THE REPUBLIC OF UGANDA

Ministry of Education and Sports

# HOME-STUDY LEARNING

PRIMARY 5

## SCIENCE

August 2020

NCDC
NATIONAL CURRICULUM DEVELOPMENT CENTRE

Save the Children

UGANDA NATIONAL EXAMINATIONS BOARD

NCDC
NATIONAL CURRICULUM
DEVELOPMENT CENTRE

Published 2020

This material has been developed as a home-study intervention for schools during the lockdown caused by the COVID-19 pandemic to support continuity of learning.

Therefore, this material is restricted from being reproduced for any commercial gains.

National Curriculum Development Centre
P.O. Box 7002,
Kampala- Uganda
www.ncdc.go.ug

# FOREWORD

Following the Outbreak of the CoVID-19 Pandemic, Government of Uganda closed all schools and other educational institutions to minimize the spread of the coronavirus. This has affected more than 36,314 primary schools, 3129 secondary schools, 430,778 teachers and 12,777,390 learners.

The COVID-19 outbreak and subsequent closure of all has had drastically impacted on learning especially curriculum coverage, loss of interest in education and learner readiness in case schools open. This could result in massive rates of learner dropouts due to unwanted pregnancies and lack of school fees among others.

To mitigate the impact of the pandemic on the education system in Uganda, the Ministry of Education and Sports (MoES) constituted a Sector Response Taskforce (SRT) to strengthen the sector's preparedness and response measures. The SRT and National Curriculum Development Centre developed print Home- Study Materials, radio and television scripts for some selected subjects for all learners from Pre-Primary to Advanced level. The materials will enhance continued learning and learning for progression during this period of the lockdown, and will still be relevant when schools resume.

The materials focused on critical competences in all subjects in the curricula to enable the learners to achieve without the teachers' guidance. Therefore effort should be made for all learners to access and use these materials during the lockdown. Similarly, teachers are advised to get these materials in order to plan appropriately for further learning when schools resume, while parents/guardians need to ensure that their children access copies of these materials and use them appropriately.

I recognise the effort of National Curriculum Development Centre in responding to this emergency through appropriate guidance and the timely development of these home study materials. I recommend them for use by all learners during the lockdown.



**Alex Kakooza**

**Permanent Secretary**

**Ministry of EDUCATION AND SPORTS**

## ACKNOWLEDGEMENTS

National Curriculum Development Centre (NCDC) would like to express its appreciation to all those who worked tirelessly towards the production of home-study materials for Pre-Primary, Primary and Secondary Levels of Education during the COVID-19 lockdown in Uganda.

The Centre appreciates the contribution from all those who guided the development of these materials to make sure they are of quality; Development partners - SESIL, Save the Children and UNICEF; all the Panel members of the various subjects; sister institutions - UNEB and DES for their valuable contributions.

NCDC takes the responsibility for any shortcomings that might be identified in this publication and welcomes suggestions for improvement. The comments and suggestions may be communicated to NCDC through P.O. Box 7002 Kampala or email admin@ncdc.go.ug or by visiting our website at http://ncdc.go.ug/node/13.



**Grace K. Baguma**
Director,
National Curriculum Development Centre

## ABOUT THIS BOOKLET

Dear learner, welcome to this home-study material which has been prepared for you. The material covers content for term 1, II and III.

The content covered has been carefully written covering the different topics in the syllabus. This is an addition to what you had learnt before schools were closed due to outbreak of COVID-19. The content is arranged using simple steps for your understanding. The activities provided in each topic are organised in such a way that they will enable you to relate with your local environment.

The content is organised into lessons. Each lesson has activities and summary notes that help you to understand the concepts. Some lessons have projects that you need to carry out at home during this period. You are encouraged to work individually as you do the practical and interactive activities.

Feel free to try out all the activities in this material.

**Enjoy learning**

# THEME: HUMAN HEALTH

## Topic: Immunisation

## Lesson 1: Immunity

***Dear learner, you are aware that all schools are closed and you are now at home because of the Corona Virus Disease (COVID – 19). The disease is already within your communities and you need to protect yourself from it. You can do this through; washing hands regularly with clean water and soap, keeping distance of at least 2 metresfrom other people and not touching your soft parts on the face (eyes, nose and mouth)***

By the end of this lesson, you should be able to;

i) mention the types of immunity.
ii) give the types of vaccines.
iii) state the importance of immunization.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in your class, and even at home, you realisethat some of your friends and family members suffer from common diseases.

Can you mention any three of these diseases?

Your body has soldiers that help to protect you from getting diseases. This ability of the body to protect itself against diseases is called immunity.

There are two types of immunity depending on the way the body gets it;

- Natural immunity
- Artificial immunity

**Natural immunity:** This is the type of immunity that the body gets through natural ways such as through breastfeeding, from the mother to the unborn baby in the womb, and after suffering and recovering from a disease.

**Artificial immunity:** This is the type of immunity that is got by introducing vaccines into the body.

**Vaccines** are drugs used for immunisation. Vaccines are introduced into the body through;

- Injection method
- Oral method (through the mouth)

**The common vaccines include;**

- BCG vaccine
- Polio vaccine
- DPT vaccine
- Measles vaccine
- Hep B vaccine
- Hib vaccine

Immunisationis the introduction of vaccines into the body to boost immunity.

Importance of immunisation

- It makes the body resistant to diseases.
- It reduces the rate at which children below 6 years die.
- It protects children against the childhood immunisable killer diseases.

**Activity**

1. Define the term immunity.
2. Mention the two types of immunity.
3. Give one way the body gets natural immunity.
4. Write down two examples of vaccines.
5. Why do parents take their children for immunisation?

## Lesson 2: Childhood Immunisable Diseases

By the end of this lesson, you should be able to;

i) mention the childhood immunisable diseases.
ii) state the signs and symptoms of immunisable diseases.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello learner, in this lesson, you will learn about the childhood immunisable diseases, their causes, signs and symptoms, and their prevention.

| Disease | Cause | Signs and symptoms | Prevention and treatment |
|---|---|---|---|
| Tuberculosis | Bacteria | • Chronic cough<br>•Loss of weight<br>•A lot of sweating at night<br>•Pain in the chest<br>•General body weakness<br>•Pain in joints, bones and backache | •Immunise with BCG vaccine on the right upper arm by injection at birth<br>•Isolate sick people<br>• Take the sick person to the hospital for treatment |

| | | | |
|---|---|---|---|
| Measles | Virus | • Sores in the mouth<br>•Skin rash<br>•Runny nose<br>•Dry cough<br>•Red eyes<br>•High temperature<br>•Loss of appetite<br>•Weakness of the body<br>•Itching rash | •Immunise with measles vaccine on the left upper arm by injection at nine (9) months<br>•Isolate sick people<br>•Take the sick person to the hospital for treatment |
| Whooping cough (pertussis) | Bacteria | • Severe cough<br>•Vomiting<br>•Gasps for breath<br>•Runny nose | •Immunise with DPT vaccine on the left upper thigh by injection at;<br>-6 weeks<br>-10 weeks<br>-14 weeks<br>•Treat with antibiotics |
| Tetanus | Bacteria | •Spasms when touched<br>•The baby stops breastfeeding<br>•High fever<br>•Loss of appetite<br>•Stiff body muscles | •Immunise with DPT vaccine on the left upper thigh by injection at;<br>-6 weeks<br>-10 weeks<br>-14 weeks<br>•Cover wounds and cuts properly |

**Activity**

1. Mention any four childhood immunisable diseases.
2. Complete the following table below.

| Age | Disease | Vaccine | Site |
|---|---|---|---|
| | Tetanus | | Left upper thigh |
| At birth | Tuberculosis | | |
| | Measles | | Left upper arm |
| 6weeks, 10weeks, 14 weeks | Whooping cough | | |

3. Mention the germ that causes tetanus.

## Lesson 3: Childhood Immunisable Diseases

By the end of this lesson, you should be able to;

i) mention the childhood immunisable diseases.

ii) state the signs and symptoms of immunisable diseases.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello learner, this is a continuation of the last lesson. In this lesson, you will learn about the childhood immunisable diseases, their causes, signs and symptoms, and their prevention.

| Disease | Cause | Signs and symptoms | Prevention and treatment |
|---|---|---|---|
| Polio | Virus | • Paralysis of limbs<br>•A person becomes lame | •Immunise with polio vaccine orally at birth<br>•Drink clean boiled water<br>•Proper disposal of faeces |
| Diphtheria | Bacteria | • Sore throat<br>•Swollen neck<br>•Difficulty in swallowing | • Immunise with DPT vaccine on the left upper thigh by injection at;<br>-6 weeks<br>-10 weeks<br>-14 weeks<br>•Isolate the sick person |
| Hepatitis B | Virus | •Eyes turn yellow<br>•Dark urine<br>•Loss of appetite | •Immunise using Hep B vaccine on left upper thigh by injection at;<br>-6 weeks<br>-10 weeks<br>-14 weeks<br>•Take a lot of fluids |
| Haemophilus InfluenzaType B | Bacteria | •High temperature<br>•Body weakness<br>•Vomiting | •Immunise using Hib vaccine on left upper thigh by injection at;<br>-6 weeks<br>-10 weeks<br>-14 weeks |

**Activity**

1. Mention any twoimmunisable diseases caused by a virus.
2. Name vaccines given to babies at birth.
3. Mention diseases which are immunised at birth.
4. List diseases which are immunised using DPT vaccine.
5. How is polio vaccine given to babies?

## Lesson 4: Other Immunisable Diseases

By the end of this lesson, you should be able to;

i) mention examples of other immunisable diseases.
ii) give vaccines of some of the these immunisable diseases.

**You will need the following materials**

Pens, notebook,pencils

**Introduction**

Hello, welcome for today's lesson. You have been looking at childhood immunisable diseases. Today you are going to look at other diseases that are immunisable.

Think of other diseases that are immunisable apart from the childhood immunisable diseases.

