

3A

Science and Technology

Time

New Primary Course

Learner's Book 3

James Chitamba and Donemore Gandazha
(Editors)



Zimbabwe Publishing House www.zph.co.zw
...beyond Publishing Excellence



© Zimbabwe Publishing House (Pvt) Ltd.
183 Acturus Road
P O Box GD510
Greendale
Harare
Zimbabwe

First Published by Zimbabwe Publishing House 2017

New Curriculum Edition, 2017

Editors : James Chitamba
Denmore Gandazha

Editorial Assistant : Agnes T. Mazenge

Design & Layout : Violet Kazingizi

Artists : Wilbert Kakowa
Farayi Dube

Cover Design : Violet Kazingizi

ISBN : 978 1 77901 291 3

Printed by : ORT Printing Services

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the publishers.

Acknowledgements

We would like to thank the following teachers for their invaluable contributions in this book:

Dafu Kome – Kushinga Primary School, **Millicent Dhlula** – Cowdray Park Primary School, **Abigail Mupinga** – Masenyane Primary School, **Chafewa Verenizhu** – Glenview 2 Primary School, **Perseverance Fandiso** – Zengeza 4 Primary School, **Engeline Mandisodza** – Moffat Primary School, and **Constance Chikwata** – Highlands Junior School.

The publisher made every effort to acknowledge all those who participated in the development of this book, but if anyone has been inadvertently left out, please advise us at the first opportunity so that this can be addressed.

Contents

| Unit | Page |
|--|------|
| TOPIC 1: HEALTH AND SAFETY | |
| 1. Human body 1 | 1 |
| 2. The human body 2..... | 12 |
| 3. Nutrition..... | 18 |
| 4. Diseases..... | 24 |
| 5. Safety | 34 |
| 6. How much do you remember? | 39 |
| TOPIC 2: MATERIALS AND STRUCTURES | |
| 7. Characteristics of materials..... | 42 |
| 8. Elements, mixtures and compounds..... | 47 |
| 9. Tools..... | 51 |
| 10. Structures..... | 55 |
| TOPIC 3: ENERGY AND FUELS | |
| 11. Energy | 60 |
| 12. Fuels..... | 63 |
| 13. How much do you remember? | 67 |
| TOPIC 4: ELECTRICITY AND ELECTRONICS | |
| 14. Electricity and electronics | 70 |
| 15. Electrical conductors and insulators | 79 |
| TOPIC 5: FORCES AND MAGNETS | |
| 16. Forces and magnets | 83 |
| TOPIC 6: DESIGN AND TECHNOLOGY | |
| 17. Elements of design..... | 91 |
| 18. How much do you remember? | 95 |
| TOPIC 7: WATER | |
| 19. Properties of water | 99 |
| 20. Sources of water | 105 |
| 21. Water and environment | 110 |

TOPIC 8: WEATHER AND CLIMATE

| | |
|---------------------------------------|-----|
| 22. Weather elements | 118 |
| 23. Weather and climate hazards | 125 |
| 24. How much do you remember? | 129 |

TOPIC 9: SOIL, PLANTS AND ANIMALS

| | |
|-------------------|-----|
| 25. Soil | 132 |
| 26. Plants | 141 |
| 27. Animals | 146 |

TOPIC 10: LANDFORMS AND MAPS

| | |
|---------------------|-----|
| 28. Landforms | 155 |
|---------------------|-----|

TOPIC 11: SUSTAINABLE RESOURCE MANAGEMENT

| | |
|---|-----|
| 29. Sustainable resource management | 160 |
| 30. Waste | 166 |
| 31. How much do you remember? | 171 |
| 32. Test 1 | 173 |
| 33. Test 2 | 175 |
| 34. Test 3 | 177 |
| 35. Test 4 | 179 |
| 36. Test 5 | 181 |

TOPIC 1

Health and Safety



Unit 1

Human body 1

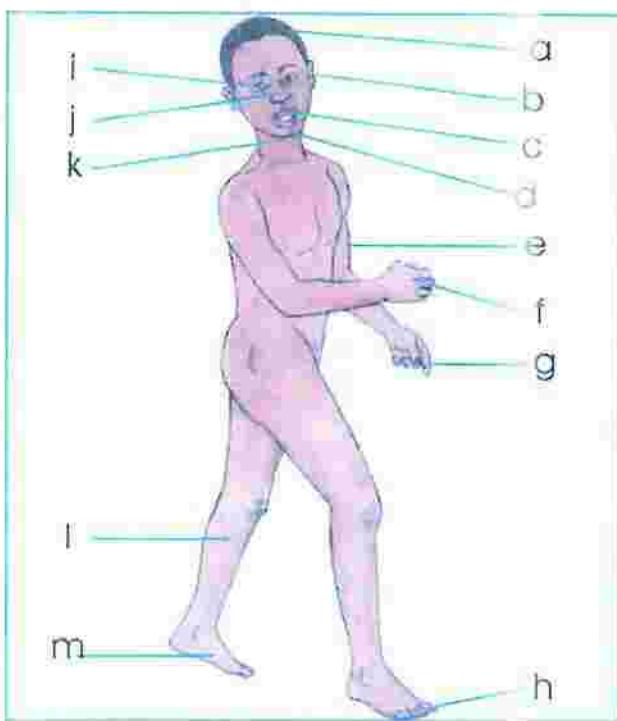
Introduction

Our body is made up of different parts. Each of the parts does a different job for the body to stay in good health and to work properly. It is our duty to make sure that we take very good care of every part of the body. If one part of our body is not well, it affects all the other parts, and they in turn will not work well. We also need to know the right things we should do and use daily when caring for our body parts.

A. The body parts

Which body part do you think is the biggest?

Tell us what it does?



Look at the boy. Label the following parts:

head, eye, ear, nose, mouth, neck, arm, hand, finger, leg, foot, toes, chin.

The diagram of the human body is showing us different body parts. Can you name some of the body parts you see on the diagram? What work does each body part do for the body? Think of how you came to school today. What body parts helped you to cross the busy street or the stream or river? Which body part did you use to eat your breakfast?

All our body parts are protected by the skin. The skin is our biggest body part!



Activity

Help each other to complete this table

| Function/Work | Body part |
|---------------------------------------|-----------|
| Seeing | |
| Hearing | |
| Holding, feeling, touching things | |
| Eating | |
| Walking, standing, jumping | |
| Smelling | |
| Eating food | |
| Protecting everything inside the body | |



Exercise

1. What is our body made of?
2. Which body part is used for hearing?
3. We ____ with our eyes.
4. Which is the most important body part?
5. We touch things with our ____.

B. Caring for body parts

Our body parts need special care. Personal hygiene is maintaining cleanliness and grooming of the body. It is a good step to health. Let us look at the following:

The teeth

Look at Ano and Tino. They have white strong and healthy teeth. They care for their teeth. They brush their teeth after every meal.



Look at Ano and Tino's parents. They have strong and white teeth.



Look at the pictures below. What caused the teeth of these people to decay? Discuss with your friend.



Your teeth are very important because they cut food into small pieces before it goes down into your stomach.

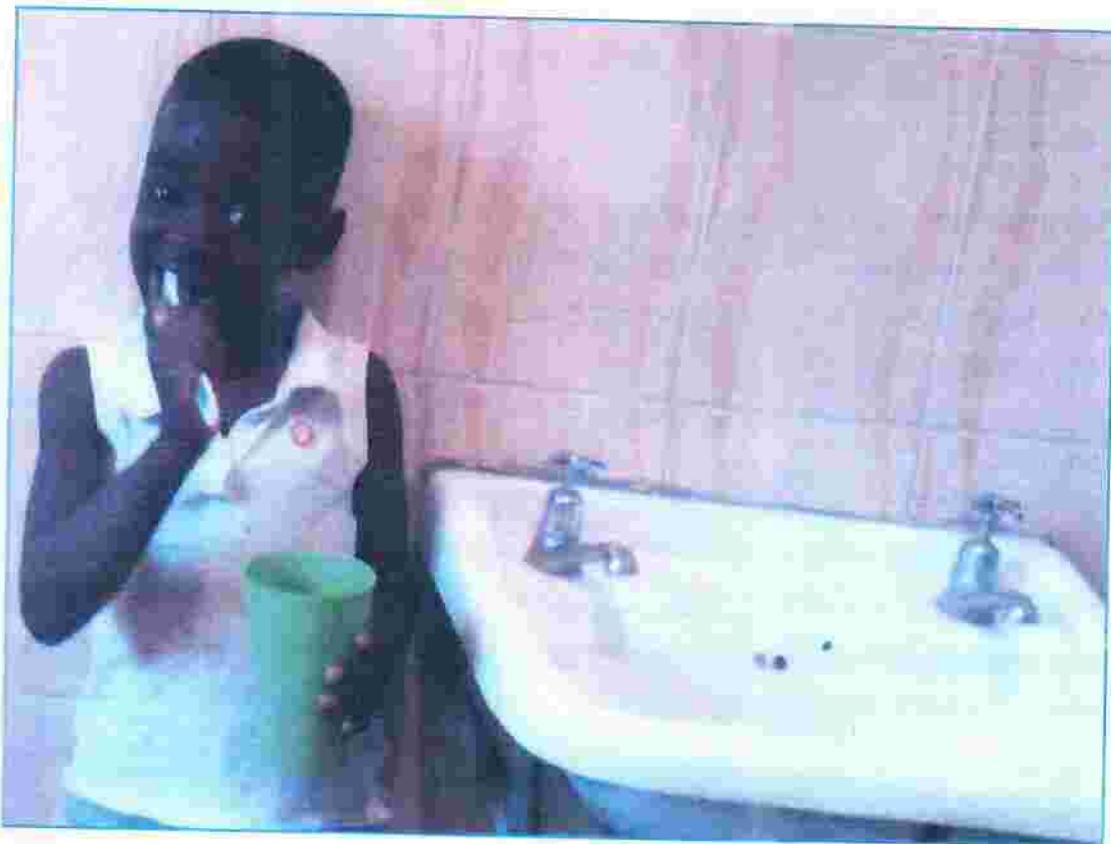
Brush your teeth at least twice a day especially after breakfast and after supper before you go to bed.



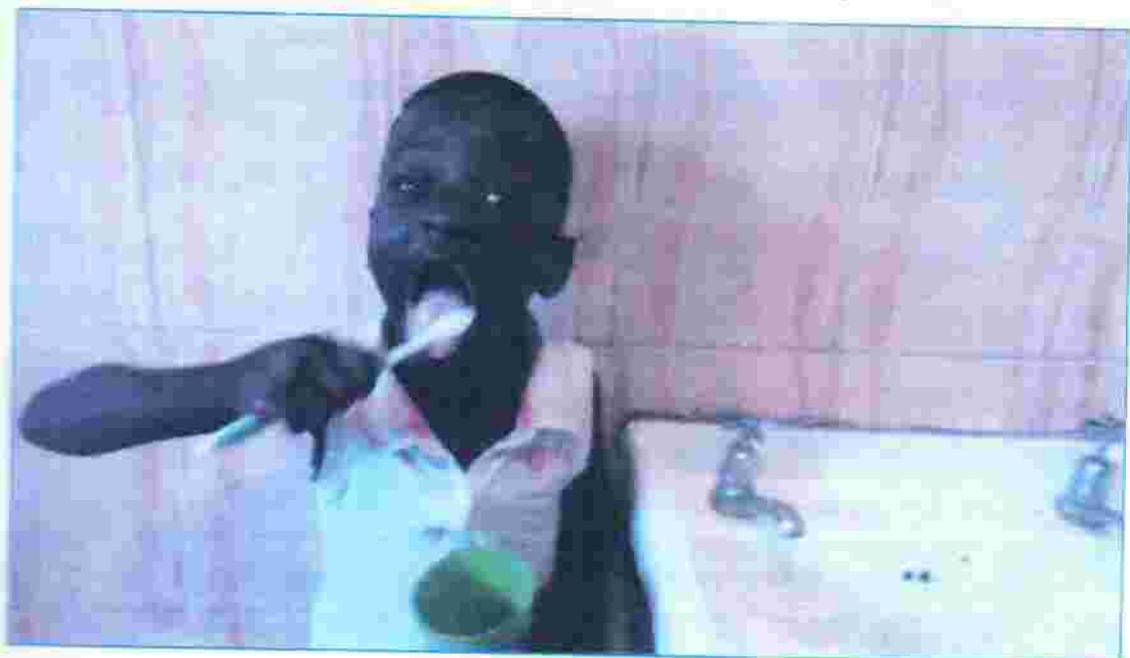
Brush your teeth using toothpaste to clean your mouth and teeth of germs. Your toothbrush must be changed every three to four months.

Brush your teeth using a toothbrush in small circular movements so that you do not hurt your gums. You should also brush the chewing teeth (molars).

Look at Praise below. She is brushing her chewing teeth . Praise uses a toothbrush, toothpaste and water to brush her teeth. She brushes her teeth at the sink.



When brushing teeth, you should also brush the tongue. Look at Praise, she is brushing her tongue with a toothbrush to keep it clean.



Eat less sweet foods like sweets, soft drinks, biscuits and cakes. Sweet foods bring germs to your teeth and these cause tooth decay.

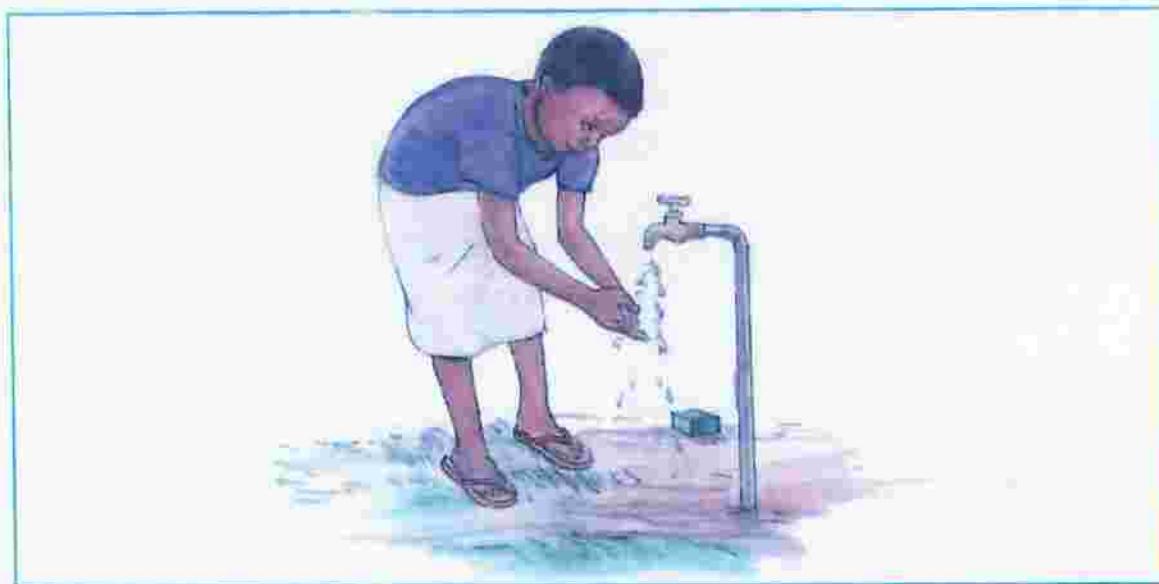
Never open a soft drink bottle using your teeth. Your tooth might crack and allow germs to enter it.

Visit a dentist regularly for check-ups, at least twice a year.

The eyes

- At night, do not read in poor light. Your room must be well lit.
- During the day, do not read with the direct sunlight on your book.
- Wash your eyes with soap and a soft towel carefully every day when you bathe.
- You must have plenty of sleep daily and do not rub your eyes for too long.
- Do not look at a computer or phone screen for too long.
- Eat foods like oranges and carrots to improve your eyesight.
- Protect your eyes from smoke.
- Always wear sunglasses or a hat to protect your eyes from the sun when outdoors.

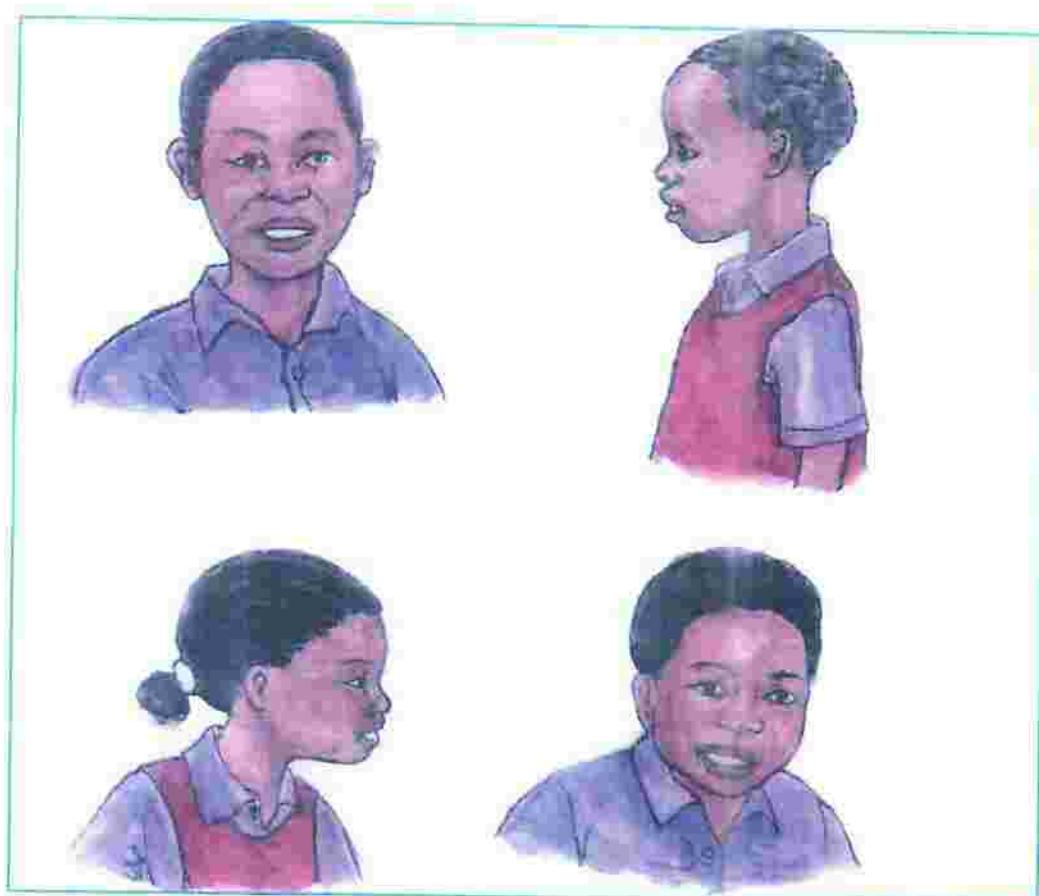
The hands



- We touch many things with our hands and so germs get to our hands. We must wash them with clean water and soap before handling or eating food.

- We must wash our hands after visiting the toilet.
- Our fingernails must be short and always clean,

The hair



- Your hair must be washed well everyday **but** if treated or plaited, it must be washed once every week.
- If possible hair should be kept short.
- Washing and combing your hair daily stops germs and lice from hiding in it.
- Try not to share your comb as this might spread diseases.

The ear



- Do not play or work in a place **with** too much noise. Too much noise can damage your hearing.
- You must not put anything in your ear, for example, ear phones with high volume or sharp objects and match sticks. This can damage your eardrum.
- Use a soft towel or earbuds to **clean** your ear.



Activity

List fruits which are good for your teeth.



Exercise

Choose the correct answer.

1. Which of the following is not a body part?
A. arms B. neck C. food D. mouth
2. We smell things using our _____.
A. hands B. nose C. mouth D. eyes
3. Which of the following foods is bad for our teeth?
A. porridge B. meat C. sweet biscuits D. milk
4. Sharing a comb might spread _____.
A. bilharzia B. malaria C. headache D. diseases
5. We must wash our _____ with soap after visiting the toilet.
A. ears B. mouth C. hands D. body

C. Daily body washing



Which activities can make us sweat? Which body parts sweat more than others?

Everyday we do activities that make us sweat. These may include cooking on the fire, jumping, digging, cleaning the floor or running around the school grounds. The sun's heat can also make us sweat. Some of our body parts sweat more than others. If we do not wash these body parts thoroughly everyday, they become dirty and smell badly. The unwashed, sweaty body parts attract germs to our bodies. Remember to wash these body parts everyday when you bath so that you remove the sweat. If we forget or do not bath properly, our bodies will begin to smell. Nobody wants to be close to someone who is smelling.

Activity



Look at the picture of the boy bathing on Page 8 and write the part of the body that the boy must remember to bath thoroughly with soap to remove the sweat.



Exercise

1. Which activity can make us sweat?
2. Why should we bath everyday?
3. Unwashed body parts attract _____.
4. We use _____ to remove sweat when bathing.
5. If we do not bath properly our bodies will begin to _____.

D. Toiletries

Which things do you use everyday to care for your body? Why do you need these?

When bathing and taking care of our bodies we use things like soap, towel, toothbrush, toothpaste, comb, hairbrush, shampoo and many others.

These are called toiletries. You have probably watched your father using shaving cream. It is another example of a toiletry.

Look at the pictures on the next page. They show examples of toiletries. Have you used any of these at your home? Have you seen any of them? Discuss with your friend the uses of these toiletries.



Activity

List all the items that you can think of that we use daily to take care of our bodies.



Exercise

1. What are toiletries?
2. Give two examples of toiletries?
3. What happens if we do not wash our body properly?
4. Name one body part we should always remember to wash?
5. What does dirty attract to our body?



Collect pictures of all toiletries we use everyday at home. Make a picture frame for display in your class. Collect empty containers of toiletries like toothpaste, soap, shampoo and arrange these neatly in a corner in your classroom.



that:

- The human body consists of important body parts such as the head, eyes, nose, mouth, ears, arms, hands, fingers, legs, feet, toes and chin.
- Every body part is important no matter how small.
- Taking good care of every body part helps your whole body to remain healthy.
- The skin protects every body part inside our body.
- Sweet foods are bad for our teeth.
- Some areas of our body sweat more than others. We must remember to wash these daily.
- Toiletries are used to wash and take care of our bodies.

GAME



Search eight words that are about our body parts and taking care of them. Toothbrush has been done for you.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F | F | S | O | A | P | C | O | M | R | K | D |
| T | O | O | T | H | B | R | U | S | H | A | B |
| O | O | A | E | A | A | M | C | W | A | S | H |
| W | T | P | E | I | T | D | E | E | A | C | F |
| E | D | A | T | R | H | A | M | A | D | A | S |
| L | E | T | H | W | C | N | W | T | C | E | R |

Find

1. Wash
2. Hair
3. Brush
4. Teeth
5. Soap
6. Towel
7. Sweat
8. Bath
9. Foot



Glossary

| | |
|-------------------|--|
| Bristles | : the most important part of the toothbrush used for brushing teeth. |
| Eardrum | : thin skin in your ear which catches sound for you to hear. |
| External | : on the outside. |
| Protect | : to keep away from danger or harm. |
| Sweat | : watery liquid that comes out of our skin. |
| Toothpaste | : a substance used to clean your teeth. |

The human body 2

Introduction

After washing and cleaning our bodies we also need to look beautiful and handsome before our friends and all the people we meet every day. You may have watched your parents preparing to go out for work or for a journey or to just meet friends. After bathing they use other items which may change the way they look. As we get used to what we want to look like every day, we also learn to make our own things to help us to care for our bodies and to learn how to handle and use the things properly.

A. Cosmetics

Can you remember the things that our parents use to look different and beautiful? Name them.

You may have heard your mother or elder sister at home saying, "I have not yet finished my make-up." What they mean is that they have not yet finished using cosmetics to make them look different and beautiful.



The diagram is showing us how the lady looks before and after she has used cosmetics. She has used lipstick, eye liner, eye shadow, hair colour

and nail polish. Can you now see that she looks different from the first diagram? She has used cosmetics to change the way she looks. All the substances that we use to make us look beautiful and attractive are called cosmetics. Remember cosmetics do not change our body structure nor the way our body parts work. Cosmetics only change our appearance.

Some cosmetics do not change how we look, but they make us smell good. Can you guess what these are? Yes, these are cosmetics like perfumes, lotions, deodorants and some creams applied to the skin.

Unlike toiletries, cosmetics are usually used by older people. You may need to become an adult for you to get permission from your parents to use cosmetics such as lipstick, finger nail and toe nail polish, eye liner, eyebrow pencils, perfumes, face powders, hair colours, hair sprays, deodorants, mascara, moisturisers like lotions and some body creams.



Activity

Name a cosmetic and describe how it is used on the body.



Exercise

1. _____ make us change our appearance.
2. Cosmetics that make us smell good are called _____.
3. Where is lipstick applied?
4. Cosmetics are usually used by _____ people.
5. After bathing we apply _____ on the body.

B. Making body cleaning equipment

What body cleaning equipment do you use everyday? Which of these can you design and make?

Body cleaning equipment is very important for the proper care of our different body parts. They are as important as toiletries and cosmetics that are used daily. Not all of us are lucky to have body cleaning equipment in our homes. This does not mean that we should not take care of our body parts. We should learn to design and make our own body cleaning equipment. If you live in the rural areas, there are many things you can use as body cleaning equipment. Twigs from Mushangura, Moshenje

and Mushuma trees can be designed to serve as a toothbrush. Clean ash can be used to clean teeth. A moderately rough stone in rural and urban areas can be used for removing cracks under the feet. There is also a runner plant called loofah whose fruit part when dried can be made into a sponge which is very good for scrubbing the body when bathing.



Activity

Discuss and describe the body cleaning equipment you have made.



Exercise

Fill in the questions below using the given words.

1. What can be used in place of toothpaste?
 2. We _____ the body when bathing.
 3. A _____ can be used to remove cracks on the feet.
 4. _____ usually use cosmetics.
 5. A _____ is a body cleaning equipment from a plant.
- sponge, stone, scrub, clean ash, adults**

C. Matching cleaning equipment with the body part they clean

Which cleaning equipment models were easy to make? Which ones were difficult to make?

When we design and make cleaning equipment, we need to know the exact body part the equipment is going to clean. This will help us to know how we are going to design the equipment and the material needed for the equipment. We also have to know whether we are going to use material which is hard, smooth, soft or rough which is suitable for the body part.

Now, we want to see if you know the correct equipment needed for cleaning various body parts.



Activity

In your groups, match the cleaning equipment shown below to the body part it is used to clean. Use arrows to match them. Matching a comb to hair has been done for you.

| Cleaning equipment | Body part |
|--------------------|-----------|
| | Hair |
| | Body |
| | Teeth |
| | Feet |
| | Hair |



Exercise

1. What cleaning equipment can be made at home?
2. What do we need to design cleaning equipment?
3. Which cleaning equipment should be smooth?
4. Which cleaning equipment should be rough?
5. We can use _____ to clean our ears.

D. Manipulating cleaning substances and equipment

It is important for us to be able to know the right toiletries, cosmetics and body cleaning equipment. We should be able to use the cleaning substances and equipment in the correct way. We should also be able to follow correctly the directions given on the containers of the substances on how to use the toiletries, cosmetics and equipment.



Activity

Take turns to handle sample toiletries, cosmetics and other cleaning equipment. Show how each substance and equipment is used to take care of the body.



Exercise

Choose the correct answer

1. We can use _____ to clean our teeth.
A. sponge B. stones C. comb D. ashes
2. Which of the following is the odd one out?
A. stone B. twigs C. ashes D. toothbrush
3. Which is a body part cleaning equipment?
A. sponge B. perfume C. lotion D. deodorant
4. A _____ stone can remove cracks on the feet.
A. smooth B. soft C. rough D. hard
5. We should follow _____ given on the containers of cosmetics.
A. ways B. directions C. writings D. drawings

PROJECT



Make a picture frame of all cosmetics we use at home. Display the model cleaning equipment you have designed and made. Label these.



- Cosmetics make us look different and beautiful.
- Examples of cosmetics are perfumes, eye liners, shampoo, lipstick and eyebrow pencils
- Some cosmetics make us smell good.
- We can make our own cleaning equipment.
- We must be able to manipulate cleaning equipment, toiletries and cosmetics to use them properly.

GAME

Write as many words as you can from the word target given. There is a nine letter word that is about what we have learnt. Try to form this word.

| | | |
|---|---|---|
| C | S | I |
| E | T | O |
| M | C | S |

Glossary

- Appearance** : the way something looks like.
Attractive : something nice or pleasing.
Cosmetics : cream, lotion, powder and other items put on the face or body to improve appearance or look better.
Equipment : things needed for you to do something.
Moderately : not too much and not too little.
Substances : things used to do something.

Unit 3

Nutrition

Introduction

It is not enough for us to simply care for our bodies. We all need food to be able to survive. Long ago, people hunted animals for food. They also gathered fruits in the forests. As time went on, people began to grow most of their food. Today most of our food is supplied to shops by farmers where we go and buy it.

A. Sources of food and their groups

What is food? Where does most of our food come from?

Food is anything we eat or drink for us to grow and stay healthy. Most of our food comes from two main sources which are plants and animals. Most of our food, however, comes from plants. The food we eat everyday is our staple food.

Food from plants

Most of the food comes from the seeds of plants like maize, wheat and rice. Legumes like beans, peas, cowpeas, groundnuts and roundnuts also give us food. Plants like monkey oranges (matamba), snof apples (matchwe), oranges, apples, tsubvu, mazhanje and others give us fruits. From plants we get food like potatoes, tomatoes, carrots, spinach, lettuce, pumpkin leaves (muboora), tsunga and many other vegetables.



Maize cobs



Pumpkin leaves



Monkey orange



Green beans



Beans



Carrots



Food from animals

We also get food from animals. Examples of food from animals are meat, milk, cheese, eggs, honey, poultry meat, yoghurt, fish and many others.

Milk



Cheese



Eggs



Beef



Poultry meat



Fish



Honey



Activity

Write at least five foods we get from plants.

Make a list of wild fruits and fruits that are grown by people.



Exercise

1. Food is anything we ____ or drink.
A. plant B. eat C. buys D. sells
2. We get milk from the ____.
A. bottle B. pig C. cow D. hen
3. We get eggs from ____.
A. hen B. plants C. cow D. goat
4. Long ago people ____ animals for food and gathered fruits in the forest.
A. hunted B. cooked C. tamed D. kept
5. Which food do we get from an orchard?
A. apple B. maize C. potatoes D. rice

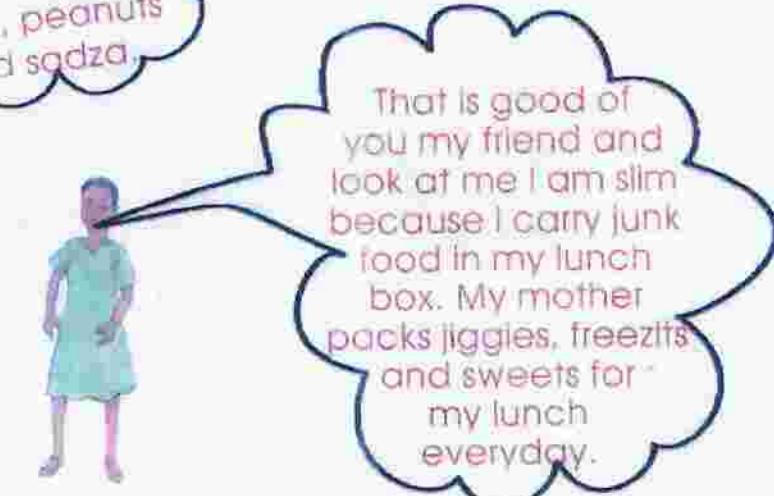
B. Food is important to our body

Food is important to our bodies because it makes us grow, gives us energy and protects us from diseases.

Billy (telling Petty)



Petty (responding)



Energy-giving food

Energy giving foods give us energy to work and play. We get energy giving food from plants such as maize, wheat, potatoes and yams. Below are pictures of energy giving foods:



Protective food

Protective food protects us from diseases. We get the food from fruits and vegetables. Apples, monkey oranges (matamba), cabbage and tomatoes are protective foods. Below are pictures of protective foods.



Body-building food

Body building food makes us grow and keeps us warm. Butter, peanuts, milk and meat are body building foods. Below are pictures of foods that make us grow.



