COMPETENCY BASED CURRICULUM

Maximum Revision Series.

GRADE 6 SCIENCE & TECHNOLOGY Notes

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Question Answers

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Topic 1 LIVING THINGS

Living things are divided in two groups. Name them.

- ✓ Plants.
- ✓ Animals.

PLANTS

TYPES OF PLANTS

- The different types of plant which include include; trees, shrubs, herbs and grass.
- Trees are big plants. They have single strong stem called trunk and many and many strong branches. Example of tree include mango, coconut and avocado trees.
- Shrubs are shorter than trees. They have many thin and woody stems. Example of shrubs include hibiscus rose and cotton plants.
- Herbs are small plants with soft green stems. Examples of herbs include mint and coriander.
- Grass is shorter and has narrow leaves.


Tree


shrub


herbs

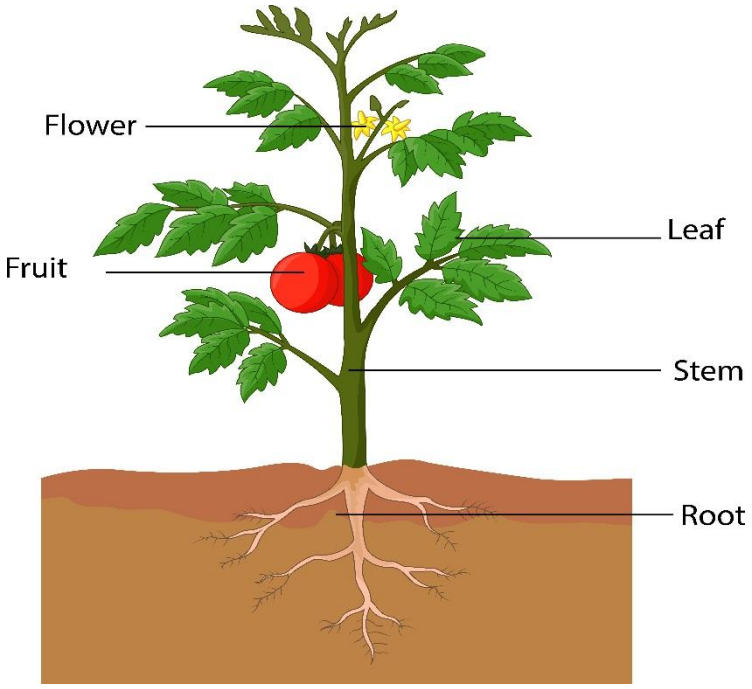

grass

Parts of a plant

Identifying different parts of a plants

The external parts of plant include:

- The roots.
- Stem.
- Leaves.
- Flowers.
- Fruits.



Functions of different parts of a plants

The following are the functions of different parts of a plant.

The Roots

- ✓ **Absorption:** The roots absorbs water and mineral salts from them the soil through a process called absorption. Plant need water and mineral salts for proper growth.
- ✓ **Anchorage**: The roots hold the plant firmly in the soil. This ensures that the plants are not carried away by water or wind.
- ✓ **Food storage:** some plants such as arrowroots, cassava and carrots store food in the roots

The Stem

- ✓ **Transport:-**The stem transport water and mineral salts from the roots to the leaves and other parts of the Plant. The stem transport food made in leaves to other parts of the plant.
- ✓ **Support:-**The hold branches, leaves, flowers and fruits.
- ✓ **Storage of food:** -Some plants such as sugar cane store their food in the stem.
- ✓ **Storage of water:-**Some plants such us a cactus store water in the stem.

The Leaves

- ✓ **Manufacture of food:** leaves make food for the plants using chlorophyll, sunlight, water and carbon oxide through process called **photosynthesis**. Chlorophyll is green Coloring matter found in plant.
- ✓ **Removal of excess water:** This done through tiny holes in the leaves called **stomata**. This process by which plant loose water is called **transpiration**.
- ✓ **Exchange of gases:** leaves take in carbon dioxide, use it during photosynthesis and give out oxygen.
- ✓ **Food storage:** some plants such as spinach, kales sisal and cabbages store food in the leaves.

The Flowers

- ✓ Flowers are reproductive organs of plants; they develop into fruits.

The Fruits.

- ✓ **Storage of food**: some plants like avocado, mangoes and oranges store food in fruits.
- ✓ **Protecting seeds**: most plants have their seeds found inside fruits. The fruits protect the seeds from drying.

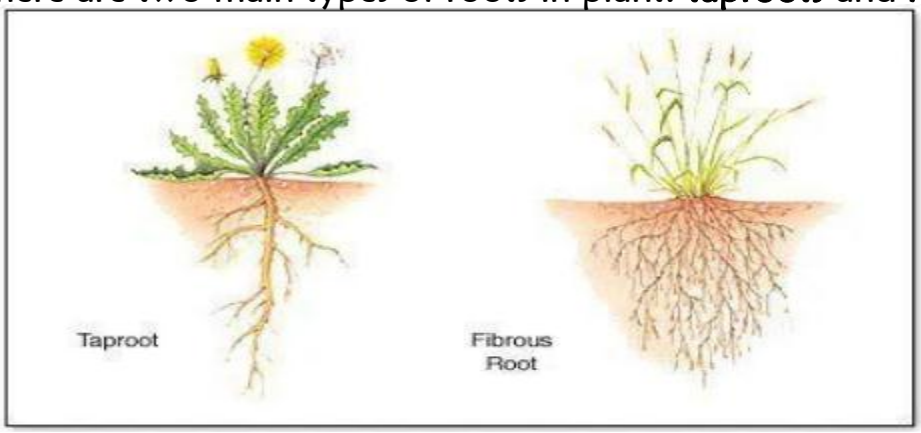
Functions of seeds

- ✓ They are planted to germinate and grow into new plants.

Types of roots

Taproots and fibrous roots

There are two main types of roots in plant: **taproots** and **fibrous roots.**



❒ Taproots.

- It is one main root called a tap root that grow into the soil.
- Smaller root called **lateral roots** and **root hair** develop or grow from the main root. Example of plant that have taproots include:
  - Carrots.
  - Peas.
  - Groundnuts.
  - Beans plants.

❒ Fibrous roots.

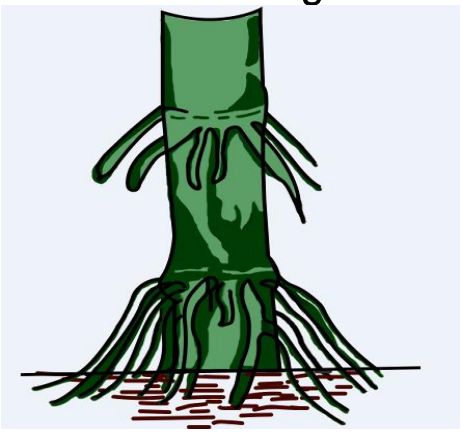
- Many similar roots a rise from the base of the stem and spread out in the soil.
- Example of the plants that have fibrous roots include:
  - Maize.
  - Wheat.
  - Millet.
  - Onions.
  - Coconut.
  - Sorghum.
- Taproots are different from fibrous roots.

Differences between taproots and fibrous roots

TAP ROOT	FIBROUS ROOT
They consist of one main root that grow down into the soil.	They do not have main roots as all roots are similar and develop from same place.
They have lateral roots that a rise from the main root.	All roots are similar and they arise from the same place.
They grow deep into the soil.	They are shallow
They grow vertically downward into the soil,	They grow horizontally in the all directions.

Grouping plants based on the type of roots they have

- Apart from taproot and fibrous root there are other types of roots in plants.
- These roots have different functions in plants.
- Some plant have roots that grow out of the lower parts of their stem. These roots provide extra supports to the plant and are known as **stilt roots**.
- Some plants such as mangrove grow in the soil that do not have oxygen. Their roots grow above the ground to obtain oxygen for the plant from the air. These roots are known as **breathing roots.**



Stilt roots

Breathing roots.

REVISION QUESTIONS.

Name two things absorbed by roots from the soil to the plants.

_____

_____

Answers.

- ✓ Water.
- ✓ Mineral salts.

Name the parts of a plant that stores food.

_____

_____

Answers.

- ✓ Leaves.
- ✓ Fruits.
- ✓ Roots.
- ✓ Stem.

Identify the parts of the plant which. Takes in carbon dioxide and takes out oxygen.

_____

Answer.

- ✓ Leaves.

Absorbs water and mineral salts.

_____

Answer.

- ✓ Roots.

What is the difference between tap roots and fibrous roots?

_____

_____

_____

_____

_____

Answers.

- ✓ Tap roots grow deep in soil while fibrous roots are shallow.
- ✓ Tap roots grow vertically downwards while fibrous roots grow horizontally.
- ✓ Tap roots consists of one main root that grows down into the soil while fibrous roots do not have a main root as al roots are similar and arise from same place.

List down any two plants with tap roots.

_____

_____

_____

Answers.

- ✓ Beans.
- ✓ Carrots.
- ✓ Most trees.

Write down four reasons why plants need roots.

_____

_____

_____

Answers.

- ✓ For absorption of water and mineral salts.
- ✓ For support in the soil.
- ✓ Roots store food in crops like arrow roots.

The picture below shows certain types of roots. Name the type of roots show and give their function.

_____

Answers.

Stilt roots-
They are used to provide extra support for plants.

Jayden and other students were collecting different plants to observe. List down safety precautions they should observe when collecting the plants.

_____

_____

_____

_____

Answers.

- ✓ Use protective clothing such as gloves and gumboots.
- ✓ Plants that irritate should be handles using special tools like forceps or tongs.

Name a plant that stores water in the stem.

Answer.

_____

- ✓ Cactus.
- ✓ Banana.

