

***PRIMARY #CREATIVE PRINTERS  
WORK BOOK***

***SCIENCE***

***FOR NOTES, SCHEMES, EXAMS. ETC***

# **SOIL**

Soil is the top the top layer that covers the earth's surface.

OR

Soil is a non living component of the environment.

## **WAYS THROUGH WHICH SOIL IS FORMED**

**Weathering;** Is the breakdown of rocks to form soil.

**Decomposition;** Is the rotting of organic matter to form soil  
ie plants and animal droppings.

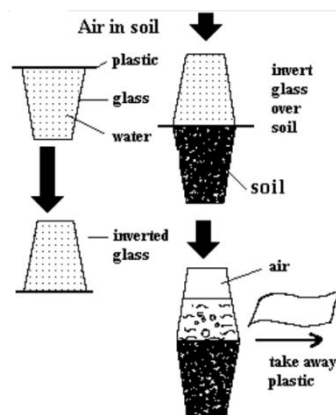
## **COMPONENTS OF SOIL**

- ❖ Humus
- ❖ Air
- ❖ Rock
- ❖ Living organisms
- ❖ Water

## **AN EXPERIMENT TO SHOW THAT SOIL CONTAINS AIR**

- Fill a glass with half dry soil.
- Fill the remaining part with water
- Put the glass on the table and watch what happens.

### **ILLUSTRATION**



## OBSERVATION

- Bubbles are seen coming out of the soil.

## CONCLUSION

- Bubbles show air escaping through the soil.

## USES OF AIR IN THE SOIL

- Helps living things in the soil to breathe.
- Helps seeds to germinate.

**Note;** When plants and animals die they rot and form humus.

## IMPORTANCE OF HUMUS

- Humus improves soil fertility.
- Humus promotes proper growth of plants.
- Improves good aeration of the soil.
- Humus is dark and soft easy for plants to penetrate.

## TYPES OF SOIL



**SOIL TEXTURE;** Is the smoothness or roughness of soil.

## CHARACTERISTICS OF LOAM SOIL.

- It has medium particles.
- Contains a lot of humus.
- Properly aerated.
- Has good drainage.

## **CHARACTERISTICS OF SAND SOIL.**

- Has the biggest soil particles.
- Contains a lot of air.
- Has less humus.
- It is loose, light, and easy to dig.
- Has the highest rate of drainage.

## **CHARACTERISTICS OF CLAY.**

- Has the finest particles.
- Best soil for pottery.
- Doesn't allow passage of water through it easily.
- It is poorly aerated.

## **USES OF DIFFERENT TYPES OF SOIL.**

<b>Sand soil</b>	<b>Loam soil</b>	<b>Clay soil</b>
For building.  For making blocks. For making sand paper. For making glasses.	For growing crops. For making bricks.	Used for;  Making pots/pottery. For making bricks. For making tiles.

## **SOIL PROFILE:**

- Is the arrangement of soil from top to bottom layers.

## **OR**

- Soil profile is the vertical arrangement of soil layers

### **ANIMALS THAT LIVE IN SOIL.**

Moles

Worms

Termites

Squirrels

Bacteria

### **SOIL EROSION**

Is the washing away of top soil by its agents.

### **AGENTS OF SOIL EROSION**

Animals

Wind

Fast running water

### **CAUSES OF SOIL EROSION**

Over grazing

Mono cropping

Drought

Over cultivation

Over stocking

Bush burning

Deforestation

### **CONTROL OF SOIL EROSION**

By mulching

Terracing

Crop rotation

Reforestation

Aforestation

Contour ploughing

### **MULCHING**

Is the covering top soil with dry plant materials.

### **EXAMPLES OF MULCHES**

Dry grass

Banana leaves

Coffee husks

## **IMPORTANCE OF MULCHING/ADVANTAGES.**

- Keeps the water in soil.
- Rots to form manure.
- Controls soil erosion.

## **DISADVANTAGES OF MULCHING GARDENS.**

- ❖ Mulches are fire hazards.
- ❖ Habitats for pests.
- ❖ Time consuming to lay mulches.
- ❖ Makes weeding difficult.

## **EFFECTS OF SOIL EROSION**

- Leads to famine.
- Leads to soil exhaustion.
- Causes desertification.
- Washes away top soil.

## **SOIL EXHUASION**

Is the loss of soil fertility.

## **CAUSES OF SOIL EXHUASION**

- Over grazing
- Over ploughing
- Bush burning
- Soil erosion

Causes of soil erosion	How to control soil erosion
Over cultivation. Over grazing. Bush burning. Leaching.	Use crop rotation. By mulching. Addition of manure. Use of fertilizers.

### TOPICAL QUESTIONS

1a. Give the three types of soil.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_ (iii) \_\_\_\_\_

b. Write three components of soil.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_ (iii) \_\_\_\_\_

2a. Define the following words.

(i) Soil.

\_\_\_\_\_

(ii) Soil texture.

\_\_\_\_\_

(iii) Soil profile.

\_\_\_\_\_

b. Which soil has got the biggest particles?

\_\_\_\_\_

c. Write the best soil used to carry out the following activities.

(i) Farming \_\_\_\_\_ (ii) Pottery \_\_\_\_\_

(iii) Building \_\_\_\_\_

3a. Name the components of loam soil.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(iii) \_\_\_\_\_

b. Why is loam soil the best for farming?

\_\_\_\_\_

c. Name three things at home made from clay.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(ii) \_\_\_\_\_

4a. Name three layers of soil.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(iii) \_\_\_\_\_

b. Which layer of the soil supports plant growth?

