SCIENCE AND TECHNOLOGY

FOR

STANDARD 8

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Scientific investigation is the process in which a scientist designs and carries out experiments to obtain information

PLANNING A SCIENTIFIC INVESTIGATION

There are a number of things that are involved when planning a scientific investigation.

Planning a scientific investigation involves the following things:

- Identifying the problem
- Stating the problem in the form of a question
- Predicting the possible solution to a problem
- Identifying what to observe or measure (variables)
- Identifying and collecting the resources that would be required to carry out the investigation.
- Deciding the steps to be followed in the process of collecting data

CONDUCTING A SCIENTIFIC INVESTIGATION

Once the investigation has been planned, it is then carried out.

This is when the hypotheses are tested by carrying out experiments.

Also, the variables to be investigated are deliberately changed while keeping the other variables constant.

This is what is meant by controlling and manipulating variables.

The variables that are changed are observed and recorded as the investigation is being conducted.

The purpose of carrying out an investigation is to collect data through observation.

If one is not satisfied with the data collected, it is necessary to repeat the procedures.

When the data has been collected, it should be organised in such a way that it is meaningful.

The data may be presented in the form of tables.

The procedures of organising data are referred to as data analysis.

One of the ways of analysing data is the use of graphs.

After the data has been analysed, there is need to interpret it.

This may involve determining the relationship between variables using the analysed data.

The determination of the relationships between variables include:

- looking for patterns of data in a table
- interpreting the shapes of graph lines

Once the data has been analysed and interpreted, a conclusion can be drawn based on the results of the investigation.

The conclusion then becomes the solution to the problem investigated.

Conducting a scientific investigation involves:

- carrying out the investigation according to what has been planned
- collecting data and presenting it in a meaningful way
- analysing the data that have been collected
- interpreting the analysed data
- drawing a conclusion based on the results of the investigation
- writing a report of the investigation

REPORTING THE FINDINGS OF A SCIENTIFIC INVESTIGATION

After the scientific investigation has been completed, it is important to write a report.

The report can include:

- ✓ Topic of the investigation
- ✓ An introduction
- ✓ The methodology (methods used to conduct the investigation)
- ✓ The results (findings)
- ✓ The discussion of the results
- ✓ The conclusion

A possible solution to the problem is called a hypothesis.

Examples of the questions that can be investigated in science and technology:

- why does a fresh egg sink and a rotten one float on water?
- what is the speed of sound in air?
- what are the factors that affect the speed of sound in air?
- how different is the life cycle of grasshopper from that of a housefly?
- how can a particular variety of maize be improved in terms of yields?
- how is the pitch of sound affected by different sizes of bottles?
- which is the most effective biological control of aphids?
- how can the components of a given mixture be separated?

Variables are factors that would affect the results of the investigation.

A variable is anything that can change.

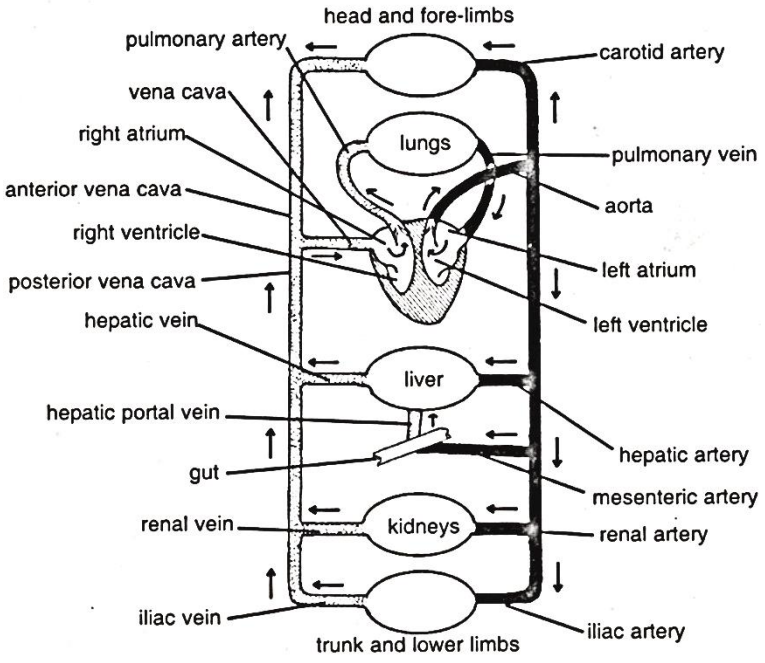
THE PURPOSE OF WRITING A REPORT AFTER CONDUCTING A SCIENTIFIC INVESTIGATION

- to communicate the findings of the investigation to those who did not take part in the investigation.
- It acts as a record of what was done
- It gives people the opportunity to learn the findings, ask questions and comment on the investigation.

UNIT 2 THE HUMAN CIRCULATORY SYSTEM

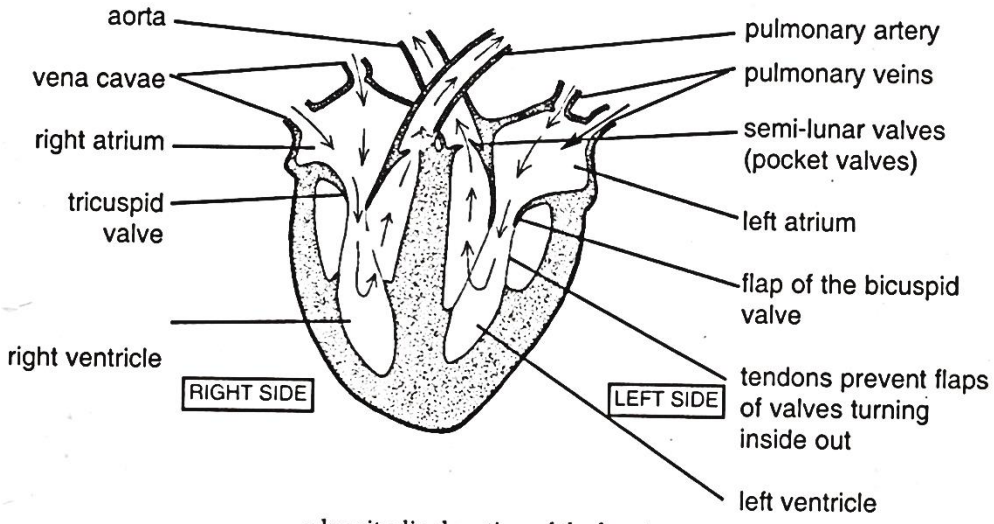
The main parts of human circulatory system and their functions

PARTS	**FUNCTION**
The Heart	It pumps blood around the body
The Arteries	They carry blood away from the heart
The Veins	They carry blood to the heart
The Capillaries	They connect the arteries to the veins



the human circulatory system

- Blood comes into the heart from all parts of the body through posterior and anterior vena cava and from the lungs through the pulmonary vein.
- The blood goes out of the heart through the aorta to all parts of the body and through the pulmonary artery to the lungs.



a longitudinal section of the heart

- When blood comes from the different parts of the body it is dark red in colour because it contains less oxygen and more waste products such as carbon dioxide and urea.
- The heart then pumps the blood to the lungs through the pulmonary artery.
- In the lungs, carbon dioxide is excreted while oxygen is added to the blood making it look bright red.
- The blood then goes back to the heart through the pulmonary vein where it is pumped to all parts of the body.

When the blood is circulating throughout the body, some of the following things happen:

- excretion of waste products such as urea from the kidneys
- diffusion of digested food particles around the intestines from where they are transported to the liver

It is the liver which regulates or controls how much food should be transported by the blood.

The liver also stores excess food.

COMPOSITION OF BLOOD

Blood is composed of:

- plasma which is the liquid part of the blood
- red blood cells which transport oxygen
- white blood cells which defend the body against disease causing organisms
- platelets which help in the process of blood clotting

BLEEDING

Bleeding is the process whereby blood oozes from the body.

CAUSES OF BLEEDING

- high blood pressure rapturing blood vessels especially in the nostrils
- disease
- tissue damage (injury)

EFFECTS OF EXCESSIVE BLOOD LOSS FROM THE BODY

- anaemia
- death

WAYS OF CONTROLLING BLEEDING

- applying direct pressure on the injured part of the body
- raising the injured part so as to reduce the amount of blood flowing to it.
- clotting of blood (this is done naturally by the body)

Where there has been excessive loss of blood, a person may be given blood from other people through a process called blood transfusion.

This is why it is important that people should donate blood to hospitals so as to save the lives of others in cases of emergency.

UNIT 3 THE HUMAN BREATHING SYSTEM

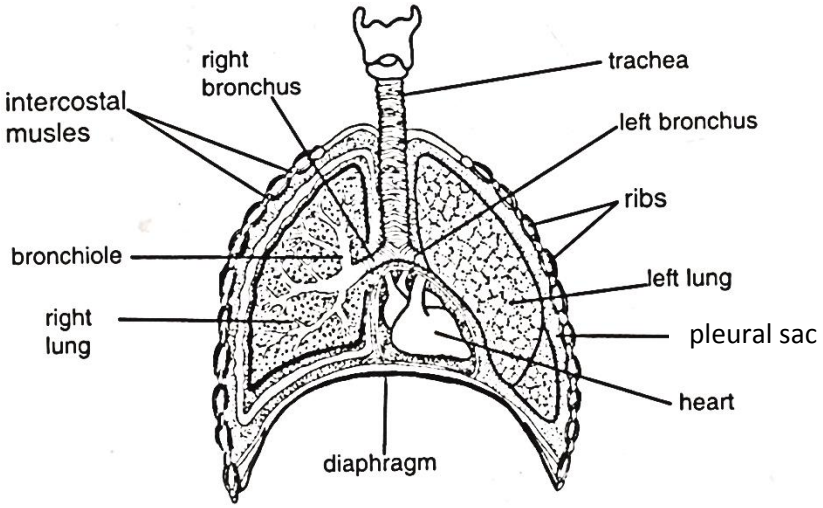
Breathing is a process through which air is pushed in and out of the lungs.

