



South Sudan

Primary Science

2

Primary Science has been written and developed by Ministry of General Education and Instruction, Government of South Sudan in conjunction with Subjects experts. This course book provides a fun and practical approach to the subject of Science, and at the same time imparting life long skills to the pupils.

The book comprehensively covers the Primary 2 syllabus as developed by **Ministry of General Education and Instruction.**

Each year comprises of a Pupil's Book and teacher's Guide.

The Pupil's Books provide:

- Full coverage of the national syllabus.
- A strong grounding in the basics of Science.
- Clear presentation and explanation of learning points.
- A wide variety of practice exercises, often showing how Science can be applied to real-life situations.
- It provides opportunities for collaboration through group work activities.
- Stimulating illustrations.



All the courses in this primary series were developed by the Ministry of General Education and Instruction, Republic of South Sudan. The books have been designed to meet the primary school syllabus, and at the same time equipping the pupils with skills to fit in the modern day global society.

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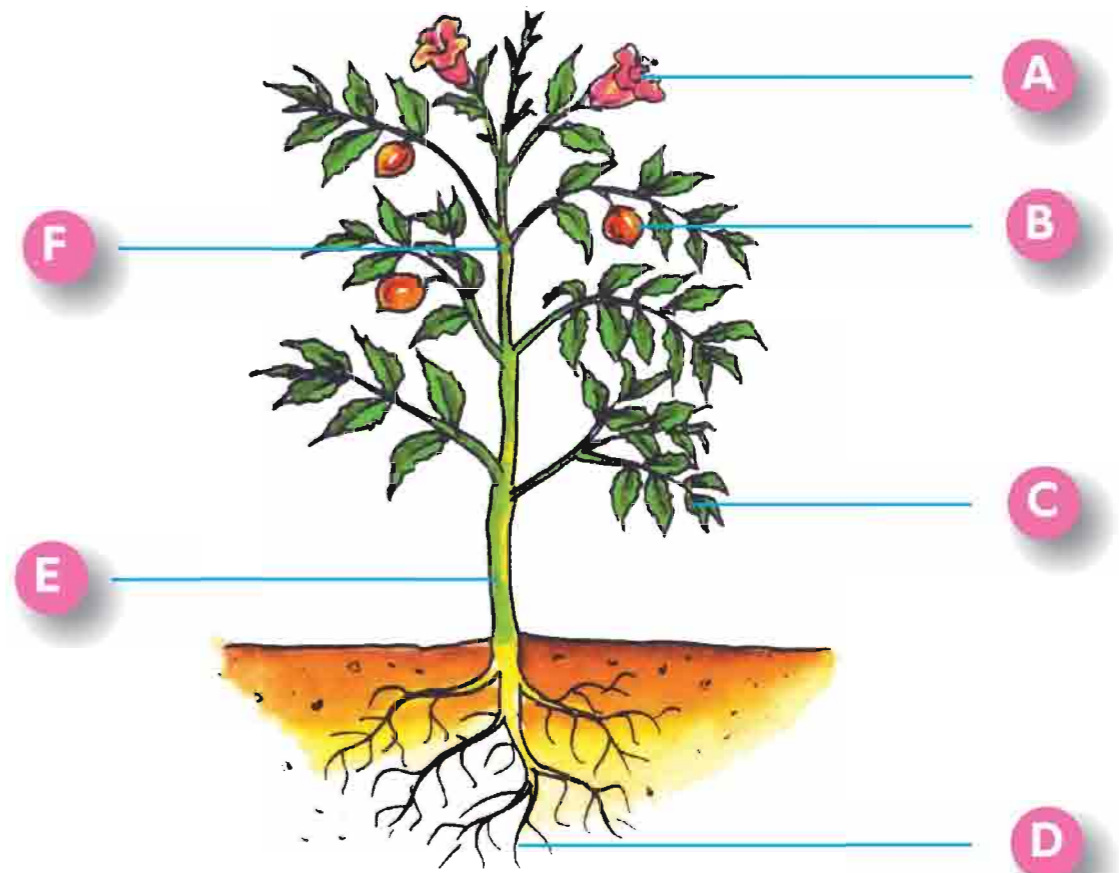
South Sudan

Primary Science



2

Pupil's Book



Primary Science Pupil's Book 2

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Science

Pupil's Book

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FOREWORD

I am delighted to present to you this textbook, which is developed by the Ministry of General Education and Instruction based on the new South Sudan National Curriculum. The National Curriculum is a learner-centered curriculum that aims to meet the needs and aspirations of the new nation. In particular, it aims to develop (a) Good citizens; (b) successful lifelong learners; (c) creative, active and productive individuals; and (d) Environmentally responsible members of our society. This textbook, like many others, has been designed to contribute to achievement of these noble aims. It has been revised thoroughly by our Subject Panels, is deemed to be fit for the purpose and has been recommended to me for approval. Therefore, I hereby grant my approval. This textbook shall be used to facilitate learning for learners in all schools of the Republic of South Sudan, except international schools, with effect from 4th February, 2019.

I am deeply grateful to the staff of the Ministry of General Education and Instruction, especially Mr Michael Lopuke Lotyam Longolio, the Undersecretary of the Ministry, the staff of the Curriculum Development Centre, under the supervision of Mr Omot Okony Olok, the Director General for Quality Assurance and Standards, the Subject Panelists, the Curriculum Foundation (UK), under the able leadership of Dr Brian Male, for providing professional guidance throughout the process of the development of National Curriculum and school textbooks for the Republic of South Sudan since 2013. I wish to thank UNICEF South Sudan for managing the project funded by the Global Partnership in Education so well and funding the development of the National Curriculum and the new textbooks. I am equally grateful for the support provided by Mr Tony Calderbank, the former Country Director of the British Council, South Sudan; Sir Richard Arden, Senior Education Advisor of DfID, South Sudan. I thank Longhorn and Mountain Top publishers in Kenya for working closely with the Ministry, the Subject Panels, UNICEF and the Curriculum Foundation UK to write the new textbooks. Finally, I thank the former Ministers of Education, Hon. Joseph Ukel Abango and Hon. Dr John Gai Nyuot Yoh, for supporting me, in my previous role as the Undersecretary of the Ministry, to lead the Technical Committee to develop and complete the consultations on the new National Curriculum Framework by 29 November 2013.

The Ministry of General Education and Instruction, Republic of South Sudan, is most grateful to all these key stakeholders for their overwhelming support to the design and development of this historic South Sudan National Curriculum. This historic reform in South Sudan's education system is intended to benefit the people of South Sudan, especially the children and youth and the future generations. It shall enhance the quality of education in the country to promote peace, justice, liberty and prosperity for all. I urge all Teachers to put this textbook to good use.

May God bless South Sudan. May He help our Teachers to inspire, educate and transform the lives of all the children and youth of South Sudan.



Deng Deng Hoc Yai, (Hon.)

Minister of General Education and Instruction, Republic of South Sudan



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1.1 Care of the body



Activity 1

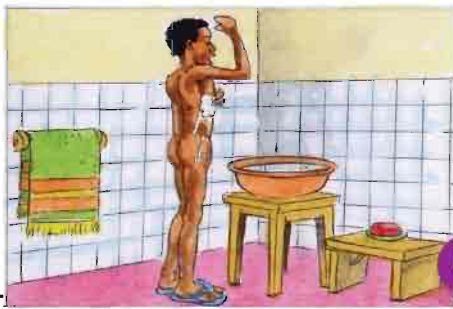
In pairs



A



B



C



D

1. Talk to your friend about what you can see in the pictures above? How do the pictures relate to good health?
2. Recite this poem in pairs.

When I wake up in the morning,
I brush my teeth,

I wash my face,
I wash my hair,
I wash my feet,
I bathe with warm water,
I dress up for school,
I go to school,
I remain fresh all day.

3. What do you learn from the poem?

Learning point

Keeping our body clean is known as **personal hygiene**.
We clean different parts of the body differently.

(a) Cleaning your teeth



Activity 2

In groups



1. You are provided with the following materials.



A



B



C



D

2. Talk to the group members about:

- How you will use the materials to clean your teeth.
- Suggest Other ways of cleaning your teeth.

Learning point

Brushing your teeth keeps your mouth fresh and protects the gums from diseases.



Fun corner

Practise singing the following song.

Brush your teeth always,
After taking breakfast, brush your teeth,
After eating snacks, brush your teeth,
After taking supper, brush your teeth,
After having lunch, brush your teeth,
Brush your teeth always.

Remember!

Toothbrushes are personal items.
They should not be shared.



Check your progress 1(a)

Arrange the following tooth brushing steps correctly.

A



B



C



D



E



(b) Cleaning your face

When do you wash your face?



Activity 3

In groups



Tell your friends:

1. What you do when you wake up.
2. How do you clean your face.
3. Why is it important to wash your face.

Learning point

We should wash our face when we wake up, after playing and before going to bed.

Remember!

When washing your face, do not forget to wash the neck and behind the ears.



