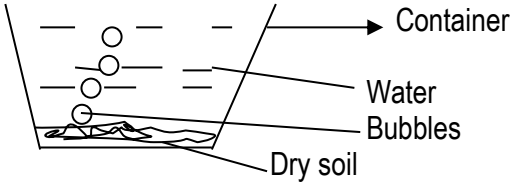
P.3 LITERACY II LESSON NOTES

Theme	**Our environment in Sub-County/ Division**
Sub-theme	**Soil**
Content	<u>Reading descriptions of words</u> - Air - living organisms - rot/decay - Water - arrangement - vertical - humus (dead plants and animals) - mineral salt - particles - profile - layer - rocks - fastest - moisture - clay - slowly - steam - sand - moderate - mixture - Loam - drain - vapour - Decay - erosion - Weathering - earthquake - Temperature - wind - Floods - earthworm - Aerate - deforestation - Afforestation - forest - Mulching - slope - Terraces - grazing - Soil - dissolve **Soil** : is the top layer on earth or Soil is a medium on which plants grow and animals live. Composition / components / constituents of soil. Soil is made up of Air , water , humus , particles of rocks, mineral salts and living organisms. **Uses of Air in the soil** Oxygen supports the life of living organism in the soil. **Uses of water in the soil.** - Helps plants to grow - Keeps the soil moist How can we keep water in the soil By mulching 3. Living organisms Examples of living organisms : Earth worm termites , rates , red ants, snakes etc. Importance of living organism in the soil Helps in aeration of the soil. Ways of keeping soil fertile

- By mulching
- By adding manure
- By bush farrowing

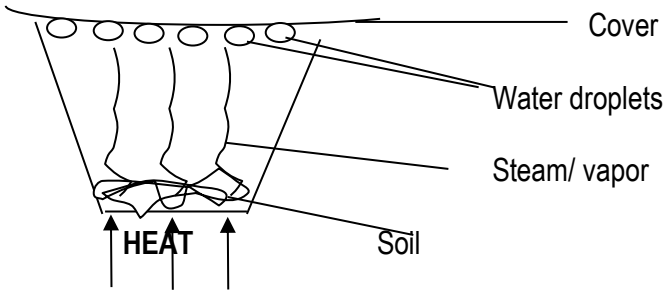
Experiments on what makes up soil

1. Soil contains air



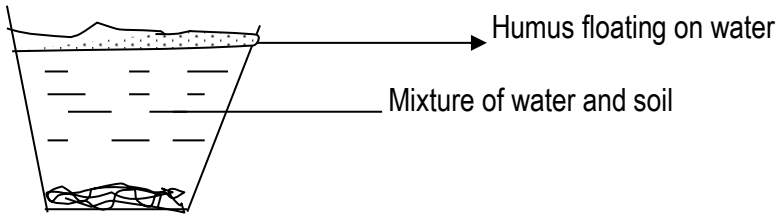
Bubbles show the air coming from the soil

2. Soil contains water



Humus : Humus is formed when dead plants and animals decay

3. Soil contains humus (dead plants and animals)



Humus floats on water

NB: Humus makes the soil fertile.

Uses of soil

To man

Man uses soil in many ways such as growing crops, building houses, painting, making pots, making bricks, for sale, constructing roads, making glass.

To plants

Plants get water and mineral salts from soil using roots, soil holds plants upright.

To other animals

Some animals live in soil like; rats, snakes, snails, mole, rats , squirrels, termites etc. Animals also get warmth and protection from the soil. The above animals can live in soil because there is air for breathing.

Soil texture: Is the roughness or smoothness of soil particles or it refers to different sizes of soil particles.

Soil structure

Is the arrangement of particles in soil.

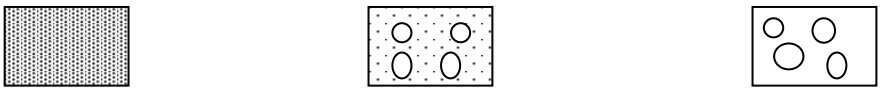
Types of soil and their texture

Soil is made up of sand, clay and loam soil.

Type	Texture
Sand soil	- Its rough - Has the biggest particles
Clay soil	- Its smooth - Has the smallest particles
Loam soil	- It's a mixture of sand, clay and humus - It has moderate texture

Soil particles

Clay soil loam soil sand soil



Characteristics of clay soil

- It has the smallest particles.
- Its sticky
- Its particles are closely packed
- It has little humus
- It drains water slowly

NB:

Clay soil is commonly used for modeling.

