The students should do Concept Check question 2 on page 17.

Homework/Going Further

The students should complete Question 2 on page 18.

Lesson Plan 3 — Student Book Pages 15–17

Learning Outcomes

The students should be able to:

- explain that accidents can be avoided if we think and act sensibly.
- explain that an adult should be called in an emergency.

Introduction

Do Activity 1 on page 20.

Main Teaching

Discuss the following safety habits with the students:

- Never play with sharp objects.
- Cross the road at a safe place.
- Do not throw things in the classroom.
- Do not climb on the desk.
- Use school equipment carefully.
- Never use electrical appliances near water.
- Wait for your turn and be patient.
- Do not play roughly.
- Do not crowd around an injured person.
- Do not try to move an injured person.

Guided Practice

The students are to do Activity 2 on page 20.

Independent Working

The students are to attempt Question 3 on page 19.

Wrap Up

Instruct the students to attempt Question 7 on page 19.

Homework/Going Further

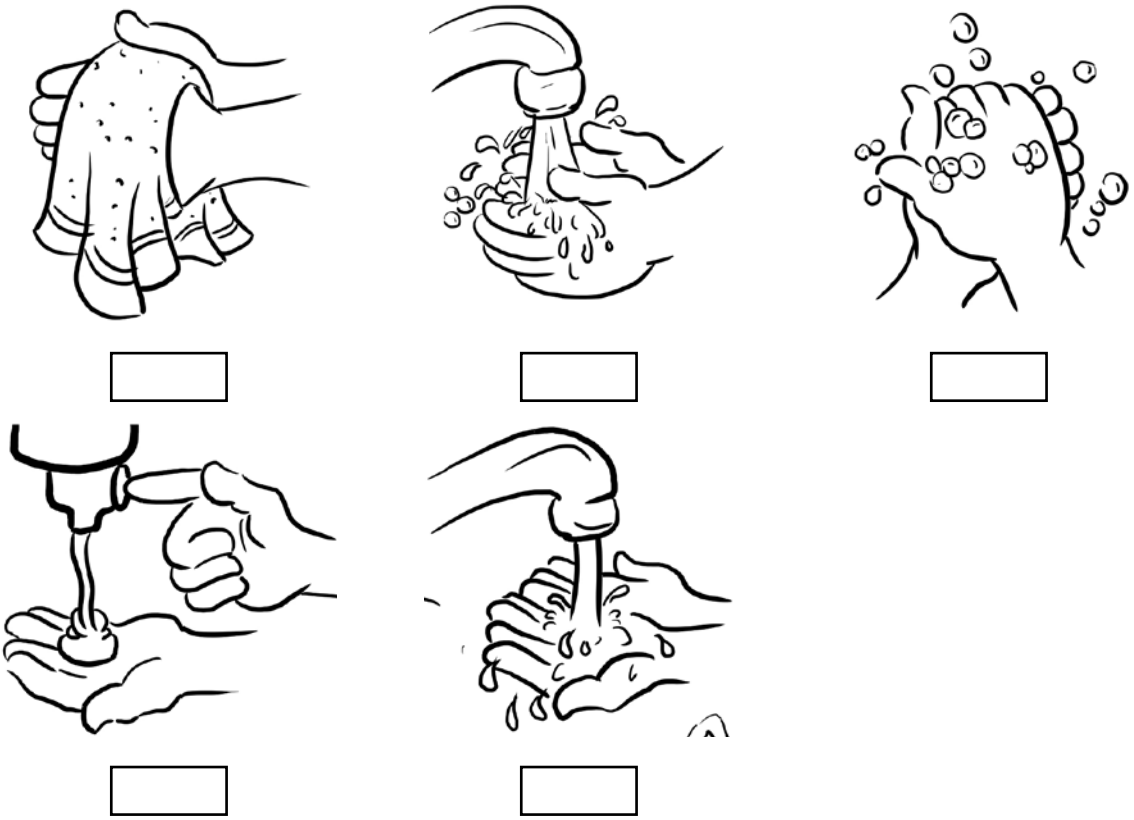
The students should complete Question 8 on page 19.

Cards: Healthy Habits

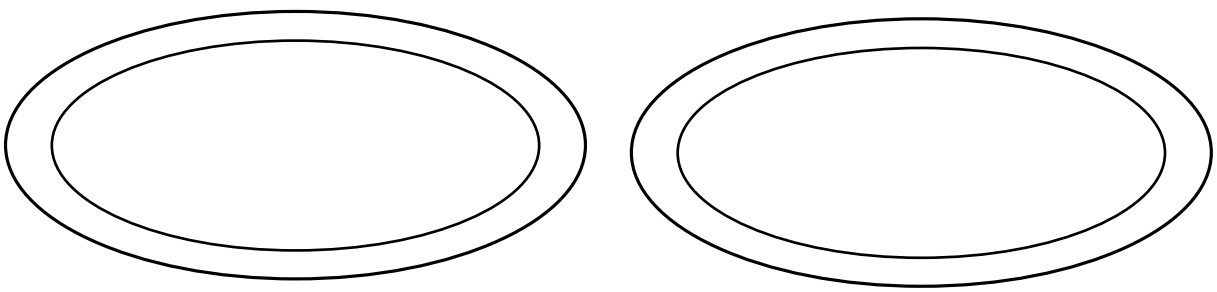
SLEEP **Early to bed,** **Early to rise.** **Plenty of sleep helps you concentrate.**	**Teeth** **Brush your teeth every morning and night to keep them shining and bright. Visit your dentist regularly!**
Nails **Trim your nails weekly.** **Keep your nails short and clean.**	**Hair** **Wash your hair regularly.** **Keep it neat by styling and brushing.**
Exercise **Play outside as much as possible. Don't sit and play on the computer and mobile phone for a long time or watch TV too often.**	**Hygiene** **Bath or shower daily. Wash your hands after visiting the toilet and before eating.**

Worksheet 2-1

Q1. Colour the pictures and number each one so they are in the right order.



Q2. Be creative and think of catchy names for healthy and nutritious snack foods for a restaurant. List at least five choices for each section.



school snacks

before-dinner snacks

Q3. Write true or false by each sentence.

i.	You should wear a bike helmet whenever you ride a bike.	True or False
ii.	Bike injuries can send children to the hospital.	True or False
iii.	It's OK to wear sandals or flip-flops when you ride a bike.	True or False
iv.	You should always ride in the opposite direction to the traffic.	True or False
v.	Hand signals do not keep you safe when you ride a bike.	True or False

Worksheet 2-2

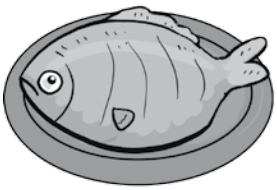
Q1. Cross out the wrong practice for a safe kitchen.

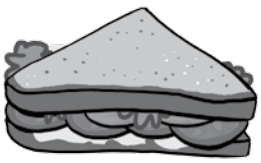
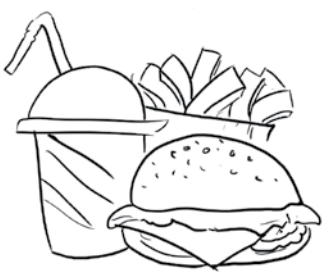
i. Clean counters and cooking surfaces after working
ii. Don't cook without an adult
iii. Don't eat old leftovers
iv. Do not use foil or metal in microwave
v. Point knife away from yourself
vi. Eat the food that falls on the floor
vii. Wash vegetables after cooking
viii. Do not wash hands
ix. Do not use potholder for hot pots and pans
x. Baggy clothes can catch fire

Q2. Annie is playing in her room. Circle the things which are hazardous.

Worksheet 2-3

Q1. Is this food healthy or unhealthy. Look at the picture and its name, then put a tick mark in the correct column.

Food	Healthy	Unhealthy
 porridge		
 fish		
 donut		
 chicken		
 fruit		

 chips		
 egg sandwhich		
 bean salad		
 burger		
 nuts		

Unit 3: Living on Earth

The students will explore the different types of plants and animals on Earth. Importance of need of air, water, and sunlight for plants to grow will be discussed. Students will understand some young animals look like their parents but others do not. They will differentiate between animals that live on land, in water, and some which can fly in the air and how animals can be divided into groups according to their feed.
Students will learn that plants and animals have special parts which are used in different ways. They will differentiate between wild and domestic animals, and that we get food and other useful products from animals. The topic further covers how plants and animals depend on each other to survive and that a group of interacting living things alongwith their environment is called an ecosystem. They will explore how to protect the environment.

Lesson Plan 1 — Student Book Pages 23–26

Learning Outcome

Students should be able to:

explain that all living things move, grow, take in food, feel, breathe, and reproduce.

Introduction

Ask the students:

- if they are living or non-living.
- if their pets are living or non-living.
- what they need to survive.

Ask the students to look at the pictures of living and non-living things on page 35 and to classify them.

Main Teaching

- Explain that they need food, water, shelter, and air to survive.
- Talk about the differences between living and non-living things. Living things can move, grow, eat, feel, breathe, and reproduce, but non-living things cannot do any of these things.
- Discuss the movements of different living organisms, for example, a horse gallops, a bird flies, a centipede crawls, a fish swims, and a person walks.
- Encourage the students to discuss different movements.
- Explain that all plants move, but only a little. Give examples: the petals of the morning glory open each morning; the sunflower turns its face towards the Sun.
- Ask for the names of the young of different animals and then explain that all living things grow and reproduce. Describe how new plants grow from seeds.
- Explain that some animals eat plants, some animals eat other animals, and some eat both plants and other animals.

- Discuss the different types of mouths, such as the jaws of a lion, the beak of a bird. Explain that frogs and lizards have long sticky tongues to catch insects.
- Explain that plants produce food using air, water, and sunlight.
- Explain that animals use their sense organs to search for food and to sense danger, while plants do not have sense organs but they can feel.
- Explain how animals and plants breathe, with examples.
- Clarify that the same basic functions occur in plants and in animals both, but in different ways. For example, with nutrition, plants manufacture their own food, whereas animals either eat plants or other animals.

Guided Practice

Help the students to do Activity 1 on page 36.

Independent Working

Instruct students to attempt Activity 2 on page 36.

Wrap Up

Ask the students to complete the Concept Check on page 26.

Homework/Going Further

The students should attempt Question 3 on page 34.

Lesson Plan 2 — Student Book Pages 26–29

Learning Outcomes

The students should be able to:

- explain that habitats are the natural homes of plants and animals.
- list different types of habitat.
- give examples of how plants and animals are adapted to their habitats.

Introduction

Ask the students to look at the pictures of animals and their habitats given on page 28. Discuss the shown variety of habitats and how they are different from each other.

Main Teaching

- Explain that a habitat is the place where an animal or plant lives. It is the most ideal or natural home for that animal. A habitat provides the animal with shelter.
- Discuss that different animals and plants require different habitats.
- Discuss the ways in which different animals and plants are adapted to their habitats.
- Discuss the different adaptations of animals to their habitats:
  - Lions have sharp teeth and claws to help them hunt.
  - Ducks have webbed feet to swim.
  - The camel has a hump to help it survive in the desert.

- An owl has sharp claws for hunting.
- Fish have fins to swim.
- A polar bear has thick fur to survive the cold.

Guided Practice

Divide the students into groups of 4 and help them to create an animal habitat in a shoe box, using materials found outdoors such as leaves, grass, twigs, and straw. Place pictures of animals in their correct habitats.

Independent Working

Ask the students to display and discuss their work.

Wrap Up

Do the Discuss and Answer on page 29.

Homework/Going Further

The students should do the Concept Check page 30.

Lesson Plan 3 — Student Book Pages 30–31

Learning Outcomes

Students should be able to:

- explain how plants and animals depend on each other to survive.
- explain that a group of interacting living things and their environment is called an ecosystem.

Introduction

Ask the students what do a lion and an elephant eat? Write their responses on the board.

Main Teaching

- Explain that an ecosystem is made up of the living things in a particular place and how they interact with each other and with non-living things (weather, Earth, sunlight, soil, climate, and atmosphere).
- Ecosystems can vary in size. They can be very small, such as a puddle, or very large, like a forest.
- Explain that plants and animals depend on each other or other non-living things to survive.
- Explain that organisms depend for food on other organisms. For example, a cat eats a rat, a cow eats grass, a lion eats cattle.
- Discuss how, if plants did not make food, then no other organisms would find food, and all living things would end up dead.

Guided Practice

Ask the students to again review the pictures on page 28. Ask them to list how the animals and plants relate to each other in each ecosystem.

Independent Working

Ask the students to cut out the given pictures of animals and glue them on worksheet 3-1.

Wrap Up

Discuss the Concept Check on page 30.

Homework/Going Further

The students should attempt Activity 1 on page 36.