**Other immunisable diseases include;**

- Meningitis
- Cholera
- Typhoid
- Yellow fever
- Cervical cancer
- Rabies
- German measles or rubella
- Small pox
- Mumps
- Plague

The following table shows the cause, signs and symptoms, prevention and treatment of other immunisable diseases.

| Disease | Cause | Signs and symptoms | Prevention and treatment |
|---|---|---|---|
| **Meningitis** | Bacteria | •Convulsion in children<br>•Child does not breastfeed<br>•Headache<br>•Fever<br>•Pain in the neck and limbs<br>•Vomiting<br>•Stiffness of the neck | •Isolate infected people<br>•Take infected people to a recognised hospital as soon as possible<br>•Immunisation of other people in case of an outbreak |

| | | | |
|---|---|---|---|
| **Cholera** | Bacteria | •Watery diarrhoea<br>•Vomiting<br>•Cramps in the stomach<br>•Dehydration<br>•Weakness, collapse and death | •Drink clean boiled water<br>•Cover all food to avoid houseflies<br>•Proper use of latrines to dispose faeces and urine<br>•Wash hands before eating food and after visiting the latrine or toilet<br>•Warm leftover food before eating it |
| Yellow fever | Virus | • Vomiting<br>•Bleeding of gums<br>•Sudden failure<br>•Headache<br>•Backache<br>•Nausea<br>•Muscle aches<br>•Loss of appetite<br>•Dizziness | •Sleep under mosquito nets<br>•Immunisation against yellow fever<br>•Spray adult tiger mosquitoes with insecticides<br>•Drain away stagnant water<br>•Apply oil on stagnant water |
| German measles or Rubella | Virus | • Skin rash<br>•Enlargement of lymph nodes<br>•Minimal fever | •Immunisation with rubella vaccine<br>•Pregnant mothers should avoid contact with infected people |
| Rabies | Virus | •Violent behaviour<br>•Paralysis of limbs<br>•Muscle spasms<br>•Pain in wounds<br>•Fear of water | •Immunisation with anti-rabies vaccine<br>•Regular immunisation of dogs and cats every 3 years<br>•Killing of mad dogs and cats from our environment |

**Activity**

1. Apart from the 8 childhood immunisable diseases, mention three other immunisable diseases.
2. Name a domestic animal that spreads rabies to people.
3. Mention signs of meningitis.
4. Name the type of mosquito that spreads yellow fever.
5. Mention ways of controlling the spread of cholera at home.

## Lesson 5: Child Health Card

By the end of this lesson, you should be able to;

i) mention important information found on a child heath card.

ii) give the importance of a child health card.

**You will need the following materials**

Pens, notebook, child health card, pencils

**Introduction**

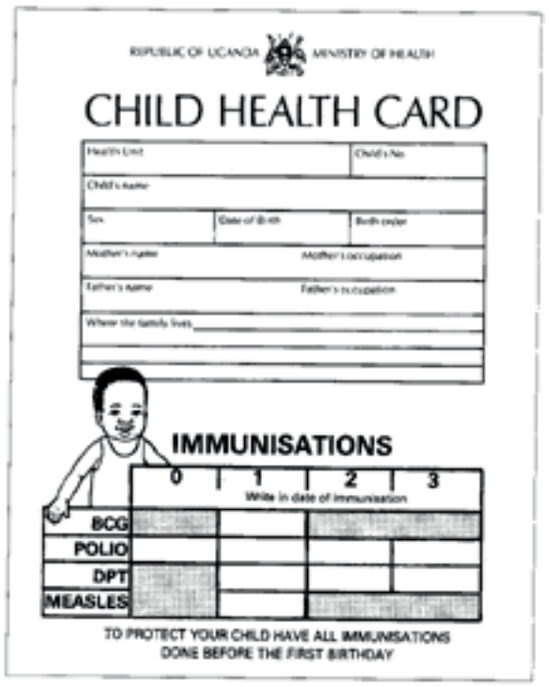
Hello, when you were taken for immunisation, some information was written and the date when you wereimmunised. Where is this information written? A child health card is a document used to monitor the health of the child. Get your child health card and write the information found on it in your notebook.Think of the importance of a child health card.

**Important information on a child health card**

i) Child's name
ii) Parent's names
iii) Age of the child
iv) Child's sex
v) Date of birth
vi) Birth order
vii) Birth weight
viii) Immunisation schedule
ix) Parent's occupation

**Importance of a child health card**

i) It helps parents to monitor the growth of the child.
ii) It reminds the parent the next date of immunization.
iii) It helps the doctor to know the vaccines given and the ones remaining.


REPUBLIC OF UGANDA MINISTRY OF HEALTH

CHILD HEALTH CARD

Health Unit | Child's No

Child's Name

Sex | Date of Birth | Birth order

Mother's name | Mother's occupation

Father's name | Father's occupation

Where the family lives

IMMUNISATIONS

| | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| | Write in date of immunisation | | | |
| BCG | | | | |
| POLIO | | | | |
| DPT | | | | |
| MEASLES | | | | |

TO PROTECT YOUR CHILD HAVE ALL IMMUNISATIONS DONE BEFORE THE FIRST BIRTHDAY

**Activity**

1. Get a child health card and write down all the important information contained on it. Find out the vaccines you have not yet received on that card.

2. Write some of the information that you can see on a child health card.
3. Ask your parent or guardian to give you a child health card and compare the information on both cards.
4. Think of the uses of a child health card and discuss with your parent or guardian.
5. Write UNEPI in full.

# THEME: HUMAN BODY

## Topic 4: The Digestive System

## Lesson 1: Digestion

**By the end of this lesson, you should be able to;**

i) explain what digestion is.
ii) name the parts of the digestive system.

**You will need the following materials**

Pens, notebook, pencils

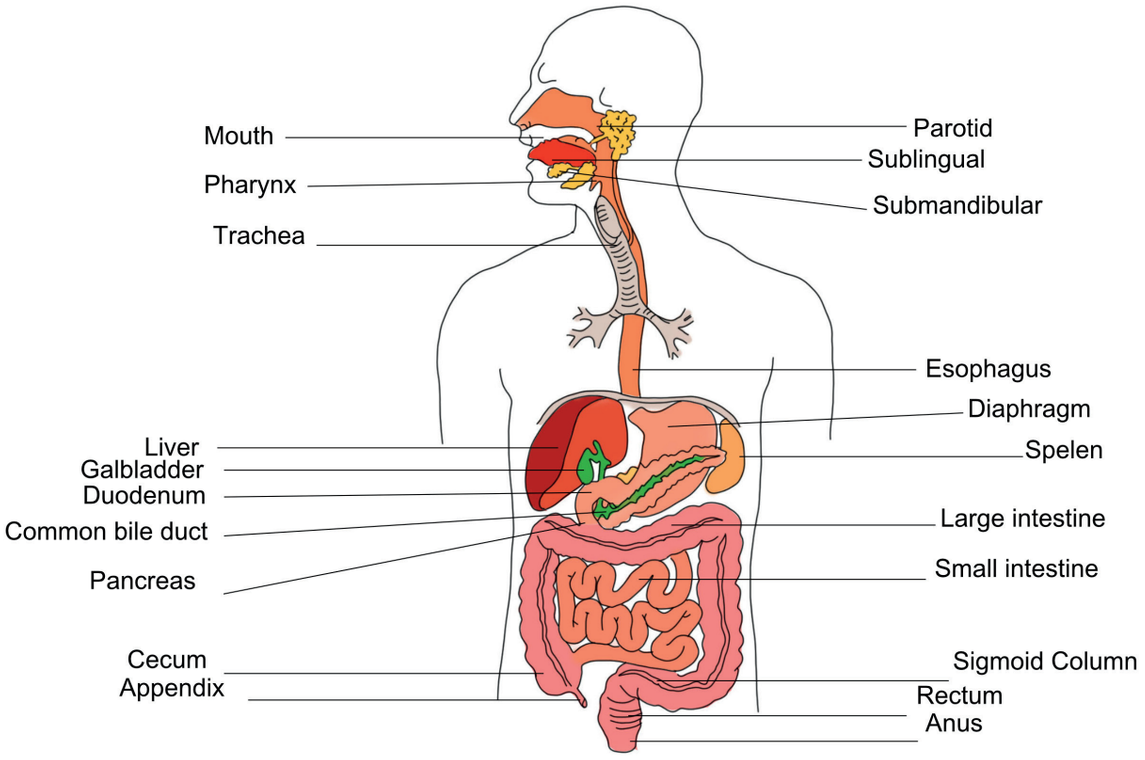
**Introduction**

Hello, we often eat big, hard, rough and solid food. However, when you go to the latrine, thefeaces that you pass out is soft, smooth and small. What happens to the food inside your body? Why is what you pass out smaller in size than what you take in? In this topic, you are going to learn what happens to food when you take it into the body.

**Digestion**

Digestion is the process by which food is broken down into small particles that can be absorbed into the body.Digestion begins in themouth and ends in the ileum.

**Parts of the human digestive system**




**Activity**

1. Define the term digestion.
2. Where does digestion of food;

i) Begin?

ii) End?

3. Draw the digestive system and name any 8 parts.

## Lesson 2: Functions of the Parts of the Digestive System

By the end of this lesion, you should be able toexplain the functions of each part of the digestive system.

**You will need the following materials**
Pens, notebook, pencils

**Introduction**
Hello, in the previous lesson, you learnt about the parts of the digestive system. Today you will learn about the functions of the parts of the digestive system.
Mouth
i)The mouth has teeth that break down food into smaller particles.
ii)The mouth also contains salivary glands that produce saliva. Saliva mixes with food to make it soft.
Gullet (oesophagus)
•It is a passage of food from the mouth to the stomach
Stomach
i)The stomach walls produce a digestive juice called gastric juice. This helps to digest food.
ii)The stomach walls also produce an acid which kills germs that come along with food.
iii)Alcohol is absorbed in the stomach.

**The liver**
i)The liver produces bile.Bile is stored in the gall bladder.
ii)Bile helps in the digestion of food.
**The pancreas**
•The pancreas produces pancreatic juice.
**Duodenum**
•This is the first part of the small intestine.
**Ileum**
i)Digestion of food ends here.
ii)Digested food is absorbed into the blood stream.
**The large intestine**
•This is the part where water is absorbed in the colon.
**The rectum**
•This prepares undigested food into feaces. It also storesfeaces.
Anus
•This consists of muscles that can open and close. This controls the out movement of feaces and gases.