Characteristics of sand soil

- It has the biggest particles
- It has rough particles
- Particles are loosely packed (far apart)
- It has big/large air spaces
- It drains water quickly

NB: Sand soil is used to make glasses

Characteristics of loam soil

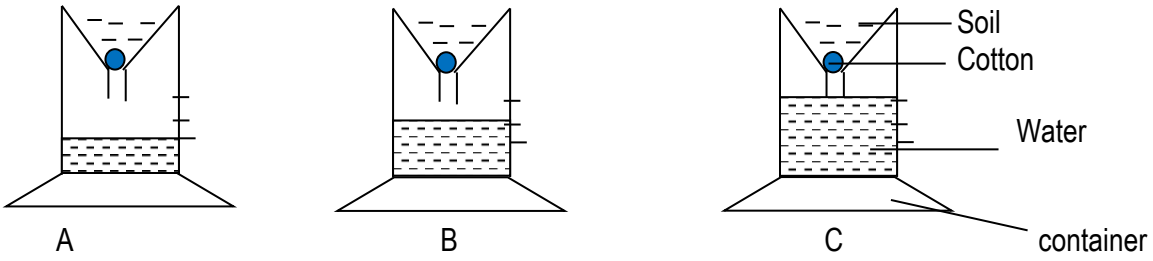
- It's a mixture of sand and clay
- It has a lot of humus
- Its dark in colour

NB: Loam soil is good for crop growing because

i) It is well Aerated

ii) It contains a lot of humus

Movement of water through the soil



A -Clay soil B - loam soil C - Sand soil

Observations and deductions

1. Clay soil allows little water to go through. Why?
   It has the smallest air spaces or it has the finest soil particles.
2. Sand soil allows water to pass through fastest. Why?
   It has the largest air spaces or it has the biggest soil particles.
3. Loam soil allows water to go through moderately.

Soil formation

Soil formation is the process by which soil is formed.
Soil is formed in two ways.

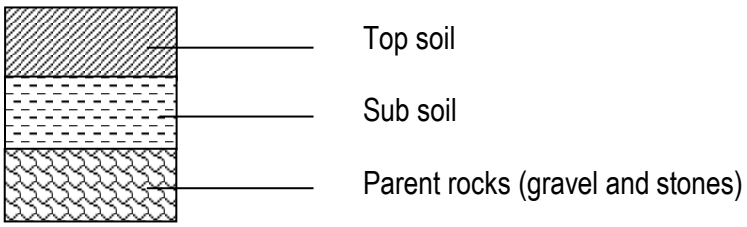
- Decomposition
- Weathering

Decomposition: is when organic matter rot or decay. NB Bacteria help in decomposition (decaying)
Weathering: is the process by which rocks break down into small particles to form soil

Agents of weathering

- Running water
- Animals
- Strong wind
- Earth quake
- Plants

Soil profile : Is the vertical arrangement of soil layers or is the arrangement of soil layers from top to bottom.



Uses of soil (practical work)

- Making pots, cups, plates, glasses, bricks (clay soil)
- For building – sand soil
- For growing crops (loam)

NATURAL CHANGES IN OUR SURROUNDING

These are changes made by God (God made changes)

Examples of natural changes in the animals
Growth, death, reproducing , sweating , digestion , excretion

Natural changes in plants
- Growth of plants
- Germination
- Drying plants / wilting
- Ripening of fruits

Germination in seeds
Germination : Is the growing of a seed into a seedling.

Natural changes around us
Floods, drought, earthquakes, land slides, storms, lightning, thunder, hail storms, soil erosion, weather changes, seasonal changes rusting

More about changes around us
Floods – Are heavy rains overflowing in a place.
Drought – Is a long period of too much sunshine.
Hail storm – Are small droplets of ice falling from the sky.
Earth quake – a sudden violent movement of the earth's surface.
Landslides – Sliding down of a heavy part of the earth or rocks from a side of a hill or mountain.
Soil erosion – Is the removal of top soil by running water, strong wind, animals, man (agents)

Changes in the sky
- Formation of rain
- Movement of clouds
- Rising and setting of the sun
- Changes in the moon shapes
- Changes in weather

Effects of changes
- Floods, earthquakes and landslides cause destruction of homes and property, plants and animals.
- Drought – causes hunger, diseases
- Storms cause soil erosion

Managing changes
Floods - control
- Digging trenches
- Avoiding clearing swamps
- Avoid building in drainage systems, swamps

Causes , danger and control of floods

Drought
- Planting trees
- Avoid clearing swamps
- Digging valley dams

Desert plants sisal , cactus
Rusting
Rust is a reddish brown substance that forms on metal when a metal is exposed to oxygen and water.

Note: Oxygen and water are conditions needed for rusting

Examples of metals
- Iron , steel , Aluminum , copper

Ways of controlling rusting
- By painting
- By greasing / oiling
- By enameling
- By galvanizing
- By keeping metals in cool and dry places.

Dangers of rusting
- It weakens metals
- It makes metals blunt
- It makes water in metallic tanks poisonous
- It spoils and changes the colour of metal.

Soil erosion : Soil erosion is the removal of top soil by its agents.

