TEACHERS ARENA

HUMAN BODY.

Parts of the breathing system.

- Nose.
- Trachea(Windpipe).
- Bronchus.
- Bronchioles
- Lungs.
- Diaphragm
- Air sacs(alveoli)

Functions of the parts of human breathing system.

1. **Nose**:- Cleaning,warming and moistening air. It has hairs and mucus to trap dust.
2. **Trachea(Wind pipe)**:- Cleaning,warming and moistening air,it also has tiny hairs and mucus to trap dust and germs, it has a C-shaped ring that prevents the trac from blocking when one bends.
3. **Bronchus**:- Branch into lungs, they are two bronchi.
4. **Bronchioles**:- These are further division of bronchus in each lung.

5. **Air sacs(alveoli):**- They are divisions of bronchioles which are surrounded by tiny blood vessels,they allow exchange of gases.
6. **Lungs**:- This is where the air sacs are located, oxygen is taken into the blood stream and carbon dioxide expelled from the blood.
7. **Diaphragm**:- This is a sheet of muscle that separates the chest from abdomen, it allows the lungs to expand and relax.

What happens during breathing in (inhalation).

- The ribs moves outwards and upwards.
- Diaphragm moves downwards.
- The lungs expand (inflates).
- The volume of the chest increase.
- The pressure in the chest cavity decrease.

What happens during breathing out (Exhalation).

- The ribs moves inwards and downwards.
- Diaphragm moves upwards(Dome-shaped).
- The lungs contract(deflates).
- The volume of the chest decrease.
- Pressure in the chest increase.

Parts of the digestive system

- Mouth.
- Oesophagus(gullet).
- Stomach.
- Duodenum.
- Small intestine. (Ileum)
- Large intestines (colon)
- Rectum.
- Anus.

Other parts that helps in digestion of food.

- Liver.
- Pancreas.

Functions of the parts of breathing system.

1) Mouth:- Starts digestion of food, teeth breaks food into finer particles through chewing, the tongue helps in rolling the food into a bolus, saliva helps in making the food slippery.
2) Oesophagus(gullet):- Passage of food from the mouth to the stomach in a wave like manner.
3) Stomach:- Digestion of proteins, has hydrochloric acid which kills germs and gastric juice that helps in digestion of proteins.
4) Duodenum:- Where food mixes with bile from the bile duct and pancreatic juice from the pancreas.
5) Small intestines(Ileum):- Absorption of digested food by the finger like projections(villi)
6) Large intestines(Colon):- Absorption of water and mineral salts.

7) Rectum:- Temporary storage of undigested food.
8) Anus:- Helps in egestion of undigested food material (faeces).

NB:- Digestion of food begins in the mouth and ends in the small intestine.

HEALTH EDUCATION.

Uses of medicines.

- Prevent diseases-vaccines or the preventive drugs.
- Cure know diseases- curative drugs/antibiotics.
- Relieving pain- painkillers or pain relievers.
- Vitamins, mineral salts and body supplements.

Proper uses of medicines.

- ✓ Never take medicine unless sick.
- ✓ Take as the doctor instructed, never overdose or underdose.
- ✓ Use medicine for proper purpose.
- ✓ Only buy medicines from the chemist.
- ✓ Never take medicine that is given to someone else.
- ✓ Never take vitamin or mineral salt supplements unless you are

instructed to by the doctor.

- ✓ Always complete the dosage given, dosage is the amount of medicine to be taken at one time.
- ✓ Painkillers are only taken when one is in pain.
- ✓ Never use the medicine after expiry date.

Proper Storage of Medicine.

- ❖ All medicine should be kept in medicine kit/cupboard.
- ❖ Medicine kit should be locked always.
- ❖ Should be stored out of children's reach
- ❖ Should be well labelled before Storage.
- ❖ The ones for rubbing or applying on the body should be kept separate from those that are taken by mouth.
- ❖ Should be kept in clean,dry and cool cabinet.

Ways in which the HIV is spread.

- ➢ Sexual intercourse with an infected person.
- ➢ Blood transfusion
- ➢ Exchange of saliva
- ➢ Infected mother to child during birth or through breastfeeding.
- ➢ Open wounds
- ➢ Sharing of skin piercing and cutting tools.

Ways in which the HIV is not Spread.