Grade 6 from Horizon school carried out an experiment by taking a transparent polythene paper and covering a leaf. After sometime, they found some water droplets in the polythene paper. Name the process that forms the water droplets in the polythene paper.

_____

_____

Answer.

- ✓ Transpiration.

ANIMALS

Invertebrates

What are invertebrates?

✓ Invertebrates are animals without backbones.

Name the common examples of invertebrates:

⇨ Insect such as houseflies, butterflies, bees, cockroaches and mosquitoes.
⇨ Spider and ticks.
⇨ Millipedes and centipedes.
⇨ Snails and slugs.


Housefly


Butterfly


Cockroach


Spider


Centipede


Tick


Bee


Mosquito


Millipede


Snail

Safety precaution to observe while handling invertebrates

↳ Always wear protective clothing such as gloves and gumboots while handling invertebrates. The gloves protect the hands and gumboots protect the legs and feet from bites and stings.
↳ Use forceps and tong to handle invertebrates that produce substance that can irritate the skin and those that sting. Never touch invertebrates with bare hands.
↳ Avoid making noise when near invertebrates as this may scare them away.
↳ Never get close to invertebrates. Always observe them from distance.

Identifying invertebrates found in the locality

Characteristics of different invertebrates

The following are some characteristics of insects.

- ✓ Insect have three body parts:
  - Head.
  - Thorax.
  - Abdomen.
- ✓ Insect have three pair of legs. (6 legs in totals)
- ✓ Most insect have two pair of wings. They use the wings for flying. Some insect such as beetles and ants do not have wings.
- ✓ Insect have a pair of antennae on top of their heads. Antenna is long thin and are used for sensing. Antennae are also known us **feeler.**
- ✓ The body of an insect has a hard-outer covering called an **exoskeleton**. Examples of insect include bees, butterflies, lice houseflies, beetle's mosquitoes, cockroaches, termites and dragonflies.

Characteristic of spider and ticks (arachnids)

The following are some characteristics of spider and ticks.

- ✓ Spiders and ticks have two body parts.
- ✓ Spiders and ticks have four pairs of legs.
- ✓ Spiders and ticks do not have wings.
- ✓ Spider and ticks do not have antennae.

Characteristics of snails and slugs

What are characteristics of snails and slugs?

The following are some characteristic of snails and slugs.

- ✓ Snails and slugs have soft body.
- ✓ Snails and slugs do not have wings.
- ✓ Snails and slugs have two pair of feeler on their head. The feeler is also called receptacles.
- ✓ Snail and slugs move by crawling on slimy mucus using the muscular foot. The slimy mucus is produced by the muscular foot.

Characteristics of centipedes and millipedes

What are the difference between centipede and millipedes?

What are the characteristics of centipedes and millipedes?

The following are some of characteristic of centipedes and millipedes.

- ✓ Centipedes and millipede have two body sections –head and trunk.
- ✓ The trunk of the both centipedes and millipedes is divided into many sections called **segment**.

- ✓ Centipedes and millipedes have many pair of legs. Centipedes have once pair of legs per segment. One leg on each side of the body. Millipedes have two pairs of legs per segment. The legs are positioned under the body. Millipedes coil their body when disturbed.
- ✓ Centipedes and millipedes have one pair of antennae on the head.

Importance of invertebrates to human beings

The following are some of the ways in which invertebrates are useful.

- ❍ **Source of food**: some insect such as termites are used for food by some people. Bees provide honey which is used as food.
- ❍ **Pollution:** most of flowering plants are polluted by insect pollution enable plant to produce seeds.
- ❍ **Cleaning and environment**: some invertebrates such as millipedes feed on dead decaying matter turning into compost. This help to clean up the environment. The compost makes soil good for growing crops.

REVISION QUESTIONS.

Animals are grouped into two categories. Identify the two categories.

_____

_____

Answers.

- ✓ Vertebrates.
- ✓ Invertebrates.

Invertebrates are animas with out

_____

Answer.

- ✓ A backbone.

Name the protective clothing used to protect the following parts when handling invertebrates.

a.) **Hands**_____ gloves.

b.) **Feet**_____ gumboots.

Which tools can be used to handle invertebrates that sting or produce irritating substances.

_____

_____

Answers.

- ✓ Pair of forceps.
- ✓ Tongs.

A teacher brought two photos of insects as shown below. One was a housefly and the other was a spider. He asked the learners to observe and give all the differences they saw. List any four differences between the animals seen in the pictures.

_____

_____

_____

_____

Answers.

- ✓ Housefly has three body parts while a spider has two body parts.
- ✓ Housefly has 3 pairs of legs while spider has 4 pairs of legs.
- ✓ Housefly has an antennae while spider lacks an antennae.
- ✓ Housefly has wings while spider lacks wings.

Jayson came across the animal shown in the photograph below.

Write down the characteristics of the animal shown above.

_____

_____

_____

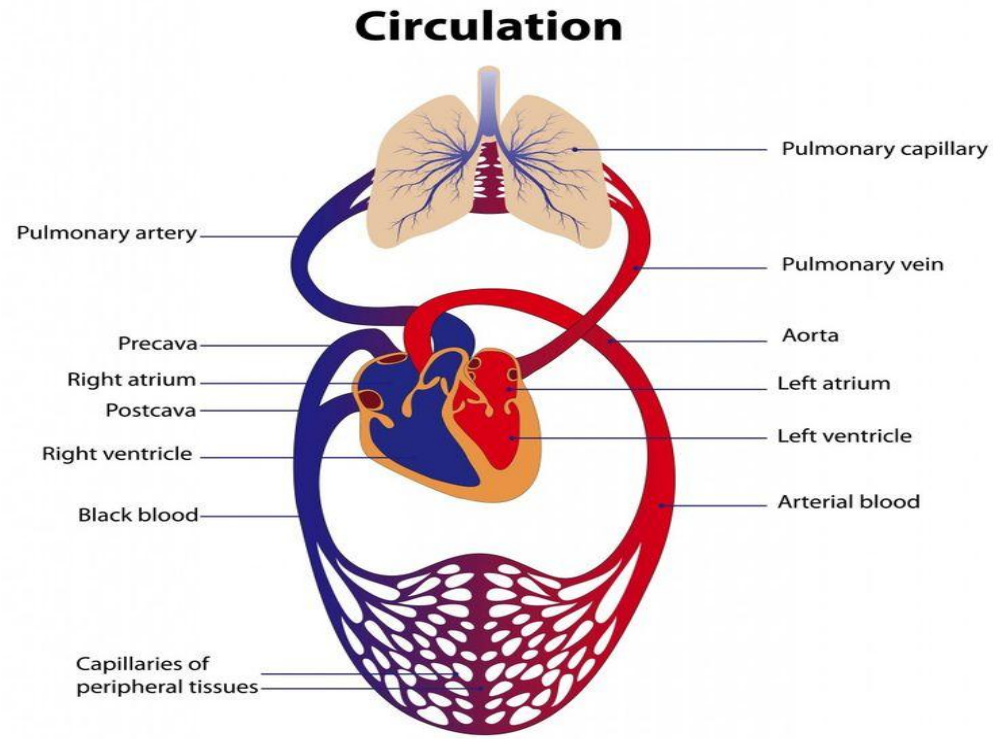
Answers.

- ✓ Does not have wings.
- ✓ Have a soft body.
- ✓ It moves by crawling.
- ✓ Has receptacles on the head.

HUMAN CIRCULATORY SYSTEM

Main parts of human circulatory system.

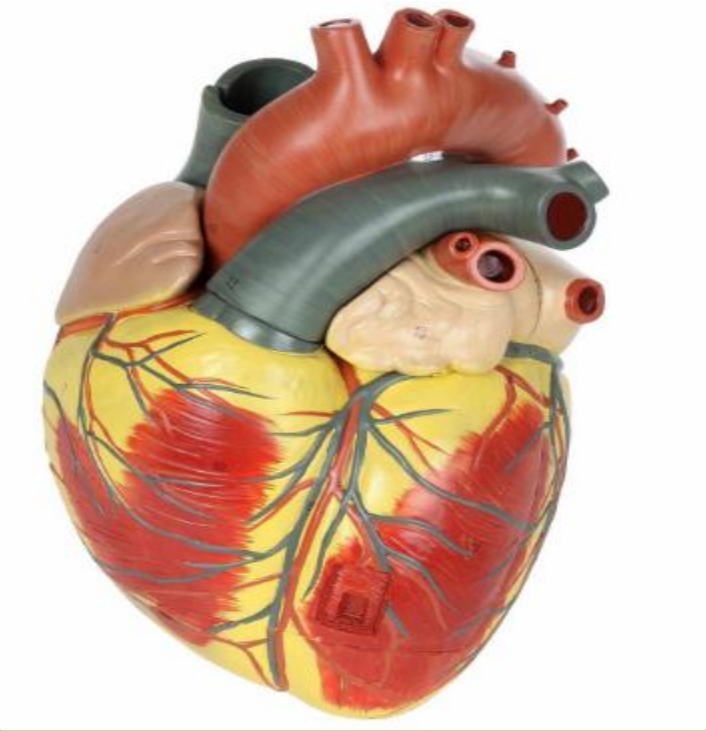
- Blood circulate throughout the body in a system known as **circulatory system.**
- The circulatory system is made up of the heart, blood and blood vessels.
- **The heart** is muscular organ that pumps blood to all parts of the body.
- Blood circulates in the body through the blood vessels.
- Blood is a body fluid that is used in the transport of substance within the body.
- **Blood vessel** are tubes in which blood flows, the main blood vessel are the arteries, veins, and capillaries.



What is the Importance of Circulatory System?