Lesson Plan 4 — Student Book Pages 31–32

Learning Outcomes

Students should be able to:

- identify some animals that are endangered and others that are extinct.
- suggest how we can help to protect the environment.

Introduction

Ask students about the dinosaurs and then ask them to read the text on page 31 and discuss it.

Main Teaching

- Discuss how an ecosystem can be affected if a new plant or animal is introduced into it.
- Explain that storms, floods, fires, and volcanic eruptions can disrupt ecosystems.
- Discuss how as human populations grow, more and more plant and animal species become endangered.
- Talk about the extinction of the dodo and the dinosaurs.
- Discuss how humans can disrupt habitats by changing them. This in turn can disrupt a whole ecosystem.
- Discuss the various specific kinds of activities that threaten the environment, for example, habitat destruction, human disturbance, and rubbish.
- Explain that human activities in an ecosystem cause imbalances, increasing dangerous environmental changes in the landscapes, oceans, and atmosphere of the world.
- In order to save our environment from further destruction, we have to take drastic steps. Trees must be planted and not cut down. Trees are the homes of many animals. Hunting animals for their fur or other body parts should be banned. We should recycle things, reuse some of them, and also reduce the use of things made of plastic.

Guided Practice

Get the students focused on endangered species and initiate a thoughtful discussion on preventing their extinction.

Independent Working

Ask the students to write a short note on endangered species.

Wrap Up

Discuss how humans affect ecosystems.

Homework/Going Further

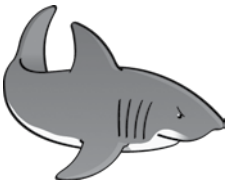
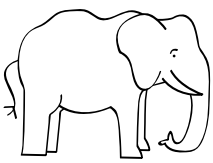
Students should complete Activity 4 on page 36.

Worksheet 3-1

Q1. Cut out the pictures of animals and glue them on the sheet of habitats.

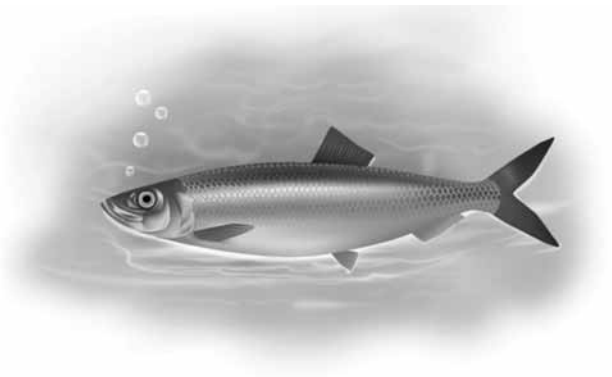
River	Sea
Desert	Forest

Cards of animals

 dragonfly	 duck	 snail	 bear	 camel
 salamander	 snake	 frog	 shark	 Eel
 chicken	 dlophin	 turtle	 tiger	 penguin
 fish	 monkey	 elephant	 squirrel	 fox
 toad	 cat	 alligator	 clown fish	 dog

Worksheet 3-2

Q1. Match the names of the organs with the correct organisms.

gills	
nose	
stomata	

Unit 4: The Life Cycles of Animals

This unit focuses on growth of different animals in different ways and the production of young ones by all living things. Students will learn that some young animals look like their parents but others do not. They will learn that the life cycle of an animal comprises of the stages in its life and different animals have different life cycles.

Lesson Plan 1 — Student Book Page 37

Learning Outcome

Students should be able to:

explain that the life cycle of an animal comprises all the stages in its life.

Introduction

Display pictures of a pet dog, as a puppy, and as an adult dog. Ask questions to prompt students to think about life cycles.

Main Teaching

- Explain that the term cycle indicates something that happens over and over again. Explain that all animals have a life cycle and that a life cycle includes all the stages of life.
- Explain that all living things can have young ones, but with time they become old and die. The life cycle shows how an animal makes copies of itself by having babies.
- Ask students to look at the life cycle of a frog on page 37 and then discuss the different stages.
- Discuss the amazing facts about the frog, given on page 37.
- Show a video about the life cycle of a frog. (https://www.youtube.com/watch?v=FIXoJYbBls0)

Guided Practice

Help the students attempt Activity 1 on page 41.

Independent Working

Ask the students to draw and colour a labelled diagram of the life cycle of a frog.

Wrap Up

Do the Discuss and Answer on page 38.

Homework/Going Further

Ask the students to glue pictures in their notebooks showing themselves at 2 stages:

- when they were very young.
- in class 3.

They should pick out and list any 5 differences.

Learning Outcome

Students should be able to:

give examples of the life cycles of different animals.

Introduction

Ask the students to look at the diagram on page 38 and read the text.

Main Teaching

- Discuss the life cycles of egg-laying animals.
- Differentiate between the life cycles of a mammal, an insect, and an animal that lays eggs.
- Discuss the nests of different birds on page 39.
- Show a video about the life cycle of a bird (https://www.youtube.com/watch?v=O1S8WzwLPlM) and discuss the stages of its life cycle.
- Ask students about their pets, if they have any.

Guided Practice

The students should answer Questions 1 and 2 on page 40.

Independent Working

The students should draw the life cycles of a fish and a butterfly in their notebooks.

Wrap Up

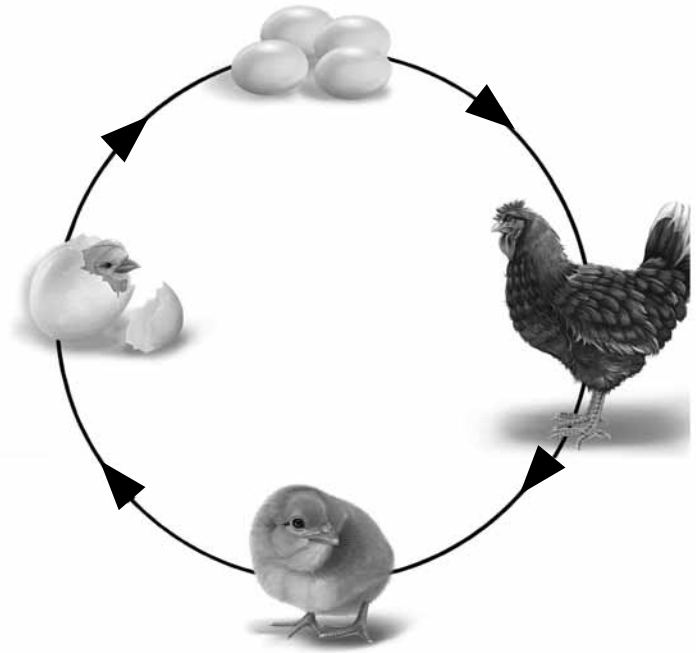
Answer Questions 3 and 4 on page 41.

Homework/Going Further

The students should do Activity 2 on page 41.

Worksheet 4-1

Q1. What is wrong in the following diagram?



Q2. Complete the following table:

Animal	Life cycle
_____	egg, chick, chicken,
frog	_____ tadpole, frog
butterfly	egg, caterpillar, _____ butterfly

Q3. Write a number in each box to show the correct order.




Unit 5: The Life Cycle of Plants

This unit will reinforce the importance of plants for other living organisms on the Earth. The students will learn that the plants give us fruits, leaves, stems, roots, grains, and seeds, and that many things are made from plants. They will understand why plants are called producers and that flowers help plants reproduce. Pupils will learn about dispersal of seeds and that plants also have a life cycle.

Lesson Plan 1 — Student Book Pages 42–44

Learning Outcome

Students should be able to:

- explain that plants are producers.
- explain how flowers help plants to reproduce.

Introduction

Do Activity 1 on page 50.

Main Teaching

- Explain that plants are called producers because they take energy from the Sun and make their own food.
- Explain that all animals directly or indirectly depend on plants for their food.
- Show the students a potted plant and discuss its different parts: root, stem, flower, and fruit.
- Discuss how plants differ greatly in size, shape, and the types of environment in which they live.
- Discuss the different types and colours of flowers.
- Explain how flowers help plants to reproduce or make copies of themselves, and that seeds are produced in the fruits which grow from the flowers.

Guided Practice

Do Questions 3 and 5 on page 52.

Independent Working

The students should attempt Question 1 on page 48.

Homework/Going Further

The students should do Activity 3 on page 50.

Lesson Plan 2 — Student Book Pages 45–47

Learning Outcome

Students should be able to:

identify different vegetables and say which parts of the plant they come from.

Introduction

Do Activity 2 on page 50.

Main Teaching

- Explain that alongwith fruits we get vegetables, from different parts of plants, such as the stem, bud, leaf, or root. Some vegetables are the whole plant.
- Discuss the different parts of plants that we eat and show pictures of them.
- Tell students about the importance of vegetables in the diet and how it is important to eat lots of them to keep healthy.

Guided Practice

Use the 'Parts of Plants We Eat' cards and discuss about the different parts of the plants we eat.

Independent Working

The students should answer Question 6 on page 49.

Wrap Up

Students should attempt Question 7 on page 50.

Homework/Going Further

The students are to do Question 5 on page 49.

Learning Outcomes

Students should be able to:

- identify different methods of seed dispersal.
- describe the life cycle of a plant.

Introduction

Show seeds of different fruits and vegetables and ask the students to find differences between them, for example, light and heavy, hard and soft.

Main Teaching

- Discuss the different methods of dispersal of different seeds, like wind, water, and air.
- Show stages in the life cycle of a plant, through a poster.
- Explain that all types of living things have their own distinctly different life cycles.
- Hold up a green bean pod and explain life cycle of the bean using the words seedling, germination, growing and adult plant, so that pupils learn the correct words.

Guided Practice

Help the students to draw stages of germination of a bean seed.

Independent Working

Ask the students to list the different methods of seed dispersal.

Arrange the cards showing germination of seeds in the correct order.

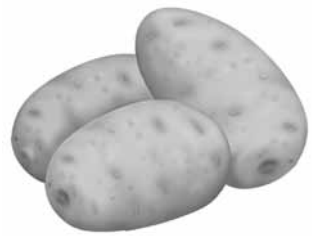
Wrap Up

Discuss the Concept Check on page 45.

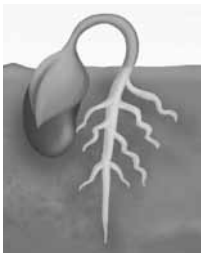
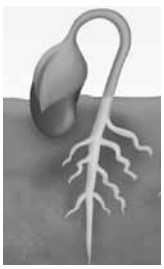
Homework/Going Further

The students should do Activity 4 on page 50.

Cards: Parts of Plants We Eat.

 cabbage lettuce	 spinach mustard
 radish	 celery
 potatoes	 cauliflower
 tomatoes	 broad beans
 onion	 carrots

Cards: Germination of seeds.

	Seed
	The seed begins to grow.
	The root appears and begins to grow.
	The shoot pushes up and begins to grow.
	Tiny roots take in water.
	The shoot grows green leaves.

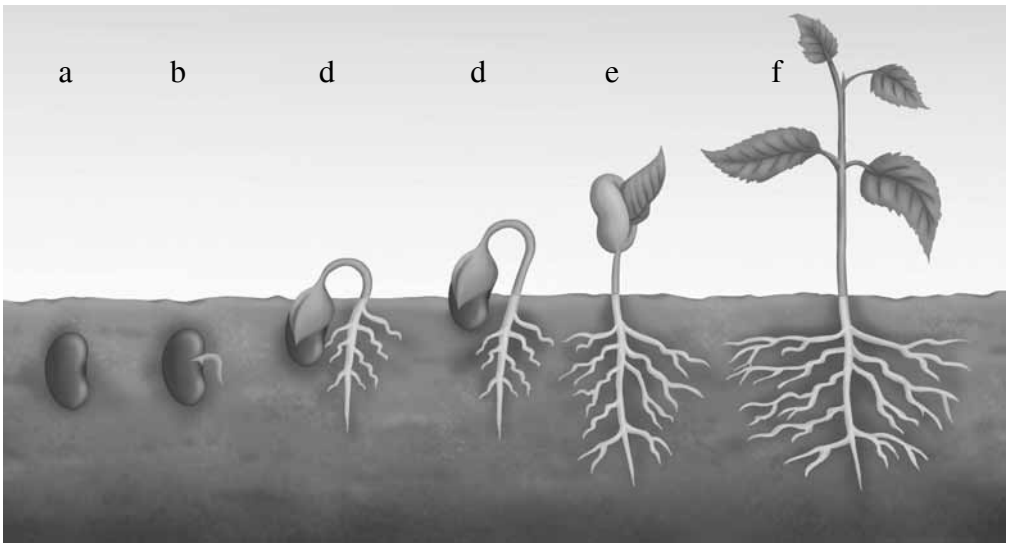
Worksheet 5-1

Q1. List the different methods of seed dispersal.