- ➢ Mosquito and other insects bite.

- Playing with infected children.
- Toilet seats or bathroom.
- Shaking hands and hugging.
- Sharing food,plates,cups and spoons.
- Living with infected people.
- Sitting next to an infected person.
- Being plaited or shaved by an infected person.

Stages of HIV infection.

- Window stage.
- Incubation (assympomatic).
- Symptomatic
- Full-blown.

Prevention of the spread of the HIV.

- Abstain from sexual activity till marriage.
- Being faithful to one married partner.
- Using condoms if the person you are having sex with is unknown or sex commercial worker.
- Seeking medical help from trained doctors.
- Not sharing body-piercing or cutting tools.
- Cover all open wounds and cuts.
- Use protective clothing.

PLANTS.

Classification of plants.

Plants are majorly classified into two:

- Green plants.
- Non- green plants.

Green plants are plants whose stem and or leaves are green in colour,they are further classified into two:

- Flowering plants
- Non flowering plants.

Examples of non green plant.

- ✓ Mushrooms
- ✓ Moulds
- ✓ Bracket tree.
- ✓ Toadstools.
- ✓ Lichens
- ✓ Maize smut
- ✓ Yeast
- ✓ Penicillium.

Useful Non-green plants

- Yeast is used to raise dough when baking breads.
- Penicillium is used in making curative medicine (penicillin)

Harmful Non-green plants.

- Ringworm: making the hair in the head to fall.
- Dandruff:- Peeling off of the skin on the head.
- Athlete's foot:- Affects the skin between the toe.

Examples of green but non-flowering plants.

Use ALIMOFECO

- Algae.
- Liverwort.
- Moss.
- Fern.
- Conifers(Pine,cedar,Cypress, Douglas fir)

Functions of the external parts of a plant.

Roots.

- Absorption.
- Support.
- Food storage eg cassava.

Stems

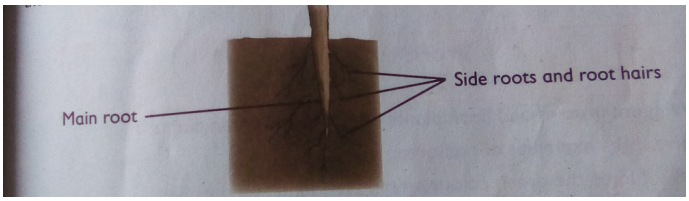
- Transport water and mineral salts.
- Transport of food from the leaves to other parts of a plant.
- Support the plant parts.
- Food and water storage eg sugar cane.
- Protect the plant.

Leaves.

- Transpiration.
- Breathing.
- Photosythesis.
- Food storage eg cabbage,spinach etc.

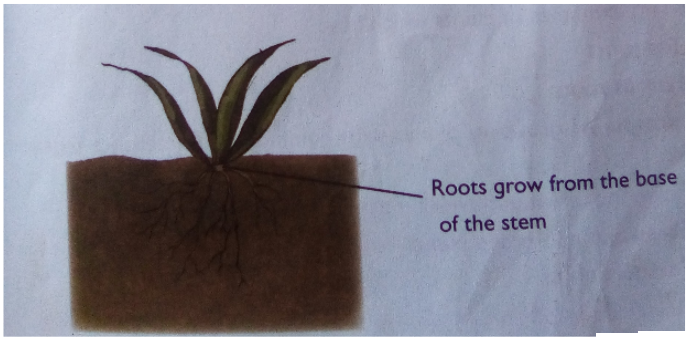
Types of roots.

Tap root:- Where there is one main root and the side roots grows from the main root.



The plants with tap root system also have network veined leaves eg beans, mango, acacia etc

Fibrous Roots:- This is a type of root where there is no main root and all the hair roots grow from one point.



Plants with fibrous Roots also have parallel veined leaves eg maize, Sugarcane, onion, grass, coconut plant etc

WEATHER.