**Activity**
1. Give the use of the teeth during digestion.
2. Mention the digestive juice produced by the liver.
3. Identify the part of the digestive system where alcohol absorbed.
4. State the importance of hydrochloric acid during digestion of food.

## Lesson 3: Disorders and Diseases of the Digestive System

By the end of this lesson, you should be able to;

i) give the disorders of the digestive system.

ii) mention the diseases of the digestive system.

**You will need the following materials**

Pens, notebook,pencils, rubber

**Introduction**

Hello, today you are looking at conditions that prevent the digestive system from performing its function properly. These conditions are called disorders. Think of such disorders that can affect the digestive system.

**Table showing disorders and diseases of the digestive system**

| Disease/ disorder | Cause | Signs and symptoms | Prevention/control |
|---|---|---|---|
| Vomiting | •too much alcohol<br>•diseases like malaria,<br>•food poisioning<br>•food allergy<br>•worms<br>•pregnancy | •Throwing up of food from the stomach through the mouth | •Take the patient to a healthcentre for treatment |
| Indigestion | Not chewing food properly | •A lot of discomfort in the stomach<br>•Burning feeling in the chest cavity<br>•Heart burn<br>•Tiredness | •Chew food properly<br>•Eat what is enough at a go |
| Constipation | lack of enough roughage in the diet | •Passing out dry and hard faeces<br>•Difficulty in passing out faeces | •Feed on foods rich in roughages e.g. cabbages, spinach, etc.<br>•Drink a lot of fruit juice and water regularly |

| | | | |
|---|---|---|---|
| **Diarrhoea** | Virus, bacteria or protozoa | •Passing out watery stool | •Give oral rehydration solution (ORS)<br>•Give a lot of fluids<br>•Seek medical attention as soon as possible |
| **Dysentery** | Bacteria, protozoa | •Diarrhea with blood stains<br>•Vomiting<br>•Abdominal pain<br>•Headache<br>•Body weakness | •Seek medical attention as soon as possible |
| **Typhoid** | Bacteria | •Diarrhoea with mucus<br>•Inflammation of the intestine<br>• Frequent defecation with a lot of pain in the lower abdomen<br>• Headache<br>• Drink clean boiled water<br>• Wash hands with soap and clean water before eating food<br>• Wash hands after visiting the latrine or toilet | • Seek medical attention as soon as possible |
| **Cholera** | Bacteria | •Severe and frequent vomiting<br>•It can lead to dehydration and death within 48 hours | •Drink clean boiled water<br>•Drink clean boiled water<br>•Wash hands with soap and clean water before eating food<br>•Wash hands after visiting the latrine or toilet |

| | | | |
|---|---|---|---|
| **Appendicitis** | Stonesand other indigestible solids get trapped in the appendix | • Inflammation of the appendix leading to pain in the lower abdomen | • Seek medical attention for a surgical operation |
| **Peptic ulcers** | Bacteria<br>• Taking long without eating | • Sores in the stomach<br>• Chronic sharp pain in the stomach<br>• Frequent heart burn | • Seek medical attention<br>• Chew magnesium to stop heart burn<br>• Avoid foods that have a lot of acid |

**Self-testingexercise**

1. Think of what will happen to you if you do not chew food properly.
2. Suggest a reason why you need to drink enough water after eating food.
3. Think of a digestive disorder that someone who has no teeth is likely to get.
4. Think of what will happen if you don't eat food on time.
5. Why is it good to first sort rice at home before cooking?
6. Prepare the ORS locally at home using the following materials; salt, sugar, clean cool boiled water

**Steps to be followed;**

i) Wash hands with clean water and soap
ii) Get a clean container and pour one litre of clean cool boiled water
iii) Measure one levelled teaspoonful of salt.
iv) Measure eight levelled teaspoonful of sugar
v) Stir and make a solution
vi) Taste the solution

## Lesson4: Keeping the Digestive System Healthy

By the end of this lesson, you should be able to;
i) give the behaviours and habits of maintaining proper functioning of the digestive system.
ii) explain why such behaviours and habits should be maintained.

**You will need the following materials**
Pens, notebook, pencils

**Introduction**
Hello, today you are going to look at the behaviours and habits you can do to maintain the proper functioning of the digestive system. Mention some of these habits that you can do.
i) Always prepare and serve food in clean places and using clean containers.
ii) Wash hands with clean water before handling food.
iii) Always eat well-cooked food which has been kept in clean utensils.
iv) Have daily physical exercises to improve the performance of the digestive system.
v) Donot drink alcohol and avoid smoking.
vi) Avoid eating stale or rotten food.
vii) Chew food properly before swallowing it.
viii) Eat food that make up a balanced diet.
ix) Have regular and enough meals.
x) Always eat what is enough at a time.
xi) Avoid eating leftover food without first warming it.
xii) Wash fruits and vegetables before eating them raw.
xiii) Eat well cooked food for easy digestion.
xiv) Do not eat food that has dropped on the floor.

**Self-testing exercise**
1. Why are we advised to prepare food in clean places?
2. Think of what can happen you eat food with unwashed hands.
3. Think of the need for performing physical exercises to the body
4. Today you should participate in preparing food and washing utensils at home
5. Why should meat or pork be cooked well before eating it?

# THEME: THE ENVIRONMENT

## Topic: Components of the Environment (Soil)

## Lesson 1: TypesofSoil

**By the end of this topic, you should be able to;**

i) mention the types of soil.
ii) givethe characteristics of each type of soil.

**You will need the following materials**

Pens, notebook,pencils, loamsoil, clay soil and sand soil

**Introduction**

Hello, in Primary Three,you learnt about soil.

1. What is soil?
2. What are the components of soil?
3. What is soil profile?
4. Give the types of soil and their uses to people.

Soilis the upper layer of the earth in which plants grow.

**Types of soil**

The three types of soil include;

i) Sandy soil
ii) Loam soil
iii) Clay soil

**Characteristics of the types of soil**

| Loam Soil | Clay Soil | Sandy Soil |
|---|---|---|
| •It is dark in colour<br>•It is well aerated<br>•Contains all soil components in balanced amounts<br>•Contains balanced particles of sand and clay<br>•Good for crop growing because it contains a lot of humus | •It has smooth fine particles and little humus<br>•Holds (keeps) a lot of water<br>•It is sticky when wet and hard when dry | •It allows water to pass through it easily<br>•Its particles are big and rough<br>•Well aerated because of the large air spaces<br>•Lack humus and mineral salts |

**Uses of soil**

i) Loam soil is used for growing crops because it has a lot of humus.
ii) Clay soil is used to make bricks, tiles, pots, cups, flower vessels.
iii) Sandy soil is used to construct or build houses.
iv) Sandy soil is used to make glass.
v) Soil is a home to some living organisms like earthworms, termites, squirrels, etc.

**Activity**

1. Name the type of soil that has big particles.
2. State one importance of each of the following types of soil.

i) Sandy soil
ii) Loam soil
iii) Clay soil

3. Why is sand soil not good for crop growing?
4. Which type of soil holds water for a long time?

## Lesson 3: Soil Erosion

**By the end of this lesson, you should be able to;**

i) identify the agents of soil erosion.
ii) givethe causes of soil erosion.

**You will need the following materials**

Pen, notebook, pencil

**Introduction**

Hello, in most cases when it rains heavily, soil is removed from its original place to other places.

**How do we call this?**

The things that carry this soil are called agents of soil erosion. Soil erosion is the removal of top soil from one place to another.

**Agents of soil erosion**

i) Strong wind
ii) Fast flowing water
iii) Moving animals

**Causes of soil erosion**

i) Overgrazing
ii) Deforestation
iii) Over-cultivation
iv) Monocropping
v) Planting crops along the slope
vi) Bush burning

**Types of soil erosion**

i) Sheet erosion
ii) Rill erosion
iii) Gully erosion
iv) River bank erosion
v) Splash erosion or rain drop erosion

**Effects of soil erosion**

i) It causes silting (mud settling in lakes, rivers)
ii) It makes soil lose fertility (causes soil exhaustion)
iii) It causes blockage of drainage system
iv) It washes away plants

**Activity**

1. Explain the term soil erosion.
2. Identify any three agents of soil erosion.
3. Mention the causes of soil erosion common in your community.
4. Give two types of soil erosion common in your community.
5. How does soil erosion affect food production in your community?

## Lesson 4: Prevention and Control of Soil Erosion

**By the end of this lesson, you should be able to;**

i) State the ways of controlling and preventing soil erosion.
ii) demonstrate how to control soil erosion.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, today you will learn about how you can control and prevent soil erosion in your community.Soil erosion can be controlled and prevented by practicing the following;

i) Terracing
ii) Contour ploughing
iii) Planting wind breaks
iv) Cover cropping
v) Strip cropping
vi) Afforestation
vii) Re-afforestation
viii) Mulching
ix) Agro forestry
x) Crop rotation
xi) Avoiding burning vegetation
xii) Intercropping (mixed cropping)

**Activity**

1. Mention any four ways of controlling soil erosion in your community.
2. How can soil erosion be controlled in your home compound?
3. State two ways of controlling soil erosion in hilly areas.
4. Why do people plant trees in their compounds?

## Lesson 4: Soil Conservation

**By the end of this lesson, you should be able to;**

i) describe soil conservation.
ii) discussthe different methods of soil conservation.

**You will need the following materials**

Pens, notebook,pencils

**Introduction**

Hello, today you will learn about the good use,management and preservation of soil with its resources. You are looking at the different ways of keeping soil safe without losing fertility. Mention some of these practices.

The methods of conserving soil include; mulching, afforestation, terracing, intercropping (mixed cropping), growing cover crops, planting wind breaks, alley cropping, contour ploughing, strip cropping, crop rotation, mixed farming, agro forestry, controlled grazing.

**Mulching**
It is the covering of top soil with dry vegetation or plant materials e.g. grass cuttings, maize stalks, dry leaves,etc.
**Advantages of mulching**
i) Mulching controls the growth of weeds.
ii) Mulching improves soil fertility.
iii) Mulching controls soil erosion by reducing the speed of fast flowing water.
iv) Mulching maintains water in the soil.