Check your progress 1(b)

1. Which body parts are found on the face?
 - a) _____
 - b) _____
 - c) _____
 - d) _____
2. What makes your face dirty?
 - a) _____
 - b) _____

(c) Cleaning your hair

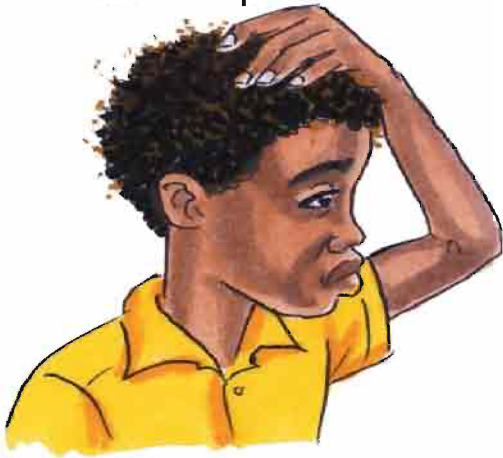


Activity 4

Individually



Look at these pictures.



A



B

1. Which of the two boy's hair looks neat?
2. Why do you think boy A looks sad?
3. How do you make your hair to look neat?



Activity 5

In groups



What are the children in the pictures below doing?



A



B

You have been provided with the following items.



A



B



C



D

1. Tell your friends how you will use the items above to clean your hair.
2. Why should you wash your hair?
3. Why do you comb your hair?

Learning point

Cleaning and combing our hair keeps us healthy.



Check your progress 1(c)

1. Draw three items used for cleaning hair.
 - a) _____
 - b) _____
 - c) _____

(c) Cleaning your nose Activity 6



In pairs



Role play the conversation below.

Hey Wani! Is your nose bleeding?



Akello



Wani

I did not notice. I just blew my nose.

What did you use to blow your nose?



Akello

I used my handkerchief.



Wani

Akello: Look at it! It should have some blood on it. You must have used a lot of force to blow your nose.



Akello



Wani

I need to see the teacher for first aid. Look you have mucus in your nose.

I have a handkerchief to clean my nose too.



Akello

Learning point

You should clean your nose using a clean piece of cloth or a clean handkerchief.

Remember!

A handkerchief is a personal item.
Do not share it.



Check your progress 1(d)

1. What is the importance of cleaning our nose?
2. Which things do we clean from our noses? _____,

(e) Cleaning your ears

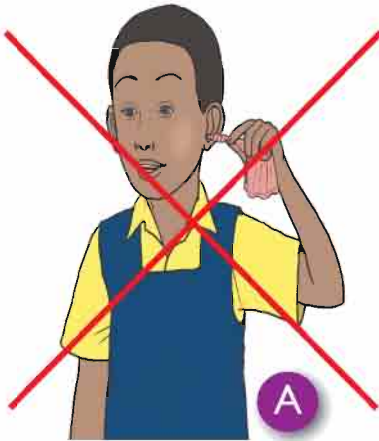


Activity 7

As a class



1. How do you clean your ears?
2. Observe the charts provided by your teacher on how to clean the ear.
3. Why is it not advisable to insert anything into your ear as shown below?



Learning point

Our ears get dirty. They should be cleaned.

Remember

We should clean our ears regularly to improve our hearing.



Check your progress 1(e)

1. What kind of dirt collects in your ears?

2. How often should you clean your ears?

(f) Cleaning your hands

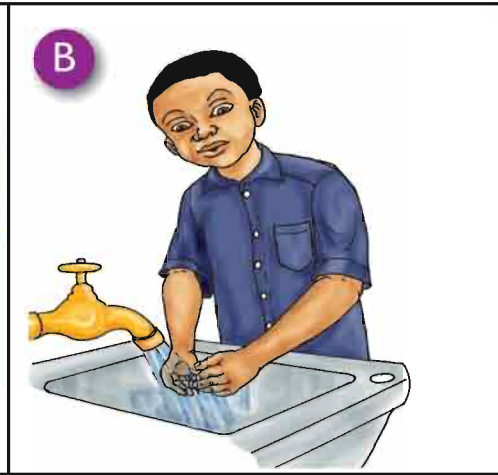


Activity 8

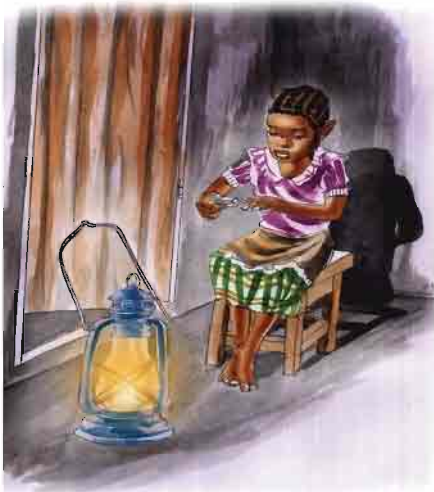
In pairs



1. Talk to your friend about the pictures in the next page.



2. What is the difference between picture A and B.
 - Whose hands will be clean?
3. How do the activities below help to prevent the spread of diseases?



A



B

Learning point

Washing hands prevents the spread of diseases such as **cholera**, **diarrhoea** and **flu**. These diseases are dangerous to us.

Remember!

We should not wipe our hands with the clothes that we are wearing.



Fun corner

Practise the song below.

Children, children, children,

Wash your hands,

Before eating any food,

After eating any food,

After using the toilet,

After cleaning the house,

After collecting litter,

After touching animals,

After blowing your nose,

After coughing,

Washing your hands prevents spread of diseases.



A



B



Activity 9

In groups



What you need

Soap, oil, clean water, towel or a clean piece of cloth, face towel, two basins



What to do

1. Demonstrate how you would wash your hands if they get dirtied with oil?



2. Use the materials listed above to clean your hands. Apply oil on your hands.
 - How did you clean your hands?



3. Compare cleaning your hands with soap and without soap.

- Which hands are still oily?
 - Which hands are clean?
4. Fill two basins with water. Wash one handkerchief with soap and the other without soap.



- 5 Compare the two handkerchiefs after drying up. Which one is clean?

Learning point

Soap helps in removing dirt from our bodies and our clothes.



Check your progress 1(f)

1. Why do we wash our hands?
2. Cutting your nails can help to prevent the spread of diseases. Why do you think this happens?

(g) Cleaning your legs



Activity 10

In groups



1. Compare pictures A and B.
2. What can the boy in picture A do to have clean legs?
3. Talk to your group on how you clean your legs.

Learning point

We should wash our legs to prevent germs from infesting them. Germs make them produce bad smell.

Remember

Dirty legs keeps jiggers.



Check your progress 1(g)

1. Draw the items you need to clean your legs.

(h) Cleaning the whole body



Activity 11

Individually



1. What is the difference between pictures A and B?



A



B

2. What will you do if you were the girl in picture B?
3. Talk to your friend about the following questions:
 - How do you keep your body clean after sweating?
 - What is the importance of cleaning your body?

Learning point

Bathing everyday protects the body from getting skin diseases by keeping germs away.



Remember

We should bathe everyday using soap and clean water.



Activity 12

In groups



Talk to your group members about the materials you can use to clean your body when you do not have soap.

Learning point

Baking soda can be used instead of soap. It clears bad odour from the body too.



Check your progress 1(h)

1. Which activities make the body to produce sweat?
 - a) _____
 - b) _____
2. Name and draw two items needed in cleaning the body.
 - a) _____
 - b) _____
3. Say if it is true or false.
 - a. When we clean our ears we hear better.
 - b. We wear shoes on our feet to keep them warm.
 - c. We should brush our teeth only once.
 - d. Dirty feet are attacked by jiggers.

4. Name and draw three items needed in bathing without a soap.
5. Why do you need to apply oil after bathing? _____

1.2 How germs spread



Activity 13

In pairs



A



B



C



D

1. Talk to a friend about what the people in the pictures above are doing?
2. How can they get diseases through the activities?

Learning point

Germs are small organisms that cause diseases.

Germ>s can be passed from one person to another. The diseases caused by germ>s include **influenza**, **cholera**, **cough** and **typhoid**.