The air which enters the body contains a lot of oxygen which later diffuses into the blood stream through the lungs.

The air which goes out of the body contains a lot of carbon dioxide which has diffused from the blood into the lungs.

For breathing to take place, there are several parts and structures that are involved.

For example, nostrils, windpipe (trachea), lungs, ribs, and the diaphragm.



the human breathing system

BREATHING MECHANISM

The breathing mechanism works in two phases which are inspiration and expiration.

INSPIRATION

This is a process of breathing in air and is also referred to as inhalation.

During inspiration, the diaphragm contracts and becomes flat, the ribs move up and out due to the contraction of the external intercostal muscles.

Due to the movement of the ribs, the volume of the thorax (chest cavity) increases.

Air pressure inside the chest cavity decreases thereby making it lower than the atmospheric pressure.

This causes the air to rush into the lungs

EXPIRATION

This is a process of breathing out air and is also referred to as exhalation.

During expiration, the diaphragm relaxes and moves upwards into the thorax, forming a dome shape.

The ribs move down and inwards due to the relaxation of the external intercostal muscles

Due to the inward movement of the ribs, the volume of the thorax decreases.

The air pressure inside the chest cavity therefore increases, making it higher than the atmospheric pressure.

This forces air out of the lungs.

When the air enters through the nose (nostrils), it passes through the trachea (windpipe), then through the bronchus, then into the lungs through the bronchioles.

Finally, it goes to air sacs or alveoli where the exchange of oxygen and carbon dioxide takes place.

PROBLEMS AND CARE FOR THE HUMAN BREATHING SYSTEM

Problems that can affect breathing system are:

A. Smoking
B. Air pollution
C. Diseases
D. Suffocation
E. Smothering

WAYS OF CARING FOR THE HUMAN BREATHING SYSTEM

A. Avoid Smoking
   - Tobacco smoking is dangerous to the breathing system
   - It can lead to diseases such as lung cancer, asthma, bronchitis and tuberculosis
   - Tobacco also contains a dangerous chemical known as nicotine
   - Smoking other substances such as Indian hemp and traditional medicines can lead to the same effects. So smoking is hazardous to health and must be avoided.

B. Avoid air pollution
   - Being in places where air is heavily polluted can lead to problems that can affect the breathing system.
   - It is important to avoid areas where the air is polluted.

C. Eat a balanced diet and go for regular medical check-ups to prevent diseases that can affect breathing system
   - Diseases such as cancer, asthma, bronchitis and tuberculosis (TB) can affect breathing system

D. Live in well ventilated places to avoid suffocation
   - Suffocation is a situation whereby air cannot pass out of the lungs either through choking or strangulation

E. Avoid covering oneself with air proof materials to prevent smothering
   - Smothering is a situation where air cannot get into the mouth or nose, for example, if clothing or plastic bag covers the face.

UNIT 4 IMPROVING THE NUTRITIONAL VALUE OF FOOD

Various foods contain different types of nutrients.

For instance, meat contains proteins, fats, vitamins and mineral elements.

The nutritional value of food refers to the major nutrients the food contains.

Improving the nutritional value of food means enriching the food with other nutrients by preparing the foods together.

WAYS OF IMPROVING THE NUTRITIONAL VALUE OF FOOD

- Combining several foods when cooking
- Adding enriching food to dishes
- Overcooking fish to soften the bones so that they can be eaten together with the flesh
- Cooking some foods in their skins or together with the skin
- Using one pot meals

Factors to consider when planning, preparing, cooking and serving dishes with improved nutritional value

- The method of cooking
- Colour, texture and flavour of food
- Season of the year
- Ensure that the meals are nutritionally balanced

THE NEGATIVE EFFECTS OF POOR NUTRITION ON THE FAMILY, COMMUNITY AND THE NATION

- Malnutrition
- Stunted growth among children
- Poor mental capacity
- Increased risk of chronic illnesses
- High mortality rate among children
- Low productivity in everyday activities
- Strain on the economy of the country
- Low standards of living

THE POSITIVE EFFECTS OF GOOD NUTRITION ON THE FAMILY, COMMUNITY AND THE NATION

- Healthy population
- Proper growth in children
- High productivity in everyday activities

- Good nutritional status of the population
- High standards of living

UNIT 5 MEALS FOR INVALIDS, CONVALESCENTS, VEGETARIANS AND ELDERLY PEOPLE

People can be categorized into different groups depending on their nutritional needs.

These people include:

- Invalids
- Convalescents
- Vegetarians
- The elderly

a. Invalids
   Invalids are people who are ill

b. Convalescents
   Convalescents are people recovering from an illness

c. Vegetarians
   Vegetarians are people who do not eat meat or animal products

d. The elderly
   The elderly are people above the age of 65 years

MEALS FOR INDIVIDUAL NUTRITIONAL NEEDS

INVALIDS
Invalids use less energy therefore they require fewer carbohydrates and fats.

Their meals should contain more proteins and protective foods for the replacement of damaged tissues and cells.

GUIDELINES TO CONSIDER WHEN PLANNING MEALS FOR AN INVALID

- the meal should be easy to digest as during illness the digestive system is weak. The best cooking methods include poaching, boiling, steaming and grilling
- liquid diet should be given due to lack of appetite and loss of water from the body
- follow doctor's instructions on meals
- take into account particular likes and dislikes for food
- leftover food should not be served to avoid contamination
- pay careful attention to food hygiene and the food must be fresh
- prepare food away from the patient
- serve meals in a tray and in small portions

CONVALESCENTS

The guidelines for planning meals for convalescents are similar to those of the invalids.

The only difference is that the convalescent's appetite is better and serving is easier.

VEGETARIANS

There are two types of vegetarians.

1. Lacto-vegetarians
2. Strict vegetarians

Lacto-vegetarians are those who eat vegetables and animal products such as eggs, milk, cheese, yoghurt, ghee and sour milk (chambiko).

Strict vegetarians are people who eat vegetables only.

Reasons for becoming vegetarians

- religion
- health
- animal welfare
- taste
- allergy

Planning meals for vegetarians can be difficult because of lack of proteins, vitamins A and D, calcium and iron from animal sources.

POINTS TO CONSIDER WHEN PLANNING MEALS FOR VEGETARIANS

- provide sufficient proteins from animal products for lacto-vegetarians
- use plenty of vegetable proteins such as peas, beans and groundnuts for strict vegetarians
- provide foods rich in oils and fats from plant sources
- use a variety of methods of cooking and serving with different combinations to bring variety to vegetarian diets
- serve large portions for maximum supply of proteins

Elderly people

Elderly people need a special diet because their bodies do not function as efficiently as when they were young.

GUIDELINES TO CONSIDER WHEN PLANNING MEALS FOR THE ELDERLY PEOPLE

- an adequate supply of calcium and vitamins is needed for healthy bones and preventing infections
- iron is needed as elderly people may suffer from anaemia
- food should be easy to eat because their teeth may not be very strong
- ensure a good supply of dietary fibre to help in the digestion of food
- meals should contain more fruits, vegetables and less fat
- provide plenty of fluids in the form of water and other beverages
- meals should be served attractively

UNIT 6 IMPROVING A TRADITIONAL KITCHEN

TYPES OF KITCHENS

- ★ modern kitchen
- ★ traditional kitchen

These kitchens are found in both urban and rural areas.

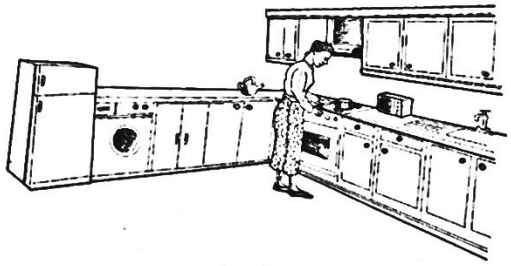
THE MODERN KITCHEN

The modern kitchen is part of the main house.

It is found inside the house.

Though a modern kitchen is built as part of the main house, the outside walls must have sufficient windows for good lighting and ventilation to avoid eye strain.

The kitchen should also be closed off from the rest of the house to prevent cooking odours from entering the rest of the rooms in the house.



a modern kitchen

MAIN FEATURES OF A MODERN KITCHEN

- Preparing centre
  This is where most of the food preparation activities are done. It is made up of work surfaces or a table.

- Cooking centre
  This is where all the food dishes are cooked. It has an electric cooker or gas cooker for cooking different types of food

- Storage centre
  This is where foodstuffs and kitchen equipment are stored. It is made up of shelves, cupboards and refrigerator.

- Washing centre
  This is where all the washing of utensils and equipment is done. It is made up of sink with taps and draining boards.

THE TRADITIONAL KITCHEN

The traditional kitchen is the most common type of kitchen in Malawi.