**Crop rotation**
This refers to the growing of different crops on the same piece of land season after season.

**Advantages of crop rotation**
i) It improves soil fertility.
ii) It controls pests and diseases.
iii) It controls soil erosion.

**Activity**
1. Define the term mulching.
2. Mention the advantages of mulching.
3. As a local farmer, think of what you can do to prevent water from getting lost from the soil.
4. How does mulching control soil erosion?
5. Carry out those practices that will help your crop grow well like watering the crop, manuring, spraying, weeding, gap filling and others.

## Lesson 5: Making Compost Manure

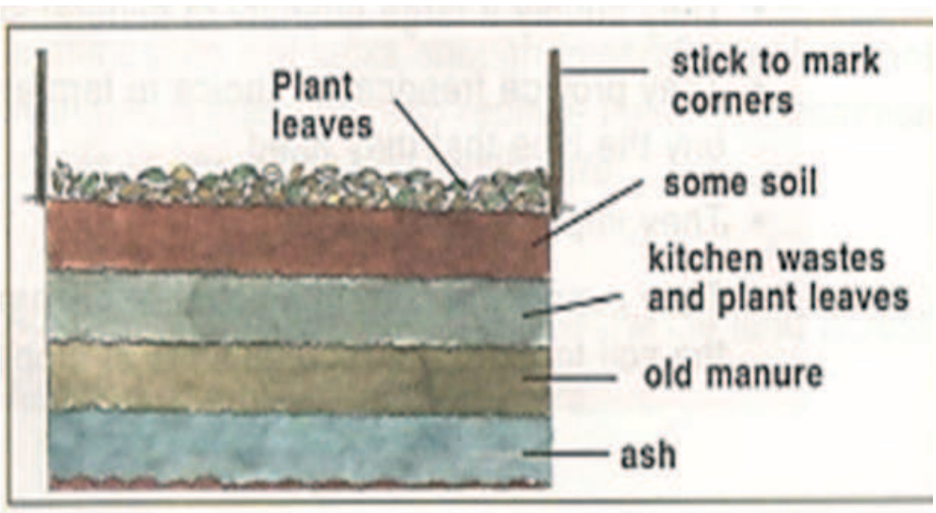
**By the end of this lesson, you should be able to:**
- name materials used to prepare compost manure.
- preparecompost manure.

**You will need the following materials**
Pens, notebook, pencils, leaves, hoe, stick, water, spade, garden fork, wheel barrow

**Introduction**
Hello, in this lesson, you will learn the steps that will help you be able to prepare compost manure. Follow the guidelines shown below to prepare compost manure.
**Project Work**
**Making compost manure**
1. Mark an area of 1.5 x 1.5 metres on a flat well drained place.
2. Dig a hole of about 60cm deep to enable air to pass through freely.
3. Get materials like household refuse, leftover food, plant materials,

kitchen wastes and spread them evenly over the marked area to a height of about 15cm.

4. Spread some top soil or ash over the layer and water slightly.
5. Continue to spread layers of 15cm thickness and repeat the above process `until the height of the heap is 1.2 metres to 1.5 metres.
6. You will dig three other pits aside for transferring the manure during the turning process.
7. Allow the heap to rot for two weeks.
8. You should keep watering the heap so that it doesnot dry.
9. After two weeks, the heap is turned over. Use a garden fork to remove the top layer and place it inside another marked ground close to the heap.
10. Repeat the procedure until the whole heap has been turned over.




*A compost pit*

# THEME: MATTER AND ENERGY

## Topic: Heat Energy

## Lesson 1: States of Matter

**By the end of this lesson, the learner should be able to:**

i) define matter.
ii) mention the states of matter.

**You will need the following materials**

Pens, pencils, notebook, stone, water, balloon, brick, cooking oil

**Introduction**

Hello, in Primary Four,you learnt about air and properties of air. In this topic,you will learn about things that have weight and occupy space. How do we call anything that has weight and occupies space?

Matter is anything that occupies space and has weight.Matter is made up of small particles called atoms.

**States of matter**

Matter exists in three states namely;

i) Solid state
ii) Liquid state
iii) Gaseous state

**Solidstate**

Examples of solids include; stones, tables, chairs, ruler, ice, bricks, wood, books, iron,etc.

**Characteristics of solids**

i) Molecules are closely packed together.
ii) There are strong forces between particles.
iii) Solids have a definite shape.
iv) Solids have a fixed volume.

**Liquidstate**

Examples of liquids include; water, paraffin, milk, soda, urine, blood, cooking oil,petrol, juice, beer,etc.

**Characteristics of liquids**

i) Molecules are loosely packed.
ii) There are weak forces between particles.
iii) Liquids do not have a definite shape. (Liquids take the shape of a container in which they are).

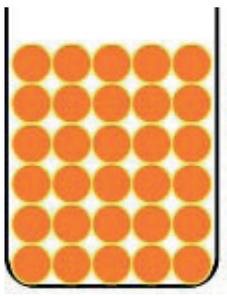
**Gaseous state**

Examples of gases include; oxygen, nitrogen, carbon dioxide and rare gases.

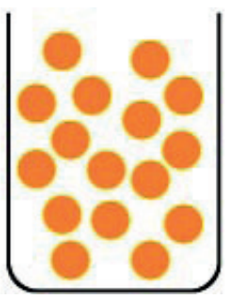
**Characteristics of gases**

i) Molecules are far apart.
ii) There are no forces between particles.
iii) Gases have no definite shape.
iv) Molecules move freely.

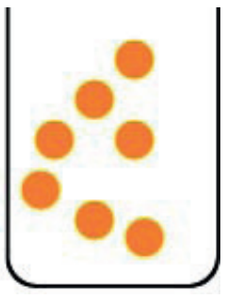
**Arrangement of molecules in the states of matter**



Solid state



Liquid state



Gaseous state

**Activity**

1. Define matter.
2. Write down the three states of matter.
3. Why is air regarded as matter?
4. Draw the arrangement of molecules in solid state, liquid state and gaseous state.

## Lesson 2:Energy

**By the end of this lesson, you should be able to;**

i) mention the types of energy.
ii) give the forms of energy.

**You will need the following materials**

Pens, pencils, notebook

**Introduction**

Hello, today you will learn about energy. For you to do any work, you need energy. What is energy?Energy is the ability to do work.

**Forms of energy**

**Examples of forms of energy**

i) Heat energy
ii) Sound energy
iii) Light energy
iv) Electric energy
v) Solar energy
vi) Chemical energy
vii) Magnetic energy

viii) Mechanical energy

**Types of mechanical energy**

There are two types of mechanical energy. These are;

- Kinetic energy
- Potential energy

**Kinetic energy**

Kinetic energy is the type of energy possessed by an object that is moving. Examples of objects that have Kinetic energy include;

i) A ball thrown in air
ii) An aeroplane flying
iii) Moving vehicles on the road
iv) A ball rolling on the ground
v) Leaves falling to the ground from a tree, etc.

**Potential energy**

Potential energy is the energy possessed by an object at rest. It can also be defined as the energy possessed by an object by being in a certain position. Examples of objects having potential energy are;

i) A pupil sitting on a chair.
ii) A baby sleeping on the bed above the ground.
iii) A box placed on the table.
iv) A teacher standing on a raised stand.
v) A stone raised above the ground.
vi) Books in the cupboard.
vii) A mango fruit on the tree

**Heat energy**

It is a form of energy that increases the temperature of an object.The sources of heat energy are the sun, burning candle, hot flat iron, burning firewood, electricity.

**Uses of heat energy**

i) Heat energy is used for cooking food.
ii) Heat is used for ironing clothes.
iii) Heat is used for boiling water
iv) Heat from the sun is used to dry harvested crops.

**Activity**

1. Define energy.
2. Mention two types of energy.
3. What type of energy is possessed by a cup placed on a table?
4. Define heat.
5. Write two forms of heat energy.
6. What is the main source of heat on earth?

## Lesson 3: Heat Transfer

**By the end of this lesson, you should be able to;**

i) mention the ways how heat travels in different states of matter.
ii) defineconduction, convection and radiation.

**You will need the following materials**

Pens, pencils, notebook

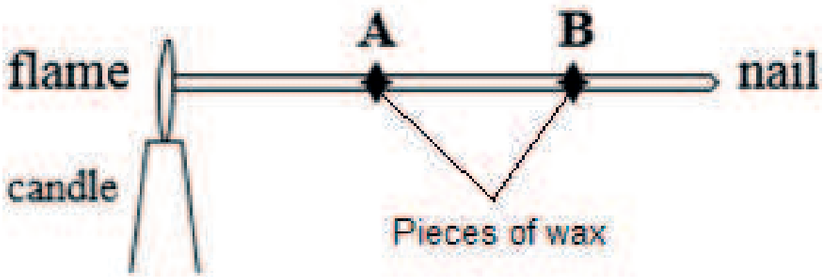
**Introduction**

Hello, in this lesson, you will learn about how heat moves in different states of matter.There are three ways through which heat travels. They include;

i) Conduction - solids
ii) Convection – liquids and gases
iii) Radiation – space and vacuum

**Conduction is the process by which heattravels through solids.**

Experiment to show conduction of heat




**Convection is the process by which heat travels through liquids and gases.**

Experiment to show convection in liquids and gases

1. Draw a kettle with boiling water
2. Draw smoke coming out of the kitchen through the chimney

**Radiation is the process by which heat travels through space and vacuum.**

**Examples of radiation in nature**

1. Draw clothes drying under sunshine
2. Draw a person drying harvested crops
3. Draw a person warming himself /herself on a fire place

**Comparison of heat transfer**

- Heat travels fastest in gases because the molecules are far apart.
- Heat travels slowest in solids because the molecules are closely packed.

**Activity**

1. Name three ways through which heat travels.
2. In which state of matter does heat travel by conduction?
3. In which state of matter does heat travel;

i) slowest
ii) fastest
4. By what process does heat from the sun reach the earth?
5. By what process does heat move through liquids?