The circulatory system is importance because it is involved in the transport of the following substance in the body:

- Oxygen from the lung to all parts of the body.
- Digested food from small intestine to all parts of the body.
- Carbon dioxide from body to the lungs where it's breathed out.
- Heat from the liver to all parts of the body. This help to regulate body temperature.
- Waste product from different parts of the body to organ such as kidney to be removed from the body.



Parts of the heart and its functions

- The heart has four chambers, the upper chamber is known as **auricle** and the lower chamber are known as **ventricles**. The heart has two auricles: the left auricle and the right auricle and the two ventricles: the right ventricle and the left ventricle. Auricles have thinner walls than ventricles.
- The functions of heart are to pump blood to all parts of the body.
- Auricles receives the blood from the body organs and then empty it into the ventricles. The ventricles then pump blood to the lung and to other parts of the body. The heart has valves that prevent blood from the following backwards.
- The heart is connected to blood vessels.

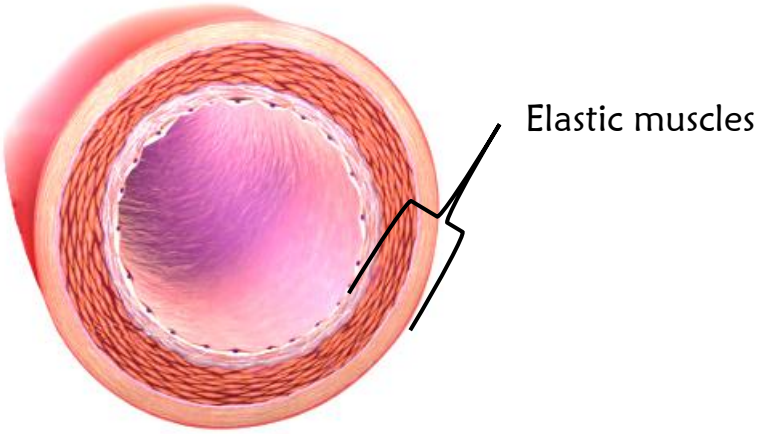
Pumping of the heart

- ❒ The right auricle receive blood from the body. The blood then flows into the right ventricle. This blood does not have oxygen and is called deoxygenated blood.
- ❒ The right ventricle pumps the deoxygenated blood into the lung through the pulmonary artery.in the lungs blood receive oxygen and become oxygenated blood.
- ❒ The oxygenated blood flow from the lungs into the left auricles of the heart through the pulmonary vein. This blood then flows into left ventricle.
- ❒ The left ventricle then pumps the oxygenated blood to all parts of the body except the lung through the aorta. The left ventricle has thick muscular walls because they pump blood to all parts of the body.
- ❒ The heart has valves which prevent blood from flowing backwards.

Types of blood vessel and their functions

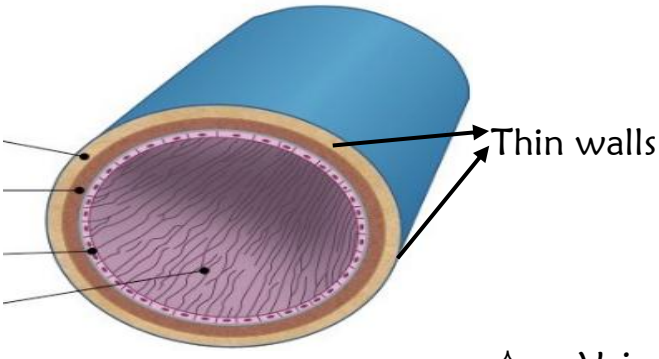
- Blood vessel are tubes that carry blood around the body. The main blood vessel in the body are arteries, capillaries and veins.

Arteries



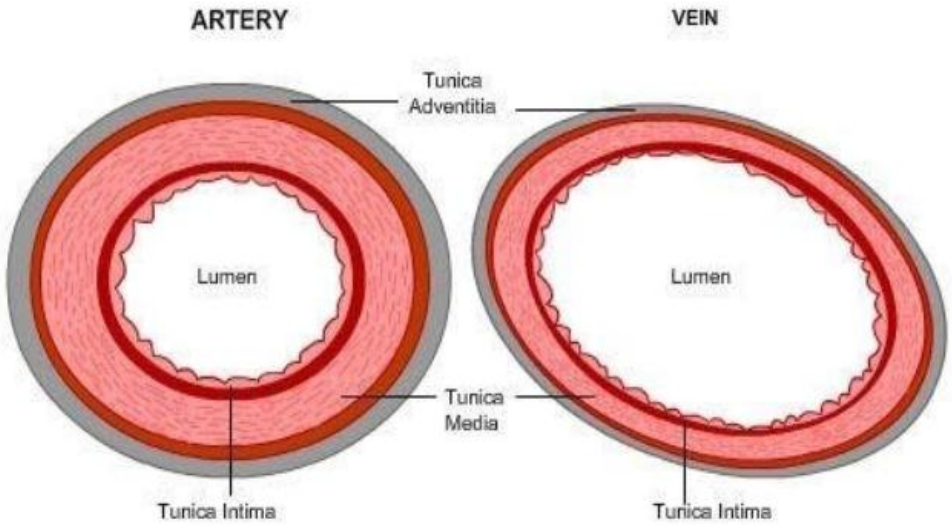
- Arteries have thick elastic walls.
- Arteries have a narrow lumen. Lumen is the space inside tube such as blood vessel.
- Arteries carry blood away from the heart to other parts of the body.
- Arteries carry oxygenated blood except the pulmonary artery which carries deoxygenated blood from the heart to the lungs.
- Blood in arteries flow under high pressure because it is pumped from the heart into the arteries at high pressure. The high pressure can be felt in the arteries as a beat. We can determine the number of times the heart beat in a minutes by counting the beat in the arteries. The number of times the heart beats in a minutes is called **pulse** or **heart rate**. The pulse is easiest to find on the wrist and on the neck.

Veins



- ✧ Veins have thin walls.
- ✧ Veins have a wide lumen.
- ✧ Veins have valve to ensure blood flows only in one direction.
- ✧ Veins carry blood towards that heart.

✧ Veins carry deoxygenated blood except the pulmonary vein that carries oxygenated from the lung to the heart.



Capillaries

⮑ Capillaries have very thin walls.
⮑ Capillaries have no valve.
⮑ Capillaries reach every part of the body. They allow movement of oxygen and food nutrients from the blood into the body.
⮑ They also allow the movement of carbon dioxide and other waste from the body into the blood.

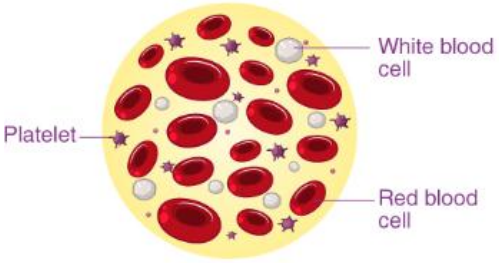
Different between arteries, veins and capillaries

Arteries	veins	Capillaries.
Have thick elastic walls.	Have thin walls	have thin walls
Carry blood away from the heart	Carry blood to the heart.	Involve in the exchange of substance between the blood and the body organs.

Components of blood and their functions

The main components of blood are;

☑ Plasma
☑ Red blood
☑ White blood cells
☑ Platelets

Component of blood	Description	function
Plasma 	▸ It is the liquid part of blood which most of it is water. ▸ It is pale yellow in colour	✧ Carries blood cells around the body. ✧ Carries waste to organs which removes it from the body. ✧ Carry food nutrients like glucose around the body
White blood cells 	▸ Lacks a fixed shape. ▸ Are few compared to red blood cells	✧ Protect the body against diseases by attacking disease causing germs.
Red blood cells 	▸ Are disc shaped. ▸ They contain a red colouring matter called haemoglobin that gives blood its red colour	✧ Haemoglobin in them carries oxygen from lungs to other body parts. ✧ They carry carbon dioxide from other parts to the lungs where it is removed out of the body.
Platelets 	▸ Are tiny oval shaped cells. ▸ Are found in plasma.	✧ They help in blood clotting. This prevents excessive bleeding when one is injured.

Blood groups

- Blood group is the type of blood a person has.
- The ABO blood group system is one of the ways of grouping blood.
- In the AOB blood groups system, there are four main blood groups. These are;
  - ↳ Blood group A.
  - ↳ Blood group B.
  - ↳ Blood group AB.
  - ↳ Blood group O.

Role of blood group in blood transfusion

- Blood transfusion is the process by which blood from one person is added to another person.
- The person who gives blood is called the **donor** while the one receiving the blood is known as the **recipient**.
- Blood transfusion is done to help restore blood in people who have lost a lot of blood due to injury or diseases.
- Before blood transfusion is done it is importance to know the blood group of the both the donor and the recipient.
- This to ensure blood is compatible that is, it can mix without the red blood cells clumping together in the recipient body.
- Clumping together of red blood cells can be dangerous.

Compatibility of blood groups	
	Can donate to
can receive from	
Blood group A blood group A and blood group O	Blood group A and AB
Blood group B group B and blood group O	blood group B and blood group AB blood
Blood group A B groups	blood group AB all
Blood group O blood group O	all groups

A Person with blood group O can donate blood to people of all the other blood groups. People with blood group O are referred to as **universal donors.**

✧ A person with blood group AB can receive blood from all the blood groups and is therefore referred to as a **universal recipient.**

REVISION QUESTIONS.

Name the five things transported by blood in the body.

_____
_____
_____
_____
_____

Answers.
- ✓ Oxygen.
- ✓ Digested food.
- ✓ Carbon dioxide.
- ✓ Waste products.
- ✓ Heat.

Identify the parts that make the circulatory system.

_____
_____
_____

Answers.
- ✓ Heart.
- ✓ Blood.
- ✓ Blood vessels.

What is the function of the heart?