Activity

Using the pictures above discuss and list down the energy-giving, protective and body-building foods grown in your area.



Exercise

1. Give one activity that we do every day.
2. Name any two examples of energy-giving foods.
3. Which nutrient gives us energy?
4. Why should we eat fruits and vegetables?
5. Why do children need food rich in proteins?



Practical

Collect pictures at home and make models of plants and animal food.



- We get food from plants and animals.
- Energy giving foods for example potatoes, bread, rice and mealie-meal gives us energy to do work and play.
- Protective foods, for example, fruits and vegetables protect us against diseases.
- Body building foods such as milk, meat, fish make us grow and keep our bodies warm.
- The food we eat almost every day is our staple food.



Find out the types of food commonly found in towns and rural areas that give us all the nutrients that our bodies need.



Play a game of the sources of food and food groups.

I am a plant

I give you a lot of proteins
Some call me a legume
Who am I?

I am an animal

I live in a kraal
I eat grass
I give you proteins
Who am I?

I am your staple crop

I am a plant
Who am I?

Glossary



| | |
|------------------|--|
| Food | : anything we eat or drink. |
| Energy | : power to do work. |
| Nutrition | : the process whereby the body uses food for growth. |
| Orchard | : a garden of fruits. |

Unit 4

Diseases

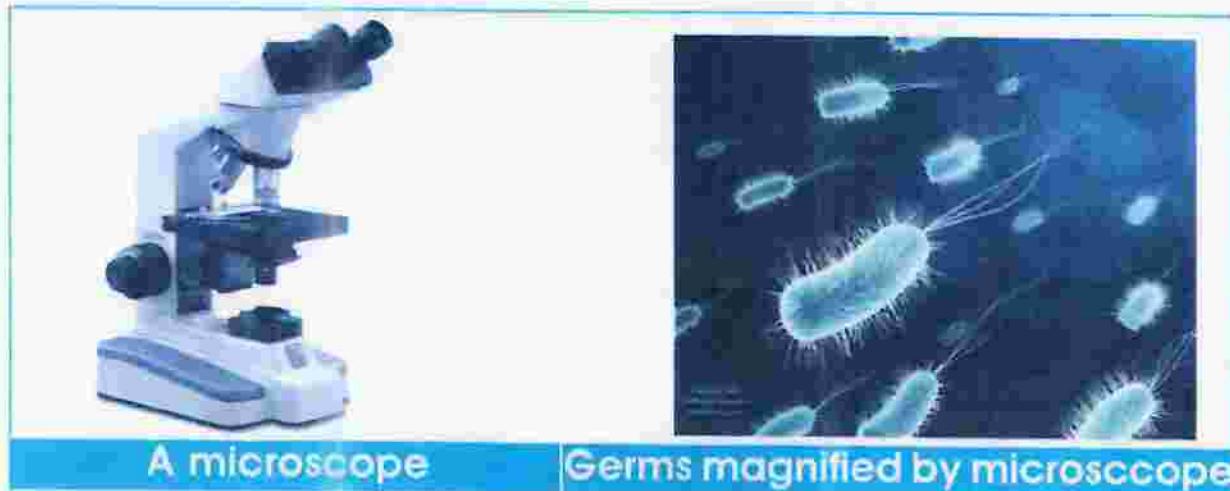
Introduction

Most of us have been ill at some point. We may have wondered what made us ill. Maybe we ate food which had gone bad, or may have drunk some water which was dirty. But what thing was in the bad food and dirty water which made us ill or sick? Knowing what makes us ill is very important because it helps to prevent the illness.

A. Germs

What are germs? Can we see them with our own eyes? What harm can they do to us?

More than half of illnesses and deaths are caused by small organisms called germs. Germs are so small that we cannot see them with our own eyes. We need the help of a powerful machine called a microscope to see them. A microscope makes germs look bigger. We say they are magnified.



A microscope

Germs magnified by microscope

There are many different germs. These are bacteria, viruses, fungi and protozoa. They also cause different diseases. When they get in our body they multiply and increase.

When viruses enter our bodies they reproduce and increase. This makes us ill and we may die if we do not get treated. Flue, polio and measles are caused by viruses.

Bacteria make poison which gets into our blood and this makes us ill. Tuberculosis, tetanus, typhoid and whooping cough are caused by bacteria.

Fungi cause diseases like ringworm which affects skin.

You may have seen some small organisms swimming in water and thought "Ah, these are germs! I have seen germs!" and called out to your friends to come and see germs.

These are not germs. They are just small creatures in water. Remember that you can never see germs with your eyes. You need a microscope.



Activity

List all diseases that you think are caused by germs.



Exercise

1. Diseases are caused by _____.
2. We cannot see _____ with our own eyes.
3. A machine used to see germs is called a _____.
4. _____ is a disease caused by bacteria.
5. _____ is a disease caused by viruses.

B. Prevention of disease

Where do germs live? How do they enter our body? How can we stop germs from making us ill?

For us to be able to prevent diseases caused by germs we need to know where germs live and how we may kill them, we also need to know how they enter our bodies to make us ill.

Germs can enter our bodies through the nose, eyes, mouth or through a cut or bite on our skin and through our reproductive organs.

You may be asking yourself now, where do these germs come from and how do they get into my body?

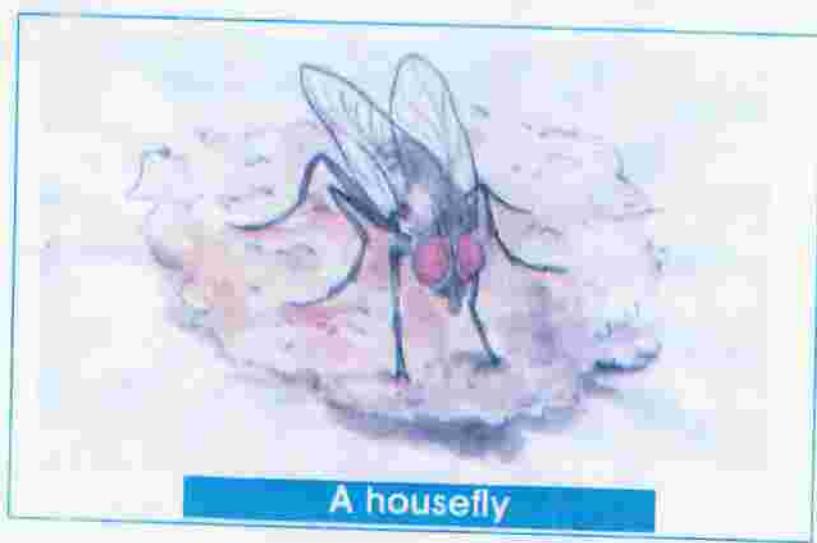
The housefly

People think it is the most dangerous insect in the world.

It can spread about thirty diseases to people which include typhoid, diphtheria and diarrhoea. Flies and germs like dirty places and waste.

If waste and rubbish are not covered or burnt or we do not clean the toilet, flies land on the dirty and waste.

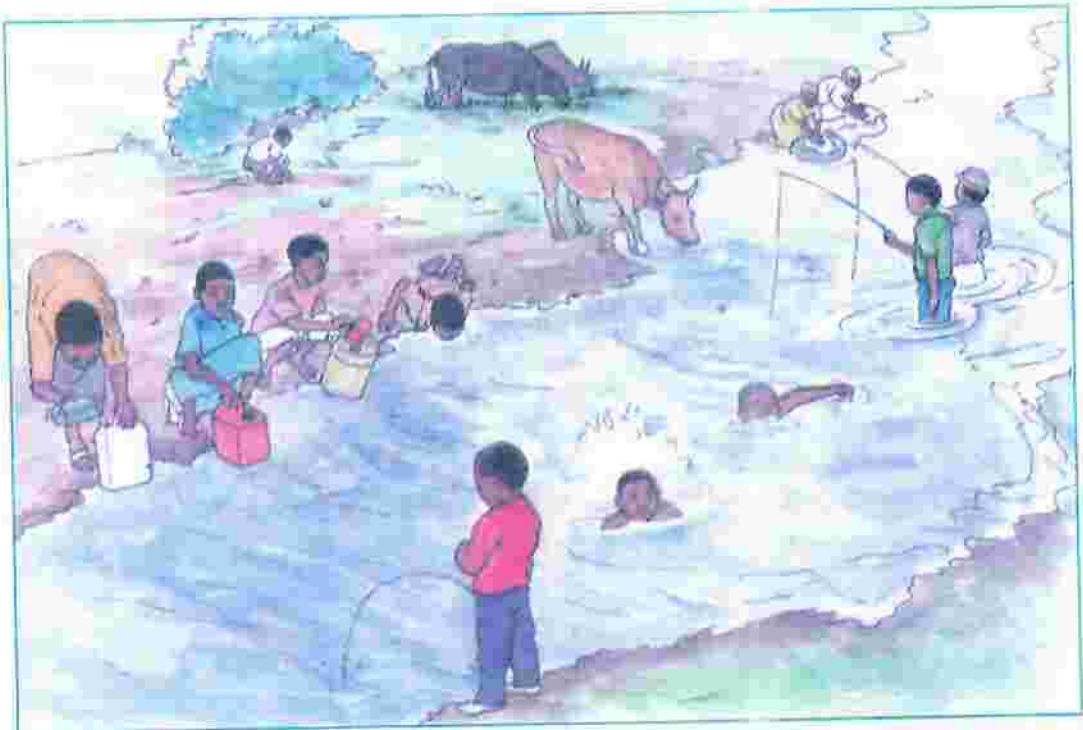
The houseflies then come and land on our uncovered food passing on germs they carried on their bodies to our food. When we eat the food we become ill.



A housefly

Water

Water from open wells, dams and rivers, though looking clean, may have germs. If we drink water from these sources we may get typhoid or cholera.



Touching

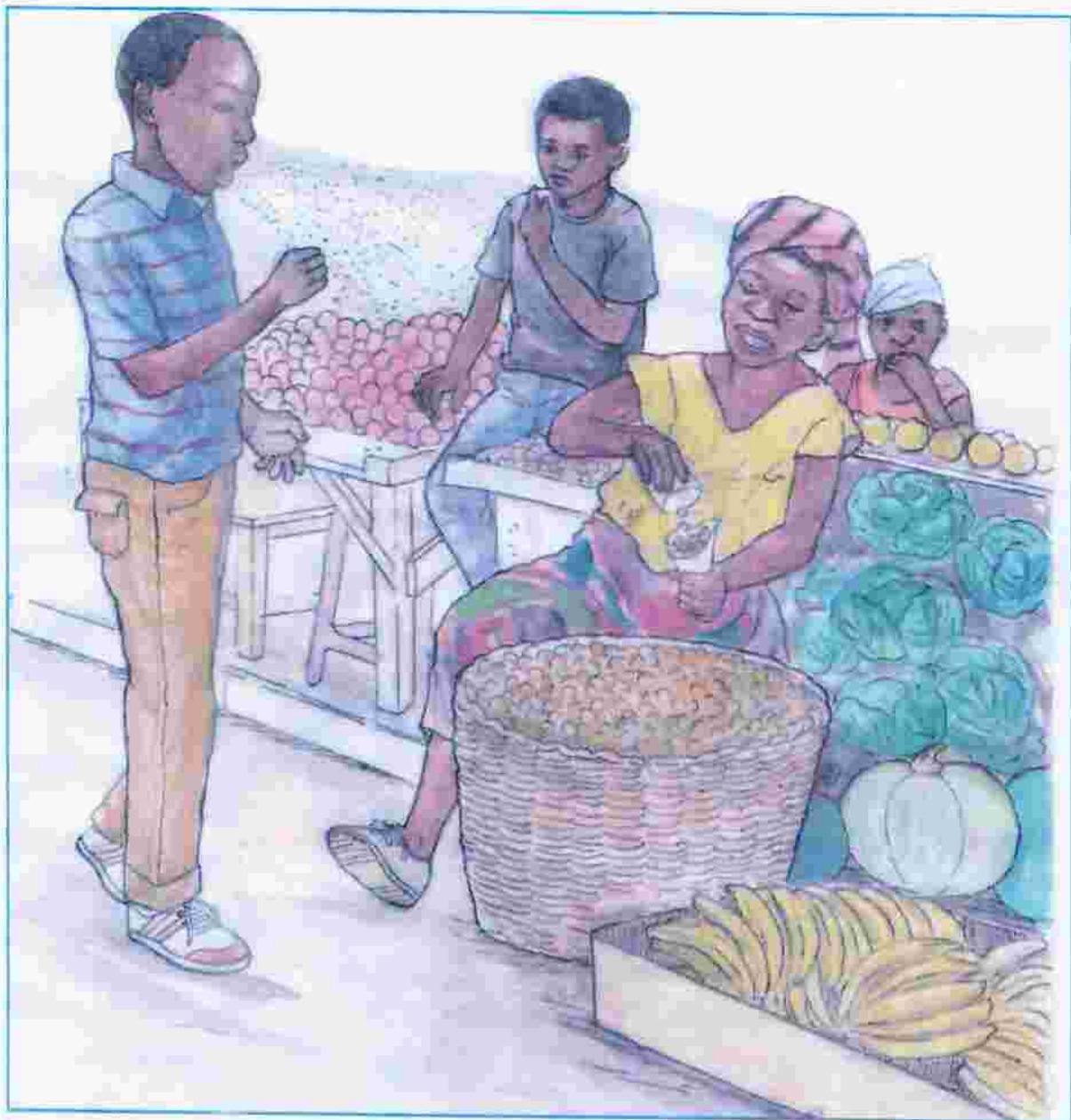
We touch a lot of things with our hands everyday. Germs get onto our hands. If we then handle things like food, plates or clothes, germs from our hands pass on to them. If someone later eats the food or handles the plates, the germs pass on to these people and they become sick.



We must always wash our hands before we touch and eat food to prevent the spread of the germs. Hands should also be washed after using the toilet so that we do not spread germs from the toilets.

Coughing

When we cough, germs come out of our mouth. The germs move through the air and they can get to another person near us. Many diseases are passed to people in this way.



When coughing, we must cover our mouth with a handkerchief. If you want to cough, move away from other people so that you do not spread germs to them.

In and on food

Germs can live on fruits and vegetables. They also like milk and love to be on babies milk bottles. These germs give people diarrhoea and stomach ache.

Make sure you wash fruits and vegetables before you eat them. Washing removes germs on fruits and vegetables.

Insect bites

Mosquitoes, ticks and fleas have germs in their bodies. When they bite us they put germs into our blood, and this makes us sick. Diseases like malaria and rabies are passed from one person to another this way.



Mosquito

Tick

Flea

Preventing diseases

How can we protect ourselves from diseases caused by germs?

- We must wash our hands with soap and clean water before we handle food and after visiting the toilet.
- We must burn all the rubbish in our environment and cover all waste dumps.
- Fresh fruits must be washed thoroughly with clean water before they are eaten.
- Cover your mouth when coughing and cough away from food and other people nearby.
- Containers with drinking water must have lids and must be covered.
- In towns and cities refuse and rubbish in bins must be carried away from homes.
- In rural areas rubbish is thrown in rubbish pits and buried.
- Sewage pipes must be repaired.
- Build the cattle kraal some distance from the house.

- Wear shoes, sandals to stop germs from the ground to enter your body.
- We must fetch our water from protected sources like a covered well, borehole or from a tap. Boil water from unprotected sources of water.
- We must not wash our clothes or bath in the river.
- Protect yourself from mosquito bites by sleeping under a mosquito net, using a mosquito repellent or wearing long clothes during the evening.
- We must wash our bodies daily.
- We must brush our teeth at least twice a day or after every meal.
- Use the toilets properly and clean them well.
- Keep the kitchen clean and all food must be covered.

Activity



Move around your school and find out places where germs can live. Germs can live in rubbish pits, toilets and other places. Think of other places in your home and then your community where germs can live. List these down and say how we can prevent germs coming from these places to people.



Exercise

1. We must wash our hands after visiting the toilet.
2. Why should fruits be washed with clean water before they are eaten?
3. Name one protected source of water.
4. Which animal passes rabies?
5. When must we brush our teeth?
6. We can protect ourselves from mosquito bites by mosquito nets.

C. Diarrhoea: causes and prevention

What is diarrhoea? What causes diarrhoea? How do I know I have diarrhoea? How can I prevent diarrhoea?

A person has diarrhoea when he or she passes out loose watery stools in short spaces of time. You may have more frequent loose stools three or four times a day and you feel like running to the toilet right away without delay. You may have some pain in your stomach. You may vomit and have a fever. Sometimes you may pass out loose watery stools with blood.

or with some mucus. You may not like to eat food and may lose weight and a lot of water from your body.

You may get diarrhoea by eating contaminated food or food with germs or drinking water with germs. You may also get diarrhoea by coming into close contact with a person suffering from the disease.

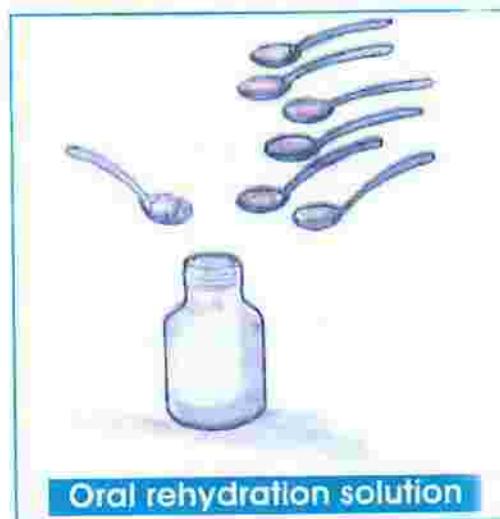
Preventing diarrhoea

- Boil drinking water from unprotected water sources.
- You must have hygienic food preparation and storage.
- Wash hands with clean water and soap and rinse well under running water when preparing food and after visiting the toilet.
- Drinking water must be clean and should come from protected sources like wells, boreholes and taps.
- People must use the toilet instead of the bush. Flies will bring germs to food and people.
- If there is someone suffering from diarrhoea in the family, the toilet must be treated with a disinfectant.
- Openings of pit latrine or Blair toilets must be covered when not in use.

Oral rehydration solution

This is a drink which should be given to a person suffering from diarrhoea. It helps the person to recover some water lost from the body because of diarrhoea.

The drink is made by mixing 6 level teaspoons of sugar and half level teaspoon of salt, dissolved in 1 litre boiled clean water.



Make the patient drink as much of the solution as possible.



Activity

Describe the preparation of the oral rehydration solution.



Exercise

1. Which of the following insects is the most dangerous to people?
A. bee B. grasshopper C. cockroach D. housefly
2. You may get typhoid or _____ if you drink water with germs.
A. cholera B. malaria C. bilharzia D. polio
3. What disease is caused by a mosquito?
A. polio B. bilharzia C. cholera D. malaria
4. Before handling food we must _____.
A. visit the toilet B. put the food in a refrigerator
C. wash our hands D. use a knife
5. The Oral Rehydration Solution is used to treat a person suffering from _____.
A. bilharzia B. polio C. diarrhoea D. malaria



Gather the required items and prepare the oral rehydration solution in your groups. Taste the solution and describe how it tastes.



- Germs are small organisms that may cause diseases.
- We need a microscope to see germs.
- We can prevent diseases caused by germs by keeping our environment clean.
- The housefly is a very dangerous insect that carries germs to people.
- The oral rehydration solution should be given to a person suffering from diarrhoea.



Word search

From left to right or top to bottom search for seven words about health that we have learnt this week. Diarrhoea has been done for you.

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

Find

1. Diarrhoea
2. Germs
3. Cholera
4. Diseases
5. Water
6. Housefly
7. Prevent

Glossary



Contaminate : to pollute or make dirty.

Disease : illness or sickness (ill health).

Disinfectant : chemical used for cleaning.

Environment : our area, where we live.

Magnify : enlarge or make bigger.

Mucus : a thick liquid produced inside the nose.

Prevent : to stop something from happening.

Stool : human waste.

Unit 5

Safety

Introduction

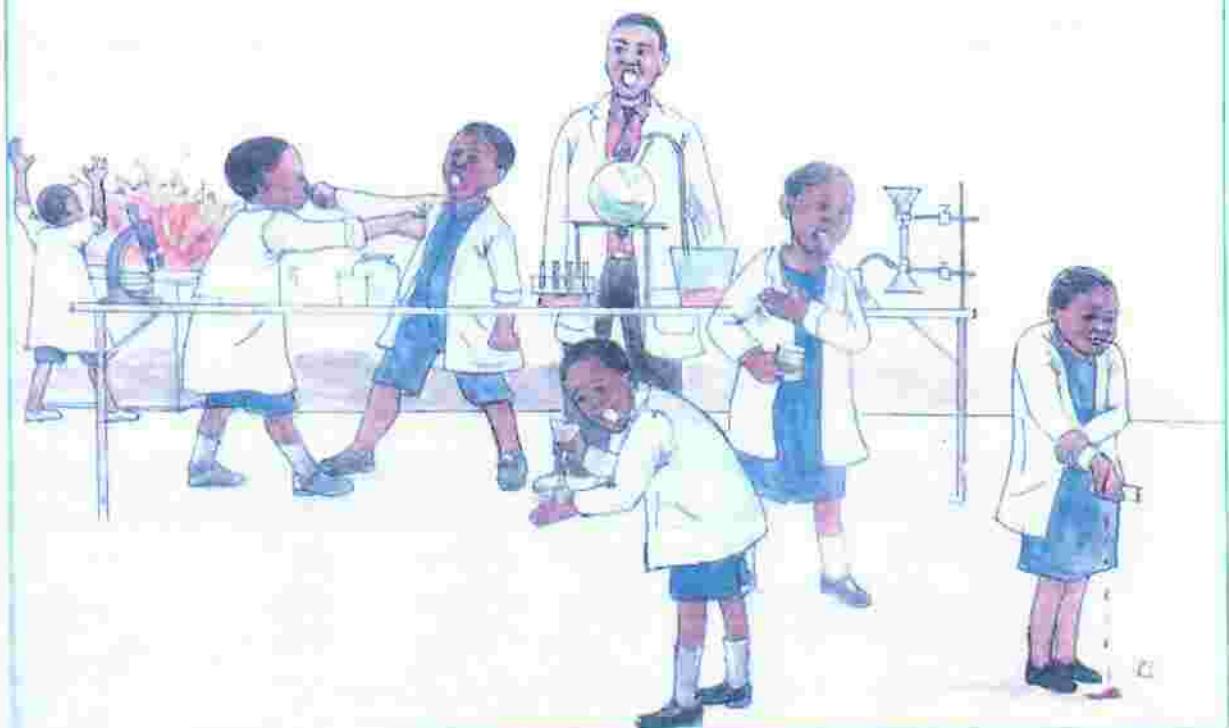
In the laboratory scientists experiment to test their ideas. At our school we may also have a laboratory where we do experiments to test ideas we have learnt in science. In a laboratory we should work calmly, carefully and without disturbing each other by making noise and running around. If we do this, accidents may happen which can hurt people.

A. Accidents in the laboratory

What do you think are some of the accidents that can happen in a laboratory?

If we are not careful in a science laboratory, many accidents may happen. These accidents may include the following:

- Substances in the laboratory catching fire.
- Dangerous chemicals spilling onto your skins.
- Being burnt or scalded by heat from the instruments.
- Having chemicals spilling into your eyes.
- Being cut by sharp objects.
- Slipping and falling because of slippery chemicals on the floor.
- Being bitten by animals like rats during an experiment.
- Objects on tables falling after being hooked by loose clothing someone is wearing.



Activity



Using the diagram of pupils in the school science laboratory, write down the accidents that have happened and those which can happen.



Exercise

1. Where do scientists test their ideas?
2. Which animal can bite a person in a laboratory?
3. Slippery chemicals on the floor can make us _____.
4. Why should we not run around in a laboratory?
5. We should not _____ each other by making noise.

B. Objects and substances that cause accidents in the laboratory

Which objects and substances can cause accidents in a laboratory?

- Cuts can be caused by broken glass from objects like test tubes or tubes made of glass.
- Razor blades can also cause cuts.

- Chemicals like acid can spill on your skin. It can damage or harm your skin, especially your face and eyes which might not be covered.
- Liquids like ethanol catch fire easily. They can cause fire if there is a flame nearby.
- If a gas leaks from a gas tank, it can cause a fire.
- Hot objects like glass, metal rods, metal spoons and hot liquids can burn or scald your hands.



Activity

List any activities that we should do in a laboratory to prevent accidents. Watch a video with your teacher showing accidents in the lab.



Exercise

1. What can cause falling in the laboratory?
2. Why should we cover our eyes in the laboratory?
3. Which chemical can damage your skin in the laboratory?
4. What can cause a fire in the laboratory?
5. Name a hot object in the laboratory that can burn your hands.
6. What can cause cuts in a laboratory?

C. Safety rules in the laboratory

Which rules do you think are important in a school science laboratory?

The following safety rules can prevent accidents in a school science laboratory.

- Do not taste any substance in the laboratory.
- Do not eat or bring any food in the laboratory.
- Chemicals and glass objects should be handled with care.
- Do not handle hot objects with your hands.
- Broken glass should be carefully swept away.

- Do not run around the laboratory.
- Wear clothes to protect you when handling chemicals.
- Wear safety goggles to protect your eyes when handling chemicals.
- Gas taps not being used must be closed.
- After use, sharp objects like razor blades and needles must be locked away.
- Wash your hands after handling chemicals.
- Do not move around the laboratory with open fire.
- Wipe all liquids spilled on the floor.
- Listen to the teacher's instructions all the time.
- Do not enter into the laboratory when the teacher is not around.



Activity

Identify accidents which might be caused by children running around the school science laboratory



Exercise

- We must not _____ any substance in the laboratory.
A. take B. carry C. taste D. give
- What must you wear to protect your eyes?
A. goggles B. clothes C. jersey D. warm clothes
- Who should give instructions in a school laboratory?
A. our parents B. our teacher C. our friends D. visitors
- We should wash our hands after handling _____.
A. food B. goggles C. chemicals D. tins
- Why must we not run around the laboratory?
A. because we have all the time
B. because we can cause noise
C. because it causes hunger
D. because we can cause an accident and injury



Find out from your parents and teachers the tests that can be done in the laboratory and how they help people.



- Accidents in the laboratory can damage our property.
- Accidents in a science laboratory can be prevented.
- Always remember to be disciplined in a laboratory.
- Accidents in the laboratory can hurt people.



Word formation

Make a nine letter word about things you should never taste in a laboratory.

| | | |
|---|---|---|
| T | A | U |
| S | B | E |
| N | C | S |

True/false

1. There are food stuffs in the laboratory.
2. Glass materials are found in the laboratory.
3. You must not talk in the laboratory.
4. There is a thermometer in the laboratory.

Glossary



| | |
|-----------------------|---|
| Chaos | : disorder. |
| Chemicals | : substances used in the laboratory. |
| Experiment | : a process done to discover or find out something. |
| Equipment | : tools used. |
| Gas | : a substance like air. |
| Laboratory | : a room where experiments are carried. |
| Safety goggles | : glasses worn to protect eyes. |
| Scalded | : to be burnt by a hot liquid or chemical. |

Unit 6

How much do you remember?



This section covers what you did in the past five weeks.

Paper 1

Read the questions carefully and choose the correct answer.

1. Which body part do we use to feel and touch things?
A. the feet B. the eyes C. the hand D. the nose
2. Which body part is the most important?
A. the nose B. All of them C. the eyes D. the teeth
3. We must brush our teeth 30 minutes after every _____.
A. meal B. bath C. sports day D. break time
4. We brush our teeth using the toothbrush and _____.
A. a sponge B. soap C. toiletry D. toothpaste
5. When must you change your toothbrush?
A. after one week B. after three - four months
C. after six months D. after one year
6. Which food may cause our teeth to decay?
A. fresh fruits B. milk
C. sweets D. green vegetables
7. Wash your hands with clean water and _____ and rinse under running water.
A. soap B. acid C. chemical D. gas
8. Which one is an example of a toiletry?
A. water B. perfume C. toothbrush D. lipstick
9. What do cosmetics do to a person?
A. they grow up
B. they smile a lot
C. they change her appearance
D. they become too old

10. Which are the two main sources of food?
A. plants and fruits B. animals and vegetables
C. legumes and plants D. plants and animals
11. Which food gives us energy?
A. vegetables B. sadza C. beans D. carrots
12. Green vegetables and fruits give us a nutrient called _____.
A. carbohydrates B. vitamins
C. proteins D. fats
13. The food we eat almost every day is our _____ diet.
A. good B. only C. staple D. other
14. Why should you sleep under a mosquito net?
A. to feel warm B. to prevent malaria
C. to stop the cold D. to stop noise
15. Scientists do their experiments in a _____.
A. laboratory B. classroom C. home D. school

Paper 2

Answer all questions.

16. a) Name any two foods that give us proteins. (2)
b) Give two examples of cosmetics. (2)
c) Which insect is the most dangerous to people? (1)
17. a) Give one accident that might happen in a laboratory. (1)
b) What causes diarrhoea? (1)
c) What do we use to see germs? (1)
d) Why do we wash our hands after visiting the toilet? (2)

TOPIC 2**Materials and Structures**

JOHNSON CITY

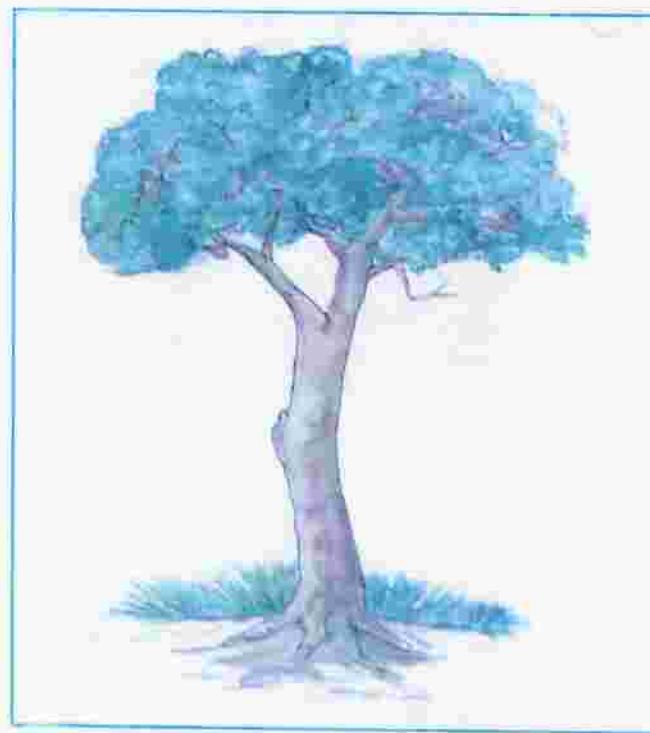
Characteristics of materials

Introduction

There are different things we use at home and at school. The things are made of different materials. Some of these things can be made by people but others are found at different places. Trees, stones and grass are not made by people. A door, a dish or a window is made by a person. Things we make need to be drawn before they are made.

A. Natural materials

Look around you. Tell the class what you can see. Which things do you see every day? Things which have not been created by man are natural materials. They were created by God.



The tree has different parts. Name the parts. What colour is the grass near the tree? Name one use of the grass. Why is the grass looking green?



Stones have different shapes. Some stones are used for building houses and bridges. What else is used for building a house?