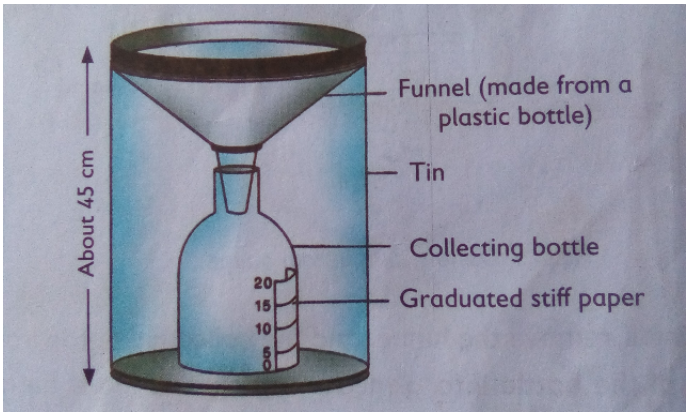
Meteorology :- This is the study of weather in order to predict or forecast any changes.

Meteorologist :- These are experts who study weather changes.

Weather stations:- This is a room or area set aside for the weather prediction.

Rain gauge.

Used to measure the amount of rainfall in millimeters (mm)



It is dug 15cm below the ground to prevent evaporation and to provide firm support.

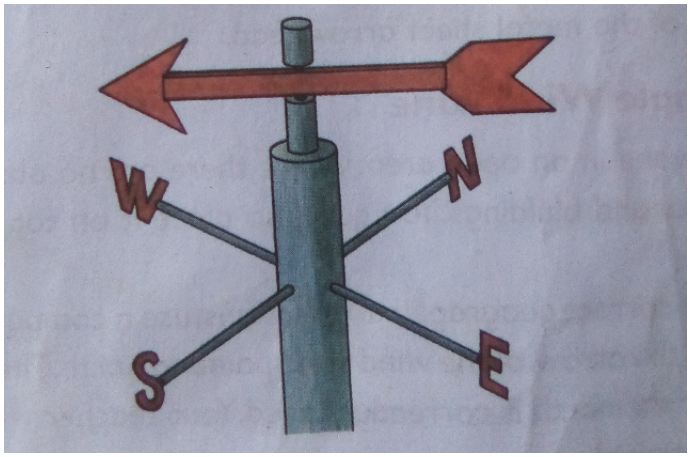
It is placed 30cm above the ground to prevent water on the ground from splashing into the funnel.

Rain gauge that is bought from shops have a metallic collecting can to withstand the harsh weather conditions.

Wind vane.

Used to show the direction of wind,the tail points the direction the wind is blowing to.

It has the main compass directions.

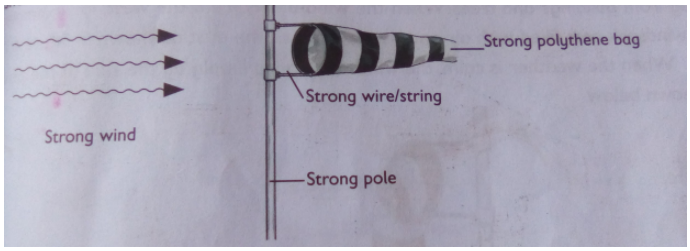


Use the principle of air in motion.

Windsock.

Used to measure two aspects of weather that is strength and direction of wind.

It has a large sock-shaped bag whose mouth is wider than the tail. It is always useful in airport and airstrip.



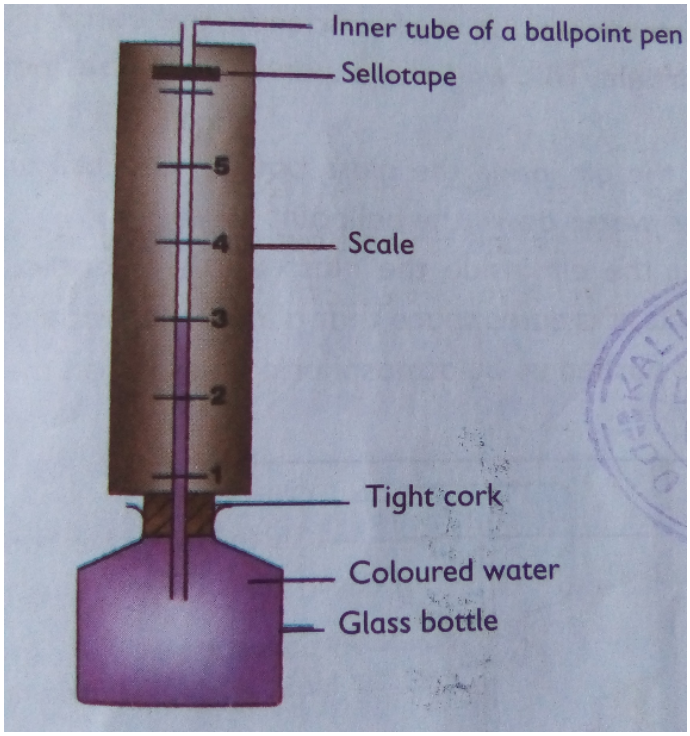
It has black and white strips for easy visibility

Uses the principle of air occupies space.

