

# **SCIENCE AND ELEMENTARY TECHNOLOGY**

**Primary Two**

**Pupil's Book**

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## FOREWORD

Dear Pupil,

Rwanda Basic Education Board is honoured to present to you this Science and Elementary Technology (SET) book for Primary Two which serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of Science and Elementary Technology subject. The Rwandan educational philosophy is to ensure that you achieve full potential at every level of education which will prepare you to be well integrated in society and exploit employment opportunities.

The government of Rwanda emphasizes the importance of aligning teaching and learning materials with the syllabus to facilitate your learning process. Many factors influence what you learn, how well you learn and the competences you acquire. Those factors include the instructional materials available among others. Special attention was paid to the activities that facilitate the learning process in which you can develop your ideas and make new discoveries during concrete activities carried out individually or with peers.

In competence-based curriculum, learning is considered as a process of active building and developing knowledge and meanings by the learner where concepts are mainly introduced by an activity, a situation or a scenario that helps the learner to construct knowledge, develop skills and acquire positive attitudes and values. For effective use of this textbook, your role is to:

- Work on given activities which lead to the development of skills;
- Share relevant information with other learners through presentations, discussions, group work and other active learning techniques such as role play, case studies, investigation and research in the library, from the internet or from your community;

- Participate and take responsibility for your own learning;
- Draw conclusions based on the findings from the learning activities.

I wish to sincerely extend my appreciation to the people who contributed towards the development of this textbook, particularly REB staff who organized the whole process from its beginning. Special gratitude goes to translators, illustrators and designers who carefully worked to the successful completion of this textbook. Any comment or contribution would be welcome for the improvement of this textbook for the next edition.

  
**Dr. MBARUSHIMANA Nelson**  
Director General, REB



## ACKNOWLEDGEMENT

I wish to express my appreciation to all the people who played a major role in development of this Science and Elementary Technology (SET) book for Primary Two. It would not have been successful without active participation of different education stakeholders.

I owe gratitude to different translators, illustrators, designers and all other individuals whose efforts in one way or the other contributed to the success of writing of this translated book.

Finally, my word of gratitude goes to the Rwanda Basic Education Board staff particularly those from the Curriculum, Teaching and Learning Resources Department who were involved in the whole process of writing of this translated book.



**Joan MURUNGI**

Head of CTLR Department

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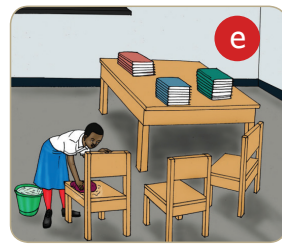
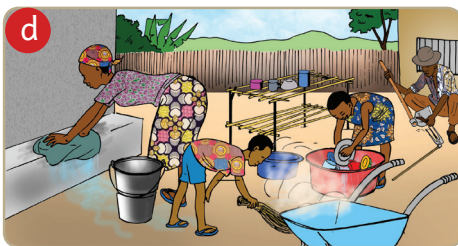
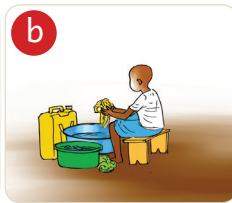
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# UNIT 1

## Tools and materials used at home and at school

### 1.0. Introduction



Much of your life time is spent at school and at home. You need different materials in your everyday activities. Therefore, it is important to know every material and tool used at school and at home, its uses, how to use, clean and keep it well. The essential questions to be answered after this unit are:

- What are the uses of various tools and materials used at home and at school?
- How can I maintain properly materials used at home and at school?

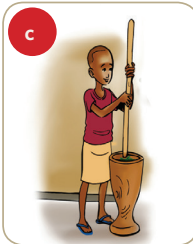
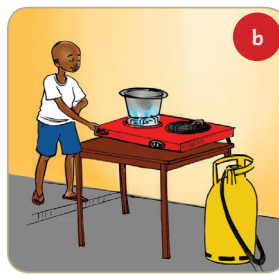
1.1.

## Tools and materials used at home and their uses

### 1. Kitchen and dining utensils

#### Activity 1

1. Look at the pictures **a**, **b**, **c**, **d**, **e** and **f** below.
2. List names of the utensils shown in the pictures. What are the uses of those materials?
3. Use a mortar to pound sorghum grains.



What have you discovered from the pictures?

## I have discovered that

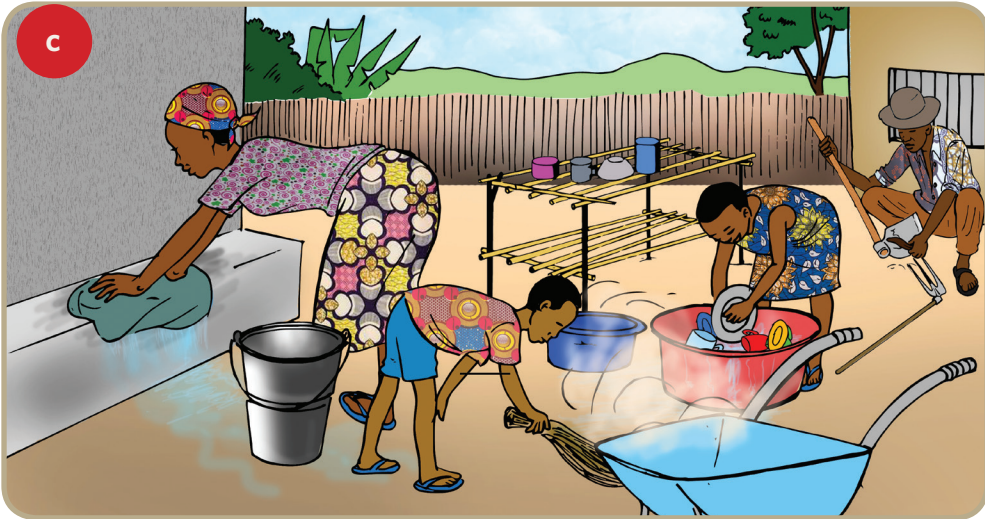
- **Plates** are utensils used for eating;
- **Saucepans, cooking pots** are utensils used for cooking;
- **Forks, spoons** are utensils used for eating;
- **Cups** are utensils used for drinking;
- **Dishes** are utensils used for keeping food.
- **Mortar and pestle** are utensils used for pounding;
- **Charcoal stove and modern cooker** are utensils used for preparing food.

## 2. Home materials used for cleaning

### Activity 2

1. Look at the pictures a, b and c below
2. Explain the importance of the materials shown in the pictures.





What have you discovered from the pictures?

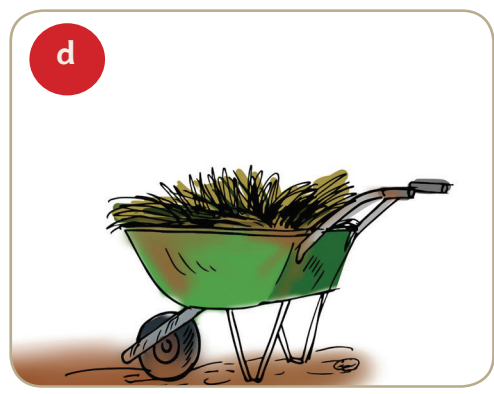
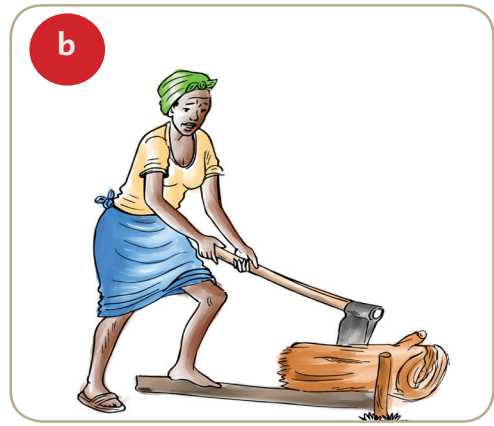
I have discovered that

- A **broom** is used for sweeping in the house and the compound;
- A **dustbin** is used for collecting rubbish swept/picked;
- A **mopping rag** is used for cleaning cement floors using water;
- **Sanitary towels** are used for cleaning window glasses, doors and home utensils;
- **Soap** is used when cleaning or washing home materials or bathing using water.

### 3. Agriculture tools (garden tools)

#### Activity 3

1. Look at the pictures **a**, **b**, **c** and **d**.
2. Where are the materials in the pictures used from?
3. Explain the uses of the materials in the pictures **a**, **b**, **c** and **d**.



What have you discovered from the pictures?

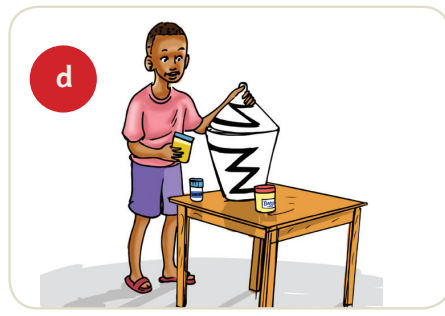
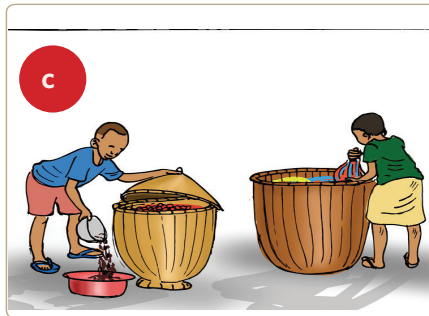
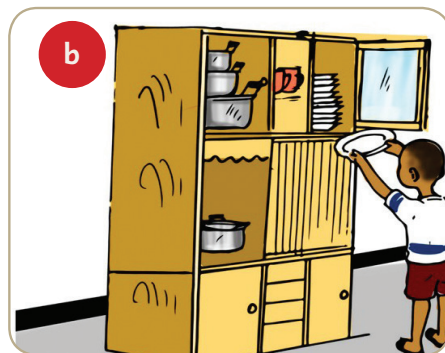
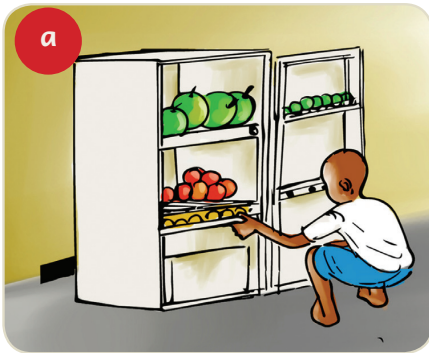
I have discovered that

- A **hoe** is used for digging soil/land;
- A **forked hoe** is used for digging in dry and hard soils;
- A **hoe dug planter mattock** is used to dig in rocky soils;
- A **ridging hoe** is used for sowing seeds like beans;
- A **wheelbarrow** is used to collect or carry crops, rubbish or waste materials;
- An **axe** is used for cutting big trees and splitting firewood;
- A **slasher** is used for slashing.

## 4. Storing materials at home

### Activity 4

1. Look at the pictures **a**, **b**, **c** and **d**;
2. What are the uses of materials in the pictures **a**, **b**, **c** and **d**?



What have you discovered from the pictures?

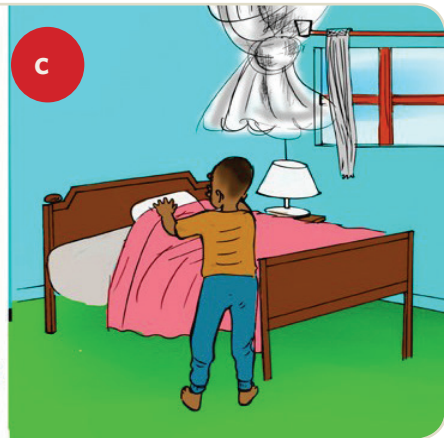
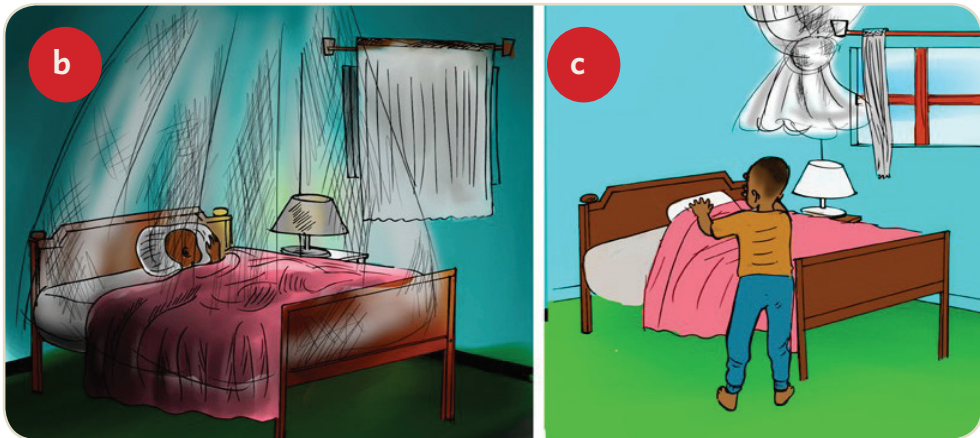
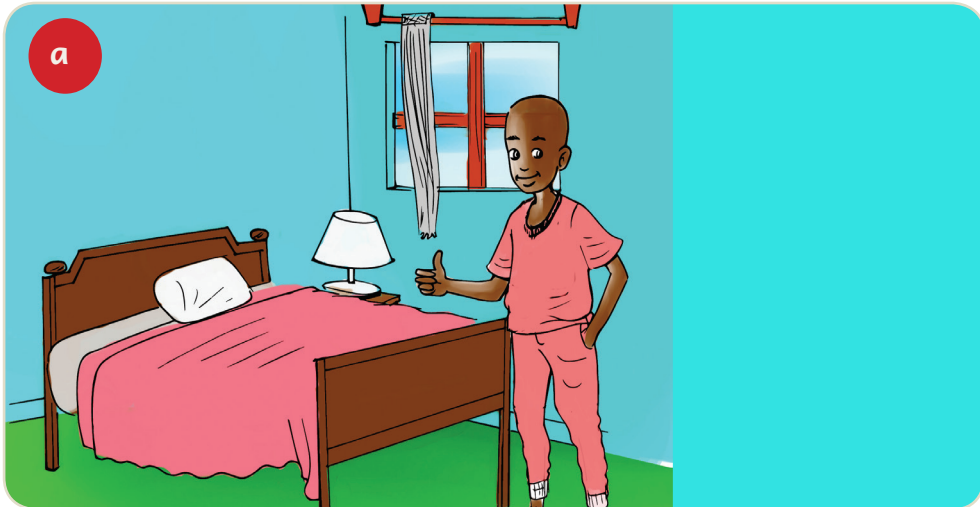
I have discovered that

- A **cupboard** is used to keep different materials: plates, dishes, books and others.
- A **woven basket** is used to keep dry foods or grains or seeds e.g. (beans, sorghum or maize etc....);
- A **basket** is used to keep dry foods or grains, seeds e.g. (beans, sorghum or maize...) or other small materials like jelly bottles, pullers, hair lifter etc;
- A **refrigerator/fridge** used to keep or preserve drinks/food.

## 5. Bedroom materials

### Activity 5

1. Look at the pictures **a**, **b**, and **c**.
1. Explain the uses of the materials in the pictures **a**, **b**, and **c**



What have you discovered from the pictures?

## I have discovered that

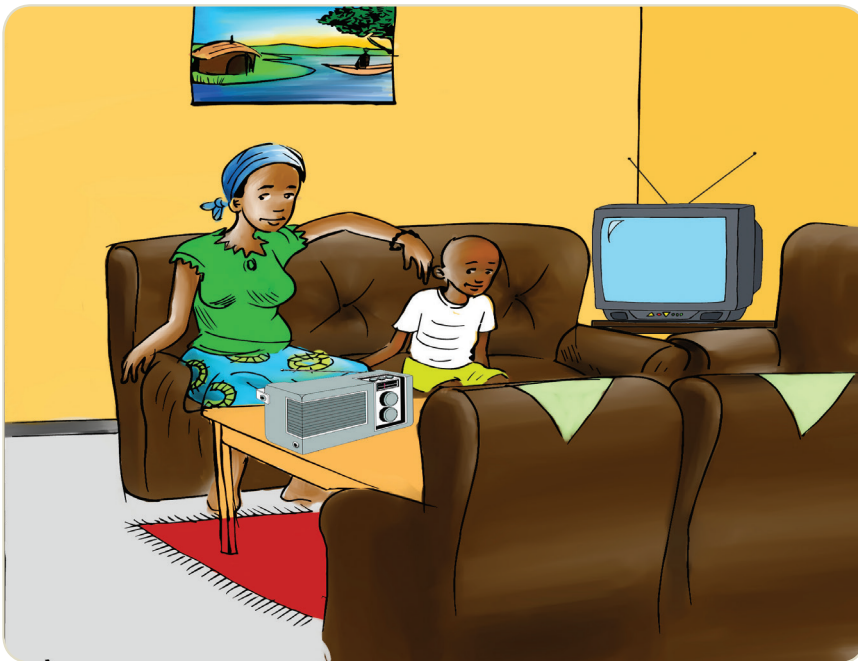
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- A **bed** is an object for sleeping on;
- **Bed sheets** are cloth materials laid on the bed to sleep on
- A **mosquito net** for covering the bed, used to protect a sleeping person from mosquitoes and other insect.
- A **mattress** is an object put on the bed to sleep on;
- A **blanket** is a cloth used to cover a sleeping person to protect him/her from cold;

### 6. Living room materials

#### Activity 6

1. Look at the picture;
2. Explain the use of materials in the picture below.



What have you discovered from the pictures?