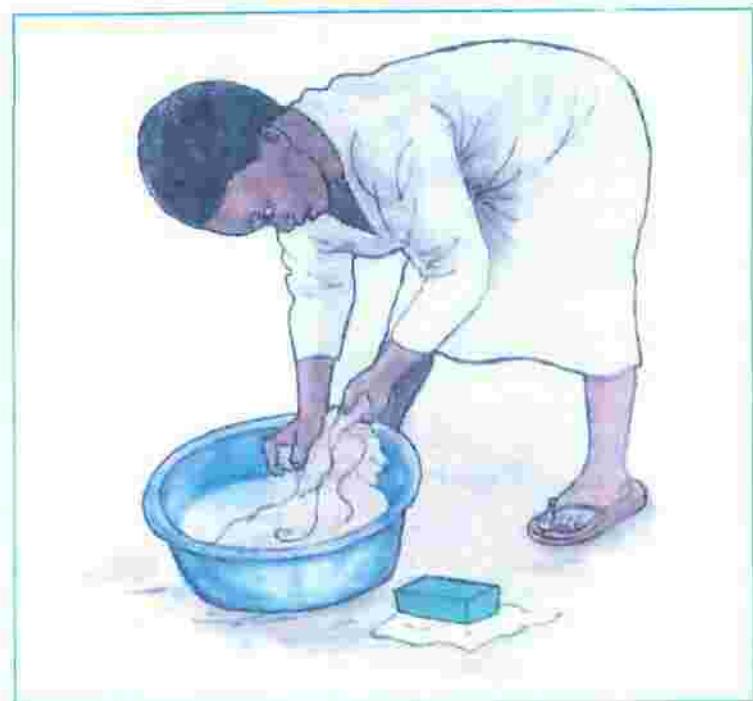


Activity

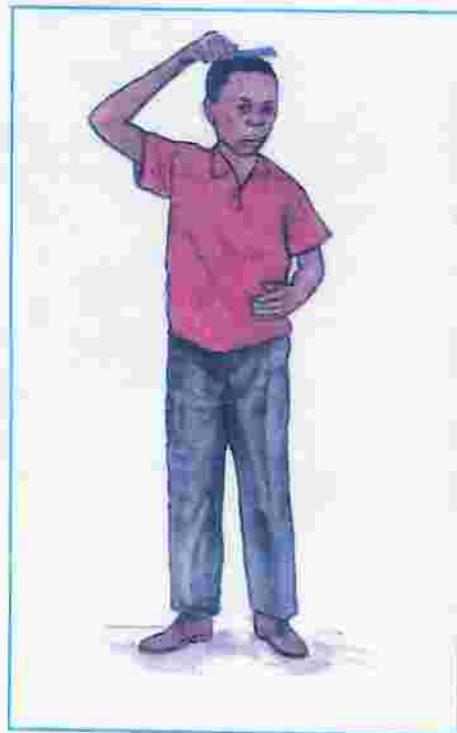
Discuss why stones are used for building a bridge?

B. Man-made materials

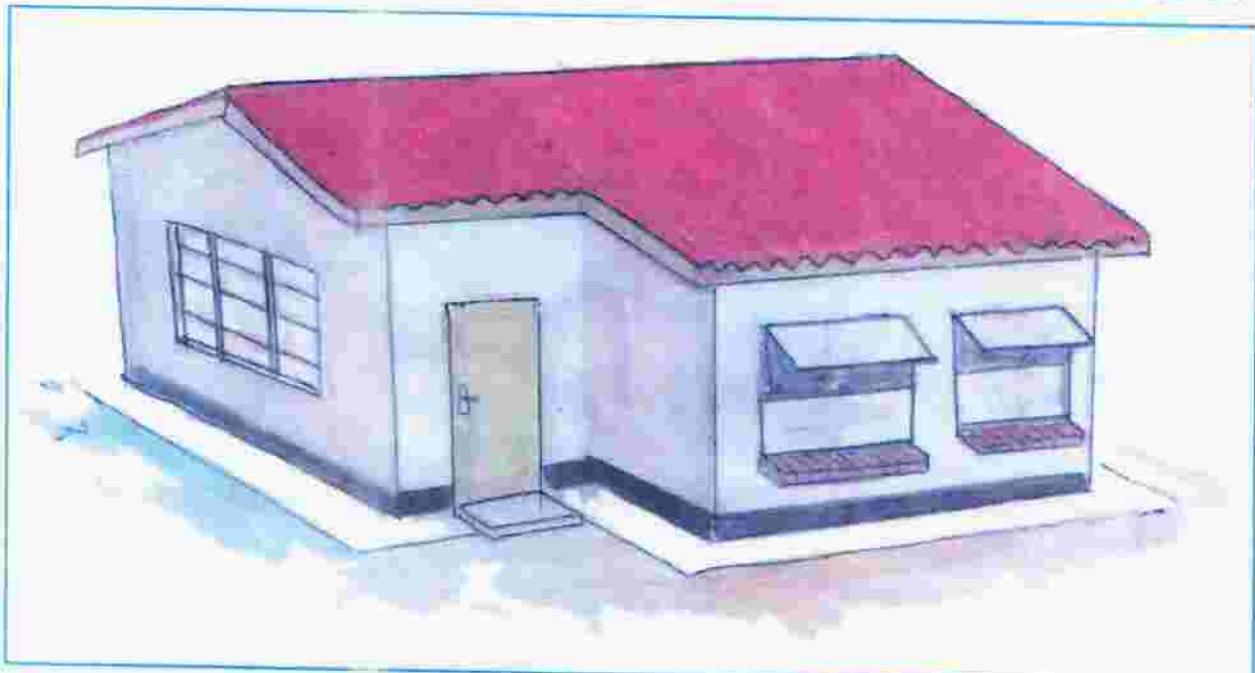
Look around your classroom. Tell the class what you can see. Which things were not made by God? Things which have been made by man are called man-made materials.



Mother washes clothes in a dish. The dish is made of plastic. Grandmother likes a metal dish. What is your dish made of? Which dish is stronger, a plastic or a metal dish?



Father is combing his hair. What is he using? What is the comb made of?



Themba lives in a big house with his mother and father. The house has many windows and doors. It was built using different materials. Name four things it is made of? What are huts found in rural areas made of? Why is the door painted?



Look at the picture. Mother is cooking using a wooden spoon. Can you find out why we use wooden materials for cooking? Yes we use wood for cooking because it does not conduct heat.



Activity

Collect different items and materials from your environment. Sort them according to what they are made of.



Exercise

- Read these words and write them under the given groups as in the table below:

bottle, stone, leaf, door, paper, chair, grass, soil, ruler, water

| Man-made materials | Natural materials |
|--------------------|-------------------|
| bottle | stone |
| | |
| | |
| | |
| | |

2. Name any two materials made of plastic.
3. Name any two materials made from wood.

Remember that:



that:

- Materials can be natural or man-made.
- Natural materials were created by God.
- Man-made materials were created by people.



Word search

From left to right or top to bottom, search for seven words about materials that we have learnt this week. Wood has been done for you.

| | | | | | | | |
|---|---|---|---|----|---|---|----|
| Q | B | W | E | (D | O | O | W) |
| T | H | D | N | T | G | P | I |
| V | O | I | O | N | L | P | N |
| A | U | S | T | A | Y | T | D |
| M | S | H | S | L | T | O | O |
| M | E | T | A | L | I | O | W |
| Y | I | B | S | W | M | A | C |
| C | E | S | K | C | I | R | B |

Find

1. Window
2. Plastic
3. Metal
4. Stone
5. House
6. Bricks
7. Dish

Glossary



Conductor

: a material which allows electricity or heat to pass through.

Environment

: the land, the water, the air and the buildings around us and the conditions in which we live.

Material

: something that can be used for making anything.

Unit 8

Elements, mixtures and compounds

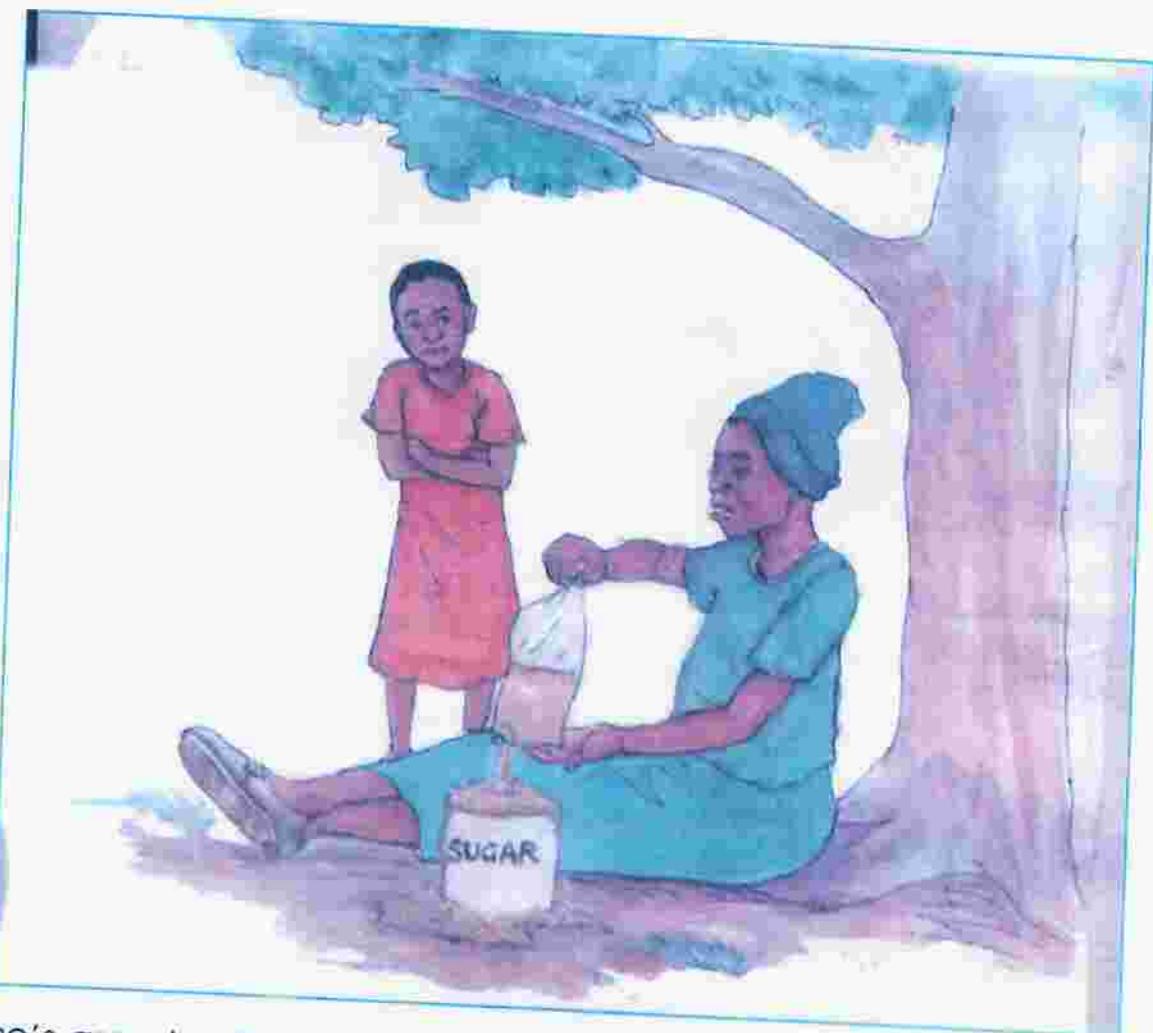
Introduction

When we place or add two more things together we will be making a mixture. However mixtures can be separated while compounds cannot be separated. When you mix mealie-meal with rice it can be separated or mix water and dirt it can also be separated. Now let us give more examples of mixtures and compounds.

A. Pure and impure materials



Mr Hove is milking a cow. Tino is drinking milk from the cow. The milk is fresh and warm. Think of other things that are pure and tell your teacher.



Praise's grandmother is pouring sugar into a tin. Some sugar spills onto the soil. Soil has mixed with sugar. The sugar in the soil is now impure. Tell your friend about impure things found at home. How can you separate soil from sugar?



Exercise

1. Milk is a _____ material. (pure / impure)
2. From the picture, what is likely to make the milk impure?
3. How can sugar be separated from soil?
4. Between sugar and soil, what dissolves in water?
5. Why does the lid of the pot have a pipe?

B. Purifying water

The teacher asked Khumbu and Kujani to make dirty water clear. Khumbu used an empty cooking oil container and Kujani used a pot.



Activity

Do the following experiment in groups.



Experiment

Purifying water by filtration

Apparatus: glass, water, soil, funnel, filter paper, grass, small stones and sand.

- Put water in a glass.
- Make it dirty by adding soil and grass.
- Place some small stones and sand into the funnel.
- Pour the dirty water into the funnel.
- Let it drip slowly.
- Observe if the water still has the soil and grass.



Exercise

1. Name two things that can make water dirty
2. What can be separated from water by filtration?
3. Why was sand placed in the funnel?
4. Can sugar be separated from water by filtration?
5. Name another way of purifying water.

Remember



that:

- Dirty water can be made clean by filtration.

Glossary



| | |
|------------------|---|
| Apparatus | : things that are used in an experiment. |
| Compound | : a mixture which consists of two or more elements. |
| Elements | : substance that cannot be broken down into simpler substances by chemical means. |
| Impure | : containing something not clean. |
| Mixture | : two or more things put together. |
| Pure | : not mixed with anything. |
| Purify | : to remove dirty or harmful substances from something. |

Unit 9

Tools

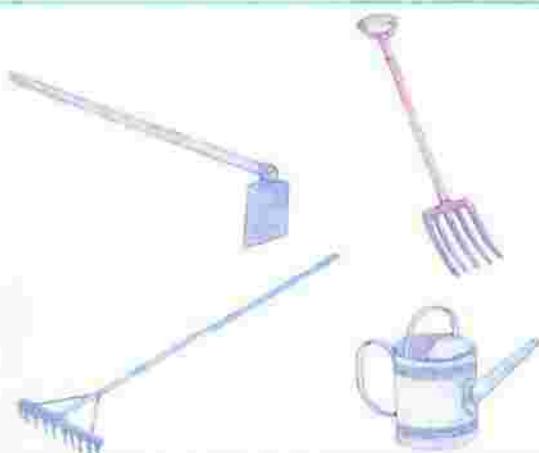
Introduction

Tools are made to make our work easy. We now know what materials are used to make different tools. Let us make our own tools using materials that can be found in our environment.

A. Classification of tools

Anotida and Tino use different tools at home. The tools are used at different places. The tools are used in the garden, in the kitchen or for building.

Name the tools



Garden Tools



Kitchen Utensils



Building Tools



Cleaning Tools



Activity

Draw a chart like the one and write names of tools given in the picture. Tell your teacher why you put the tools under different groups.

| Kitchen tools | Garden tools | Building tools |
|---------------|--------------|----------------|
| Knife | Hoe | shovel |



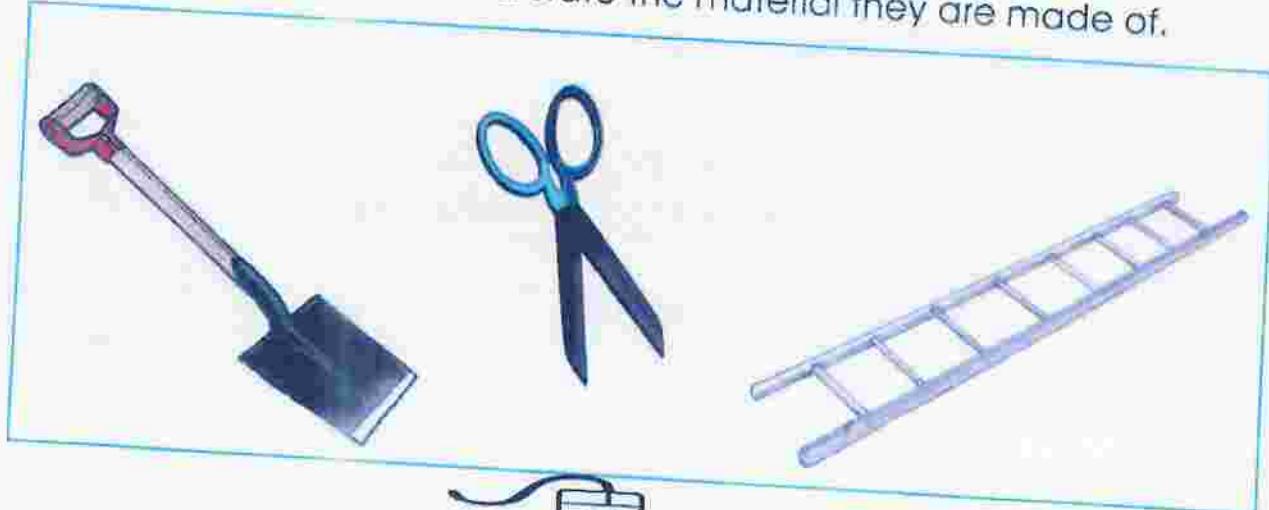
Exercise

1. State the uses of the tools in the table below.

| Tool | Use |
|-----------------|----------|
| pliers | |
| shovel | |
| scissors | cutting |
| Tyre liver | |
| Bottle opener | |
| Shoe polish tin | |
| ladder | climbing |

B. Tool design and models

Name the following tools and state the material they are made of.



Destiny is good at making her own tools. The teacher asked her to draw a tool she wanted to make. Tools are made of different materials. Tell the class what each tool in the picture is made of.



Activity

Draw the tool you like to use in the garden or when building. Make the tool and put it in your classroom. What is your tool used for? Name the materials used to make your tool.



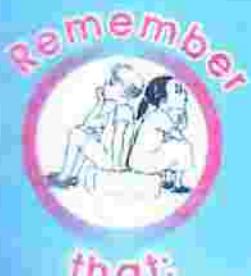
Exercise

1. A _____ is used to open tins.
A. bottle B. can C. spoon D. Can opener
2. Which tool is used to cut trees?
A. hoe B. axe C. spade D. spanner
3. Which of the following is not a metal?
A. stick B. spoon C. pot D. tin
4. A _____ can be used to cut papers.
A. pen B. spoon C. bottle D. scissors
5. A _____ is a very strong material.
A. metal B. wood C. plastic D. clay

PROJECT



- Identify tools that you can make.
- Collect materials to make them.
- Make a sketch or drawing of the tool.
- Start making the tool.
- Display and choose the best that can be sold to get money.



- Tools make work easier.
- Tools are made of different materials.



Who am I?

1. I am very sharp, I can cut you if not handled carefully. I have two sides. Who am I?
2. I like trees so much. My body is usually made of wood and my head is made of iron. I am also very sharp. Who am I?
3. They use me to cut through things. I cut with my two legs. Be careful with me. Who am I?
4. I make it easy to open tins. Who am I?

Copy and complete the crossword puzzle below by writing a letter in each unshaded box.

| | | |
|---|--|---|
| | | A |
| H | | |

Going down: A tool we use to chop a tree.

Going across: A tool we use to dig the garden.



| | |
|-------------------|---|
| Material | : something that you use to make something with. |
| Metal | : a hard strong material like gold, silver, iron or tin. |
| Pliers | : tool used to hold metal objects tightly. |
| Pure | : something made of one material only like fresh milk from a cow. |
| Sketch | : plan. |
| Tyre lever | : tool for opening tyres. |

Unit 10

Structures

Introduction

As you have learnt before, structures are made of different materials. They are used for different purposes such as for shelter and storage.

A. Structures for people's shelter found at home

There are different types of structures at home. In rural areas people build different structures but in urban areas they at times build one structure. Everything is in that structure. These are called houses. Toilets and bath rooms are inside the house in towns.

Name the structures.





Activity

Name and draw structures found at your home.



Exercise

1. Structures are used for _____ and _____.
2. Name any three structures found at home.

B. Structures for animals at home

Some structures are made for animals. At home we have different kinds of structures for the shelter of animals. We keep animals in these structures to protect them from thieves. These structures also help prevent them from destroying people's crops and gardens. The structures at home which are used for animals are kraals, pigsties, fowl runs, kennels and stables.



Activity

Discuss with your friend other structures for animals found at your homes.



Exercise

Which animals are kept in these structures numbered 1 to 4?



1

Pigsty



2

Fowl run



3

Kraal



4

Stable

C. Structures used for storage

Some structures at home are used to store different things. These things include grain, tools, equipment, agricultural inputs like fertilisers and chemicals. The structures for that use include those shown below.



Tool room/store room



Granary



Shed



Activity

Draw a granary in your exercise book and list crops that are kept in it.



Exercise

1. What are structures?
2. Which three things are structures used for?
3. Name two structures used by people at home.
4. Which two structures are used for storing things?

5. Where are these animals kept at home?

- a) Cattle
- b) Chicken
- c) Pigs
- d) Dogs
- e) Horses or donkeys

*Remember
that:*



- Structures are made from materials.
- Structures that are found at home are houses, huts, kraals and granaries.
- Structures are used for storage and shelter.

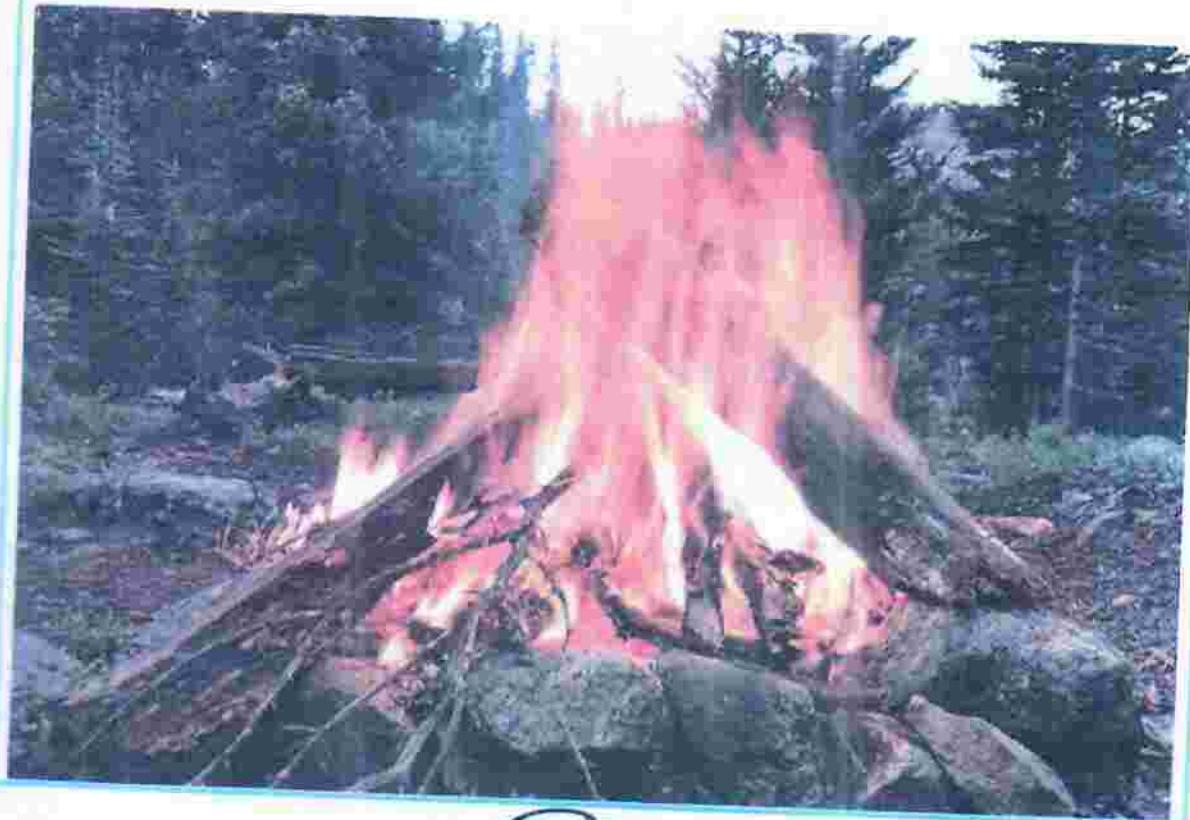
Glossary



| | |
|------------------|---|
| Granary | : a structure used for storing crop grain like maize. |
| Material | : Is a thing used to make an object |
| Structure | : objects built by people for shelter and storage purposes. |

TOPIC 3

Energy and Fuels



Unit 11

Energy

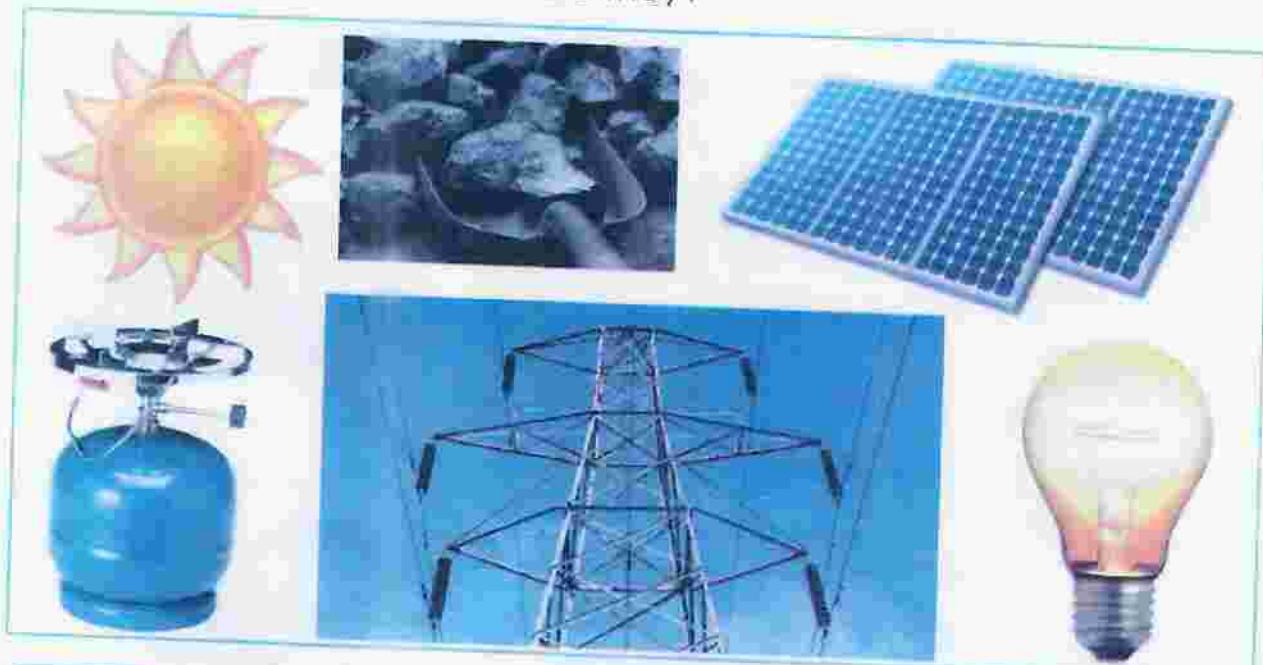
Introduction

People need energy to jump, walk, breathe, work or think. Energy is used in many places like homes, industries and transport. There are different types of energy.

A. What is energy?

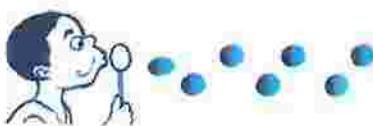
Energy is the power that either moves or pulls things. Energy is power that comes from coal, solar, electricity and gas. Energy makes machines work and gives us heat and light.

Look at these pictures. What are they?



Activity

Find out other sources and forms of energy and discuss them with your teacher.



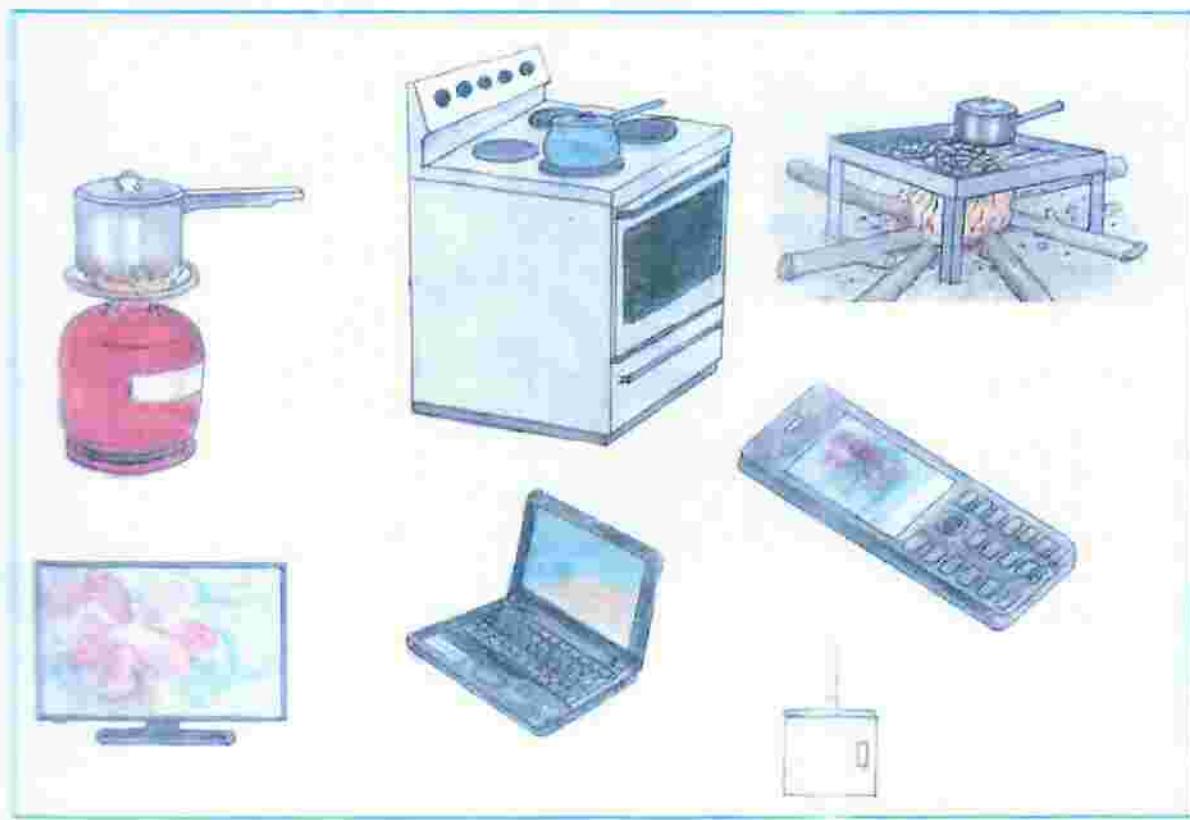
Exercise

1. Energy is the _____ to move or pull things.
A. machines B. coak C. power D. electricity
2. Energy can come from _____.
A. coal B. heat C. light D. movement
3. Energy gives us _____ and light.
A. sun B. fun C. gas D. heat
4. Energy makes machines _____.
A. grow B. work C. stop D. fun
5. What gives us light?
A. coal B. the sun C. stones D. strength

B. Uses of energy

Energy can be used for cooking or heating and lighting. In rural areas and some places in town people use solar energy. Electricity is also a form of energy which also gives us heat and light.

Name the pictures.



Switch on electricity and see what happens to the electricity bulb. What happened?

Why does the light come on?

The cell phone will work if you put electricity in it (charge it). If you switch it on, it lights up. You can see light energy in the cell phone.

An electric stove becomes hot if you switch it on. Heat energy is used when cooking.



Activity

1. Group work demonstrating how clothes are ironed.
2. Show the class how to plug on a radio.
3. Explain to the class how a TV is connected to a wall plug.
4. Show the class how to switch on a stove.
5. How do you charge a cell phone?



Exercise

1. Give two uses of energy.
2. What do we call energy from the sun?
3. When cooking we use _____ energy.
4. What can solar energy be used for?
5. When you switch on electricity, what happens to the light bulb?

Glossary



Computer : electronic device for storing and processing data.

Electricity : charged energy supplied for lighting, heating etc.

Energy : power to do something.

Unit 12

Fuels

Introduction

Fuels are materials that give out light and heat when you burn them. Examples of these are wood, coal, paraffin and petrol. These fuels are used to power trains, cars, tractors, grinding mills and cooking stoves.

A. Forms of fuel

What does your family use for cooking? Do you cook using firewood, gas or electricity?



Firewood



Petrol



Coal



Diesel



Gas



Paraffin

What can you see in the pictures? Tell the class what you do to use the energy?

Firewood, paraffin, petrol and diesel are all fuels. Some fuels are solid but others are liquid. Gas is another form of fuel.