Agents of erosion
- Running water
- Strong wind
- Animals

Types of erosion
- Rill erosion
- Gulley erosion
- Splash erosion

Causes of soil erosion
- Over stocking
- Mono cropping
- Bush burning
- Deforestation

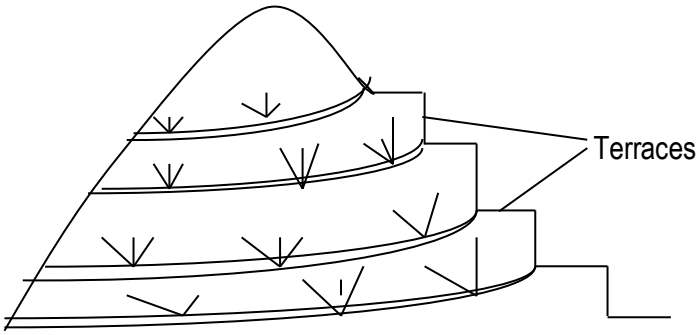
Ways of controlling soil erosion

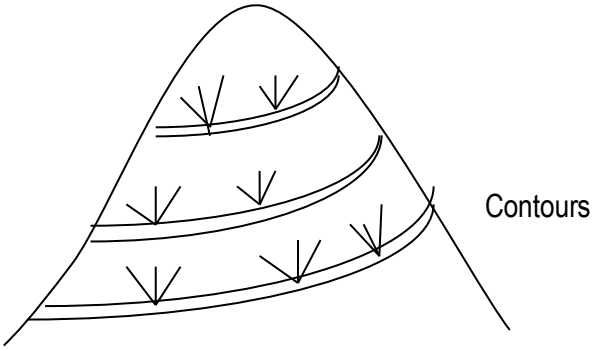
a) Compound
- By planting grass in the compound
- By planting trees (Afforestation)

In the garden
- By mulching
- By crop rotation
- Afforestation
- Bush farrowing

- Contour ploughing
- Mulching
- Planting trees/ grass
- Crop rotation
- Planting cover crops
- Intercropping
- Agro forestry
- Bush farrowing

c) In hilly areas
- By terracing
- By contour ploughing





Mulching : Mulching is the covering of top soil with dry plant materials (mulches)
Mulches: are materials used in mulching.

Examples of mulches.
- Dry banana leaves
- Coffee husks
- Dry grass
- Saw dust
- Dry banana fibre

Advantages of mulching
- It keeps the soil fertile
- It keeps moisture in the soil
- It controls soil erosion
- It controls weeds in the garden

Disadvantages of mulching
- Mulches are fire hazards
- Mulches hides pests
- Some mulches are sources of weeds
- **Note** : Pests are living organisms that spoil farmers crops. Eg monkeys , birds , rats , weevils, caterpillars.
- **Weeds**: are unwanted plants in the garden.

Examples of weeds
- Black jack
- Star grass
- Nut grass
- Milk grass

- Pig weed

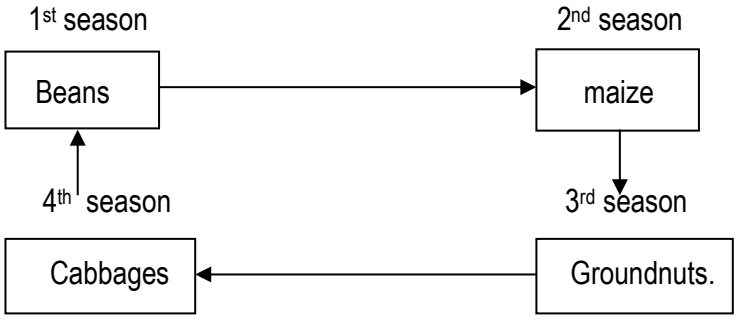
Ways if controlling weeds

- By spraying
- By mulching
- By slashing

Crop rotation

Crop rotation : is the growing of different types of crops on the same piece of land seasonally

Illustration



Importance (advantages) of crop rotation

- It makes the soil fertile
- It controls soil erosion
- It controls crop pests
- It controls crop diseases
- NOTE: Crop rotation , monocropping and mixed farming are examples of farming practices.

Man made changes (ARTIFICIAL CHANGES)

These are changes made by man.,

Examples of man made changes

- Planting trees
- Cutting down tree
- Growing crops
- Killing animals
- Accidents
- Painting buildings
- Building
- Construction of roads

Effects of man made changes

Good effects	Bad effects
- People get shelter - Easy transport - Houses look good	Drought Causes floods Causes soil erosion Causes dealth

Managing changes brought by man

1. Accidents

An accident is a sudden happening that harms someone's body.

Examples of common accidents

- Burn
- Scalds

- Bites
- Stings
- Cuts

Causes of accidents

a) At school and home
- Carelessness
- Playing bad games
- Running down and up stairs
- Fighting

b) On the road
- Not following road signs
- Over speeding
- Over loading
- Playing on the road

Ways of controlling accidents

a) At home and school
- Avoid fighting
- Avoid playing bad games
- Avoid playing with sharp objects

b) On the road
- Following road signs
- Avoid over speeding
- Avoid over loading

(Afforestation)

Is the planting of trees where they have never existed

Reasons why people plant trees.
- To get firewood
- To get charcoal
- To get poles
- To get shade
- To get timber
- Trees help in rainfall formation

Things we get from forests
- Fruits
- Poles
- Firewood
- Timber
- Herbal medicine
- Flowers

Note: A group of trees growing together is called a forest.