TYPES OF TRADITIONAL KITCHENS

- The open-air kitchen
- An enclosed kitchen

THE OPEN-AIR KITCHEN

This type of kitchen is usually in the open outside the house.

It is common in the dry season mainly to boil water for domestic purposes and cook food.

The following illustration below shows an open-air kitchen.



an open air kitchen

AN ENCLOSED KITCHEN

This kitchen is in the form of a hut and is located outside the main house.

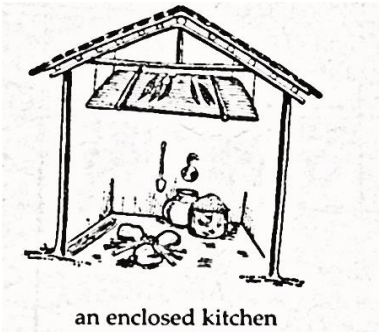
It is constructed of materials such as poles, bricks, reeds and mud.

The roof is made of poles and thatched with grass.

In some cases, the kitchen does not have windows.

As such, the main source of ventilation is the door.

The three-stone fireplace is the one commonly used as the cooking centre.



an enclosed kitchen

Both open and enclosed kitchens have the kitchen centres located far away from each other.

This arrangement is not good.

A lot of time and energy is spent walking between the centres.

This makes the traditional kitchen not efficient.

The centres are:

- The storage centre
- The preparation centre
- The cooking centre
- The washing centre

COMPARISON OF A MODERN AND A TRADITIONAL KITCHEN

Modern kitchen	**Traditional kitchen**
- expensive to construct - adequate ventilation and lighting - enough space - has working surfaces - expensive to maintain	- it is cheap and easy to construct - sometimes there is little ventilation - poor lighting - sometimes there is limited space - no working surface - easy to maintain

STRENGTHS AND LIMITATIONS OF A TRADITIONAL KITCHEN

The strengths of a traditional kitchen are;

- ★ easy to construct
- ★ easy to maintain

LIMITATIONS OF TRADITIONAL KITCHEN

- ❖ a lot of smoke is produced
- ❖ the food cooked in a three-stone fireplace can have a smoky flavour if not cooked properly
- ❖ there is wastage of fuel energy
- ❖ space is limited
- ❖ the traditional kitchen does not have work surfaces and there is no running water

WAYS OF IMPROVING THE TRADITIONAL KITCHEN

- making a kitchen with a window and a chimney
- fixing surfaces and shelves to an already existing kitchen
- making a drying rack outside the kitchen for drying pots and plates
- constructing a mud stove with more than one cooking place to save fuel and time

CONSTRUCTING A MUD CUPBOARD

The materials and equipment required for constructing a mud cupboard are:

- Poles
- Soil

- Bamboo
- Water
- Nails
- Panga knives
- Buckets
- Strings
- A piece of rope
- A hoe

CONSTRUCTING A SHELF

The materials and equipment required for constructing a shelf are

- Bamboo strips
- Reeds
- Grass
- Millet or maize stems
- Sticks
- Poles
- Pieces of string

CONSTRUCTING A DRYING RACK WITH A SOAK PIT

The materials and equipment required for constructing a drying rack are:

- Poles
- Bamboo strips
- Pieces of string
- A hoe
- Chilaya (a tool for digging hoes)
- Panga knives
- Nails
- A hammer

UNIT 7 IMPROVING THE QUALITY OF PRODUCTS

Some of the locally produced products in the community such as wood carvings, mats, clay pots, mortar and hoe handles may not be of high quality.

It is therefore important to improve their quality.

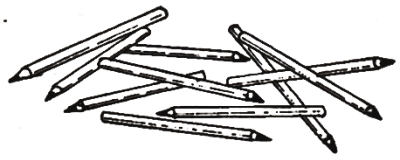
Quality guarantees that the products are of a high standard.

There are many ways of improving the quality of a product.

These ways include:

- improving the smell
- improving the taste
- improving the appearance
- improving the colour
- improving the volume
- improving the shape
- packaging
- decorating
- labelling

The following table shows some suggestions of how the quality of products can be improved:

Unimproved product	Improved product
 a mortar	 a decorated mortar
 unpacked crayons	 neatly packed crayons
 clay pot	 different shape of the clay pot

THE IMPORTANCE OF IMPROVING THE QUALITY OF PRODUCTS

- Products of high quality can help to build confidence in the consumer.

- The producer is assured of high sales at a better price.
- Quality assurance ensures that the products are manufactured consistently and are attractive.

NEGATIVE EFFECTS OF IMPROVING THE QUALITY OF PRODUCTS

- the products may become expensive and slow to sell
- some materials used for improving the quality of the products may not be found locally and can be expensive

UNIT 8 FOOD PROCESSING

Food processing refers to the methods that are used to change raw ingredients into food products for human and animal consumption.

REASONS FOR PROCESSING FOOD

- improving flavour, texture and appearance
- preserving the food
- improving the quality of food
- preventing wastage
- improving the livelihood of people

WAYS OF PROCESSING FOOD

There are two main ways of processing food.

These are primary and secondary processing.

PRIMARY PROCESSING

Primary processing involves raw ingredients for sale, consumption or making them ready for cooking.

Examples include:

- grinding grain into flour
- sorting and washing vegetables
- extracting oil from seeds and nuts
- soaking cassava
- fermenting cereals such as millet, sorghum and maize for making chimera

- soaking mphale to make flour
- pounding cereals such as rice and maize

SECONDARY PROCESSING

Secondary processing involves turning basic processed foods into new products.

Examples include:

- making margarine from oil
- making bread, cakes and biscuits from flour
- making jam from fruits
- making juices from fruits
- making thobwa from chimera
- making thobwa, starch, nsima from cassava flour
- making chambiko or cheese from milk
- making peanut butter from groundnuts

ADVANTAGES OF FOOD PROCESSING

- improving the taste, flavour and appearance of food
- preserving the food
- improving the quality of food

DISADVANTAGES OF FOOD PROCESSING

- loss of nutrients during processing
- some of the methods used in processing food are not hygienic
- some methods used in processing can lead to wastage
- food processing can lead to increase in the cost of food

UNIT 9 REPRODUCTION IN HUMAN BEINGS

THE PROCESS OF CONCEPTION IN HUMAN BEINGS

Human life begins at the moment of conception.

During sexual intercourse, a man ejaculates millions of sperms contained in a liquid called semen.

The sperms are deposited in the vagina.

From there, they swim up to the uterus through the cervix into the fallopian tubes to meet the egg (ovum).

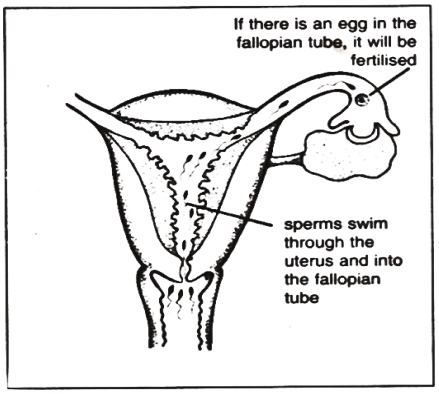
The sperm unites with the egg.

This is called conception or fertilisation.

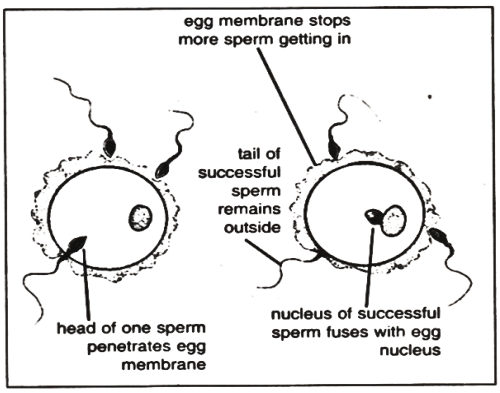
The union of the sperm and egg results in the formation of a single cell called a zygote.

Once the successful sperm has entered the egg, no other sperm can get in.

Eventually, all the unsuccessful sperms die.



how sperms get to the egg



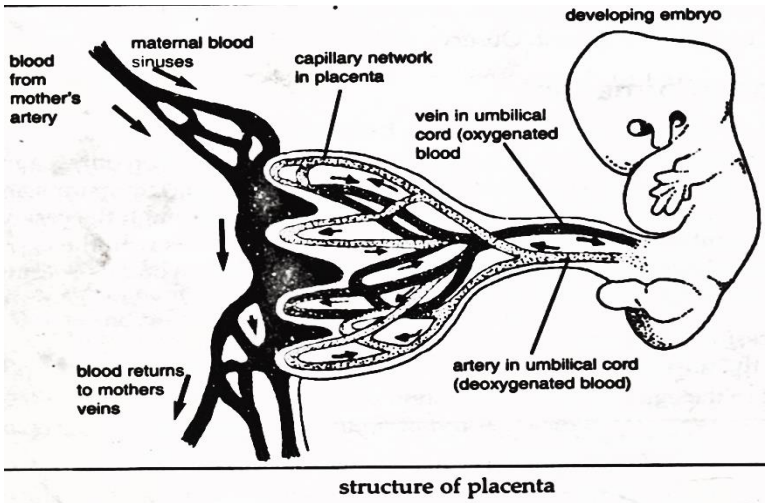
how fertlisation occurs

DEVELOPMENT OF THE EMBRYO

Once fertilisation has taken place, the zygote passes from the fallopian tube to the uterus.