_____

Answers.
- ✓ To pump blood.

Name the four chambers of the heart.

_____
_____
_____

Answers.
- ✓ Left auricle.
- ✓ Right auricle.
- ✓ Left ventricle.
- ✓ Right ventricle.

Name the blood vessels that enable exchange of materials between blood and body organs.

_____

Answers.
- ✓ Capillaries.

List down any differences between arteries and veins.

_____
_____
_____

Answers.
- ✓ Arteries have thick elastic walls while veins have thin walls.
- ✓ Arteries carry blood away from the heart while veins carry blood to the heart.
- ✓ Arteries have a narrow lumen while vein have a wider lumen.

State four components of blood.

_____
_____

Answer.
- ✓ Plasma.
- ✓ White blood cells.
- ✓ Red blood cells.
- ✓ Platelets.

Name the four blood groups.

_____
_____

Answers.
- ✓ Blood group A.
- ✓ Blood group B.
- ✓ Blood group AB.
- ✓ Blood group O.

The transfer of blood from one person to another is called_____

Answer.
- ✓ Blood transfusion.

A person with blood group AB can receive blood from all the blood groups. He is therefore known as_____

Answers.

A universal recipient.

A person with blood group O can donated blood to all other groups. He is known as_____

Answer.

A universal donor.

Which chamber of the heart pumps blood?

a.) To the rest of the body_____

Answer.

Left ventricle.

b.) To the lungs_____

Answer.

Right ventricle.

Reproductive systems

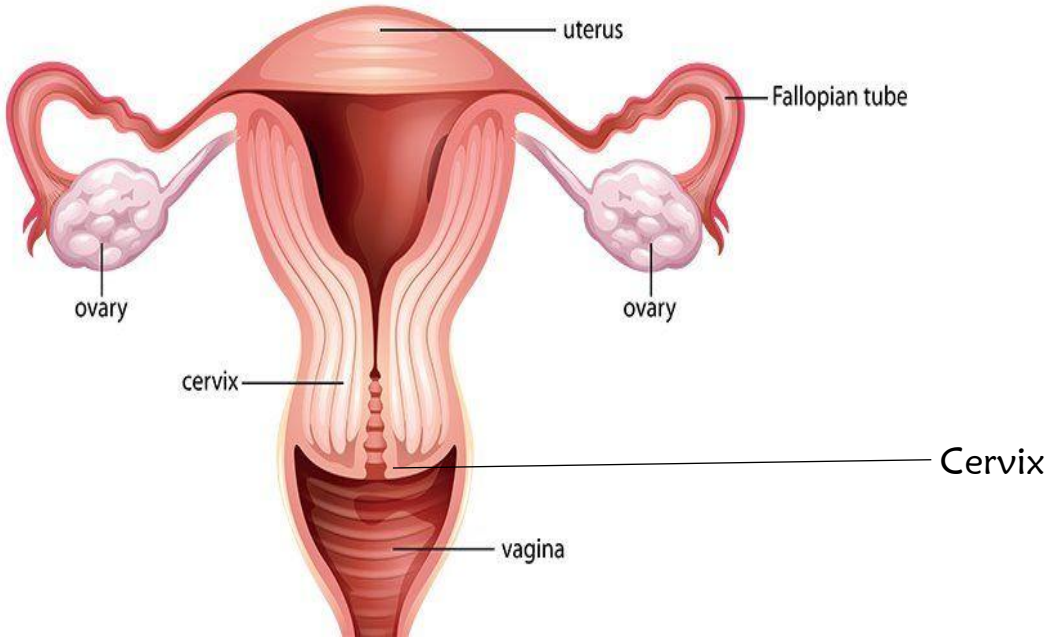
Parts and functions of the female reproductive system

☑ Living things increase their number through **reproduction**.

☑ Living things have organs that enables them to reproduce. These organs form the **reproductive system.**

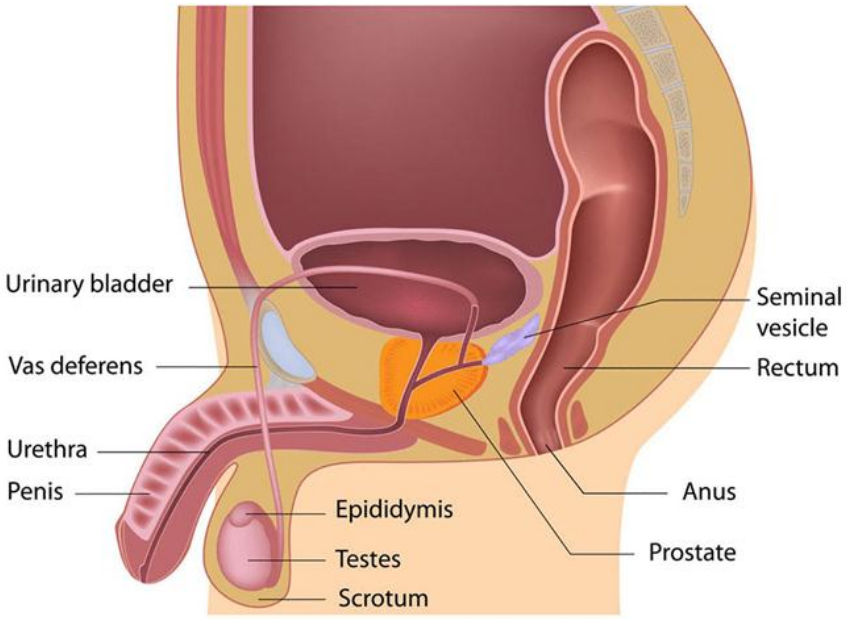
☑ The major parts of female reproductive systems include :

- ⇨ Ovary.
- ⇨ Oviduct.
- ⇨ Uterus.
- ⇨ cervix
- ⇨ Vagina.



Functions of the major parts of the female reproductive system.

Part	Function
Ovaries	✓ They are small oval-shaped glands that are located on the either side of the uterus. ✓ They produce eggs cells called ova in the process called ovulation. When released, the eggs enter into the oviduct. ✓ They produce hormones.
Oviduct also called fallopian tube.	⇨ The oviduct is a tube that connect the ovary to the uterus. ⇨ It is the place where fertilization of the eggs by the sperm takes place.
Uterus also called womb.	✓ The place where the fertilized egg develops into a foetus
Cervix	✓ It connects vagina with the uterus. ✓ It produces mucus that facilitate the entry of the sperms. ✓ It opens to allow the passage of a baby from the uterus into the vagina during childbirth.
Vagina also called birth canal.	It is an elastic tube that extend from the vaginal opening to the cervix. ✓ It receives semen during intercourse, ✓ It is the birth canal through which the baby passes during birth.



Parts and functions of the male reproductive systems.

- The major parts of the male reproductive systems are:
  - ✓ Penis.
  - ✓ Testis.
  - ✓ Urethra and glands.
- Gland of the male reproductive system are the **prostate gland**, **seminal vesicles** and the **Cowper's glands**.

Definition and functions of major parts of the male reproductive system

Part	Function
Penis	The penis is the male sex organ. It transfers sperm into the female reproductive system during intercourse.
Testicle or testis	✓ Testis is oval -shaped and is enclosed within structure called a scrotum which hangs outside the body. ✓ Testis produce sperms and hormones.
Urethra	✓ The urethra is a tube that runs through the penis. ✓ It is a passage of sperms and urine out of the body.
Glands.	✓ The glands produce a fluid known as seminal fluid. Sperm cells depends on seminal fluid to move and keep them alive. The mixture of **seminal fluid** and sperm is called **semen**.
Sperm duct.	✓ A tube that allows the sperm to pass from testis to the urethra.

Physical changes that occur during adolescence

Adolescence is the period during which a boy or a girl develop from childhood to adulthood.
Boy or the girl who are undergoing this changes are called an **adolescent**.
During adolescence boy and girl undergo many changes.
The changes that are visible are known as **physical changes.**

Physical changes that occur in girls during adolescence

The physical changes that occur in girls during adolescence include;

- ✓ Increase in weight and height.
- ✓ Breast appear and continue to enlarge
- ✓ Hips broaden
- ✓ Hair grow under the armpits and on the pubic area
- ✓ The menstrual flow begins. This a monthly flow of blood and tissue flow uterus through the vagina.
- ✓ Pimples may appear on face.

Physical changes that occur in boys during adolescence

The physical changes that occur in boys during adolescence include the following

- ✓ Increase in weight and height.
- ✓ The penis testis and scrotum enlarge.
- ✓ The shoulders and the chest broaden.
- ✓ Hairs grow on the chest cheeks, chin, and the pubic area and under the armpits.

- ✓ Some will start experiencing wet dreams wet dreams that cause them to release semen in their sleep.
- ✓ Pimples may appear on the faces.
- ✓ The voice becomes deep and the voice box may enlarge and become visible on the throat.

Social implication of changes that occur during adolescence

The following are some of the effects of changes that occur during adolescences

- Developing of new identity. This makes adolescence try out new clothing styles, listen to new music and develop new friendship all in a bid to behave like adults.
- Development of values' mikes adolescence question things, they therefore seem like are rebelling against established rules
- Desire for independence. This makes adolescence wants to make their own decision like how to spend their free time or how to spend their money.
- Increase peer influence. This influence adolescence behavior and mode of dressing. Adolescence want to be importance and recognize by their friends.
- Development of interest in the other gender leading to relationship.
- Increased influence from media. The internet greatly influences adolescence lifestyle.

Health implication of changes that occur during adolescence

Sexually transmitted infections STI are diseases usually pass from one person to another through sexual contact.

Acquire immunodeficiency syndrome AIDS, syphilis and gonorrhea are some examples of sexually transmitted infections.

Adolescence needs to practice good hygiene for their well beings and for around them.