Liquid thermometer.

Used to measure temperature of a place using water

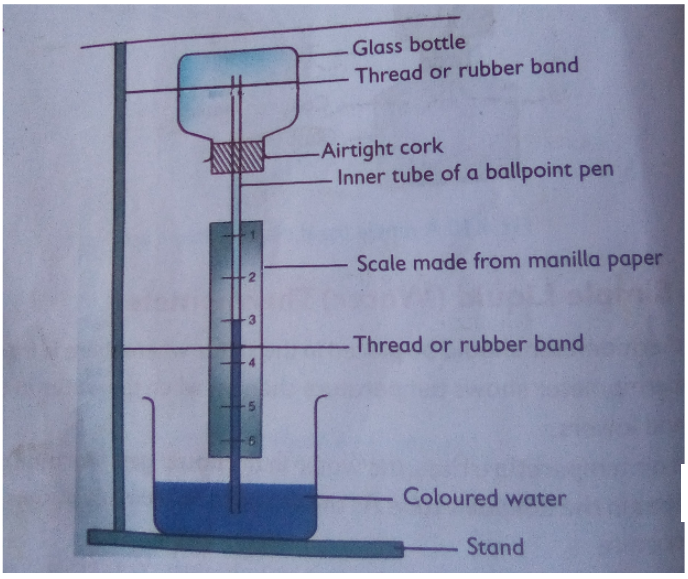
It has a coloured water for easy visibility



It works due to expansion and contraction of liquids.

Air thermometer.

Used to measure temperature of a place



Use the principle of expansion and contraction of air.

ANIMALS.

Classification of Animals.

Animals are classified into 2 main groups that is:-

- Vertebrates.
- Invertebrates.

Vertebrates.

Animals with a backbone. Futher divided into 5 groups.

1. Mammals.
2. Reptiles.
3. Birds.
4. Fish.
5. Amphibians.

Mammals.

- They have mamary glands.
- Their bodies are covered with fur or hair.
- Most of them give birth to young ones except duck-billed platypus and spiny ant eater which lays eggs.
- They are warm blooded ie constant body temperature.
- Most of them walk on their limbs except bat which flys.
- Most of them live on dry land except whale, seal and dolphin which

live in water.

Examples: camels, goats, dogs, cattle etc.

Birds.

- Their bodies are covered with feathers.
- They have wings to fly except ostrich, penguin and kiwi which cannot fly.
- They have beaks instead of mouth.
- They lay eggs.
- They have claws on their feet.
- They are warm blooded.

Examples:*cock, ostrich, duck, dove*

Reptiles.

- Their bodies are covered with dry scales.
- They lay eggs.
- They are cold blooded-their body temperature varies with the sorrounding.

Examples: chameleon, lizard, crocodile, snakes, tortoise etc.

Amphibians.

- They live partly in water and partly on land.
- They have a moist skin without scales.
- They lays eggs.

- They are cold blooded.
- They breath through gills, skin and lungs at a late age.

Examples: Frogs, Toad, newts, salamander.

Fish.

- They have fins.
- Their bodies are covered with scales.
- They lay eggs.
- They breath by means of gills.
- They are cold blooded.

Examples:- tilapia, trout, nile perch, shark etc

Examples of invertebrates.

- Bees
- Flies.
- Fleas.
- Earthworm.
- Lobster.
- Snail.
- Millipede.
- Grasshopper.

SOIL.

Types of soil.

There are three types of soil,namely:-

- Sandy soil
- Clay soil.
- Loam soil.

Sandy soil.

- Has largest particles,it feels rough or course.
- It spreads easily because of it's rough texture.
- It is best in drainage but poor in water retention.
- It is used in building and construction because of it's particles.