As it does so, it develops into an embryo.

It takes about five days for the embryo to reach the uterus to which it is attached.



structure of placenta

This is called implantation

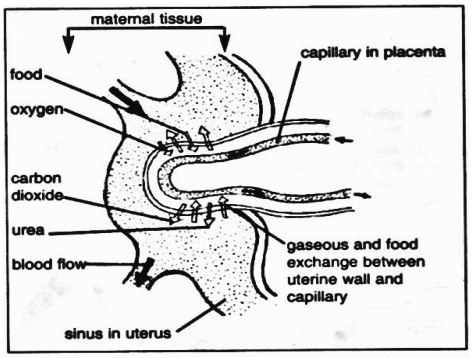
A membrane known as the amnion encloses the embryo in a fluid-filled cavity.

The fluid protects the embryo, supports it and allows it to move freely during growth.

During birth the fluid lubricates and reduces friction in the vagina.

During implantation the placenta develops in the walls of the uterus.

The embryo is attached to the placenta by a tube called the umbilical cord.



how the placenta works

FUNCTIONS OF THE PLACENTA

- it allows dissolved food substances and oxygen to diffuse from the mother's blood into that of the embryo
- it allows waste products such as urea and carbon dioxide to diffuse from the blood capillaries of the embryo to the mother's blood stream
- it allows antibodies to diffuse from the mother's blood into the blood capillaries of the embryo. The antibodies protect the embryo against diseases.

THE DEVELOPMENT OF THE FOETUS

The embryo continues to grow and forms tissues and organs.

After eight weeks, when all the organs are formed, the embryo is called foetus.

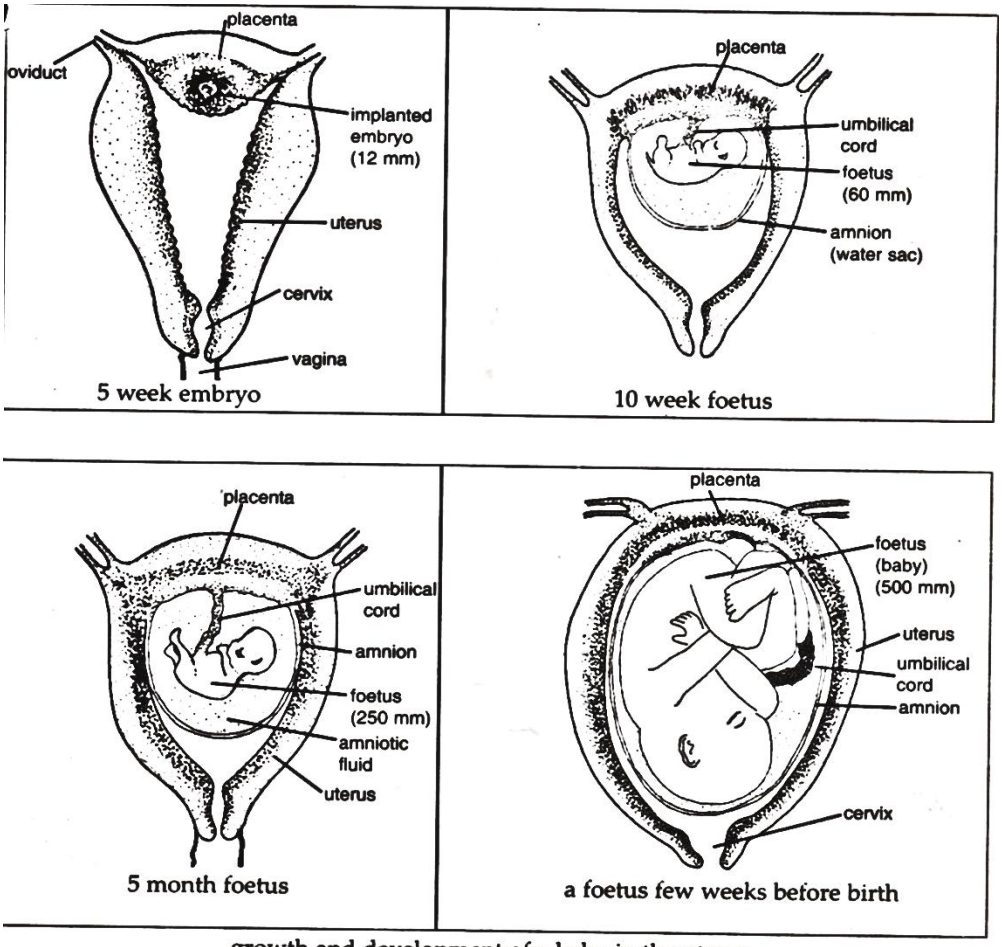
By the fifth month, the heart can be heard beating through a stethoscope.

By the end of the sixth month, the baby has grown eyelashes and eyebrows.

During the first six to seven months, the foetus moves freely in the uterus and its movements can be felt by the mother.

The placenta continues to grow as the foetus grows bigger.

About nine months from conception, the baby is ready to be born.



growth and development of a baby in the uterus

THE SIGNS AND SYMPTOMS OF PREGNANCY

- menstruation stops to occur
- morning sickness
- increase in body weight
- enlargement of breasts and abdomen

In some cases the following signs and symptoms of pregnancy can also occur

- vomiting
- nausea
- being choosy about food
- feeling dizziness
- swelling of legs
- craving for unusual food and other substances like soil and sour things
- change in appetite
- teeth problems due to loss of calcium to the baby
- changing moods
- changes in the pigmentation of the skin

- anaemia
- maternal morbidity

Some of the signs and symptoms will disappear in the early stages of pregnancy, but others will disappear soon after delivery.

While the above signs and symptoms are indicators of pregnancy, it is important to have a medical examination for confirmation.

THE NEEDS OF A PREGNANT WOMAN AND AN UNBORN BABY

DIETARY NEEDS

- ★ a balanced diet
- ★ plenty of clean and safe drinking water and other fluids but not alcoholic drinks

HEALTH NEEDS

- undergoing regular medical check-ups at antenatal clinics
- taking regular baths and wearing clean clothes
- not smoking or taking of drugs without prescription by a medical doctor

PSYCHOLOGICAL NEEDS

- ➢ love
- ➢ care
- ➢ understanding from all people around her

PHYSIOLOGICAL NEEDS

- ▪ proper attire such as loose clothes and flat shoes
- ▪ regular moderate physical exercises

CARE FOR THE BABY

Caring for the baby involves:

- following good feeding habits
- the provision of complementary feeding at the appropriate age of the baby
- weighing the baby to monitor growth and development at a clinic or health centre
- immunisation against diseases such as polio, tuberculosis (TB) and measles
- provision of vitamin A and deworming tablets

- diagnosis and treatment of infections
- regular baths and wearing of clean clothes
- adequate sleep

THE COMMON DISEASES OF CHILDREN AND THEIR EFFECTS

COMMON DISEASES OF CHILDREN

- whooping cough
- tetanus
- TB
- malaria
- diphtheria
- polio
- measles
- diarrhoeal diseases such as dysentery

EFFECTS OF THE DISEASES IN CHILDREN

- paralysis and deformity of limbs in the case of polio
- deafness in the case of measles
- dehydration in the case of diarrhoeal diseases
- pneumonia
- anaemia
- death resulting from any of these diseases

PREVENTION OF THE COMMON DISEASES OF CHILDREN

- immunisation against polio, whooping cough, TB, tetanus, diphtheria and measles
- following general rules of hygiene against diarrhoeal diseases
- sleeping under a treated mosquito net to prevent malaria

THE IMPORTANCE OF UNDER-FIVE CLINICS

- routine check-ups on the health of children
- routine monitoring of the weight of children
- giving advice on feeding, vaccination and nutrition for both the mother and the baby
- administering BCG vaccine to prevent TB, DPT vaccine to prevent diphtheria, whooping cough and tetanus, and other vaccines to prevent polio and measles
- provision of vitamin A
- treatment of common infections

FAMILY PLANNING

Family planning is practicing some form of birth control to space out births and limit the size of the family.

SOME REASONS FOR FAMILY PLANNING

- it can improve the well-being of families because couples can have fewer children who can be provided with enough food, clothing and schooling
- women can protect themselves from unplanned pregnancies
- it helps to save the lives of children because parents can properly take care of them
- it can help nations to develop because the people's economic situation improves greatly in countries where women have fewer children

FAMILY PLANNING METHODS

- natural methods
- use of condom
- use of contraceptive pill
- Vasectomy
- Spermicides
- The diaphragm
- Intra-uterine device (IUD)
- Tubal ligation (TL)
- Norplant implants

NATURAL METHODS

The natural methods of family planning depend on knowing when ovulation occurs.

USE OF CONDOM

A male condom is worn on an erect penis before sexual intercourse.

or

A female condom is inserted in the vagina before sexual intercourse.

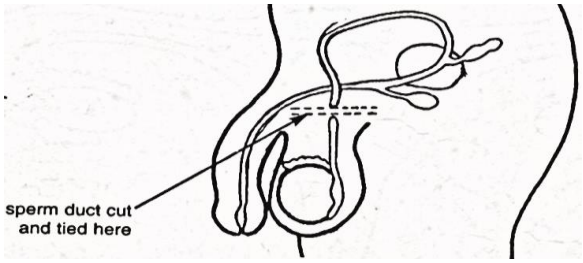
This prevents sperm from reaching the egg.