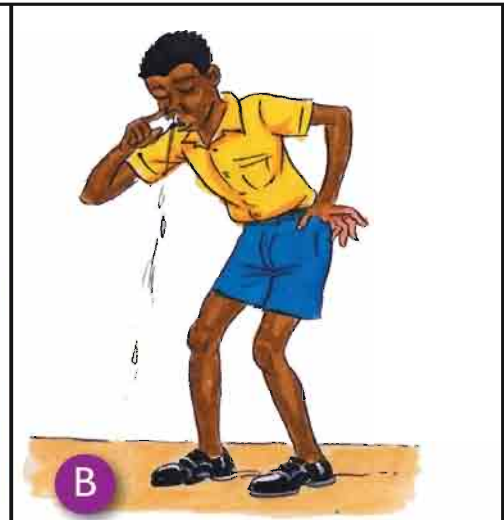
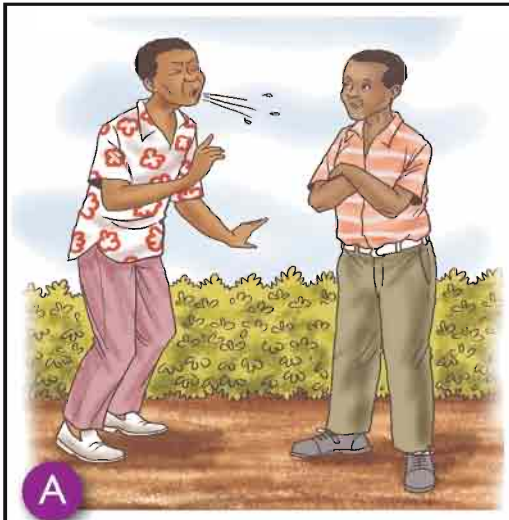


Activity 14

In pairs



1. Talk to your friend about what is happening in the pictures below.
 - How do we get diseases through such actions?



2. How do we get diseases through mishandling food?

Learning point

Germs are spread through **sneezing, coughing, blowing our nose** without using a handkerchief or **rubbing eyes** with dirty hands.

Germs can be spread from **dirty hands** to food too.

Remember !

It is always good to wash your hands before cooking, after using the toilet and before eating.



Check your progress 1(i)

1. Which foods need to be washed before cutting or cooking?
 - a. _____
 - b. _____
 - c. _____
 - d. _____
2. The best method of preventing spread of germs is by _____.

1.3 Designing posters



Activity 15

As a class



Visit the nearest health centre and observe the posters on the wall.

- What do they contain?
- How is information written in the posters?

Learning point

An example of a poster in a health centre is shown below.

Healthy Child Care

When to Wash Hands

- 1** Before children arrive for the day.
- 2** After cleaning.
- 3** Upon arrival and after outdoor play.
- 4** Before and after preparing and eating food.
- 5** After diapering or toileting.
- 6** After contact with body fluids.
- 7** After touching animals or their equipment.



Fun corner

Write and colour the information below on a manila paper.

CLEAN HANDS ARE HAPPY HANDS.

REMEMBER TO WASH YOUR HANDS.



Check your progress 1(j)

1. What information is found in a poster on uses of soap?
2. What information would be contained in a poster about the danger of germs.

1.4 How animals clean themselves

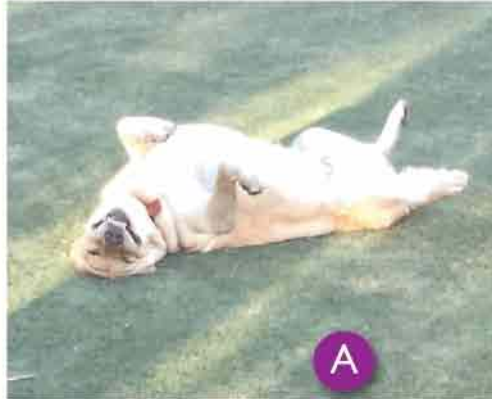


Activity 16

In pairs



Talk to your friend. How do dogs and chickens clean themselves?



1. What do you think the dogs in the pictures above are doing?
 - What makes a dog roll on soil, sand or grass?
 - Why do dogs bite their fur?



2. What do you think the chickens in the pictures above are doing?
 - What makes a chicken shake off soil?

Learning point

Dogs have different ways of cleaning themselves.

Chickens too are clean birds. They give themselves a dust bath then shake it off.



Fun corner

1. In pairs, role play how animals clean themselves.
2. Let your friend guess what animal it is that you role played.



Check your progress 1(k)

1. Name other two animals and state how they clean themselves.
2. Why should animals keep clean?

2.1 Plants



Activity 1

In pairs



1. Talk to your friend about the plants below. Tell your friend:
 - The names of the plants.
 - Where the plants grow.



2. Walk around your school compound with your teacher and observe the plants found in the school compound. There after, answer these questions:

- Are they similar?
- Do they have the same leaves?
- Do they have the same colour?
- Are they small or big?

Learning point

Plants grow in different areas. Some plants grow in water, others in wet areas, dry areas and along the rivers.

- What kind of plants are found in your area?

Parts of a plant



Activity 2

In groups



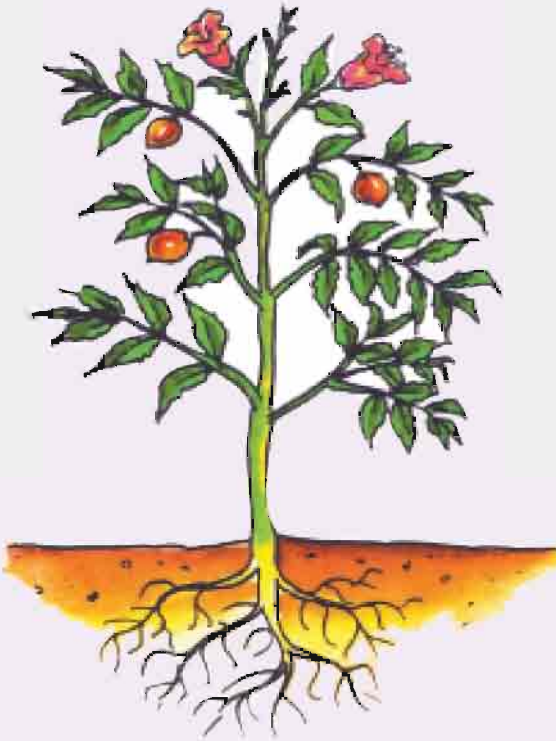
What you need

An uprooted young plant, drawing papers, pencils, crayons, Manila paper and glue stick.



What to do

1. Look at the uprooted young plant.
 - Can you identify different parts of the plant?
3. Draw the plant on a Manila paper.
4. Name parts of a plant shown below.



Fun corner

Play a game of identifying plant parts using flash cards.

Remember

Not all plants have the same structure.



Check your progress 2(a)

1. Match the following

	Part of the plant	Description
1	Leaves	They are very beautiful.
2	Stem	Are picked when they are ready.
3	Fruits	They are green.
4	Roots	The middle part of the tree.
5	Flowers	They are found in the soil.

Classification of plants based on their habitats

A **habitat** is a place where plants are found.

(a) Plants that grow in water or near water



Activity 3

In pairs



1. Talk to your friend about the following plants.



- What is the difference between plants A and B?
- Why do you think the plants grow near water or in water?
- Name other plants that grow near water or in water.



Activity 4

As a class



Visit a nearby swamp and:

1. Observe and collect plants that grow in water and near water.
2. Copy and complete the following table in your notebooks.

	Name of the plant	Grows in water	Grows near water
1			
2			

Learning point

Some of the plants that grow in water either **float** in water or grow at the **base** of the water.



Fun corner

Draw plants you might find in a pond or a swamp near your home.

Remember!

Do not destroy plants.



Check your progress 2(b)

1. Which plants grow in water?

a) _____

b) _____

2. Draw two plants that grow near water.

a)

A large empty rectangular box for drawing a plant.

b)

A large empty rectangular box for drawing a plant.

3. Which two things are common in plants that grow in and near water?

a) _____

b) _____

(b) Plants that grow in hot and dry areas



Activity 5

In groups



1. Talk to your friends about the plants above. Tell them:
 - (a) Where the plants are found.
 - (b) How their leaves look like.
 - (c) How tall you think the plants are.
2. Write down what they have in common with your friends' opinions.

Learning point

Plants that grow in hot and dry areas include: **acacia**, **cactus** and **aloe vera**



Check your progress 2(c)

1. Say if these statements are true or false.
 - (a) Plants that grow in water float in water.
 - (b) Papyrus grows at the river bank.
 - (c) Plants that grow in hot and dry areas are short and have thorns.

Plants that grow in cool and wet areas



Activity 6

In pairs



A



B



1. Talk to your friend about the plants above.
 - (a) Can you identify the plants?
 - (a) Do they grow at home?
 - (c) Do the plants have leaves throughout the year?

Learning point

Plants that grow in cool and wet areas need a lot of rainfall to grow. Their leaves are usually green throughout the year.



Fun corner

In groups, identify and draw plants found around your home that need a lot of rainfall to grow.

Remember!

Not all plants found in an area are the same.



Check your progress 2(d)

1. What do plants that grow in cool and wet areas have in common?
 - a) _____
 - b) _____
 - c) _____

(d) Plants that grow along the river



Activity 7

In pairs



1. Talk to your friend about the pictures below.



A



B

- (a) Why do you think they grow where they are found?
- (b) Do such plants grow in your home area?

Learning point

Plants that grow along the river include **papyrus** and **palm trees**.



Fun corner

1. Talk to your friends about the uses of plants found along the river.
2. Use plant materials found along the river to make a basket.

Remember

We get many products from plants.



Check your progress 2(e)

1. Name two plants that grow along the river.
 - a) _____
 - b) _____

2. Why do you think the plants grow along the river?

a) _____

b) _____

2.2 Animals



Activity 8

In pairs



Talk to your friend about the pictures below.



a) Where do the animals in the pictures above live?

b) Why do they live there?