Forests in Uganda

Forest	Where we find it
Mabira	Mukono/ Buikwe district
Bugoma	Masindi
Budongo	Masindi
Buhweju	Rwampara

Types of wood trees

a) Hardwood trees.

These are trees whose wood lasts for along time.

Examples of hardwood trees.

- Mvule
- Mahogany
- Eucalyptus
- Mugavu
- Teak
- Misambya
- Oak

Soft wood trees

These are trees whose wood do not last for along time.

Examples of soft wood trees

- Kirundu
- Enzingu
- Wattle
- Misizi
- Mutuba (ficus)
- Jackfruit tree

NOTE: The bark of Mutuba tree is used to make bark clothes

Ever green trees:

These are trees which bear cones (corniferous) e.g fir . pine , cedar.

Deforestation

Deforestation is the cutting down of trees on a large scale (massively)

Reasons why people carryout deforestation

- To get charcoal
- To get firewood
- To get poles
- To get timber
- To make space for farming

Dangers of deforestation

- It causes soil erosion
- It leads to drought
- It destroys habitats for wild animals

Things we get from wood.

- Tables
- Desks
- Chairs
- Beds
- Doors
- Windows frames

Killing animals

- Pouching is the illegal hunting of wild animals or This is the hunting of wild animals without permission.
- Ways of preventing the killing of animals.
- Putting up strict laws against poaching
- Fencing game reserves.

WEATHER

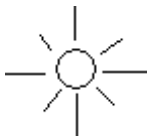
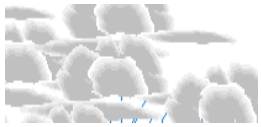
Weather is the condition of the atmosphere of a place at a given time.

There are four types / conditions / kinds of weather

- Windy weather
- Sunny weather
- Cloudy weather
- rainy weather

Weather makers – these are the aspects, factors or elements of weather.
- Wind blow
- cloud cover
- Sunshine
- Rainfall
- temperature
- humidity
- air pressure

The weather chart

Sunny	Rainy	Windy	Cloudy
			

Importance of weather

Rainfall – it provides rain water to animals and plants.
Sunshine – It dries crops (seeds), provides heat for drying clothes,
- vitamin D

Clouds – nimbus clouds form rainfall,
- makes the weather cool.

Items used in different kinds of weather.
- Rainy weather: Umbrellas, gum boots, rain coats.
- Sunny weather : Umbrellas , light clothes , sun glasses , sandals
- Cloudy weather: Sweater , Jackets overall
- Windy weather : sun glasses

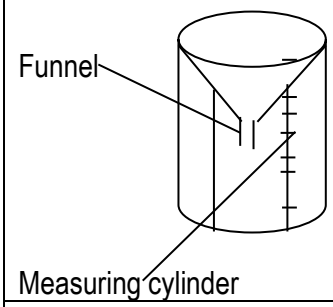
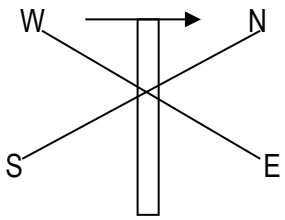
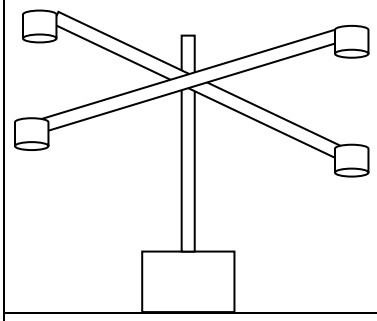
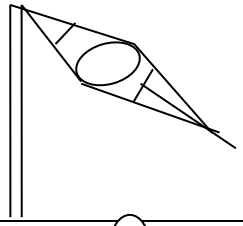
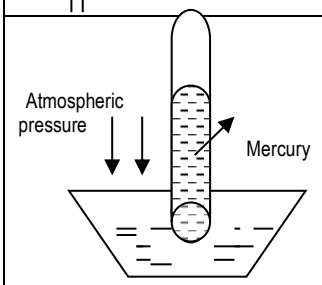
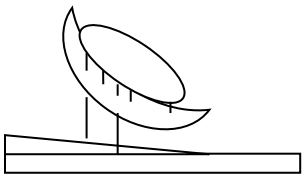
Importance of weather makers
- Rainfall – it provides rain water to animals and plants
- Sunshine – it dries crops (seeds), provides heat for drying clothes
- Vitamin D
- Clouds – nimbus clouds form rainfall.
- Makes the weather cool.

Weather instruments

Weather instruments are instruments which are used to show or measure the different factors of weather.