USE OF CONTRACEPTIVE PILL

Contraceptive pills are taken each day between menstrual periods.
The pills suppress ovulation and so prevent conception.

VASECTOMY

This involves a surgical operation in which the man's sperm ducts are cut and the ends sealed or tied.



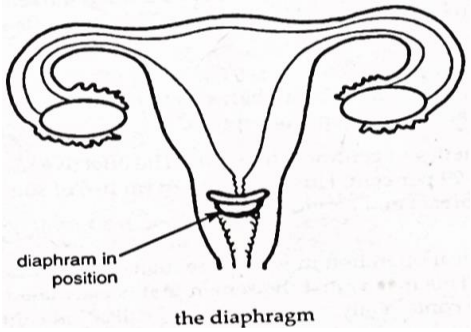
SPERMICIDES

Spermicides are chemicals in the form of a cream, gel or foam that are used to kill or immobilise sperms.

THE DIAPHRAGM

This is a rubber disc that can be placed in the vagina before sexual intercourse.

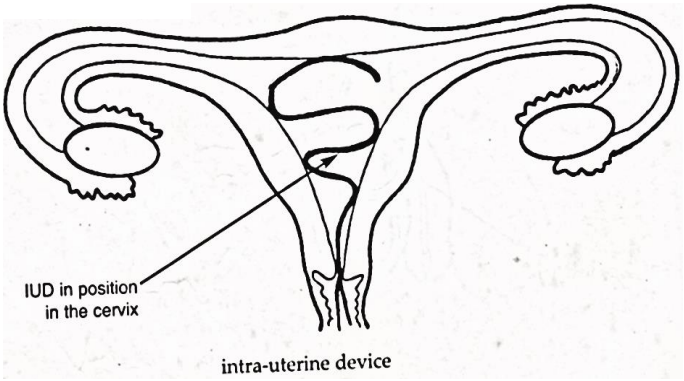
It covers the cervix and so prevents sperms from entering the uterus.



the diaphragm

INTRA-UTERINE DEVICE (IUD)

This is a small metal or plastic strip bent into a loop or coil that is inserted in the uterus where it prevents implantation of the embrvo.



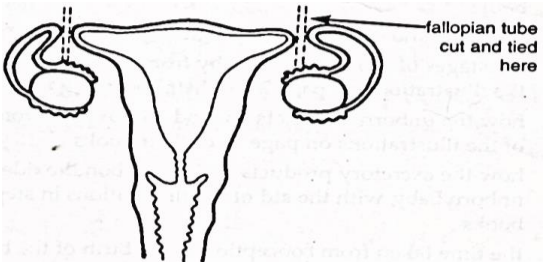
intra-uterine device

TUBAL LIGATION (TL)

This involves sterilising a woman by an operation in which the oviducts are cut and tied.

This operation does not affect the ovaries, sexual desire or menstruation, but sperms cannot reach the egg.

The eggs that are released break down in the upper part of the oviduct.



NORPLANT IMPLANTS

This is a set of six small plastic capsules that are placed under the skin of a woman's upper arm.

UNIT 10 SOLUTIONS AND MIXTURES

MIXTURES

When two or more types of substances are put together, a mixture can be formed.

Mixtures can be formed in a number of ways.

These include:

- mixing a liquid with another liquid
- mixing a solid with another solid
- mixing a solid and a liquid
- mixing a liquid and a gas
- mixing a gas and another gas

In some mixtures, the components can easily be seen like a mixture of maize flour and water. Such mixtures are called suspensions

In some mixtures, like salt and water, its components cannot be recognised. Salt disappears in water. The mixture appears as if it were one substance. Such mixtures are called solutions.

When sugar is mixed with water and stirred, it disappears in the water. The visible particles of sugar break down into invisible particles. These particles spread throughout the water producing a clear solution. This process is called dissolving.

A substance that dissolves in another substance is called a solute.

A substance in which something dissolves is called a solvent.

Substances that dissolve in water are said to be soluble in water.

Those that do not dissolve in water are said to be insoluble in water.

FACTORS AFFECTING THE RATE OF SOLUBILITY OF SUBSTANCES IN WATER

- size of particles
- temperature
- stirring
- nature of substance

SEPARATION OF MIXTURES

Components that form mixtures can be separated using different methods.

METHODS OF SEPARATING MIXTURES

- handpicking
- winnowing
- sieving
- decanting
- filtration
- evaporation
- distillation
- magnetism

HANDPICKING

Large components in a mixture can be separated by picking.
For example beans can easily be handpicked from a mixture of beans and sand.

WINNOWING

This method is used to separate solid mixtures.
During winnowing the lighter solids are carried away by wind.
The heavier ones remain in the winnower.

SIEVING

Solid mixtures can be separated using this method.
Smaller particles pass through the sieve while the bigger ones remain behind.
Solid particles can also be separated from a liquid using this method.
For example tea leaves from tea.

DECANTING

When a liquid forms a clear boundary with another liquid one liquid can be poured off leaving the other liquid behind.

A mixture of water and paraffin or suspensions can be separated using this method.

FILTRATION

Filtration is a method of separating a solid substance from a liquid or a gas using a filter.

The liquid or gas passes through the filter while the solid ones remain behind.

The substance that passes through a filter is called a filtrate.

The substance that does not pass through a filter is called a residue.

EVAPORATION

A solution is heated gently to evaporate the liquid part and leave behind the solid part in the container.

For example a solution of salt and water can be separated using this method.

DISTILLATION

This is used to separate liquid mixtures with components of different boiling points.

The liquid that boils first evaporates and its gas is passed through a delivery tube via a condenser where it is cooled and changed into a liquid again.

This liquid is then collected in the container as a distillate, for example kachaso.

MAGNETISM

Magnetism can be used to separate magnetic materials from non-magnetic ones.

The magnet attracts magnetic materials only from the mixture leaving the non-magnetic ones behind.

For example iron particles cab be removed from sand in this way.

UNIT 11 METHODS OF COOKING

Methods of cooking can be categorized into dry and moist heat methods.

Dry methods include frying, baking and roasting.

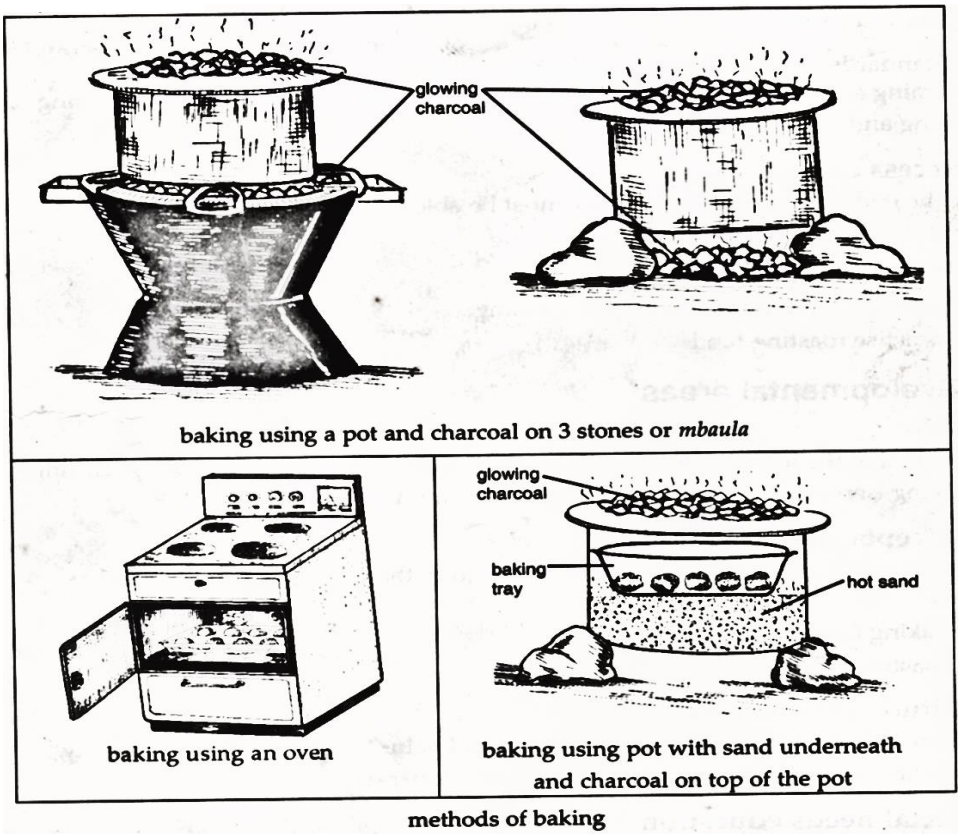
Moist methods include boiling, steaming and stewing.

BAKING METHOD

This is a method of cooking food using dry heat in an oven or in a pot.

When baking using a pot, hot charcoal is placed on top and underneath or hot sand is placed beneath and hot charcoal on top.