Teenage pregnancy can increase health risky for newborns as well as for the young mothers.

The use of alcohol and other drug can lead to addiction, failure in school and poor judgments which may put adolescence at risk of accidents, violence and suicide.

Adolescent are encouraged to share their feeling when they feel overwhelmed.

REVISION QUESTIONS

Identify the functions of:

Scrotum_____

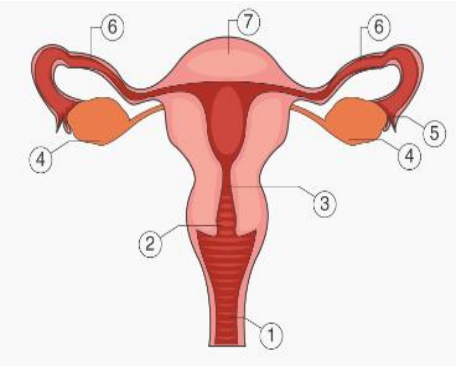
Testis_____

Urethra _____

Answers.

Scrotum holds are protects testis.
Testis produces sperms.
Urethra is a passage for both urine and sperms.

Name the parts represented by the numbers.



1-
2-
4-
6-
7-

Answers.

1-vagina.
2-cervix.
4-ovary
6-oviduct or fallopian tubes
7-uterus

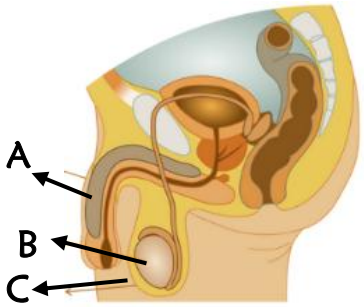
What are STIs?

_____

_____

Answer.

STIs are diseases that are passed from one person to another through sexual contact.



Name the parts labelled A, B and C.

A-
B-
C-

Answers.

A-penis
B-testes
C-scrotum.

List down changes that occurs in boys when reach adolescence.

_____

_____

answer.

- ✓ There is increase in weight and height.
- ✓ Penis, scrotum and testes enlarges.
- ✓ Shoulder and chest broadens.
- ✓ Development of pimples in the face.
- ✓ Voice becomes deep.
- ✓ Hair grow on chin, chest, pubic area and in the armpits.
- ✓ Some experience wet dreams.

List down changes that occurs in girls when reach adolescence.

_____

_____

answers.

There is increase in weight and height.

- ✓ Hips broaden.
- ✓ Breasts appear and enlarge.
- ✓ Hair grow under armpits and in pubic areas.
- ✓ Menstrual flow begins.
- ✓ Pimples may appear in the face.

Topic 2 ENVIRONMENT

WATER CONSERVATION

Meaning of water conservation.

- Water is important for pants and animals.
- To conserve water means to use water without wasting.
- it involve taking good care of water source to ensure that there is enough water for use throughout. Sources of water include streams, rivers and lakes.

Ways of conserving water

Water can be served in the following ways.

- Reusing.
- Reducing the use of water.
- Recycling.
- Harvesting rain water.
- Mulching.
- Construction of dams.

Reusing

→ Reusing water means using again water that has already been used. The following are some of ways of in which water can be reused.
→ Water used for washing clothes can be used again for cleaning houses, latrines and toilet.
→ Water used for cleaning fruits and vegetables can be used again for watering crops on the farm.
→ Water used for washing clothes can be sprinkled on earthen floors to reduce dust.
→ Water used for washing hands can be used to mop floors.

Reducing the use of water

- Reducing involve using a valuable water carefully to avoid wastage. The following are some of ways we can reduce amount of waters for different activities.
- Turning off the water tap while brushing teeth, leaving the tap running while brushing teeth wastes water
- Using basins rather than running water when cleaning utensils. Cleaning utensils in basin use less water than cleaning them under running water.
- Repairing broken water pipes. Leaks from pipes waste a lots of water.
- Taking a short time to shower or using water in a basin bath,
- Using drip irrigations instead of overhead irrigation. In drip irrigation water is put directly to each plant. This ensure that there is no wastage of water.in overhead

irrigation, not all water falls on the plant. Some of it goes to waste. Drip irrigation help to conserve water.

Recycling

- Recycling water is treating water that has already been used so that it is safe to be used again.
- Treating water ensure that polluted water is not lost but is made available for use again.
- Waste water from toilets, bathroom and industries can be recycled in special area known as sewage treatment plants.
- In sewage treatment plants, solid are filtered out of water waste. Chemical are then added to the remaining water to kill germs and make it safe for use it is released into the environment.

Harvesting rainwater

- Harvesting rainwater is done by trapping it from roofs of the house using gutters.
- The gutter traps rainwater and direct it to storage tank.
- Harvesting water ensure that rainwater does not go waste.
- Water harvested from roofs made of asbestos is not safe for cooking or drinking.

Mulching

- Mulching involves covering the soil around plant.
- This reduces the loss of water from the soil through evaporation.
- Mulching reduces evaporation of water from the soil.

Construction of dams

- Dams are constructed that are built across rivers or steams to hold water for future use.
- Dams can be constructed in areas where floods occur to store excess water or in dry area to store water it rains.
- The water in the dams is then used for domestic purposes, irrigation or to produce electricity.

Importance of water conserving water

The following are some reasons why we should conserve water

- To ensure constant supply of water during the dry season and when there is shortage.by conserving water, we ensure that there is enough water for use throughout the year.
- To conserve our environment. Human beings are not the only living things that require water for survival. All plants and animals need water for survive.by conserving water, we ensure that there is enough water for other animal and plants.
- To reduce amount of money spent on water bills. Using less water means paying less money on water bills.

- To reduce pollution especially from the sewage. Treating sewage reduce the amount of harmful substance that are released into the environment.
- To conserve energy. By conserving water, we reduce the amount of energy used to pump water.

REVISION QUESTIONS.

Give reason why we should conserve water.

_____

_____

_____

_____

Answers.

- ✓ To ensure we conserve the environment.
- ✓ To ensure constant supply of water.
- ✓ To reduce water bills spent.
- ✓ To reduce pollution.
- ✓ To conserve energy used to pump water.
- ✓ To prevent damage to property.

What is water conservation?

_____

_____

Answers.

- ✓ Water conservation means use of water without any wastages.

List down ways of conserving water.

_____

_____

_____

_____

Answer.

- ✓ Reusing.
- ✓ Reducing use of water.
- ✓ Recycling.
- ✓ Harvesting rainwater.
- ✓ Mulching.
- ✓ Construction of dams

What are the benefits of conserving water?

_____

_____

_____

Answers.

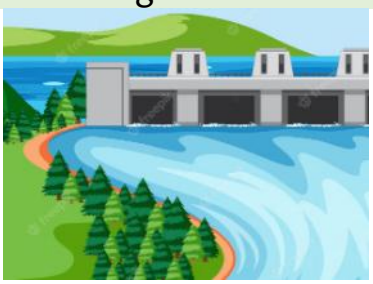
- ✓ We reduce water wastage.
- ✓ Our environment is conserved.
- ✓ Water can be supplied in times of scarcity.
- ✓ Avoid damage to property.
- ✓ Reduces soil erosion.

Identify the method of water conservation represented below.

_____

Answer.

Mulching.



_____

Answer.

Dam

Topic 3 Interacting with computing devices.

Handling data – spreadsheets

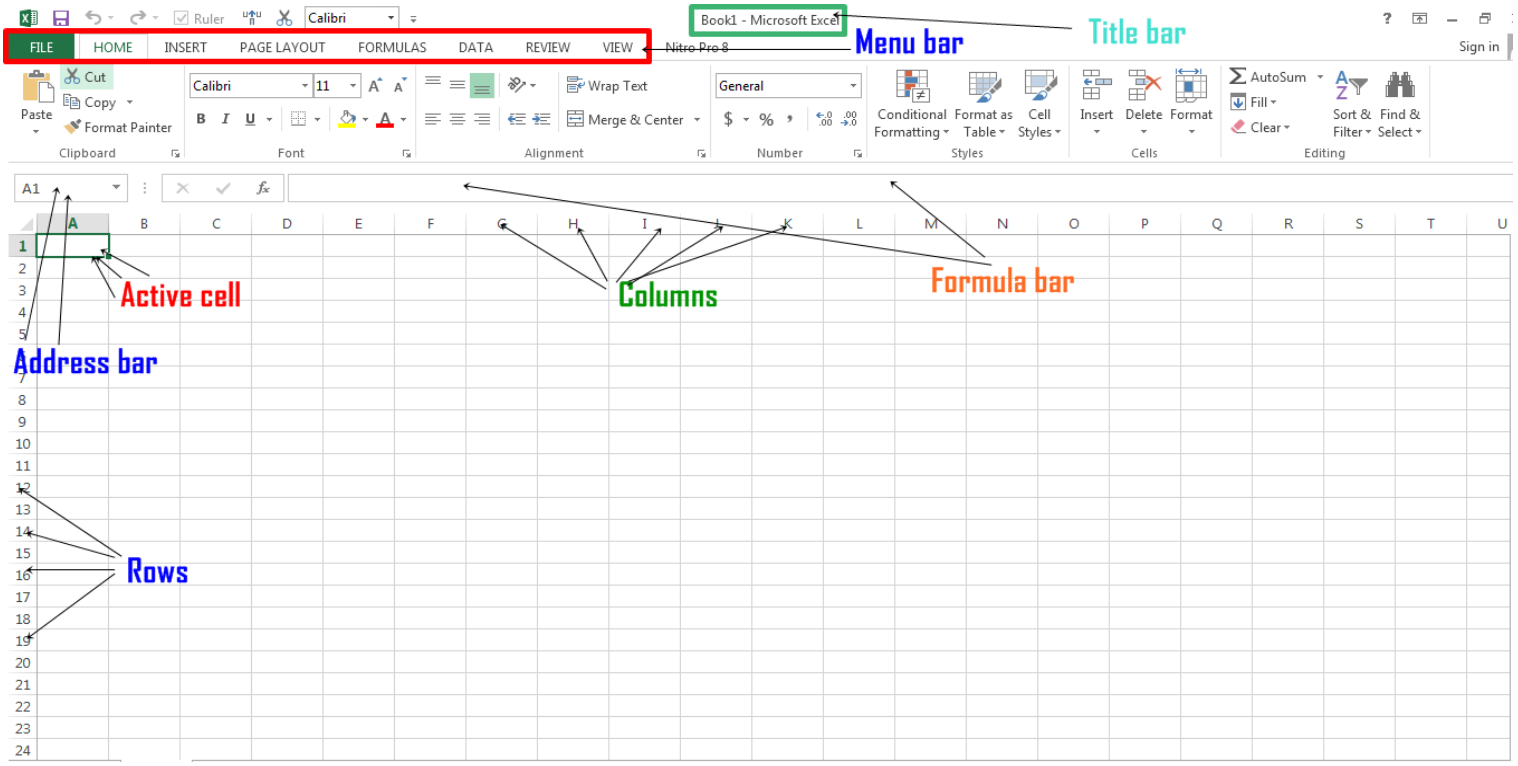
Safety measure to be observed while using computing devices in the locality