Weather instruments

Instrument	Name	Use / function

	Rain gauge	Used to measure the amount of rainfall received
	Wind vane	Used to show the direction of wind
	Anemometer	Measures the speed of wind
	Wind sock	Shows the strength of wind
	Barometer	Measure air pressure
	Sunshine recorder	Show the number of hours it shines

Thermometer

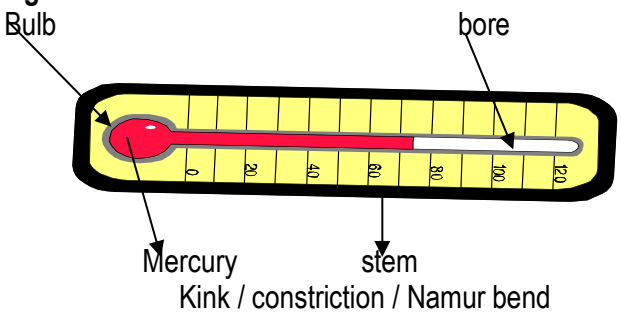
A thermometer is used to measure temperature.

Types of thermometer

a) Clinical thermometer

clinical thermometer is used to measure the human body temperature.

Diagram showing a clinical thermometer

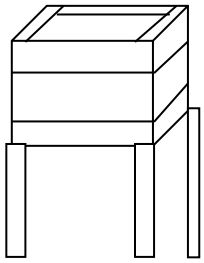


b) Six's thermometer / minimum and maximum thermometer.

Six's thermometer is used to measure the highest and lowest temperature of the day.

Stevenson screen

A Stevenson screen is used to keep delicate weather instruments.



Its painted white to reflect heat.

Examples of delicate weather instruments

- Barometer
- Thermometer

The seasons

A season is a period when an area receives the same weather condition for a long time.

There are two seasons in Uganda.

i) **Wet season** – an area receives a lot of rainfall.

ii) **Dry season** – an area receives too much sunshine.

Activities done during each season by farmers

Wet season	Dry season
- Planting seeds - Weeding - Pruning - Thinning	- Land clearing - Harvesting crops - Drying seeds - Watering

Theme

Sub-theme

Air and the sun

Reading descriptions of words

Air	atmosphere	objects
Sun	weight	translucent
Gases	properties	glass
Oxygen	pressure	transparent
Nitrogen	occupy	umbra
Carbondioxide	space	penumbra

Rare gases	bubbles	cools
Mixture	compressed	heat
Percentage	Support	winnowing
Breathing/respiration	natural	
Burning	heat	
Fire extinguisher	light	
Preserve	energy	
solar	Artificial	
Fertilizers	Nutrients	
Electrical		

Air concepts and its properties

Air is a mixture of gases

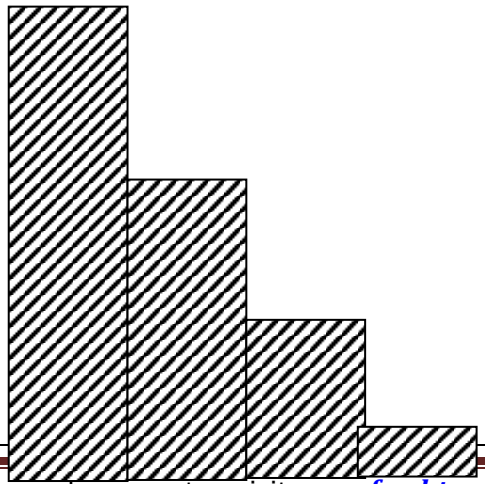
Components / parts of air

- Nitrogen,
- Oxygen,
- rare gases (argon , helium , xenon , neon , hydrogen , krypton
- carbondioxide

Percentages of gases in the atmosphere

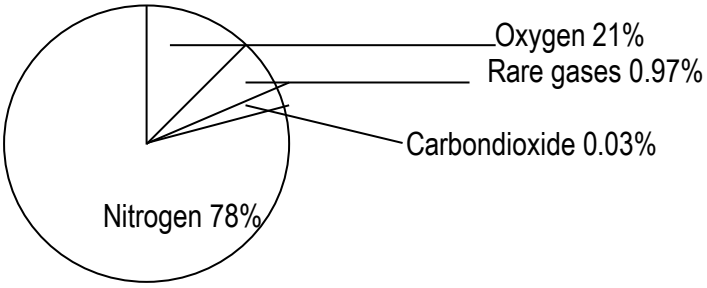
A graph showing the percentage of gases in the atmosphere