Examples of the food that can be cooked using baking method include scones, cakes, chigumu or chikondamoyo, chimimina, biscuits, pudding, fish and root vegetables.



methods of baking

GUIDELINES FOR BAKING USING CHARCOAL

- prepare the fire before preparing the food
- wait until the wood or charcoal is glowing
- prepare the mixture of the food you would want to bake
- place either the food directly into a pot or in a baking tin on top of a layer of hot sand
- stand the pot on a three stone stove or a charcoal burner over the glowing charcoal
- place the lid on the top and put glowing charcoal on top of the lid
- test to see if the food is cooked by using a clean fork or knife. If it comes out clean and not sticky the food is cooked
- if the food is cooked, remove it from the fire
- allow the food to stand for about 15 minutes before removing from the pan to let the centre become firm

GUIDELINES FOR BAKING USING AN ELECTRIC OR GAS OVEN

- pre-heat the oven so that its temperature is 5 to 10 degrees above the required temperature
- turn the oven to the correct temperature once you have put the food in the oven
- place the food in the oven and close the door
- open the oven door after the set baking time is over

HOW TO REMOVE FOOD FROM BAKING TRAYS OR PANS

1. gently run a palette knife around the edges between the food and the pan
2. shake the pan gently up and down until the food loosens
3. turn the pan over
4. cool the food upside-down on a wire rack

ADVANTAGES OF BAKING FOOD

- food does not break up if cooked well
- no soluble nutrients are lost
- the food looks attractive
- flavour is improved

DISADVANTAGES OF BAKING FOOD

- uses a lot of fuel
- most baking ingredients are expensive
- needs careful attention
- not suitable for cooking food for the sick

RECIPE FOR BAKING PLAIN SCONES

INGREDIENTS

2 cups of plain flour
2 teaspoons of baking powder
A pinch of salt
2 tablespoons of cooking oil or margarine
¾ cup of water or milk
1 egg, if available

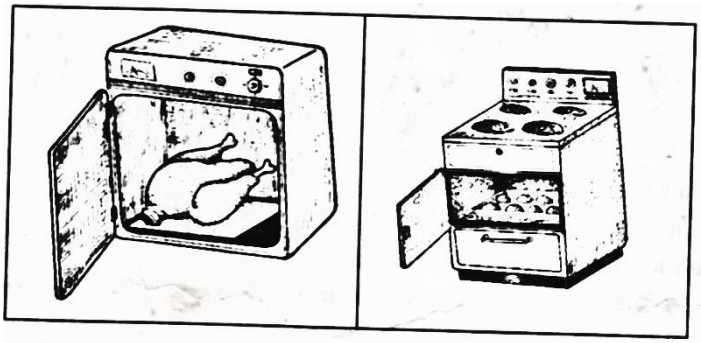
METHOD

1. prepare the fire in advance or pre-heat the oven to 180^{o}C

2. grease with cooking oil or margarine or flour a tin ready for baking
3. sieve flour, baking powder and salt together and mix well
4. add oil or margarine and rub it with the finger tips until very fine
5. add water or milk and knead until the flour has all been mixed
6. roll the dough on a floured board until it is about 2 centimetres thick
7. cut into different shapes floured cutters
8. place on a greased baking tray
9. bake in a hoe oven for 10 to 15 minutes
10. test the food if it is cooked
11. cool before removing from the baking tray

ROASTING METHOD

Roasting is cooking food with a little oil or fat in an oven or saucepan or without oil or fat over glowing charcoal fire.



roasting in an oven or over glowing charcoal

Examples of food that can be roasted include meat, fish, green maize, potatoes and cassava.

GUIDELINES FOR ROASTING

- high temperature should be used in an open fire or when using an oven
- the food is turned from time to time so that cooking is even
- only tender food can be successfully roasted
- the length of cooking time will vary with the size and type of food
- baste the food with hot fat every 15 minutes to keep the outside moist and to improve the flavour

ADVANTAGES OF ROASTING

- the food looks attractive
- a cheap method of cooking food
- only few soluble nutrients are lost

- the flavour of the food is improved

DISADVANTAGES OF ROASTING FOOD

- incorrect roasting can harden the inside proteins
- roasting causes food to lose much of its moisture
- not suitable for cooking food with a high percentage of water like root vegetables
- does not make food tender
- the method demands more attention
- the food shrinks during roasting
- over-roasting burns or spoils the food

RECIPE FOR ROASTING FISH, CHICKEN OR MEAT OVER GLOWING CHARCOAL

INGREDIENTS

- pieces of fish or chicken or meat
- some salt

METHOD

1. wipe either the meat, chicken or fish
2. cut into pieces the fish, chicken or meat
3. apply salt all over the fish, chicken or meat
4. place the pieces of fish, chicken or meat on top of the glowing charcoal over a wire mesh
5. turn the fish, chicken or meat from time to time to get it cooked all over
6. keep turning until the food is browned
7. slice with a knife to see if it is cooked

SIMILARITIES BETWEEN BAKING AND ROASTING FOOD

- they are both dry methods of cooking food
- cooking can be done inside an oven or in a saucepan over a fire
- in both methods cooked food is attractive
- the flavour of the food is improved

DIFFERENCES BETWEEN BAKING AND ROASTING FOOD

- oil in baking is used for greasing baking tins so that the food does not stick to the tin whereas oil in roasting is used to aid stewing
- ingredients in baking are more expensive than in roasting

UNIT 12 TECHNOLOGIES FOR CONSERVING THE ENVIRONMENT

MEANING OF ENVIRONMENT

The term 'environment' refers to the total surrounding of living things.

It includes land, soil, water, air, vegetation, animals and buildings.

IMPORTANCE OF ENVIRONMENT

The environment is vital for the survival of living things.

All living things depend on the environment for basic necessities such as food, shelter, air, warmth and water.

For living things to survive, they need a sustainable environment.

ACTIVITIES THAT CAN LEAD TO THE DESTRUCTION OF THE ENVIRONMENT

- deforestation
- setting bushfires
- overgrazing
- poor land husbandry practices
- poor waste disposal
- excessive use of inorganic fertilisers, herbicides and pesticides
- emissions of harmful gases
- poaching
- charcoal production
- use of inefficient energy stoves
- discharge of untreated sewage into water bodies

EFFECTS OF DESTROYING THE ENVIRONMENT

- desertification
- erratic rains leading to droughts and floods
- global warming
- adverse change in weather and seasons
- outbreak of diseases such as cancer and cholera
- low agricultural output leading to famine
- soil erosion
- scarcity of water
- decrease of animal population
- siltation
- loss of tourism

TECHNOLOGIES FOR CONSERVING THE ENVIRONMENT

- solar driers
- solar cookers
- biogas
- fuel saving stoves
- compositing
- solar panels (photovoltaics)
- solar heaters
- A-frame
- paper recycling
- briquettes
- dam

USES OF TECHNOLOGIES TO CONSERVE THE ENVIRONMENT

SOLAR DRIERS

- equipment that uses solar energy for drying fresh fish and vegetables

SOLAR COOKERS

- equipment that uses solar energy for cooking

BIOGAS

- gas mostly produced from fermenting animal excreta

FUEL SAVING STOVES

- stoves that use less fuel

COMPOSITING

- producing of compost manure from organic matter

SOLAR PANELS (PHOTOVOLTAICS)

- devices that convert sunlight into electric energy

SOLAR HEATERS

- devices that use solar energy for heating

A-FRAME

- device used to construct contours, terraces and for levelling the ground to control the surface run off of water

PAPER RECYCLING

- process of recycling waste paper

BRIQUETTES

- compacted pieces of paper or dry leaves or grass used as fuel

DAM

- a barrier for restraining water

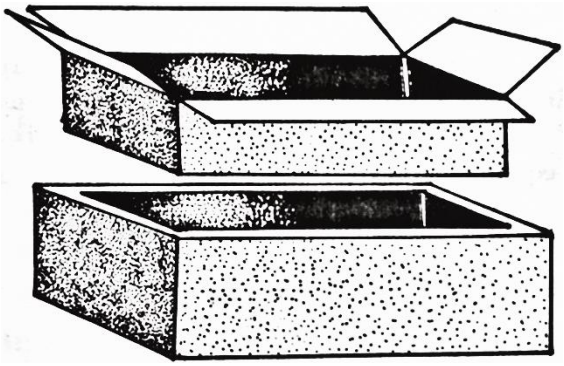
MAKING A SOLAR HEATER OR COOKER

Materials needed for making a solar heater or cooker are:

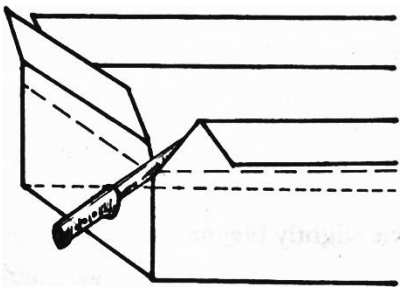
- Two cardboard boxes, one slightly bigger than the other
- One cardboard sheet for the lid. This must be large enough to cover the top of the finished heater
- One roll of aluminium foil
- Black paint or charcoal paste
- 1 cup of glue
- A sheet of glass or transparent plastic paper
- A knife

PROCEDURE FOR MAKING A SOLAR HEATER

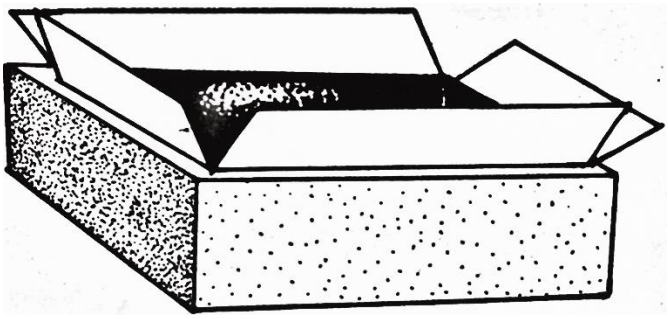
1. Close the large box by folding the top flaps
2. Put the smaller box on top of the larger box, leaving roughly the same space around it
3. Trace (mark) a line around the smaller box into the top of the larger box
4. Remove the smaller box as shown in the diagram on page 38