_____ _____

_____ _____

Q2. Identify the stages of germination of a seed.



a. _____ d. _____

b. _____ e. _____

c._____ f. _____

Q3. Draw fruits that have one seed, a few seeds, and many seeds.

Worksheet 5-2

Q1. Complete the table.

Vegetable	Part of a plant
	
spinach	
	stem
	
	tuber

	seeds
	
	
	
	flower

Unit 6: Materials

Students will learn that some non-living things are made of natural materials that come from plants, but others are man-made. Materials are used to make things and different materials have different properties. Students will learn that natural resources are useful and need to be preserved.

Lesson Plan 1 — Student Book Pages 53–55

Learning Outcomes

Students should be able to:

- explain that materials are used to make things.
- explain that different materials have different properties.

Introduction

Show the students a bicycle and point out that different parts are made of different materials according to their properties.

Main Teaching

- Explain the term material and ask the students to look at different types of materials.
- Ask the students if they can come up with different methods of sorting objects. List them on the board or on chart paper.
- Ask the students to work in small groups to find as many different ways as possible to sort the objects they were shown earlier.
- Ask the students to look through a glass and through a book. Explain that the glass is transparent and the book is opaque.
- Ask the students to identify some opaque and transparent materials around them.
- Explain that things like metal and wood are materials, but transparency and magnetism are properties.

Guided Practice

Divide the students into groups. Explain that you are going to sort the objects (shown earlier) into groups in as many different ways as you possibly can. Do one sorting together.

Independent Working

Now the students have a chance to create something! Bring different recyclable materials into the classroom and challenge students to think of a good use for them.

Wrap Up

Make a display of all the projects.

Homework/Going Further

The students are to do Activity 1 on page 60.

Lesson Plan 2 — Student Book Pages 55–58

Learning Outcomes

The students should be able to:

- give examples of different materials that are used for different purposes.
- explain how natural resources are useful and need to be preserved.

Introduction

Ask the students to draw a picture of something made from their favourite toy and write a sentence about its properties.

Main Teaching

- Talk about the properties of different materials.
- Discuss waterproof and absorbent materials and show an umbrella, gloves, a cloth, and a sponge.
- Show objects made of metals, plastics, and glass, and ask the students to notice the differences.
- Explain the difference between rigid and flexible materials, and show that plastic and rubber are flexible while glass and wood are rigid.
- Discuss the fibres that are used to make fabric.
- Explain that fibres are not very strong on their own, but they can be spun together into strong thread, string, or rope.
- Explain that the term natural resources refers to natural materials.
- Talk about the natural resources that are running out, for example, wood. This is the case with many natural resources.

Guided Practice

Do Activities 1 and 2 on page 61.

Independent Working

Ask the students to make a kite using suitable materials.

Wrap Up

Discuss Questions 4 and 5 in class.

Homework/Going Further

The students should write a paragraph about Activity 3 on page 62.

Worksheet 6-1

Q1. Tick the objects which are transparent.



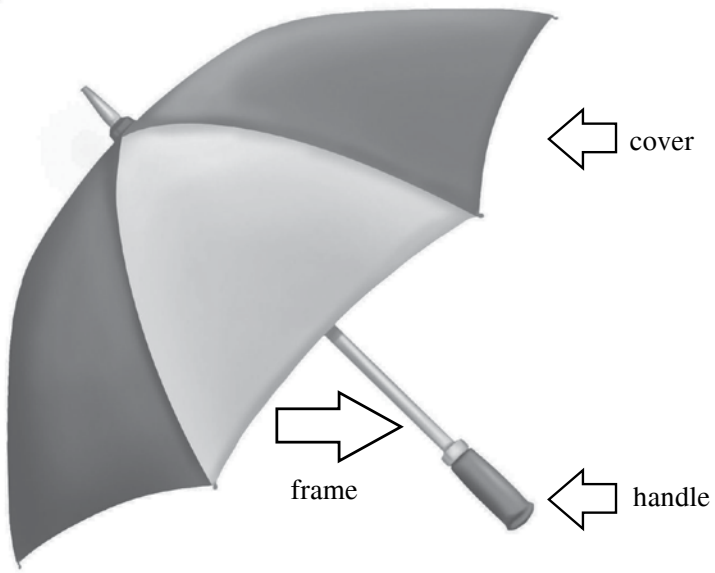



Q2. Write one difference between the following:

Transparent	Opaque
Magnetic	Non-magnetic
Insulators	Conductors
Rigid	Flexible

Worksheet 6-2

Q1. Look at the picture of the umbrella. Complete the table by filling in the correct information.

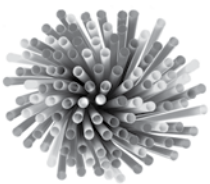


Material	Properties
frame	
cover	
handle	

Note – The upper part of the handle is an extension of the frame.

Q2. What materials are used to make these objects?

gloves



straws

bands

coin

book

shirt

Unit 7: Force

Students will learn that work means using force to move an object by pushing or pulling and there are many types of force. They will learn that gravity pulls everything down towards the Earth and friction is the force present when two surfaces rub against each other. They will realise forces can cause objects to start moving or come to a stop.

Lesson Plan 1 — Student Book Pages 63–64

Learning Outcomes

Students should be able to:

- explain that forces make things move, change direction, slow down, speed up, or change shape.
- identify forces as pushes and pulls.

Introduction

Invite a volunteer to ride a bicycle and ask the students to observe. Ask the students to refer to Discuss and Answer on page 65, and discuss it with a peer.

Main Teaching

- Explain that a force is the energy which changes the movement of body.
- Explain different types of forces.

Guided Practice

Divide students into groups and instruct them to perform the following activities one by one and to note their observation.

- Blow up a balloon, then let the balloon go.
- Open and close the door.
- Stretch a rubber band.
- Squeeze a sponge

Independent Working

Encourage students to share and discuss their observations with the other students.

Wrap Up

Do the Concept Check on page 65.

Homework/Going Further

The students should do Activity 3 on page 67.

Lesson Plan 2 — Student Book Page 65

Learning Outcomes

Students should be able to:

- explain that friction slows down moving objects.
- explain that gravity pulls everything down towards the Earth.

Introduction

Do Activity 1 on page 67.

Main Teaching

- Explain that friction is the force present when two surfaces rub together. It slows down moving objects.
- Ask students to roll a ball first on a marble floor and then on a carpet. Ask them to observe the difference: friction is greater on a rough surface.
- Drop a stone to show that an invisible force called gravity pulls everything down towards the Earth.
- Explain that when you let something drop, it falls downwards.
- Make a slope by resting one end of a piece of wood or cardboard on a book. Place a marble at the top of the slope and let it roll down. Now try other classroom objects in turn.
  - Which objects move most easily down the slope?
  - Which objects have most friction?
  - Which objects have least friction?

Guided Practice

Ask the students to discuss Question 3 on page 66 and write the answers in their notebooks.

Independent Working

- Ask the students to investigate whether toy cars go faster over a towel or over a marble floor. Make a prediction then experiment.
- The students should answer Question 2 on page 66.

Wrap Up

- The students should discuss in groups what they observed and record their observations. They should investigate the following:
  - Do you think friction is present?
  - If so, where?
- Answer Question 1 on page 66 and Question 4 on page 67.

Homework/Going Further

The students should use recycled materials to make a model of a boat that has low friction.

Worksheet 7-1

Q1. Say whether each force shown is a push or a pull:

Q2. Friction is acting on which part of the cycle?

Q3. Which force is used to stop the boat?

Q4. Which force is used write on a sheet of paper?

Unit 8: Electricity

This topic discusses that electricity is a form of energy and it is produced in the power station and can be dangerous. Students will learn batteries and cells are used to store electricity in small amounts. They will learn that electricity is useful and we must not waste it. They will differentiate between conductors and insulators. The topic also elaborates why circuits need to be complete and have a power source to work.

Lesson Plan 1 — Student Book Page 68

Learning Outcomes

Students should be able to:

- identify materials that conduct electricity as conductors.
- identify materials that do not conduct electricity as insulators.

Introduction

Do Activity 2 on page 72.

Main Teaching

- Explain the terms electricity and electric current.
- Explain how electricity is produced in a power station.
- Show some electrical wires and explain that electricity is brought to our homes through thick wires called cables.
- Explain that an electric current can flow only through certain materials known as conductors.
- Differentiate between conductors and insulators.
- Show the working of a simple circuit in a torch, or some battery-operated toys. Remove the battery and show that the torch/toy does not work.
- Explain that chemical energy is stored in a battery.
- Demonstrate how switches are used to control the working of lights and fans.

Guided Practice

Answer Question 2 on page 71.

Independent Working

The students should attempt to answer Question 3 on page 72.

Wrap Up

Answer Question 5 on page 71.

Homework/Going Further

The students should research how electricity is supplied from a power station to the different parts of the city, and make a model of their findings.

Learning Outcome

The students should be able to:

explain that a circuit needs to be complete and have a power source to work.

Introduction

Show the students a simple circuit. Point out the different parts of the circuit and explain how they work.

Main Teaching

- Demonstrate that an electric current can flow from a battery or cell. Explain that it passes through the wire that is a conductor to light the bulb.
- Show that the inner part of the wire (the conductor) is made of metal, while the cover on the wire is an insulator.
- Explain that a complete circuit is needed for an electric current to flow and a complete circuit is always closed, with no gaps.
- Show that if a circuit is not complete, electricity cannot jump across a gap. If there is a gap in the circuit, the bulb will not light up.
- Collect pupils' comments about the Discuss and Answer on page 70.

Guided Practice

Do the Concept Check on page 70.

Independent Working

The students should do Activity 1 on page 72. Objects to be used are coin, plastic scale, pin, eraser, rubber band, wire, steel scale.

Wrap Up

The students should share their results tables with their classmates.

Homework/Going Further

The students should answer Questions 3 and 4 on page 72.

Worksheet 8-1

Q1. Complete the following sentences by crossing out the wrong words.

i. A conductor/ insulator is a material that stops the flow of current.

ii. Conductors/ Insulators are materials that electrical current can easily pass through.

iii. The flow of electricity is an electric current/ circuit.

iv. A closed/open circuit is a circuit in which electrical current can flow.

v. The path that an electric current follows is a current/circuit.

vi. A conductor/ battery supplies energy to move electricity through a circuit.

vii. Conductors/ insulators are materials that electric current cannot pass through.

viii. Metal /Wood is an example of a material that is a conductor.

Q2. Tick (✓) the objects which are conductors.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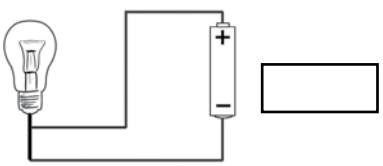
Q3. Tick (✓) the electrical circuits through which electricity will flow.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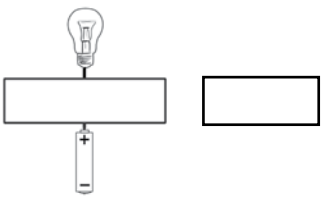
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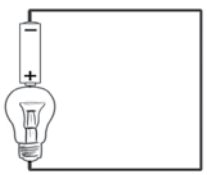
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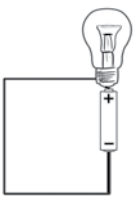
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Unit 9: Simple Machines

This topic is about the use of machines and tools to make work easier, and how humans and animals use force to move objects. The unit further intrduces the six types of simple machines.

Lesson Plan 1 — Student Book Page 73

Learning Outcomes

Students should be able to:

explain that in science, work means using force to move an object by pushing or pulling.

give examples of how humans and other animals use force to move objects.

Introduction

Do Activity 1 on page 78.

Main Teaching

- Explain that in the field of science, work means using force to move an object by pushing or pulling.
- Discuss different types of work in daily life, for example, lifting, loading, etc.
- Invite student volunteer to perform different activities using only their fingers:
  - open an empty paint can
  - move a heavy desk /heavy object
  - cut an apple
  - cut a piece of cloth
- Explain that although forces were applied, the objects did not undergo change and there was no motion, therefore the work was not done.
- Invite student volunteers to perform the same activities using appropriate tools.
- Emphasise that simple machines use force to make work a lot easier.
- Ask the students to read the text on page 73 and look at the diagrams.
- Ask about different machines used in their homes and in school.

Guided Practice

Ask students to work in pairs to perform the following activity:

Stand a set of bathroom scales against a wall. Lie down on the floor and put one foot against the scales. Push as hard as you can. Ask your partner to read the scale while you are pushing. Repeat the experiment with the other foot. Now do it with both feet. Note down the readings.

Now your partner should repeat the activities.

Independent Working

Encourage the pupils to draw and label pictures of tools and machines that help us work.

Wrap Up

The students should share their drawings with other students.

Homework/Going Further

Ask students to attempt Question 2 on page 77.