The following are some safety measure we should observe while working with computing devices.

- ✓ Keep the computing device clean. Always place a cover on them when they are not in use so as to keep off dust.
- ✓ Do not drink or eat near computer. The food and drink might spill on the computer and damage them.
- ✓ Do not bang any part of computing devices.
- ✓ Never touch computer with wet hands. Always dry your hands before touching any computing device.

Creating a spreadsheet document

- **A spreadsheet** is a computer application that's is used to arrange calculate and sort data. The data can be in form of numbers, texts and formulas, a spreadsheet is made of row and columns.
- Spreadsheet application are many. In this grade, we are going to learn about spreadsheet using Microsoft excel.
- Microsoft excel window look like the one shown in the figure below.



- A Spreadsheet has boxes known as **cells**.
- Cells are organized into rows and columns. Rows are the horizontal cell and column are the vertical cell.
- The rows are identified using numbers while the columns are identified using letters of the alphabets.
- A cell is identified by a combination of letter and a number. This combination is known as **a cell address**. A cell address A1 means that the cells is in column A, row I while a cell address B6 means that the cell is in column B, row 6. The correct way to write a cell a dresses is by starting with a letter followed by the row number.
- A selected cell is called an active, it always has a heavy border around it.
- Name box. This is the area that display the address of the active cells.
- The formulas bar displays the content of the active cells.
- Worksheet are the spreadsheet that contain the data. Many worksheets make up of a workbook.
- The title bar shows the name of the workbook that is in use.

Starting a spreadsheet program (Microsoft Excel)

Steps followed when staring Microsoft Excel.

- ↳ Switch on the computer.
- ↳ Click the start button.
- ↳ Click all programs option from the start menu.
- ↳ Search for Microsoft Office from the submenu and click on it.
- ↳ Search for Microsoft Excel from the submenu and click on it.

Keying in information.

- Information or data is entered in a cell. To enter data in a cell, click in the where you want the data to appear and then type or key in your information. You can also key information using the formula bar. To do this use the following steps
- Click the cell where you would like the data to appear
- Place the cursor in the formula bar and key in the data.
- To move from one cell to another use the row key on the key board.
- To move to next line within the cell press the ALT+ENTER keys.
- To select cell, hold down the left mouse button and drug to mouse over the cells.
- To go to a specific cell quickly, use the name box. Click in the name box and type the address of the cell you want to go and then press enter.

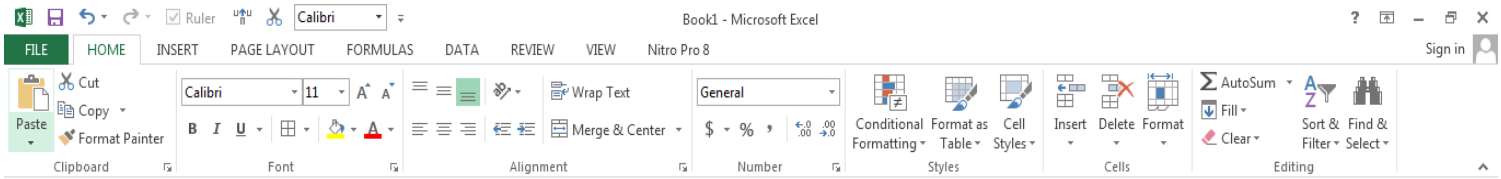
Open Microsoft excel and key in the information below

NAME	Grade	Age
Jayson	4	15
Jayden	6	13

Editing a spreadsheets document in a computing device

1. In a spreadsheets data can be edited using button in the ribbon
2. The home tab in a Microsoft excel ribbon has groups such as clipboard, font, alignment, styles, cells and editing. Clicking on a group display different buttons or command. You click on the buttons to edit or make changes in a spreadsheets documents.

The following is a summary of ribbon showing different groups



Clipboard group, has buttons for copying, cutting and pasting data in a spreadsheet.
Font group. Has buttons for changing font size, type and color of data.
Alignment group. Has buttons for changing or arranging data in cells.
Number group. Has button for edit currencies, dates, percentages and fractions.
Styles group. Has button to create tables or make data stand out by adding color to cells.
Cells group. Has buttons to insert, delete or format cells, rows column and sheets.
Editing group. Has button to filter data, auto fill data, and sort, filter find and replace data.

3. When you type text it overlaps onto next text cell, to avoid this wrap the text so that it fills in one cells by using the following steps.
   a) Select the text that you want to fill in a cell
   b) Click the home tap to display the ribbon.
   c) In the alignment grip click the wrap text button.
   d) The text will fit in one cell.

4. **To sort or arrange numbers according to their size do the following;**
   a) Highlight the cells that have the numbers you want to sort or arrange.
   b) Click the home tab and in the editing group, click the sort and filter button.
   c) Select how you want to sort or arrange the numbers.

5. **To change the width of a column.**
   a) Click the cells whose column width you want to change.
   b) On the home table, in the cell groups, click format.
   c) Under cell size, make the change that you want.

6. **To copy and paste data, do the following.**
   a) Select the cell that you want to copy.
   b) Click on home tab and on clipboard group, clock copy. You will see dotted lines moving around the cell you have selected.
   c) Select the cell where you would like to copy the data to.
   d) Click on home tab and on clipboard group, click paste.

Simple data calculations in a spreadsheet program.

1. In Microsoft excel, you can perform simple mathematics operations such as addition, subtraction, division, and multiplication.
2. All formulas in Microsoft Excel Must start with an equal sign. The formulas are entered in the cells where you want the answer to appear.

Addition and Subtraction.

	A	B	C	D
1	NAME	ENGLISH	MATH	TOTAL
2	Jayson	4	15	
3	Jayden	6	13	
4				
5				

- We can practice addition by entering the data above in a computer spread sheet or in Microsoft excel.
- To get the totals for Jayson marks we need to add the two subjects using a formula.
- We can use two formulas as follows.
  Under totals in Jayson's marks enter
  - ✓ Equal sign.
  - ✓ Then type SUM.

- ✓ Open bracket.
- ✓ Highlight B4 to C4
- ✓ Close the button
- ✓ Press ENTER

= SUM (B4:C4) ENTER BUTTON
Or
= (B4+C4) ENTER BUTTON

Multiplication and division.

	A	B	C	D
1	FRUIT	QUANTITY	PRICE /FRUIT	TOTAL COST
2	Mango	3	20	60
3	Guava	6		30

Enter the table above in a spreadsheet and use it to calculate total cost for mangos and the price for each guava.

Multiplication (mangos total.

- ✓ Click the cell where you want the answer to appear.
- ✓ Type equals sign under total cost box for mangos.
- ✓ Open the bracket
- ✓ Type cell address of quantity of Mangos, for example B2
- ✓ Type the multiplication sign asterisk (*)
- ✓ Type cell address of the price for each mango, example C2.
- ✓ Close the bracket.
- ✓ Press Enter key.

= (B2*C2) ENTER BUTTON

	A	B	C	D
1	FRUIT	QUANTITY	PRICE /FRUIT	TOTAL COST
2	Mango	3		=(B2*C2) ENTER
3	Guava	6		30

Division (Price of each guava)

Enter the table above in a spreadsheet and use it to calculate total cost for mangos and the price for each guava.

Division (Quantity of Guavas.)

- ✓ Click the cell where you want the answer to appear which is C3.
- ✓ Type equals sign
- ✓ Open the bracket
- ✓ Type cell address of total cost of guava (D3)
- ✓ Type the division sign (/)
- ✓ Type cell address of the number of guavas, example B3.
- ✓ Close the bracket
- ✓ Press Enter key

= (D3/B3) ENTER BUTTON

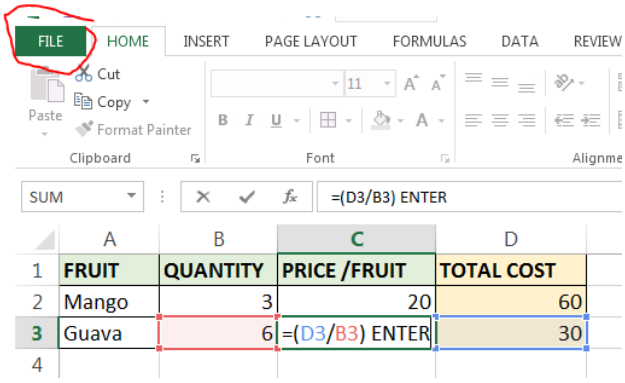
	A	B	C	D
1	FRUIT	QUANTITY	PRICE /FRUIT	TOTAL COST
2	Mango	3	20	60
3	Guava	6	=(D3/B3) ENTER	30

Saving a spreadsheet document in a computing device.