Learning point

Animals live on land or in water.

Land animals

Animals that live on land include :

- Animals that live underground.
- Wild animals.
- Domestic animals.

(a) Animals that live underground



Activity 9

In pairs



1. Answer these questions.

What are these animals? Where do they live? Which other animals live where they are found?



A



B



Activity 10

In groups



What you need

A jembe or hoe



What to do

1. Your teacher will guide you in digging out soil in the school garden.
2. Write down some of the animals you found.
3. In groups, discuss why they cannot live above the ground compared to other animals.

Learning point

Moles, termites, ants and squirrels live in holes underground.

Earthworms, millipedes, centipedes and worms live in the soil.



Check your progress 2(f)

1. Why do you think animals live under the soil?
2. Animals that live underground _____ from other animals.

(b) Wild animals



Activity 11

In groups



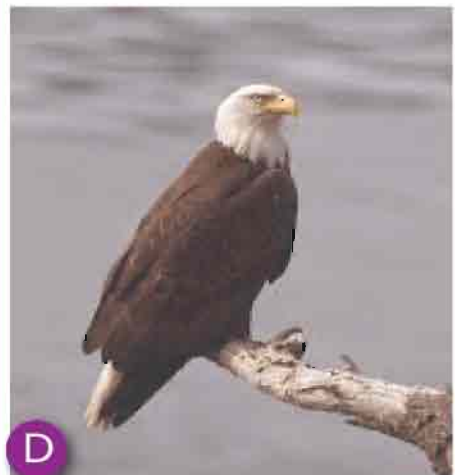
1. Talk about the pictures that follow.



A



B



- (a) Where are the animals found?
- (b) Name the animals that you have seen.
- (c) Suggest the kind of food that the animals eat.



Activity 12

As a class



What you need

Pens and notebooks

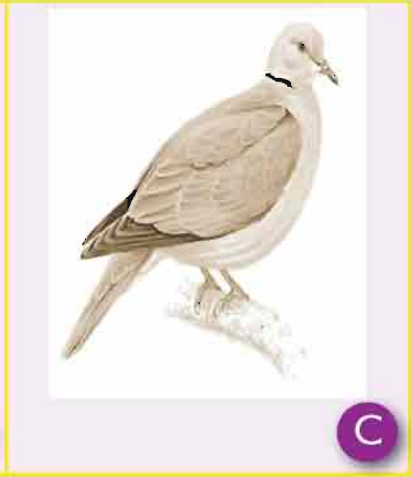


What to do

1. Your teacher will arrange a trip to an animal park or invite a **wildlife officer** to tell you about wildlife.
2. Ask the wildlife officer questions about wild animals.
3. Observe pictures provided in a chart.
4. Copy and complete the table below in your notebook.

	Animals that feed on other animals	Animals that feed on plants only
a		
b		
c		
d		

5. Name the birds shown below.



6. Where do you think wild birds live?

Learning point

Animals that live in the forest are known as **wild animals**. These animals include gazelles, zebras, lions, antelopes among others. Birds make part of wild animals too.



Fun corner

Draw and colour a bird you like.

Remember!

Wild animals are not friendly.



Check your progress 2(g)

1. Is it true or false to say:
 - a. Birds live in nests. _____.
 - b. We should not take care of wild animals. _____.
 - c. Wild animals gives the government money. _____.
 - d. An ostrich flies. _____.
 - e. Eagles feed on animals. _____.

Characteristics of animals and their habitats



Activity 13

In pairs



1. Observe photographs, pictures and charts provided to you by your teacher or the picture below.



Antelopes at home

2. Talk to your friend about the animals you have seen.
- (a) How do they protect themselves from other animals?
 - (b) Which animals are dull coloured?
 - (c) Which ones are brightly coloured?
3. Copy and fill the table below in your notebooks.

	Animals with dull coloured fur	Animals with brightly coloured fur
1		
2		
3		
4		
5		

Learning point

Animals with **brown** or **grey** fur cannot be seen from far. They look like their surroundings. Their **predators** are not able to spot them. Predators are animals that eat other animals.

Animals with brightly coloured fur such as zebra can be spotted from far. They are easily seen by their predators.



Check your progress 2(h)

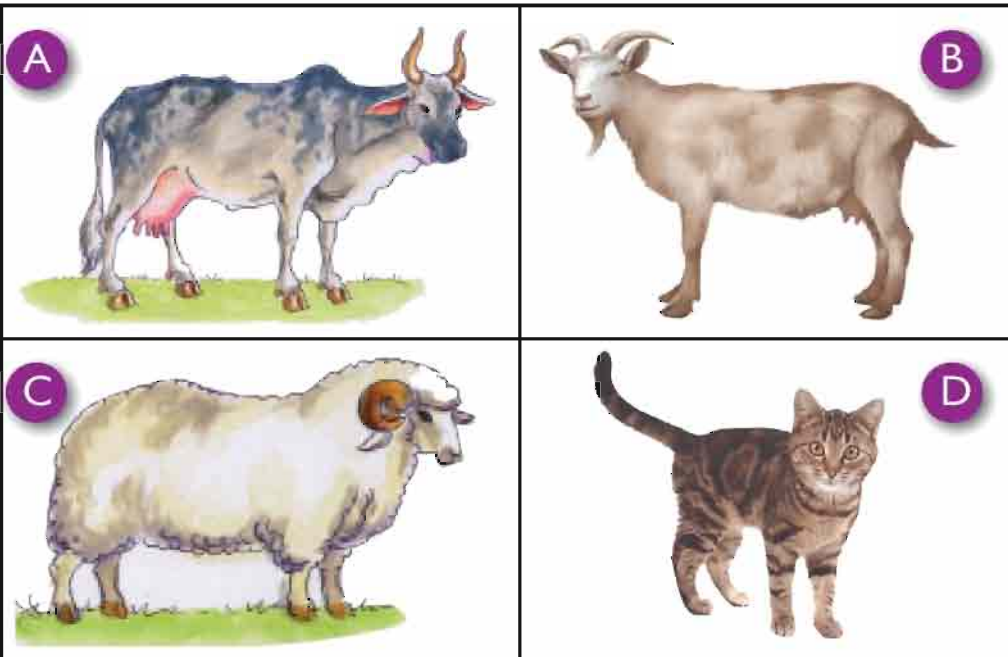
1. Name two wild animals that have brightly coloured fur.
 - a. _____
 - b. _____
2. Which animals are eaten by other animals?

(c) Domestic animals



Activity 14

Individually



1. Name the animals shown in the pictures on the previous page.
2. Where are the animals found?
3. How do the animals help us?

Learning point

Domestic animals are animals kept at home. We also have birds kept at home.



Check your progress 2(i)

1. What is the use of these animals at home?



A



B



C



D



Fun corner

Compose a song about domestic animals and their uses.

Animals that live in water

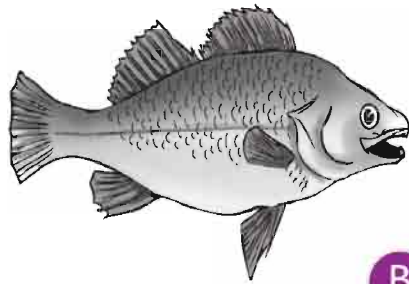


Activity 15

Individually



A



B



C



D

1. Name the animals shown in the pictures above.
2. Where are they found?
3. What kind of food do you think they eat?

Learning point

Animals that live in water include **crocodiles**, **fish** and **hippopotamus**.



Check your progress 2(j)

1. What happens to a fish when it is taken out of water?
2. The body of a crocodile is covered with _____
(fur, scales).

3.1 Senses



Activity 1

Individually



1. Identify sense organs from the picture above.
2. Draw the sense organs and give their functions.

Learning point

Sense is the way we know our surrounding. Our senses enable us to see, feel, hear, smell and taste.



Check your progress 3(a)

1. I can tell what is being cooked by _____ with my _____.
2. I can tell what is in my pocket by _____ using my _____.
3. I can tell there is no sugar in my tea by _____ with my _____.
4. I can hear the bell ringing using my _____.
5. When I look outside, I can _____ the sky using my _____.

Sense of smell



Activity 2

In pairs



1. Name the part of the body the girl is pointing at.
 - What is its function?



What you need

Ripe banana, oranges, perfume, onions, pineapple, lemons, hair oil, lotions, pawpaws, rotten eggs, spoilt food and a piece of cloth for blindfolding.



What to do

1. Blindfold your partner.
2. Let the blindfolded partner smell the assorted items.



3. Let him or her say the name of the item by just smelling.

Learning point

We use our nose to smell things. Things can smell good, bad or can be without any smell.

Remember!

We should not smell items directly.



Fun corner

Name things that do not have any smell.

Sense of sight



Activity 3

Individually



1. Look at the pictures below.



A



B



C



D



E



F



G



What to do

- Which colours can you identify from the displayed items?
- Copy and fill in the table below in your notebook.