Lesson Plan 2 — Student Book Pages 74–76

Learning Outcome

Students should be able to:
identify the six types of simple machine.

Introduction

Do Activity 3 on page 86.

Main Teaching

- Introduce the six types of simple machine. Show the students pictures of different machines.
- Explain that anything that helps to make work easier is a machine.
- Discuss the different kinds of machine that we use at home and in offices and other work places.
- Hold up a spoon and tell the students it is a machine. Explain that a spoon, a knife, and a pair of scissors are examples of (simple) machines because they help to make our work easier.
- Cut a piece of cloth with a pair of scissors and explain that a pair of scissors is a simple machine.
- Show the students various types of lever and discuss their use in daily life.
- Show the students the simple wheel and axle from a toy car. Wind a piece of string round the groove of the wheel and attach a small object to the free end. Explain how the wheel and axle can be used to lift heavy things.
- Draw a diagram on the board to explain the action of a pulley.
- Show them different screws and explain how a screw works.
- Look at the pictures of complex machines on page 76.

Guided Practice

Guide the students to complete Activity 2 on page 78.

Independent Working

The students should complete Activity 4 on page 86.

Wrap Up

Students should attempt Question 1 on page 77.

Homework/Going Further

The students should do Questions 2 and 3 on page 77.

Worksheet 9-1

Q1. Give two examples of each type of simple machine.

wedge	_____	_____
inclined plane	_____	_____
screw	_____	_____
lever	_____	_____
pulley	_____	_____
wheel and axle	_____	_____

Q2. Name these simple machines:

Q3. What types of simple machines do you see in the pictures?

a.

b.

c.

d.

The slide is _____

The shovel is _____

The broom is _____

The screwdriver is _____

Unit 10: Sound and Light

Pupil will learn that sound and light are all around us and sounds are made by vibrations which travel in waves in all directions through the air, solids, and water. They will learn the safety rules about loud sounds. This topic links the concept of light to the previous stage. Shadow formation is the interesting part of this topic.

Lesson Plan 1 — Student Book Pages 79–80

Learning Outcomes

The students should be able to:

- explain that sounds are made by vibrations.
- explain that sound travels in waves in all directions.
- explain that sounds can travel through air, solids, and water.

Introduction

Do Activity 1 on page 84.

Main Teaching

- Explain that every sound we hear is caused by the movement of an object. Things that produce sound shake to and fro. These shaking movements are called vibrations.
- Explain that vibrations cause tiny particles of air to bump into each other. This movement is called a sound wave.
- Discuss the sounds produced by different objects.
- Explain that sound needs a medium to travel in; we cannot hear sounds from outer space as there is no air to vibrate.
- Explain that sound travels at different speeds through different materials.
- Explain that sound travels best through solids.

Guided Practice

Ask the students to investigate whether sound travels better through solids, liquids, or gases. Help them come up with experiments to aid their investigations.

Independent Working

The students should do Activity 2 on page 84.

Wrap Up

Discuss the 'Do You Know?' on page 80. Explain that sounds can travel through water.

Homework/Going Further

The students should draw five objects that produce sound.

Learning Outcomes

Students should be able to:

- distinguish between sounds that are soft or loud, high or low.
- explain that sound and light become less intense as they travel away from a source.

Introduction

Review the previous class teachings by asking students questions about how sound travels.

Main Teaching

- Explain that sound that is pleasing to the ears is music, but sounds which we find unpleasant are called noise.
- Discuss how musical sounds can be loud or soft. For example, a guitar string plucked hard makes a loud sound, while a guitar string plucked gently makes a soft sound.
- Explain that a loud sound is produced by a long vibration, and a soft sound is produced by a shorter vibration.
- Explain that noise is any sound that is unpleasant. Ask the students to name some unpleasant sounds.
- Discuss noise as a form of environmental pollution.

Guided Practice

Ask the students to work in pairs to make a guitar/drum using recycled materials.

Independent Working

The students should do Activity 1 on page 84.

Wrap Up

Discuss the 'Do You Know?' on page 81.

Homework/Going Further

Ask the students to make a list of 5 soft and 5 loud sounds.

Learning Outcomes

Students should be able to:

- explain that light travels in straight lines at very high speeds.
- explain how the position of an object in relation to the source of light and the surface onto which a shadow is cast affects the size of the shadow.

Introduction

Do Activity 3 on page 84.

Main Teaching

- Explain that we cannot see things in the dark, but we can see things in the light.
- Explain that light is very important, and the main source of light is the Sun.
- Explain that light is a form of energy that helps us to do many things.
- Explain that light travels in the form of waves.
- Explain that light travels faster than sound. This is why we see the lightning before we hear the thunder during a thunder storm.
- Roll a newspaper to form a hollow tube. Light a candle and place it on the desk. Ask a student to look at the flame through the tube. Bend the tube to demonstrate that light cannot go round corners. It travels in straight lines.
- Show the students different types of materials through which light can and cannot pass.
- Explain the formation of shadows with the help of transparent, translucent, and opaque surfaces.
- Discuss luminous and non-luminous objects.
- Explain that in the morning and evening, when the Sun is low over the horizon, shadows are long, while at midday, when the Sun is overhead, shadows are short.

Guided Practice

Do Activity 4 on page 84.

Independent Working

Ask the students to make a list of 5 luminous and 5 non-luminous objects.

Wrap Up

Students are to answer Question 2 on page 83.

Homework/Going Further

The students should attempt Question 3 on page 84.

Worksheet 10-1

Q1. Choose the correct answers.

i. Energy that you hear is called _____.

a. light
b. electricity
c. sound
d. heat

ii. The energy that enables us to see is _____.

a. heat energy
b. electricity
c. light energy
d. wind energy

iii. Things that give out _____ are called luminous.

a. heat
b. electricity
c. sound
d. light

iv. It takes just _____ for the Sun's light to travel 146 million km to reach the Earth.

a. 2 minutes
b. 4 minutes
c. 6 minutes
d. 8 minutes

v. In the morning and evening, when the Sun is low over the horizon, shadows are _____.

a. long
b. short
c. small
d. dark

Unit 11: The Earth

This lesson is about the different kinds of rocks found on the Earth's surface and underground which contain minerals. They will learn that the Earth is made up of different layers and the Earth's surface is cool but the centre is very hot. Pupils will explore how the different types of soil are formed by erosion and action of the weather on the rocks.

Lesson Plan 1 — Student Book Page 87

Learning Outcomes

Students should be able to:

- identify the different layers that make up the Earth.
- explain that the Earth's surface is cool but the centre is very hot.

Introduction

Show the students a representation of the layers of the Earth made from a ball of play dough of different colours.

Main Teaching

- Ask the students to read the text on page 87 and observe the labelled diagram of the Earth.
- Discuss the different layers of the Earth.
- Show the students a globe and discuss the characteristics of the Earth.
- Show the students a large map and explain that we live on the Earth's crust. It has mountains and valleys, deserts, and plains. It also has oceans and seas. In some places the Earth's crust is very thin; in other places it is quite thick.
- On the map, show that three-quarters of the surface of the Earth is covered with water. There is water in the seas and also in the air. In many places the Earth is covered with soil and plants.
- Show a picture of a volcano and discuss.

Guided Practice

Show the students a video https://www.youtube.com/watch?v=eXiVGEEPQ6c and discuss the layers of rocks.

Independent Working

Ask the students to list the main characteristics of the Earth.

Wrap Up

Do the 'Discuss and Answer' on page 87.

Homework/Going Further

The students should do Activity 1 on page 94.

Learning Outcomes

The students should be able to:

- name different kinds of rocks.
- explain that some rocks contain minerals.

Introduction

Ask the students to show the rock samples they have collected.

Main Teaching

- Explain the term rock.
- Explain that there are different kinds of rocks.
- Discuss the uses of rocks.
- Look at the pictures of minerals on page 89 and explain that different rocks have different uses. For example, granite is hard: it is used to make pillars and roads.
- Define minerals and explain how they are formed.
- Look at the pictures on page 89 and talk about the uses of different minerals.
- Discuss the differences between rocks and minerals.
- Look at the pictures on page 89 and discuss precious stones and their uses.

Guided Practice

Draw a Venn diagram on the board. Label one side 'Minerals' and the other side 'Rocks.' Ask student volunteers to add information about rocks and minerals. To contrast, they can write in the parts of the circles that do not overlap. For similarities, they can write in the parts of the circles that overlap.

Independent Working

The students should attempt Question 3 on page 93.

Wrap Up

Students are to answer Question 6 on page 93.

Homework/Going Further

The students should do Activity 3 on page 94.

Learning Outcomes

The students should be able to:

- explain how soil is formed by erosion and the action of the weather on rocks.
- identify different kinds of soil.

Introduction

Ask the students about their observations of Activity 3 on page 94.

Main Teaching

- Ask the students to look at the picture on page 90 and discuss the damage caused by an earthquake.
- Discuss the 'Do You Know?' on page 90.
- Discuss the differences between weathering and erosion.
- Explain how rocks are broken up into small pieces over many years.
- Show some types of soil and explain that these are formed by the weathering of rocks.
- Explain that erosion takes place when weather and water change rocks.
- Show a picture of a soil profile and talk about the components of soil.
- Discuss the importance of humus for vegetation.
- Talk about the differences between loam soil, sandy soil, and clay.
- Explain that the best soil for plants to grow in contains air, water, mineral salts, and humus.
- Show the students some earthworms and explain that these organisms turn the soil over and increase the fertility of the soil.

Guided Practice

Help the students to list the differences between loam soil, sandy soil, and clay.

Independent Working

The students should answer Question 3 on page 93.

Wrap Up

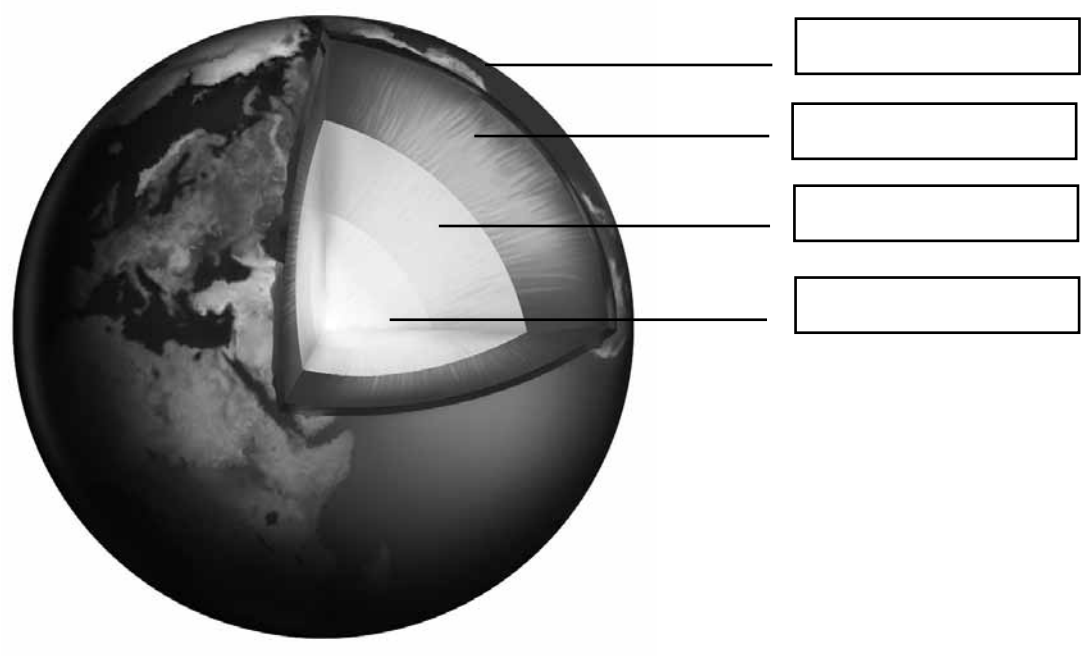
Students are to answer Questions 1 and 2 on page 92.

Homework/Going Further

The students should answer Questions 1 and 2 on page 95.

Worksheet 11-1

Q1. Label each layer of the Earth and then fill in the blanks.



The _____ is where most of the Earth's heat is stored.

The _____ is where we live and where the oceans are found.

The _____ is made of molten metal.

The _____ is the layer outside the core.

We live on the _____

Q2. Why is the outer core of the Earth made of hot liquid (molten) rock?

_____

_____

_____

_____

Worksheet 11-2

Q1. Sort the following and write them in the correct column.
gold, granite, silver, iron, limestone, chalk

Minerals	Rocks

Q2. How is soil formed?

Q3. What are volcanoes?

Unit 12: The Solar System

This topic is about the Earth and the eight planets of the solar system which go around the Sun and that the Moon is a sphere which goes around the Earth. Students will also learn that the light of the Moon is really the reflected light of the Sun. They will review the formation of seasons. Students will learn that the stars are huge balls of very hot gases and the Moon is a satellite of the Earth which appears in different phases.