## I have discovered that

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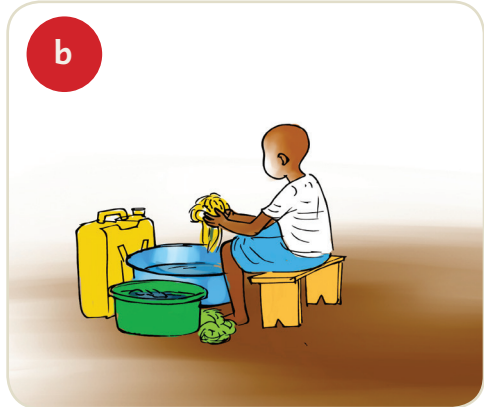
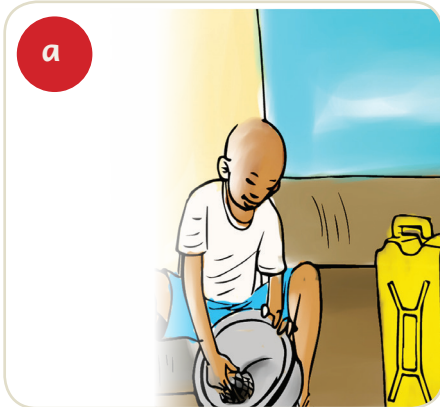
- **Chairs/couch** are the seats in a living room;
- **A living room table** is used to place on living room materials;
- **A television** is used for watching news, films and music;
- **A radio** is used to listen to news and music in sitting room;
- **A mat or a carpet** is a decoration in the sitting room.

1.2.

### Keeping and maintaining properly materials used at home

#### Activity 1

1. Look at the pictures **a, b, c, d** and **e**.
2. What are the materials being cleaned in the pictures?
3. Explain ways you can clean home materials you know.
4. Wash/clean dirty spoons and plates in the school kitchen.
5. Why do we do cleaning at home?



**What have you discovered from the pictures?  
What are you able to clean?**

## I have discovered that

The proper ways to maintain home materials/utensils are:

- washing, wiping, cleaning, greasing, ironing them.
- I am able to maintain and clean home materials and store them well in a clean place.
- We clean home materials to prevent diseases.

### 1.3. School materials and their uses

#### 1. Materials for writing and drawing

##### Activity 1

1. Look at the pictures (a, b, c and d)
2. What do you see in the pictures? What is the use of those materials?
3. Which materials in the pictures are you not familiar with?





What have you discovered from the pictures?

I have discovered that

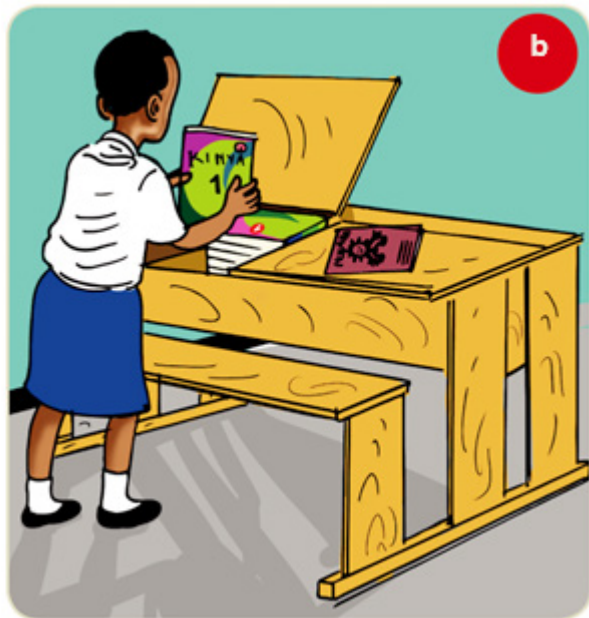
- A **notebook** is a material used to write in using a pen or pencil;
- A **paper** is a material to write on using a pen or a pencil;
- A **white board** is also a material used to write on using a colored marker;
- A **chalk board** is a material used to write on using chalk;
- A **pen** is a material used to write on paper or note book;

- A **colored marker** is a material used to write on specific writing board and papers;
- A **pencil** is a material used to draw pictures;
- A **colored pencil** is a material used to shade pictures;
- A **piece of chalk** is a material used to write on a chalk board.

## 2. Keeping/storing school materials

### Activity 2

1. Look at the pictures a and b.
2. Explain the use of the materials in the pictures.



What have you discovered from the pictures?

## I have discovered that

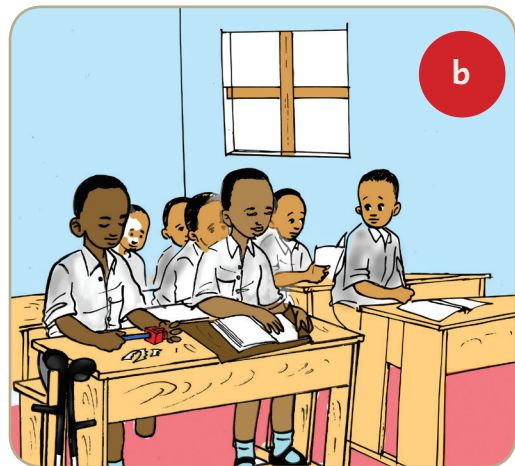
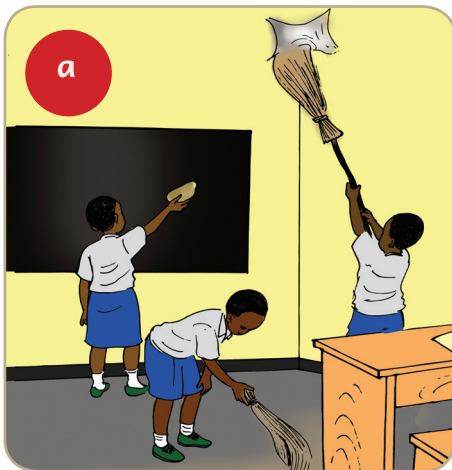
- A **book shelf** is a material where school materials are kept (books, ruler, square etc);
- A **school bag** is a material used to keep/carry pupils' school materials;
- A **desk** is a material where a pupil sits and keeps in materials needed in the lesson.

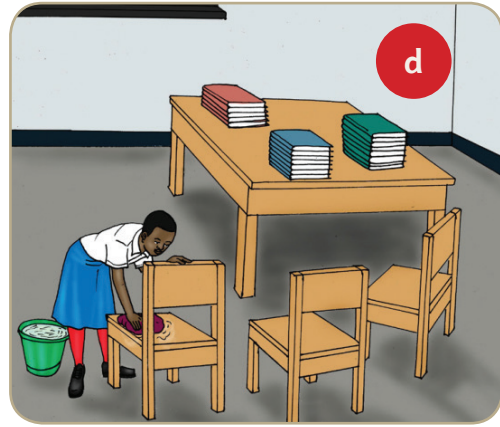
1.4.

### Keeping and maintaining properly school materials

#### Activity 1

1. Look at the pictures (a, b, c and d)
2. What are the pupils in the pictures doing? Explain.
3. Clean your classroom, chalkboard, table and even your desk.
4. Cover all your note books.
5. Clean properly your desk.





**What have you discovered from the pictures?  
What are you able to do after looking at the pictures?**







## I have discovered that

---

- Ways of maintaining school materials are the following:
  - Washing them;
  - Wiping them;
  - Covering text books or note books;
  - Sharpening pencils using a sharpener;
  - Covering a pen with a lid when not in use.
- I am able to clean and maintain school materials properly and keep them well from being destroyed.

## End of Unit Assessment 1

1. Match the following materials with their uses and where they are used.

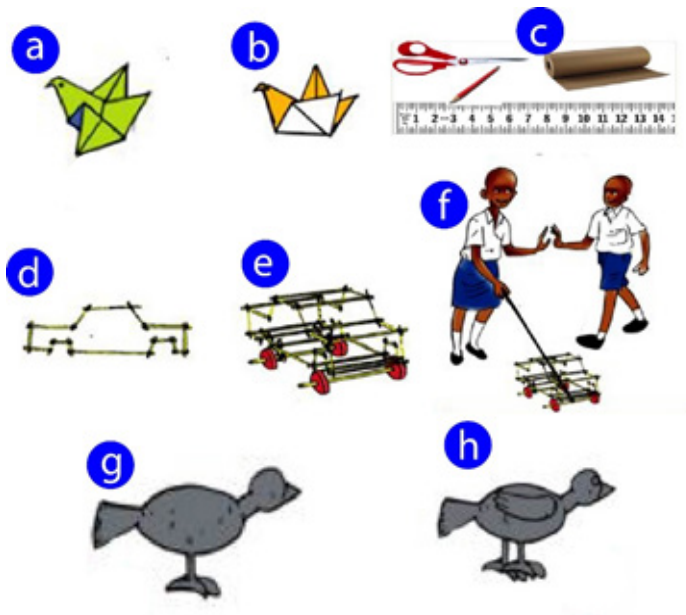
	Material	Its Use	Where they are used.
a)	Pencil 	Eating	At home
b)	Plate 	Pounding cassava leaves	
c)	Desks 	Sitting	
d)	Mortar 	Cooking	At school
e)	Fridge 	Writing	
f)	Modern cooker 	Store food	

2. Do the following :
  - a) Cover your note book;
  - b) Wash plate using soap and water;
  - c) Wash well your handkerchief;
3. In front of each of the following sentences write “TRUE” or “FALSE”;
  - a) A map is washed, when it gets dirty.
  - b) We throw old books away or burn them because they look so dirty;
  - c) When cleaning a hoe, I first wash it with water, then dry it and keep it dry to avoid rust.

## UNIT 2

# Toys, various materials and teaching and learning aids

### 2.0. Introduction



This unit gives you capacity and ability to make for yourself different toys and learning and teaching materials you were usually buying from the shops. You will need those materials in your daily life, games even during lessons. The essential questions to be answered after this unit are:

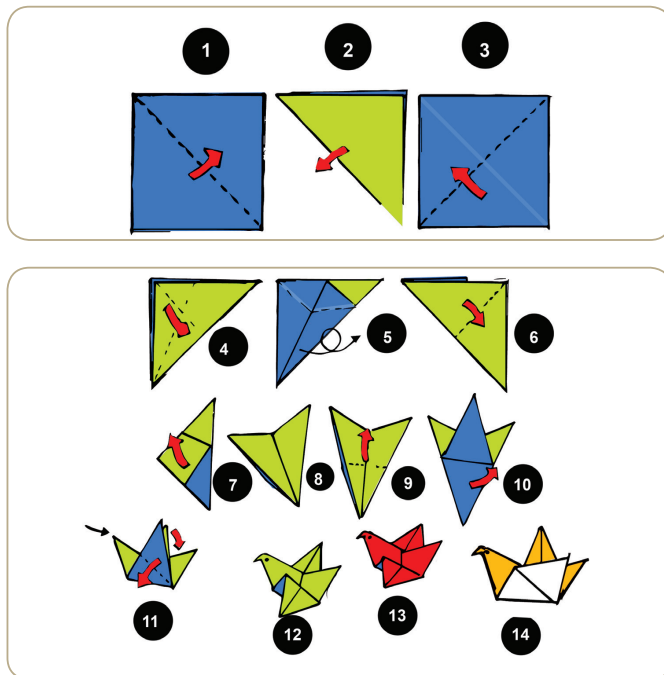
- How can I make toy objects like bird, car, clock, airplane, goat using local materials?
- How can I make teaching and learning aids like rectangle and square using papers?

## 2.1. Making a toy bird out of papers

### Activity 1

1. Look at the pictures
2. Take a used paper with at least 20cm.
3. Cut the paper in such way that all the four sides are equal.
4. Fold that paper and make a toy of a flying bird as shown in the pictures following all the 14 steps given.
5. Fly the toy like bird you have made in the school compound.

**Materials: Pair of scissors, paper**



**What are you able to do after this activity?**

**I am able to make a toy bird out of a paper following all the steps given in this book.**

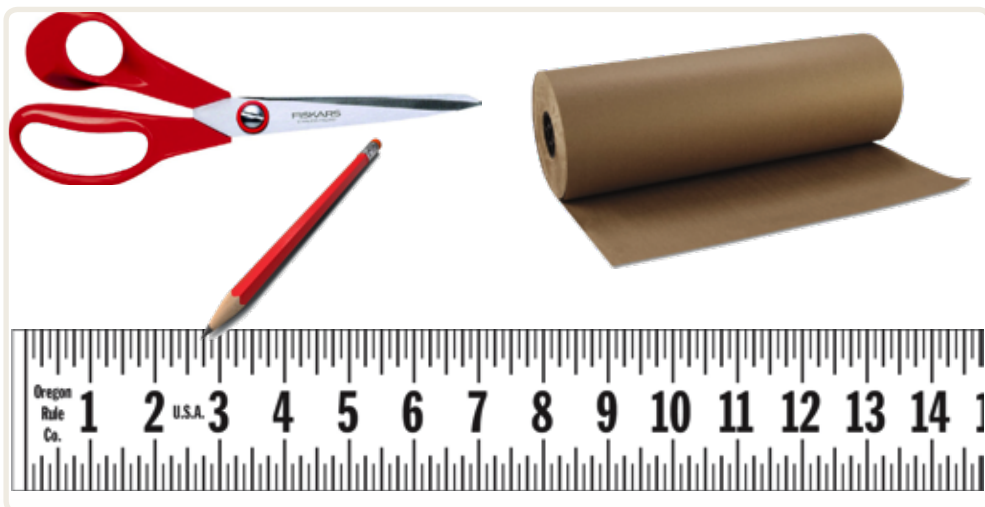
## 2.2.

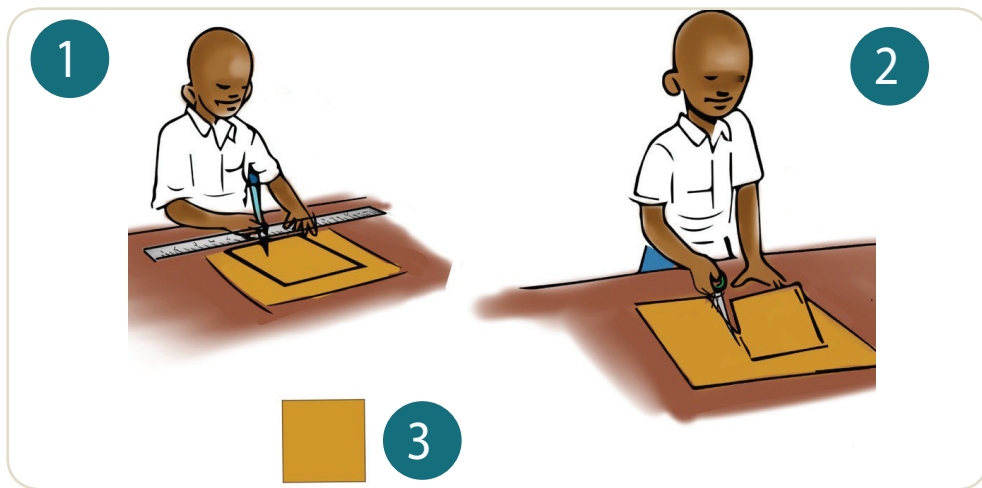
# Making a rectangle and a square out of paper

### Activity 2

1. Look at the pictures (1, 2 and 3)
2. Take a paper with a size of at least 10cm.
3. On the paper draw a square with a right angle and each side of 5cm.
4. Cut the paper using a pair of scissors following the sides of that square (**NB:** Avoid harming yourself while cutting the paper).
5. Again, take another paper with a size of 10 cm.
6. On the paper draw a rectangle with 2 equal parallel sides of 5cm and 8 cm.
7. Cut the paper using a pair of scissors following the sides of the rectangle.

**Materials:** Paper, pair of scissors, ruler and pencil





**What are you able to do after this activity?**

I **am able** to make four sided figures (a square and a rectangle) in papers following all the steps given in this book.