	Colour of item	Name of the item
a	Green	Unripe banana, grass, etc

b		
c		
d		
e		
f		
g		

Learning point

We are able to identify things of different colours through seeing. Our eyes are also able to see things that are near and far.



Fun corner

Go outside the classroom and play a game of observing things.

- Are there classmates who are not able to see clearly?



Check your progress 3(b)

1. Name three items that you can identify from their smell only.

a. _____

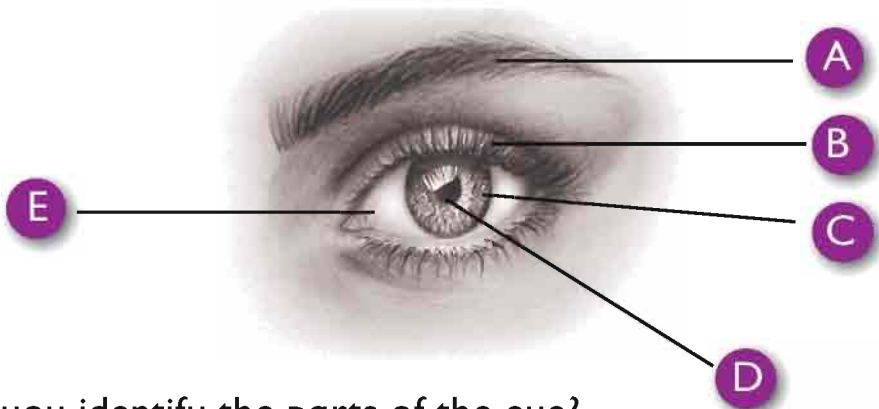
- b. _____
- c. _____
2. Name two items in the classroom that smell bad.
- a. _____
- b. _____
3. People who cannot see are known as _____.
4. People who cannot see well are given _____ by the doctor.
5. Things closer to me appear _____ while things far away appear _____.

Parts of an eye



Activity 4

In pairs



Can you identify the parts of the eye?



Fun corner

1. Turn to your friend. Look at their eyes closely. What is the colour of their eyes? How many parts can you see?
2. With your friend, take turns in blindfolding each other. Let your friend give you directions to follow. Try walking around the class with your eyes blindfolded. Is it easy to find your way?



Check your progress 3(c)

1. Say if each statement is true or false.
 - a. Light enters the eye through the nose.
 - b. We have three eyes.
 - c. The eyeball is the white part of the eye.
 - d. We should not rub our eyes when they itch.
2. Talk to your friend about true or false statements about the sense of sight.

Sense of hearing



Activity 5

As a class



What you need

A bell

What to do

1. Let one learner, go outside the classroom and ring the bell.



2. Try to cover your ears and listen. Can you hear any sound? Uncover your ears. Can you hear the sound?

Learning point

We hear sounds around us using our ears. When ears are covered we cannot hear any sound.

Sense of touch



Activity 6

In pairs



What you need



A pumice stone



What to do

1. Touch your friends using your bare hands then touch them using a pumice stone.
2. Can you tell the difference in the feel? Which one is rough?
 - What part of your body did you feel the touch?

Learning point

Our bodies are covered by **skin**. When one touches us we feel it through our skin.

Remember!

Some body parts are sensitive to touch.



Check your progress 3(d)

1. Which body parts are sensitive to touch?
 - a. _____
 - b. _____
2. Say if each statement is true or false.
 - a. The sense organ for touch is hands.
 - b. We should listen to loud music everytime.

Sense of tasting



Activity 7

In groups



What you need

Sugar, lemon, pepper, ripe mango or banana and honey.



What to do

In groups, taste the items above. Copy and fill in the table on the next page with your findings.



	Item	How it tastes	Name other items with the same taste
1			
2			
3			
4			

Remember!

To wash your hands and the foods properly before tasting.

Learning point

We use the **tongue** to taste different types of food.



Check your progress 3(e)

1. What is the taste of clean water?
2. How do tears taste?
3. My sweat tastes.

3.2 Sounds of different pitches



Activity 8

In groups



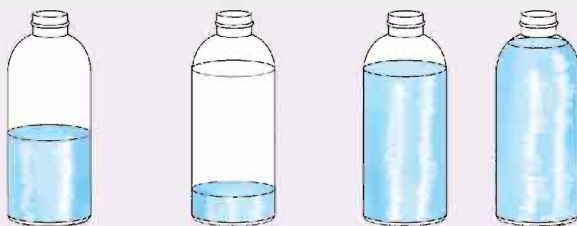
What you need

Plastic bottles, water, sticks, whistle.



What to do

1. Come up with bottles which have different sounds when they are blown into.
2. Did you come up with something as shown below?



3. Blow each bottle one at a time.
 - Which one produced the lowest sound?
 - Which one produced the highest sound?
 - Arrange the bottles from the one with the highest sound to the lowest.
4. Blow a whistle then clap your hands.
 - What kind of sound is produced?
5. Compare all the sounds produced.

Learning point

Sound is produced when items are hit, plucked, blown or shaken. The sound produced can either be high or low. This is called **pitch**.

- How do the items below produce sound?



A



B



Fun corner

Using small stones and tin containers, make a shaker.



Check your progress 3(f)

1. Match correctly

	Instrument	Produces sound when
1	Shaker	Hit
2	Drum	Keys are pressed
3	Guitar	Shaken
4	Violin	Plucked
5	Piano	Blown



Activity 9

As a class



What you need

Empty room



What to do

1. Take out all the desks and chairs in the class room.
2. Go back to the classroom one by one and speak.

What did you hear?

Learning point

The bouncing back of sound in an empty room is known as an **echo**.



Check your progress 3(g)

1. Clapping your hands in an empty room produces _____.
2. Sound is produced when we _____ an object (hit, throw).

3.3 Shadow formation



Activity 10

In groups



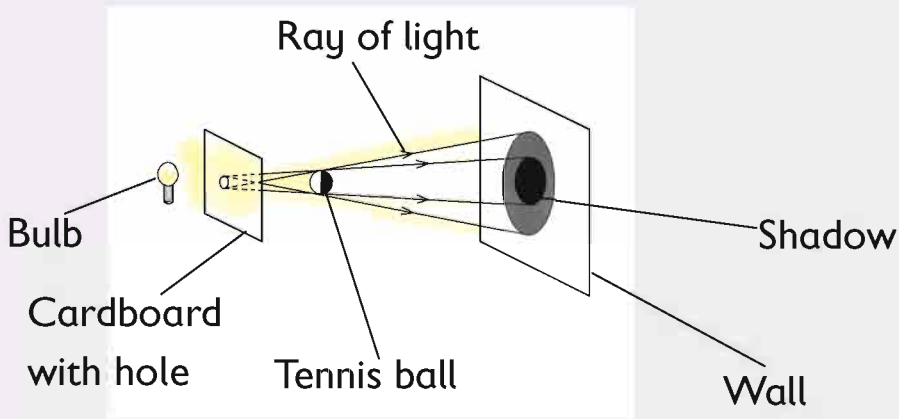
What you need

Torch or bulb, tennis ball, cardboard and pencil



What to do

1. Light a torch or bulb then place the tennis ball in front of the rays of light of the torch or bulb as shown below.



2. Observe what happens.

Learning point

When an object is placed in front of light, a **shadow** is formed.

Shadows at different times of the day



Activity 11

In pairs



What you need

Ruler



What to do

1. In the morning, measure the shadow of your partner.



2. Mark the position of the shadow and its length.
3. At lunch time, mark the position of the shadow and its length.
4. In the afternoon repeat the above exercise.
 - What did you find out?

Learning point

Shadows are formed in the presence of light. Glasses do not form shadows because they are clear.



Check your progress 3(h)

1. Shadows are formed when something blocks the path of _____.
2. _____ materials do not form shadows.
3. Light helps us to _____ shadows.

4.1 Weather symbols and instruments



Activity 1

In pairs



1. Talk about the pictures below with your friend.

A



B



C



D



E



2. What does each picture show?
3. What type of weather is shown in each picture?

Learning point

The weather pictures are above called **weather symbols**.



Fun corner

1. Draw and colour weather symbols.
2. Stick them on a Manila paper
3. Hung the Manila paper on the notice board at the science corner.



Activity 2

Individually



1. Copy and fill in a weather journal on weather changes throughout the week. Use weather symbols to fill in the journal.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning							
Afternoon							

Learning point

Weather symbols are used to show the weather condition of each day.



Activity 3

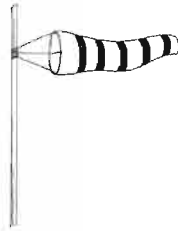
In groups



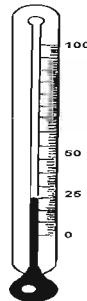
1. Talk about the instruments shown below.



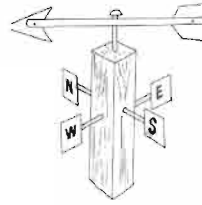
A



B



C



D



E

- a) What are they used for?
 - b) Where are they found?
2. Draw and colour the weather instruments in your notebook.