Activity

Write fuels you know under each name in the chart.

| Solid fuel | Liquid fuel | Gas |
|------------|-------------|--------|
| Firewood | Paraffin | LP gas |

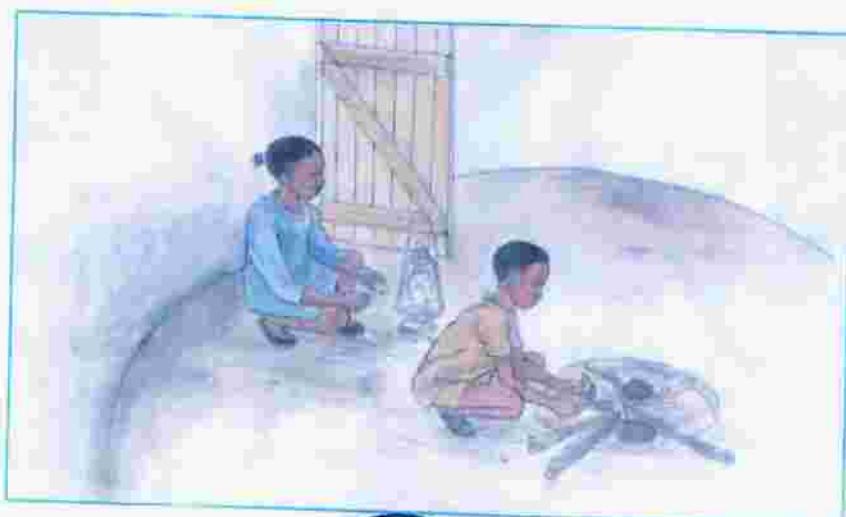
Gas

Mother wants to boil some water. She is lighting up a gas stove. Where is the gas? What will happen to the gas?



Paraffin and fire

It is dark in the hut and Emily is lighting up a paraffin lamp. Lizwe is making a fire for her mother to cook some food.





Exercise

1. What do you use for lighting a lamp?
2. Name the fuel found in the lamp.
3. Why does Lizwe use grass and twigs to start a fire?
4. What will happen to the paraffin and wood after some time?
5. We use paraffin in lamps and _____.

B. Renewable and non-renewable fuels

Some fuels never get finished. They can be replaced. People can plant more trees so that they get wood. Fuels like wood are renewable. Firewood is a renewable fuel because we can grow more trees. Why is solar energy renewable?

Other fuels get finished. They can not be replaced. It is difficult to get the fuel again. Fuels that get finished are non-renewable.



Activity

Ask your teacher to give you renewable and non-renewable fuels. Draw a table and write the fuels under renewable and non-renewable.

| Renewable fuel | Non-renewable fuel |
|----------------|--------------------|
| Wood | Gas |
| — | — |
| — | — |
| — | — |
| — | — |



Exercise

1. Fuels that can be replaced are called _____.
2. List 2 examples of non-renewable fuels.
3. List 2 examples of renewable fuels.



- Forms of fuel are: solid, liquid and gas.
- Fuels burn to give out heat and light.
- There are renewable fuels which can be replaced and non-renewable fuels which cannot be replaced.

Glossary



| | |
|---------------|--|
| Energy | : power to move or pull things. |
| Fuel | : any material that can be burnt to produce heat and light. |
| Liquid | : a substance that flows freely. |
| Solid | : strongly made (not liquid or gas). |
| Twig | : small thin branch that grows on a larger branch on a tree. |

Unit 13

How much do you remember?



This section covers what you did in the past five weeks.

Paper 1

Read the questions carefully and choose the correct answer.

1. Which material is man-made?
A. tree B. door C. water D. stone
2. Natural materials were made by _____.
A. people B. man C. schools D. God
3. A _____ is a structure for people's shelter.
A. house B. kraal
C. kennel D. shed
4. We can make water clear by _____.
A. pouring B. washing C. drinking D. filtration
5. Choose a kitchen tool.
A. hoe B. spade C. axe D. fork
6. A storage structure found in the rural areas is a _____.
A. stable B. silo C. granary D. pigsty
7. Why is a knife sharp?
A. So that it can cut. B. So that it can dig.
C. So that it is light to carry. D. So that it is shiny
8. Why is it good to carry tools carefully?
A. Because they are new.
B. So that we do not hurt ourselves.
C. So that we use them
D. So that we put them in the storeroom.
9. Structures are made from _____.
A. air B. water C. dust D. materials
10. Energy in a cell phone is stored in the _____.
A. light B. charger C. voice D. battery

11. If you switch on a TV you see pictures because there is _____.
A. screen B. light C. picture D. sound
12. Paraffin is a _____ fuel.
A. gas B. solid C. liquid D. heat
13. Petrol is used in _____.
A. televisions B. stoves C. lights D. cars
14. _____ more trees for firewood.
A. Cut B. Grow C. Burn D. Eat
15. Which fuel is a solid?
A. diesel B. petrol C. gas D. coal

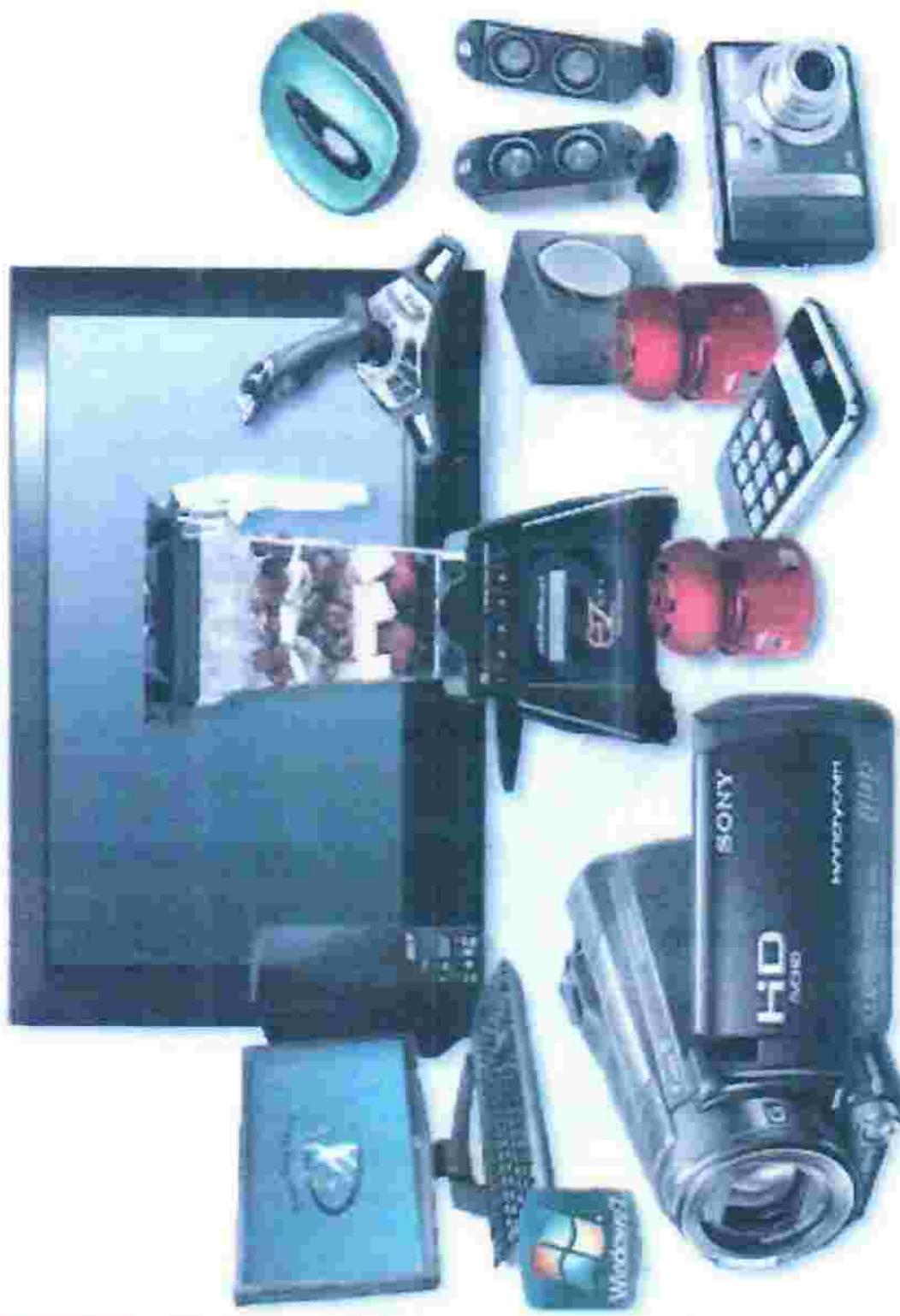
Paper 2

Answer all questions.

16. a) What is used for mixing mud when building a house? (1)
b) Give one example of an impure material. (1)
c) Explain how water is filtered using a sand filter. (3)
17. a) Solar energy is the energy from the _____. (1)
b) Which two things are kept in a store room? (2)
c) Give two uses of fuels. (2)

TOPIC 4

Electricity and Electronics



Unit 14

Electricity and electronics

Introduction

In Zimbabwe many people use electricity. They use electricity to light their homes and streets. Electricity should be used carefully as it can be dangerous. People use devices or gadgets which use electricity. These are called electronic devices.

A. Electronic devices

We see and use electronic devices everywhere. They use electricity for them to function. Think of any electronic devices that use electricity at home.

Name the electronic devices shown below.



Activity

Explain how the devices in the above picture are used.

Toys are also electronic devices. They use electricity. The electricity in toys comes from batteries. Look at the pictures below, they show some toys. Can you identify these toys? Talk about these toys with your friend.



Look at Tawana, Chloe, Praise and Reco. They are using computer toys in their classroom. The computer toys use electricity which comes from batteries. Can you use these toys?



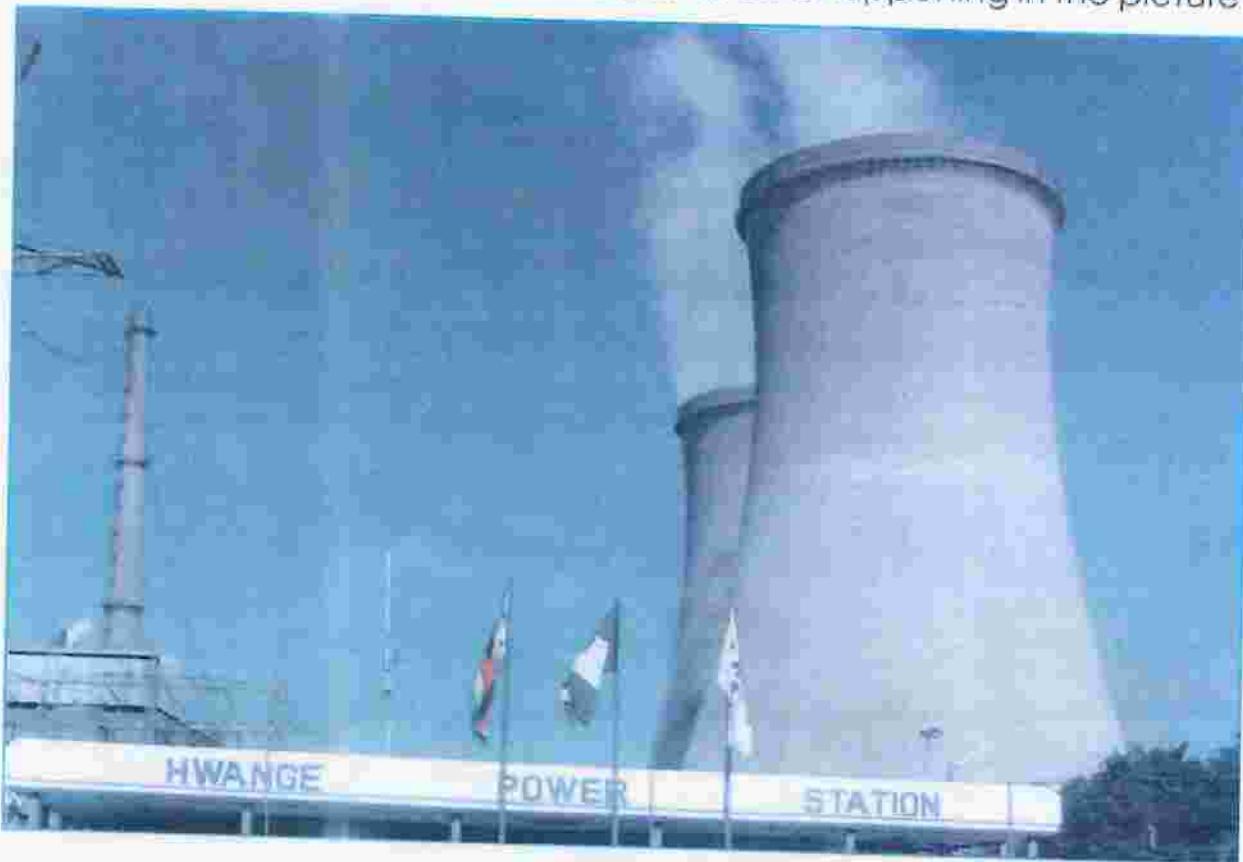
Exercise

1. Every electronic device uses _____ to function.
2. Name three devices you know that use electricity.
3. Name and draw any two electronic devices.

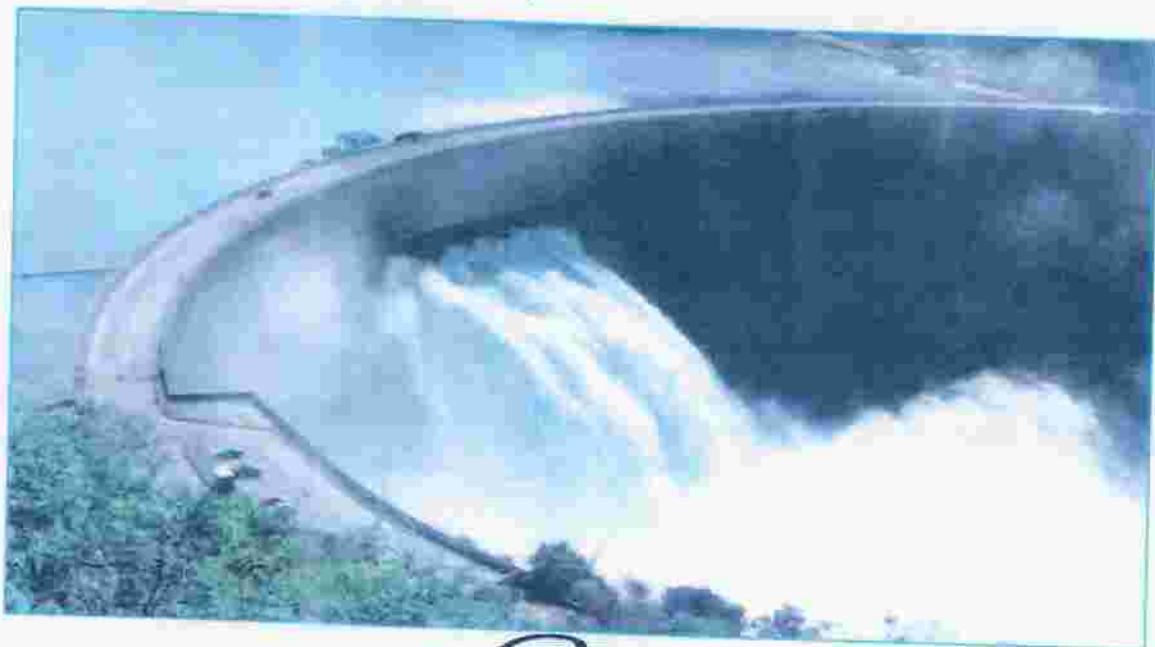
B. Sources of electricity

There are many places where electricity is made in Zimbabwe. Hwange Power Station and Kariba Power Station are the main sources of electricity in Zimbabwe.

Look at the picture below. Talk about it. What is happening in the picture?



This is a very big dam. It is called Kariba Dam. Water falling from the dam wall is used for making electricity.



There are many other small ones namely, Munyati Power Station, Harare Power Station and Bulawayo Power Station.

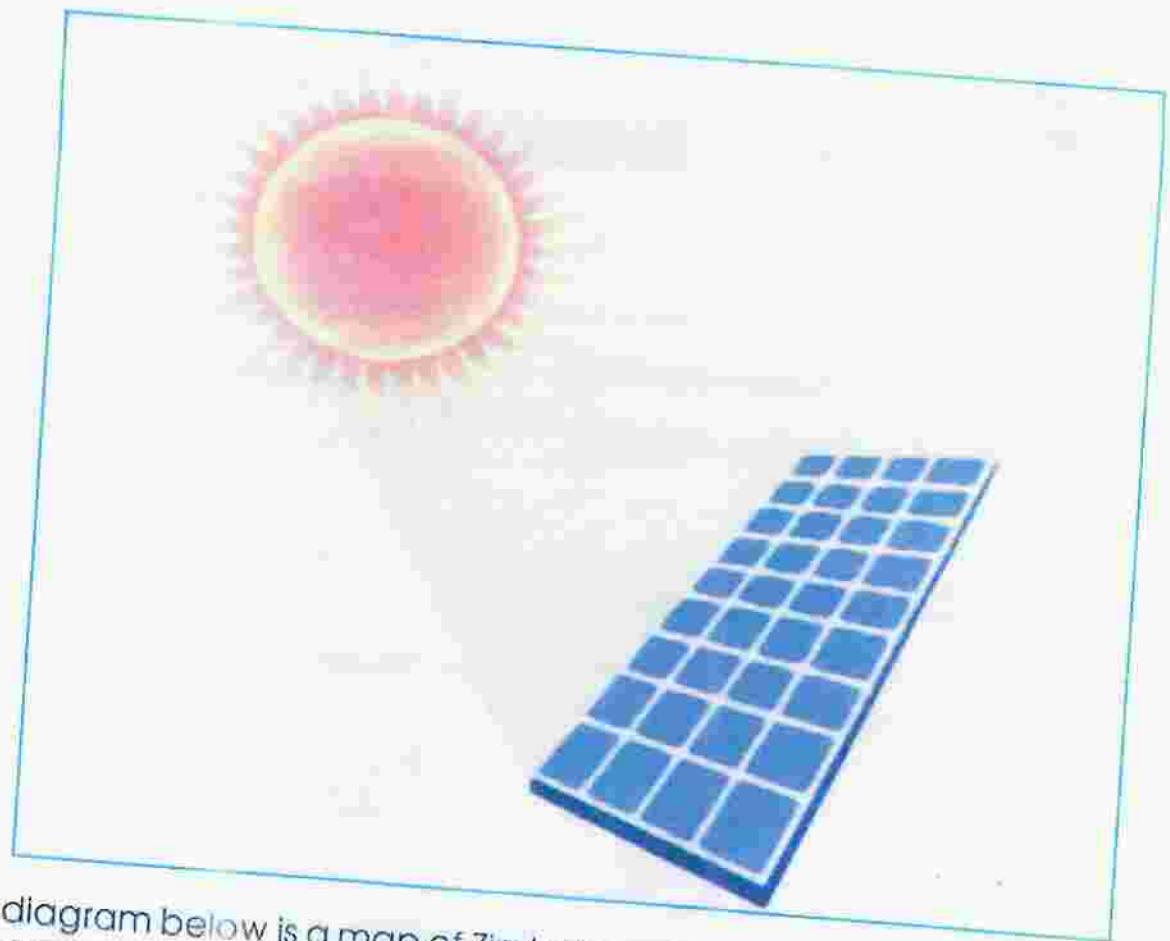
Generators are also a source of electricity. We can use them at our homes. Generators use petrol or diesel.



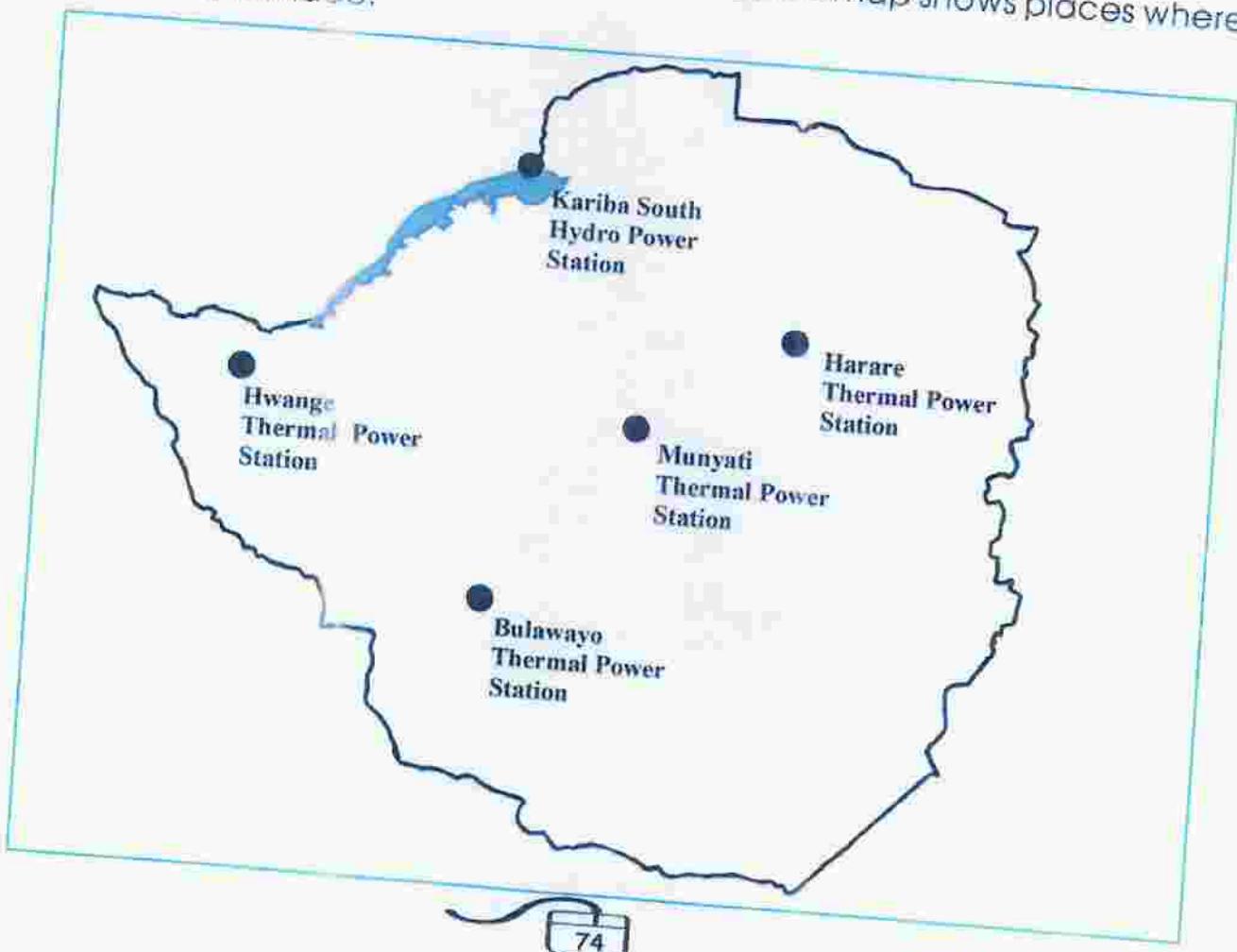
We can also produce electricity using battery cells. We can find these in the shops or on the streets.



The sun also gives us electricity called solar energy. We use solar panels to get this electricity. The diagram below shows the sun and a solar panel.



The diagram below is a map of Zimbabwe. The map shows places where electricity is made.



How does electricity come to your home?

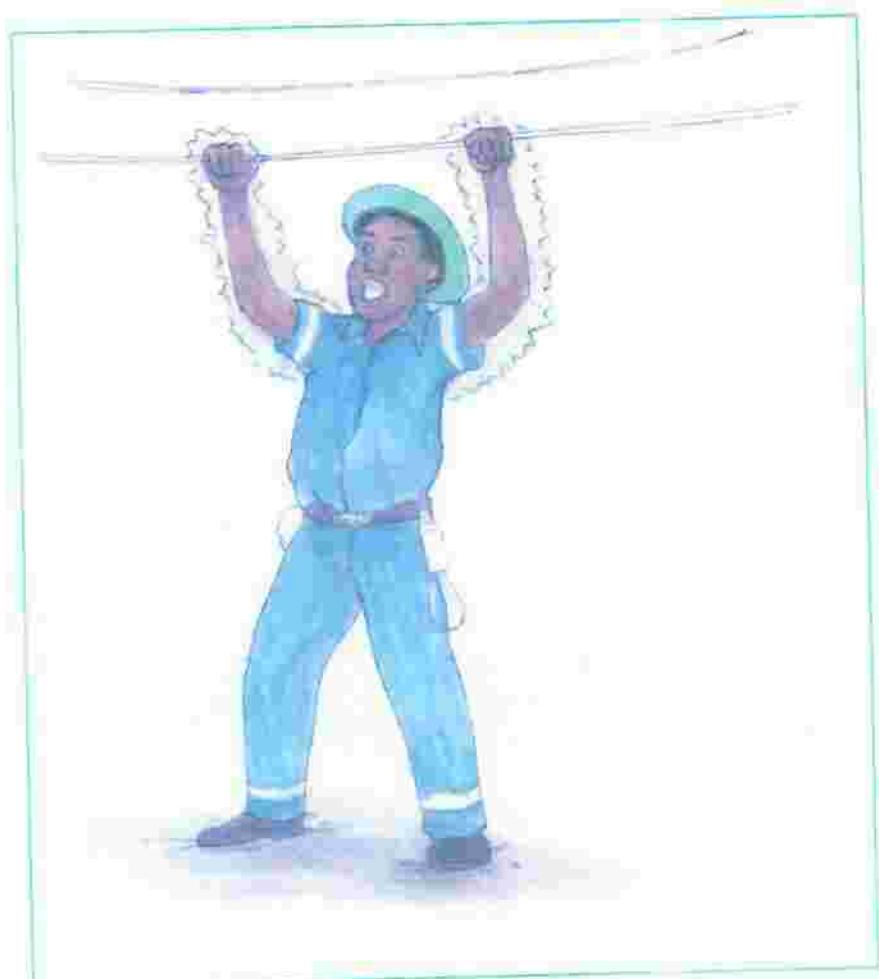


Exercise

1. Name 2 uses of electricity.
2. Name 2 places where we can find sources of electricity in Zimbabwe?
3. If we do not have electricity, what else can we use to light our homes?
4. The energy from the sun is _____ energy.

C. Dangers of electricity

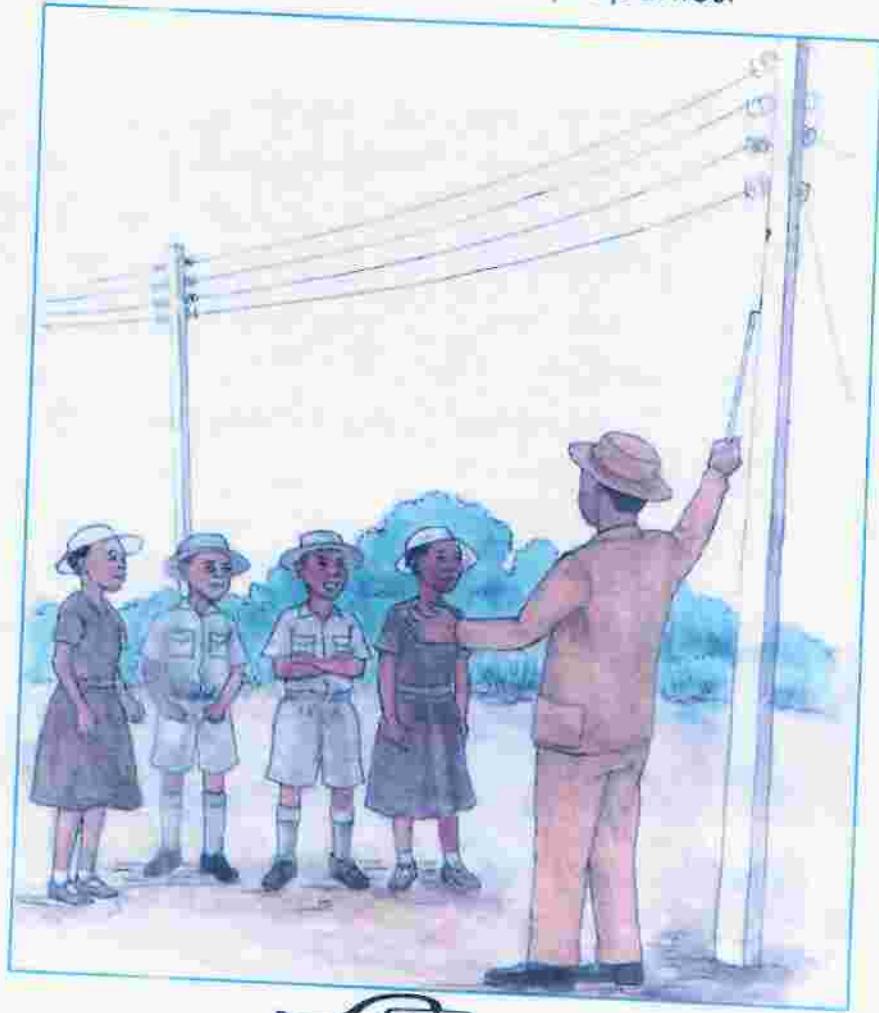
People need to use electricity carefully because it is dangerous. Electricity can kill people.



Electricity can kill if people touch the electric cables.



Electricity can destroy houses and other properties.



Mr Oliver is talking to the children. He is pointing at electricity wires. What do you think he is saying? Pretend you are Mr Oliver. Tell the class about the dangers of electric wires.



Activity

Draw signs that tell people about the dangers of electricity. Ask your teacher to show you dangerous electrical points in the home and at school. Talk about what can be done to avoid being injured by electricity. Work in groups to write sentences about how to avoid electric dangers.



Exercise

1. Why should electricity be used carefully?
2. What can electricity do to people?
3. Electricity can _____ houses.
4. What can be done to avoid being injured by electricity?
5. Name one dangerous electrical point in the home.



that:

- The main sources of electricity in Zimbabwe are Hwange and Kariba power stations.
- There are smaller sources of electricity namely Munyati, Harare and Bulawayo power stations.
- Generators, battery cells and the sun produce electricity.
- Electricity must be used carefully because it is dangerous.
- Electricity is used for many things, like cooking, ironing, lighting and charging phones.
- Electronics is the science of controlling electrical devices.
- We see and use electronic devices everywhere.
- Every device uses electricity for them to function.

Glossary



| | |
|---------------------------|---|
| Electricity | : is a form of energy that flows in devices. Without electricity, some devices do not function. |
| Electrocuted | : to be killed by electricity. |
| Electronic devices | : gadgets or things which use electricity for them to work. |
| Injured | : hurt. |
| Solar energy | : electricity from the sun. |

Unit 15

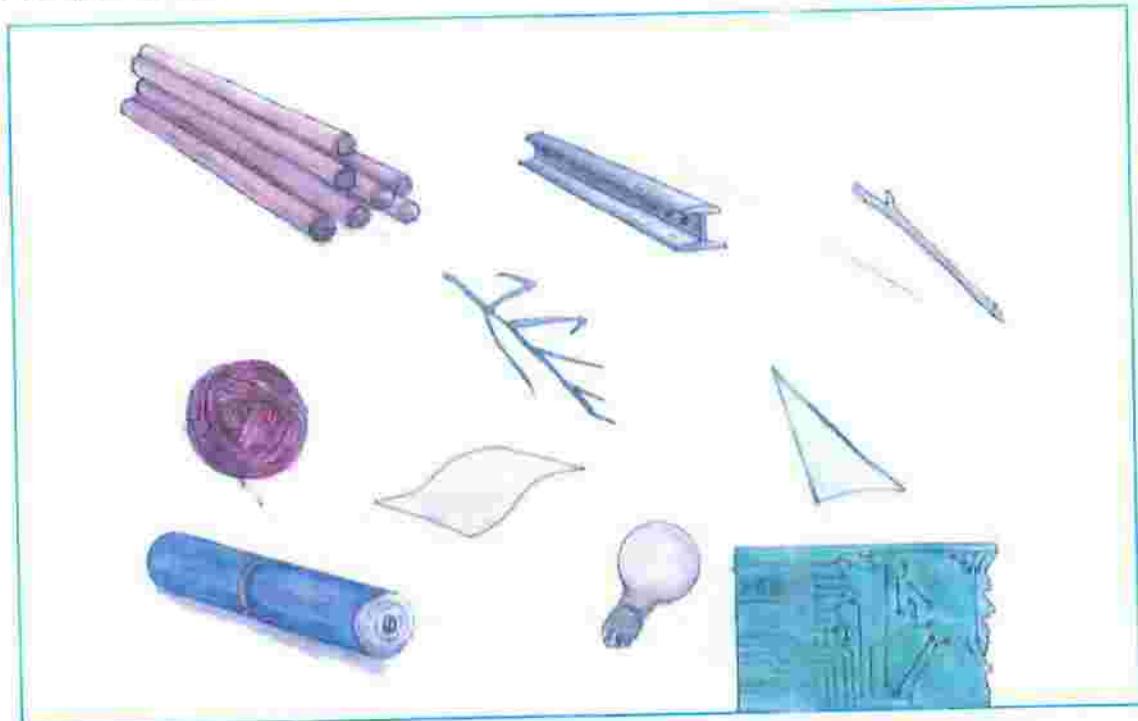
Electrical conductors and insulators

Introduction

Electricity moves from the source to our homes. As we said in the last chapter, sources of electricity in Zimbabwe include Kariba and Hwange. Electricity travel from these areas through wires which are called conductors.