Percentage of air



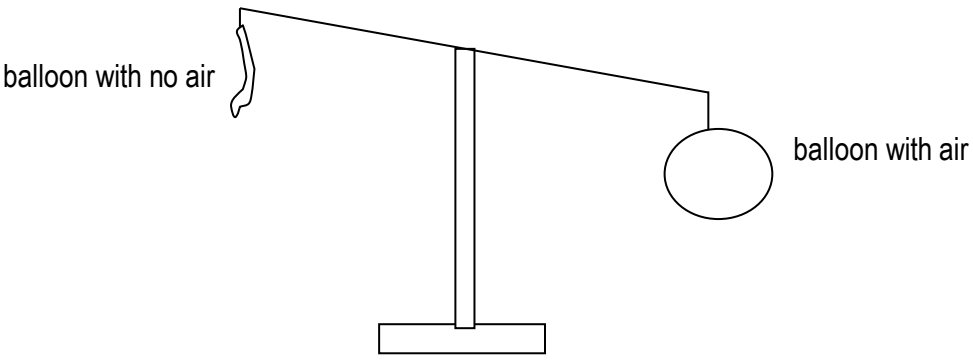
Nitrogen oxygen rare gases carbondioxide

Component of Air



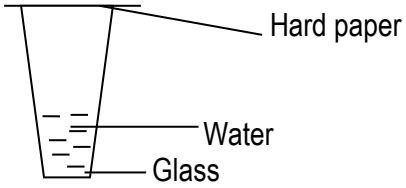
Properties of air

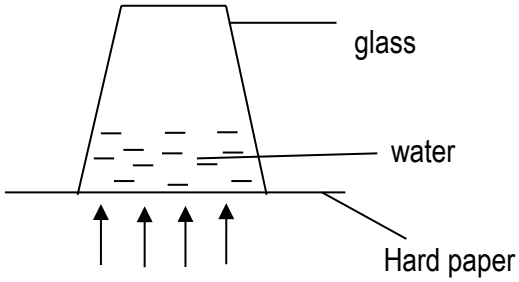
1. Air has weight



The balloon with air goes down because air has weight.

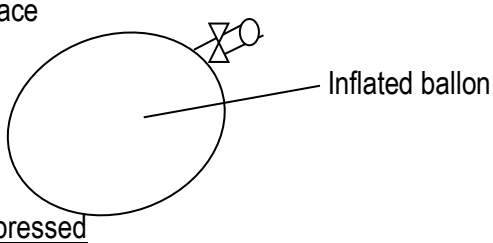
2. Air exerts pressure





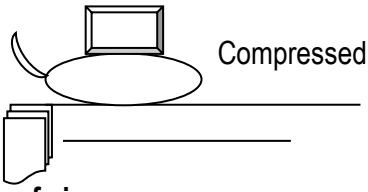
When you turn the glass upside down, the hard paper does not fall off because air pressure pushes it up.
When taking a drink e.g. soda using a straw, the pressure pushes the drink up the straw.

3. Air occupies space



4. <u>Air can be compressed</u>

Compressed air is used in car tyres to support the weight of the car. It is also used in balls, balloons, floaters and sprays.

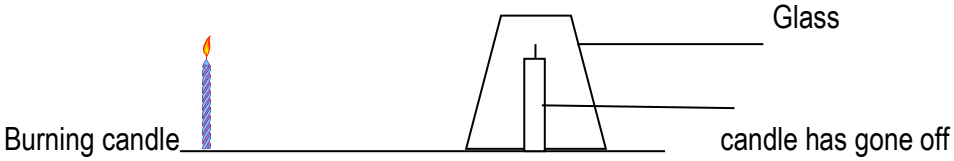


Importance of air

Oxygen

- supports life (breathing, respiration)
- It supports burning

An experiment to show that air supports burning



When the candle is burning, it is supported by oxygen. A glass cuts off the supply of oxygen and then it gets used up in the glass.
The gas the remains in the glass is carbondioxide.
NB: The gas produced by a burning candle is carbondioxide.

Carbondioxide

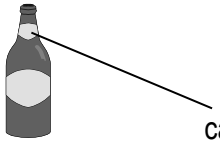
- It puts out fire because it does not support burning. A fire extinguisher uses carbondioxide to put out fire. (carbondioxide extinguishes fire)

Places where we find fire extinguishers

- schools
- hospitals
- banks
- hotels
- Vehicles
- petro stations

Picture of fire extinguisher

Carbondioxide is used to preserve drinks like soda, beer and tinned food.



Plants use carbondioxide in the process of making their own food. (photosynthesis)

Nitrogen –

- Nitrogen helps in formation of artificial fertilizers
- Nitrogen provides nutrients to plants through minerals.

Rare gases – used in electrical bulbs.

Wind (moving air)
Wind is moving air or wind is air in motion

Uses of wind
- Wind cools our bodies
- Wind moves things e.g. boats, kites
- Wind is used in winnowing
- Wind moves wind mills

Uses of wind mills
- Used to pump water from the ground
- Used to generate electricity

Dangers of wind
- Strong wind destroys crops.
- Strong wind breaks tree branches.
- Wind spreads diseases like flu, cough tuberculosis , measles , mumps etc
- Wind rises dust
- Wind destroys houses
- Wind causes soil erosion

The sun
The sun is the main source of heat and light energy
It also provides solar energy

Sources of light
- Natural sources of light (God made sources) e.g. the sun, stars, glow worms (caterpillars), fire flies, shooting stars, volcanic mountains
- The moon s not a natural source of light because it reflects light from the sun.