Learning point

The instruments used for recording weather are kept in **weather stations**.















Fun corner

Visit a weather station near your school and identify the weather instruments.



Check your progress 4(a)

1. This is Nyibol's weather chart. Look at it carefully.

Day	Morning	Afternoon
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		

- (a) Which day was cloudy all through?
 - (b) Which day was windy in the morning and calm in the afternoon?
 - (c) Which day was cloudy in the morning and rainy in the afternoon?
2. Where should you place a rain gauge?

4.2 Weather changes



Activity 4

In pairs



Talk to your friend about:

- What you do when its cold or hot.
- What you do when it is raining or windy.
- How you respond to weather changes.

Learning point

Weather conditions keeps on changing. When the weather changes, we do different activities.



(a) Hot day



Activity 5

Individually



1. Look at this picture. What are the people in the picture wearing?



2. Name the clothes below worn on a hot day.



A



B



C



D

3. What other things do you do on a hot day?

(b) A cold day



Activity 6

Individually



1. What are the people in the picture on the next page wearing?



2. What other things do you do on a cold day?

(c) A rainy day



Activity 7

Individually



1. What are the people using to keep off rain?



2. What other activity do you do on a rainy day?

(b) A calm day



Activity 8

Individually



1. What clothes are the people wearing?



2. On a calm day we wear these clothes. Name them.



A



B



C



D



E



F



G



Check your progress 4(b)

1. When the _____ changes people wear different clothes. (cloud, weather)
2. When it is hot I wear _____ and _____.
3. What do people wear on their legs on a rainy day?
4. On very _____ days some people remove their jackets, hoods and scarfs. (cold, hot)
5. Say if each statement is true or false.
 - (a) We drink a lot of water during hot days?
 - (b) We sweat alot during cold days.
 - (c) We wear jackets during hot days.

4.3 How animals respond to different weather conditions

Animals too are able to sense weather changes.

(a) How animals behave on rainy days



Activity 9

In pairs



1. Talk to your friend about:
 - How animals behave during the rainy season.
 - Where animals go when it is raining.

Learning point

On rainy days, animals hide in **caves**, **holes**, **nests**, under **shades** and others go to their houses.

(b) How animals behave on a sunny day.

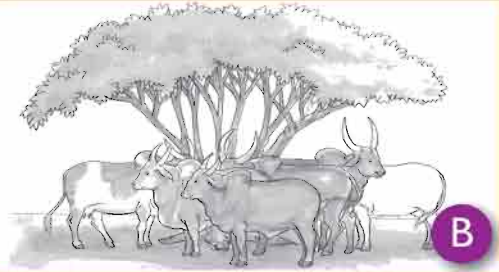


Activity 10

In pairs



Talk to your friend about what the animals in the pictures below are doing.



- Why is the crocodile laying in the sun? Which other animals bask under the sun?
- What are the cattle doing under the shade?

Learning point

When it is sunny, animals bask under the sun. When it gets hot they hide under a shade.

Animals also drink water from rivers and ponds to cool off. Others roll on water to cool themselves.

(c) How animals behave on a cold day



Activity 11

In pairs



1. Talk to a friend about the pictures below.



A



B

- Why are the animals close together in A?
- Why do chickens have feathers on their bodies?

Learning point

On a cold day, animals stay closely together to produce heat.

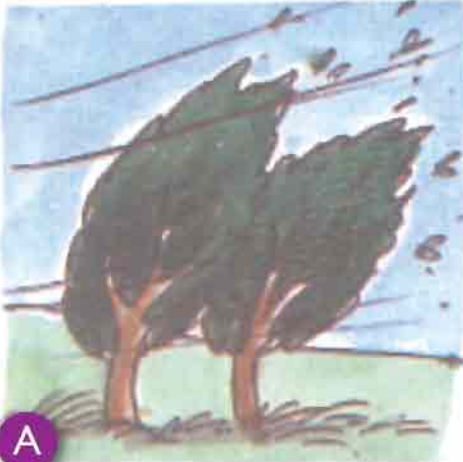
Animal bodies contain fur or feathers to protect them from cold.

How plants respond to different weather changes



Activity 12

Look at the trees outside during different weathers conditions. What happens to the trees when it is sunny? How about when it is windy? Now look at the pictures below. Talk to a friend. What can you see?



Learning point

When it is windy, trees move from side to side.

When the sun is too hot, plant leaves fold.



Check your progress 4(c)

1. Say if these statements are **true** or **false**.
 - a. When it is too hot animals look for water to cool off.
 - b. Animals hide under shades when it is too hot.
 - c. When it starts raining animals hide under sheds.
 - d. Plants fold their leaves when it gets hot.

4.4 Air



Activity 13

Individually



What you need

Balloons



What to do

1. Take a balloon.
2. Blow air in it.
 - What has happened to the balloon?
 - What does it contain?

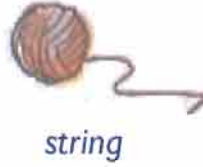


Making a kite



Activity 14

What you need

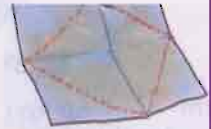


What to do

1. Tie the two straws or sticks with a string tightly to make a frame.



2. Draw the shape of a kite on the plastic paper



3. Cut the paper along the lines.



4. Put the frame on the paper. Tie the paper to the frame with the thread.

5. Tie a long string to the frame and a cloth ribbon for the tail.



6. Go outside the classroom and fly your kite as shown.



What makes the kite to stay up?

Learning point

We cannot see air with our eyes. We only feel it passing.

We also get to know there is air when we see trees and other objects around us moving from one point to another.

Effects of moving air



Activity 15

Individually



1. What is happening in the pictures below?



2. What are the effects of moving air?

Learning point

Moving air is important, it helps in:

- drying clothes.
- separating chaff from grains.
- producing electricity.

Moving air is called **wind**. It is also bad because it:

- destroys trees and houses.
- blows away soil.



Check your progress 4(d)

1. Moving air enables us to _____ and _____.
2. How do we tell there is air around us?
3. Clothes dry faster when the weather is _____.



Activity 16

Which animals are likely to fly? What makes them fly?

A



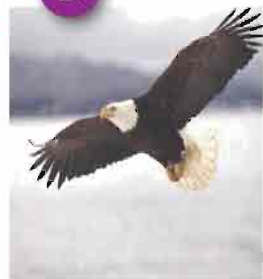
B



C



D



Learning point

All birds fly except the **ostrich**. Birds fly because they have wings. Animals that do not have wings cannot fly.



Check your progress 4(e)

1. Copy and fill the table correctly in your notebooks.

	Animals that fly	Animals that do not fly
a		
b		
c		
d		

2. What makes an eagle to fly and an ostrich not to fly?
3. How many wings do birds have?

5.1 Importance of water



Activity 1

In pairs



1. Talk to a friend about the use of water in the pictures shown below.



2. In which other ways do we use water?

Learning point

Water is very important to us. We cannot live without water.

Clean and safe water



Activity 2

In groups



Talk to your friends about water obtained from rivers, wells, dams and lakes.

- Is the water clean and safe for drinking?
- How do you make clean water safe for drinking at home?

Learning point

Not all clear water is safe for drinking. Germs that causes diseases are small and cannot be seen with naked eyes.



Check your progress 5(a)

1. Dirty water contains _____ which cause diseases.
2. Clean water is _____ and does not _____.

5.2 Making water clean and safe

We make water safer for drinking by boiling, decanting, filtering, adding chemicals and distilling.

(a) Boiling



Activity 3

In groups



What to do

How does the process shown in the picture below make water safe for drinking?



Caution: Handle fire and hot water with care!

Learning point

Boiling water **kills** germs that may be in the water.

Remember!

Always filter dirty water before using.



Check your progress 5(b)

1. Where do you get your drinking water from when:
 - a. at home? _____
 - b. at school? _____

(b) Adding chemicals



Activity 4

In pairs



What you need

A container with water, water treatment chemical and measuring containers.



What to do

1. Read the instructions contained in the water treatment chemical bottle.



2. With your teacher's assistance, measure the required amount of chemical as instructed.
3. Pour the measured chemical into the container with water.
4. Stir or shake the container then cover.
5. Let the container settle for sometime.
 - Is the water now safe for drinking?

Learning point

Water treatment chemicals kill germs that live in water.

Remember!

Always read carefully the instructions contained in the water treatment chemical container.



Check your progress 5(c)

1. Is chemically treated water safe for drinking? **True** or **false**.
2. Which chemicals do you use to treat water at home?

(c) Distillation



Activity 5

In groups



What you need

Water, a cooking pot, source of heat and a clean piece of cloth.



What to do

1. Put water in a cooking pot and cover it with a lid.
2. Place the cooking pot on the source of heat.



3. Let the water boil.
4. Lift the lid carefully.
 - Observe what is underneath the lid.
 - Where do you think the water on the lid came from?
 - Can the water on the lid be safe for drinking?

Caution: Steam can cause burns.