Lesson Plan 1 — Student Book Pages 96–97

Learning Outcomes

Students should be able to:

- explain that Earth is one of the eight planets of the solar system.
- explain that the planets orbit the Sun.

Introduction

Draw a diagram of the solar system on the board and invite students to share whatever facts that they already know about the planets and the solar system.

Main Teaching

- Explain which planet is closest to the Sun, which planet comes next, etc.
- Discuss some facts about the planets and show the students a chart of the solar system.
- Explain that the eight known planets and their moons, along with other heavenly bodies, orbit the Sun.
- Explain that an orbit is the regular path of a planet around the Sun.
- Explain that the Earth is one of the eight planets in the solar system.
- Explain that planets do not crash into each other because each travels along a different orbit.
- Discuss how the planets closer to the Sun have smaller orbits, and the orbits get larger with increasing distance from the Sun.
- Explain that when Earth takes 365 days to travel around the Sun, it is known as one year.
- Explain that since Mercury is the closest planet to the Sun, its revolution only takes 88 days, Meanwhile Neptune takes 165 years and Pluto takes 248 years to complete one revolution.
- Discuss the ‘Myth vs Fact’ on page 96.

Guided Practice

Choose nine students to come to the front of the room and give each one a ball/plate. Give one student a torch to be the Sun. Ask the students which planet is closest to the Sun, and ask the student representing Mercury to stand next to the student with the torch. Continue to place the rest of the planets in order.

Independent Working

Ask the students to draw a diagram of the solar system.

Wrap Up

Do the 'Discuss and Answer' on page 97.

Homework/Going Further

Ask the students to choose one feature to the solar system to research.

Lesson Plan 2 — Student Book Pages 97–98

Learning Outcome

Students should be able to:

- explain that stars are huge balls of very hot gases; they form constellations.
- explain how day and night are caused by the rotation of the Earth on its axis.

Introduction

Talk about the students' daytime and night-time activities in order to establish the difference between the two different times of a day.

Main Teaching

- Show the position of Pakistan on a globe and state that it is now daytime in Pakistan. Ask which part of the Earth is dark.
- Show the students Australia on the globe and ask where it will be daytime when it is night in Australia.
- Using a ball and a candle, demonstrate how day and night follow each other.
- Explain that the Earth takes 365 days to revolve round the Sun and this movement causes the changes of season.
- Explain that we cannot see the other stars during the day because the Sun is very bright, but at night our side of the Earth is dark so we can see the stars in the sky at night.
- Explain that we can also see the other planets when it is dark.

Guided Practice

Answer Questions 1 and 2 on page 101.

Wrap Up

Discuss the 'Do You Know?' on page 98.

Homework/Going Further

The students should do Activity 2 on page 102.

Learning Outcomes

Students should be able to:

- explain that the Moon is a satellite of the Earth; it has different phases.
- explain that man-made satellites give us information about space and the atmosphere.

Introduction

Do Activities 1 and 2 on page 103.

Main Teaching

- Explain that the stars are huge balls of burning gases. The Sun is the nearest star to the Earth, therefore it looks the biggest and brightest of all the stars.
- Explain the differences between the Sun, the Moon, and the planets.
- Explain that astronomers are scientists who study space, the planets, and stars. They use telescopes to study planets, stars, and other objects in space.
- Explain that the Hubble Space Telescope is a satellite that orbits the Earth. It can see farther into space than telescopes on the ground.
- Explain the difference between a planet and a moon: a planet orbits the Sun, while a moon orbits a planet.
- Explain that a moon is a natural satellite.
- Explain the term man-made satellite. They are very complicated machines that orbit the Earth. There are over 2500 man-made satellites in space today.
- Explain that satellites help us make discoveries find out about the solar system. Also, the telephone connections around the world are made with the help of satellites.
- Explain that Mercury and Venus do not have moons; the Earth has only one moon; some of the other planets, like Saturn, have as many as 17 moons.

Guided Practice

Answer Question 5 on page 102.

Independent Working

Ask the students to read the moon facts on page 100.

Wrap Up

Students are to answer Question 3 on page 101.

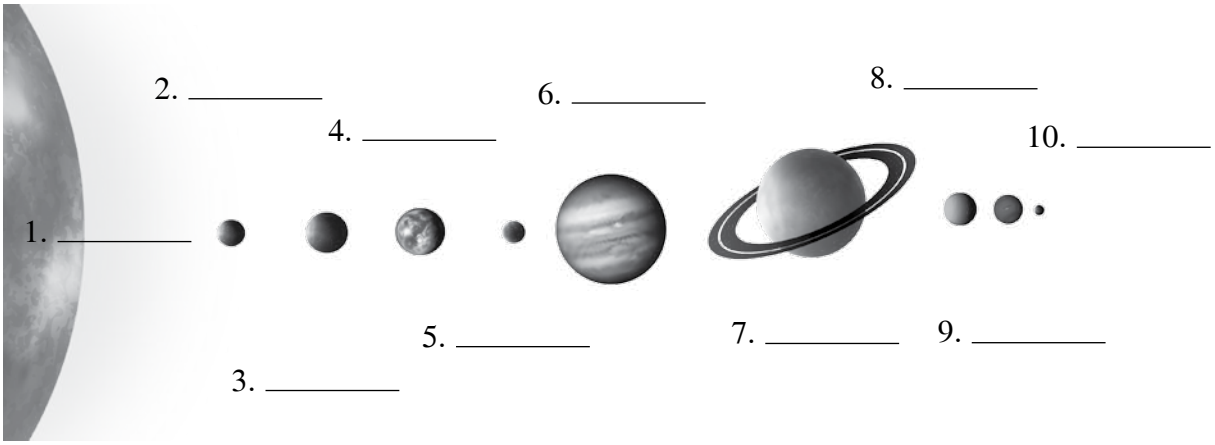
Homework/Going Further

Ask the students to do Activity 4 on page 102.

Worksheet 12-1

Q1. Label the planets of the solar system and draw their orbits.

Jupiter, Neptune Venus, Earth, Sun, Saturn, Uranus, Mars, Mercury



Q2. Choose the correct answers.

i. Which planet is the farthest from the Sun?

a) Neptune b) Earth

c) Jupiter d) Mars

ii. A day and night on Earth lasts _____ .

a) 6 hours b) 12 hours

c) 18 hours d) 24 hours

iii. Astronomers use _____ to study space, planets, and stars.

a) microscopes b) telescopes

b) binoculars d) glasses

iv. Which planet has the most visible ring?

a) Neptune b) Earth

c) Jupiter d) Mars

v. The nearest star to the Earth is _____ .

a) the Moon b) the Sun

c) Mercury d) A dwarf planet

Answers

Unit 1

Discuss and Answer

Which organs and organ systems are these children using? **Discuss. Talk about the five senses and which are being used. Talk about any other organs/systems that they can remember. You can return to this task at the end of the unit if you wish .**

Concept Check

1. Which sense organ (or organs) would be involved in sensing these changes?
   i. While you are sleeping there is a sudden change in temperature. **The skin would feel the change in temperature (and the brain might wake you).**
   ii. While searching in a bag for a book, a pin pricks your finger. **The skin would feel the pin prick and the brain would process what had happened.**
   iii. While you are in your bedroom, someone comes through the front door of the house. **The ears would hear the person entering. The brain would process the sounds and interpret them.**
2. Try to write a short sentence while keeping your eyes closed and covered with your other hand. What was the effect on your writing? **Discuss what happens when the students attempt the task.**

Concept Check

There are many parts and systems in the body. Match the system or organ to its function.

- skeletal system gives the body a framework and protects parts of it
- brain the control centre of the body
- muscular system works closely with the skeletal system to allow us to move many parts of the body
- digestive system carries food through the stomach and other channels

Exercises

1. Choose the correct answer.
   i. Which organ controls all the systems and organs in the body? **b. brain**
   ii. Which two sense organs do we use when we cross a road? **a. eyes c. ears**
   iii. Which waste product does the skin get rid of? **b. sweat**
   iv. Which organ tells us what we are seeing? **c. brain**
   v. What does the blood travel in, to move around the body? **b. veins and arteries**
2. Match each body part to the correct system.
   i. muscles d. muscular system
   ii. bones c. skeletal system
   iii. arteries e. circulatory system
   iv. nerves a. nervous system
   v. stomach b. digestive system

3. Which words do not belong in each list? (There may be more than one word!)
   i. skeletal system: skull, ~~eye~~, spine, ~~lung~~, kneecap, ~~heel~~
   ii. respiratory system: nose, ~~nerve, heart,~~ windpipe, lung
   iii. circulatory system: vein, ~~ear~~, artery, blood vessel, heart, ~~rib~~
   iv. digestive system: liver, ~~hip~~, stomach, intestine, brain
4. Answer these questions.
   i. Which organs make up the respiratory system? **The nose, windpipe, and lungs make up the respiratory system.**
   ii. Which organ pumps blood to all parts of the body? **The heart pumps blood to all parts of the body.**
   iii. How does the framework of bones and muscles help us? What would happen if we did not have this framework? **The bones and muscles help us to stand and move. The support and protection is provided by the skeleton and the movement, strength, and framework is provided by the muscles. We would not be able to move, and we would be like a blob if we did not have them.**
   iv. Does blood flow to all parts of the body? How can one prove this? **Yes. We can tell by feeling the pulse around the body. Also, if we get a cut on the body, we bleed!**
   v. Do all people have all five senses? **No. Most people have all five sense organs, but some people may have one or more sense that does not function. Example the deaf or blind. Also, people can have issues with the function of their skin, their sense of smell, or their ability to taste, but these are lesser well-known.**
5. How many breaths do you take in a minute? When does your breathing rate increase? Why does it increase? **Take estimates/guesses. Discuss when our breathing changes: size, exercise/activity, emotions, etc. Get them to feel their pulse rate and that of others, before and after exercise. Discuss the contents of the table.**

   The breathing rate increases when you exercise. It increases because the heart pumps faster to increase the blood supply to the muscles.

   Talk about these questions with your teacher.
   i. What does the table show us? **The table shows us that average breathing rates differ based on ages. Our breathing rate declines as we grow up.**
   ii. What do we learn from the table? **As our lungs grow, we have more room in them to get the same amount of air in them in fewer breaths.**
   iii. Can you see where you come in the table? **Students will be between preschool children and older children.**
   iv. Is the information in the table correct? How can you prove this? **Yes, the information in the table is correct. We can prove this by counting how many breaths we take in a minute, and by getting others from each age category to take part in a test**.
   v. What is the breathing rate of someone who has just exercised? Is it the same as the rate while at rest? **The breathing rate of someone who has just exercised is faster than when they are at rest.**

6. How fast does your heart pump blood? Each time your heart beats, it pumps blood through your arteries. Each push is called a pulse. You can feel your pulse on any artery which is close to the surface of your skin. Make a chart to show the pulse rates of five children in your class. Measure the rates before exercise and after exercise.

   Students should try and take their own pulse rate and the pulse rate of others. They might need to try a few times to be able to do it. Once they are able to take a pulse, they should record the results before and after exercise in a table.

7. Think about it!
   i. Which is the most important—skeletal, digestive, nervous, circulatory, respiratory, or muscular system? Note down your answer. Discuss all the responses in class. **The brain is the key organ and without it the other systems could not function. The systems are all important, however, some people live with reduced function of certain systems. Encourage students to give reasons why each of the systems mentioned is importan, and to explain their choice if they choose one as being the most important.**
   ii. Which sense is most important? Which sense could you do without? Which sense could you not do without? **Students should discuss how people would be affected by the loss of each sense. People do live without certain senses. What would they find it hard to do? What dangers would they face? What would their life be like? For example, without the sense of touch, a person would not be able to feel cold, heat, or pain, and their body might suffer a great deal.**
8. Label the systems and their organs

   Answer in the book.

Unit 2 Health and Safety

Concept Check

Put a ✓ next to all the things that will help your body to keep working well. Put a × next to the things that could harm your body.

1. regular exercise ✓
2. eating lots of sugary snacks ×
3. running in a kitchen when someone is cooking ×
4. playing outside in the fresh air ✓
5. climbing on furniture in your house ×
6. using faulty electrical goods ×

Discuss and Answer

When crossing busy roads, we must pay attention and use our eyes and ears. What can distract us from paying attention when crossing the road? Share your ideas with your class and come up with ways to cope with distractions. **The students should discuss this in small groups and then each group should share one idea with the class. The groups should then try to find solutions to each of the distraction, and then share these with the class.**

Concept Check

1. Fill in the blanks.
   i. When walking on a busy road, walk along the **pavement**.
   ii. Look carefully in **both** directions before crossing the road.
2. Put the labels on this plate to show how much of each type of food a balanced diet includes: bread, rice, and grains: meat, fish, nuts, and eggs: milk and dairy products, fruit and vegetables: fats and sugars

   Answer in the book.