Artificial sources of light (man made)
- torches
- electric bulbs
- candles
- mobile phones
- match boxes

Effects of the sun
Uses of the sun to animals
- Helps to see (light)
- Tells direction
- It helps in formation of rainfall
- It dries clothes
- It is a source of solar energy
- Provides vitamin D

Uses of the sun to plants
- Helps plants to manufacture (make) food.
- Helps plants to grow well.

Dangers of the sun
- Prolonged sunshine causes drought.
- Too much sunshine dries crops.

Changes bought by the sun on the earth
- It causes day and night

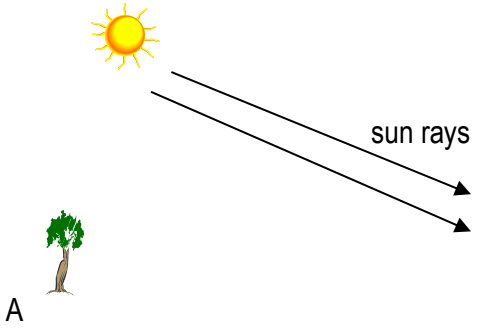
- Drought

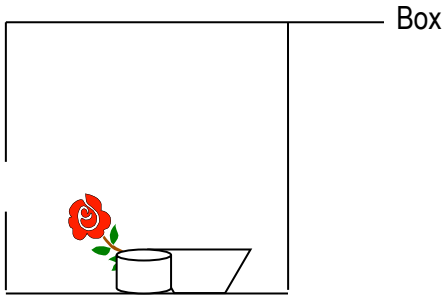
Day is the time between sun rise and sun set.

Night is the time between sun set and sun rise

Qn. What causes day and night? the rotation of the earth.

Plants need sunlight to grow





A plant bends towards the hole where sunlight is.

Shadows: A shadow is a region of darkness formed when light falls on an opaque object

Formation of shadows

Shadows are formed with light falls on an opaque object.

Shadows are formed when an opaque object stands in the way of light.

Opaque objects:

These are objects which do not allow light to go through them.

Examples of opaque objects

Walls, books, trees, tables, desks etc

Translucent objects

These are objects which allow light to go through them e.g. clear glass, colourless polythene, sun glasses.

Transparent objects

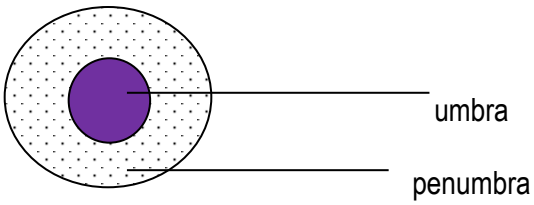
These are objects which allow little light to pass through them e.g clear glass, water and air.

Parts of a shadow

A shadow has two parts.

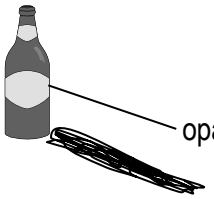
a) Umbra – the darker part of a shadow

b) Penumbra – the lighter part of a shadow



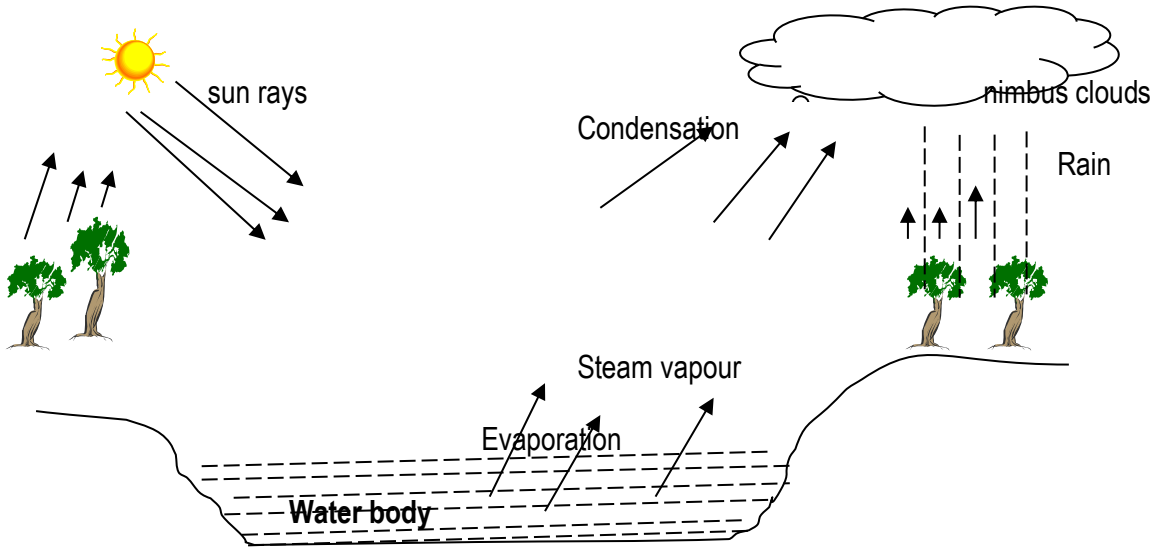
Characteristics of shadows

- Have two parts (umbra and penumbra)