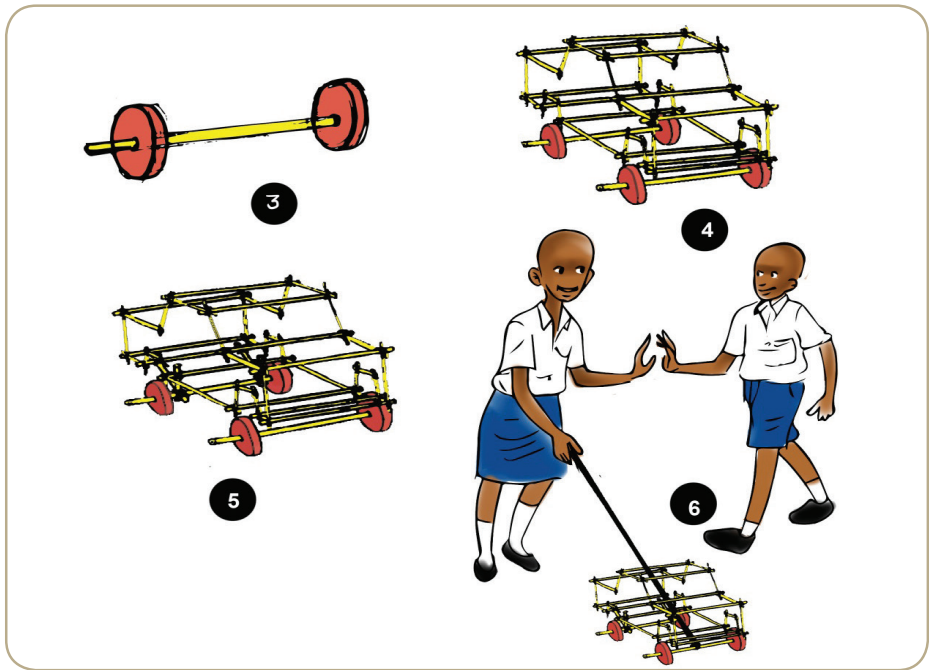
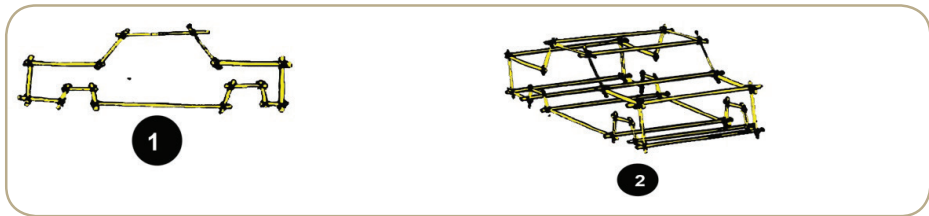
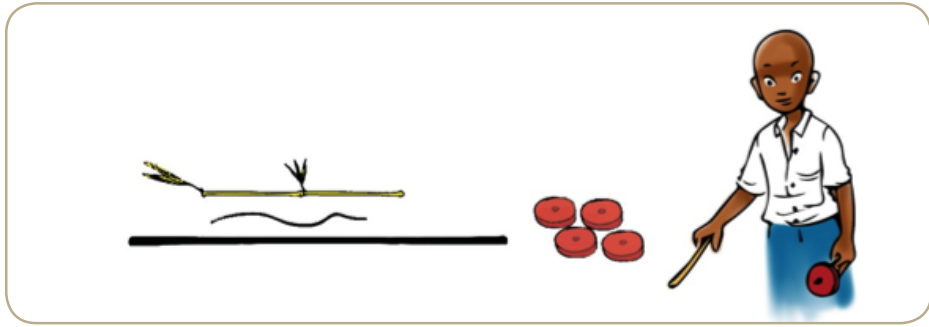
**2.3.**

### **Making a toy car in dry sorghum sticks or straws**

#### **Activity 3**

1. Look at the pictures as shown in **1, 2, 3, 4, 5,** and **6.**
2. Gather materials that you shall need (dry sorghum sticks, straws iron rod, nail, long stick, strings, bottle tops).
3. Cut (break) sorghum sticks and join them, following steps for making a toy car given in this book. (**Note:** *in the process of cutting/breaking sorghum sticks, be careful not to harm yourself.*)
4. Drive that toy car you have made. Are the tyres rotating/rolling?

**Materials:** Dry sorghum sticks, (straws) iron rod, hard sticks, bottle tops, nails.



**What are you able to do after this activity?**

**I am able** to make a toy car in sorghum sticks and hard sticks following all the steps given in this book.

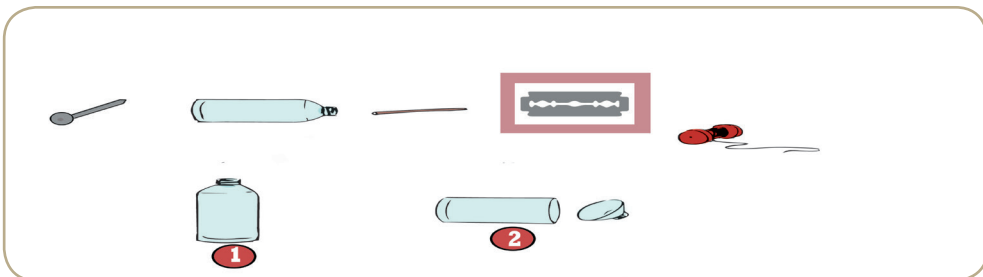
## 2.4.

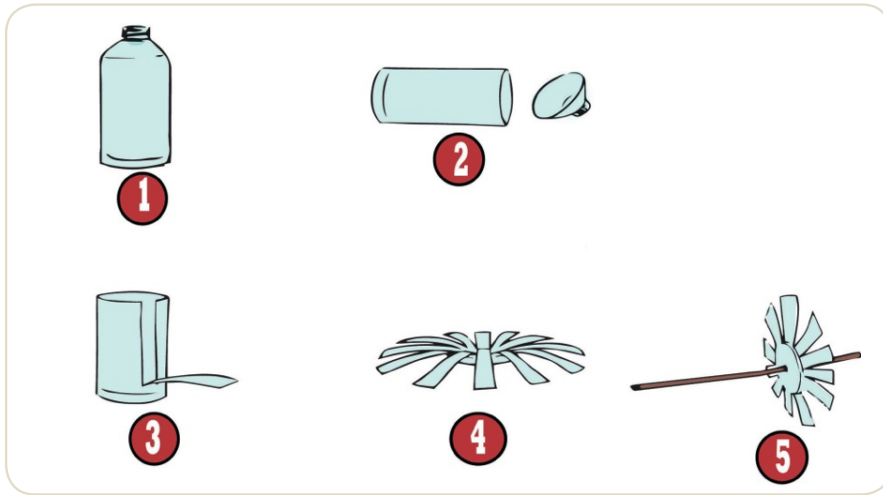
# Making a toy airplane out of an empty plastic bottle

### Activity 4

1. Look at the pictures 1, 2, 3, 4 and 5 below.
2. Gather materials you shall need (razor blade or sharp knife, empty plastic bottle, a long stick/ wire, a nail for perforating/ piercing).
3. Cut a plastic bottle using a sharp knife and follow steps shown in the pictures, and fix a stick to hold when flying that toy airplane (**Note:** Be careful while cutting the plastic bottle and avoid harming yourself.)
4. Fly the toy that you have made.

**Materials:** Razor blade, empty plastic bottle, long stick/wire, nail.





**What are you able to do after this activity?**

I **am able** to make a toy like airplane using an empty plastic bottle following all the steps given in this book.

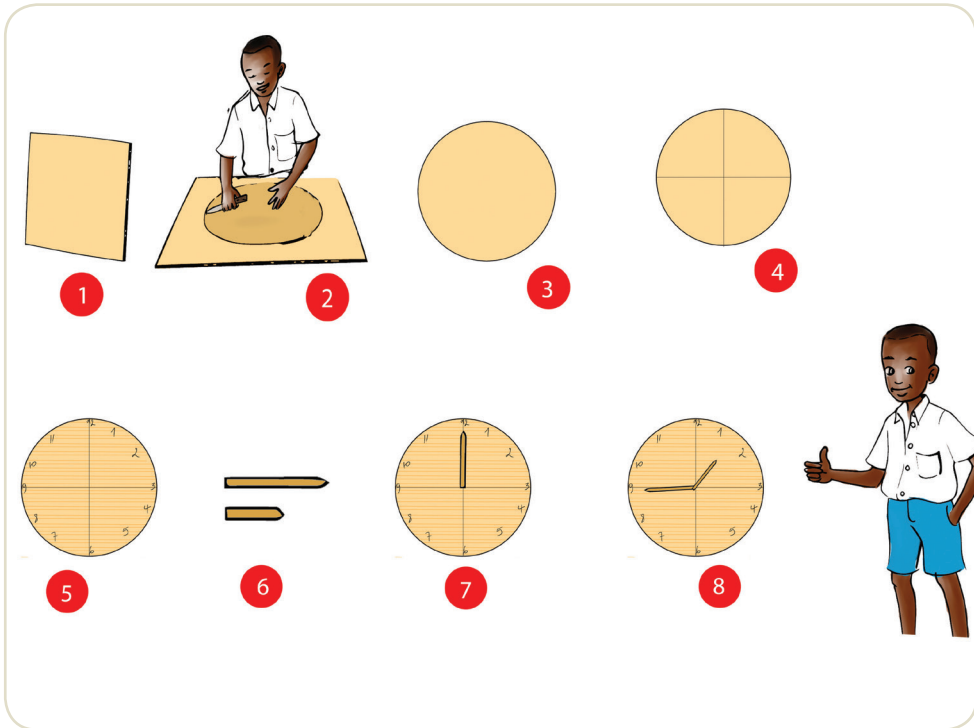
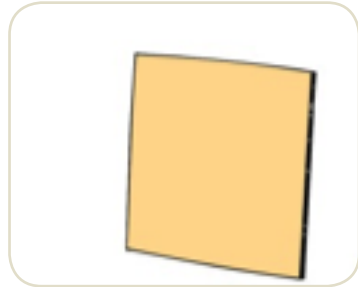
**2.5.**

## **Making a wall clock toy to hang in class out of a box**

### **Activity 5**

1. Look at the pictures (1, 2, 3, 4, 5, 6, 7 and 8)
2. Gather materials you shall need (a pair of scissors and stick/nail, box, pen, paper ruler, compass).
3. Cut a box using a pair of scissors, follow the steps given in pictures and make a wall clock toy to hang in your classroom. (**Note:** In the process of cutting a hard box be careful not to harm yourself).
4. Compare your toy wall clock to that of your friend, which one is better?

**Material:** pair of scissors, box, stick/nail, pen, hard paper, iron rod



**What are you able to do after this activity?**

**I am able** to make **a wall clock** using a hard paper box, following all the steps given in this book.

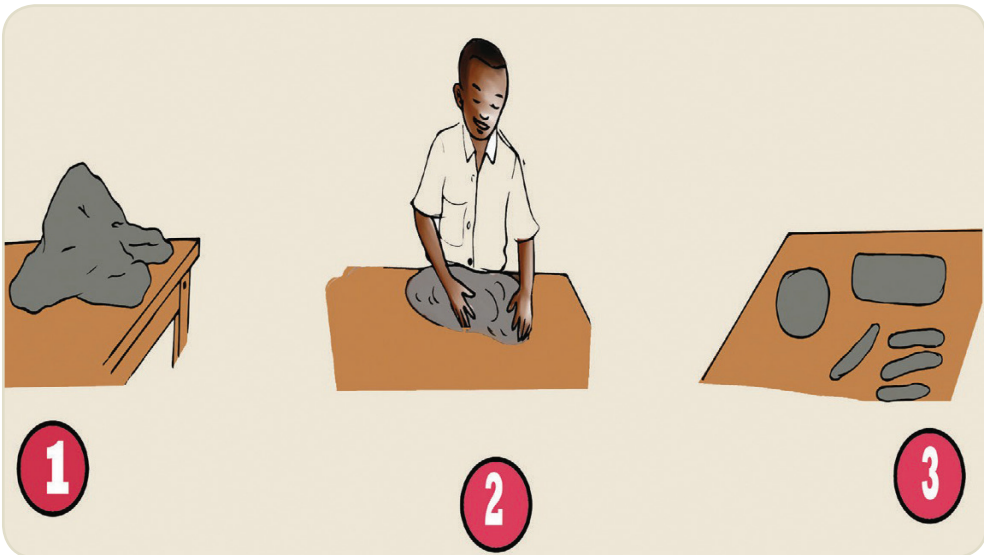
2.6.

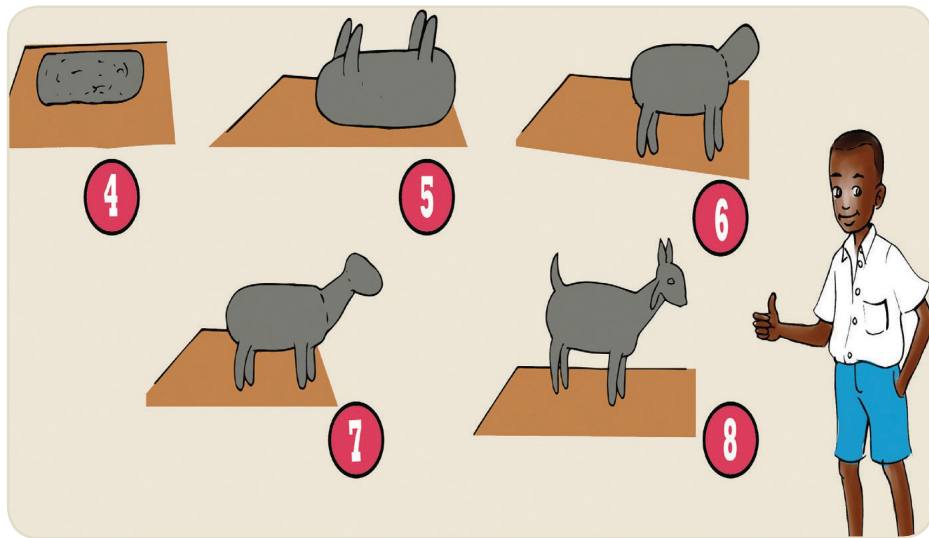
## Modeling a goat sculpture out of clay

### Activity 6

1. Look at the pictures 1, 2, 3, 4, 5, 6, 7 and 8
2. Prepare clay, fine sand and water.
3. Mix clay and fine sand (in the ratio of 2:1).
4. Knead the clay soil with fine sand and water until they fully mixed.
5. Model a goat like sculpture following steps given in the pictures below.
6. Put your model goat like sculpture in a dry place where there is no sun (so that it doesn't crack).

**Materials:** Clay, fine sand and water





**What are you able to do after this activity?**

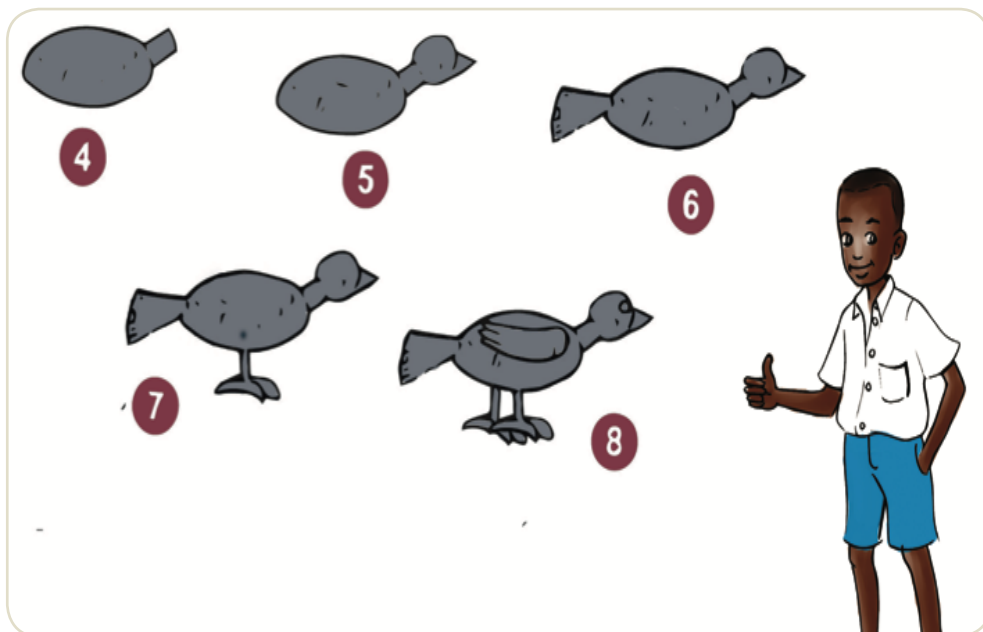
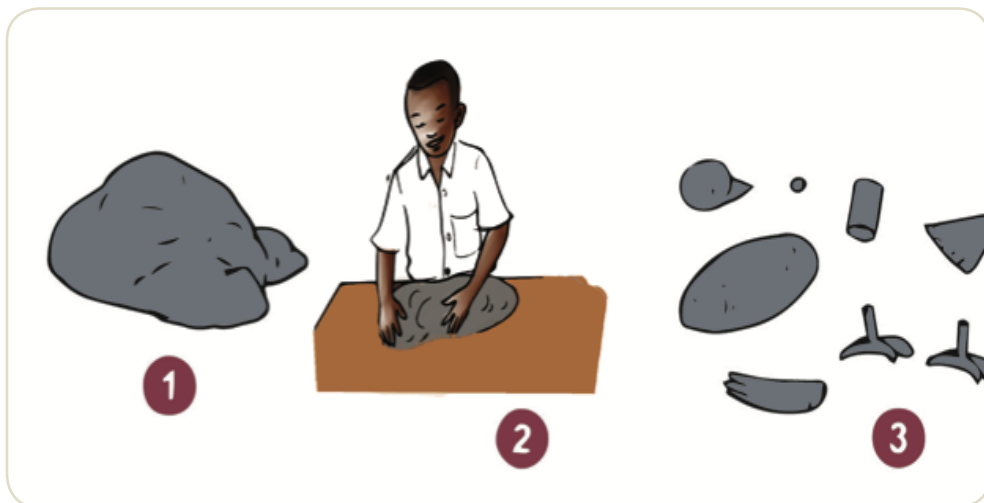
**I am able** to model a goat like sculpture in clay following all the steps given in this book.

## **2.7. Modeling a bird sculpture out of clay**

### **Activity 7**

1. Look at the pictures 1, 2, 3, 4, 5, 6, 7 and 8.
2. Prepare clay, fine sand and water.
3. Mix clay with fine sand (in the ratio of 2:1)
4. Knead the clay soil with fine sand and water until they fully mixed.
5. Model a bird like sculpture using steps given in the following pictures below.
6. Put that model clay sculpture in a dry place free from sunshine (so that it doesn't crack).