Exercises

1. Choose the correct answer.
   i. What is a balanced diet? **b. eating the right amounts of healthy food**
   ii. What do we need to stay healthy? **d. all of these**
   iii. Why should we never run with sharp instruments? **c. They could cut us.**
   iv. What is the right thing to do in the playground? **c. Look out for younger children.**
   v. In a balanced diet, which two types of food should you eat the most of? **c. grains, fruits, and vegetables**
2. Answer these questions.
   i. What makes a balanced diet? **A balanced diet is eating a wide variety of foods in the right amounts and having the right amount of food and drink to achieve and maintain a healthy body weight.**
   ii. Which types of foods are healthy? **Pupils may suggest a range of foods. Grains, fruits, and vegetables are very good for the body and can be eaten in fairly large quantities. Fats should be consumed in smaller quantities but are part of a healthy diet. Sweets, chocolates, and highly processed foods are not healthy. Sharing the pupils' choices and having a discussion would be beneficial here.**
   iii. Why should we eat a balanced diet? **We need to eat a balanced diet to stay healthy.**
   iv. How much sleep should an eight-year-old have every night? **An eight-year-old usually needs about ten hours of sleep every night.**
   v. Why do we need to exercise regularly? What are some exercises you can do to stay healthy? **Exercise makes the bones and muscles strong. It also leads to better health and it makes people feel good! Pupils may suggest a range of sports or particular exercises.**
3. All these things are useful. If they are not used properly, they can harm you. Try to find out what they are. Here are some pictures to help you:
   i. **MEDICINE**
   ii. **MATCHES**
   iii. **KNIFE**
   iv. **SCISSORS**
   v. **FIREWORKS**

4. Find the odd one out in each list. Explain your choice.
   i. chicken, lamb, beef, **potatoes,** salmon, cod
   ii. lettuce, spinach, cabbage, **cheese,** aubergine, okra
   iii. milk, yoghurt, butter, cheese, **bread,** ice cream
   iv. apples, oranges, apricots, **corn,** plums, mangoes
5. Are there any rules in your school? What are they? Make a list of three school rules you know. Find out what the other rules are. **Pupils should share their knowledge of the rules and write down three of them.**
6. Think about it!
   i. Choosing one item at a time, think about the things shown on page 15. How are they dangerous? How might they cause accidents? **Pupils should discuss the objects in turn: medicines can be poisonous, sharp objects could cut us, we can burn ourselves or cause a fire when using a cooker, oil in a plastic bottle would make you ill if you drank it, hot oil could burn you, oil spills can make surfaces slippery and cause someone to fall, hot drinks can burn us so we should be careful around them, etc.**
   ii. Choose one of the foods from page 13. Draw a picture and write a few sentences about it in your notebook. **Pupils can choose to draw any food. They should write a few sentences about it. Some ideas: the amount that should be eaten, what it tastes like, where it comes from, which type of food it is, etc.**
   iii. What happens to people who have an accident? Where are they taken? Who looks after them? **When there is an accident, the injured people are taken to hospital – sometimes in an ambulance. The fire service puts out fires and rescues people. The police may clear the area or take other action to keep people safe.**
7. Tell your teacher in your own words:
   i. about an accident that took place and how you helped.
   ii. about the importance of getting enough sleep.
   iii. about how to stay healthy.

The correct responses have been studied in the lessons. Students should be able to say a few sentences about one or more of the topics.

8. This sign gives you a warning. What might it be warning you about? What does the sign tell you might happen? Make up your own warning sign. **The sign is triangular – triangular signs are usually warning signs. This one warns of a danger of death. What things might people need to be warned about? Collect some ideas (fire, wild animals, poison, falling rocks, deep water, etc.) before they draw their sign.**

Fun pages

1. Solve this crossword puzzle.

1 NOSE 2 EARS 3 LUNGS 4 HEART 5 TONGUE 6 EYES

Which word do you get in the shaded column? **ORGANS**

2. Find these words (and one other 'body' word) in the square.

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

3. We can move! Which letters of the alphabet can you make using your whole body? Can you spell out some words if you work in a group?

   Teacher's note: this works really well, and is much easier, if students have space to lie flat on the ground! **Discuss and practise before allowing groups to make words.**

Unit 3 Living on Earth

Concept Check

Complete these sentences using the correct word from the list at the end of each one.

1. **All** living things breathe.
2. Fish **breathe** through **gills**.
3. Leaves take in **air** through **stomata**.

Discuss and Answer

How have the following animals adapted? Where do they live? Talk about the parts of their body which they help them to survive in their habitats. **The pupils should be able to suggest ideas about the animals and plants shown in the pictures. The teacher can prompt them with questions: e.g. What parts of a cactus help to protect it from animals that might want to eat its juicy stems? The camel stores fat in its hump and can use this extra energy store when needed, its hooves are designed to help it walk on sand, it has long eyelashes to help keep the sand out of the eyes. The cacti store water in their thick stems, the spiky thorns (leaves) keep animals away and help collect dew, they do not need much water to grow.**

The fish has scales and a tail to help it swim, gills to allow it to breathe under water. The lily has wide leaves that can float on the water and absorb sunshine, the frog can swim well because of its webbed feet. The polar bear blends into the snowy environment, It has strong legs, sharp teeth, and claws to help it catch its prey. The seal has a thick layer of fat to keep it warm in cold water, Its body is designed to help it swim fast in water. The cheetah can run very fast, it can blend in to the surrounding environment, the monkey can use its tail as an extra limb and for balance, its hands and feet can grip branches well.

Concept Check

Match the definition with the word. Write them out in your book.

- habitat: the natural environment in which a particular animal or plant lives
- adaptation: when plants and animals have developed special parts that help them to survive in their environment
- breathing: the process of taking air into and out of the body
- reproduction: the process by which parent plants and animals produce their young

Discuss and Answer

Discuss these pictures. How is the ecosystem being disrupted? Which animals and plants will be affected? **Pupils should be able to spot the issues in the pictures and may suggest the negative effects on a range of specific plants/animals – including humans. The rubbish in the water may harm the living things that live in and around the water by poisoning them, blocking their access to the light, cutting or otherwise harming them. Clean water is important to all living things. They should be able to identify that many small birds and animals will lose their home/food source when a tree is cut down. Trees are important to all living things.**

Exercises

1. Choose the correct answer.
   i. Plants take in water through this part. **d. roots**
   ii. Which of the following is adapted to live underwater? **d. fish**
   iii. The natural home of an animal or plant is called its: **a. habitat**
   iv. To survive, an animal needs a habitat that contains **b. food, water, air, and shelter.**
   v. Which of these is a habitat of the camel and the cactus? **a. desert**
2. Fill in the blanks with these words.
   i. **Birds** and **snakes** lay eggs.
   ii. A cat gives **birth** to **kittens**.
   iii. Plants take in air through tiny holes in their **leaves**.
   iv. Plants do not have **sense** organs.
   v. Babies grow into **adults**.
3. Re-arrange the letters to make three living and three non-living things.

   Living things: SUNFLOWER GIRAFFE MONKEY

   Non-living things: BALLOON TRACTOR BASKET

Make up some anagrams of your own. Ask others to work out the answers. **Pupils should be given the chance to try to make their own anagrams and solve the ones created by their classmates. It will help them to write down the word first and then jumble it up.**

4. Answer these questions.
   i. What do animals use their sense organs for? **Animals use their sense organs to search for food and to sense danger.**

ii. What will happen to an animal if it does not eat or drink? **If an animal does not eat or drink, it will die.**

iii. Which organ helps a fish to breathe? **Gills enable a fish to breathe.**

iv. Which flowers show us that plants move? How do they move? **Sunflowers show us that plants move by turning to the Sun. The petals of the morning glory plant open every morning.**

v. What happened to the dinosaurs and the dodo? **They became extinct.**

vi. What is an ecosystem? **An ecosystem is the living things in a particular place interacting with each other and with the non-living components (weather, sun, soil, climate, atmosphere).**

5. Think about it! You may need to use books or the internet to find the answers.

i. Which grows to full size the quickest? Put the following in order, with the quickest first.

fly rabbit cat man elephant

ii. Which lives the longest? Can you match the ages with the animals?

Animals	chimpanzee	tiger	elephant	blue whale	mouse
Years	**55**	**20**	**78**	**110**	**5**

6. Tell your teacher in your own words:

i. about what living things need in order to live.

ii. about pets and how long they live.

Students will use their own words.

7. Are these things living or non-living? How can you tell?

Write L (Living) and NL (Non-Living) in the blank spaces.

L ant, mushroom, child, plant, snail, cat

NL clouds, book, bag, flag, clock

Discuss and Answer

Have you seen a frog? Talk about it in your class.

Unit 4 The Life Cycle of Animals

Concept Check

Tick all of the true statements.

Baby birds: hatch from eggs ✓

can fly ×

have to be fed ✓

are blind ✓

have no feathers ✓

stay in the nest ✓

Exercises

1. Choose the correct answer.
   i. What does a life cycle show? **c. all the stages of an animal's life**
   ii. Which of the following is not a stage in the life cycle of a frog? **c. pupa**
   iii. An adult butterfly emerges from a **b. chrysalis.**
   iv. Where do birds build nests? **d. all of them**
   v. Which type of animal has the stages eggs, fry, adult in its life cycle? **a. fish**
2. Fill in the gaps using the words given below.
   i. Birds lay **eggs** in a **nest**.
   ii. Frogs lay **eggs** in **water**.
   iii. Caterpillars turn into **butterflies**.
   iv. Tadpoles develop into **frogs**.
   v. Fish eggs first develop **fry** into before turning into fish.
   vi. Baby birds cannot **see** or fly. They have no **feathers**.
3. Mark these sentences with × or ✓.
   i. A frog's eggs are called spawn. ✓
   ii. Birds hatch out of eggs. ✓
   iii. Baby birds can see well when they are born. ×
   iv. Young frogs are called fry. ×
   v. Caterpillars hatch out of eggs. ✓
4. Circle the stage which does not belong to each life cycle.
   Bird: (**tadpole,**) egg, chick, chicken,
   Insect: egg, caterpillar, (**puppy,**) pupa, chrysalis
   Frog: (**fry,**) egg, tadpole, frog
5. Label the stages in the life cycle of a fish.
   Answer in the book.

Unit 5 The Life Cycle of a Plant

Concept Check

1. Tick the statements that are correct and put a × next to any that are wrong.
   a. Seeds are always the same size. ×
   b. Some seeds are carried away by the wind or water. ✓
   c. All fruits have many seeds. ×
2. What are the different ways a seed can be planted? **Seeds can be planted in many ways. When a fruit is broken open, or dries up, its seeds may fall into the soil near the plant and start to grow. Many seeds are scattered by the wind or carried by water; they grow when they land on the ground. Some seeds are collected by humans and planted in the soil. Seeds can germinate after being excreted by animals or buried by animals.**

Exercises

1. Choose the correct answer.
   i. What do flowers grow into? **c. fruit**
   ii. Which of these are roots? **b. carrots**
   iii. What does a seed need to grow? **c. good soil, water, sunlight, and air**
   iv. Which of these has the largest seed? **a. mango**
   v. Which of these vegetables is really a fruit? **a. tomato**
2. Find the odd one out in each list below.
   i. **ginger,** potato, onion, sweet potato
   ii. cherry, peach, mango, **orange**
   iii. **rock,** water, sunlight, air
   iv. carrot, turnip, radish, **cauliflower**
   v. lettuce, turnip, **tomato,** potato
3. Match the following.
   a) tomato:fruit
   b) carrot:root
   c) pea:seed
   d) lettuce:leaf bud
   e) cauliflower:flower bud
4. Order the steps of the life cycle of a plant by numbering them correctly.
   1. The seed germinates.
   2. The plant grows.
   3. The plant flowers.
   4. The flower produces fruits.
   5. The fruit releases seeds.
   6. A new life cycle begins.
5. Answer these questions.
   i. What are these different ways in which seeds can be dispersed? **Seeds are dispersed in numerous ways: by wind or water, by explosion of seed heads or pods, by being eaten and excreted by animals, buried by animals, or by being collected and planted by humans.**
   ii. In which part of a plant do seeds grow? **Fruits contain seeds.**
   iii. What does a seed need to grow into a plant? **Seeds need soil and enough water, sunlight, and air to grow into a plant.**
   iv. What kind of vegetables are peas? **Peas are seeds that grow in pods.**
   v. What are underground stems called? **Underground stems are called tubers.**
6. In a table like the one shown below, list the names of vegetables under the headings.

Students should transfer the names of the vegetables shown in the unit to the table.