## Lesson 3: Temperature

**By the end of this lesson, you should be able to:**
i) define temperature.
ii) give units for measuring temperature.

**You will need the following materials**
Pens, pencils, notebook

**Introduction**
Hello, in Primary Four,you learnt about temperature as an element of weather.
What is temperature?
Temperature is the degree of hotness or coldness of an object.Temperature is measured in units called degrees.A thermometer is an instrument used to measure temperature.

**Temperature scales**
There is thecentigrade scale or Celsius scale and the Fahrenheit scale,

**Heat**
Heat is the form of energy that rises the temperature of an object. It makes an object warm or hot.

**Activity**
1. Define temperature.
2. Mention the units used to measure temperature.
3. Name the instrument used to measure temperature.
4. Write down onedifference between heat and temperature.
5. Mention two temperature scales.

## Lesson 4: Thermometers

**By the end of this lesson, you should be able to;**
i) name the types of thermometers.
ii) give the liquids used in thermometers.

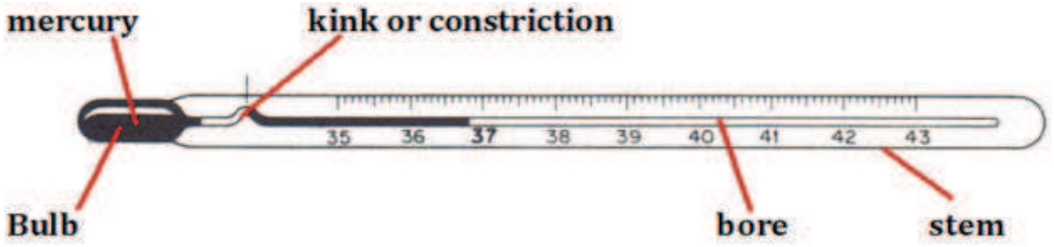
**You will need the following materials**
Pens, pencils, notebook

**Introduction**
Hello, today you will learn about thermometers.A thermometer is an instrument used to measure temperature.Alcohol and mercury are the two liquids used in thermometers.

**Types of thermometers**

i) The clinical thermometer
ii) Minimum and maximum thermometer
iii) Wall thermometer

**The clinical thermometer**




**Importance of each part**

Kink / Constriction - Prevents the backflow of mercury before the reading is taken.
Bulb - Stores mercury.
Bore -Allows expansion and contraction of mercury.
Stem -Provides the scale where the temperature is read.

**Reasons why mercury is used in the thermometer**

i) Mercury can easily be seen in a glass.
ii) Mercury is a good conductor of heat.
iii) Mercury does not stick on the walls of the thermometer.

**Activity**

1. Mention two types of thermometers.
2. Name two liquids used in thermometers.
3. Why is mercury commonly used in thermometers?
4. Name the instrument used to measure the human body temperature.
5. State the use of a kink in a clinical thermometer.

## Lesson 4: Converting Temperature

**By the end of this lesson, you should be able to;**

i) change from Celsius to Fahrenheit.
ii) convert from Fahrenheit to Celsius.

**You will need the following materials**

Pens, pencils, notebook

**Introduction**

In the previous lessons,you have learnt about temperature scales; the Celsius scale (oC) and Fahrenheit scale (oF). In this lesson, you will learn how to change from one scale to another.
Changing temperature from Celsius scale to Fahrenheit scale
Formula OF = (OC x 9/5) + 32

Example
Change 20OC to OF
Formula OF = (OC x 9/5) + 32O
= (20O x 9/5) + 32O
= (4 x 9) + 32O
= 36O + 32O
= 68OF
Therefore 20OC = 68OF

**Activity 1**
**Work out the following.**
1. Change 10OC to degrees (OF) Fahrenheit.
2. Convert 25OC to (OF) Fahrenheit.
3. Change 50OC to (OF) Fahrenheit.
4. Change 100O to (OF) Fahrenheit.

**Changing temperature from Fahrenheit scale to Celsius scale**
Formula OC = (OF – 32) x 5/9
**Example.**
Change 68O to OC (Celsius)
Formula OC = (OF – 32O) x 5/9
= (68O -32O) x 5/9
= 36 x 5/9
= 4 x 5
= 20OC
Therefore, 68OF = 20OC

**Activity 2**
**Work out the following.**
1. Convert 32OF to OC (Celsius)
2. Change 50OF to OC (Celsius)
3. Convert 77OF to OC (Celsius)
4. Change 212OF to OC (Celsius)

# THEME:SCIENCE IN HUMAN ACTIVITIES AND OCCUPATIONS

## Topic: Crop Growing
## Lesson1: Tuber Crops

**By the end of this lesson, you should be able to;**

i) mentionexamples of tuber crops.
ii) givethe characteristics of common tuber crops.

**You will need the following materials**

Pens, pencils, notebook, cassava tuber, potato tuber, yam tuber

**Introduction**

inPrimary Four,you learnt about growing crops. Mention the different kinds of crops grown in your community. In this topic, you will learn about tuber crops. Tuber crops are crops that store food in the swollen underground stems or roots.

**There are two types of tuber crops:**

i) Root tubers
ii) Stem tubers

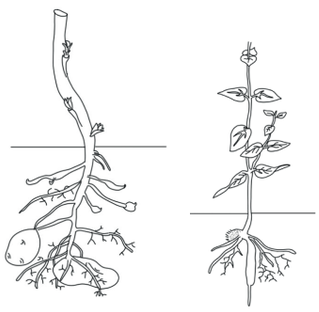
**Root tubers**

Root tubers are crops which store food in their swollen underground roots. Examples of root tubers include sweet potatoes, carrots, cassava and turnips.



**Stem tubers**

Stem tubers are crops which store food in the swollen underground stems. Examples of stem tubers include Irish potatoes and yams.



**Activity**

1. What are tuber crops?
2. Name the food value we get from eating tuber crops.
3. Write down three examples of tuber crops.
4. State the meaning of stem tubers.
5. Identify any two examples of stem tubers.

## Lesson2: Growing and Caring for Tuber Crops

**By the end of this lesson, you should be able to;**

i) mention the ways of growing tuber crops.
ii) givethe ways of caring for tuber crops.

**You will need the following materials**

Pen, pencil, notebook, cassava cutting

**Introduction**

Hello, in this lesson you will learn about how to grow and care for tuber crops.

**Growing cassava**

Cassava is grown by planting Stem cuttings.Part of the cassava stem is cut and placed in the ground.

**Growing sweet potatoes**

Sweet potatoes are grown by planting stem cuttings or vines.The vines are planted on ridges or mounds.

**Growing carrots and turnips**

•Carrots and turnips are grown from seeds.
•Seeds for carrots and turnips can be planted in a nursery bed.
•After some days, seedlings are removed from the nursery bed and taken to the main garden.
•A trowel is a garden tool used for transplanting seedlings.

**Growing Irish potatoes**

•Irish potatoes are stem tubers.
•The stem tubers have buds or eyes.
•The new plants develop from the buds or eyes.
•Irish potatoes are grown by planting stem tubers.

**Growing white yams**

•The top part of the stem is cut off and planted in the soil.
•White yams usually grow well in swampy areas.

**Ways of caring for tuber crops**

•By weeding crops. It is the removal of unwanted plants from the garden.
•By pruning crops. It is the removal of excess branches and leaves from a plant.
•By thinning crops. It is the removal of excess seedlings from the garden.
•By watering crops.

**Activity**

1.Give one example of root tubers.
2.How are the following tuber crops planted?

| Tuber crop | Method of propagation |
|---|---|
| Cassava | Using stem cuttings |
| Carrots | |
| Irish potatoes | |
| Sweet potatoes | |

2. Mention four ways of caring for tuber crops.
3. Name the garden tool used for transplanting seedlings.
4. In which season do farmers plant crops?

## Lesson 3:Common Pests and Diseases of Tuber Crops

**By the end of this lesson, you should be able to;**

i) mention the common pests that attack tuber crops.
ii) givethe ways of controlling pests and diseases of tuber crops.

**You will need the following materials**

Pens, pencils, notebook

**Introduction**

Hello, in Primary Four,you learnt about crop pests and diseases. In this lesson, you will learn about pests and diseases of tuber crops.
The following are examples of common tuber crop pests;

- Monkeys
- Rats
- Wild pigs
- Moles
- Nematodes
- Squirrels
- Caterpillars
- Locusts
- Army worms
- Aphids
- Eelworms

**Methods of controlling pests to tuber crops**

- By practicing crop rotation to break the life cycle of pests.
- By putting scarecrows in the garden.
- By spraying crops with pesticides to kill pests.
- By building fences around the garden to control big animals. e.g. wild pigs, elephants,etc.
- By using poison
- By trapping animals e.g. rat traps.

**Diseases of tuber crops**

| Cassava | Sweet potatoes | Carrots and turnips |
|---|---|---|
| •Cassava mosaic | •Potato blight | •Bacterial wilt |
| •Leaf spot | •Bacterial wilt | •Leaf spot |
| •Bacterial blight | | •Leaf rust |
| •Brown streak | | |

**Methods of controlling diseases in tuber crops**

- By spraying and dusting crops with pesticides.
- By practicing crop rotation.
- By planting crops which are resistant to diseases.
- By uprooting and burning infected crops.
- By early planting to prevent pests and diseases to multiply.

**Effects of pests and diseases on tuber crops**

- They reduce on crop yield.
- They cause rotting of tubers.
- Tubers developholes and leaves.
- The leaves turn yellow.
- The leaves start curling.

**Activity**

1. What are crop pests?
2. Write down four examples of crop pests.
3. Mention any two ways of controlling pests of tuber crops.
4. Give one sign of pest and disease attack on tuber crops.
5. State two effects of pests and diseases on tuber crops.

## Lesson 4: Practices of Growing Tuber Crops (project)

By the end of this lesson, you should be able to plant and care for any tuber crop of your choice.

**You will need the following materials**

Pens, pencils, notebook, hoe, watering can, poles, grass, carrot and turnip seeds

**Introduction**

Hello, in this project, you will plant and care for any tuber crop of your choice; cassava, carrots, sweet potatoes,turnips, Irish potatoes, yams. Remember that the crops take different amounts of time to mature.