**Materials:** clay, fine sand and water



**What are you able to do after this activity?**

**I am able to model a bird like sculpture out of clay following all the steps given in this book**

## End of Unit Assessment 2

1. In the following activities, choose any two and do them:
  - a) Make a bird out of paper.
  - b) Cut paper and make (a) square, (b) rectangle
  - c) Make a toy like airplane out of paper and sorghum sticks.
  - d) Out of a box make a wall clock to hang in the class-room
2. Fill these words in the following sentences:  
**plastic, sides, sand, knife.**
  - a) In preparing clay used to model toys, you mix clay with .....and water up to when they are fully mixed up.
  - b) A.....bottle can be used to make a play material that fly like an aero plane.
  - c) When using a pair of scissors, ..... or a razor blade we must be careful not to harm ourselves.
  - d) A square is a four sided figure with four equal..... and four right angles.

## UNIT 3

# Computer my Friend

### 3.0. Introduction



A computer is a tool that is used in the daily life. This unit will help you to discover and identify the main parts of a computer, know their uses and take care while using it at school and at home. The essential questions to be answered after this unit are:

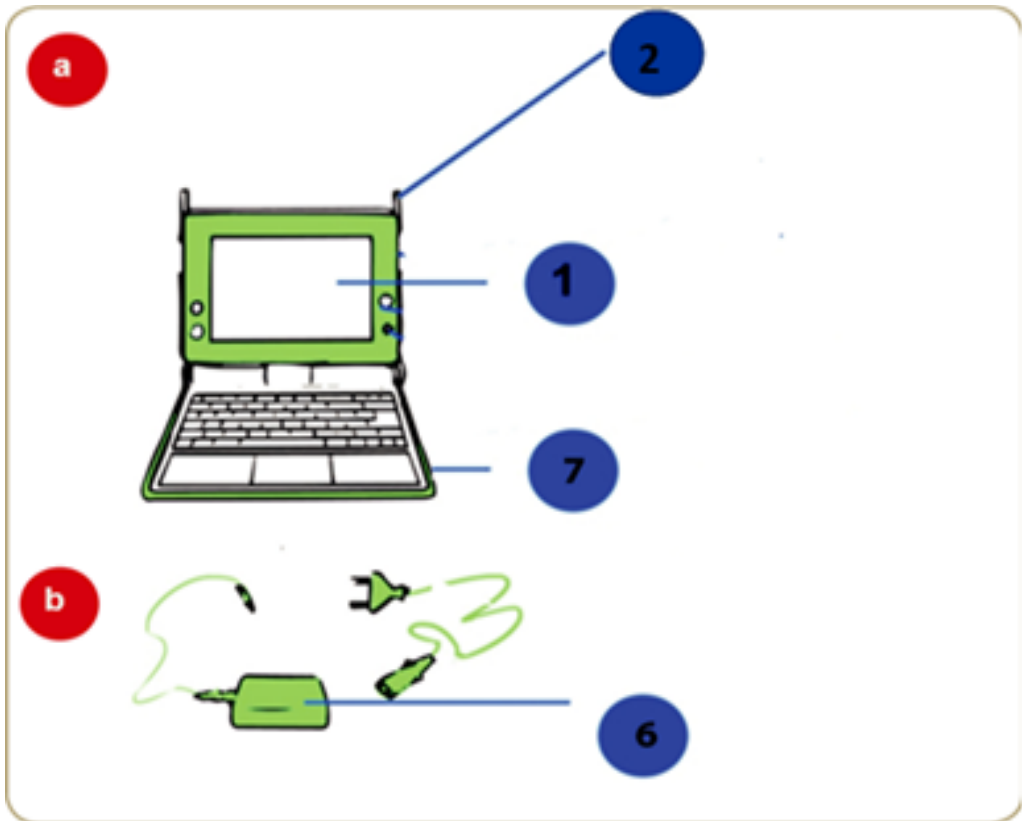
What are the main external parts of a computer we use at school and their uses?

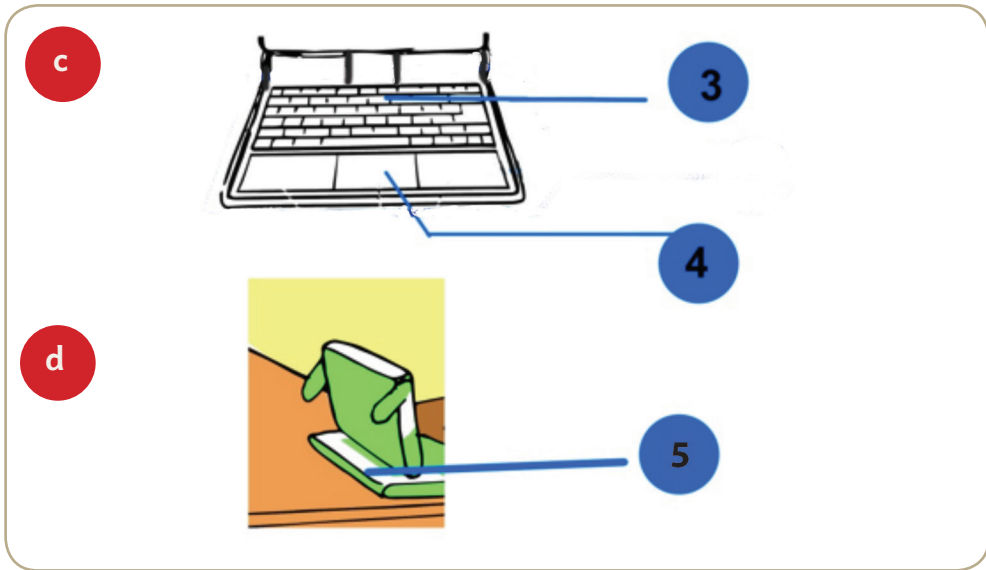
How can I maintain my computer well and use it properly?

### 3.1. The main external parts of a computer

#### Activity 1

1. Look at the pictures **a**, **b**, **c** and **d**.
2. Open your computer and place it in front of you on your desk.
3. Tell the names of the parts labeled; (**1**, **2**, **3**, **4**, **5**, **6**, **7**) shown in the pictures **a**, **b**, **c** and **d**.





**What have you discovered from the pictures?**

**I have discovered that**

---

The main external parts of a computer are:

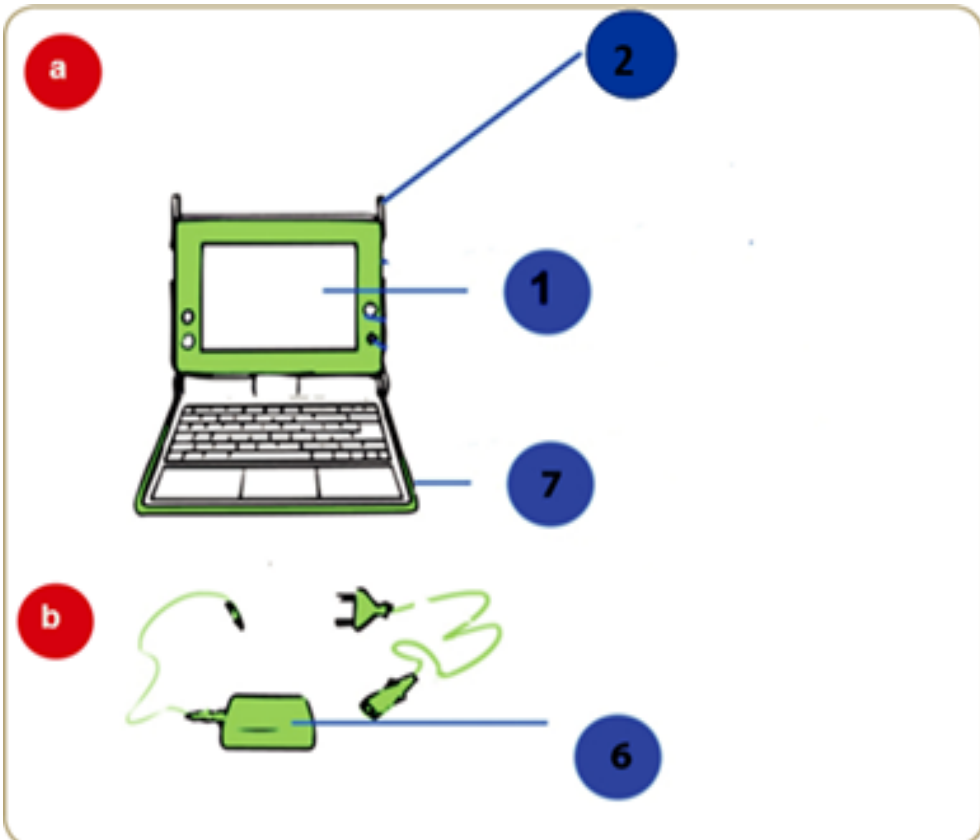
1. Screen/monitor
2. Antenna
3. Keyboard
4. Touch Pad
5. Battery
6. Charger/Adapter
7. Computer case

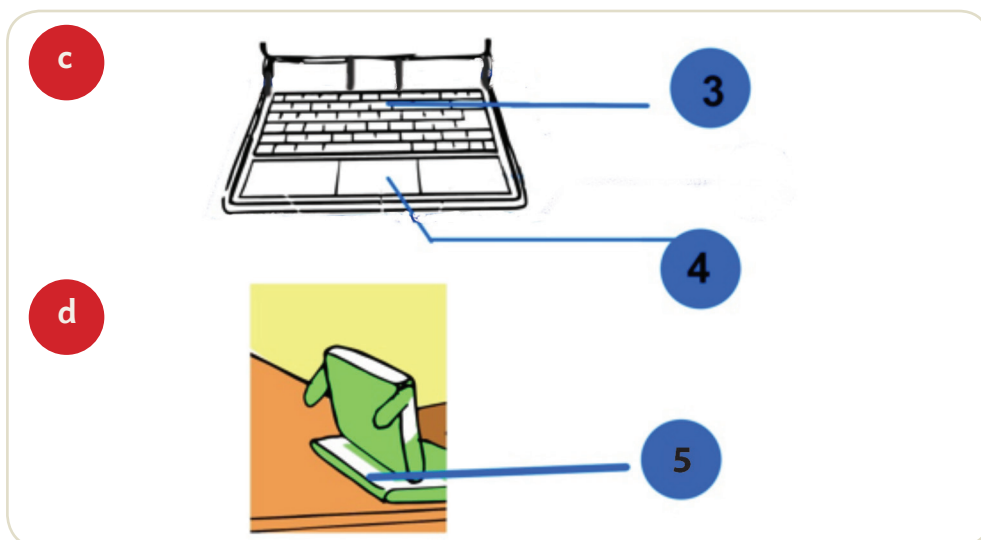
### 3.2.

## Uses of the main external parts of a computer

### Activity 2

1. Look at the pictures (a, b, c and d).
2. Open your computer, place it in front of you on your desk.
3. Explain the use of each part labeled (1, 2, 3, 4, 5, 6, 7) shown in the pictures below.





What have you discovered from the pictures?

I have discovered that

The uses of the external parts of a computer are the following:

1. **Screen/monitor:** Used for reading text or display pictures from the computer.
2. **Antenna:** They are two and they connect a computer to the internet.
3. **Keyboard:** Part of a computer that helps us to write.
4. **Touch Pad:** Part of a computer where pupils slide their fingers to choose or select information on the computer screen.
5. **Battery:** Part of a computer that stores electricity used by the computer.
6. **Charger/Adapter:** A cable that connects a computer to the electricity source.
7. **Computer case:** Part of a computer that covers the internal parts of a computer

### 3.3.

## Proper ways of maintaining a computer

### Activity 3

1. Look at the pictures (a and b)
2. Explain what the pupils are doing.
3. Who is cleaning his computer properly? Why?
4. What else can you avoid in order to maintain your computer safe?



**What have you discovered from the pictures?**

**I have discovered that**

---

A computer must be maintained properly in the following ways:

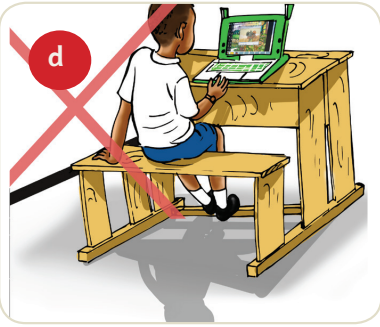
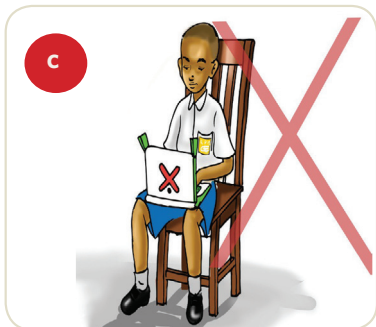
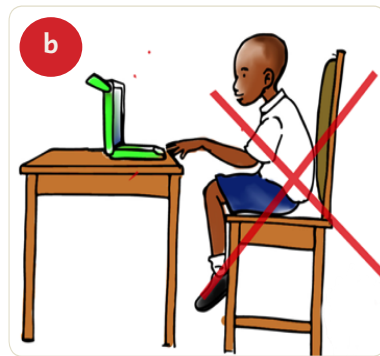
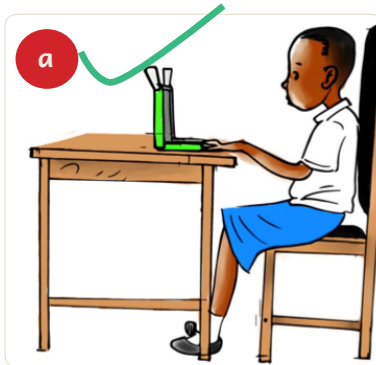
- Cleaning to remove dust
- Covering it to avoid dust
- Putting off after use/shutting down
- Putting in anti virus
  - Avoid pouring water on it or putting it in rain;

- Handling it with care to avoid falling down;
- Avoid putting it in very hot areas;
- Avoid putting it in a place which is not well ventilated.

### 3.4. Sitting posture when using a computer

#### Activity 4

1. Look at the pictures a, b, c, and d
2. Look carefully how those pupils are sited. Who is sited well? Why?
3. Tell someone who is sited poorly in your class to sit well.



What have you discovered from the pictures?

## I have discovered that

---

Someone using a computer must sit as follows:

- Sit on the chair upright;
- Sit without bending the back while leaning on the chair/desk;
- Avoid getting your eyes closer to the computer when it is switched on
- Avoid putting the computer on the laps while using it;
- Avoid sitting while bending right or left.

**3.5.**

### **Dangers of poor sitting posture while using a computer**

#### **Activity 5**

1. Look at the pictures **a** and **b**.
2. Show a picture of pupils with dangers of poor sitting posture while using a computer.
3. Say other dangers of poor sitting posture while using a computer.



**What have you discovered from the pictures?**

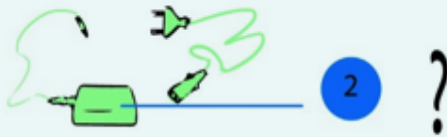
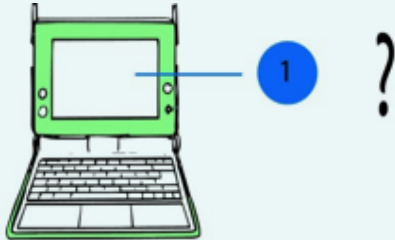
**I have discovered that**

Negative effects of poor sitting posture while using a computer are as follows:

- Eye sickness
- Back sickness (backache)
- Bent backbone
- Fatigue

## End of Unit Assessment 3

1. Write in your exercise book the external parts of a computer shown in the following pictures.

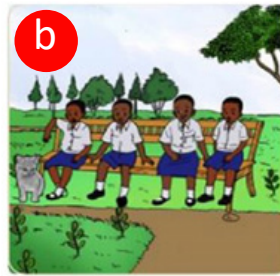
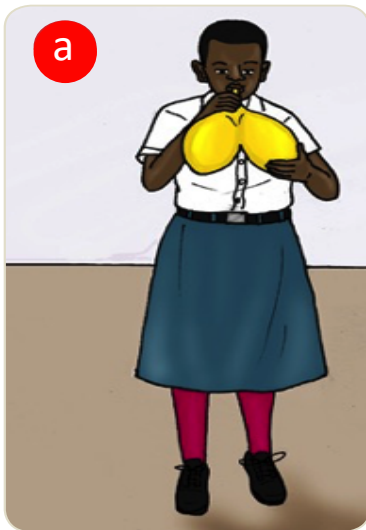


2. What is the use of each external part of a computer that you have given in question 1?
3. Using your computer, show a proper way for keeping it safe.
4. Using your computer and your desk, show the proper ways of sitting when using a computer. Say the reasons why?