5. Using a knife, slit the corners of the smaller box down about ¾ of its height (cut ¼ of it)
6. Fold each side down forming extended flaps as shown in the illustration below



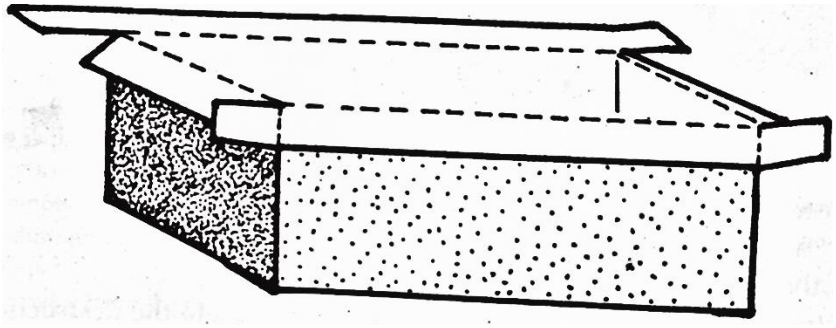
7. Glue aluminium foil to the inside of both boxes and also to the inside of the remaining top flaps of the larger box
8. Glue the top flaps on the larger box to close them
9. Place some crumpled paper into the larger box so that when you set the smaller box down inside the hole in the larger box, the flaps on the smaller box just touch the top of the larger box
10. Set (put) the smaller box inside the larger one
11. Glue the flaps of the smaller box into the top of the outer (larger) box
12. Trip the excess flap length to be even with the parameter of the outer box as shown in the illustration below



13. Cut a piece of cardboard, the same size as the bottom of the interior of the oven and apply foil to one side. Paint the foiled side black and allow it to dry. Put the piece of cardboard in the oven

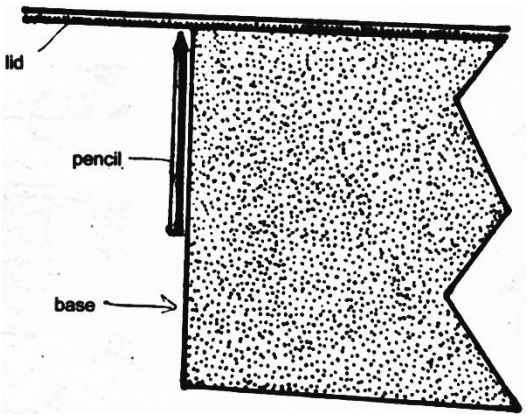
so that it rests on the bottom of the inner box (black side up), and place your pots on it when cooking

14. Take the large sheet of cardboard and lay it on top of the base
15. Trace its outline and then cut and fold down the edges to form a lip of about 8 centimetres
16. Fold the corner flaps around and glue to the side lid flaps as shown in the diagram below



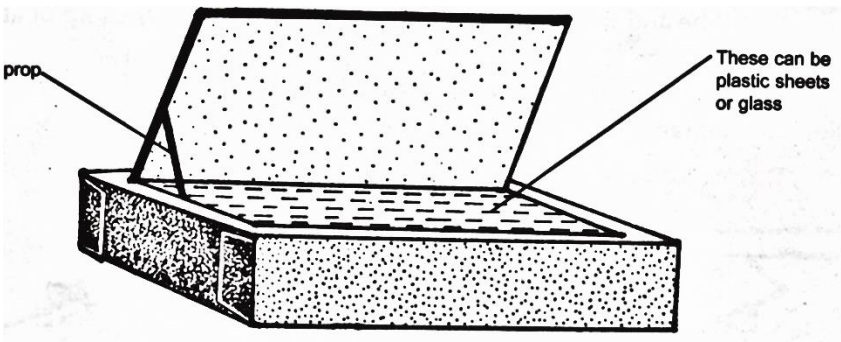
Orient the corrugations so that they go from left to right as you face the oven so that later the prop may be inserted into the corrugations. Do not glue this lid to the box; you will need to remove it to move pots in and out of the oven

17. To make the reflector flap, draw a line on the lid, forming a rectangle the same size as the opening. Cut around three sides and fold the resulting flap up forming the reflector as shown in the diagram below



this flap to be foiled on the inside

18. To make the prop, bend a 30 centimetre piece of hanger wire. This can then be inserted into the corrugations as shown in the diagram below



19. Turn the lid upside-down and glue two layers of a transparent plastic paper or sheet of glass or the oven bag (or other grazing material) in place to cover the oven opening
20. Place the lid on top of the oven

UNIT 13 ELECTRICITY AND ELECTRIC CIRCUITS

SOURCES OF ELECTRICITY

There are many sources of electricity.

These are primary and secondary sources.

Primary sources produce electricity directly, that is, by connecting a source to a load.

Secondary sources produce electricity through an intermediary such as a generator.

Some of the sources of electricity are:

- wind power
- geo-thermal power
- hydro-power
- chemical energy
- thermocouple
- solar energy

HOW ELECTRICITY IS PRODUCED IN DIFFERENT SOURCES

WIND POWER

- wind mills are turned by wind causing a coil of wires between magnets to rotate thereby producing electricity

GEO-THERMAL POWER

- steam turns turbines which in turn cause a coil of wire between magnets to rotate

HYDRO-POWER

- water turns turbines that rotate a coil of wire between magnets

CHEMICAL ENERGY

- it is derived from sources such as nuclear power, coal, lemons, Irish potatoes and cells

THERMOCOUPLE

- it is a junction of two different metals

SOLAR ENERGY

- solar cells convert sunlight into electricity

USES OF ELECTRICITY

- for heating
- for ironing
- for cooking
- for lighting
- for cooling
- for cleaning
- for drying
- for communication
- for entertainment
- for mixing things
- for propelling machines
- for air conditioning
- for washing

Devices that use electricity must be part of a complete circuit.

It is importance to learn how to construct electric circuits.

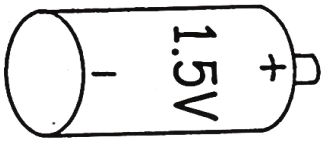
Sometimes electric circuits are constructed based on circuit diagrams that consist of electrical symbols.

The symbols are used to represent parts of the electric circuit such as cells, bulbs, switches, wires or connectors and fuses.

Some of the symbols are as follows on the next page:

Component	Symbol
Cell	
Switch	
Bulb	
Connecting wire	
Fuse	

The symbol for a cell has one long line representing the positive terminal and the short one for the negative terminal.

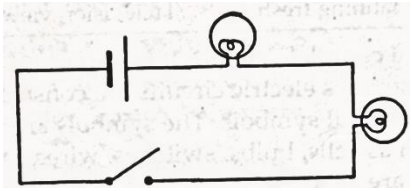


A cell

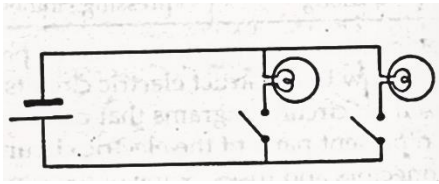
SERIES AND PARALLEL CIRCUITS

A series circuit is constructed by connecting components such that they lie along one conducting path.

If an electric circuit has more than one conducting path, it is called a parallel circuit.



a series circuit



a parallel circuit

A parallel circuit is better than a series circuit because in a parallel circuit:

- the components can be controlled separately
- each component uses the total voltage from the source

HOW BULBS GIVE LIGHT

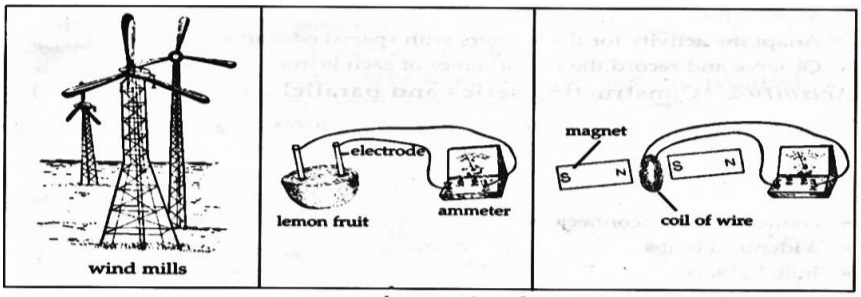
A bulb gives light when it is connected to a cell.

The electric current that flows in the electric circuit causes the bulb to give light.

The electric current in the tungsten wire in the bulb meets resistance which results in the production of heat.

The tungsten wire glows and gives off light because of the heat.

WAYS OF GENERATING ELECTRICITY USING LOCALLY AVAILABLE RESOURCES
Electricity can be generated by using locally available resources.



some ways of generating electricity

UNIT 14 FAMILY SIZE, INCOME AND FOOD SUPPLY

FAMILY SIZE
Family size refers to the number of people in a family.

Some families are generally big while others are small.

INCOME
This is the amount of money one gets regularly as payment for work or from trading, sale of farm produce or other forms of livelihood.

FOOD SUPPLY
This is the amount of food available for consumption.

Food can be made available to a family by producing their own or buying.

This can ensure food security at the household level.