What is required?

i) Identify a place where to plant your tuber crop.
ii) Prepare the place where to plant the tuber crop.
iii) Apply compost manure that you prepared earlier.
iv) Plant your tuber crop.
v) Keep watering in case there is no rain.
vi) Weed your crops.
vii) Remove excess seedlings where need be(thinning).
viii) Control pests and diseases e.g. uprooting infected crops.
ix) Remove excess branches or leaves from the crop (pruning).
x) Monitor and care for your crop until harvesting time.
xi) Harvest your crops.

# THEME: THE WORLD OF LIVING THINGS

## Topic: Bacteria and Fungi

## Lesson 1: Characteristics of Bacteria

**By the end of this lesson, you should be able to;**

i) describe the nature of bacteria.
ii) explain how bacteria reproduce.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, you are going to learn about the very small living organisms that cannot be seen by our naked eyes and have one cell. How do we call these organisms?

**Characteristics of bacteria**

i) Bacteria are made up of one cell.
ii) Bacteria can live in water, air, soil, plants, animals, etc.
iii) Bacteria don't have a uniform shape and size.
iv) Bacteria can't be seen with our naked eyes.
v) A microscope is used to see tiny living organisms like bacteria.
vi) Bacteria need moisture, food and warmthin order to grow.
vii) Bacteria reproduce by dividing themselves into parts (by cell division/ binary fission).

**Activity**

1. What are bacteria?
2. How do bacteria reproduce?
3. Why are bacteria called single celled organisms?
4. Name the instrument used by doctors to see bacteria.
5. Mention any one place where bacteria can be found.
6. Identify one condition needed by bacteria to multiply.

## Lesson 2: Useful and Harmful Bacteria

By the end of this lesson, you should be able to;

i) describe the importance of useful bacteria.
ii) give the dangers of harmful bacteria.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you are going to learn about how bacteria are useful in the environment. And also how these bacteria are harmful.

Bacteria are useful in the following ways;

i) Bacteria cause decay of dead plants and animals in the environment.
ii) Bacteria reduce the volume of faeces in pit latrines by feeding on it.

iii) They help in the production of milk products like cheese and yoghurt.
iv) Nitrogen fixing bacteria found in the root nodules fix nitrogen in the soil.
v) Bacteria are used in making of vaccines.

**Bacteria are harmful or dangerous in the following ways;**
i) They cause diseases to people, animals and plants.
ii) They make food to go bad (food poisoning).
iii) Bacteria make milk turn sour.

**Activity**
1. State two ways how bacteria are useful in the environment.
2. Mention two ways how bacteria are harmful.
3. How are bacteria useful during formation of soil?
4. Think of a way how bacteria are useful in pit latrines.
5. Why is it not good to pour chemicals like acids in pit latrines?
6. Mention any four diseases caused by bacteria in human beings.
7. Mention one disease in plants caused by bacteria.

## Lesson 3: Fungi

**By the end of this lesson, you should be able to;**
i) mention the examples of fungi.
ii) give the uses of fungi.

**You will need the following materials**
Pens, notebook, pencils

**Introduction**
Hello, today you are going to learn about a different group of organisms. At first, these organisms were thought to be plants. However, today, we know that they are completely different from plants. These are the fungi.
Fungi
i) Fungi are not plants because they do not have chlorophyll.
ii) They do not have true roots.
iii) They feed by absorbing nutrients from decaying matter and others feed on living things.
iv) Fungi grow where there is moisture.
v) Their bodies are made of branched threads called hyphae.
vi) Some fungi reproduce by means of spores.

**Examples of fungi include the following:**
Mushrooms, toadstools, yeast, puffballs and moulds

**Mushrooms**
Mushrooms are examples of useful fungi
- They reproduce by means of spores.
- They feed by absorbing nutrients from decaying matter.
- Some mushrooms are eaten as food.

**Structure of a mushroom**




**Functions of the parts**

- Cap:It holds and protects the gills
- Gills: They produce and store spores
- Stalk:It holds the cap in an upright position
- Ring: It holds the cap when it is still young

**Uses of fungi**

i) Some fungi are eaten as food e.g. mushrooms.
ii) Yeast is used to bake bread.
iii) Yeast is used to ferment alcohol.
iv) Used in making antibiotics.
v) They help in the rotting of the remains of dead plants and animals.

**Dangers of fungi**

i) Some cause disease to humans, animals and plants.
ii) Some fungi are poisonous if eaten e.g. toadstools.
iii) Some fungi cause food to go bad e.g.moulds on bread and food.
iv) Diseases caused by fungi in plants include; potato blight, maize rust, tomato blight, blast in rice.
v) Diseases caused by fungi to humans include; ring worm, athlete's foot, candidiasis, jock, itch, thrush, eczema

**Activity**

1. Give a reason why fungi are unable to make food.
2. Mention at least four examples of fungi in the environment.
3. Draw a mushroom and label all the parts.
4. How do mushrooms obtain food?
5. Give two importance of fungi in the environment.
6. Mention one disease caused by fungi in human beings.

## Lesson 4: Prevention and Control of Bacterial/ Fungal Diseases

By the end of this lesson, you should be able to;

i) mention the ways of controlling diseases caused by bacteria / fungi.
ii) give the diseases caused by bacteria and fungi.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you are going to learn about the ways of controlling and preventing diseases caused by bacteria and fungi.

**Ways of preventing and controlling bacterial and fungal diseases**

i) Sterilizing surgical instruments and injection needles using heat from steam or boiling.
ii) Boiling milk before drinking.
iii) Cooking food properly before eating.
iv) Drinking clean boiled water.
v) Covering and cleaning wounds using antiseptics.
vi) Spreading beddings and plates under sunlight.
vii) Washing hands, clothes, the body and brushing teeth, etc.
viii) Proper ventilation of houses.

**Activity**

1. Name one fungus eaten as food.
2. Give two ways of preventing diseases caused by bacteria and fungi.
3. Mention two diseases caused by fungi in human beings.
4. State one difference between bacteria and fungi.
5. State one reason for boiling water fordrinking.
6. Explain why we should put ventilators on houses.
7. Name two diseases caused by fungi to plants.

# THEME: MANAGING CHANGES IN THE ENVIRONMENT

## Topic: Changes in the Environment

## Lesson 1: Types of Changes in the Environment

**By the end of this lesson, you should be able to;**

i) give the types of changes in the environment.
ii) mentionexamples of each type of change in the environment.

**You will need the following materials**

Pens, notebook,pencils, salt, sugar, water

**Introduction**

Hello, you are going to learn about changes in the environment. There are several types of changes that take place in the environment. They include;

i) Biological changes
ii) Physical changes
iii) Chemical changes

**Biological changes**

These are changes that take place in the life of living things.

**Characteristics of biological changes**

i) They take place in living things.
ii) They cannot be reversed (irreversible).

**Examples of biological changes**

i) Growth
ii) Flowering
iii) Reproduction
iv) Shedding leaves
v) Moulting
vi) Sweating
vii) Transpiration
viii) Ripening of fruits

**Chemical changes**

These are changes that form new substances. They are changes that cannot be reversed (irreversible).

**Characteristics of chemical changes**

i) They cannot be reversed (irreversible)
ii) They form new substances

**Examples of chemical changes**

i) Burning
ii) Decay of matter
iii) Digestion
iv) Rusting
v) Respiration
vi) Milk turning sour
vii) Fermentation
viii) Boiling an egg

**Physical changes**

These are changes that do not form new substances. They are changes that can be reversed (reversible).

**Characteristics of physical changes**

i) They can be reversed (reversible)
ii) They do not form new substances.

**Examples of physical changes**

i) Evaporation
ii) Condensation
iii) Deposition
iv) Sublimation
v) Freezing
vi) Melting
vii) Stretching a rubber band
viii) Dissolving a solute in a solvent
ix) Expansion
x) Contraction

**Activity**

1. Name the three types of changes in the environment.
2. How do we call changes that take place in living things?
3. Give two examples of biological changes in plants.
4. Give one difference between physical changes and chemical changes.
5. Why is rusting regarded as a chemical change?
6. Mention one characteristic of physical changes.

## Lesson 2: Effects of Changes in the Environment

**By the end of this lesson, you should be able to;**

i) give the positive effects of changes in the environment.
ii) mention the negative effects of change in the environment.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, today you are going to learn about the effects or results of the changes you learnt about in the previous lesson. These effects/ results can be good or bad.

**Positive (good) effects of changes in the environment**

i) Young organisms are born to replace old ones.
ii) Old organisms die to create room for younger ones.
iii) Planting of trees controls soil erosion.
iv) Planting of trees increases amount of rainfall in the environment.
v) Houses protect people and their property from bad weather.
vi) Houses protect people from dangerous animals.
vii) Roads help to improve transport.

**Negative (bad) effects of changes in the environment**

i) Burning pollutes the environment.
ii) Burning can destroy life and property.
iii) Over population leads to destruction of forests for farming.
iv) Rusting makes sharp tools blunt.
v) Rusting makes tools weak.
vi) Environmental degradation.
vii) Natural disaster e.g. floods, earthquakes.

**Activity**

1. State one reason why people plant trees in the environment.
2. Mention one danger of burning bushes in the environment.
3. Give any two good effects of changes in the environment.
4. Mention any two bad effects of changes in the environment.
5. Suggest one way how roads are important in the community.

# THEME: SCIENCE IN HUMAN ACTIVITIES AND OCCUPATIONS

## Topic: Keeping Goats, Sheep and Pigs

## Lesson 1: Breeds of Goats and Sheep

**By the end of this lesson, you should be able to;**

i) describe the characteristics of breeds of goats and sheep.
ii) givethe examples of local and exotic breeds of goats and sheep.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in Primary Four,you learnt about keeping rabbits. In this topic, you will learn about keeping goats, sheep and pigs.

**Breeds of goats and sheep**

There are two main breeds of goats and sheep;

i) Local breeds or indigenous breeds.
ii) Exotic breeds.

**Local or indigenous breeds**

These are breeds which have been kept in Uganda for manymany years.

**Examples of local breeds**

| Goats | Sheep |
|---|---|
| •Mubende goat | •Blackhead |
| •The small East African goat | •Persian sheep |

**Exotic breeds**

Exotic breeds are breeds which are imported to Uganda from other countries.