# UNIT 4

## Air and wind

### 4.0. Introduction



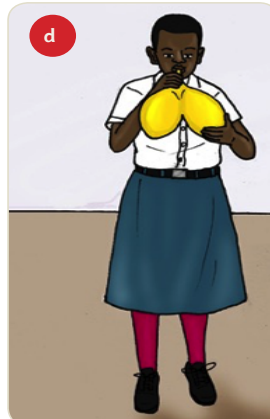
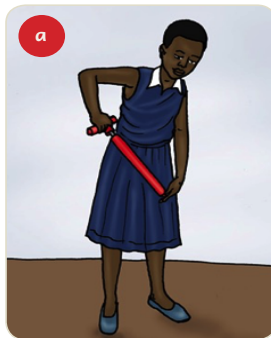
Doing well activities in this unit will help you discover the presence of air, characteristics of air, identify importance of air, explain the relationship between air and wind, differentiate types of wind and prevent/reduce negative effects of wind. The essential questions to be answered after this unit are:

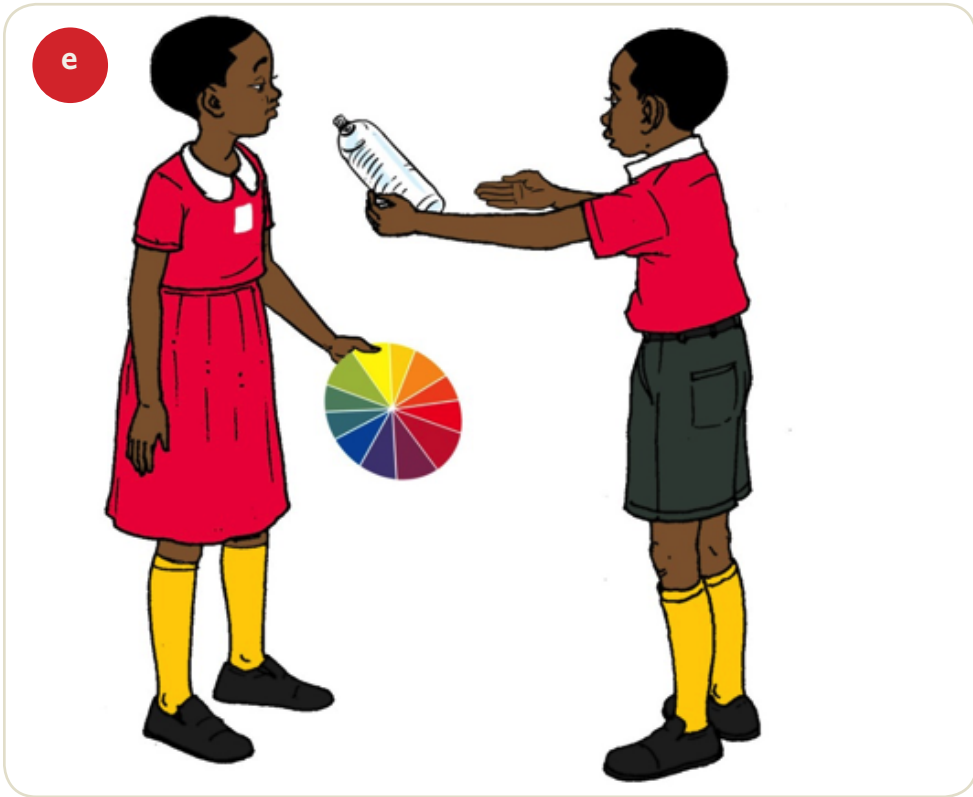
- What are the characteristics of air? What is the importance of air?
- What is the relationship between air and wind?
- What are the types of wind, its effects and ways of preventing them?

## 4.1. Characteristics of air

### Activity 1

1. Look at the pictures below a, b, c, d and e
2. Take a sealed bottle without water. Do you think there isn't any water in the bottle or it is empty? If it is not empty, what is the color of the substance in the bottle?
3. Using bicycle pressure pump, tap your finger on its hole closing it, pump while your finger is still holding firmly at the hole of the pump. How do you feel the air inside the pump?
4. Breathe in the smell of air in a bottle of water that was previously full of water. What is the smell of the air?
5. Blow hard air in a balloon and then let the air out of the balloon. Can you explain/tell the color of air from the balloon?





**What have you discovered from the pictures?**

**I have discovered that**

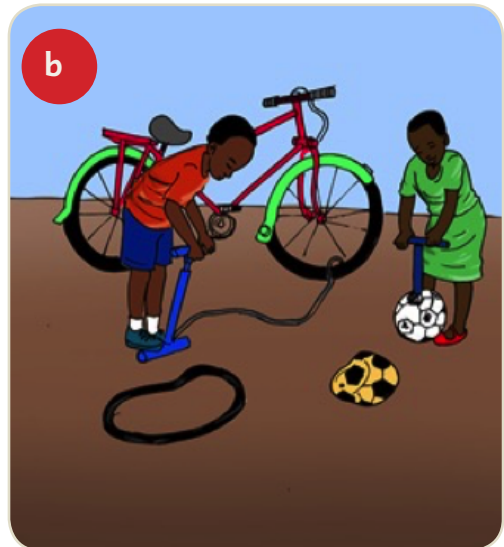
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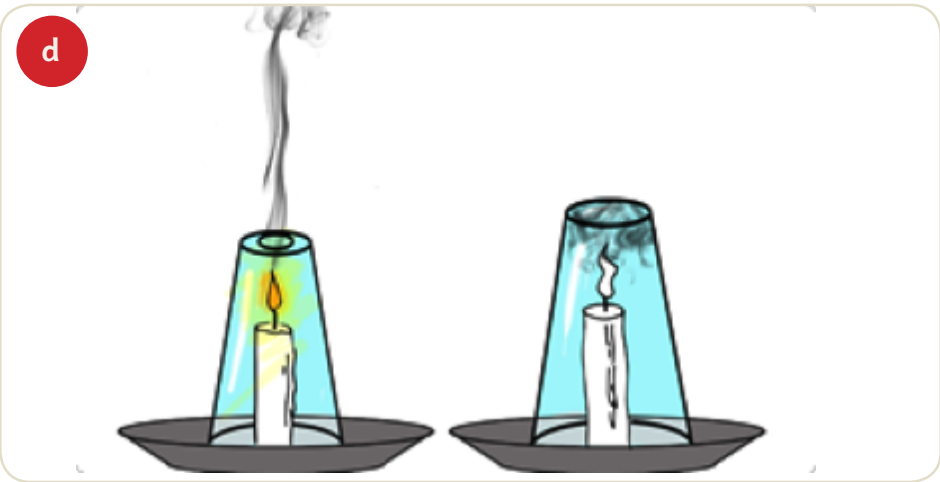
- Air exists and it is different from emptiness/nothing;
- Air has the following properties:
  - Air occupies space
  - Air is shapeless; it takes the shape of the container e.g. polythene paper, bottle etc.,
  - It has no color
  - It has no smell.
  - It has weight.

## 4.2. Importance of air

### Activity 2

1. Look at the pictures a, b, c, and d
2. Are the children in the pictures in a place with air? If yes, how is that air like? Explain.
3. Using a bicycle pressure pump, blow air in a football and a bicycle tyre. How does a football or a tyre get filled with air?
4. Light two candles, cover one with a perforated (holed) glass at the bottom and cover the second one with a normal glass as shown in the picture d; What have you seen?
5. Blow air into a burning charcoal stove. Why is charcoal burning turning more red?





**What have you discovered from the pictures?**

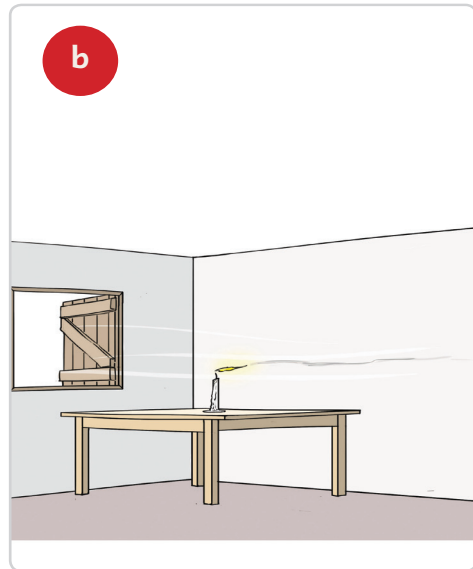
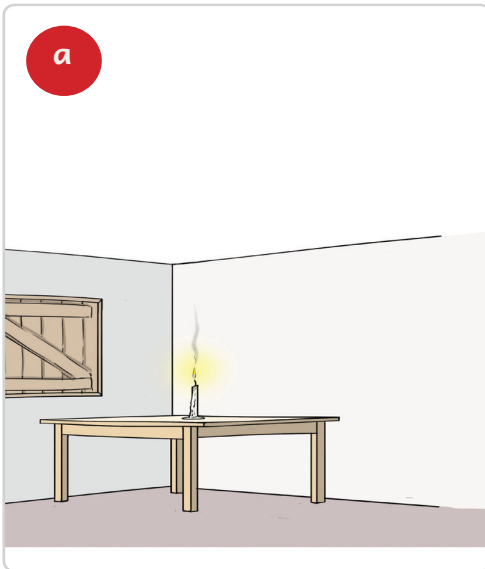
**I have discovered that**

- Living things (a person, animals, and plants) breathe good air;
- Air is pumped into tyres of non-engine machines, like bicycle and Engine machines like motorcycle, car, and also pumped in balls and balloons.
- Air helps fire to burn.

## 4.3. Relationship between air and wind

### Activity 3

1. Look at the pictures **a** and **b**;
2. Why does the fire flame and smoke of candle **b** change the direction?
3. What is the difference between air and wind?



**What have you discovered from the pictures?**

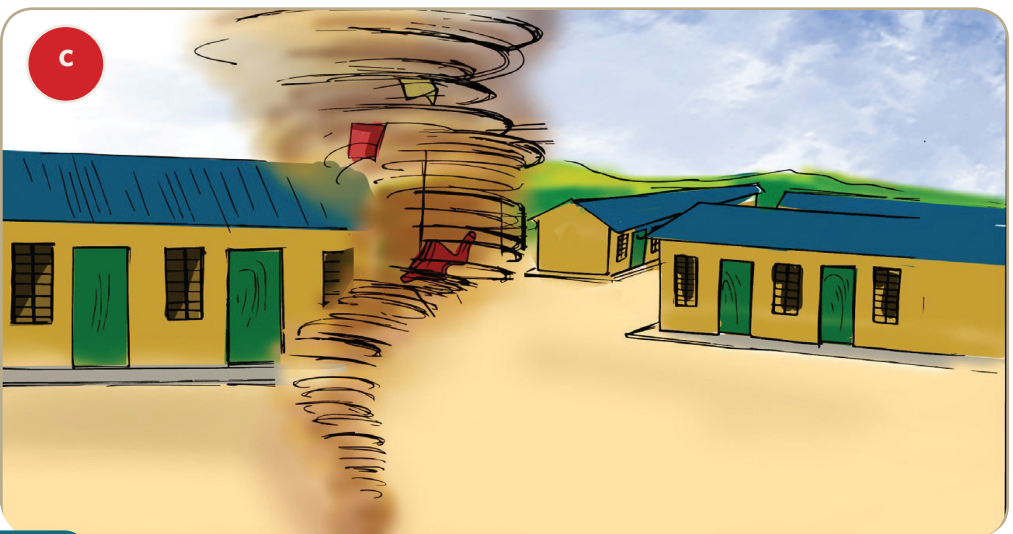
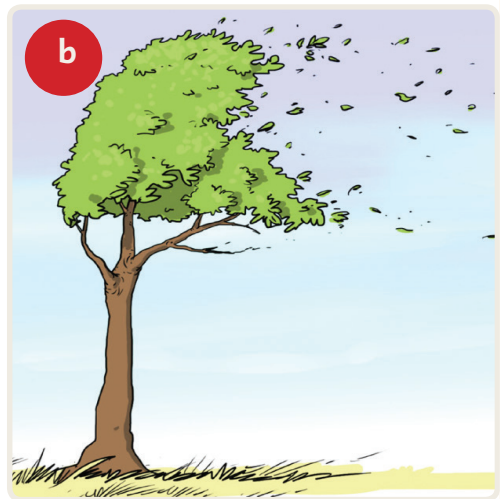
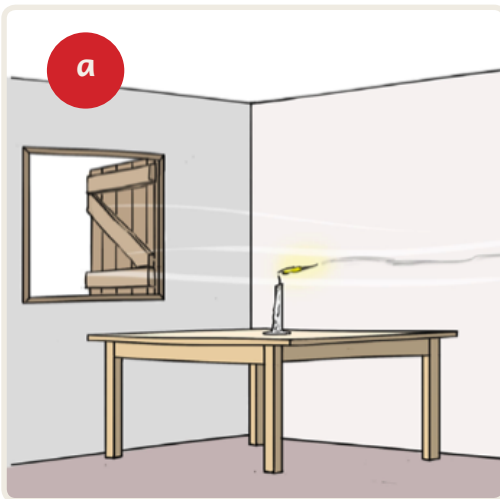
**I have discovered that**

Wind is moving air with more speed as compared to air.

## 4.4. Types of wind

### Activity 4

1. Look at the pictures **a**, **b**, **c** and **d**.
2. Explain what is in pictures **a**, **b**, **c** and **d**.
3. In the pictures below, show where there is: (1) Light wind, (2) Speedy wind (3) Strong wind (4) Moderate wind.





What have you discovered from the pictures?

I have discovered that

There are four (4) types of wind: Light (slow) wind, moderate (breeze) wind, speedy (cyclone) wind and Strong wind (storm).

1. **Light wind (slow)** is a type of wind that blows very slowly. It is also calm and helps fire to burn.
2. **Moderate (breeze) wind** is a type of wind that blows and felt on the face. It also shakes trees and other surroundings.
3. **Strong wind** is a type of wind that blows at a high speed and destroys buildings, plants and causes soil erosion.
4. **Speedy wind** is a type of wind that blows at a very high speed in a circular form but it takes a short time. It raises dust.

## 4.5. Effects of wind

### Activity 5

1. Look at the pictures **a**, **b**, **c** and **d** below.
2. In the pictures below, show where there are good and bad effects of wind. Explain.



b



c





**What have you discovered from the pictures?**

**I have discovered that**

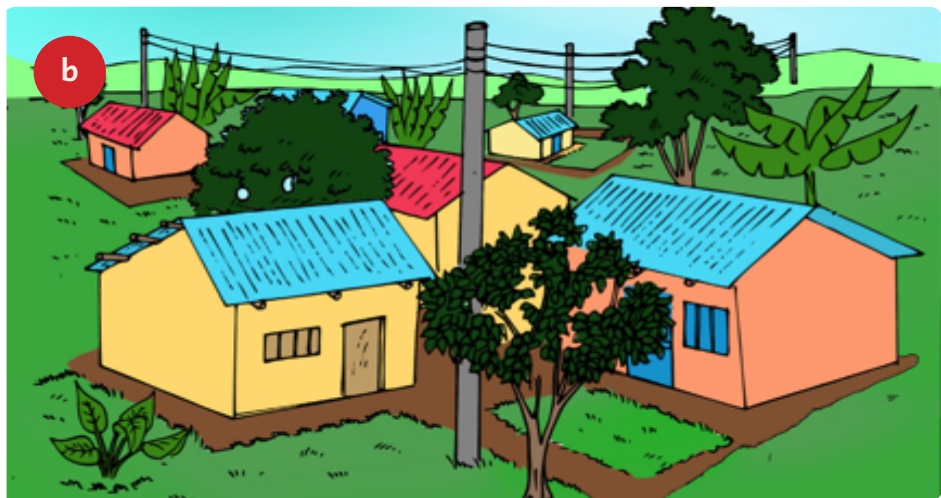
- The good effects of wind are drying clothes and giving a cool fresh environment.
- Bad effects of wind are destroying buildings, plants and causing soil erosion.

## 4.6.

# Measures to prevent negative effects of wind

### Activity 6

1. Look at the pictures **a**, **b**, **c** and **d**.
2. What is the importance of the trees around the house ?
3. Explain how can we prevent negative effects of wind ?





What have you discovered from the pictures?

I have discovered that

---

Ways of preventing negative effects of wind are:

- **Planting trees** on hills, around houses and in plantations;
- **Building hedges** using specific trees (live fences using relatively tall trees)

## End of Unit Assessment 4

1. Give five properties of air.
2. Mention types of wind you know and explain effects of each type.
3. In this picture below, what is missing so that wind does not destroy the houses and the planted crops in the gardens?
4. Looking at the pictures below, say the good effects of wind and air.





# UNIT 5

## Soil

### 5.0. Introduction



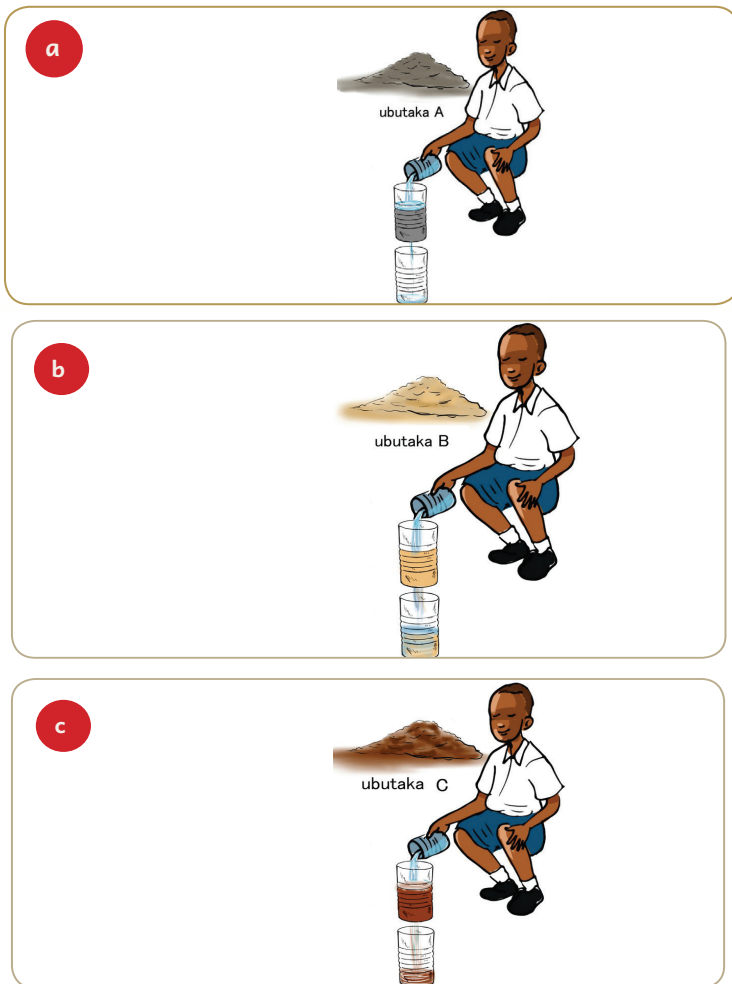
In the area where your home is located, places where you go and at your school, there are different physical features. Among them include soil. You may be asking yourself whether all soils are the same, what might be its importance, and what may damage soil or cause it to lose its value and what one can do prevent it from being damaged or lose its value. The essential questions to be answered after this unit are:

- What are the types and uses of soil?
- What can destroy soil and how to prevent them.