Learning point

Distilling water is boiling water to produce steam. When the steam cools, it is collected as distilled water. Distilled water is safe for drinking.



Check your progress 5(d)

1. Why do you think distillation is an expensive method of water purification.

(d) Decantation



Activity 6

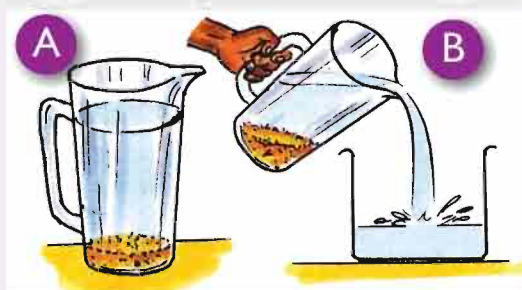
What you need

Three containers, water and cooking oil



What to do

1. Mix water and cooking oil in one container.
2. Let the mixture to settle for sometime.
3. Pour the top layer in another container.



- What are you left with?
- Were you able to separate the two mixtures?

Learning point

Decanting is a process that can be used to separate two liquids that do not mix. It is also used to separate solids that do not dissolve in water.

Remember!

Decantation does not make water safe for drinking. To make it safe we can add chemicals or boil it.



Check your progress 5(e)

1. Say if each of these statements is **true** or **false**
 - a. A piece of cloth is used in decanting water.
 - b. We can separate sugar from water through decanting
 - c. Decanted water is safe for drinking.

(e) Filtration



Activity 7

What you need

- Dirty water collected by the roadside in a jerrycan
- A clean piece of white cloth
- A container



What to do

1. Tie the clean piece of cloth round mouth of the container.
2. Pour the dirty water from the jerrycan into the container through the piece of white cloth as shown below.



3. Remove the piece of cloth.
4. Look at the water in the container.
 - What things does it contain?
 - Where do you think the things came from?
 - Is the water clean or dirty?
 - What do you think happened?

Learning point

Filtration helps to remove dirt and other small particles present in water.

Remember!

Filtered water is not safe for drinking.



Check your progress 5(f)

1. How does filtering make water clean?
 - a. _____
 - b. _____

6.1 Types of soil

Soil is everywhere, in our gardens, along the road, in the school compound and even along river banks.



Activity 1

What you need

Soil from different places, sheets of paper, hand lens



What to do

1. Your teacher will help you to collect soil from different places such as:
 - a garden,
 - a dry river bed or a river bank,
 - along the road.
2. Place the soils from these different places on pieces of paper.
3. Look at the different soils carefully.
Are the soils of the same colour?
4. Rub each soil between your fingers.
 - Which soil feels rough?
 - Which soil feels smooth?
 - Are the soil particles big or small?
 - Which soil has the biggest particles?
 - Which soil has the smallest particles?

Learning point

There are three types of soil. These are loam, clay and sand.



Loam soil



Clay soil



Sand soil



Fun corner

Read aloud.

My name is Mr Soil,
I have two daughters and one son.

My first born is clay,
She is grey in colour,
She lives near river banks,
She has small particles.

My second born is loam,
He lives in the garden,
He has medium sized particles.

My last born is sand,
She has large particles,
She lives along the roads.



Activity 2

Find out which type of soil is most common in your home area?

Remember

We need to take care of the soil because we plant crops in it.

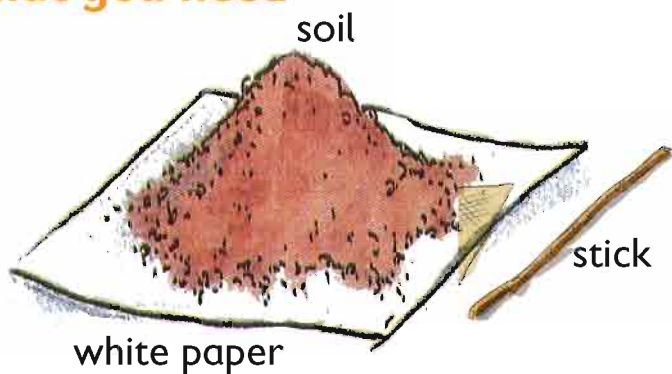
6.2 Soil composition

(a) Things in the soil



Activity 3

What you need





What to do

1. Collect some soil and bring it to class.
2. Put it on a piece of white paper.
3. Using a stick, turn the soil about.
 - What do you see in the soil?
4. Write down all the different things that you see in the soil.

(b) Organic matter in soil

Where do you put waste materials at your home?



Activity 4

What you need

A hoe, a stick and rubbish pit



What to do

With your teacher, visit a rubbish pit in your school or near your school.

1. Get a hoe or stick.
2. Turn the rotting rubbish in the rubbish pit.



- What things do you see there?
 - How is the smell of the rotting plants and animals?
 - What is the colour of the rotting plants and animals?
3. Take some soil from the rubbish pit and some soil from a garden and compare their:
- colour.
 - smell.

Learning point

The things that are found in a rubbish pit are made up of dead plant and animal materials. They are called **humus**. Humus is black in colour.



(c) Air in soil



Activity 5

What you need

A clear glass, some water and a lump of soil.

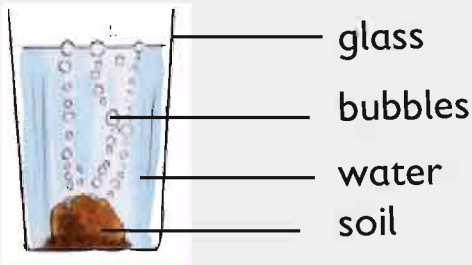


What to do

1. Half-fill the glass with water.
2. Gently drop a lump of soil in the water.
3. Observe what happens.

You may have noticed bubbles coming out.

- Where do the bubbles come from?
- What do we learn from this activity?



Learning point

Soil has air. This air is needed by plants and animals.

(d) Water in soil



Activity 6

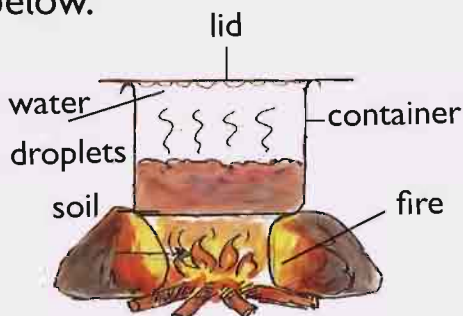
What you need

A container with a lid, a source of heat, sample of soil



What to do

1. Put the soil in the container. Cover the container with a lid.
2. Heat the sample of soil in the container as shown in the diagram below.



3. After sometime open the lid.
 - What can you see on the underside of the lid. What does this show about soil?
 - Where do the water droplets come from?
 - What do we learn from the activity above?

Learning point

Soil contains water.



Check your progress 6(a)

1. Why is clay soil the best for modelling?
2. Humus are _____ materials from plants and animals.
3. Some types of cups and plates are made from _____ soil.
4. Which soil is found in the garden?

6.3 Soil structure



Activity 7

As a class



What you need

Notebooks, pens and pencils



What to do

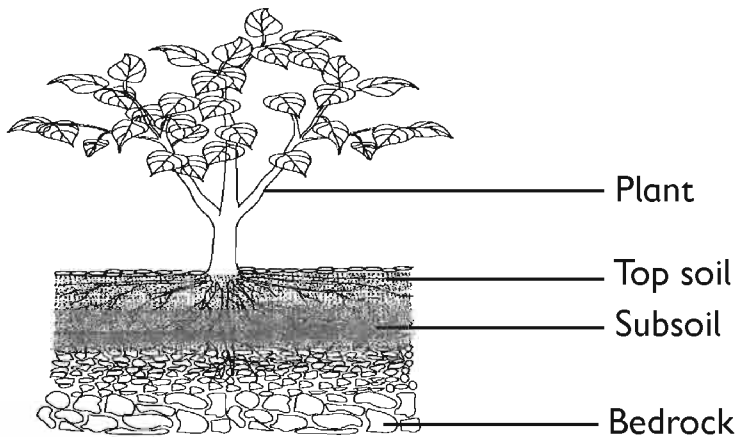
1. Your teacher will organise a visit to a dug up area or a pit.



2. Observe the soil layers.
3. Look closely at the way the soil is arranged.
 - How many layers did you see?
 - What is the colour of each layer?
4. Draw your observation in your notebook.

Learning point

Soil has different layers arranged from the bottom to the top. The big stones at the bottom eventually form soil.



Check your progress 6(b)

1. Between the soil particles there are spaces. These spaces are occupied by _____.
2. Before organic matter becomes humus it has to _____ first.
3. The air in the soil is used by _____.