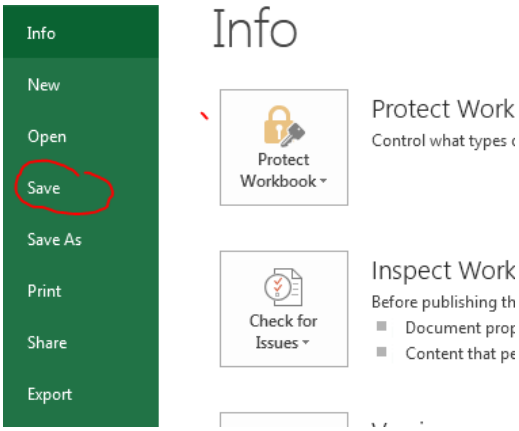
Saving is storing your work in the computer so as to use it at later date and not to lose it. When saving a workbook, you have to give it a name. This makes it easy to retrieve when you need it.

Steps when saving a spreadsheet document.

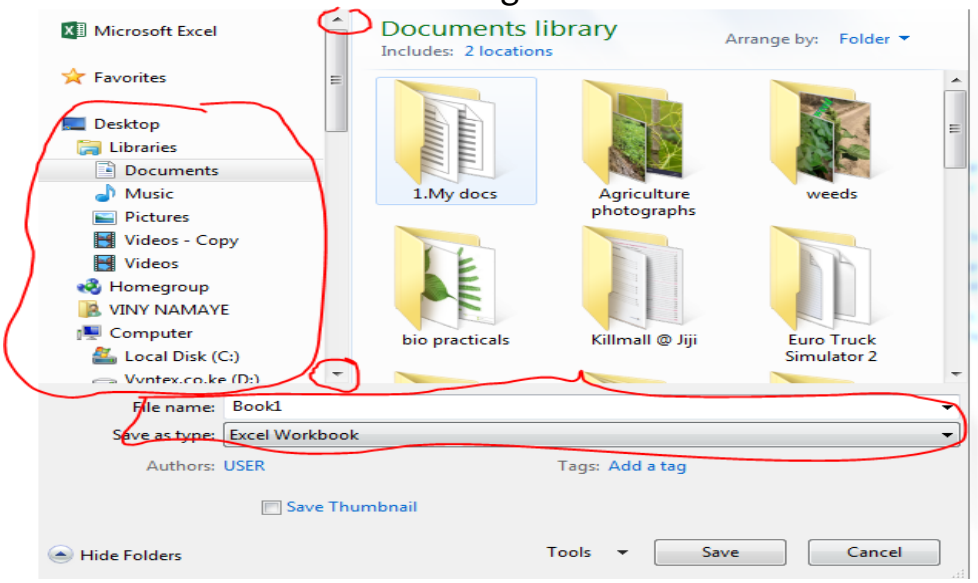
- ✓ Click file menu as shown below.



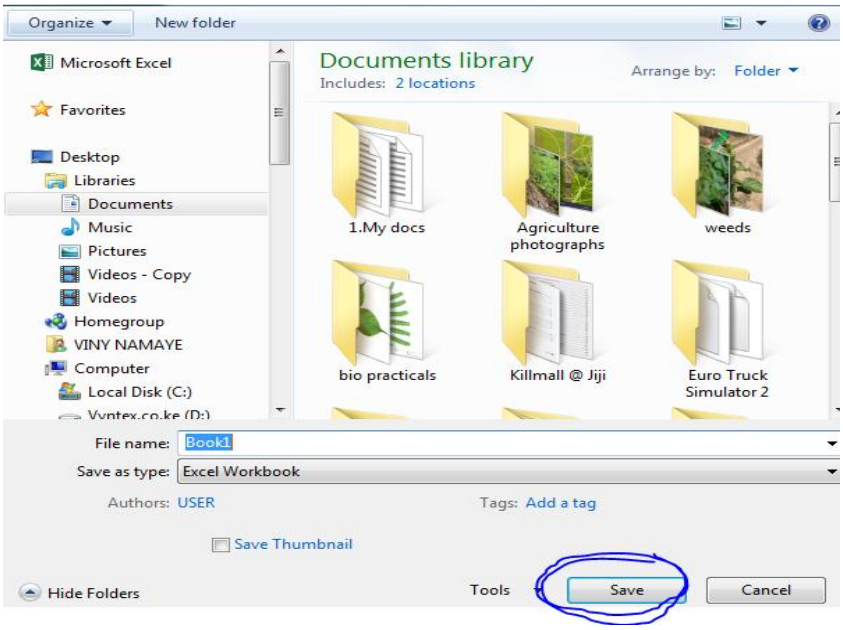
- ✓ Click save



✓ Select where to save and Change file name as shown below.



✓ Then click save



Uses of spreadsheets in everyday life

- ☑ Spreadsheets can be used by shopkeepers to keep records of sales made in a shop.
- ☑ Spreadsheets can be used by teachers to keep records of learners scores.
- ☑ Spreadsheet can be used to records amount of money contributed by people of certain group.
- ☑ Spreadsheets can be used to keep a record of the household budgets.
- ☑ Spreadsheets can also be used in hospitals to keep a record of patient name and their medication.
- ☑ Spreadsheets can be used in schools to keep a record of school fees paid to the school.

REVISION QUESTIONS.

Name a spread sheet prom in the computer.

_____

Answer.

- ✓ Microsoft excel.

When saving a document for the first time we press_____

Answer.

- ✓ Save button.

Give three reasons for saving your work on the computer.

_____

_____

_____

_____

Answer.

- ✓ For later reference.
- ✓ To finish it later.
- ✓ To avoid loss of information.

Name the parts of the computer used for:

a.) Displaying information or output.

_____

b.) Typing.

_____

c.) Selecting objects on the screen.

_____

d.) Processing data.

_____

Answers.

Displaying information-monitor
Typing-keyboard
Select object on screen-mouse
Process data-System unit.

Topic 4 Matter

Properties of matter

Expansion and contraction of solids

Procedure of carrying out expansion and contraction of solids using a metallic ball and a ring.

Requirements.

- A metallic ball.
- A metal ring.
- Cold water in a container.
- A source of heat.

Steps followed.

1. Pass the metallic ball through the ring.
2. Heat the metallic ball over a flame.
3. Pass it through the ring a gain
4. Dip the metallic ball in a cold water to cool it. Pass it through the ring a gain

Observations

- ↳ Before heating the metallic ball goes through the ring.
- ↳ After heating. The metallic ball does not go through the ring
- ↳ After it cools, the metallic ball goes through the ring.

Conclusion

- ✓ When the metallic ball was heated, it expanded and so it could not go through the ring.
- ✓ When the metallic ball was cooled, it contracted and so it could go through the metal ring again.
- ✓ Metals expands when heated and contract when they are cooled.

NOTE

Liquids expands when heated and contract when cooled.
Gases expands when heated and contacts when cooled.

Application of expansion and contraction in everyday life

The following are some areas where expansion and contraction is applied in everyday life.

In overhead power line. Overhead power line expands on hot days and contracts when it is cold. To solve this problem, they are installed in such a way that they loosely this is to give them room to expand on hot days.

In metallic bridges. One side of metallic bridge is felted with rollers to allow for expansion and contraction. On hot day when the metals the roller allow the brigade to slide over smoothly on the cold days, when metals contract the roller allows the bridge to roll without damaging the bridge.

In railways tracks. On hot days' railway tracks expand. To solve this problem, gaps are left between sections of railways tracks to give them room to expands, if no gap were left, the railway tracks would be damaged when they expand and cause accidents.

Removing metal caps from bottles. Putting the cap in hot water expands it thus making it loose and easy to remove.

Composition of air

Components of air in the atmosphere

- Air is a mixture of many gases.
- The components of air are;
  - ✓ Nitrogen gas.
  - ✓ Oxygen gas.
  - ✓ Carbon dioxide GAS.
  - ✓ Noble gases.

Air also contains water vapor and dust particles.

Uses of different components of air

The following are different uses of oxygen.

- ❒ **Breathing**. All living thing needs air. When we breathe in air, the body use the oxygen present in the air.
- ❒ Oxygen is used in hospital to help patient with breathing difficulties.
- ❒ Deep sea diver also carry oxygen in tanks tied to this backs. The oxygen helps them to breathe while they are under water.

Uses of carbon dioxide

- ❒ **Photosynthesis**. Photosynthesis is the process by which green plants make their own food. During photosynthesis green plants use light, water and carbon dioxide to make food. Plants obtain carbon dioxide from the air. In the process of photosynthesis, plants release oxygen into the air.
- ❒ **Preserving soft drinks**. Soft drinks include soda, carbon dioxide is used to preserve soft drinks and prevent them from going bad.
- ❒ **In making fire extinguishers**. Carbon dioxide is stored in fire extinguisher. When sprayed on a fire it puts out the fire.

Uses of nitrogen

Nitrogen is used in the following ways:

- ❒ **In making fertilizer**. Nitrogen is used for making fertilizer. Fertilizer are applied to plants to make them grow well.
- ❒ **In food preservation**. Nitrogen is filled in food store container and bags to prevent the food from going bad.
- ❒ **In bulbs**. Nitrogen gas is used to fill inside electric bulbs.it prevents the filaments in the bulb from burning.
- ❒ **In plants.** Nitrogen is used by leguminous plants to make their own proteins.

Uses of noble gases

Noble gases include argon, neon and helium.
The following are some of the uses of noble gases.