Examples of exotic breeds

| Goats | Sheep |
|---|---|
| •Saanen goat | •Hampshire down |
| •Toggenburg goat | •Corriedale |
| •Angora goat | •Merino sheep |
| •Boar goats | •Romney marsh |
| •Anglo-Nubian goats | •Dorper |

**Characteristics of breeds of goats/ sheep**

| Exotic breeds | Local breeds |
|---|---|
| •They have a specific colour | •They have different colours |
| •They grow and mature very fast | •They grow and mature slowly |
| •They are less resistant to diseases | •They are more resistant to disease |
| •They need good pasture and a lot of water to drink | •They can survive on poor pasture and little water |
| •They produce a lot of milk, wool and soft meat | •They produce little milk, wool and hard meat |
| •They cannot withstand harsh weather conditions | •They can withstand harsh weather conditions |

Local breeds of animals can be improved by cross breeding.

**Activity**

1. Mention any two breeds of goats and sheep.
2. Give two examples of local breeds of goats
3. Mention two examples of exotic breeds of sheep.
4. State one reason why people rear goats at home.
5. Name one product got from sheep.
6. Mention one breed of sheep kept for wool production.

## Lesson 2: Diseasesof Goats and Sheep

By the end of this lesson, you should be able to;

i) mention diseases of goats and sheep.
ii) givethe ways of controlling diseases of goats and sheep.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you will learn about the causes, signs and symptoms, prevention/ control of diseases of goats and sheep.

| Disease | Cause | Signs and symptoms | Prevention/ control/ treatment |
|---|---|---|---|
| **Pneumonia** | Bacteria or virus | •Difficulty in breathing<br>•Coughing<br>•Loss of appetite<br>•Discharge from the nose | •Isolate and treat infected animals<br>•Treat early cases with antibiotics |
| **Foot rot** | Bacteria | •Limping<br>•Pus comes from the hooves<br>•Bad smell from the hooves | •Clean the animal hooves regularly<br>•Regular hoof trimming<br>•Treat sick animals with antibiotics |
| **Foot and mouth disease** | Virus | •Loss of appetite<br>•Lameness<br>•Loss of milk production<br>•Hooves develop pus<br>•Wounds on the tongue | •By regular cleaning of the animal house<br>•Clean the animal feet with an antiseptic solution<br>•Trim the hooves<br>•Quarantine |
| **Nagana** | Protozoa | •Fever<br>•Watery eyes<br>•Loss of appetite<br>•High temperature<br>•Anaemia and loss of weight | •Kill the tsetse flies using insecticides<br>•Clear bushes around home<br>•Use tsetse fly traps |
| **Lamb dysentery** | Bacteria | •Diarrhoea with blood<br>•Dullness<br>•Staggering while moving<br>•Sudden death in lambs | •Treat infected lambswith antibiotics<br>•Vaccinate twice a year<br>•The animal shed should be cleared regularly |
| **Anthrax** | Bacteria | •Loss of appetite<br>•High fever<br>•Sudden death<br>•Shivering<br>•Blood stained faces | •Vaccinate the animals regularly<br>•See a veterinary doctor for advice |
| **Mastitis** | Bacteria | •Swollen udder<br>•Pus and blood clots in milk<br>•Udder may stop producing milk | •Clean the milking place<br>•Use a strip cup to detect mastitis disease in milk<br>•Treat the infected animals with antibiotics<br>•Get advice from the veterinary doctor |

| | | | |
|---|---|---|---|
| **Heart water** | Protozoa | •Fever<br>•Loss of appetite<br>•The tongue comes out | •Early treatment<br>•Control ticks by spraying or dipping animals regularly |
| **Coccidiosis** | Protozoa | •Diarrhoea<br>•Weakness of the body<br>•Loss of weight in body<br>•Abortion in pregnant animals | •Give animals clean water and food<br>•Keep the animal house clean<br>•Isolate sick animals and treat them |
| **Nairobi disease** | Virus | •Blood stained diarrhoea<br>•Difficulty in breathing<br>•High fever | •No treatment<br>•Control ticks |

**Activity**

1. Write down any four diseases that attack goats and sheep.
2. How can foot and mouth disease be controlled on a farm?
3. Name one disease of goats and sheep spread by tsetse flies.
4. Mention the disease that attacks the udder of goats and sheep.
5. Name one disease of goats and sheep that is carried by ticks.
6. Mention one general way of controlling diseases of goats and sheep.

## Lesson 3: Exotic Breeds of Pigs

**By the end of this lesson, you should be able to;**

i) mention examples of exotic breeds of pigs.
ii) give the ways of controlling diseases of pigs.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you will learn about the exotic breeds of pigs and the causes, signs and symptoms and prevention/ control of diseases of pigs.

**Examples of exotic breeds of pigs**

- Large white
- Landrace
- Large black
- Poland China
- Wessex saddle back
- Hampshire

A house for pigs is called a pigsty. A pigsty should have a slanting floor for easy flow of droppings and urine.

| Disease | Cause | Signs and symptoms | Prevention/ control/ treatment |
|---|---|---|---|
| **African swine fever** | It is caused by a virus | •High fever<br>•Loss of appetite<br>•Staggering<br>•Diarrhoea with blood<br>•Coughing<br>•Difficulty in breathing | •Isolate infected animals<br>•Kill and bury infected animals<br>•Quarantine the infected area |
| **Piglet anaemia** | •Worms e.g.roundworm, tapeworm<br>•Poor feeding (malnutrition) | •Weakness of the body<br>•Rogh skin<br>•Loss of body weight | •Regular deworming<br>•Give piglets iron tablets or injections |
| **Pneumonia** | It is caused by a bacteria/virus | •Difficulty in breathing<br>•Coughing<br>•Fever | •Treat early with antibiotics<br>•Maintain proper hygiene |
| **Anthrax** | It is caused by a bacteria | •High fever<br>•Weakness<br>•Sudden death<br>•Muscular swelling | •Vaccinate regularly<br>•Kill and bury infected animals |
| **Swine flu** | It is caused by viruses | •Fever<br>•Bleeding from all body openings | •Isolate infected animals |
| **Nagana** | Protozoa | •Fever<br>•Loss of appetite<br>•Dullness<br>•Loss of weight<br>•Death can occur easily | •Treatment with drugs<br>•Control of tsetse flies |

**Activity**

1. Write down any four diseases that attack pigs.
2. Give one sign of anthrax in pigs.
3. Name one disease of pigs caused by bacteria.
4. Give two reasons why people keep pigs at home.
5. Mention one product obtained from pigs.

## Lesson 4: Care of Goats, Sheep and Pigs

**By the end of this lesson, you should be able to;**

i) mention ways you can care for goats, sheep and pigs.
ii) givethe ways of controlling diseases of pigs.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you will learn about the different ways you can care for goats, sheep and pigs on a farm.

**Ways of caring for goats, sheep and pigs**

i) Proper housing
ii) Feeding them regularly
iii) Practicing correct breeding methods
iv) Controlling diseases and parasites
v) Treatment of sick animals

**Activity**

1. What name is given to the house for;
i) Goats
ii) Sheep
iii) Pigs
2. Why should we keep animal houses clean?
3. Give a reason why we construct houses for animals.
4. Why should a pigsty have a slanting floor?
5. Mention three ways you can care for animals at home.

# THEME: HUMAN HEALTH

## Topic: Food and Nutrition

## Lesson 1: Breastfeeding

**By the end of this lesson, you should be able to;**

i) describe what breastfeeding is.
ii) give the advantages of breastfeeding.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson,you are looking at the best food for a newly born baby. What is it called? When a baby is born, the mother feeds the baby on milk from her breast.

**Breastfeeding**

Breastfeeding is the act of feeding a baby directly on milk produced by the mother's breasts.



**Advantages of breastfeeding to a baby**

i) Breast milk contains most food values.
ii) Breast milk has some antibodies that protect the baby against diseases.
iii) Breast milk is always at the right body temperature.
iv) Breast milk is easy to digest.

**Advantages of breastfeeding to a mother**

i) Breastfeeding delays the next pregnancy.
ii) Breastfeeding is cheap since you don't buy it.
iii) Breastfeeding saves time.
iv) Breast milk is ever ready to feed the baby.
v) Breastfeeding creates a love bond between the mother and the baby.

Conditions under which breastfeeding may not be allowed
When the mother is HIV positive (when mother has AIDS)

**Activity**

1. Define breastfeeding.
2. Give one advantage of breastfeeding to the baby.
3. Name the best food for a new born baby.
4. Mention one advantage of breastfeeding to the mother.

## Lesson 2: Bottle Feeding

**By the end of this lesson, you should be able to;**

i) describe what bottle feeding is.
ii) givethe advantages of bottle feeding.

**You will need the following materials**

Pens, notebook, pencils, bottles used to feed babies

**Introduction**

Hello, at home you have ever seen babies being fed on milk using a bottle. How do we call this practice?

**Bottle feeding**

Bottle feeding is the act of feeding a baby on cow's milk put in a bottle.

**Conditions that may lead to bottle feeding**

i) Death of the mother
ii) When the mother has HIV/AIDS
iii) When the mother has breast cancer
iv) When a mother cannot breastfeed due to sickness.

**Advantages of bottle feeding**

i) It saves lives of babies whose mothers are dead.
ii) It gives a mother time to do other activities.
iii) It is used when the mother cannot produce enough breast milk.

**Disadvantages of bottle feeding**

i) Bottles can easily be contaminated by germs e.g. houseflies (be made dirty)
ii) Bottles are difficult to clean.
iii) A lot of time is spent when preparing the milk.
iv) Bottle milk can easily get contaminated.
v) Cow's milk is hard to digest.
vi) Milk is expensive to buy.
vii) Bottle milk does not provide immunity to the baby.

**Activity**

1. State any one difference between breastfeeding and bottle feeding.
2. State any one advantage of bottle feeding.
3. Mention one situation where a mother is forced to use bottle feeding.
4. Give any one disadvantage of bottle feeding.
5. Draw a mother feeding a baby using a bottle.
6. Write down one disease that makes a mother not to breastfeed her baby.