## 5.1. Types of Soil

### Activity 1

- Look at the pictures a, b, and c below;
- What are the pupils doing?
- Compare the amount of water got from soil in each picture.
- Explain why water got in the bottles in each picture is not equal.



What have you discovered from the pictures?

## I have discovered that

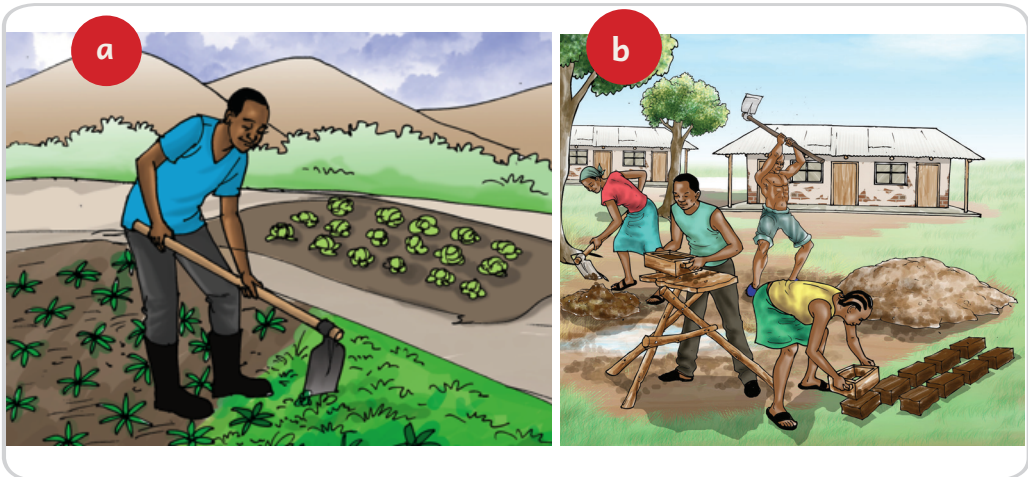
There are three (3) types of soil:

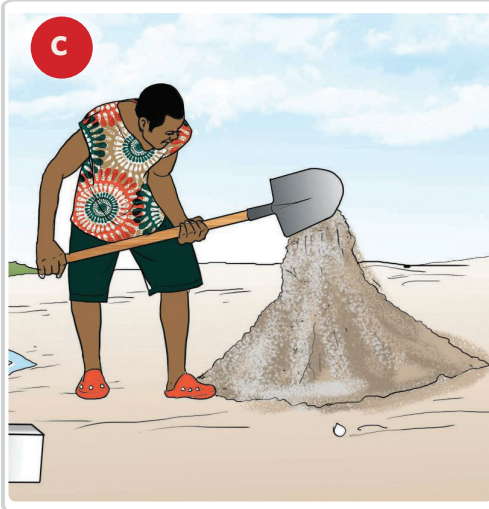
1. **Clay soil** is a type of soil with very small particles which cannot allow water to pass through easily;
2. **Sand soil** is a type of soil with big particles which allows water to pass through easily.
3. **Loam soil** is a type of soil with small particles that holds water or allows very little water to pass through.

### 5.2. The uses of soil

#### Activity 2

1. Look at the pictures **a**, **b**, **c**, **d**, **e**, **f**, **g** and **h**.
2. What are the people in the pictures **a**, **b**, **c**, **d**, **e**, **f**, **g** and **h** doing?







What have you discovered from the pictures?

I have discovered that

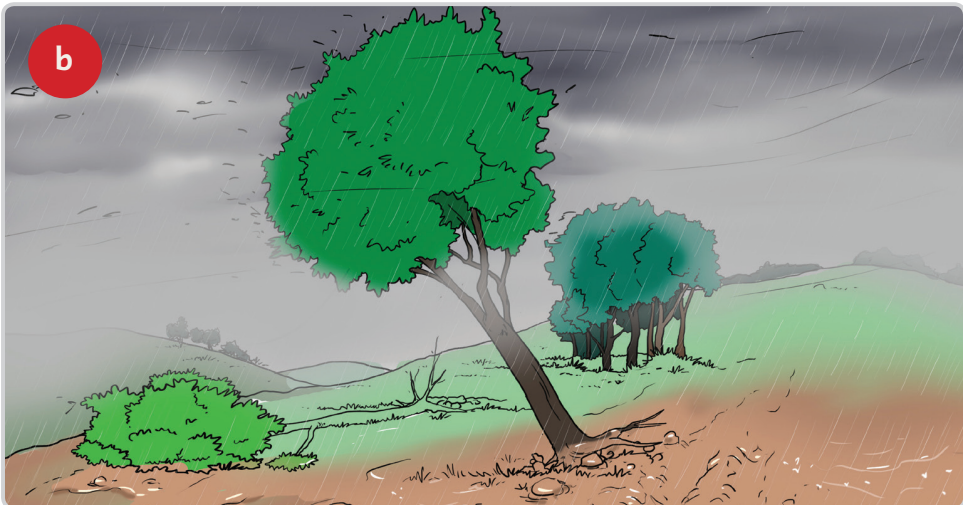
- **Loam soil** is a type of soil that is the best for farming /growing of crops;
- **Sand soil** is a type of soil used to make building materials like blocks, roofing tiles, plastering houses;
- **Clay soil** is a type of soil used for modeling different

## 5.3.

## Things that destroy soil

### Activity 3

1. Look at the pictures a, b, c and d;
2. What do you see in the pictures a, b, c and d?
3. Point to the picture which shows that soil has faced some problems? Identify the problems. What caused them? Explain.
4. What can you do to prevent things that destroy soil?





**What have you discovered from the pictures?**

**I have discovered that**

Soil can be destroyed by the following:

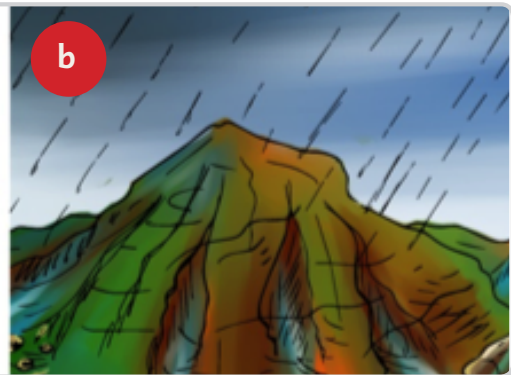
- Rainfall (running water),
- Strong wind
- Fire (Bush burning),
- Things which do not rot [decay] or non-degradable wastes dumped in open places like plastics, polythene bags.
- Over grazing

## 5.4.

## Effects of water on soil

### Activity 4

1. Look at the pictures a, b, c and d;
2. Which picture shows the importance of water in soil?
3. Which picture shows where water damaged soil?



d



**What have you discovered from the pictures?**

**I have discovered that**

---

**1. The importance of water on soil are:**

- Water softens the or moisturizes soil which enables farmers to grow crops.
- Water helps the plants to grow well.

**2. The dangers of water on soil are:**

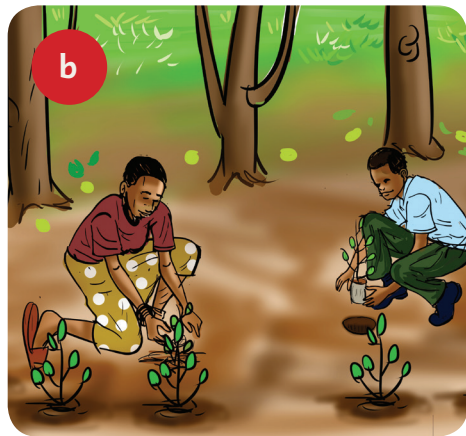
- Water causes soil erosion;
- Water causes the landslides;

## 5.5.

## Measures to prevent soil damage

### Activity 5

1. Look at the pictures a and b;
2. What can you do to prevent soil damage?



**What have you discovered from the pictures?**

**I have discovered that**

---

We prevent soil damage by:

- Planting trees;
- Practicing terracing;
- Avoiding bush burning;
- Avoiding dumping materials which do not rot on the soil surface.

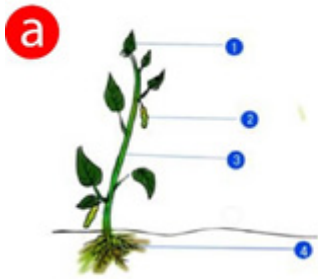
## End of Unit Assessment 5

1. a) Give the types of soil?  
b) What are the characteristics of each type of soil?
2. Write true or false.:
  - a) When modeling decorations clay soil is mixed with fine sand.
  - b) When we want to identify the type of soil we are guided by its smell.
  - c) When modeling pots, clay soil is used, mixed with water, dried under sunshine and then burnt to harden it.
3. Answer **Yes** or **No** where necessary:
  - a) Loam soil is used to model decorations, bricks and pots.
  - b) Sand soil is /good for plant growth
  - c) Soil erosion is caused by running water.
4. Why is that all soils cannot be for constructing houses?
5. Apart from water, give any other thing that destroys soil.
6. Identify the importance of water in soil.

# UNIT 6

## PLANTS

### 6.0. Introduction



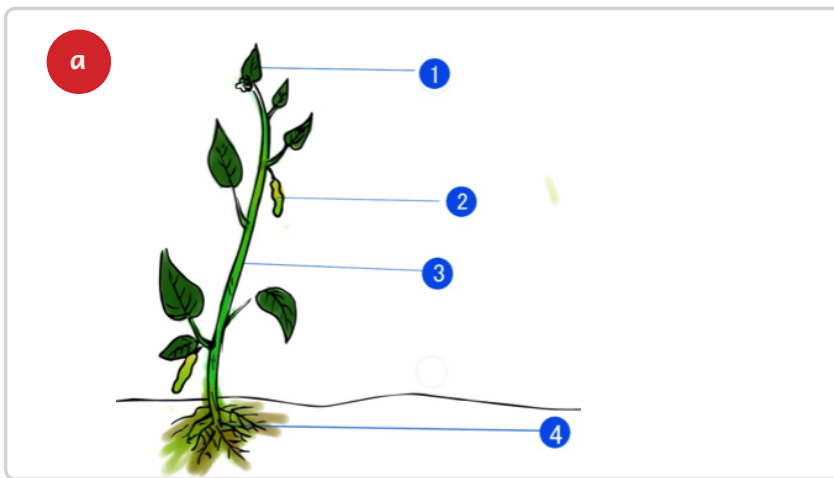
There are a lot of plants around our homes. Some grow naturally while others are planted by human beings. However, all are important to people, animals and the environment as well. The essential questions to be answered after this unit are:

- What are the main parts of the plant?
- What is the function (use) of each part to a plant?
- What is the importance of plants?

## 6.1. Main parts of the plant

### Activity 1

1. Look at the pictures **a**, **b**, and **c**;
2. What are the main parts of a plant?
3. Give the importance of each part of the plant.



What have you discovered from the pictures?

## I have discovered that

---

The main parts of the plant are: Roots, Stem, Branches and Leaves. Other parts are Flowers and Fruits.

Each part of a plant has its own function (use):

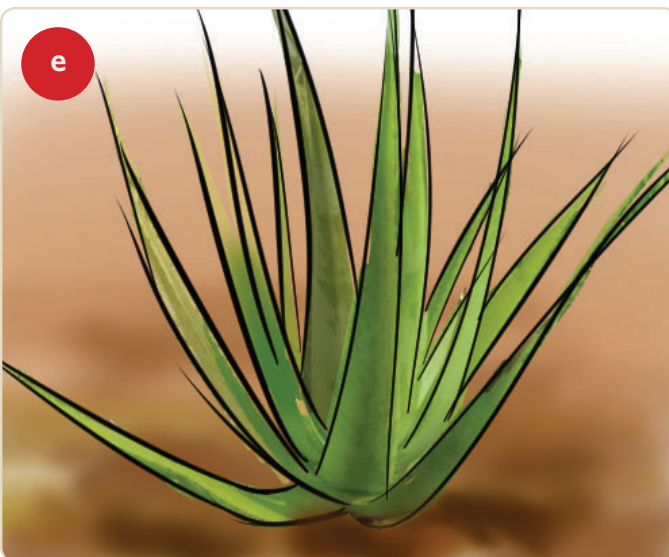
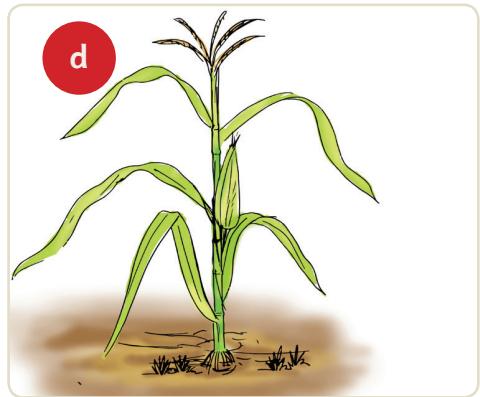
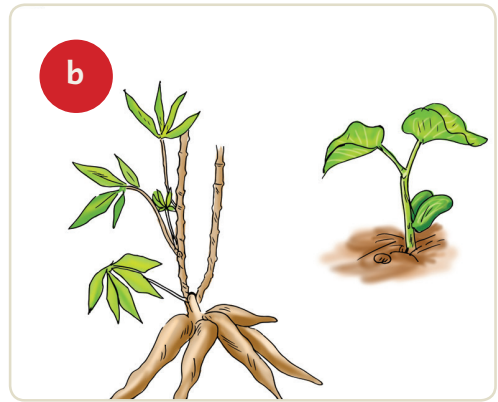
- **Roots** hold the plant firmly in the soil and absorb food (nutrients) and water from the soil;
- **Stem and branches** hold leaves, flowers and fruits. They also carry food and water to other parts of the plant;
- **Leaves** make food for the plant and help the plant to breathe
- **Flowers** give fruits;
- **Fruits** give new plants.

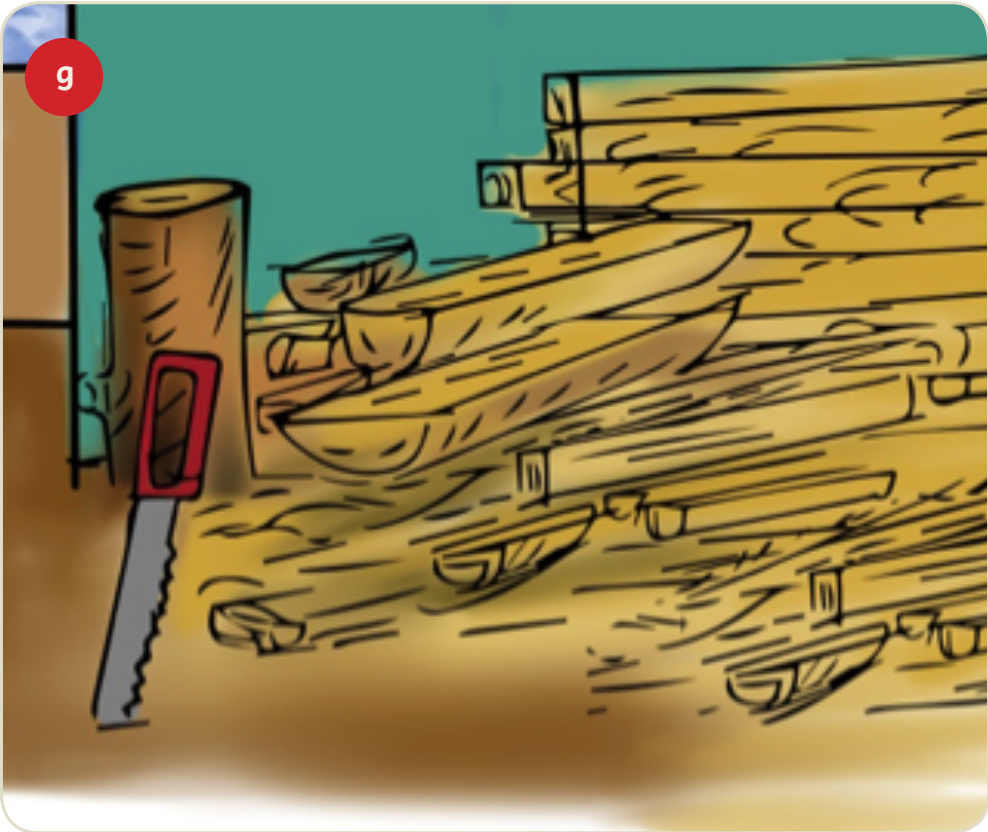
### 6.2.