6.4 Importance of soil



Activity 8

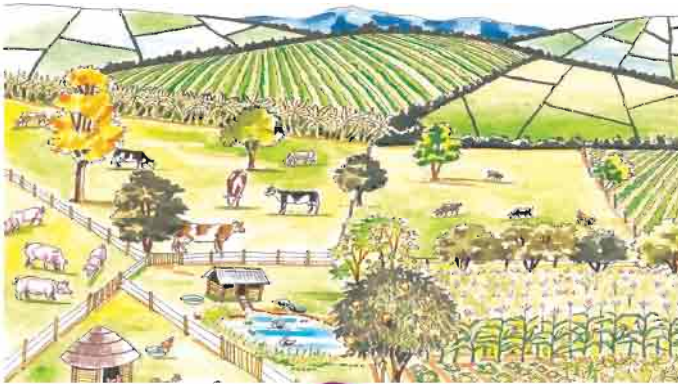
In pairs



A



B



C

1. What is used to make the wall of house in picture A and things in picture B?
2. Where do you think plant roots get food and water from in picture C?
 - Why do we grow crops in soil?

Learning point

- Soil is used for building and construction.
- Soil provides trees with water and mineral salts.



Check your progress 6(c)

1. Draw two things made from soil that you use at home.
2. How do we use these kinds of soil?
 - a. Loam soil _____
 - b. Clay soil _____
 - c. Sand soil _____

We use **tools** and **machines** to make work easier. Some of these tools and machines have wheels or rollers.

7.1 Rollers

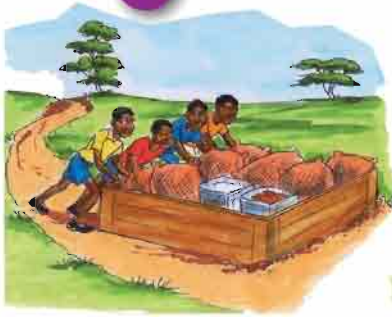


Activity 1

In pairs



A



B



Compare the amount of work to be done in picture A and B.

Learning point

Rollers make it easier for us to push or pull things.

7.2 Making and using rollers



Activity 2

What you need



sticks



a box



bottle caps



hammer



nail

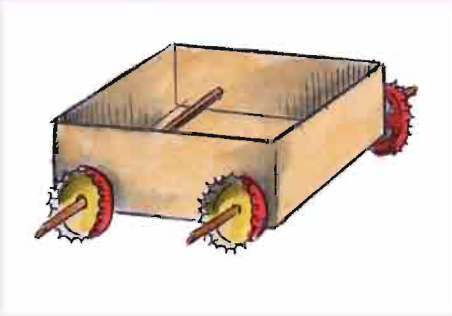
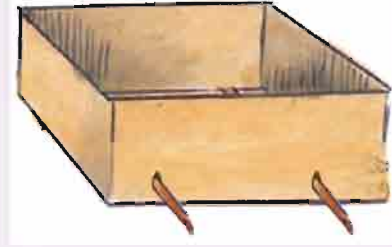


What to do



1. Use a nail to make holes at the centre of every bottle top. Then make four holes on the box.

2. Fix the sticks into the holes on the box.



3. Now, fix the bottle tops with holes on to the sticks to form a cart.



4. Tie a string and pull your toy cart along as in the picture alongside.



Activity 3

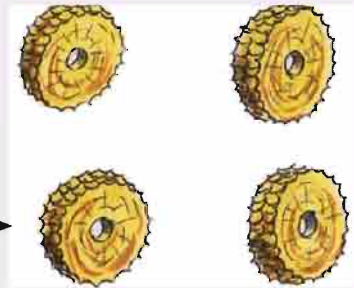
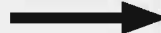
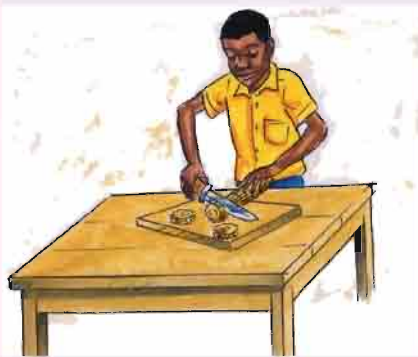
What you need



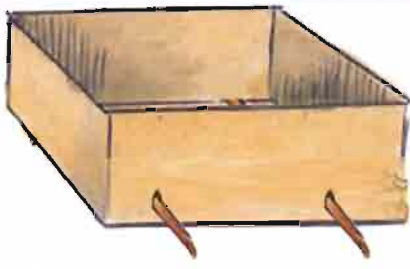
Caution: Be careful when using the knife. It can cut!



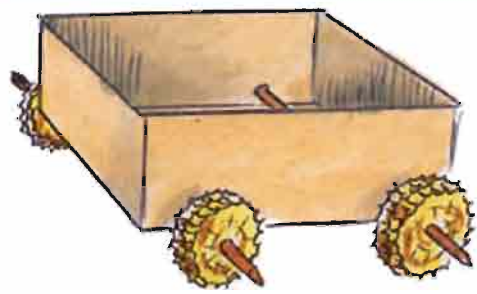
What to do



1. Cut the wheels from the maize cob as shown above.
2. Use a nail to make holes at the centre of the cut maize cob wheels. Then make four holes on the box.
3. Fix the sticks into the box as shown below.



4. Fit wheels onto the sticks like this to form a cart.



5. Tie a string and pull your toy cart along.



Activity 4

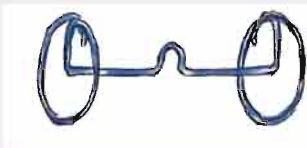
What you need



Long wires

What to do

1. Bend a long wire to make wheels as shown below.
2. Bend another wire to make a steering wheel.



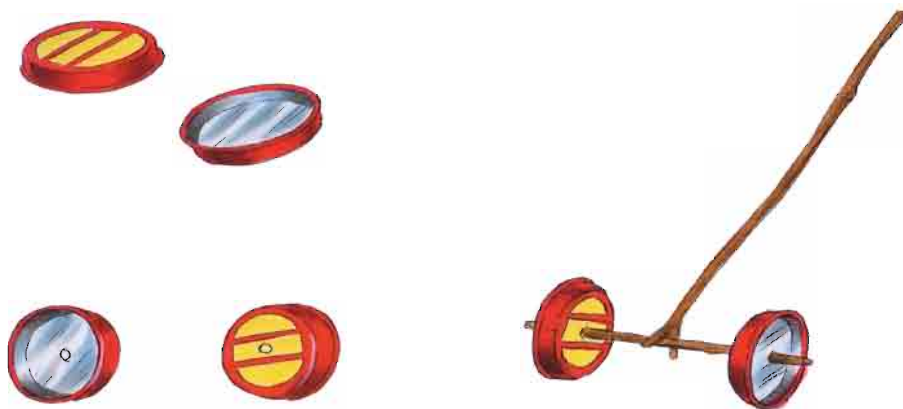
3. Use other wires to make a toy car. Fix the steering wheel onto the toy car.



4. Now, use the steering wheel to push the toy car as shown.

Other things used to make rollers

1. We can make wheels from shoe polish tins.

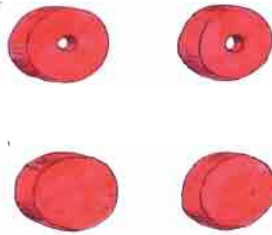


Toy car made from shoe polish tins

2. We can also make wheels from old slippers.



Old slippers



Wheels made from old slippers



Toy car made from old slippers wheels

3. We can also make wheels using wood or a round stick.



Check your progress 7(a)

1. Name other things that we can use to make wheels.

7.3 Things that use wheels

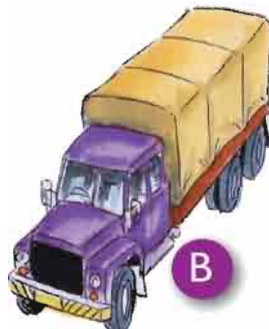


Activity 5

1. Look at the following pictures.



A



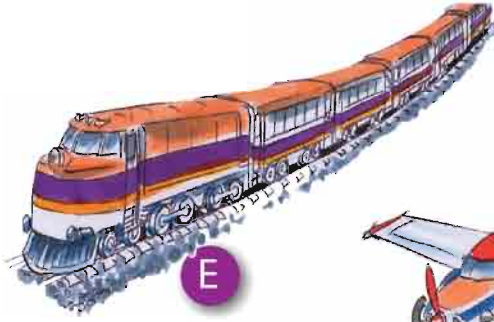
B



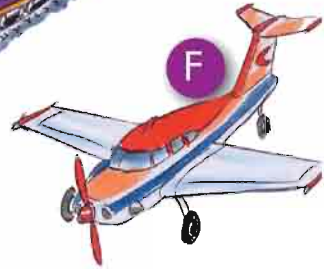
C



D



E



F

G

H



I

2. Copy and fill the table below in your notebook.

Name	Number of wheels	Use
A	4	transportation
B		
C		
D		
E		
F		
G		

Learning point

The things in the pictures have wheels. The wheels help them to move along easily.



Activity 6

1. Find out other things that use wheels in your home area.
2. How many wheels do they have?



Check your progress 7(b)

1. Wheels help machines to _____ easily. (move, stop)
2. A cart without wheels is _____ to move. (easy, difficult)
3. _____ make it easier for us to move things. (Wires, Wheels)