	- Shadows are always formed on the opposite side of the source of light. - Appear shortest at noon or mid-day. - Appear longest in the early morning and late evening. **Uses of shadows** - Shadows tell time - Shadows show direction - Shadows give us shade **How shadows are formed** source of light 1. Opaque object  2. source of light 
Sub Theme	**Water** **Reading descriptions of words** - Rainfall - Formation - Cycle - Vapour - Nimbus - Evaporation - Ice - Stratus - Cumulus - Nearest - Humidity dark feathers piles measure source irrigation disposal proper collect station types - Layers public stagnant Water Sunrays Clouds Heat Gaseous Cirrus Masses Furthest Temperature transport promote condition resemble aspects generate fencing waste products direct elements Water cycle : Is the process by which rain is formed **Water cycle/ rainfall formation** - The sun heats the water body. - The water gets heated up and starts evaporating (rising up). - The vapour rises up and then condenses to form nimbus clouds.

- The condensed vapour becomes heavy and then falls down as rain.

Diagram showing the water cycle



Condensation: is the process by which vapour changes to water.
Transpiration : Is the process by which plant lose water to the atmosphere through leaves.

An experiment to show how rainfall is formed

Teacher to draw the experiment

- The charcoal stove represents the sun.
- The water in the kettle represents the water body.
- Evaporation takes place inside the kettle.

NOTE: Evaporation is the changing of water into gas.

- The cold water in the bottle condenses the steam to water.
- The water droplets represent rain.

Types of rainfall.

- Relief rainfall
- Convectional rainfall
- Cyclonic rainfall

NOTE: Vapour is water in gaseous form and ice is the water in solid form.

Importance of rain

To man/ animals/ plants
- Plants get water used to grow.
- Animals get water for drinking.
- Rain fills water bodies.
- Rain cools the weather.

Dangers of rain
- Too much rainfall destroys crops.
- Too much rainfall causes floods.
- Too much rainfall kills animals.
- Too much rainfall destroys buildings.
- Too much rainfall causes soil erosion.

Clouds
Clouds are big masses of water that form in the sky.

There are four types of clouds.
- Nimbus
- Cumulus
- cirrus
- stratus.

Nimbus clouds
- Dark grey in colour, appear nearest the earth and bring rain.

Stratus clouds
- They spread in the sky with calm flat layers and are a sign of fair weather.

Cirrus clouds
- Appear furthest (highest) in the sky. Resemble (look like) feathers.

Cumulus clouds
- They are white in colour and resemble cotton piles.

Uses of clouds
- Form rainfall (nimbus clouds)
- Protect us from too much sunlight.
- Make the weather cool.

Water sources
There are two types of sources of water
i) Natural sources or God made sources e.g rain, lakes, rivers, oceans swamps etc
ii) Artificial sources or manmade sources e.g. tanks, bore holes, fountains, dams, spring ,etc

Importance of water
- For domestic use e.g. cooking, bathing
- For transport
- For generating electricity (hydro)
- For cooling machines
- For irrigation/ watering crops

Ways of protecting water sources

- By fencing sources
- Putting laws
- Planting grass around them
- Proper disposal of waste products
- Adding chlorine to water sources to kill germs.

Water harvesting

Ways of collecting water

- By using tanks
- Using jerrycans
- Tapping from the roof
- Using dams
- Tapping from trees

Ways of contaminating water sources

Urinating in water sources.
Putting rubbish in water sources

Sanitation

Sanitation is the general cleanliness of a place where we live (public cleanliness)or is the cleaning of a place where we live or stay.

Important of sanitation

- It reduces the spread of germs.
- It promotes public health.
- Little money is spent on treating people.
- People live longer.
- Vectors are controlled.

Ways of promoting proper sanitation

- Cleaning latrines or toilets.
- Proper disposal of rubbish.
- Slashing around our homes.
- Draining away stagnant water.
- Sweeping our compound.
- Building plate stands.
- Fencing water sources.

Why do we smoke latrines?

- To reduce bad smell
- To prevent house flies.

Things used to keep proper sanitation

- Brooms, soap, water, ash, dustbin, hoes, rays, rakes, brushes, wheel barrows, spades

Qualities of a good house

- A good house should have windows, doors, strong roof, ventilators and a verandah.

Qualities of a clean home

A good home should have;

- A kitchen
- Bathroom

	- Latrine or toilet - Rubbish pit - Plate stand - Well ventilated house **Germs** Germs are small living things (organisms) that cause diseases. There are four types of germs. - Bacteria - Viruses - Fungi - Protozoa