- ❒ In advertising light. Noble gases are filled in fluorescent bulbs to make them grow.
- ❒ In balloons. Some noble gases such as helium is filled in weather balloons and in decorative balloons because it is light.
- ❒ In welding. Noble gases such as argon are used to melt metals in welding.

Safety while working with heat

The following are some safety measures that should be observed while working with heat.

- ↳ Never play with matches as this might cause a fire.
- ↳ After you light a match, put it out before disposing of it properly.
- ↳ Always put out the fire after carrying out any activity invoking fire.
- ↳ Do not touch hot apparatus with bare hands to avoid getting burns always use gloves.

REVISION QUESTIONS.

Name the components of air.

- ✓ Oxygen.
- ✓ Carbon dioxide.
- ✓ Nitrogen.
- ✓ Noble gases

Give two uses of oxygen.

Breathing. All living thing needs air. When we breathe in air, the body use the oxygen present in the air.
Oxygen is used in hospital to help patient with breathing difficulties.
Deep sea diver also carry oxygen in tanks tied to this backs. The oxygen helps them to breathe while they are under water.

Which component of air is used in:
Photosynthesis.
Carbon dioxide.
Making fertiliser.
Nitrogen
Breathing.
oxygen

Topic 5 Force and energy.

Force

Friction

Meaning of friction

- **Friction** is a force that opposes the movement of objects that are moving, Sliding or rubbing over each other.
- Friction works in the direction opposite to the direction in which an object is moving.
- Friction always slows down or stops a moving object.

Advantages and disadvantages of friction

Friction is useful to us because it is involved in the following activities.

⇔ **Movement of vehicle**. Friction enable vehicle to move on roads without skidding. Vehicles tyres have grooves called treads. These treads give the tyres a rough surface which give them a better grip on the roads. Friction also enables vehicles to stop when brakes are applied. Friction between brakes pads and wheels of the vehicles makes the vehicles to stop.

Walking and running. People are able to walk or run because of the force of friction acting between the shoes or feet and ground. Friction enables people to walk or run without sliding. Without friction it would be impossible to maintain balance while walking or running.

Sharpening items. The force of friction between the cutting tool and the items used for sharpening makes the cutting tool sharp to cut things. Friction also enables us to sharpen pencils so that they write and draw properly.

Lighting matches. When a matchstick is rubbed on the rough band of a matchbox the friction between the head of the matchstick and the rough band produces heat. The heat light a matchbox.

⇔ **Riding bicycle**. Friction makes riding a bicycle possible. Friction between bicycle tyres and the road enable the bicycle to move.

⇔ **Writing and drawing**. Friction makes it possible to write and draw on paper on the board.

⇔ **Erasing work**. Friction acts between the eraser and the paper, thus enabling a person to erase work.

⇔ **Skating**. Friction between skates and the ground enables the skater to move without falling down.

Disadvantages of friction

Friction cause wear and tear of items.

Soles of shoes vehicles and bicycles tyres wear out because of friction.

Moving parts of machines and vehicles wear out because of friction on the parts. Due to this the worn out parts have to be replaced frequently.

Friction causes wearing out of items such as pencils and blackboard chalk.

Friction caused by continuous rubbing of clothes when they are being washed leads to wear and tear of clothes especially at the collars.

Friction produces heat.

Friction between moving parts produce heat. When you rub your hands together they get warmer.

Friction makes work difficult. Moving objects on a rough surface is difficult and require more effort this is because of friction between the object and rough surface.

Friction produce noise which can cause noise pollution.

Friction may cause injuries. Friction between tight shoes and feet can cause injuries. When doing manual work, the friction between the hands and tools can cause bruises on the hands.

Increasing and reducing friction

Friction can be reduced in the following always;

Oiling and greasing. When oil or grease is applied between moving parts of vehicle, bicycles and hinges of doors they reduce friction these substances that reduce friction is called **lubricant**.

Using rollers and ball bearing. Rollers are used in luggage bags to reduce friction. Wheels are used in vehicles to reduce friction.

Streaming. Aeroplanes are made in streamlined shape. This helps to reduce friction between the aeroplane and air during the flight. This makes them move with ease birds and fish have streamlined bodies. Thin reduce friction with air and water allows them to move with less efforts.

Making surfaces smooth. Making surface smooth reduce friction.

Ways of increasing and reducing friction.

Friction can be increased in the following ways.

- ✓ Increase roughness of a surface.
- ✓ Increase force between two surfaces.

Friction can be reduced by;

- ✓ Oiling a surface.
- ✓ Apply grease or greasing a surface.
- ✓ Making a surface smooth.
- ✓ Using rollers or ball bearing.

Effects of frictions

What are effects of frictions?

- ↳ Friction produce heat. The heat can sometimes destroy the objects that are in contact.
- ↳ Friction cause wear and tear of objects in contacts.
- ↳ Friction slows down the movement of objects.

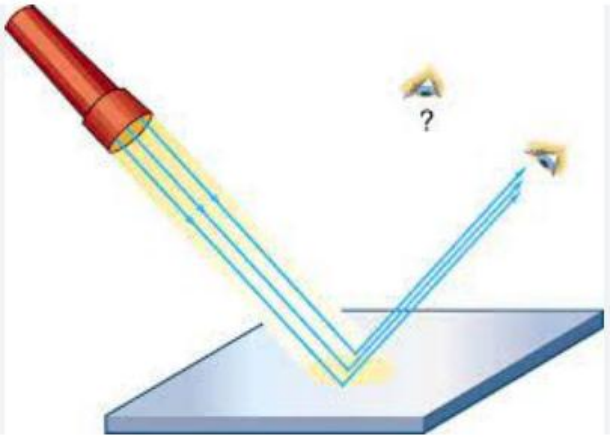
Light energy

Meaning of reflection of light.

- When rays of light on a shiny surface like a flat mirror, they bounce off. We say the light has been **reflected**.
- Mirrors reflects light in a special way that enables us to see images in them.

Reflection of light by different materials

- When light falls on shiny objects it is reflected.
- A part from reflection light behave differently when it falls on different object.
- When light falls on transparent objects such as a clear plastic ruler it is transmitted or goes through to the other side.
- When light falls on translucent objects like a piece of tissue paper, some of it goes through.
- When light falls on opaque objects like a wooden block it does not go through.



Application of reflection of light in day to day life

Reflection of light is applied in the following areas.

1. **Seeing objects.** Reflection enables us to see. We see objects likes bulbs or a lit candle because they give off their light. We also see other objects because they reflect light. Light moves in a straight line from source and when it hits an objects it is reflected into our eyes allowing us to see the object. When reading light from source hits the book and some of light is reflected into eyes. This enables a person to see the book.

2. **in reflector clothing**. These cloths are made with materials that reflect light, when light shines on them. They reflect light and are seen from far. This makes the wearer visible. Reflectors clothing helps to prevent accidents. People who wear reflectors clothing include road construction workers, cyclist, policemen and women, medical rescue teams, the fire brigade, among other. Reflectors clothing helps the wearer stay safe.

3. **in mirrors**. Mirrors reflect light in a special way that allow a person to see images in them mirrors are used in money places

In vehicles. Vehicles are fitted with side mirrors to help driver to see what is behind the vehicles. This help to prevent accidents on the road.

By dentist. Dentist use dental mirrors to examine teeth in the mouth.

We use mirror to see our images when doing activities such as combing hair.

4. **In periscope**. A periscope is an apparatus that is used to see places that are of sight such as over the walls, fences or a round corner periscope are also used in submarines. Submarine are ships that move underwater. People in submarines use a periscope to see what is above water.

A simple periscope is along tube that has flat mirrors at the top and the bottom. When light rays from an objects hit the top mirrors, the mirror reflect the light onto the bottom mirror at an angle 45. When the rays hit the bottom mirror they reflect at the same angle of 45. In the eye of the observer who see the image of the object on the bottom mirror.

5. **In vehicles**. Reflectors are put to reflect light from other vehicles. This makes the vehicles even in poor lighting condition such as at night. This helps to prevent accidents.

6. **In roads construction**. Reflectors are put on roads to guide drivers at night to drive in the proper lanes to avoid accidents.

Machines

Slope

Meaning of slopes.

- A slope is a flat surface with one side positioned higher than the other.
- Slopes are used to raise objects to higher ground using less efforts.
- Slopes are simple machines because they make work easier and quicker.
- Slopes can be used to lower objects from a higher position to the ground with ease.

Forms of slopes

Forms of slope that make work easier include ladder, staircase and ramps.

1. **Ladders**. Ladders are used to climb tall structure. Climbing a tall structure using a ladder is easier than climbing without. Ladders are placed leaning against a wall or any other structure that needs to be climbed and the person using it climb up by stepping on the horizontal bar known as rungs.

2. **Staircases**. Staircase help a person to climb up to higher level or another floor abuilding. They are made of fixed steps that make walking up easier.

3. **Ramps.** Ramps are flat with one end higher than the other. They are used for moving loads to higher grounds. This is done by pushing the load along the ramps. Most building have ramps at their entrance these ramps allow physically challenged people like those using wheelchairs to access those building in a comfortable and safe way.

Uses of Slope in everyday life.

- ✓ Use to lift heavy objects to a higher position.
- ✓ Used in hospitals by patients on wheel chairs.
- ✓ Use to offload heavy loads from a higher position such as a vehicle.
- ✓ When moving from bottom rooms to upper floors like in staircases.

REFLECTION QUESTIONS.

Name the materials that:

Allow light to pass through-transparent materials

Do not allow light to pass through-opaque materials

Allow some light to pass through-translucent materials.

Write down three forms of slopes that make work easier,

- ✓ Ladders.
- ✓ Stair cases.
- ✓ ramps