A & B. Electrical conductors and Insulators

Materials which allow electricity to pass through them are called conductors. Most metals are conductors of electricity. What about those materials which do no conduct electricity? What are they called? Well, these are called insulators. Most plastics are insulators of electricity.



Name all the things shown on the picture. What are they used for? Work in groups to find out which of the above things allow electricity to go through them.



Activity

Which materials can be used to cover electricity wires? Why are electricity wires covered?



Practical

Carry out an experiment to identify electrical conductors and insulators. Use a battery, bulb and the necessary connections to test the various materials.



With the assistance of your teacher:

- Find materials that can conduct heat from the sun
- Collect them
- Make a solar cooker
- Test if it works
- Make tea for the teachers
- Display and prepare to sell your gadget
- Calculate cost and put a mark up.



Exercise

1. Materials which transmit electricity are called _____.
2. List any 3 materials which conduct electricity.
3. Materials which do not transmit electricity are called _____.
4. List any 3 materials which cannot transmit electricity.



- Electricity moves to our homes through conductors.
- Materials which allow electricity to pass through them are called conductors.
- Most metals are electricity conductors.
- Insulators are materials which do not conduct electricity like plastics.

Glossary



- Conductors** : materials which allow electricity to pass through them.
- Gadget** : a tool.
- Insulators** : materials which do not allow electricity to pass through them.
- Transmit** : to allow something to pass through.

Unit 1

Electricity

Conductor

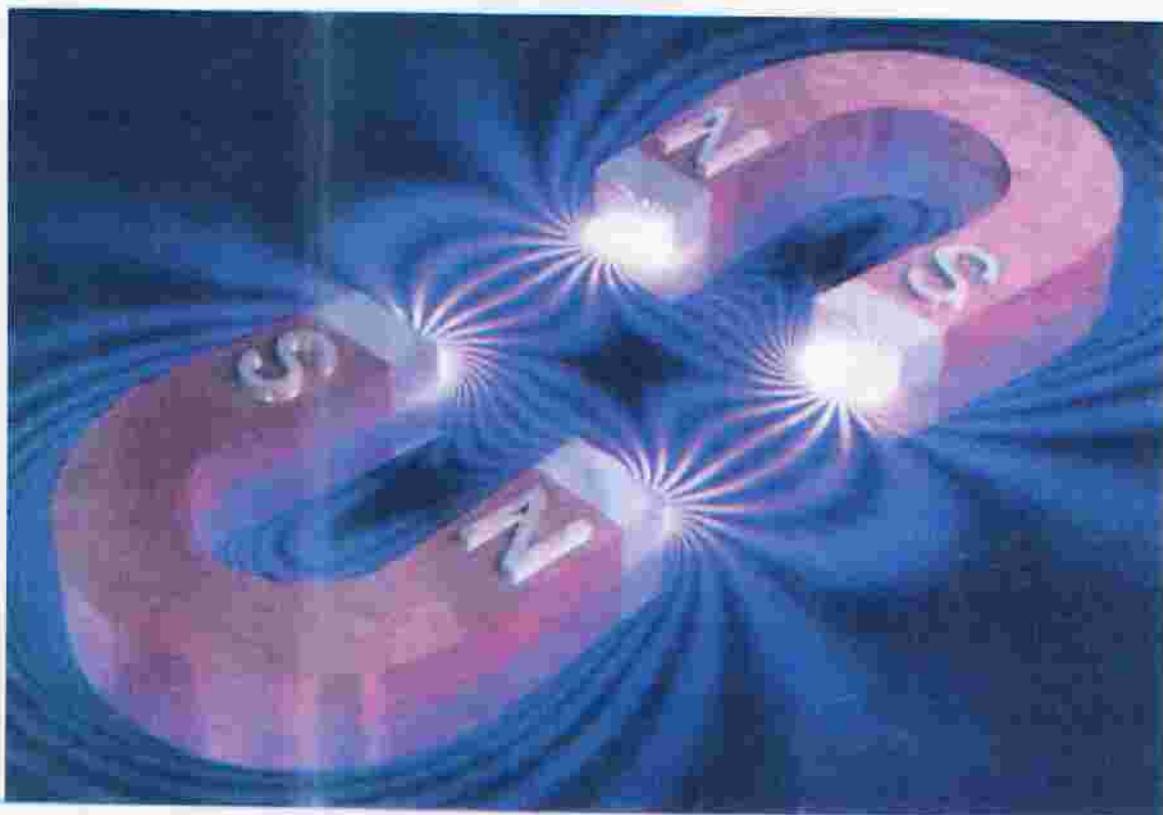
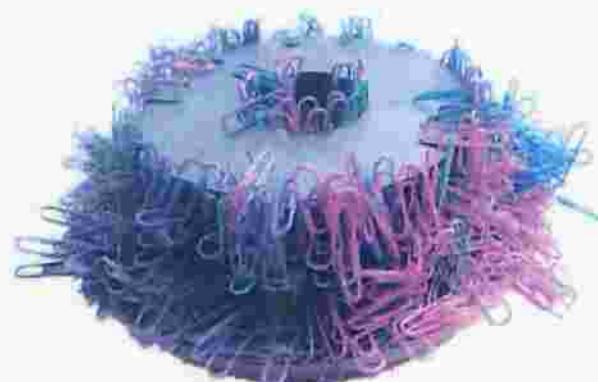
Insulator

Transmit

Tool

TOPIC 5

Forces and Magnets



Unit 16

Forces and magnets

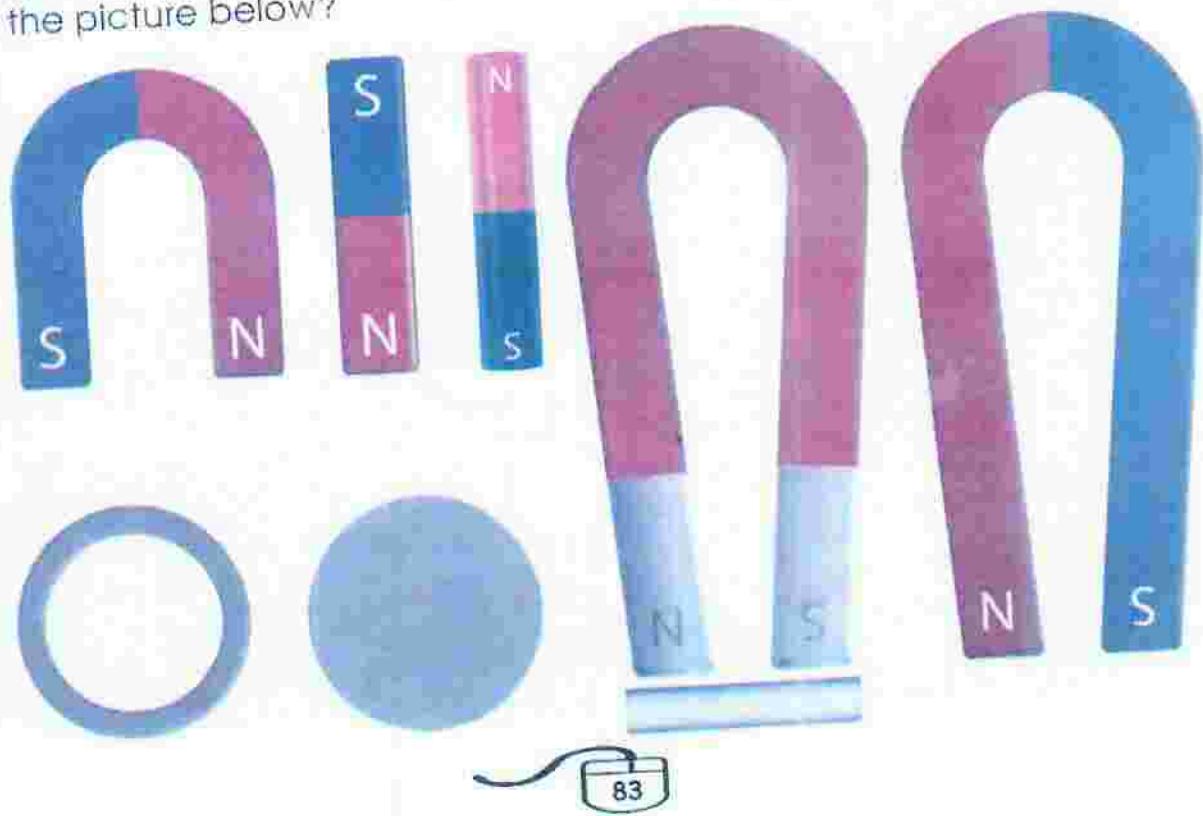
Introduction

In our day to day life there are gadgets that we use. Some of these gadgets contain magnets. Magnets are used for different purposes. Identify these purposes.

A. What are magnets?

Magnets are objects that produce an area of magnetic force called magnetic field. You cannot see the magnetic field with your eyes. Iron filings can be used to show magnetic fields which magnets create.

Magnets have two ends that are called North pole (N) and South pole (S). Magnets come in different types. For example we have bar magnets, horse shoe magnets, ring magnets, disc or circular magnets, cylindrical magnets and U-shaped magnets. Can you identify these types of magnets in the picture below?

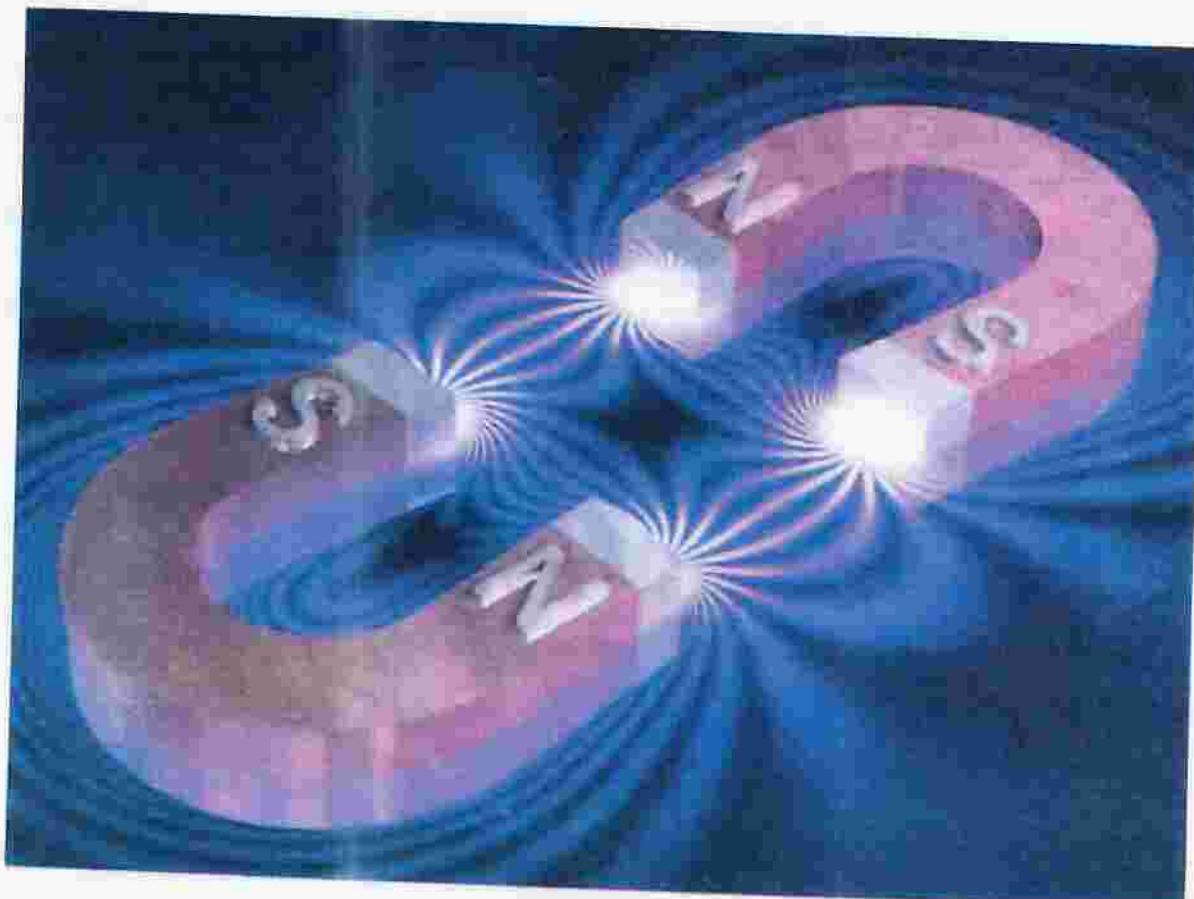


Magnets have certain things they cannot attract like glass, wood and plastics. They however attract certain types of metals such as iron, nickel and cobalt.



Some metals are not attracted to magnets. These include copper, silver, gold, magnesium, platinum and aluminium.

Magnets can attract objects or push them away. The poles are the magnet's strongest points. Around the two poles, we have what is called the **magnetic field**.



The same poles of two magnets will **repel** or push each other away. If different poles are put together, they **attract** or pull together.



Magnets are useful in the generation of electricity in hydroelectric dams like Kariba. They are also used in compasses which give direction to ships.



Activity

With the assistance of your teacher, take two magnets and do the following:

1. Bring the North pole of the first magnet to the South pole of the second magnet. Observe what happens.
2. Bring the North pole of the first magnet to the North pole of the second magnet. Observe what happens.
3. Bring the South pole of the first magnet to the South pole of the second magnet. Observe what happens.



Exercise

1. State two uses of magnets.
2. The area of magnetic force is called a magnetic _____.

3. State any two types of magnets?
4. Which two metals are attracted to magnets?
5. What is the name of the two ends of the same magnet?

B. Devices with magnets

People use many electronic devices with magnets at home and at their work places. Below are some of the examples of devices that use magnets. Look at the pictures below, they show some of the devices which have magnets. Can you name other devices?



- **Watches:** the magnets in watches are there to move the minute hands and the hour hands.
- **Cell phones:** there are speakers that use magnets to produce sound in cell phones.
- **Computers:** the magnets are put in them for storing data on hard drives. The magnets also help in the display of images. In computers, there are speakers that also use magnets to produce sound.
- **Radios:** radios have speakers that have built in magnets so that they make sound.
- **Televisions:** television speakers contain magnets that help like in radios to produce sound.
- **Generators:** they rely or depend on magnets to produce power that we use at home and at work.
- **A compass:** this has magnetic force in it so that it will always point to the North.



Activity & Homework

Look around the school and identify things that have magnets in them. Explain how they use the magnets.

Make a list of all devices that you use at home. From the list identify those devices that have magnets inside them. Find out what the uses of those magnets are for. Write your answers in your homework book.



Exercise

1. Most electronic devices have _____ in them. (magnets / data)
2. People use many electronic _____ at home. (devices / magnets)
3. In radios, magnets help the speakers to make _____. (sound / noise)
4. Generators use magnets to produce _____. (power / water)
5. In a compass the arrow must always point to the _____. (North / South)

C & D. Illustrating magnetic force

There are so many ways to illustrate magnetic force. These include separating iron objects from sand by using a magnet and placing a magnet near metal objects.



Experiment

Separating metal objects from soil.

Apparatus: different metal objects, magnet, soil and plastic container.

- Put some soil in a plastic container such as a plastic plate or a beaker.
- Mix the soil with different metal objects such as iron nails, pins and bottle tops.
- Take the magnet and place it above the container.
- Observe what happens and record your observations in your book.



Activity

In twos pick a magnet and go outside the classroom. Move the magnet through the soil and see if any metal objects get attracted to the magnet. Do this in the presence of your teacher.



Exercise

1. Magnetic force can be shown in _____ ways.
A. two B. three C. many D. four
2. The magnet has _____ poles.
A. three B. two C. many D. five
3. From sand a magnet is able to pick _____ objects.
A. metal B. wooden C. paper D. plastic
4. Praise took a magnet and placed it above metal pins. What do you think happened?
A. the metal pins were attracted
B. the metal pins were repelled
C. nothing happened
D. the metal pins disappeared

5. Magnets are _____ to people.
- A. useless B. tasteless C. dangerous D. useful



- Magnetism can be shown in different ways.
- Force is the push or pull applied on an object.
- Force can move objects.
- Unlike poles attract and like poles repel.
- Many electronic devices have magnets.

Glossary



| | |
|-----------------------|---|
| Attract | : when a magnet pulls metal objects to it. |
| Force | : is the push or pull applied on an object. |
| Magnet | : an object that produces an area of magnetic force called magnetic field. |
| Magnetic field | : an area where a magnet can able to attract metal objects. |
| Magnetic poles | : the two opposite ends of a magnet. |
| Repel | : when same poles of two magnets are brought together and push each other away. |

TOPIC 5

Design and Technology



Unit 17

Elements of design

Introduction

We need to use our brains to think up new things. Everything that we use daily is a special design by someone clever like you. Look at the patterns in your uniform. Check the things in your classroom. They did not just come up. Someone designed them.

A. Elements of design

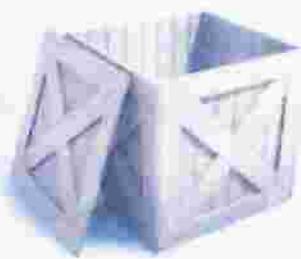
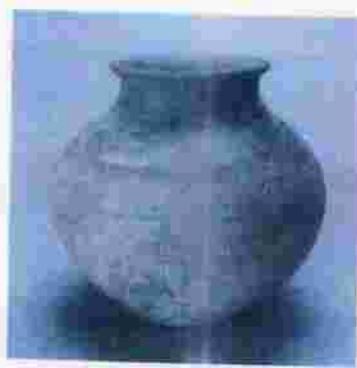
Now let us have a look at the designs below and let us discuss them.



Activity

- Let us go out to the garden or any place of your choice around the school.
- Draw one thing you have found there.
- Consider the natural colours you see around you.
- Collect any material that can be used for moulding e.g. paper mache, clay and plasticine.

Below are artefacts that were used long ago. They used mud to mould these things. They also used clay, grass and wood from the trees. They always used materials found around them.



Exercise

1. Draw a hut and show the door, windows and the roof. Use colour so that it is easy to see the door, windows, walls and the roof.
2. Write names of materials you can use to make a cave a comfortable place to live in.
3. What is an artefact?
4. Give two examples of artefacts made long ago.
5. Artefacts were made using _____, _____ and _____.

B. Manipulation of materials

There are many materials that can be used to make models of things people see in the environment. Materials that can be used to make different models for example

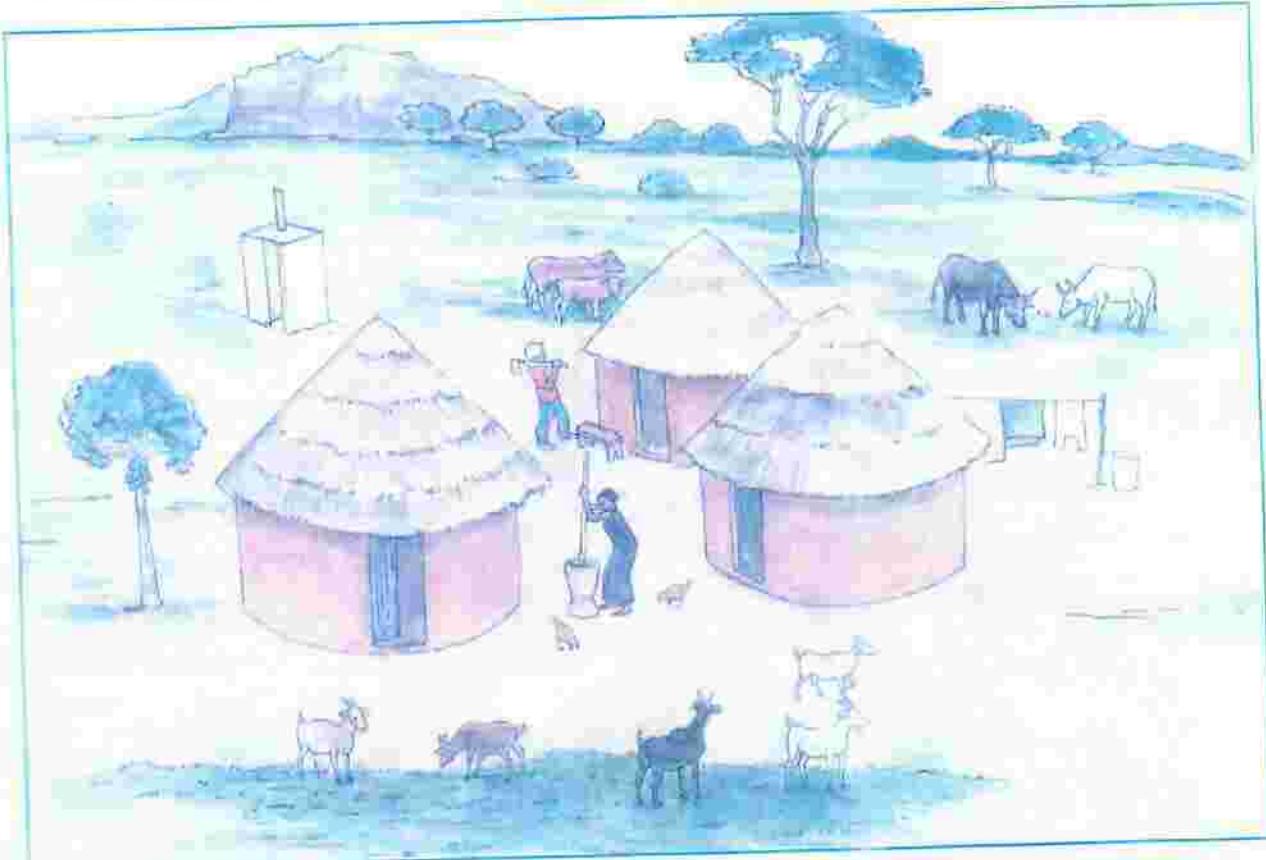
- (i) newspapers and old magazines,
- (ii) plasticine
- (iii) clay.

Artefacts from paper mache

How to make paper mache

- Take plenty of old newspapers.
- Tear them into shreds and put them in a container with water.
- Mix them until the shreds are semi-solid (porridge like).
- Make sure that the paper mixture is smooth.

Things that can be made from paper mache



Activity

Draw a cow and a Blair toilet using paper mache.



Exercise

1. Name two materials that are used to make paper mache.
2. Name two things that can be found in your local environment.
3. What is a design?
4. A material that looks like clay which is used to mould things is called _____.
5. What are artefacts used for?

C. Designs for decoration

Artefacts are useful to everyday living. Artefacts can be used for many purposes including decorations. Different designs make places beautiful.



Exercise

1. Name two things that are used to decorate your classroom.
2. Name two things that are used to decorate your home.
3. Decorations are good because they make places look b_____ ful.

PROJECT



Let us see what you can make.

- Collect materials such as mud, newspapers for paper mache, plasticine.
- Make artefacts of your choice.
- Display and exhibit your artefacts.

Remember
that:



- All the things which we use are designed by people.
- Artefacts were moulded with clay.
- Grass and wood were also used for artefacts.
- Paper mache and plasticine can be used to mould.

Glossary



| | |
|--------------------|--|
| Artefact | : a thing made by people, for example, a tool used by people long ago. |
| Design | : a drawing or an outline from which something maybe made. |
| Mould | : something made by hands, either from soil or plasticine. |
| Paper mache | : mixture of paper and water. |
| Plasticine | : material similar to clay which does not harden and is used for moulding. |
| Technology | : application of science to practical tasks. |

Unit 18

How much do you remember?



Section A

Choose the correct answer from A, B, C or D.

Study the picture below and use it to answer question 2.



2. This is a _____.

 - A. dam
 - B. power station
 - C. solar panel
 - D. school

3. Electricity is used for _____.

 - A. eating
 - B. cooking
 - C. wearing
 - D. digging

4. Electricity does not travel through _____.

 - A. wire
 - B. iron

Unit 19

Properties of water

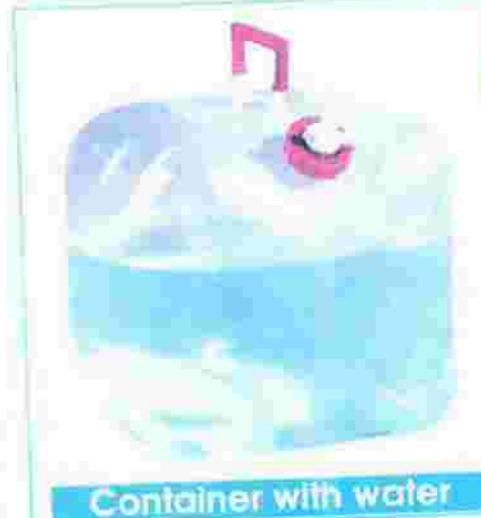
Introduction

Water is one of the most important and common substances in the world. It is found in many sources and in different forms. Water is needed by both plants and animals. Without water there is no life.

A. Properties of water

There are certain things that tell us that a liquid we have is water.

- Water is colourless.
- Water does not have a smell.
- Water is tasteless.
- Water takes the shape of the container.
- Water flows from a high place to a low place.
- Water sinks into the ground.
- Water makes things wet.



Container with water



wet soil



Activity

In your groups explain the properties of water.



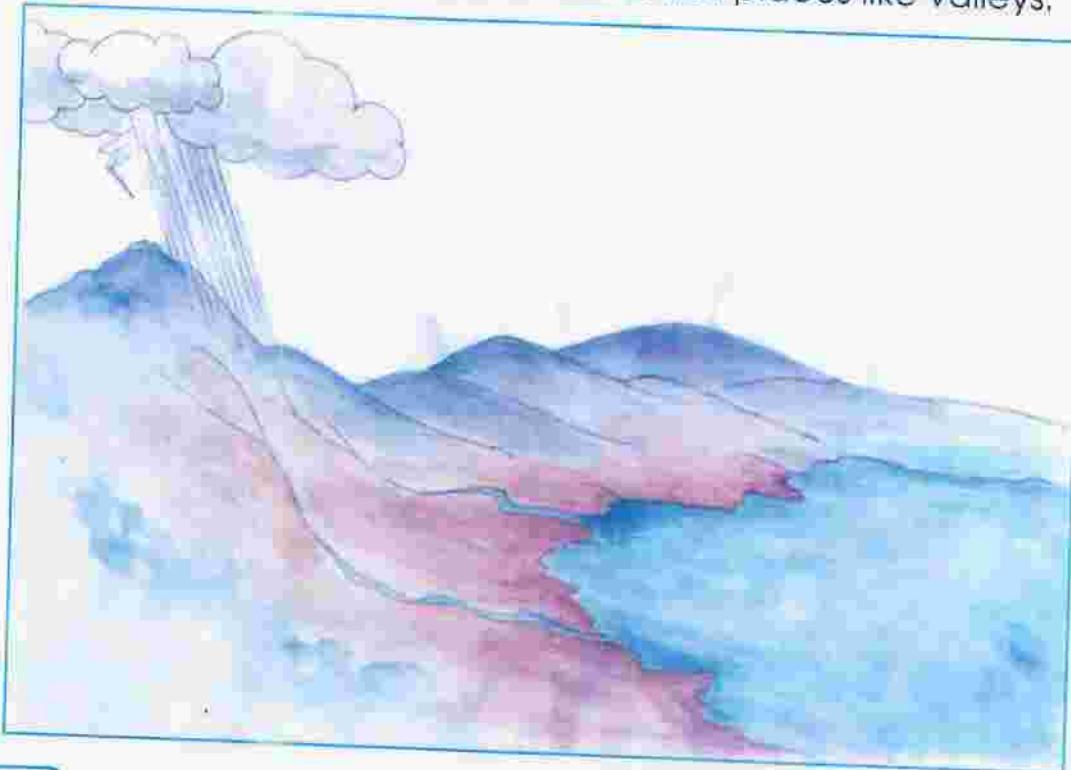
Exercise

1. What colour is water?
2. How does water taste?
3. Which two groups of things need water?
4. What happens to people if they don't have water?
5. What shape is water?

B. Water flows from a higher to a lower place

Do you have a river or stream in your area? In what direction does the water flow to? Why?

Water flows from a higher place. A place where a river starts is called its source. Most rivers and streams have their sources in higher places like hills and mountains. Their waters flow to lower places like valleys.



Activity

- Identify higher places in your area where water flows to lower areas.
- Find a place around the school where land slopes are available.

- Use a rain can to pour water.
- Observe how the water flows.



Exercise 1

1. Where does water flow to?
2. Where do most rivers start?
3. Water flows from a higher place to a _____ place.
4. Name one lower place that water can flow to.
5. Can water flow up a mountain?
6. What do we call a place where a river starts?

C. Water infiltration

Where does water go after it has rained?

After raining some water sinks into the ground. This water will form underground water. The process by which water on the ground surface enters the soil is called infiltration. If the rains are heavy some of the water will flow on the ground surface. This water is called run-off.



Activity

Identify and discuss places in your area where infiltration is quick and where it is slow.



Practical

In your groups, go into the school garden or yard. Collect some water in a can and pour it on the dry soil surface. What do you see? What happens to the water on the ground? Are you able to collect it from the ground and put it back into the can?

D. A water filter

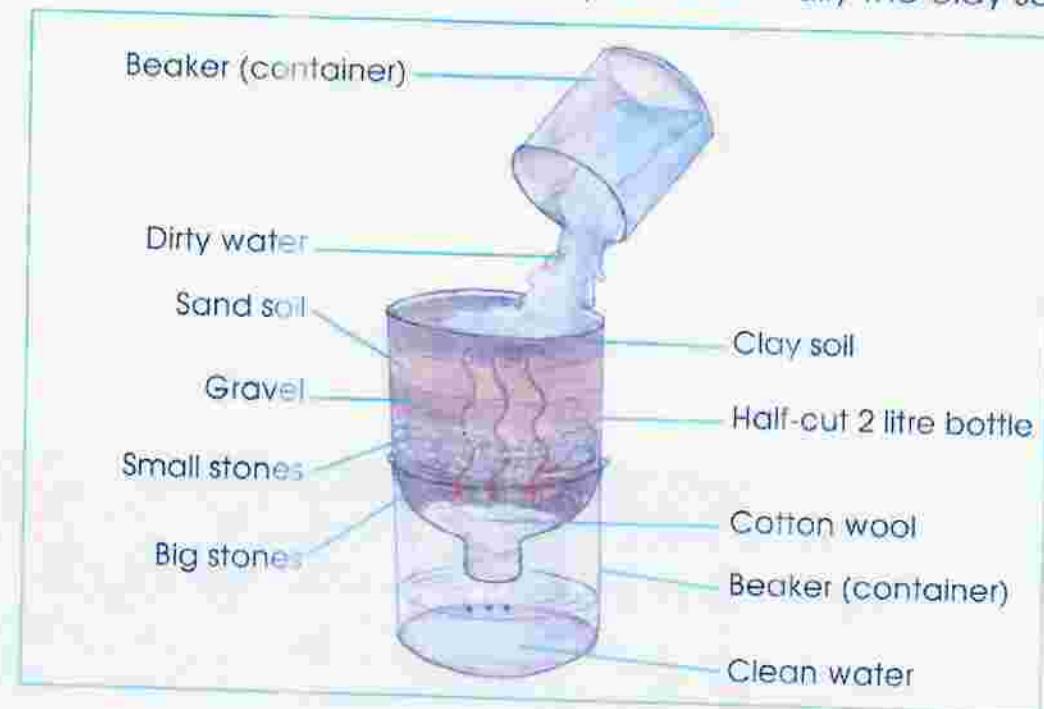
If you pour dirty water in a water filter, you will get clean water in the container because the dirty is filtered by the sand, gravel, small and big stones.