Clay soil.

- Has the smallest particles and therefore it has finer particles and feels smooth texture.
- Clay soil does not spread easily because the particles are closely packed.
- It is best in capillarity and poor in drainage.
- It is used in modelling.

Loam soil.

- This is a mixture of clay and Sandy soil.
- The particles are neither too big nor too small.
- It is best in farming.

Things that need to be the same in drainage.

- The diameter of the funnel.
- Amount of water
- Size of the Cotton wool
- Time taken for the experiment.

Things that need to be the same in capillarity.

- Diameter of the biro tubes.
- Size of Cotton wool.
- Time taken for the experiment.

FOOD AND NUTRITION.

Food:- any substance that is taken into the body by either drinking or eating,in order to maintain good health.

Nutrition:- This is the process of providing the body with food necessary for growth and maintenance of good health.

Nutrients:- These are substances found in food.

Functions of Food.

a) Produce enough energy needed to work and play.

b) Build the various parts of the body.

c) Repair parts of the body that may have been damaged by diseases.

d) Protect itself against various disease.

e) Stay alive and maintain good health.

Types of Food Required by the Body.

- Carbohydrates- These are energy-giving food,eg Sugarcane, green maize, green banana, honey, table sugar, etc
- Fats and oils- These are also energy-giving foods.eg coconut, sunflower, cod-liver oil, corn, simsim etc
- Proteins- These are body-building and repair foods.eg beans, milk, eggs, peas, soya beans etc
- Vitamins- These are protective foods.eg vitamin A,B,C and D
- Mineral salts- These supply chemicals needed for growth and good health.

Vitamin	*Sources*	*Use in the body.*
Vitamin A	Butter, liver, fish, milk, eggs, dark green leafy vegetables, pumpkin, carrots, oranges, fats, avocado and pears	Good for eyesight.
Vitamin B	Whole cereals grains eg maize,wheat, millet, green leafy vegetables, milk, soya beans, liver, kidney.	Proper working of the brain. Also important for digestion of food, growth in children and general health such us smooth skin.
Vitamin C	Fresh vegetables and fruits eg oranges, lemons, pawpaw, guavas, pineapples, tomatoes.	Helps to heal woulds, healthy teeth, gums and skin.

Vitamin D	Eggs, milk, sunlight	Strong bones and teeth.

Minerals,their sources and their use in body.

Minerals	*Sources*	*Use in the body*
Calcium	Milk, millet, matumbo and small fish eaten whole	Strong bones and teeth. Helps in clotting of blood to stop bleeding.
Phosphorus	Milk, beans, eggs.	Works together with calcium and vitamin D in the formation of strong bones and teeth.
Iron	Liver, kidney, meat, eggs, kales, spinach, any green leafy vegetables	Helps to make the blood healthy.

A Balanced Diet.

This is a meal that contains all the different types of food nutrients that are needed by the body in order to maintain good health.

Importance of water in a Diet.

i. Water helps in the digestion of food that is transporting the food in the body.

ii. Water also helps in making blood.

iii. Water removes waste products from the body through urine and sweat.

iv. Water cools the body when the weather is hot.

v. Water prevents the skin from drying.

Fibres.

This is the thread-like parts of the food in vegetables, fruits and outer skins of grains such as maize and wheat.

They are not digested by the body and has no nutritive value

They help in getting rid of waste product (constipation)

Deficiency Diseases.

These are disease caused by food related diseases, they include:-

Disease	*Cause*	*Signs*	*Prevention*
Kwashiorkor	Lack of protein	• The child develops brownish and thin hair. • Parts of the body eg face,cheek, stomach,arms and feet swells • The child cries alot • Sores at the	Eating foods rich in proteins.

		corner of the mouth. • Skin becomes loose and hair falls out easily.	
Marasmus	Caused by starvation is lack of enough food	• The child becomes very weak. • Shapes of bones are visible. • The patient looks like a small old person. • The child cries very often.	Take enough food
Ricket	Lack of vitamin D or calcium.	• Bow shaped legs • Knocked-kneeds • Soft and weak bones	Expose to sulight or eating food rich in calcium

Anaemia	Lack of iron in the body.	• Dizziness. • Fainting. • Eye, nails, toe becomes pale. • Tiredness. •	Eating foods rich in irons

ENERGY.