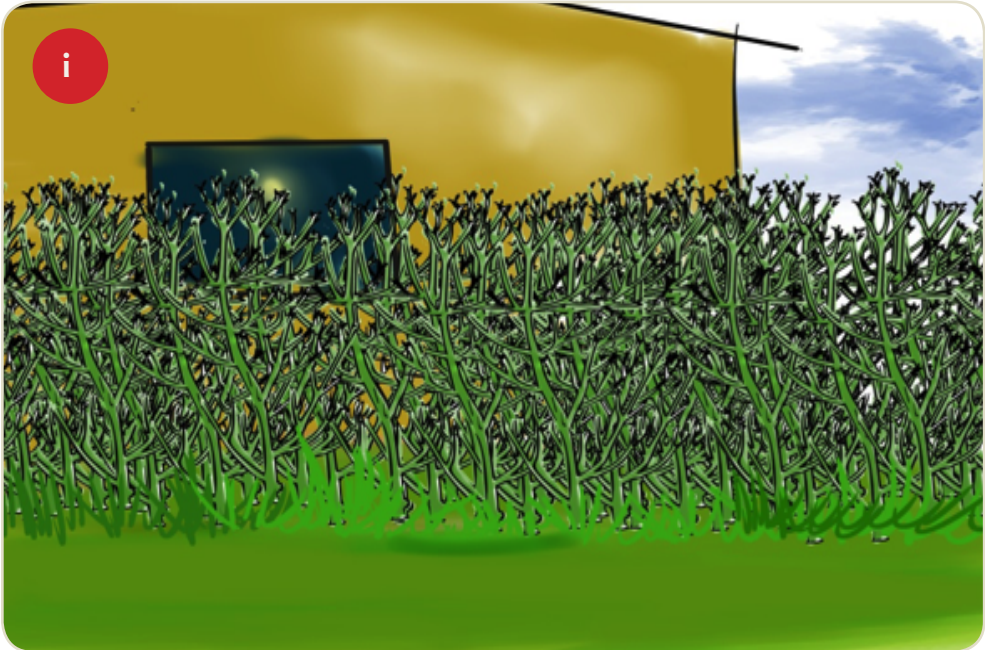
## Groups and importance of plants

### Activity 2

1. Look at the pictures **a, b, c, d, e, f, g, h, i** and **j**;
2. Explain what you see in pictures **a, b, c, d, e, f, g, h, i** and **j**;
3. What are the two groups of plants you have seen in the pictures?
4. Basing on the pictures, what is the importance of plants to us?









What have you discovered from the pictures?

I have discovered that

Plants are divided in two groups:

- **Food crops:** Irish potatoes, beans, banana.
- **Cash crops:** Coffee, Tea, pyrethrum, cotton, sugar cane...

The following are the importance of the plants:

- **Some are source of food:** Irish potatoes, beans, banana
- **Some are for sale:** Coffee, Tea
- **Some are used as herbal medicine:** Eucalyptus, ginger bush (Umuravumba) and others.
- **Some are used for decoration:** Flowers.
- **Some are used to control soil erosion:** Seteria , elephant grass, pass palm.
- **Some are used for fire wood and timber:** Eucalyptus, pines, grevillea, and others.
- **Some are used for fencing (hedges)** Euphorbia (imiyenzi), bamboo, ficus thonningii(umuvumu) and others.

## End of Unit Assessment 6

1. Answer the questions below:

a) Draw a bean plant and show its major (main) parts.

b) Explain the importance of each part of the plant.

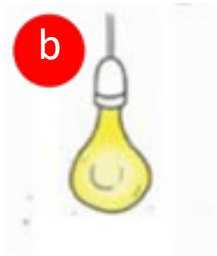
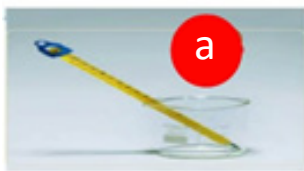
2. In the table below, put these plants in groups based on their use: beans, peas coffee, tea, Lemon, flowers, aloevera, ginger bush (umuravumba), *Eucalyptus* (inturusu), and *euphorbia* (umuyenzi).

Food crops	Cash-crop Fencing	Fire wood and timber	Decoration

# UNIT 7

## Light and heat

### 7.0. Introduction



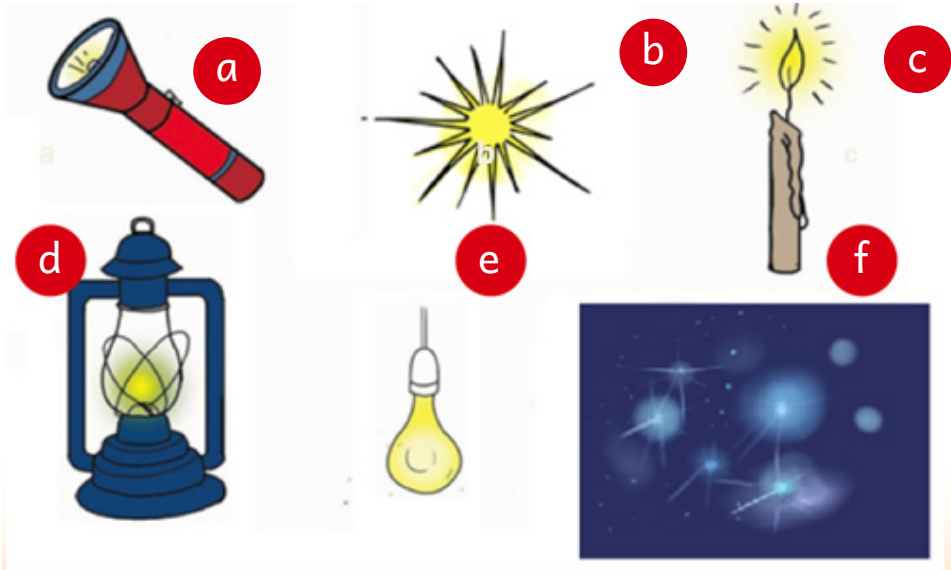
In our environment, work can be done during day time or at night when there are other sources of light other than sunlight. Some sources of light can also give us heat. The essential questions to be answered after this unit are:

- What are the various sources of light and heat?
- What is the importance and dangers of light and heat?
- What can I use to measure my body temperature and how?

## 7.1. Source of light

### Activity 1

1. Look at the pictures **a**, **b**, **c**, **d**, **e** and **f**;
2. Explain what you see in the pictures. What is the common characteristic of materials in pictures?
3. Identify sources of light you know.



**What have you discovered from the pictures?**

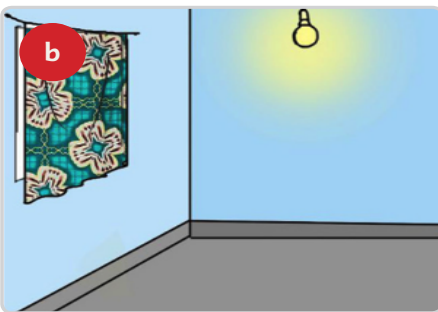
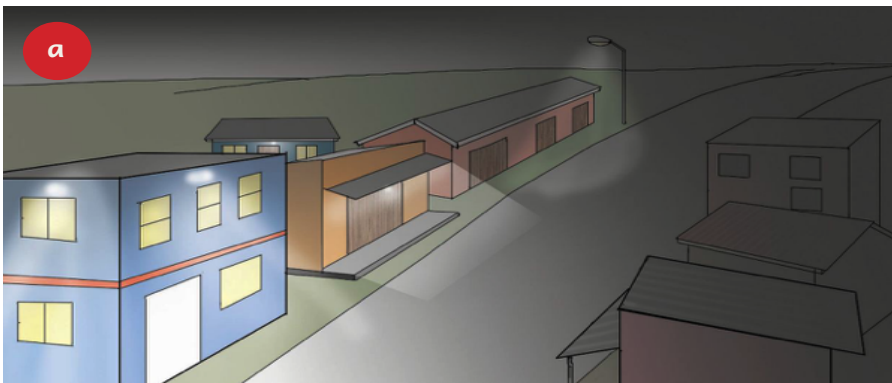
**I have discovered that**

- There is light and darkness.
- Major sources of light are: sun, torch, fire, candle, lanterns, Kerosene lanterns, bulbs, match stick, pressure lamp, fire wood...and others.

## 7.2. Meaning of darkness

### Activity 2

1. Look at the pictures **a**, **b** and **c**.
2. What separates the two parts observed in picture **a**?
3. Can a person in picture **c** search and get easily any material he /she is looking for in that room? Why?
4. Prepare a dark room by putting curtains on the windows and doors such that no light can enter. Explain what is darkness?



**What have you discovered from the pictures?**

**I have discovered that**

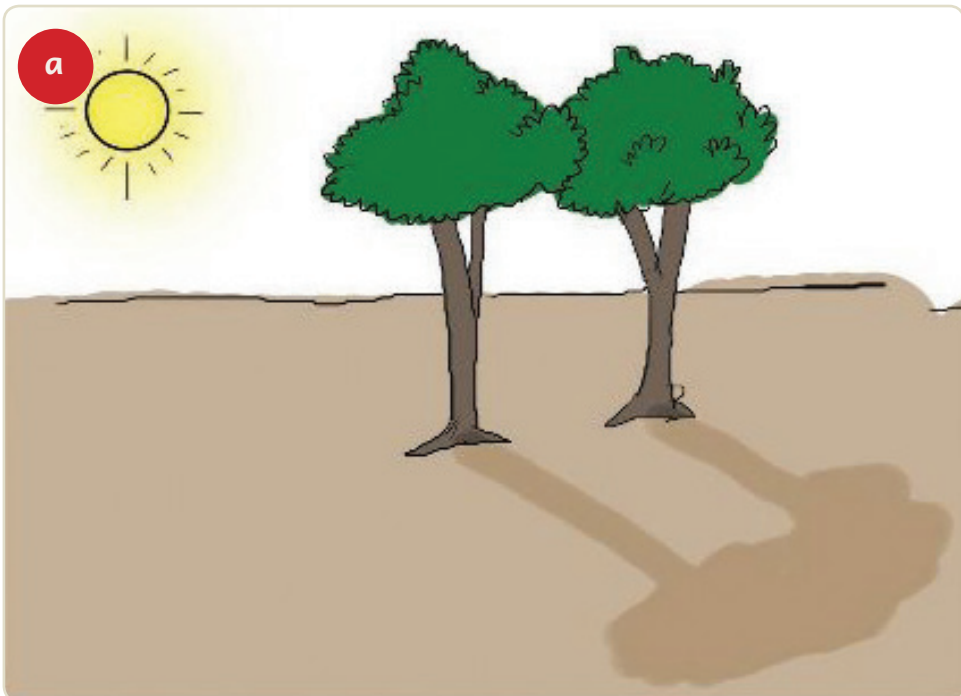
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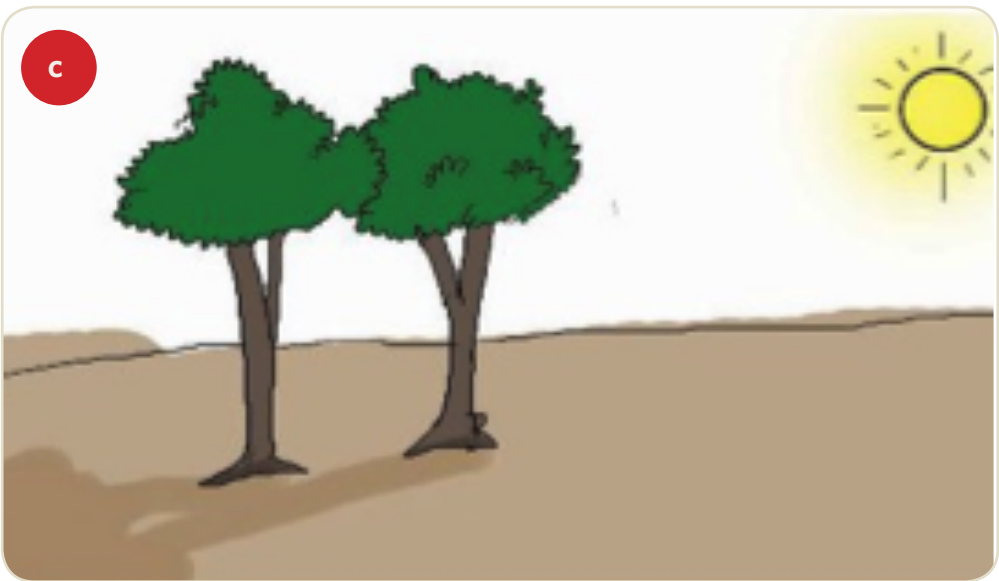
There is always darkness when there is no light.

## 7.3. Relationship between light and the shadow

### Activity 3

1. Look at the pictures a, b and c;
2. What do the pictures show?
3. Why do the shadows in pictures a, b, and c have different height?
4. What is the role of the sun in the presence of the shadow?
5. Measure the height of the shadow for any tree in your school compound at different time intervals (morning, afternoon and evening). Give reasons why the tree's shadow has a different height.
6. Using a torch, make a shadow of a notebook and pen in your classroom. What do you think is a shadow?





**What have you discovered from the pictures?**

**I have discovered that**

A shadow is an image formed when light is blocked.

## 7.4. Importance of light on living things

### Activity 4

1. Look at the pictures (**a** and **b**);
2. What do the pictures and **b** show?
3. Find where there is fresh green grass in your school compound. Find a big stone and cover some grass. Wait for seven days and then remove the stone. What have you seen? Now, explain the importance of sunlight to plants.



What have you discovered from the pictures?

## I have discovered that

- Light helps people to see.;
- Light allows plants to have green color.
- Light helps plants to make their own food (starch).

### 7.5. Dangers of light and ways to avoid them

#### Activity 5

1. Look at the pictures **a**, **b**, **c** and **d**;
2. What do the pictures **a**, **b**, **c** and **d** show?
3. In the pictures **a**, **b**, **c** and **d** choose a picture which shows a pupil who is reading while avoiding the dangers of light. Why have you chosen that picture?
4. What are the dangers of too much light or dim light?



What have you discovered from the pictures?

## I have discovered that

- Too much light affects the eyes.
- Dim light also affects the eyes.

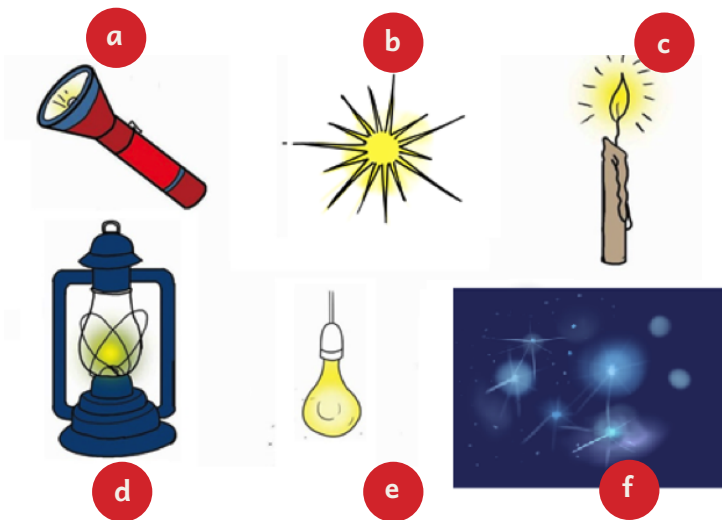
### Ways of avoiding the dangers of light:

- We should avoid reading under too much light or dim light.
- We should use recommended sun glasses (sun gurgles) to reduce the amount of light.

## 7.6. Sources of heat

### Activity 6

1. Look at the pictures **a**, **b**, **c**, **d**, **e** and **f**;
2. What do the pictures **a**, **b**, **c**, **d**, **e** and **f** show?
3. Which of the materials shown in pictures **a**, **b**, **c**, **d**, **e** and **f** can produce heat?
4. Identify some of the materials you use at home that give out heat?



What have you discovered from the pictures?

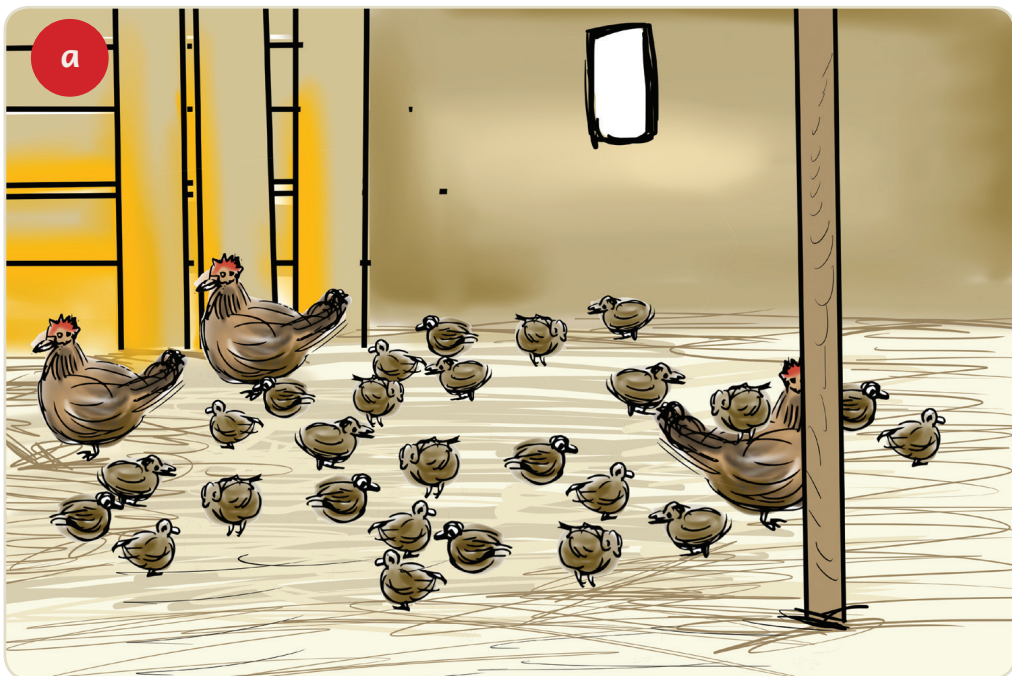
## I have discovered that

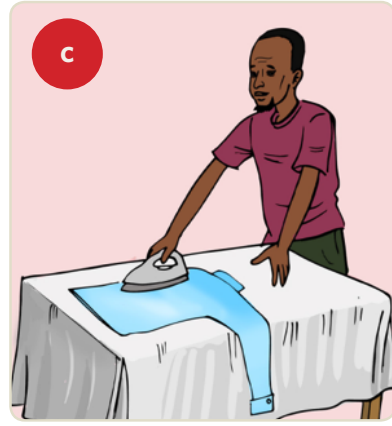
Sources of heat are: Sun, candle, lantern, kerosene lantern, electrical bulb, match stick, gas lamp, firewood and others.