When it rains this is how water moves down underground. When it reaches a hard rock it collects as groundwater. We can bring this water to the surface by digging wells or sinking boreholes.

Designing a water filter

We can observe water infiltration by making our own model of a water filter. We need a 2 litre plastic bottle, 2 water containers or beakers, some clay and sandy soil, gravel, small stones and big stones.

Cut open the bottom part of the plastic bottle container and turn it upside down. Fill the bottle with large stones at the bottom then small stones, followed by the gravel, then the sandy soil and finally the clay soil.





Make a model of a water filter in your group using available materials. Do this outside the classroom.



Exercise

Choose the correct answer

1. The movement of water from the surface to the underground is called _____
A. well B. borehole C. infiltration D. water filter
2. Water which does not sink but flows on the ground is called _____
A. run-off B. infiltration C. tasteless D. vegetation
3. In which soil type does water move down quickly?
A. clay B. sandy C. all soils D. bare soil
4. Which of the following protects the soil from heavy rain?
A. soil particles B. ground water C. gravel D. vegetation
5. Why does water infiltrate quickly in forested areas?
A. because plant roots loosen the soil
B. because people do not live there
C. because animals live there
D. because there are few animals
6. How can we bring groundwater to the surface?
A. by growing crops B. by sinking a borehole
C. by protecting the water D. by planting trees.

PROJECT



Get soil samples from different places in your area. Fill your model filter with different samples at a time. Observe and record how water filters in each of the samples.

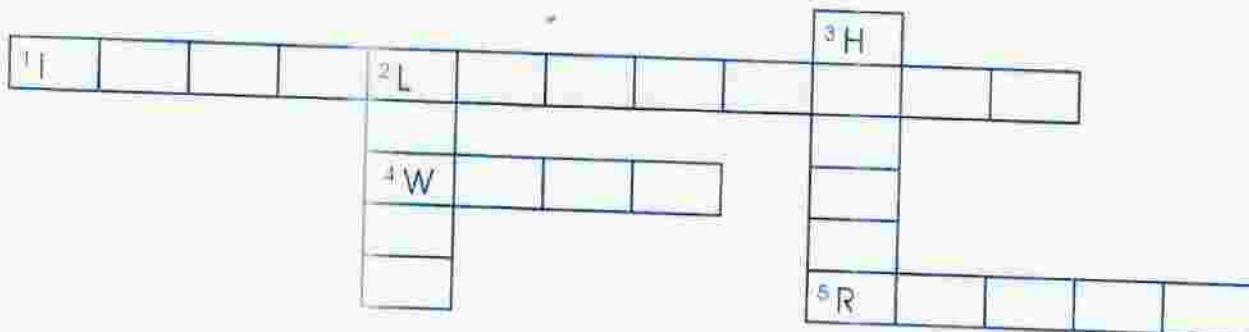


- All water originally comes from rain.
- Water supports all life on earth.
- Water flows from higher to lower ground.
- Water infiltrates soil at different rates or speed to form underground water.
- Water is found everywhere.



Crossword Puzzle

Complete the crossword puzzle below as shown on number 4 across



CLUES

Across

1. The process by which water on the ground surface enters the soil.
4. We can get ground water by digging a _____.
5. A source of water.

Down

2. Water flows from a higher place to a _____ place.
3. Rivers flow from _____ places to lower places.

Glossary

| | |
|--------------------|--------------------------------|
| Colourless | : with no colour. |
| Infiltrates | : sinks down. |
| Observe | : look at something carefully. |
| Slope | : ground that goes down-wards. |
| Tasteless | : with no taste. |

Unit 20

Sources of water

Introduction

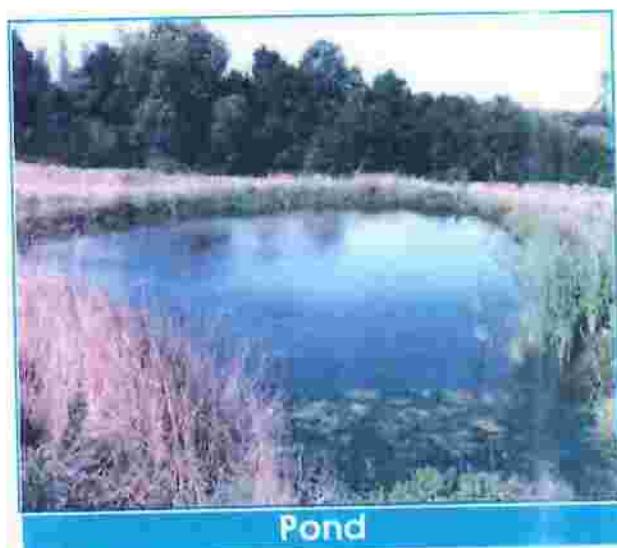
After raining water collects in a number of places. People, animals and plants may use the water collected. Some water may collect on the ground surface while some may collect under ground. There are different sources of water.

A. Natural sources of water

Do you have natural sources of water in your area? Can you name these?

Examples of natural sources of water are streams, rivers, ponds, springs, lakes, seas and oceans.

These sources of water form on their own without the help of people.



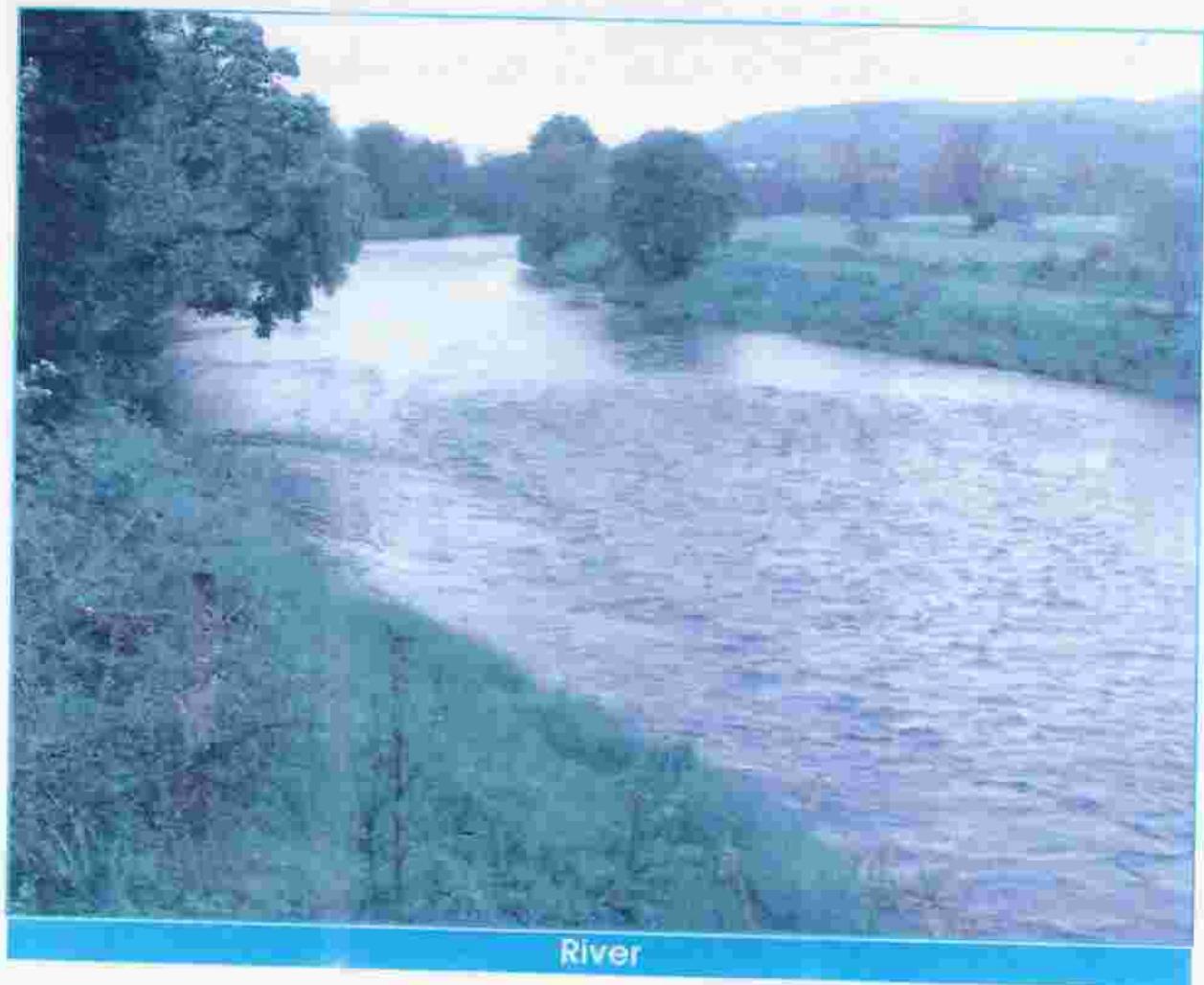
Pond

Ponds have a small amount of water compared to the rest. They usually form in the rainy season. In the rural areas they may have some water up to the dry season and then it dries up. Domestic animals may drink from them.



Stream

Streams flow into rivers.



River

In turn, some rivers may flow through lakes on their way to seas and oceans. Oceans are the biggest natural sources of water.



Spring

Springs usually form on mountain sides where water maybe coming out from the side of the mountain or under it.



Activity

Discuss the different uses of water from natural sources.



Exercise

1. A _____ is a natural source of water.
2. Streams flow into _____.
3. The biggest natural sources of water are _____.
4. _____ uses natural sources of water.
5. _____ have small amounts of water.

B. Man-made sources of water

Can you think of man-made sources of water in your area?

Examples of man-made sources of water include dams, wells, boreholes, reservoirs, and canals.



Borehole



Protected well



Tape

- People build or construct these sources of water. Dams are constructed on rivers. They keep a lot of water.
- Wells, boreholes and handpumps have their source of water under the ground.
- People dig wells and sink boreholes to bring underground water to the surface.
- Canals are built by people to carry water from a river or dam to far away fields for irrigation.

C. Design a model of a man-made source of water



Activity

Discuss what people in your area do to have underground water.



Practical

In pairs design a model of a man-made source of water of your choice.



Exercise

1. Examples of man-made sources of water are _____, _____ and _____.
2. Dams are constructed on _____.
3. Water in wells and boreholes comes from _____.
 - A. above the ground
 - B. under the ground
4. _____ are built to carry irrigation water.
5. Canals are built by people to carry water from a _____ or _____.

Remember



that:

- There are natural sources of water, for example, springs, rivers, lakes and oceans.
- Underground water can be brought to the surface for use through digging wells and sinking boreholes.
- Oceans are the biggest natural sources of water.
- There are man-made sources of water, for example, dams, boreholes, wells and others.

GAME



Word search

Find 6 words to do with natural and man-made sources of water. Well has been done for you.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| K | C | B | N | P | X | W | C | D | S |
| Z | O | S | R | I | V | E | R | O | Q |
| O | C | E | A | N | D | L | A | K | E |
| M | A | A | W | C | O | L | L | S | Q |
| P | N | T | X | M | D | D | A | M | O |
| Q | A | M | Y | C | K | N | C | D | C |
| C | L | D | Z | B | A | T | S | O | K |

Find

1. Sea
2. Canal
3. Ocean
4. River
5. Lake
6. Dam

Glossary



Domestic animals

: animals we keep at home like cattle.

Man-made

: created or built by people.

Natural

: not created or built by people but by God.

Source

: place from which something is obtained.

Spring

: a place where water comes naturally to the surface from underground.

Reservoir

: man-made lake used for storing water.

Unit 21

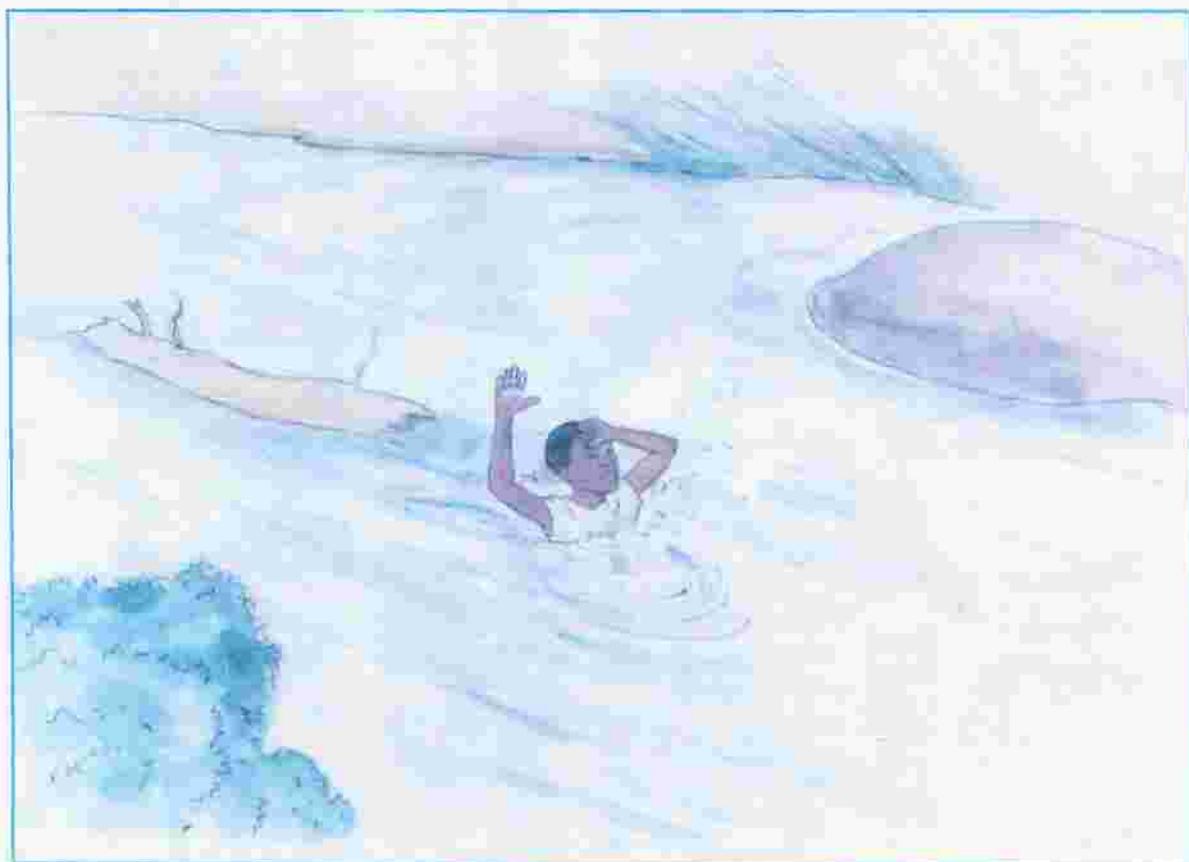
Water and environment

Introduction

Water supports all life on earth. It is the most common liquid on earth. It can also destroy life and property. There are many dangers or hazards that can be caused by water. We must all be ready for these hazards and try to prevent them.

A & B. Water hazards

There are many dangers or hazards that may be caused by water. Crossing flooded rivers can be dangerous. People may drown if they try to cross flooded rivers. A number of people especially school children drown in rivers, dams and pools trying to swim or cross.

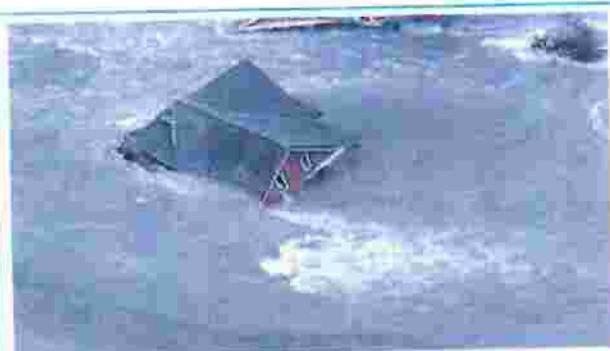


Flooded rivers destroy homes and drown people in low areas where homes are near the rivers.

In Zimbabwe, a national disaster, The Tokwe Mukosi flooding, occurred in February 2014, after heavy rainfall in Masvingo Province. The Tokwe Mukosi Dam partially collapsed and over 1 500 families were left homeless and had to be relocated to Chingwizi Transit Camp in Mwenezi.



Look at the photos below? What happened to the houses? Can something be done to prevent this from happening?



Open wells or pits are also dangerous to people and animals.



Lightning may kill people and animals. Boiling water may burn or scald people especially children if it spills.



Activity

Identify water hazards in the environment. Talk about water hazards in your area. Watch a video on the dangers of water.



Exercise

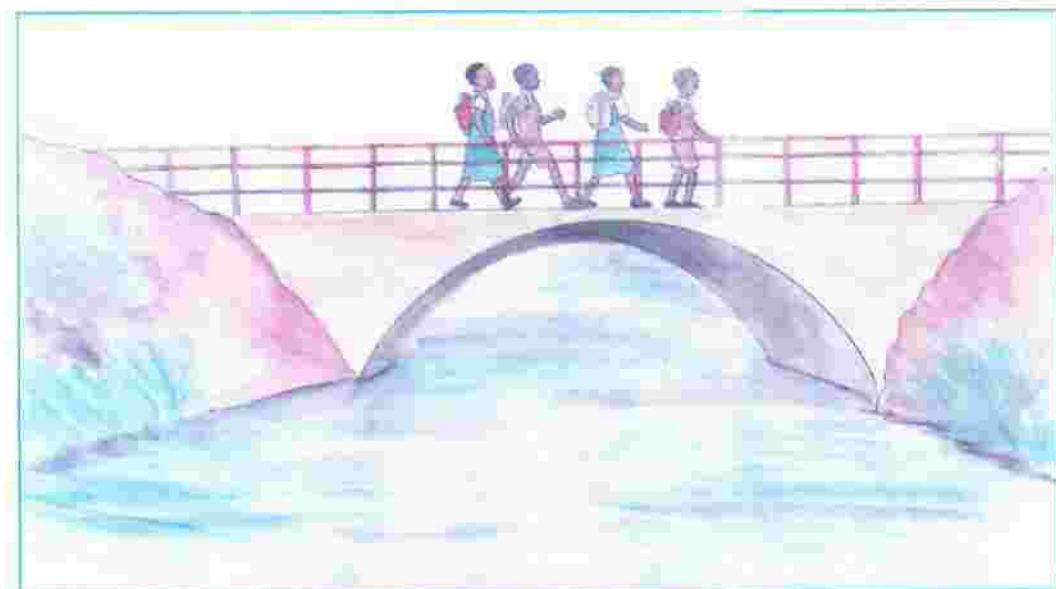
1. What is a hazard?
2. What can be destroyed by strong winds and hailstones?
3. Give two groups of things that can be killed by lightning.

4. What can destroy dam walls?
5. Why should people never cross flooded rivers?

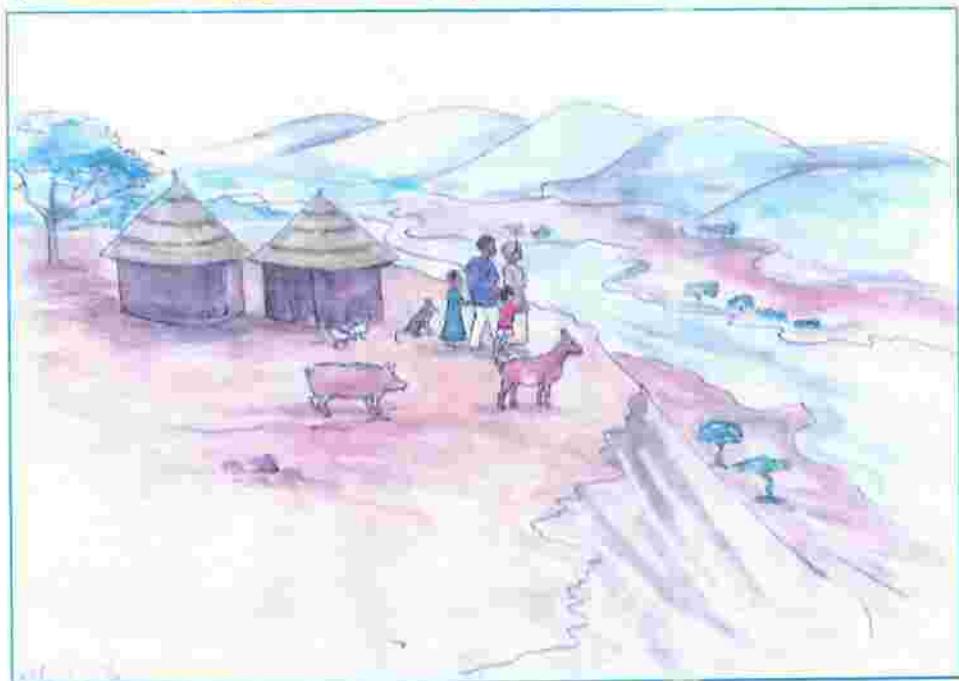
C & D. Safety precautions: Dangers of water can be prevented

What do people in your area do to prevent water hazards? The following can help people to prevent or reduce dangers caused by water.

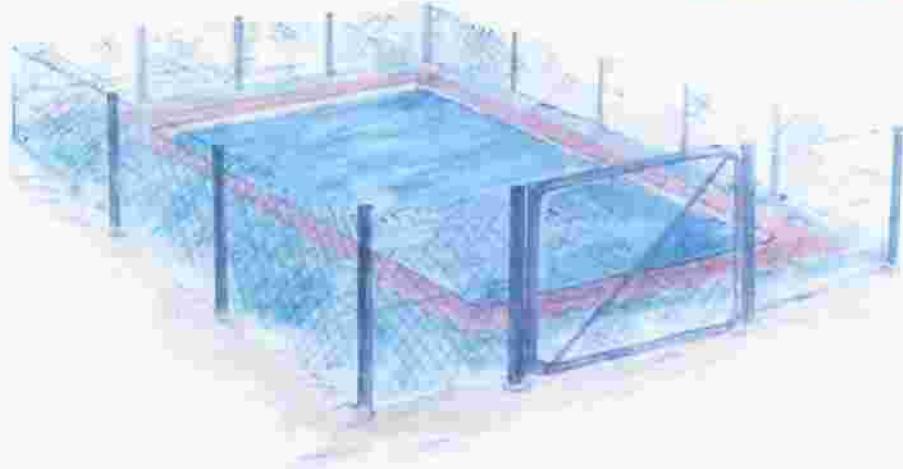
1. People should never cross flooded rivers. It is safe to use on bridges or wait until the water level is low.



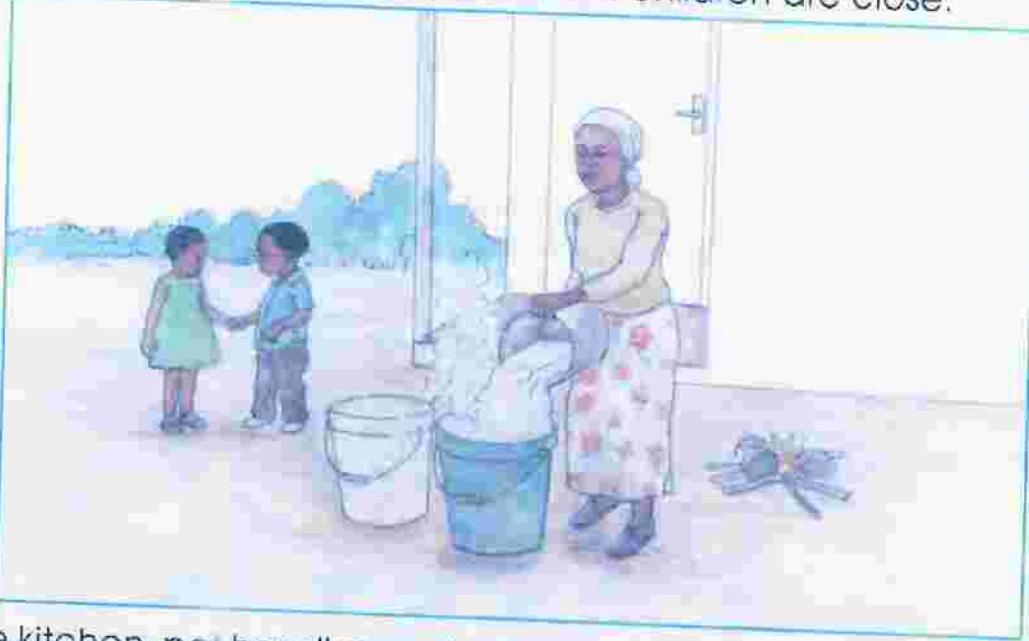
2. Building homes on high land helps prevent homes from being flooded.



3. Fencing right round swimming pools and locking the gate prevents children from drowning in the swimming pools. If you cannot swim do not get into a swimming pool unless a life saver is present.



4. Do not pour hot water in buckets when children are close.



5. In the kitchen, pot handles must not be turned outwards on the stove.





Activity

Talk about one common water hazard in your area and say what you think should be done.



Exercise

1. People should build homes on _____ land to prevent their homes from flooding.
2. Name two dangers which can be caused by water?
3. Which is a safe place to cross a flooded river?
4. What advice would you give to your mother who is cooking in the kitchen about boiling pots on the stove?
5. People who cross flooded rivers may _____.



Find pictures of water hazards and make a picture frieze (wall painting). Display these in your classroom.



- Water can cause dangers to people and animals.
- Dangers caused by water can be prevented.
- Open wells and pits should not be left uncovered.
- Homes should be built on high land away from rivers.
- Never cross flooded rivers.
- Do not swim without a life saver if you cannot swim.



Puzzle Game

Complete the crossword puzzle on the next page.
Number 3 down has been done for you.

| | | | | | | | | |
|----------------|----------------|--|--|----------------|--|--|--|--|
| ¹ F | ² L | | | ³ D | | | | |
| | | | | ⁴ R | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | ⁵ D | | | | |

CLUES

Across

- When a river's water overflows the banks.
- A water channel.
- A flooded river can _____ homes and crops.

Down

- Never build your home on _____ ground.
- A person _____ after being carried away by flooded river.

Glossary



| | |
|---------------------------|---|
| Constructing | : building. |
| Disaster | : something that happens suddenly and causes much suffering or loss, for example, a flood and fire. |
| Drown | : death caused by water. |
| Environment | : the surroundings in which we live. |
| Floods | : covering of land by water. |
| Safety precautions | : ways to prevent harm. |
| Scalds | : burns caused by boiling water. |
| Transit Camp | : a temporary home for people escaping from a dangerous situation. |

TOPIC 7

Weather and Climate



Unit 22

Weather elements

Introduction

Weather is the hotness or coldness of a place, the amount of rainfall, the level of sunshine, the cloud cover, how windy it is and so on. We can tell what the weather will be like by looking at the sky. If the sun is shining, we know it is going to be hot. At times our bodies tell us what the weather will be like. If it is going to be cold, we feel it.

A. Weather patterns

Weather can change easily with time. It can be cold in the morning, then it becomes warm and even hot by midday. It may at times rain in the afternoon on the same day. The direction and speed of the wind can also change during the day. There may also be changes at night on the same day.

During different seasons we can have drought and storms that can turn to disasters. Storms can destroy buildings. Find out more about these problems caused by weather.

We can also study weather changes and see that during such months as September and October it can be very hot. From November to February there is a lot of rainfall and it is warm. From March to May it becomes cool and we have less rainfall. Lastly, in June and July it is very cold and there is no rainfall. We call these seasons. Summer season is warm and wet. Autumn is cool. Winter season is very cold and dry and Spring season which is hot and dry. There are four seasons in Zimbabwe.

Let us discuss the diagrams on the next page.



Activity

- Write down what is happening in the pictures above.
 - Find out how people keep themselves warm in winter in different countries in the world.
 - Collect pictures showing different weather patterns.



Exercise

Choose the correct answer.

- When we see _____ it will rain on that day.
A. dry leaves B. the sun
C. dark clouds D. the rainbow
 - The trees shake and lose their leaves when it is _____.
A. raining B. cold and windy
C. hot D. cloudy
 - We know it is going to be cold when _____ move around.
A. clouds B. people C. trees D. animals
 - The _____ season is cold.
A. winter B. autumn C. spring D. summer
 - _____ destroy buildings.
A. Mists B. Disasters C. Storms D. Cloud covers

B. Elements of weather

Weather is the daily condition of the air around us. Temperature, sunshine, wind, rainfall, humidity and cloud cover are called weather elements.

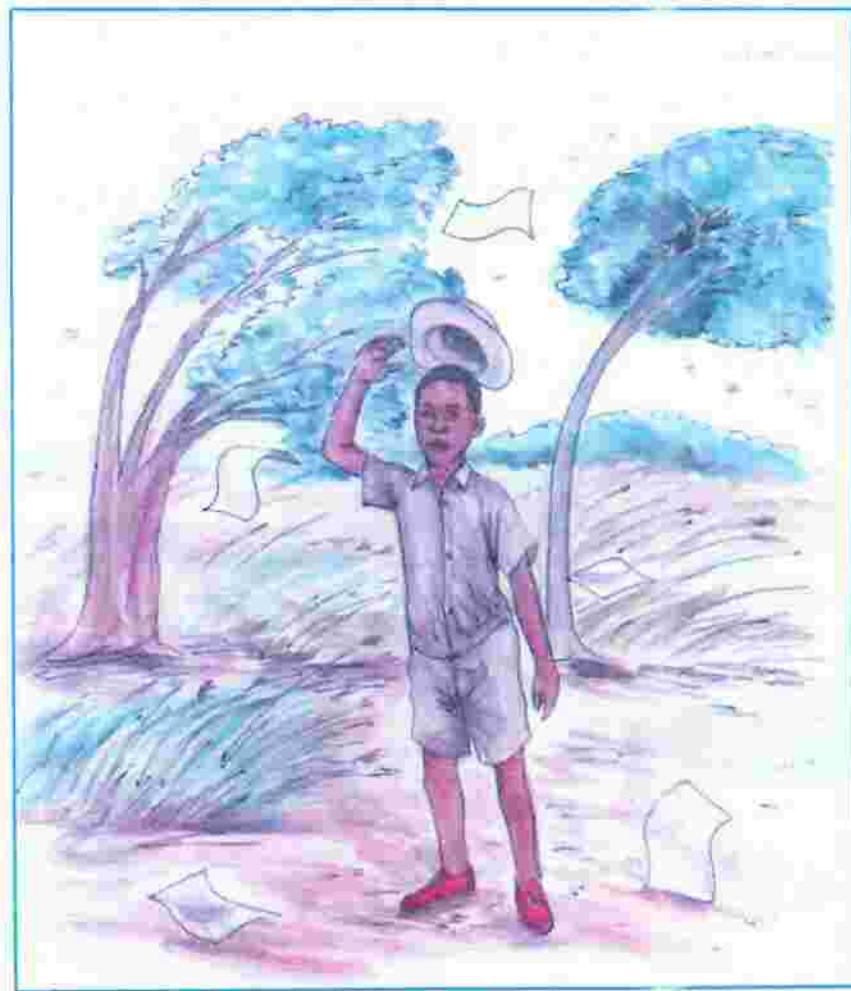
Look at the picture below. What is it telling us about the weather?



Look at Praise and Reco, they are coming from school. Why are they wearing big hats? Why are they not wearing jerseys? What is the weather like?



What is the weather like today? Why is the woman wearing a big hat?



Look at the boy above. What is happening? Why is the boy's hat flying off his head?



Exercise

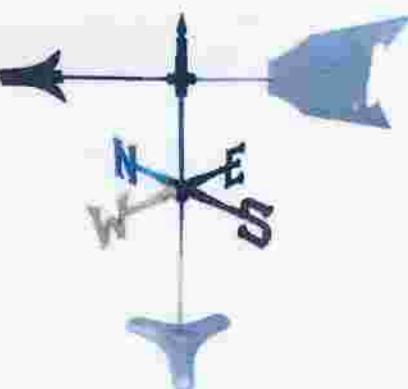
1. What is weather?
2. What are weather elements?
3. We wear a sun hat when it is _____.
4. When do we put on warm clothes?
5. In the picture above why is the boy's hat flying off his head?