Sound.

Types of sound.

Loud sound- produced when a book is dropped from a higher point.

Soft sound- Produced when a book is dropped from a few centimeters from a table

Volume:- This is the extent of loudness or softness of a sound.

Pitch:- This is highness or lowness of sound.

Factors affecting the pitch of a sound.

- ✓ The length of the wire.
- ✓ Tightness of the wire.
- ✓ Thickness of the wire.
- ✓ Type of material.

Noise pollution.

This is unpleasant sound that is made when many people talked at a time.

Effects of noise pollution.

- Noise makes people become less alert.
- Frequent noise can make people feel uncomfortable.
- Loud noise is dangerous as it damage our ears.

Heat.

Transfer of heat.

This is the flow of heat from one point of matter to another.

Heat transfer in three methods:-

- ❖ Radiation- This is a method of heat transfer where the source of heat is above the object or is at the same level with object. It normally occurs in gases. It does not require a medium for it's transfer.
- ❖ Convection- This is a method of heat transfer where the source of heat is below the object, normally occurs in gases and liquids (fluids).
- ❖ Conduction:- This is a method of heat transfer in solids mainly metals.

Use of good conductors of heat

- ➢ They are used to make utensils eg kettles, saucepans, irons, boilers, sufuria etc.

Uses of poor conductors of heat.

- Making handles of utensils.
- Used to prevent water from being heated by sun.
- When we feel cold, we put on warm clothes to prevent the heat produced by the body from escaping into the cold air.
- During cold weather, birds fluff out their feathers to prevent the heat produced by their bodies from escaping.

PROPERTIES OF MATTER.

States of matter.

Matter is anything that occupies space and has weight.

Matter exist in three states:-

- Solids.
- Liquids.
- Gases.

Solids.

Characteristics of solids.

- ✓ They have a definite shape.
- ✓ They have a definite size or volume.
- ✓ They have a definite mass.
- ✓ They changed states on heating.(when temperature is increased)

Liquids.

Characteristics of liquids.

- ✓ They have a definite mass.
- ✓ They have indefinite shape hence takes the shape of container.
- ✓ They have a definite volume or size.

- ✓ They change states on both heating and cooling.

Gases

Characteristics of gases.

- ✓ They have a definite mass.
- ✓ They have indefinite shape.
- ✓ They have indefinite volume.
- ✓ They change states on cooling.

Effects of heat on matter.

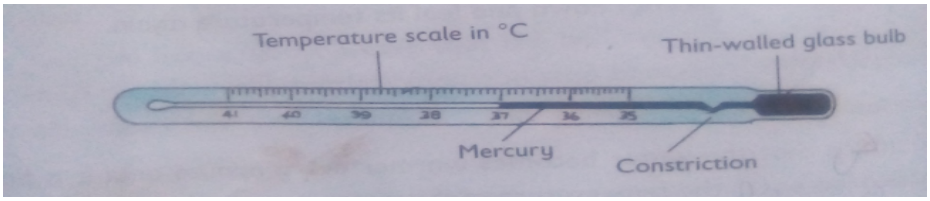
Melting:- This is the process by which a solid changes to liquids when subjected to heat. Occurs due to increase in temperature.

Evaporation:- This is the process by which liquids changes to vapour,it occurs due to increase in temperature.

Condensation:- This is the process by which gases changes to liquids, it occurs due to reduction or decrease in temperature.

Freezing:- This is the process by which liquids changes to gases due to decrease in temperature.

NB:- Temperature is measured by thermometer in degrees celcius (°c)



MAKING WORK EASIER.

Balancing and weighing.

A weighing balance is used to compare and measure the mass of objects.

Mass is the quantity of substance in matter.

Mass is measured in grams, kilograms and tonnes.

We use standard weights against unknown masses to get their masses.

Making a sea saw.

Materials needed.

- A Y-shaped tree trunk about 80cm long and at least 15cm in diameter.
- A panga.
- A long and strong pole.

Balancing on a sea saw.

- Get a friend who is the same size as you are.
- Let your friend siton the other end of the pole as you sit on the other end.
- Lift your feet from the ground at the same time.

When a lighter person balanced a heavier person, the heavier one sits near the pivot while the lighter one sits farther away from the pivot.