### 7.7. Importance of heat

#### Activity 7

1. Look at the pictures **a**, **b**, **c** and **d**;
2. What do the pictures **a**, **b**, **c** and **d** show?
3. Basing on pictures **a**, **b**, **c** and **d** explain the importance of heat to living things.





**What have you discovered from the pictures?**

**I have discovered that**

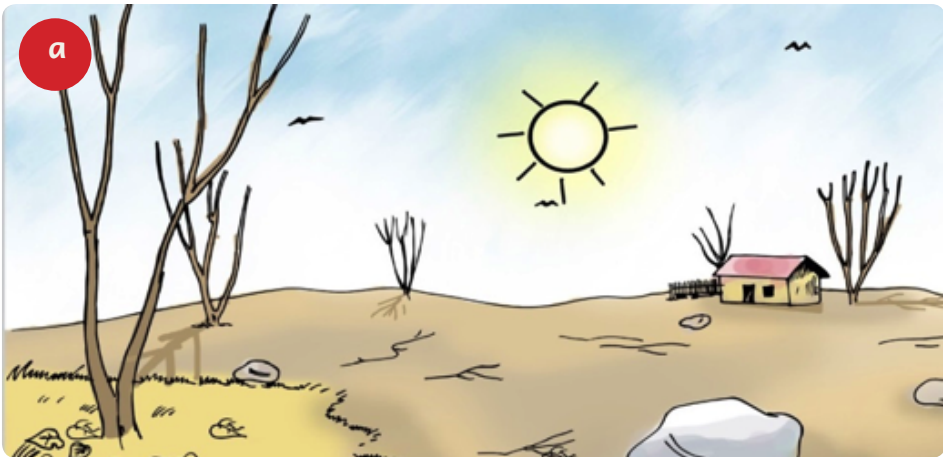
Heat is important because:

- Heat helps in cooking of food;
- Heat helps in warming the house;
- Heat helps in drying of clothes and crops
- Heat helps young animals to grow well (chicken).
- Heat helps in ironing of clothes

## 7.8. Effects of heat

### Activity 8

1. Look at the pictures (a and b);
2. What do the pictures a and b show?
3. What are the dangers of heat shown in the pictures a and b?
4. In which way can you protect yourself from the dangers of too much heat?



What have you discovered from the pictures?

## I have discovered that

Heat causes the following effects:

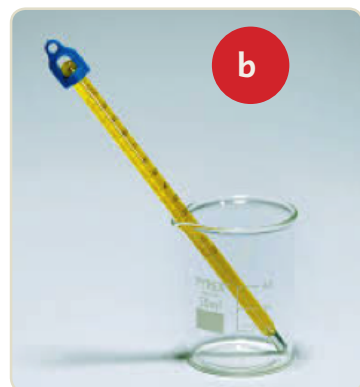
- Heat leads to loss of water in living things;
- Heat leads to burning of food when cooking;
- Heat leads to drying of plants and crops;
- Heat causes bush burning (it is easy for dry grass to catch fire).

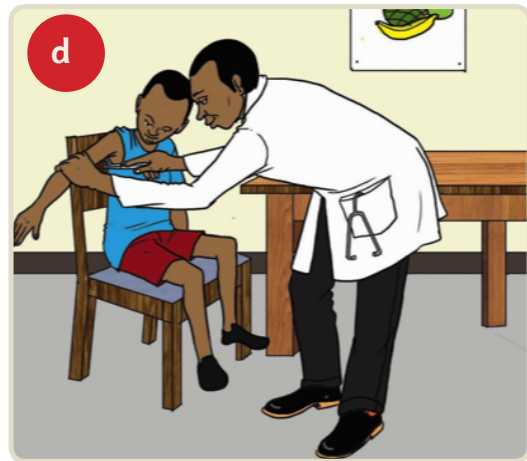
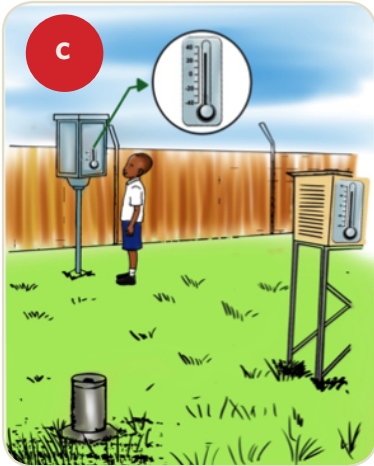
7.9.

### Types of heat measurements (thermometer)

#### Activity 9

1. Look at the pictures **a**, **b**, **c** and **d**;
2. What do the pictures **a**, **b**, **c** and **d** show?
3. What are the types of thermometers shown in the pictures **a**, **b**, **c** and **d**?
4. What are the parts that make up a thermometer?
5. What is the use of a thermometer?





**What have you discovered from the pictures?**

**I have discovered that**

There are three types of thermometers:

- Medical/clinical thermometer;
- Laboratory thermometer;
- Meteorological thermometer (Six's thermometer)

A thermometer has three major parts: Capillary (Mercury or alcohol) tube, bulb and Stem.

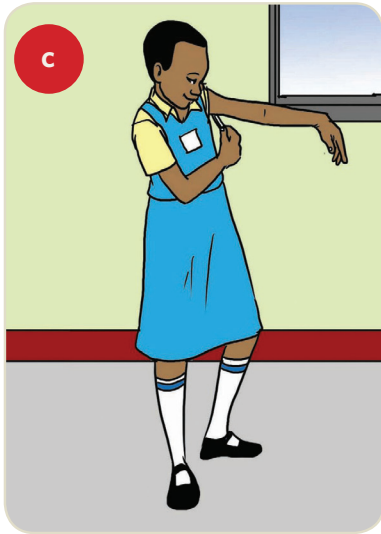
The use of a thermometer is to measure the temperature of the human body, object or place.

## 7.10. Measuring body temperature

### Activity 10

1. Look at the pictures **a**, **b**, **c** and **d**;
2. What do the pictures **a**, **b**, **c** and **d** show?
3. Measure your body temperature following the steps below:
  - Shake (calibrate) the thermometer until it reads 0;
  - Place the thermometer under your armpit and wait for three (3) minutes;
  - Remove the thermometer from your armpit and read the new number it is showing.





**What have you discovered from the pictures?**

**I have discovered that**

To measure human body temperature, you follow the steps below:

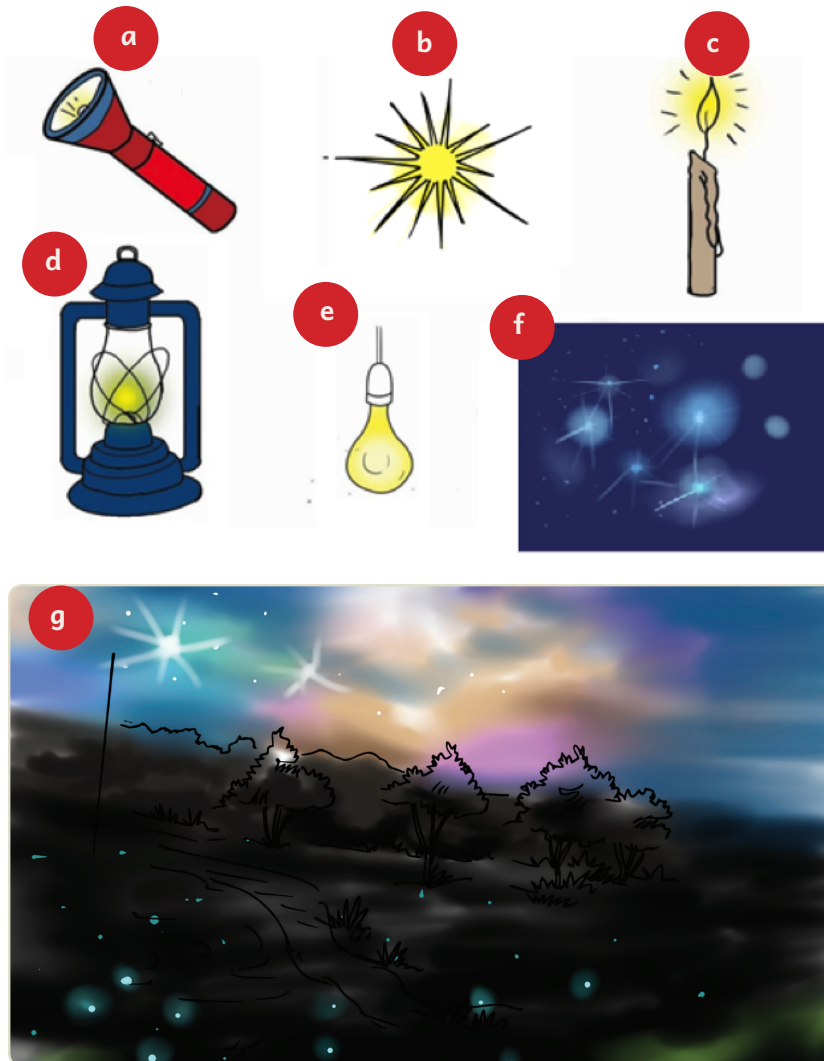
- Bringing back the thermometer reading to 0 (by shaking);
- Put the thermometer under armpit;
- Read the new thermometer reading number after 3 minutes.

**NB:** The normal human body temperature is  $37^{\circ}\text{C}$

## **7.11. Relationship between sources of light and sources of heat**

### **Activity 11**

1. Look at the pictures **a, b, c, d, e, f** and **g**;
2. What do the pictures **a, b, c, d, e, f** and **g** show?
3. Which objects in the pictures **a, b, c, d, e, f** and **g** give *both light and heat*?
4. Do all the sources of light also give heat? Explain and give examples.



**What have you discovered from the pictures?**

**I have discovered that**

- Most of the light sources are also heat sources.  
**Examples:** Sun, torch, fire, candle, lantern, petrol/oil lamp, gas lamp, electrical bulb, match stick, fire wood.
- However, there are some small insects (beetles/ fireflies/ lightning bugs) that give out light but don't produce heat.

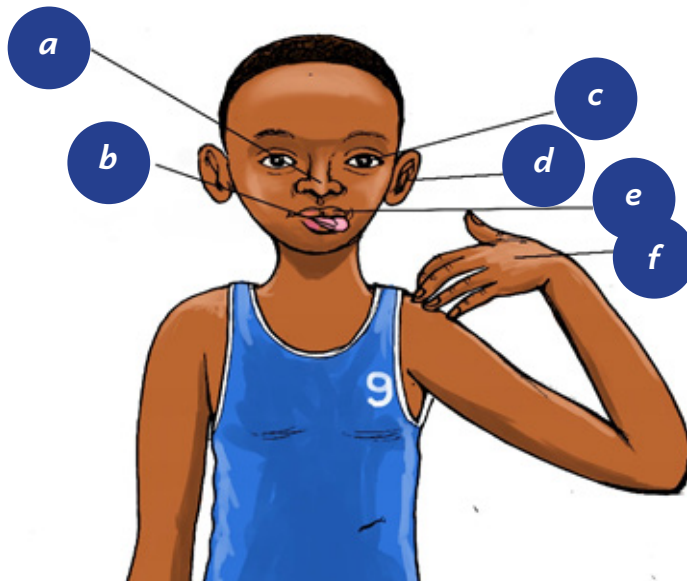
## End of Unit Assessment 7

1. Identify five objects that give out light.
2. What is the difference between light and darkness?
3. Write True or False:
  - a) Shadow is lack of light.
  - b) All sources of light are also sources of heat.
  - c) Our eyes can be affected badly when we read from sunshine without eye protection tools.
  - d) The normal human body temperature is 40oc.
4. Give two dangers of heat to plants and animals.
5. Show how a medical thermometer is used?
6. List four objects/materials that give out light but don't give out heat.

## UNIT 8

# Sensory organs

### 8.0. Introduction



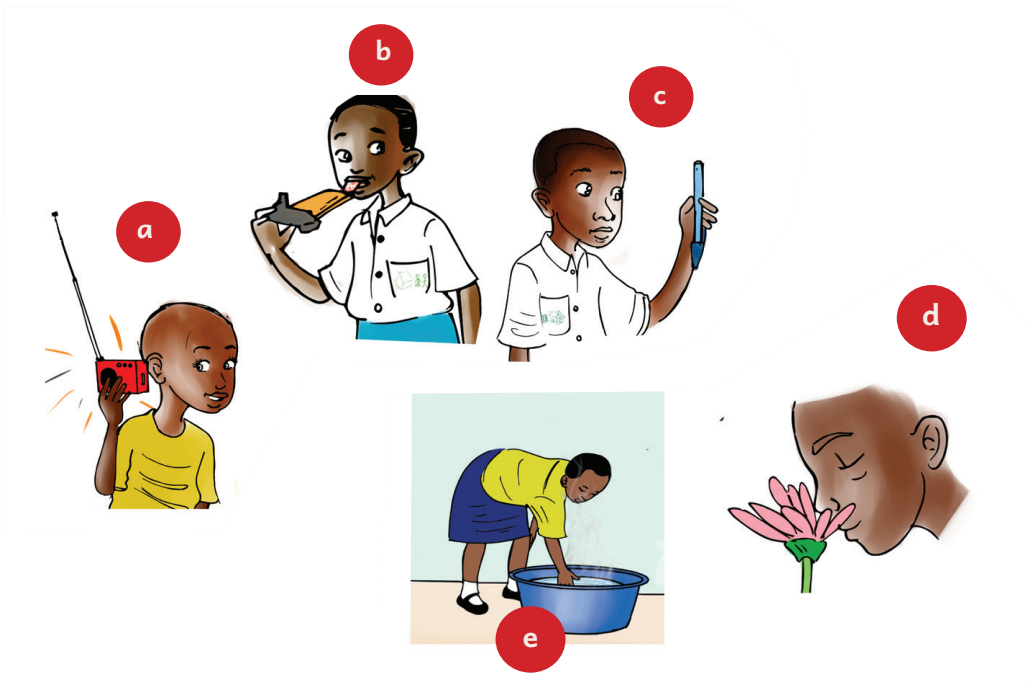
The human body has different body parts which support one another to make a complete person. For a person to receive well information from the environment, it requires to have normal and well-functioning sensory organs. This unit will help you to know the importance of sensory organs and find out ways to keep them healthy. The essential questions to be answered after this unit are:

- What are the human sensory organs and their functions?
- How can I keep my sensory organs well?

## 8.1. Human sensory organs and their functions

### Activity 1

1. Look at the pictures **a**, **b**, **c**, **d** and **e**;
2. What do the pictures **a**, **b**, **c**, **d** and **e** show?
3. How many sensory organs have you seen in the pictures?
4. Name every sensory organ you have seen.



What have you discovered from the pictures?

## I have discovered that

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Human body has five (5) sensory organs: **Eye, Ear, Tongue, Skin and Nose.**

The importance of human sensory organs are:

- **Eye**, the function of an eye is to see;
- **Ear**, the function of the ear is to hear sound;
- **Tongue**, the function of the tongue is to taste and help a person to swallow;
- **Nose**, the function of the nose is to smell and help a person to breathe;
- **Skin**, the function of the skin is to feel anything that touches or gets into contact with a human body, it also protects or covers the body and regulates body temperature.

### 8.2.

## Ways of keeping sensory organs healthy

### Activity 2

1. Look at the pictures **a, b, c, d, e** and **f**;
2. What do the pictures **a, b, c, d, e** and **f** show?
3. Which picture shows the child doing what is not allowed (dangerous).
4. Explain how you can keep well/ healthy your sensory organs.



**What have you discovered from the pictures?**

**I have discovered that**

Ways of keeping sensory organs well/ healthy are:

- Washing the whole body with water and soap;
- Cleaning the ears using a clean piece of cotton cloth;
- Brushing the teeth and mouth after every meal or eating;
- Cleaning the nose using a clean handkerchief;
- Washing eyes with clean water using soap;
- Seeking medical treatment when sick.

## End of Unit Assessment 8

1. Match the senses to their sensory organs below.

Seeing

Hearing

Smelling

Tasting

Feeling



2. Answer **Yes** or **No**:

- It is good to clean the ears using a stick covered with cotton wool.
- It is a must to brush after every meal/eating.
- Too loud music sound affects the ears.
- The nose can enable you to know what the neighbours are cooking.

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