7. Think about it! You want to grow your own vegetables at home. Your parents say you can use a small plot, 3 square metres in area.
   i. Design your garden. Draw some pictures to show what it will look like, and where it will be best placed.
   ii. Make a list of things to do to prepare the soil for planting.
   iii. Make a list of the tools you will use.
   iv. Make a list of the plants you want to grow.

   Students should plan their gardens and share their plans with the class.
8. Tell your teacher in your own words:
   i. about the vegetables which you eat and do not eat.
   ii. what you know about the life cycle of a plant.

   Students are to use their own words.

Fun pages

1. Who am I? Identify the animal or part of an animal from the clues below.
   - I live in water. I have scales and fins. I have a tail. I breathe through gills. I am a **fish**.
   - I live on land and in the water. I use my webbed feet to swim and my leg muscles to jump. I catch flies with my long, sticky tongue. I lay eggs. My babies do not look like me. I am a **frog**.
   - I am not a nose, but I help creatures to breathe under water. I am **gills**.

Identify the parts of plants from the clues below.

- I am a vegetable. Gardeners call me a leaf bud. I am usually eaten raw, not cooked. I am **lettuce**.
- I am a green vegetable. Really, I am a fruit. Cooks put me in a curry to make it hot, hot, hot! I am **a chilli**.
- I am so small you cannot see me. I help a leaf to breathe. I am holey! I am **stomata**.

Now make up your own set of clues and see if your friend can guess which plant or animal they describe. **Students should be given the chance to come up with their own clues and try them out on their classmates.**

2. Butterflies are known for the striking patterns and colours on their wings. Copy the design on the butterfly's wing as closely as you can. **Students are to complete the drawing task.**
3. Mr Scientist (not a very clever one) made these statements. Was Mr Scientist right or wrong? Mark the sentences ✓ or ×.

   Seeds can grow into plants. ✓

   Plants and animals make their own food. ×

   All plants are leaf vegetables. ×

   Leaves grow from flowers. ×

   Plants absorb water through their roots. ✓
4. Complete the life cycle by adding in the missing parts. **Students should put in the missing parts.**

5. Rearrange the letters to make words. They are all words for parts of a plant.

   ROOTS SHOOT STEM STOMATA LEAF

Unit 6 Materials

Concept Check

Make a collection of different materials and test their properties. Are they transparent, opaque, waterproof, magnetic, hard, weak, strong, soft, or flexible? Record your results in a chart. **The students should attempt this exercise, not just read about it. They should record their results in a chart.**

Exercises

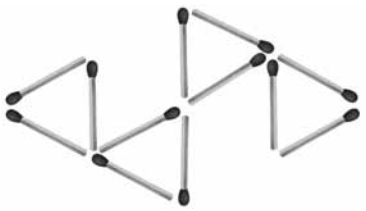
1. Choose the correct answer.
   i. Which of these is not a natural resource? **b. buildings**
   ii. Glass is made from: **b. sand**
   iii. Plastic is made from: **d. oil**
   iv. Which of the following is magnetic? **c. iron**
   v. Which of these is not waterproof? **d. cotton fibres**
2. Name the term for:
   i. materials that are not found naturally but are made from chemicals: **plastics.**
   ii. strong, hard, and shiny materials that can be hammered into different shapes without breaking: **metals.**
   iii. materials through which heat can travel easily: **conductors.**
   iv. materials that are attracted to magnets: **Some metals, such as iron, and some kinds of steel, are magnetic materials.**
   v. material that is difficult to scratch: **strong, hard materials.**
   vi. material that is easy to bend: **flexible materials.**
3. Are there any tasks for which paper is not suitable? Think and talk to your friend about it. Write your findings below.
   i. I think paper is not suitable for: ii. This is because:

   Students should discuss this and then their ideas should be shared with the class.

Fun pages

1. Structure puzzle

Arrange 16 matchsticks to make this pattern. Now remove four matchsticks to leave four triangles of the same shape and size. Do not leave any loose ends, other triangles or shapes of any kind.



2. Make a cube from one sheet of card.
   i. Copy this plan on to graph paper. Follow the instructions to make a cube.

   Students can use a different scale and make cubes of different sizes. Stiff card is best for the cubes, but ordinary paper can be used if card is unavailable.
   ii. Can you draw the plan for this house? It is almost the same as the plan for the cube. **To be done by the students. By studying the shape of the cube and the flat plan, students should be able to draw a flat plan of the house. They can test it by trying to make it.**
3. What materials would you use to build a house? Explain your choices. **To be done by the students**
4. What are the following made from? Talk about them; they may be made of more than one material. raincoat shoes glasses umbrella rabbit hutch water bottle car house **The students should discuss this in small groups and then share their ideas with the class.**
5. Tell your teacher **Students will use their own words.**
   i. what natural resources are?
   ii. why we need to save natural resources, and how we can do this?
   iii. why we need materials that have different properties. Give examples.
   iv. whether or not you think that glass is better than plastic. Explain your view.

Unit 7 Force

Concept Check

Fill in the missing words.

A force can cause moving objects to **speed** up, **slow** down, **stop**, or **change** direction. A force can make an object change its **shape**.

Exercises

1. Choose the correct answer.
   i. Which of these is not a force? **d. light**
   ii. Which of these can a force do? **d. all of these**
   iii. The force present when two surfaces rub together is called: **b. friction.**
   iv. Cycling faster creates a force that will make a bicycle: **b. speed up.**
   v. The force that pulls everything down to the Earth is called: **a. gravity.**
2. Answer these questions.
   i. What is a force? **Forces are pushes and pulls.**
   ii. What can a force do? **A force can make something change position, fall, fly up into the air, turn, stop, or move in any way.**
   iii. Objects do not fly up, move backward or forward, but fall down when you let go of them? Why? **This happens because of gravity.**
   iv. When someone rides a bicycle, which forces are being applied? **When someone rides a bicycle, they push down on the pedals, pull on the brakes, friction slows the**

bicycle down, especially when thebrakes are applied.
Students may suggest more pushes/pulls applied when changing gear or ringing a bell, etc.

3. The effects of forces are all around us. The following paragraph shows some of the effects of forces in our daily life. Underline the words that show these effects.

'Sara and Usman were waiting for ripe mangoes to drop. When Sara saw a big, ripe mango **fall**, she **ran towards it**. Usman **appeared** from behind and **pushed** Sara away. He **picked up** the mango. Just as he **lifted** it to his mouth, Sara **pulled** the mango right out of his hand and **ran** away!'

4. Fill in the blanks using the correct words/phrases from the brackets.
   i. **Wind** is a natural force.
   ii. A horse cart moves due to force produced by the **horse**.
   iii. The force of gravity keeps everything firmly **on the ground**.
   iv. A **push** is the force applied to the pedal on a bicycle.
   v. A **pull** is the force applied when someone applies the brakes on a bicycle.
   vi. When the brake pads rub against the wheel, **friction** slows the bicycle down.

Unit 8 Electricity

Discuss and Answer

Look at this picture. Do you think this bulb will light up?

The circuit is incomplete so the bulb will not light up.

Exercises

1. Choose the correct answer.
   i. In order for a current to flow through a circuit, it must be: **a. complete.**
   ii. Why is plastic used to cover electrical wires? **c. It is an insulator.**
   iii. Which of the following is a good conductor of electricity? **c. metal wires**
   iv. What is stored in a battery? **a. electricity**
   v. Which of these are part of a circuit? **d. all of them**
2. Fill in the blanks.

Fill in each blank using the words in the box.

   i. The path through which a current flows is called a **circuit**.
   ii. A **complete** circuit is needed for an electric current to flow.
   iii. Materials that allow electricity to pass through them are called **conductors**.
   iv. Materials that do not allow electricity to pass through them are called **insulators**.
3. Answer these questions.
   i. What does the word circuit mean? **A circuit is the path along which electric current flows.**

ii. What is electricity which moves along wires called? **Electricity which moves along wires is called a current.**

iii. Why does flex have a thin layer of plastic on the outside? **Flex has a thin layer of plastic on the outside because plastic is an insulator.**

4. Mark these sentences with ✓ or ×.
   i. The filament is the path along which electric current flows. ×
   ii. Metal and water are conductors of electricity. ✓
   iii. A gap in the circuit will allow electric current to flow. ×
   iv. A complete circuit allows electric current to flow. ✓
   v. A pencil and a wooden ruler are good conductors of electricity. ×
5. Find out.
   i. Which items in your classroom use electricity?
   ii. Which items in your house use batteries?

   Students should find out and report back to the class.

Unit 9 Simple Machines

Exercises

1. Choose the correct answer.
   i. Which of these machines uses a wheel and axle? **a. bike**
   ii. Which of these machines uses a lever? **d. see-saw**
   iii. If you wanted to split a log, what machine could you use to help you? **b. wedge**
   iv. In science, what word do we use to mean using force to move an object by pushing or pulling? **c. work**
   v. Hundreds of years ago, what did people use to make work easier? **d. all of them**
2. Find some simple machines in your classroom. How do they work? **Students should suggest and discuss a range of objects in the classroom.**
3. Try to make a simple pulley or lever using items in your classroom such as pencils, pens, and string. **The students should attempt this exercise, not just read about it.**
4. Answer these questions.
   i. How many types of simple machine are there? **There are six kinds of simple machine.**
   ii. What type of simple machine is an access ramp? **An access ramp is an inclined plane.**
   ii. If you climb up a ladder and go down a slide, what types of simple machine are you using? **You will be using inclined planes.**

Unit 10 Sound and Light

Discuss and Answer

As a class, make a list of useful sounds. **Collect all their responses on the board.**

Discuss and Answer

Have you ever experienced a thunderstorm? The thunder and lightning occur at the same time, but we first see a flash of lightning, and then a few seconds later, we hear the thunder. Can you say why this is so? **This is because light travels faster than sound.**

Fill in the blanks.

If you are close to a sound, it sounds **loud**. If you are faraway, it sounds **soft**.

When **light** falls on an object, a **shadow** can be seen on the surface directly behind the object.

Exercises

Concept Check

1. Choose the correct answer.
   i. Sound travels through **d. all three**
   ii. A drum skin hit gently makes a **b. soft sound.**
   iii. The beautiful colours we sometimes see at sunrise or sunset are caused by **d. dust and droplets.**
   iv. How many minutes does it take for the Sun's light to travel 146 million km to reach the Earth? **d. 8 minutes**
   v. At midday, when the Sun is overhead, shadows are **b. short.**
2. Mark these sentences with ✓ or ×.
   i. Sound waves can travel only through water and other liquids. ×
   ii. Sound waves travel in one direction. ×
   iii. You can have sound without anything vibrating. ×
   iv. Very loud sounds can damage hearing. ✓
   v. Less vibration creates louder sound. ×
   vi. Light rays travel faster than sound waves. ✓
   vii. The Sun, the Moon, and the stars are all luminous. ×
   viii. The brightness of light is called its intensity. ✓
   ix. The intensity of light increases as we move away from the source of light. ×
   x. A shadow is always smaller than the object itself. ×
3. Answer these questions:
   i. What are luminous objects? Name any five luminous objects. **The students could name any of the following or other luminous objects: The Sun, stars, lamps/ electric lights of any kind, torch/other battery-operated lights, TV/computer/tablet/ phone screen, firefly, vehicle headlamps, etc.**
   ii. How does light travel? **Light travels in straight lines.**
   iii. Which travels faster, light or sound? **Light travels faster than sound.**
   iv. Are shadows longer in the morning or at midday? Explain why. **Shadows are shorter at midday, because the Sun is overhead.**

v. The Sun is the star closest to the Earth. How does this affect the intensity of its light as compared to the light of other stars? **The light of the Sun is more intense than the light of the stars because it is much closer to us than the stars. The closer you are to a source of light, the more intense it is.**

vi. Explain what is meant by transparent, translucent, and opaque materials. Give one example of each kind. **Transparent materials like glass let light pass through them. Translucent materials like tissue paper let only some light to pass through. Opaque materials like wood do not let any light pass through.**

Fun pages

1. What happens to rays of light when they pass through something transparent?

   Shine a torch through:

   i. a round bottle full of milk and water.

   ii. a small medicine bottle.

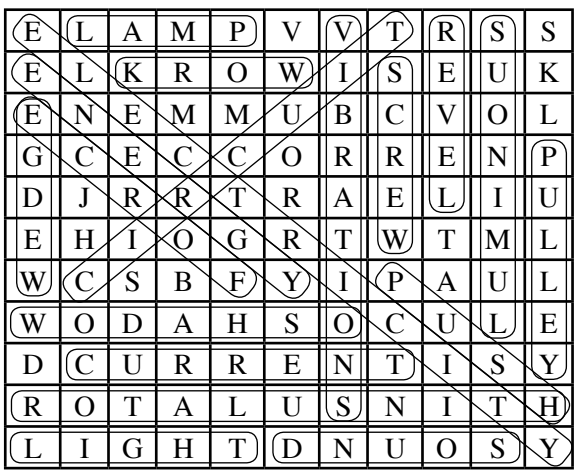
   iii. a mirror.

   iv. a piece of wood.