## Lesson 3: Vulnerable Groups

**By the end of this lesson, you should be able to;**

i) describe what vulnerable people are.
ii) givethe examples of vulnerable groups of people.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

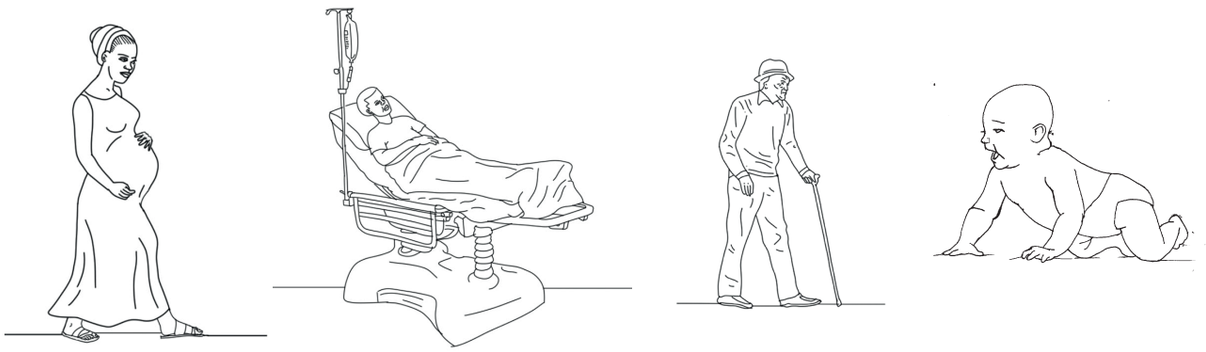
Hello, today you will learn about people in our communities who are easily attacked by diseases. These people need special care and special feeding from us the healthy people. How do we call such people in the community?

Vulnerable groups

These are groups of people whose bodies can easily be harmed by diseases due to poor feeding and care.

**Examples of vulnerable groups**

i) Pregnant women
ii) Sick people
iii) Weaning babies
iv) The elderly (very old people)
v) Breastfeeding mothers



**How to care for the vulnerable**

i) Feeding them on a balanced diet.
ii) Encouraging them to take their drugs.
iii) Taking them to health centres for treatment.
iv) Bathing them.
v) Giving them extra fluids.
vi) Feeding the elderly on food which is easy to chew such as minced meat, fish without bones, mashed fruits.
vii) Feeding them all the time because they may not eat much food at once.

**Activity**

1. Define vulnerable people.
2. State four examples of vulnerable people in your community.
3. Mention one way you care for a sick person at home.
4. Name the practice of introducing solid food to a baby?

# THEME: HUMAN HEALTH

## Topic: Primary Health Care (PHC)

## Lesson 1: Elements of Primary Health Care

By the end of this lesson, you should be able to;

i) describe the elements of PHC.

ii) givethe principles of PHC.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello,in Primary Four,you learnt about personal hygiene and sanitation. These are the elements of primary health care. In this topic, you will learn about other elements of PHC.

**Primary Health Care (PHC)**

Primary health care is the essential care in which individuals, families and communities work together to solve their health problems.

**Elements of Primary Health Care**

The following elements of PHC help to improve and maintain the health of community members.

i) Water and sanitation

ii) Immunisation

iii) Personal hygiene

iv) Family planning

v) Health education

vi) Food and nutrition

vii) Maternal and child health care

viii) Accidents and first aid

ix) Dental and oral health services

x) Provision of essential drugs

xi) Control of communicable diseases and disease vectors

**Principles of PHC**

Primary health care principles are basic rules which must be followed in carrying out health care programs. They include;

i) The health care practice should be accessible to all.

ii) members of the community must be involved in providing the health care service.

iii) The practice must promote the health of the community

iv) Equal distribution of health care to everyone.

v) Activities of the community should be organised according to priorities.

vi) The care must be accepted by the community

vii) It must use good technology

**Activity**

1. Write PHC in full.
2. What is a primary health care?
3. State any three elements of PHC.
4. State any two activities which promote personal hygiene.
5. Write down any two principles of PHC

## Lesson 2:Sanitation

**By the end of this lesson, you should be able to;**

i) mention ways of maintaining sanitation.
ii) give ways of protecting community water sources.

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you will learn about how to keep the community clean. Community hygiene is the cleanliness of the environment in which a particular community lives.

**Management of rubbish and human waste**

- Disposing rubbish in rubbish pits and burning rubbish helped to reduce the volume of rubbish in the community.
- Pit latrines and toilets should be constructed in towns and in markets for proper disposal of faeces and urine.Proper disposal of faeces and urine helps people to avoid the spread of diseases.
- Reusing waste plastic containers.Old jerry cans can be used as dustbins, feeding containers for domestic animals and flower vessels.

**Protecting water sources**

Water sources are places where people collet water for domestic use e.g. wells, dams, taps, boreholes,etc.

Ways of protecting water sources

- By cleaning the water sources regularly, by slashing grass and removing rubbish.
- By fencing the water sources to prevent animals from contaminating the water.
- Latrines should be built at least 30 meters away from the water source to avoid contamination.

**Activity**

1. Why should every home have a latrine or toilet?
2. Mention one way of maintaining community hygiene.
3. Give oneway water sources can get contaminated.
4. How can community members protect water sources getting dirty?
5. Why should a pit latrine be constructed at least 30 metres away from the water source?

## Lesson 3: Roles of Individuals, Families and Communities in Promoting PHC

By the end of this lesson, you should be able to;

i) mentionthe roles of individuals in promoting PHC.
ii) give the roles of families in promoting PHC

**You will need the following materials**

Pens, notebook, pencils

**Introduction**

Hello, in this lesson, you will learn about the responsibilities of individuals, families and communities in promoting primary health care.

**Responsibility of an individual in promoting Primary Health Care**

i) Bathing regularly.
ii) Brushing teeth every after a meal.
iii) Ironing clothes and beddings.
iv) Washing dirty clothes and beddings.
v) Washing hands before handling food.
vi) Washing hands after visiting the toilets or latrine.
vii) Cutting finger nails short.
viii) Grooming hair.
ix) Combing the hair.

**Responsibility of families in promoting Primary Health Care**

i)Feeding family members with a balanced diet.
ii)Proper disposal of rubbish.
iii)Maintaining proper sanitation by keeping the environment clean.
iv)Sharing information on health.
v)Removing breeding places for vectors near home.
vi)Boiling drinking water for family members.
vii)Proper disposal of faeces and urine in toilets or latrines.
viii)Practicing good food hygiene.

**Responsibility of a community in promoting PHC**

i)Protecting and cleaning water sources to avoid water contamination.
ii)Constructing public latrines in public places e.g. towns, taxi parks and markets.
iii)Distributing garbage containers for proper disposal of rubbish.
iv)Repairing roads to reduce accidents.
v)Participating in immunisation activities.
vi)Construction of rehabilitation centres for the less abled.

**Activity**

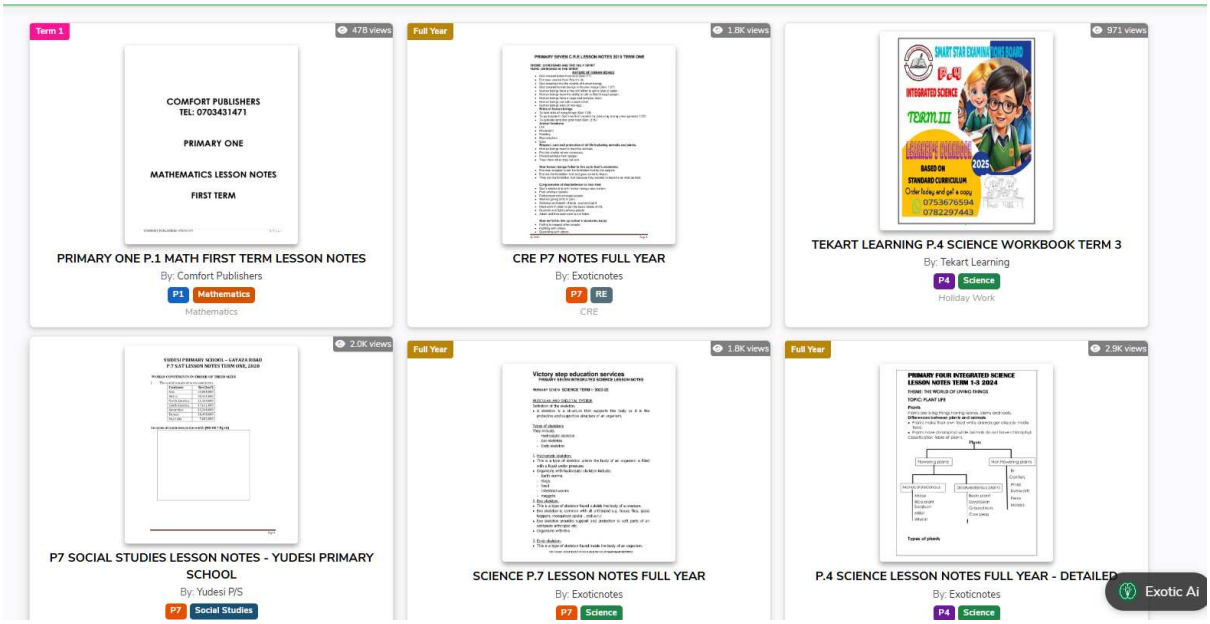
1. State any two roles of individuals in promoting PHC.
2. Mention one role of the family in promoting PHC.
3. Give one duty of the community in promoting PHC.
4. Mention one way of maintaining sanitation in a home.
5. Give one disease that can result from staying in a dirty home.




National Curriculum
Development Centre,
P.O. Box 7002,
Kampala.

**www.ncdc.go.ug**

This document was downloaded from https://exoticnotes.com




**Do you need more LESSON NOTES for Primary (All classes)?**

**Click**
**https://exoticnotes.com/notes/primary/**

**If you need LESSON NOTES for SCIENCE (P.1 – P.7)**
**Click**
**https://exoticnotes.com/notes/primary/science/**

**If you need LESSON NOTES for English (P.1 – P.7)**
**Click**
**https://exoticnotes.com/notes/primary/english/**

**If you need LESSON NOTES for Mathematics (P.1 – P.7)**
**Click**
**https://exoticnotes.com/notes/primary/mathematics/**