C. Weather instruments

The weather elements can be measured using different instruments. Let us have a look at the following weather instruments. Let us discuss what they are used for.



Thermometer



Windvane



Rain gauge



Sunshine recorder

These instruments are kept at a weather station. Your school should have a weather station.



Activity

- Go to the weather station and observe the weather instruments and identify them.
- Field trip - visit a local weather station or meteorological centre.



Exercise

1. Name the instrument shown in the diagram below.



2. A rain gauge is used for measuring _____.
3. A wind vane is used to show direction of _____.
4. We use a thermometer to measure _____.
5. What do we call a place where weather instruments are kept?



Look back

June
snows
October

storm
wind vane
Jersey

weather
weather station
four
July
umbrella

From the words above, fill-in the spaces in the questions below:

- a) In September and _____ it can be very hot.
b) There are _____ seasons in Zimbabwe.
c) The months _____ and _____ can be very cold and dry.
d) _____ can destroy buildings.
e) When it is raining we need _____ to protect us.
f) _____ is the daily condition of the air around us.
g) In very cold countries it _____ during winter.

- h) A _____ keeps us warm during winter.
- i) We show wind direction with a _____.
- j) We find weather instruments at a _____.



- Weather elements are temperature, sunshine, humidity, wind, rainfall and cloud cover.
- Weather changes from time to time.
- There are four seasons in Zimbabwe, namely, summer, autumn, winter and spring.
- Weather instruments are kept at a weather station.
- Weather elements are measured using weather instruments such as thermometer, rain-gauge, wind vane and others.

Glossary



| | |
|------------------------|--|
| Disaster | : a very bad accident. |
| Drought | : a long period when there is no rain and the land is dry. |
| Instrument | : a piece of equipment or tool. |
| Rain gauge | : instrument used to measure rain. |
| Storm | : windy and a very bad weather. |
| Thermometer | : instrument used to measure temperature. |
| Weather station | : a place where weather instruments are kept. |
| Wind vane | : instrument used to show wind direction. |

Unit 23

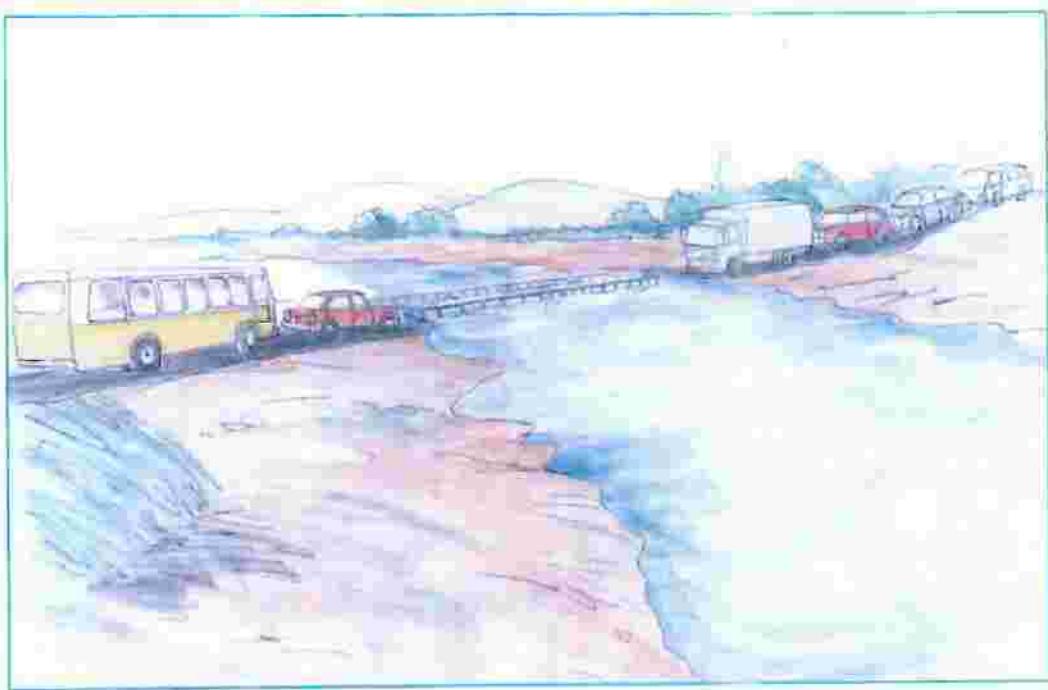
Weather and climate hazards

Introduction

Sometimes weather can be bad like when there is too much rain or very little rain. Heat waves which result in very high temperatures are also dangerous. Other weather and climate hazards are floods, fires, cyclones and drought.

A & B. Weather and climate hazards

This is a river.



What is in the river? Why are cars and buses not crossing the river? What will happen if the cars and buses try to cross the river? In Zimbabwe heavy rainfall in Masvingo, Midlands and Matabeleland South provinces caused flooding in districts like Gutu, Chivi, Mberengwa, Gwanda and Chiredzi in January and February 2014. Dams, bridges, crops and homes were destroyed while many rivers overflowed. The Tokwe Mukosi floods

left many people homeless. On 22 February 2000, Cyclone Eline affected the Eastern and Southern parts of Zimbabwe.

Look at the picture below.



The fire is burning the bush. Veld fires are caused by smokers who throw away cigarette stubs or people clearing land, hunting, harvesting among others. What are the animals and birds doing? At which time of the year do we have veld fires? What does the fire do to the birds, trees, grass and animals? People must make fire guards or fire breaks to prevent fires from spreading.



Grandmother is looking at her maize crop. Look at the crop. What has happened to the maize? Why is the crop like this?

Effects of weather and climate hazards

- Soil erosion.
- Siltation of rivers thereby reducing their water carrying capacity.
- Burning plants and animals.
- Animals and plants are destroyed.
- Lack of food and water.
- Animals that live in water are destroyed.

In October 2015, Zimbabwe experienced a heat wave. Many people and more than 77 elephants died.



Activity

Talk about the dangers of the sun if it is too hot. Pretend you are a farmer who grows maize talking to a farmer who keeps cattle. Talk about what is happening because of too much heat from the hot sun.



Exercise

1. If the sun is too hot _____.
A. crops grow well
B. rivers dry up
C. there is good grass for cattle to eat
D. animals have plenty of drinking water
2. Big black clouds tell us it might _____.
A. rain
B. get hot
C. the sun is about to set
D. too much rain has fallen
3. A fire burns strongly if _____.
A. there is heavy rain
B. the grass is dry
C. it is a cold day
D. there are few clouds in the sky
4. Rivers have a lot of water in the month of _____.
A. June
B. March
C. September
D. August
5. Look at these pictures. Choose what you can wear for walking in the mud.



remember



that:

- Floods, fire, cyclone, heat wave and drought are weather and climate hazards.
- Weather and climate hazards destroy plants and animals.
- Effects of weather and climate hazards include soil erosion and siltation of rivers and dams.
- Fire breaks prevent fires from spreading.

PROJECT



Make a model of a field with plenty of grass and trees in it. Show a fire guard right round the field. Explain to the class when a fire guard is needed most and say why.

Glossary



| | |
|---------------------|--|
| Climate | : average weather conditions in a place over many years. |
| Cyclone | : extreme large, powerful and destructive rain with very high winds. |
| Drought | : period of no rainfall. |
| Fire guard | : cleared narrow field to prevent fire from spreading. |
| Heat wave | : too much heat which lasts for two or more days. |
| Siltation | : mud, clay or small rocks carried by moving water and put in rivers and dams. |
| Submerge | : cover with water. |
| Wilting crop | : weak drying plants because of little or too much water or heat. |

Unit 24

How much do you remember?



PART A

1. What must you wear to protect your eyes in the laboratory?
A. goggles B. clothes
C. hats D. warm clothes
2. Accidents in a laboratory can _____ people.
A. hide B. cure C. harm D. help
3. Substances used in the laboratory are called _____.
A. chemicals B. food C. drinks D. water
4. A tree has _____ parts.
A. two B. one C. five D. different
5. Stones are used for building bridges because they are _____.
A. weak B. loose C. strong D. good
6. A comb is made of _____.
A. plastic B. wood C. metal D. grass
7. Materials that allow heat to pass through are called _____.
A. grass B. glass C. conductors D. chemicals
8. We can purify water by _____.
A. conducting B. boiling C. filtration D. microscope
9. Something not clean is said to be _____.
A. pure B. impure C. correct D. white

10. Which type of food can cause teeth to decay?
A. sugar B. salt C. butter D. meat

PART B

1. a) Name three parts of a tree. (3)
b) Which part of a tree takes in water? (1)
c) What do you call materials created by God? (1)
2. a) Fill in the table below.

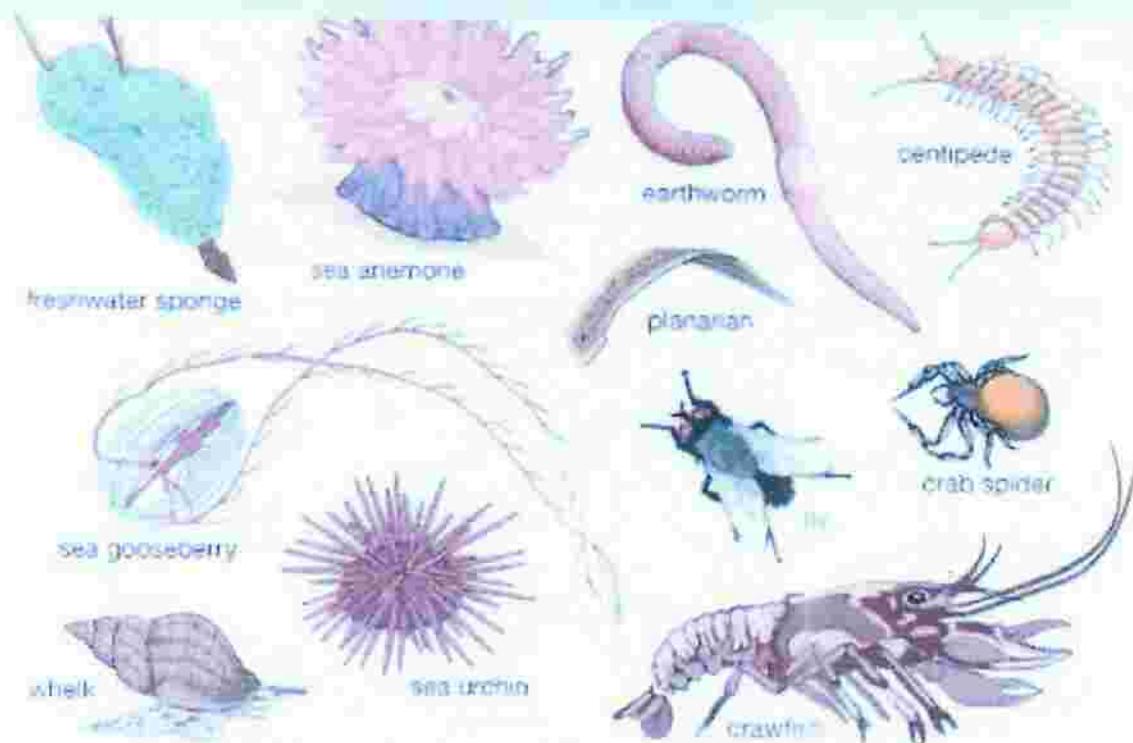
| Man-Made Materials | Natural Materials |
|--------------------|-------------------|
| Bottle | Stone |
| (i) _____ | (iii) _____ |
| (ii) _____ | (iv) _____ |

(4)

3. a) Which two tools are used for digging? (2)
b) Why are tools important? (1)
c) (i) A house is used for _____, (1)
 (ii) A shed is used for _____, (1)

TOPIC 8

Soil, Plants and Animals



Unit 25

Soil

Introduction

Soil is one of the most important substances on earth. It supports plant and animal life. Most of our food is grown on soil. It takes many years for good soil to form. The main types of soil are clay, sand and loam. These have different properties. Covered soil has plant growing on it as well as dead leaves and plants. It stays damp and soft. Bare (uncovered) soil has nothing growing on it.

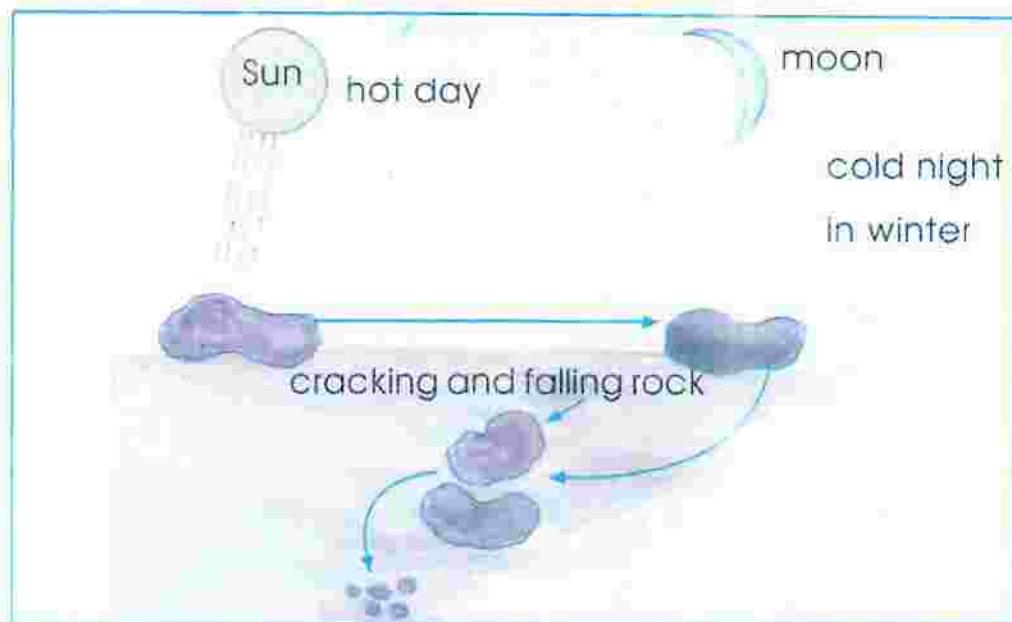
A. Soil formation

Where does all this soil come from? What made it?

Soil is formed by the breaking down of rocks and stones. Rocks break down into small pieces and mix with dead leaves, grass and animal matter. They form soil. Decayed plant matter and animal matter is called organic matter or humus. There is air and water in the soil.

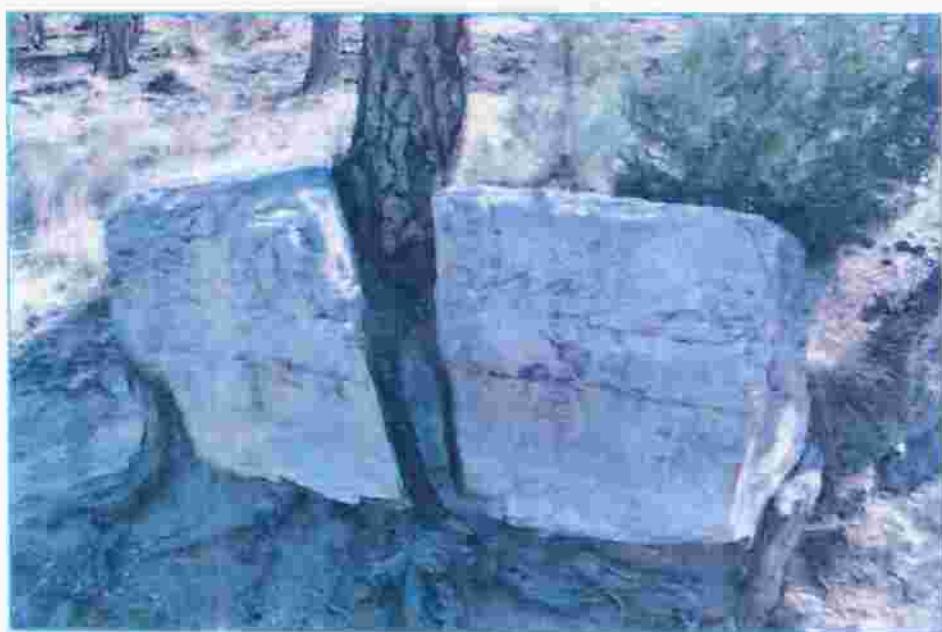


The changes in temperature during the day and at night in winter make rocks break to form soil.

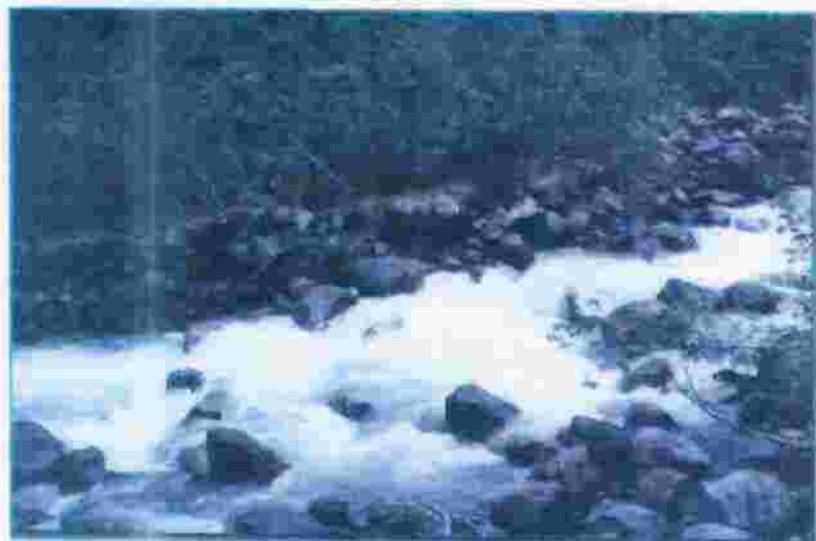




The roots of trees growing among rocks break the rocks into smaller pieces which help to form the soil.



Water flowing in rivers move small stones and they rub against each other. They break down and help to form soil.





Activity

Discuss how you think the soil in your area was formed.



Exercise

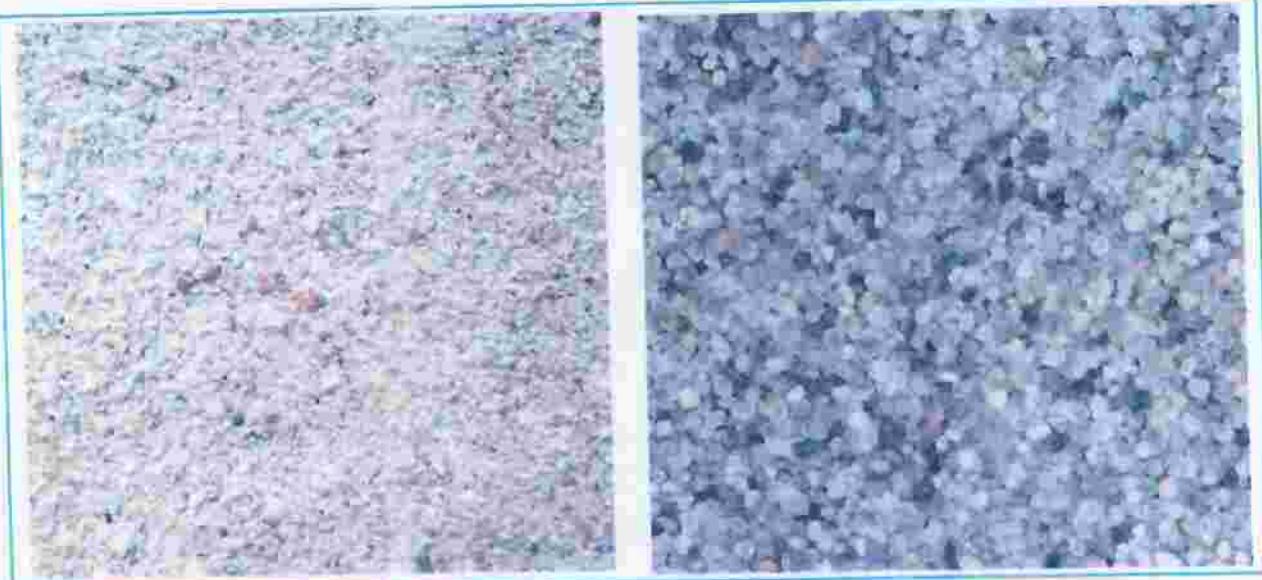
1. Where does soil come from?
2. Small stones carried by running water in a river ____ against each other and break to form soil.
3. Which part of a tree breaks rocks?
4. During the ____ there is heat from the sun.
5. The decayed animal matter in the soil is called ____.

B & C. Soil types and properties

What type of soil do you have in your area? Can you name them?

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

Sand soil



Sand soil has large particles. It does not keep moisture. The particles are not close to one another. If sand soil is rubbed in hands you will feel gritty and rough. Water sinks in sand soil and washes away all the nutrients.

Clay soil



Clay soil particles are small and fine. They are close to each other. Water sinks slowly in clay soil and it keeps moisture than sand soil. Clay soil is used for pottery such as clay pots and vessels.

Loam soil



Loam soil is a mixture of clay and sand soil. Crops such as ground nuts grow well in loam soil.

What happens to water when poured into different types of soil?



Experiment



Sand soil



Loam soil



Clay soil

- Collect sand soil, clay soil and loam soil from the school garden or anywhere in the school yard.
- Collect 3 beakers and half fill them with the 3 different soil types you have collected.
- Pour same amount of water into the 3 soil types.
- Observe the time taken by water to sink.

In which soil does water sink faster and slower?



Activity

Collect different soil types. Feel different types of soil and observe colour of soil.

D. Models from clay

Use clay soil to model clay pictures of your own choice.

Section B

Answer all questions..

16. a) Name 1 town in Zimbabwe where electricity is made. (1)
- b) State any 2 fuels used by generators to make electricity. (2)
17. a) Two materials that can be used to make artefacts are _____ and _____. (2)
- b) A _____ is a container that was used long ago to fetch water. (1)
18. a) Write 2 types of magnets. (2)
- b) Give two natural sources of water. (2)





True/false

1. Water, air, organic and rock particles forms the soil.
2. Bubbles show that there is water in the soil.
3. Water sinks slowly in sand soil than in clay soil.
4. There is water in the soil.

Glossary



| | |
|------------------|--|
| Droplets | : a very small amount of liquid. |
| Humus | : decayed animal and plant matter. |
| Loam | : soil mixture of clay and sand. |
| Matter | : material or substance. |
| Nutrients | : food in the soil given to plants so that they grow well. |
| Organic | : animal matter and plant matter. |
| Particles | : one part of something. |
| Pottery | : items such as pots made using clay. |

Unit 26

Plants

Introduction

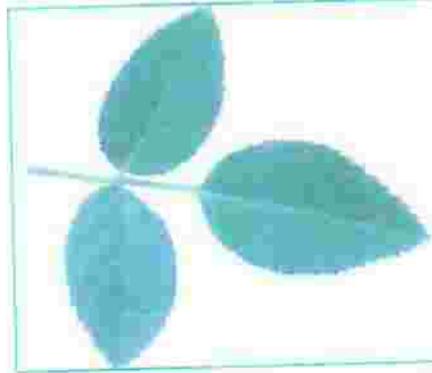
Plants have different parts like the leaves, stems, roots, flowers and fruits. These parts have different important functions for the plant.

A & B. Plant parts and their functions

Can you name the plant parts you know? What work do they do?



The leaves



Leaves grow on the stem. They make the plant's food. They make the air we breathe in.

The roots



Roots take water and plant nutrients from the soil. They hold the plant in the soil so that it does not fall. They keep extra food for the whole plant.

The stems



Stems support the plant. They carry water and nutrients from the roots to all plant parts. They carry food from the leaves to all plant parts.



Activity

Discuss how the leaves, roots and stems work together to support plant life.



Exercise

1. Which part of a plant makes food?
2. Which part of a plant makes the air we breathe?
3. Where is extra food for the plant stored?
4. Give two things that roots take from the ground.
5. What does the stem carry from the leaves?
6. What does the stem carry from the roots?

C & D. Plant parts and their functions

The flowers



Flowers make the fruits. They attract insects to the plant. It is where pollination takes place.

The fruits



Fruits give a covering to the seeds. Fruits can be hard like a monkey orange (damba), nut or fleshy like a mango, avocado or apple.



Activity

Discuss how the flower changes to a fruit.



Exercise

1. In a plant, the fruit is made by the _____.
2. Flowers attract _____ to the plant.
3. Where do we find seeds in a plant?
4. Give 2 examples of fruits eaten by people.
5. What makes the fruit?



Practical Find out why insects are attracted to the flower of a plant?

Remember that:



that:

- plants have different parts.
- leaves produce food for the plant.
- roots take food and water from the soil.
- the stem transports food and water to all parts.
- the fruit keeps the plant seeds.



Word Search

Find 4 words to do with plants parts. Roots has been done for you.

| | | | | | | |
|---|---|---|---|---|---|---|
| D | C | R | C | L | Y | Z |
| F | L | O | W | E | R | S |
| R | M | O | D | A | O | T |
| U | K | T | A | V | E | E |
| I | D | S | B | E | G | M |
| T | P | O | Q | S | I | C |
| S | O | C | M | L | B | A |

Find

1. Leaves
2. Flowers
3. Fruits
4. Stem

Glossary



Attract : to cause to draw near.

Breathe : take oxygen into the lungs.

Nutrients : substances that plants or animals need in order to grow.

Pollination : moving pollen from one plant to another.

Unit 27

Animals

Introduction

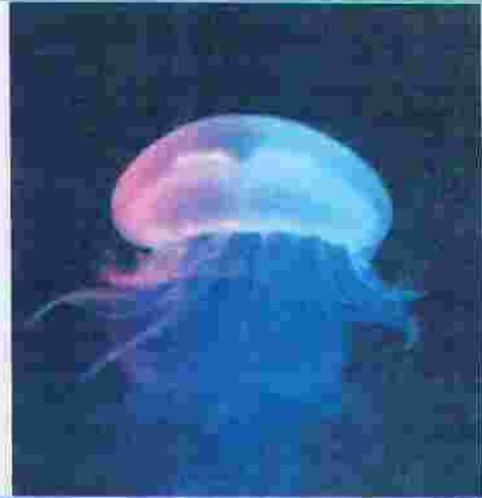
There are different types of animals. Invertebrates are the most common ones. They make about 97% of all other animal types.

A. Invertebrates

Invertebrates are animals that do not have a backbone. They do not have a bone skeleton either on the inside of their bodies or outside. Some of the invertebrates have bodies filled with a fluid, for example the worm and jellyfish.



Worm



Jellyfish

Some invertebrates have a hard outside shell like most insects. Insects make the biggest number of all invertebrates. Insects have six legs. Some insects have wings. Examples of insects are flies, bees, mosquitoes, cockroaches, ants, butterflies and many others.



Housefly



Bee



Mosquito



Cockroach



Ant



Butterfly

Other examples of invertebrates include crabs, snails, lobsters, octopuses, starfish, scorpions and spiders.



Crab



Snail



Lobster



Octopus



Starfish



Scorpion



Spider



Activity

Observe and describe some of the invertebrate animals found in your area.



Exercise

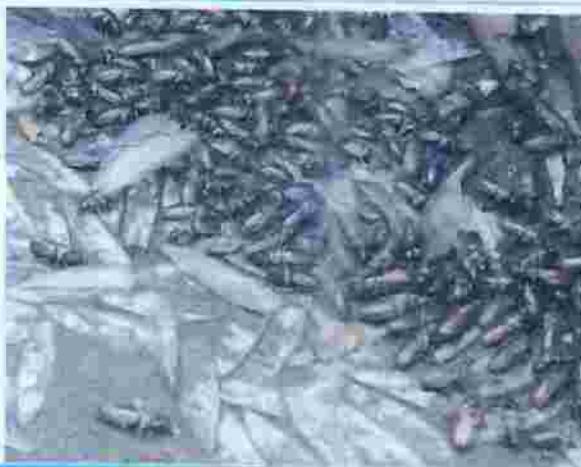
1. Animals with no backbone are called _____.
2. _____ make the biggest number of all invertebrates.
3. 3 examples of invertebrates are _____, _____ and _____.
4. An example of an invertebrate whose body is filled with a fluid is a _____.
5. How many legs do insects have?

B. Useful insects

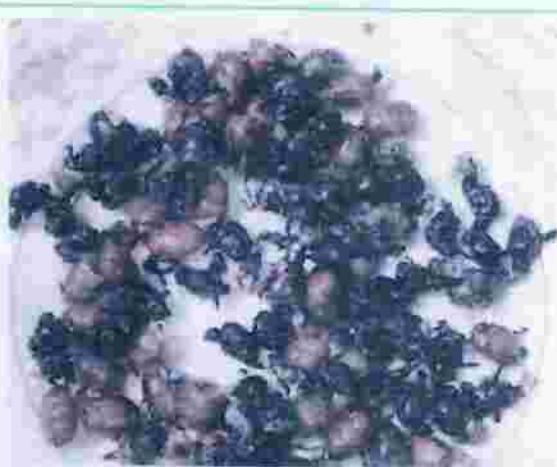
Which insects do you think are helpful to people? How are they helpful?

Some insects are very helpful to people

Some insects are rich in proteins and are used as food. For example, flying termites (ishwa), flying ants (tsambarafuta), grasshoppers and crickets (makurwe).



Flying termites (ishwa)



Flying ants (tsambarafuta)



Cricket (gurwe)



Grasshopper

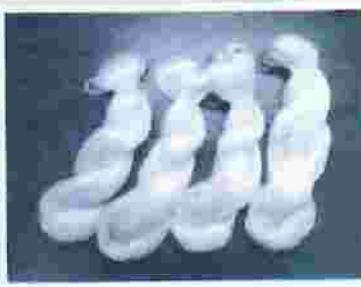
The ladybird beetle eats aphids in vegetables. Aphids destroy our vegetable crops.



Bees make honey that we eat. Butterflies and bees help flowers to make fruits by carrying pollen. Bees make wax which is used in making cosmetics.



The silkworm, a larva of a moth, makes silk fibre for people.



Ants clean our environment by eating up dead plants and animals.



Activity

Describe and discuss useful insects in your area.



Exercise

1. What do bees make?
A. flower B. leaves C. honey D. nectar
2. The ladybird eats _____ in vegetables.
A. aphids B. flowers C. leaves D. insects
3. Insects rich in _____ are used as food.
A. vitamin B. salts
C. proteins D. carbohydrates
4. What makes silk fibre for people?
A. aphids B. bees C. silk worm D. ant
5. How do ants clean our environment?
A. by eating our furniture
B. by making honey
C. by making silk fibre for people
D. by eating up dead plants and animals

C. Harmful insects

Some insects are harmful to people, animals and crops. These insects include termites, locusts, mosquitoes, bed bugs, lice and tsetse fly.

Termites destroy wooden furniture and eat our crops.



Swarms of locusts can destroy our crops. Look at the pictures below. What is happening? Discuss with your friends.



Mosquitoes bite us and cause us to suffer from malaria. Bed-bugs and lice suck our blood and make us suffer from various diseases. The tsetse fly bites animals and people. Tsetse fly causes a disease called sleeping sickness in people.



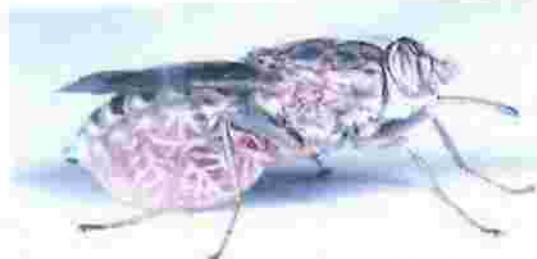
Mosquito



Bed bug (tsikidzi)



Lice (inda)



Tsetse fly

The housefly spreads diseases. Cockroaches get onto our food at night. They carry germs to our food. Look at the photos below. Which food is being eaten by the housefly? Which food is being eaten by the cockroaches? Discuss with your friend.





Activity

List some harmful insects found in your area. What can you do to control them?