   Record your observations.

   The students should attempt this exercise, not just read about it. They should record their observations.

2. Complete this word search. It contains lots of words from this chapter. What do they all mean?



3. Try this!

   You will need a heavy book, some pencils or pens, and a smooth surface. Place the book on the surface and push it along using one finger. How much effort does it take? Now place the pencils under the book and roll it along the smooth surface. Do you notice any difference? Try this on different surfaces. Try it on a slight incline. **The students should attempt this exercise, not just read about it. They should note the differences in their records.**

4. Unjumble these words and use them to label the pictures below.

i. SCREW **ii. PULLEY** **iii. LEVER**
iv. WEDGE **vi. WHEEL AND AXLE** **v. INCLINED PLANE**

Unit 11 The Earth

Discuss and Answer

How do we know that the outer core of the Earth is made of hot liquid (molten) rock? **Students should suggest responses. Some ideas: volcanoes, hot springs, etc.**

Discuss and Answer

Close your books and describe how the Earth was formed to a partner. Then listen to your partner doing the same. **This is an opportunity for the students to learn and be able to explain how the Earth was formed.**

Concept Check

There are different kinds of soil. Find the kinds of soil that have been mentioned in this chapter hidden in these sentences. E.g.: OUR C**HUM US**UALLY ARRIVES NOW.

1. BECAUSE HE WAS TIRED ERI**C LAY** DOWN.
2. HEL**LO AM** I EARLY?
3. WASH YOUR HAND**S ANDY**
4. DO YOU PRE**FER TILE**S OR WOOD?

Exercises

1. Choose the correct answer.
   i. What is liquid rock known as when it pours out of a volcano? **d. lava**
   ii. How much of the Earth's surface is covered with water? **b. 3/4**
   iii. What kind of soil contains very small particles which stick together? **c. clay**
   iv. What colour are rubies? **b. red**
   v. What gives soil its colour? **d. minerals**
2. Mark these sentences with ✓ or ×.
   i. Loam is good for plants. ✓
   ii. Clay is found in a desert. ×
   iii. There are many different coloured soils. ✓
   iv. Lava is a kind of soil. ×
   v. Humus is made of rotting plants and dead animals. ✓
   vi. The mantle is the layer of the Earth outside the crust. ×
   vii. Limestone is a hard rock. ×
   viii. Earthquakes can push up mountains. ✓

3. Underline the best answer.
   i. A friend of the farmer: **earthworm**
   ii. The best soil for plants: **loam**
   iii. A precious stone: **emerald**
   iv. The inner part of the Earth: **core**
   v. A metal found in the Earth: **silver**
4. Answer these questions.
   i. What are the three layers which make up the Earth? **The three layers are the crust, the mantle, and the core.**
   ii. Which part of the Earth is still hot? **The core is the hottest part of the Earth.**
   iii. Name three kinds of rocks. **The students can name the three kinds mentioned in the unit, granite, limestone, and chalk, or others.**
   iv. What is a volcano? What does it do? **A volcano is a place where the hot gases in the Earth come to the surface. Sometimes hot, liquid rock, called lava, pours out.**
   v. What is lava? **Lava is molten (liquid) rock.**
   vi. How is soil made? **Soil is made by erosion. It is made up of rocks that have been broken up by the action of water and weather, and humus.**
   vii. Why do farmers add chemicals and cow dung to the soil? **Farmers add manure and chemicals to the soil to make it more fertile**.
   viii. How are worms good for the soil? **Earthworms help to turn the soil over which allows air to enter it.**
   ix. What actions make rocks crumble? **Rocks are broken up into small pieces over many years by weather and water. We call this erosion.**
   x. Which type of soil is best for plants to grow in? Why? **Loam is the best soil for plants to grow in because it contains air, water, mineral salts, and humus.**
5. Find out more about precious stones. What are they used for? What colours are they? Where are they found? **Students should try to find out what they can about precious stones. Precious stones are used in jewellery and other industries. Sapphires are blue, emeralds are green, rubies are red, and opals are a misty white. Students can try to find out about the use of particular stones and about the colours and names of other precious stones. Precious stones are worth a lot of money because they are rare. They are found in the Earth, in rocks. They are mined.**
6. Tell your teacher in your own words:
   i. about any piece of jewellery that you have seen. What was it made of? Did you like it? Why?
   ii. about the soil in a garden. What makes it good for plants? How can it be improved? **Students will use their own words.**

Fun page

1. Solve the crossword. All the missing words have something to do with the topic of the Earth.

   1. MANTLE
   2. EARTHQUAKE
   3. CORE
   4. EMERALD
   5. VOLCANO
   6. MINERALS
   7. FERTILE
   8. CHALK

   THE EARTH

2. Find the odd one out in each of the following.

   i. mountain **star** valley desert
   ii. gold **minerals** silver iron
   iii. chalk limestone granite **gold**
   iv. emerald ruby garnet **limestone**

Unit 12 The solar system

Concept Check

Fill in the blanks.

1. Stars are just like the **Sun**.
2. Scientists who study stars are called **astronomers**.
3. From Earth we see the Sun rising in the **east** and setting in the **west**.

Discuss and Answer

Some stars seem brighter than others. Can you say why? **Stars that appear to be brighter than others might be bigger or closer to the Earth.**

Exercises

1. Choose the correct answer.

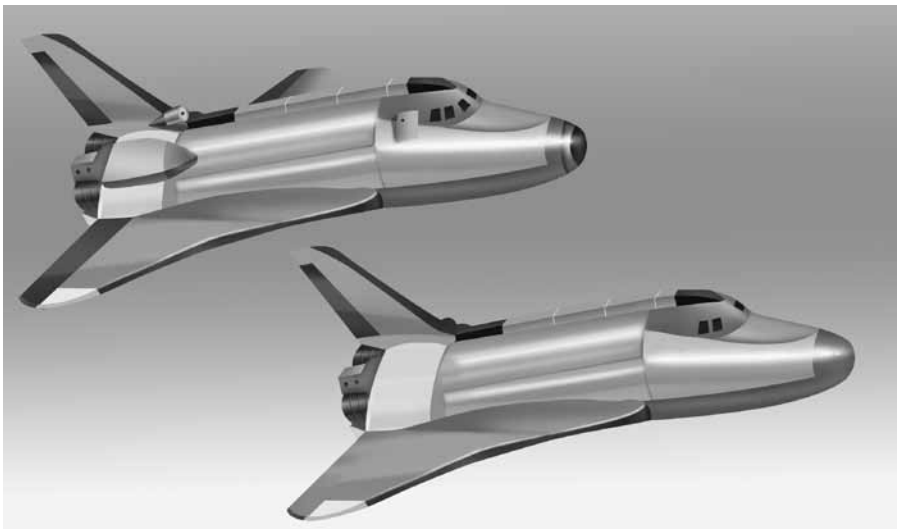
   i. What do we call the path of a planet moving around the Sun? **b. its orbit**
   ii. What is Pluto? **a. a dwarf planet**
   iii. How many days does it take the Moon to orbit the Earth? **c. 28**
   iv. What makes planets look bright at night? **d. sunlight**
   v. What does solar mean? **b. of the Sun**

2. Fill in the blanks.
   i. The Earth rotates on its **axis**.
   ii. The Moon is a natural **satellite** of the Earth.
   iii. The Moon has no **light** of its own.
   iv. Satellites send and receive **signals**.
   v. At night our side of the Earth faces away from the **Sun**.
   vi. The Sun is a ball of burning **gases**.
3. Name the following.
   i. the planet closest to the Sun **Mercury**
   ii. the planet farthest from the Sun **Neptune**
   iii. an instrument for studying stars **telescope**
   iv. a scientist who studies the stars **astronomer**
   v. the largest planet **Jupiter**
   vi. the natural satellite of the Earth **the Moon**
   vii. the increase and decrease of light on the Moon **the phases of the Moon**
   viii. a man-made complicated machine which orbits the Earth **a satellite**
4. Answer these questions.
   i. How many planets are there in the solar system? **There are eight planets in the solar system.**
   ii. What is the difference between stars and planets? **Stars have their own light. Planets orbit stars and do not have their own light. Stars are larger than planets. Stars are very hot, and they are made of gases. Planets are cooler than stars and they can be made of solids, liquids, gases, or a combination.**
   iii. Which are farther away from the Earth — stars or planets? **Stars are farther away from Earth than the planets in our solar system.**
   iv. When do we see the Sun? When do we not see it? **We see the Sun in the daytime, when our side of the Earth faces the Sun. We do not see the Sun at night, when our side of the Earth faces away from the Sun.**
   v. How do man-made satellites help us? **Man-made satellites help us to know about the weather. They also help with communications.**
5. Tell your teacher in your own words:
   i. what you know about the Moon.
   ii. what you know about man-made satellites.
   iii. which stars you have seen in the sky at night. **Students should use their own words.**
6. Do you know which way is east? How can you find out? From school, which direction do you go in to get home. **Ask students for their ideas and collect a range on the board. They may suggest such things as checking where the Sun rises, using an app, using a compass. Check the position of the school by using a map so that the students can work out which direction they go in to get home.**

Fun page

1. Spot the difference.

These two spacecrafts look the same but there are seven differences. Can you spot them all?



2. Put these planets in order, starting with the one closest to the Sun. You need to unscramble the letters first.

MERCURY VENUS EARTH MARS
JUPITER SATURN URANUS NEPTUNE

Sample Assessment Paper

Maximum marks: 50 1st term Examination Time Allowed: 1 hour

Q1. Fill in the blanks: [5]

i. Blood is pumped by the _____ to all parts of the body.

ii. _____ materials do not soak up water.

iii. _____ is made by melting sand.

iv. The path along which electric current flows is called a _____.

(v) _____ is stored in a battery.

Q2. Complete the table: [4]

Function	Organ
receive sounds from outside	
	Eyes
control centre of the body	
	Skin

Q3. Write down the good and bad habits in the separate columns: [4]

Eating lots of sugar and fats

Stay alert when crossing the road.

Make sure you get to go first

Avoid running with sharp instruments

Good habits	Bad habits

Q4. Identify the type of material from the material bank. [4]

transparent, metal, opaque, water proof




a.	b.	c.	d.

Q5. Tick the electrical objects: [4]




Q6. Answer the following questions: [2 marks each]

i. What is a balanced diet?

_____

_____

ii. What would happen if we did not have framework of bones?

_____

_____

iii. Why we need to save natural resources?

_____

_____

iv. What is a flex?

_____

_____

v. What is First aid?

_____

_____

Q7. Draw a complete circuit. [3]

Q8. Write true or false:[5]

i. A battery has stored chemical energy. _____

ii. Glass can be recycled. _____

iii. Plastics are materials that are found naturally. _____

iv. The brain and the lungs form the nervous system. _____

v. Never go near the stove. _____

Q9. Give reasons of the following: [1 mark each]

i. Electricity cannot jump across a gap.

ii. Some materials do not get attracted to magnets.

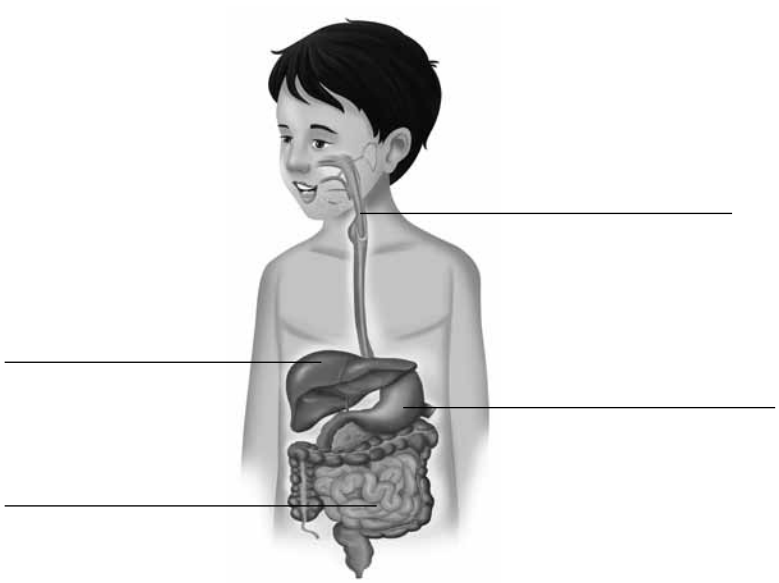
iii. The tongue helps us to taste things.

iv. When crossing busy roads, we must pay attention and use our eyes and ears.

v. We cannot see through opaque materials.

Q9. Write one difference between Conductors and insulators: [2]

Q10. Label the systems and their organ: [4]



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