RELATIONSHIP AMONG FAMILY SIZE, INCOME AND FOOD SUPPLY
Family size determines the amount of food to be available to family members for consumption.

The amount of food available to a family depends on the amount of money available for buying food or how much food the family can produce.

UNIT 15 LAUNDERING CLOTHES AND BED LINEN

TYPES OF FABRICS
Fabrics from which clothes and bed linen are made are classified into two main groups.

These are natural and synthetic fibres.

NATURAL FIBRES
These are made from plants, animals and minerals.

For example:

- plant fibres - cotton and linen
- animal fibres - wool, silk and leather
- mineral fibres - fibreglass, aluminium and asbestos

SYNTHETIC FIBRES
These are fibres that are made by people.

Examples include polyester, nylon, rayon and acetate.

These are made from chemicals.

LAUNDERING CLOTHES AND BED LINEN
When laundering clothes and bed linen, the following are required: water, soap, bleaches, starch and stain removals.

Laundry equipment that can be used include pails, basins, bathtubs, sinks, pegs, line on which clothes can be dried, pressing iron, ironing table or ironing board, mats, ironing stands, hangers, ironing blankets and sheets.

The main processes in laundry are sorting, mending, soaking, washing, drying, pressing, airing and storing.

It is important to sort out articles according to colour, degree of dirt, types and uses of fabric.

STEPS IN LAUNDERING COTTON CLOTHES AND BED LINEN

- sort out articles according to their uses
- mend torn parts and split seams, if any, to prevent them from becoming bigger during washing
- soak in cold water to loosen dirt
- wash in warm soapy water using the friction method to remove dirt
- rinse in warm water to remove soap. Then rinse in cold water to refreshen the fibres
- starch can be added to give the required stiffness to the garments, if necessary
- dry the clothes by hanging on a line inside out
- coloured articles should be hung in the shade to dry to prevent bleaching the clothes
- press dry clothes and bed linen
- fold according to article and store

PROCEDURES FOR PRESSING DRY CLOTHES AND BED LINEN

- damp the articles
- press thick parts on the wrong side to dry, then on the right side to obtain a smooth finish
- air to remove remaining moisture in the garment to prevent mildew

STEPS IN LAUNDERING CLOTHES AND BED LINEN MADE FROM SYNTHETIC FIBRES

- sort out articles according to colour, type of fibre, degree of dirt and use
- mend torn parts if any
- soak for a short time in warm soapy water to loosen dirt
- wash in warm soapy water using kneading and squeezing
- rinse in warm water to remove soap
- rinse in cold water to refreshen the articles
- drip dry or squeeze gently then shake to remove greases
- dry in a shade
- press with a moderately hot iron
- air, fold and store

Note: Soft water is ideal for laundry.

UNIT 16 HIV AND AIDS

AIDS is a killer as well as a contagious disease.

AIDS stands for Acquired Immune Deficiency Syndrome.

The disease is caused by a virus called HIV.

HIV stands for Human Immunodeficiency Virus.

The virus destroys the immune system of the body making it prone to different infections.

The word human means that the disease affects people only.

HIV TRANSMISSION

HIV can be transmitted in the following ways:

- unprotected sexual intercourse with an infected person
- infected pregnant mother passing the virus to the child during pregnancy, birth or breastfeeding
- through blood transfusion when the donor is infected
- transfer of the virus through the blood of an infected person to an uninfected person through sharing of skin cutting objects such as razor blades and needles

COMMON INFECTIONS ASSOCIATED WITH HIV AND AIDS

- TB
- meningitis
- cancer
- skin infections

HIV AND AIDS PREVENTION

HIV and AIDS can be prevented in the following ways:

- abstinence from sex
- being faithful to one life-long uninfected sexual partner
- using condoms correctly and consistently during sexual intercourse
- avoiding having more than one sexual partner
- avoiding certain behaviours such as taking intoxicating drugs and substances
- avoiding sharing skin cutting objects such as razor blades and needles
- infected females should avoid getting pregnant or should seek medication so that the virus is not transmitted to the unborn child
- avoiding cultural practices that can lead to the transmission of HIV such as chokolo and kulowa kufa

HOW TO TAKE CARE OF PEOPLE LIVING WITH HIV AND AIDS

A person with HIV and AIDS should have a balanced diet that can help one to remain strong and healthy.

The following should be avoided:

- processed foods
- foods containing preservatives, artificial flavours or artificial colourants
- canned foods – which usually contain preservatives and lose many of the nutrients due to high temperatures during processing
- junk food, – for example, chips, cold drinks, chocolates and sweets
- alcoholic drinks
- smoking

People living with HIV and AIDS should be given food such as the following:

- meat – meat is a good source of proteins, but people with HIV and AIDS may find it difficult to digest this type of food. Minced meat is better as long as it is freshly prepared. Meat such as liver, heart, and kidneys are better sources of proteins
- dairy products – such as sour milk, cheese and yoghurt
- fish – fish is a good source of proteins and can easily be digested
- seafood – seafood such as snails, crabs and lobsters contain proteins that can easily be digested
- cereals – cereals help to build the body and contain important vitamins and minerals
- food containing fats and oils – these are good for gaining weight. Good sources of fats and oils include beef, chicken, coconut, peanut butter, olives, seeds and nuts. However, excess fats cause problems in liver, heart and digestion
- vegetables, garlic and onions – include vegetables like moringa (*cham'mwamba*) in the diet on daily basis because they strengthen the immune system

A person living with HIV and AIDS should immediately receive medical attention for any ailment.

Moderate exercises are also important.

People living with HIV and AIDS also need love and care.

GLOSSARY

Acquire – get from

Anaemia – condition of the blood caused by lack of red blood cells

Baste – pour liquid fat or juices over food while it is cooking

Bleeding – oozing of blood from the body

Cavity – empty space within a solid

Chaste sexual purity

Chimney – structure used to let smoke out of the kitchen

Clot – thickening or setting of blood

Conception – the fertilization of an ovum by a sperm in the fallopian tube followed by implantation in the womb

Consumption – use

Data – information

Data analysis – organisation of information in a meaningful way using various procedures

Decant – pour off slowly

Deficiency – lack of

De-role – limit the roles of characters only in the play

Desertification – complete loss of vegetation

Diaphragm – wall of muscles between the chest and stomach which helps to control breathing

Diffusion – movement of particles from an area of high concentration to an area of lower concentration

Diphtheria – an infectious disease of the throat that causes difficulty in breathing

Dish – food served at a meal

Dissolve – be soluble

Distil – evaporate and condense

Dough – a mixture of flour, water and other ingredients

Electric current – rate of flow of electric charge

Electrical appliance – equipment that uses electricity like radios, TVs, and many others

Electrical resistance – opposition to the flow of electric current

Environmentally friendly technology – technology with minimal negative impact on the environment

Evaporation – change from liquid to gas

Excrete – get rid of

Fabric – material made by weaving wool, cotton, silk and other fibres

Fertilization – the union of male and female gametes to form a zygote

Fibre – tiny threads from cotton, silk and other fibres

Glowing – burning without flames

Heart beat – sound made by regular movement of the heart

Hypothesis – a reasonable guess to explain a particular event or observation

Immune – protected

Immunodeficiency – inability to resist diseases and infections

Implantation – the process in which the embryo becomes attached to the lining of the uterus

Insoluble – unable to dissolve

Interpreting data – saying what the information collected shows or tells us

Knead – press and stretch dough with hands

Lacto-vegetarian – a person who eats vegetables and selected animal products other than meat

Load – anything that uses electricity

Marketable – that which can easily be sold

Maternal morbidity – frequent illness of a woman associated with pregnancy

Mgaiwa – whole maize flour

Mildew – very small white fungus that grows on different things such as clothes in warm wet conditions

Mixture – a combination of different substances

Nicotine – oily substance in tobacco that is dangerous to a person's health

Nutrient – essential chemical substance found in food

Obesity – state of being excessively fat

Ooze – flow gently

Ovulation – the process in which a mature egg is released from an ovary

Parallel circuit – circuit with more than one conducting path

Petty trading – sales realising money for daily use only

Predict – foretell what will happen on the basis of observation, experiment or scientific reason

Pregnant – carrying a foetus in the womb

Product – what comes out after a process

Puree – cooked food passed through a sieve to make a paste

Quality – degree of perfection of something

Rind – fruit skin

Scientific investigation – a process in which a scientist designs and carries out experiments to obtain information

Self-reliant – being self sufficient

Series circuit – circuit with one conducting path

Soak pit – pit dug under a drying rack to drain water

Soluble – able to dissolve

Solute – a substance that dissolves in another substance

Solution – a uniform mixture

Solvent – a substance that dissolves another substance

Strict vegetarian – a person who does not eat any meat or any other animal product

Syndrome – group of different signs and symptoms of a disease

Synthetic – made by people

Tender – easy to bite or cut

Tetanus – a disease in which the muscles, especially the jaw muscles, become stiff, caused by bacteria entering the body through cuts and wounds

Variable – any factor that can change

Waste – something no longer useful

Whooping cough – an infectious disease, especially of children, that makes them cough and have difficulty in breathing (*chifuwa chokoka mtima*, also known as *pertussis*)

Zygote – a cell resulting from the union of the male and female gametes

REFERENCES

Malawi Institute of Education (2009), Science & Technology Teachers` Guide for standard 8, Domasi

Malawi Institute of Education (2009), Science & Technology Learners Book for standard 8, Domasi