Exercise

1. _____ destroy our wooden furniture.
A. Aphids B. Termites C. Bees D. Houseflies
2. The _____ causes sleeping sickness.
A. housefly B. mosquito C. locust D. tsetse fly
3. Mosquitoes spread a disease called _____.
A. bilharzia B. malaria C. diarrhoea D. cholera
4. Locusts can destroy our _____.
A. bodies B. crops C. clothes D. blood
5. _____ carry germs to our food.
A. Locusts B. Mosquitoes C. Lice D. Cockroaches



Practical

Collect pictures of useful and harmful insects. Make a picture frieze of useful insects and another picture frieze of harmful insects.



- Invertebrate animals have no backbone.
- Some insects are useful while others are harmful.
- We can control some harmful insects.
- We can help some useful insects to do their work.



Play the game of useful and harmful. Who am I? Insects

I help plants to make fruits

I make honey

Who am I?

I bite people

I cause malaria

Who am I?

You eat me

I have a lot of proteins

Who am I?

I cause sleeping sickness

I bite you

Who am I?

Glossary



Fluid : liquid-like substance.

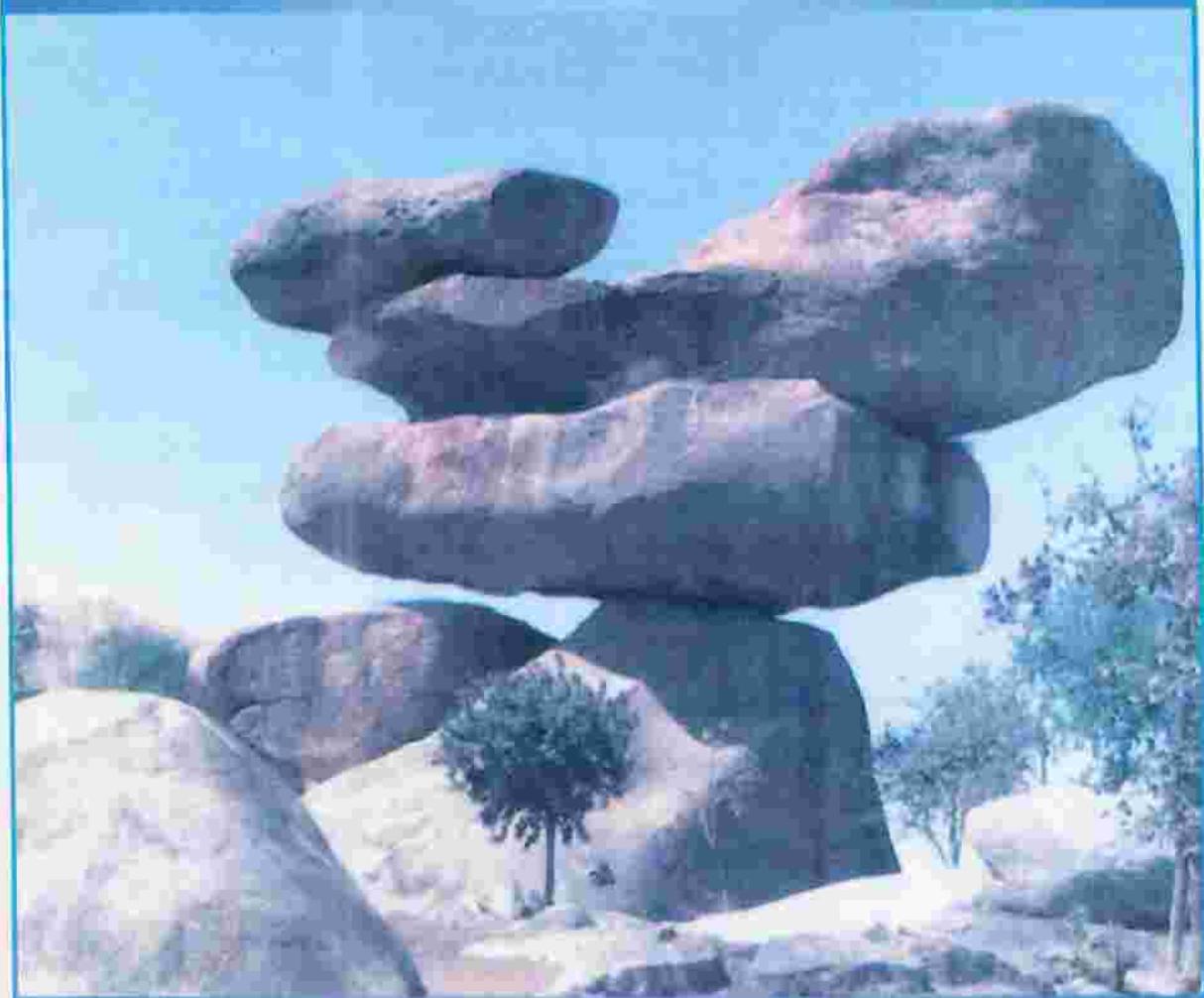
Invertebrates : animals with no backbone.

Larva : a young insect which has not yet grown.

Pollen : fine yellow powder formed in flowers which will cause the development of fruits.

TOPIC 9

Landforms and Maps



Unit 28

Landforms

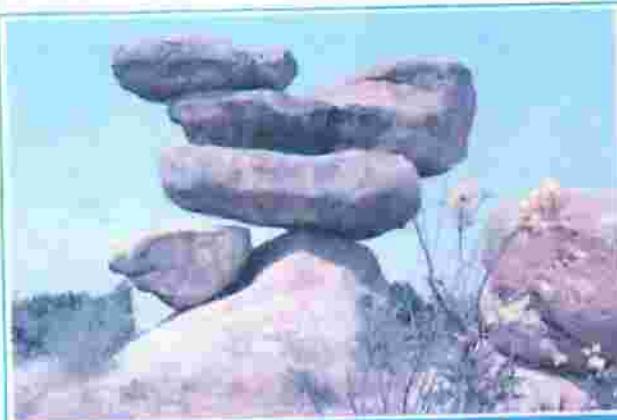
Introduction

The school grounds have objects we can see. When we are going home we see many more objects. People use some of the bigger objects when they give directions. These objects are called landforms. Landforms can be natural or man-made. Both natural and man-made landforms make our environment beautiful. They also make our lives easy. Trees and buildings provide us with shelter. We get fruits and medicine from trees.

A. Natural landforms

Natural landforms are found in nature. They are not created by man. They are created by God.

These are mountains, waterfalls, rivers, valleys, balancing rocks and many more. Balancing rocks are found in Matopos near Bulawayo. A waterfall can be seen at Victoria Falls. These landforms are visited by people from other countries. These people are called tourists.



Balancing rocks at Matopos



Victoria Falls

Mountains are also visited by tourists. In Zimbabwe, the biggest mountain is called Mount Nyangani. It is found in Nyanga.



Ant hill



Nyanga

The children are going to school. They are getting off the bus at Baobab Bus Stop. What is the name of the school? Where does the name come from?



Activity

Discuss how landforms are important to people and animals.



Exercise

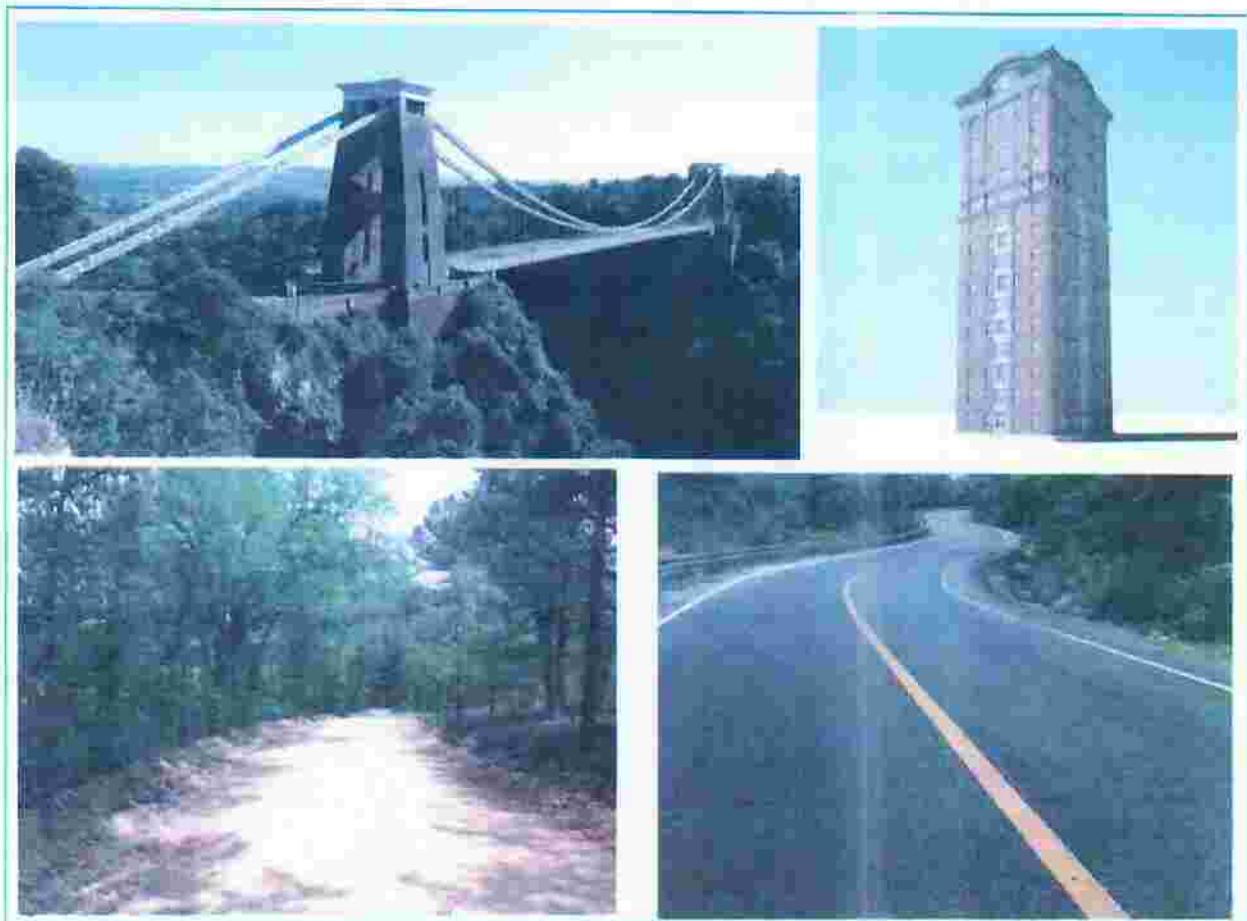
1. What are landforms?
2. Who created natural landforms?
3. Name two natural landforms.

- How are landforms important to people?
- In the picture, where does the name of the school come from?

B. Man-made landforms

Man-made landforms are created by humans. Examples of man-made landforms are bridges, roads and buildings like sky scrapers.

Name the following.



Activity

Visit a natural landform near your school. What is the name of the landform?

Draw the landform. Make a model of the landform.



Exercise

Answer these questions.

- What is the name of your school?
- Where did it get its name from?

3. The river nearest to my home is called _____.
4. Which big building do you know?
5. Have you ever seen a hill? What is the name of the hill?

Remember



In this

- Landforms help us to locate places.
- Landforms make our environment beautiful.
- Landforms can be natural or man-made.

Glossary



Landforms : natural features of the earth's surface.

Man-made : made by people.

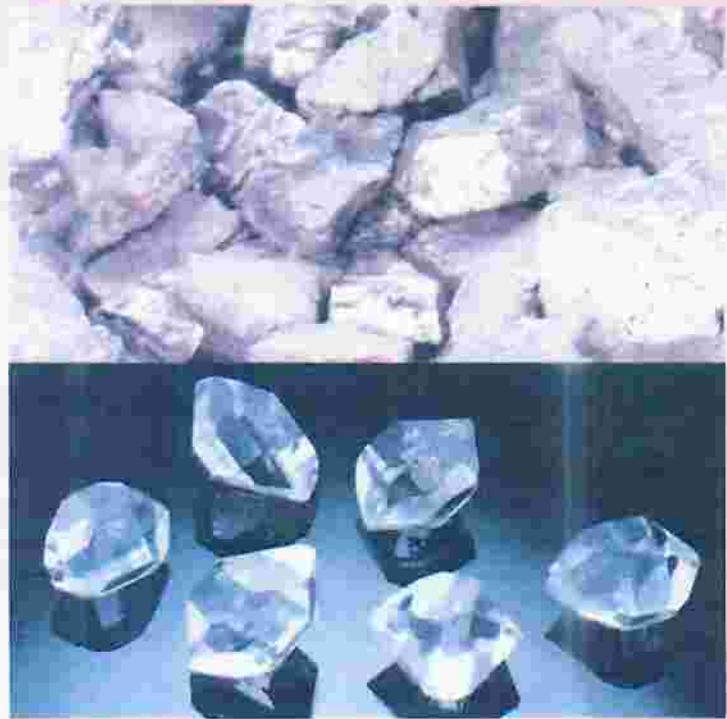
Model : representation of something usually smaller than the original.

Natural : created by God.

Skyscraper : tall building.

TOPIC 10

Sustainable Resource Management



Unit 29

Sustainable resource management

Introduction

Resources are things that you make use of in your environment. In this unit we are going to look into how we can manage our local resources for future generations. Resources are classified into man-made and natural resources.

A & B. Natural resources

Can you think of important resources that we use everyday in our area?

A natural resource is anything that you can use which comes from nature and not created by human hand. Natural resources are those things that are not created by people, for example, sunlight is a natural resource. No one can say that he or she makes sure that we get sunlight everyday. No one in our local environment brings sunlight to us. It is there on its own. No one controls it.

Some examples of natural resources are water, land (soil), air, wind, vegetation, minerals and wildlife.

Water is an important natural resource. Animals and plants need water. Look at the picture of water below.



Land is also a natural resource. Soil is found on the land. Look at the picture below, what can you see? What is found on the land? Discuss with your friends as a group.



Vegetation includes plants and forests. Look at the vegetation on the picture below. What is its colour?



Mineral ores are important natural resources for our country. Example of minerals found in Zimbabwe are gold and diamonds.



Wildlife is another important natural resource. Wildlife include wild animals which are not kept at home. Elephant, giraffe, cheetah, buffalo, rhinoceros and zebra are examples of wildlife. Look at the wild animals

below, can you name them? Tell your friend the names of the animals below.



When some of these resources are used up or finished, we may never replace them again, for example, minerals, oil and some animals.

We have to be careful when we use natural resources in our local area. Some of the natural resources take many years to recover. Some trees in our local area may have taken many years to grow. If we cut them all they may take a long time to grow to big trees again. We must remember to conserve some of the natural resources for our children who are going to be here after we have long died.

Some of the natural resources which we should remember to use carefully so that those who come after us will use them as well are wildlife, water, land and soil and clean air to breathe.



Activity

Discuss the natural resources in your area and how we use them everyday.



Exercise

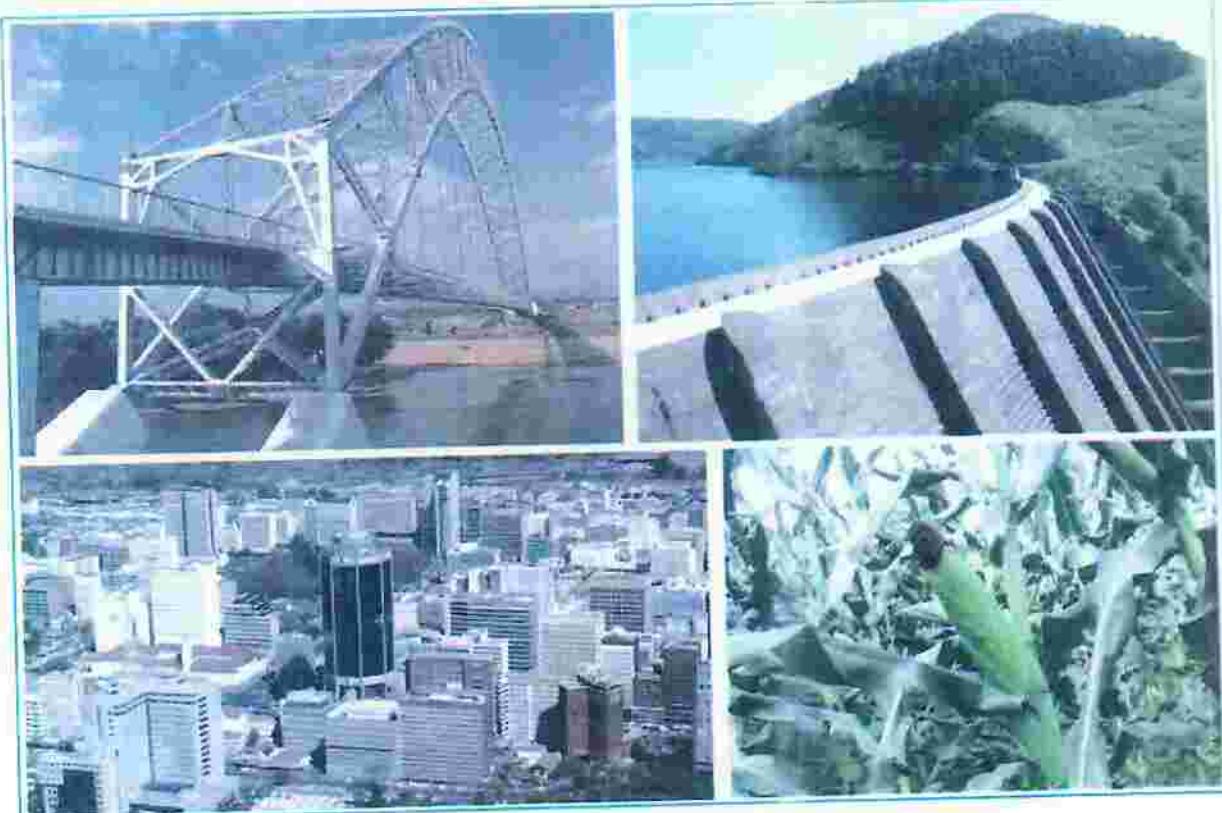
1. _____ is an example of a natural resource.
2. Natural resources which cannot be replaced when they are finished are _____ and _____.

3. We must _____ natural resources for other people who will come in future.
4. One of the natural resources which we should conserve is _____.

C&D. Man-made resources

These are things that are there because of human action. They are made by people. Some natural resources can be changed by people so that we can use them. Examples of man-made resources are dams, wells, boreholes, crops, buildings and domestic animals we keep for food and other uses at home. The books we use at school are man-made resources. Other examples at school are school furniture, sports uniforms and school buildings.

Look at the man-made resources below. Identify these things in your groups with the assistance of your teacher.



Can you think of any man-made resources we use at home? Your house or buildings at your home are man-made resources.

A natural resource like water can be used to make a man-made resource like electricity. Soil is a natural resource. It can be used to make bricks or to grow crops, which are man-made resources.



Activity

Discuss and list the man-made resources in your area.



Exercise

1. Write examples of man-made resources at school.
2. What man-made resources do we have at homes?
3. Which natural resource is used to make electricity?
4. How can we use a natural resource like soil?
5. Where do books come from?



Investigate the natural and man-made resources in your area. How can we use them well.



- Some natural resources can never be replaced.
- Most man-made resources are made from natural resources.
- We should use our natural resources wisely.



Write the words starting with the last letter going backwards. All the words are about natural resources.

The first one is water

renaw, ilos, thgilnus, tarenim, dniw

Glossary



- Conserve** : to keep for a longer time.
- Ore** : rock or earth from which metal or mineral can be obtained.
- Vegetation** : plants like trees and grass growing in an area.
- Wildlife** : animals that live in the forest.

Unit 30

Waste

Introduction

Waste is any material which is thrown away after use. It is unwanted material. We always see unwanted material everywhere we go that is thrown away. Waste is found at school, at home, in town and even in the community. In this lesson we are going to look at sources of waste.

A&B. Sources of waste

The different sources of wastes can be identified by firstly knowing the types of wastes. We produce a huge amount of wastes in our everyday life. The litter we throw away after eating causes or produces a lot of waste. The sources of waste are household, electronic gadgets, industrial and plant and animal waste.

Sources of waste are classified in the following way:

Household waste

It is solid waste that is found at home. We see household waste at home every day in our rubbish bins we place outside. It is made up of rubbish such as bottles, cans, newspapers, plastics and food left overs.



Electronic gadgets

These are unwanted or no longer in use tools that are thrown away or dumped by big companies or even at home. Examples of these are phones, computers, radios and televisions.



Industrial waste

These are wastes produced by industrial activity which are thrown away or dumped anywhere. Examples of these wastes are dangerous chemicals, food wastes, ashes, papers and cardboard boxes. These wastes are usually dumped on the land or in water.



Plant and animal waste



Plant waste



Animal waste

Many trees shed leaves each year and most animals such as cattle produce droppings at least once a day. This combined is plant and animal waste. This type of waste is often used as manure in gardens and farms. Examples of plant wastes are dry leaves and dry twigs that fall off trees. An example of animal waste is cow dung.



Activity

Identify sources of waste in your community.



Exercise

1. What is waste?
2. Solid waste found at home is called _____ waste.
3. Identify any four examples of household waste.
4. Electronic gadgets include _____ and _____.
5. _____ is an example of plant waste.
6. _____ is an example of animal waste.

C & D. Disposing of waste

What can be done with waste at home and at school?

- Waste can be reused.
- Waste can be recycled.
- Place waste in a bin.
- Burn waste.
- We can make a compost.

Littering is when waste is thrown everywhere. It is not allowed to throw litter everywhere. The other names of waste are litter and rubbish.



Exercise

Answer these questions.

1. Two other names for waste are l _____ and r _____.
2. Why is some waste dangerous?
3. The type of waste which can be made into a new product is _____.
4. What can be done with waste at home?
5. How do you dispose of waste at school?



Activity

Identify how people in your area dispose of their electronic waste. Suggest ways in which the waste can be disposed of that it does not become dangerous to the environment.



that.

- Waste is any material which is thrown away after use, or unwanted material.
- The sources of waste are household, electronic gadgets, industrial and plant and animal waste.
- We mostly produce a huge amount of wastes in our everyday life.
- Plant and animal waste is often used as manure in gardens and farms.

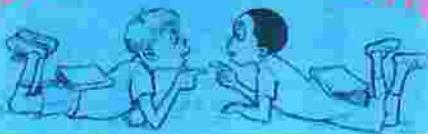
Glossary



| | | |
|---------------------------|---|---|
| Electronic gadgets | : | Tools such as machines that have different uses, for example, a computer or a cell phone. |
| Household | : | A place where members of a family live together under one roof. |
| Litter | : | Waste thrown away by people. |
| Waste | : | Waste is any material which is thrown away after use. It is unwanted material. |

Unit 31

How much do you remember?

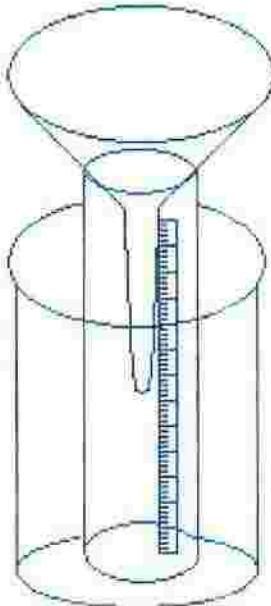


Section A

Choose the correct answer from A, B, C or D.

1. There are _____ seasons in Zimbabwe.
A. five B. eight C. four D. fourteen
2. Weather instruments are kept in a _____.
A. weather station B. windvane
C. weather elements D. cloud cover

Study the diagram below and use it to answer question 3.



3. Name the instrument shown above.
A. thermometer B. windvane
C. overflow cylinder D. rain-gauge
4. _____ are weather and climate hazards.
A. Dry grass B. Floods
C. Rivers D. Enough rain
5. _____ prevents fires from spreading.
A. Dry grass B. Paraffin
C. Fire break D. Wind

6. Decayed plant and animal matter is called _____.
A. loam soil B. break down
C. roots D. humus
7. If _____ soil is rubbed in hands, you feel gritty and rough.
A. loam B. clay
C. sand D. garden
8. _____ make food in a plant.
A. Roots B. Stems C. Trunk D. Leaves
9. Animals with no backbone are called _____.
A. invertebrates B. vertebrates
C. big animals D. people
10. Malaria is spread by _____.
A. locusts B. mosquitoes C. snails D. worms
11. At home we put waste in a _____.
A. plate B. dish
C. blanket D. bin
12. _____ are natural landforms.
A. Bridges B. Roads C. Sky scrapers D. Valleys
13. Natural resources which cannot be replaced when they are finished up are oil and _____.
A. minerals B. furniture C. doors D. books
14. An example of a man-made resource is _____.
A. tree B. soil C. dam D. water
15. Waste can also be called _____.
A. rubbish B. household C. electronic D. resource

Section A

Write the correct answer.

16. a) Name an instrument used to measure temperature. (1)
b) Write 2 effects of weather and climate hazards. (2)
17. a) Where does soil come from? (1)
b) What causes rocks to break? (1)
18. a) Where is the extra food for the plant stored? (1)
b) Name the part of a plant which attracts insects. (1)
19. a) Give 2 examples of invertebrates. (2)
b) State one source of waste. (1)

Unit 32

TEST 1

PART A

Answer the following questions by choosing the correct answers from those given.

1. We remove sweat from our bodies by _____.
A. heating B. bathing C. coughing D. cooking
2. _____ is used to smell.
A. The mouth B. The ear C. The nose D. The tongue
3. We use _____ to brush our teeth.
A. toothpaste B. sadza C. drink D. sand
4. _____ spread diseases.
A. Cattle B. Arms C. Germs D. Noses
5. What must you do after visiting the toilet?
A. wash your hands B. wash your feet
C. blow your nose D. clean your plates
6. Which one is an example of a toiletry?
A. dish B. hoe C. pot D. towel
7. Where do you apply lipstick on your body?
A. lips B. nose C. ears D. eyes
8. The comb is to hair as the toothbrush is to _____.
A. ears B. legs C. teeth D. nose
9. Which cosmetic makes you smell good?
A. soap B. eye liner
C. Vaseline petroleum jelly D. perfume
10. What attracts germs to our bodies?
A. flies B. dirt C. smell D. toothpaste

PART B

Answer the following questions in your own words.

1. a) Name any two body parts (2)
b) How do you clean the parts you have mentioned? (2)
c) Why do people bath? (2)

2. a) What two activities make people sweat? (2)
b) How do you remove sweat from the body? (2)
c) What two things do you use when bathing? (2)

3. a) How many times must you visit the dentist? (1)
b) Two ways one can protect their teeth are
(i) _____ (1)
(ii) _____ (1)
c) What do you do when it is hot? (1)
d) The _____ protects the body parts. (1)

Unit 33

TEST 2

PART A

1. Before you eat fruits you _____ them.
A. wash B. heat C. boil D. rub
2. Water from open sources must be _____ to make it safe.
A. brushed B. boiled C. cleaned D. flushed
3. A person with diarrhoea should be given _____.
A. medicine B. toothpaste
C. oral rehydration solution D. pills
4. How many tea spoonfuls of sugar are put in the oral rehydration solution?
A. five B. six C. seven D. eight
5. The biggest natural sources of water are _____.
A. oceans B. seas C. lakes D. rivers
6. What do you need to see germs?
A. glasses B. microscope
C. thermometer D. comb
7. A thick liquid produced inside the nose is called _____.
A. saliva B. stool C. mucus D. water
8. Playing in dirty water may cause _____.
A. bilharzia B. malaria C. cholera D. typhoid
9. Which animal can spread rabies?
A. cow B. dog C. horse D. goat

10. We should cross flooded rivers at a _____.

- A. dam
- B. bridge
- C. line
- D. corner

PART B

1. a) How did people long ago get food? (2)

b) Which two plant seeds give us mealie-meal? (2)

c) We get _____ from animals. (1)

2. a) Two examples of body-building foods are

(i) _____ (1)

(ii) _____ (1)

b) Protective foods protect us from _____. (1)

c) Sadza is an energy giving food and _____ is a protective food. (1)

d) We get food from plants and _____. (1)

3. a) How do germs get into our bodies? (2)

b) We get _____ and _____ from dirty water. (2)

c) Germs come out of our mouth when we _____. (1)

Unit 34

TEST 3

PART A

1. Which two structures are used for storage?
A. house and hut B. granary and storeroom
C. shed and flat D. granary and hut

2. Cattle are kept in a _____.
A. sty B. stable C. kennel D. kraal

3. Plants get energy from the _____.
A. sun B. food C. coal D. water

4. Energy makes machines _____.
A. stop B. work C. grow D. sweat

5. We use heat energy when _____.
A. playing B. praying C. cooking D. reading

6. We can make water clean by _____.
A. filtration B. boiling C. drinking D. smoking

7. Wood and coal are ____ fuels.
A. liquid B. solid C. gas D. petrol

8. Fuel used in a lamp is _____.
A. diesel B. petrol C. paraffin D. water

9. Electricity from moving water is made at _____.
A. hwange B. Munyati C. Kariba D. Harare

10. We should cross flooded rivers at a _____.

- A. dam
- B. bridge
- C. line
- D. corner

PART B

1. a) State three devices that use electricity at home. (3)
b) Most of our electricity is made at
(i) _____, (1)
(ii) _____, (1)
2. a) List two materials which conduct electricity. (2)
b) The following materials cannot conduct or transmit electricity
(i) _____, (1)
(ii) _____, (1)
c) A gadget can also be called a _____. (1)
3. a) Magnets attract (i) _____.
(ii) _____, (2)
b) What are the names of the two ends of a magnet? (2)
c) Which device has a magnet inside? (1)

TEST 4

PART A

1. _____ is an artefact.
 A. A bicycle B. A clay pot C. A phone D. A book

2. _____ is needed by both plants and animals.
 A. Water B. Tree C. Wood D. Soil

3. What colour is water?
 A. It is red. B. It is colourless.
 C. It is blue. D. It is white.

4. _____ is water that flows into rivers and dams.
 A. Run-off B. Erosion C. Filtration D. Rising

5. Which one is a source of dirty water?
 A. tap B. borehole C. spring D. river

6. Irrigation water is carried by pipes or _____.
 A. clouds B. air C. lorry D. canals

7. When water comes naturally to the surface it is called a _____.
 A. river B. spring C. borehole D. tap

8. _____ is a water hazard.
 A. Drowning B. Swimming C. Bathing D. Watering

9. Which water disaster occurred in Zimbabwe in 2014?
 A. Kariba B. Bulawayo C. Matopo D. Tokwe-Mukosi

10. People should build homes on _____ ground.
 A. low B. high C. central D. medium

PART B

1. a) What is weather? (2)
b) In which season is it
 (i) hot and wet _____?
 (ii) cold and dry _____? (2)
c) A rain gauge is used to measure _____. (1)

2. a) Fires can destroy _____ and _____. (2)
b) We make a _____ to prevent fire from spreading. (1)
c) _____ and _____ are climate hazards. (2)

3. a) The three main types of soil are:
 (i) _____,
 (ii) _____,
 (iii) _____. (3)
b) Changes in _____ during the day and at night causes rocks to _____ and form soil. (2)

Unit 36

TEST 5

PART A

1. _____ soil is the best for growing crops.
A. Loam B. Clay C. Sand D. Fine
2. Which part of a plant takes in air?
A. trunk B. branch C. leaf D. root
3. Pollination takes place in the _____.
A. seed B. leaf C. stem D. flower
4. Animals that have a backbone are called _____.
A. vertebrates B. invertebrates
C. worms D. snakes
5. How many legs do insects have?
A. four or B. six C. eight D. three
6. Which insect is helpful to people?
A. scorpion B. mosquito C. bee D. housefly
7. _____ is a natural landform.
A. A bridge B. A building C. A canal D. A river
8. We make _____ from coal.
A. food B. electricity C. water D. sugar
9. Any material which is thrown away after use is _____.
A. waste B. good C. bad D. paper
10. Waste can be in liquid or _____ form.
A. water B. solid C. small D. good

PART B

1. a) Two sources of waste are _____ and _____. (2)
b) Which three resources are man-made? (3)

2. a) Harmful insects include _____, _____ and _____. (3)
b) Which part of a plant holds soil together? (1)
c) Decayed plant matter is called _____. (1)

3. a) Name two weather elements. (2)
b) State three things supported by water on earth. (3)