\_\_\_\_\_

c. Why is sub soil not good for plant growth (farming)?

\_\_\_\_\_

d. Name two animals which live in soil.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

e. In which layer of soil are living things found?

\_\_\_\_\_

5. What is weathering?

\_\_\_\_\_



- b. Give two ways through which soil is formed.  
(i) \_\_\_\_\_ (ii) \_\_\_\_\_
- c. What is soil erosion?  
\_\_\_\_\_
- d. List all the agents of soil erosion.  
(i) \_\_\_\_\_ (ii) \_\_\_\_\_  
(iii) \_\_\_\_\_ (iv) \_\_\_\_\_
- e. Give four causes of soil erosion.  
(i) \_\_\_\_\_  
(ii) \_\_\_\_\_  
(iii) \_\_\_\_\_  
(iv) \_\_\_\_\_
- 6a. Mention three ways of controlling soil erosion.  
(i) \_\_\_\_\_  
(ii) \_\_\_\_\_  
(iii) \_\_\_\_\_
- b. How are farmers in mountainous areas able to control soil erosion.  
\_\_\_\_\_
- c. What is reforestation?  
\_\_\_\_\_

7a. Give two effects of soil erosion.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

b. What is soil exhaustion?

\_\_\_\_\_

c. State two causes of soil exhaustion.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

d. Mention three ways of controlling soil exhaustion.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

8a. What is crop rotation?

\_\_\_\_\_

b. Carry out an experiment to show that soil contains air molecules.

## **CHANGES IN OUR ENVIRONMENT.**

### **Natural changes.**

Are changes brought about by nature and non living things.

### **Examples of natural changes in the environment**

Floods	storms
Drought	Lightening
Landslides	Earthquakes
Thunder	

### **Effects of natural changes in our environment**

Soil erosion. Causes famine (hunger).  
Displacement of people (migration). Diseases.  
Destruction of homes and property. Death.

### **Man made changes**

These changes are brought by mans activities in the environment.

- Planting trees (Aforestation)
- Cutting down trees (Deforestation)
- Draining swamps (Swamp reclamation)
- Burning bricks
- Building houses
- Building roads

### **Effects of people/man made changes**

- ❖ Drought
- ❖ Soil erosion
- ❖ Accidents
- ❖ Easy transport
- ❖ Soil exhaustion
- ❖ Death of animals
- ❖ Desertification

### Ways of managing changes.

#### Floods.

- ❖ Avoid clearing swamps.
- ❖ Dig big trenches to avoid floods.
- ❖ Settlings on areas with good drainage patterns.

#### Drought

- Plant trees.
- Avoid clearing.
- Use of irrigation schemes.
- Avoid bush burning
- Proper farming
- Educate people about changes.
- Dig valley dams.

#### Rusting

Rust is a reddish coating that appears on metals.

#### Conditions for rusting

- Oxygen
- Moisture

#### Methods of preventing rusting

- By oiling.
- By painting. By greasing.
- Keeps tools in dry places

### Accidents

Are sudden happenings which cause pain, harm and eventually death.

### Causes of accidents

- Over loading
- Over speeding.
- Poor roads.
- Drunken drivers.
- Over talking at wrong places.
- Careless drivers and pedestrians.
- Crossing busy roads on zebra crossing.

### Environment and weather

**Air:** Is the mixture of gases.

**Wind:** Is moving air.

Wind can also be defined as air in motion.

### **Components of air**

✓ Nitrogen	78
✓ Oxygen	21
✓ Rare gases	0.97 (1)
✓ Carbon dioxide	0.3 (0.04)

### Properties of air

- ❖ Air has weight.
- ❖ Air occupies.
- ❖ Air exerts pressure.
- ❖ Air can be compressed.
- ❖ Air can move things.

### Importance of air/uses of air

- Supports burning e.g. oxygen.
- Used for transport e.g. planes, parachutes.
- For germinating seeds e.g. oxygen.
- Carbon dioxide is used to preserve drinks.
- Air is used in winnowing.
- Animals breathe in air e.g. oxygen.
- Wind is used for flying kites.
- Carbon dioxide is used in fire extinguishers.
- Moving air helps to cool our bodies.

### Dangers of strong winds

- Strong winds carry away top soil.
- Destroy property.
- Strong winds blow off people's houses.
- Strong winds move floating vegetation which makes transport difficult.
- They break down crops.

### The sun

- ✓ It is the highest and hottest star.
- ✓ The sun rises from the east and sets from the west.

### Uses of the sun/importance of the sun

- Provides heat
- Provides light
- Source of solar energy
- Sunlight is used during photosynthesis.
- Sun helps living things to grow.
- Sun helps mans skin to make vitamin c.

- Dries peoples clothes

### **Changes of the sun.**

- ❖ Too much sunshine dries crops in the garden.
- ❖ Too much sunshine dries water bodies.
- ❖ Too much sunshine leads to drought.
- ❖ Sunny weather makes animals thirsty.
- ❖ The sun spoils our eyes when you look directly to it.
- ❖ Too much sunshine causes transpiration in plants.

### **Shadows**

- ✓ A shadow is a dark region formed when a light is blocked by an opaque object.

### **Importance of shadows**

- Tell time
- Gives direction

### **Topical questions**

1a. what is air?

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b. Which part of air supports burning?

c. Why is carbon dioxide used to put out fire.

\_\_\_\_\_

d. Name two things that can be moved by air.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

e. Give four dangers of strong winds.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

2a. Write three use of sun to

a). People

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

b. Where does the sun rise from?

\_\_\_\_\_

c. What causes day and night?

\_\_\_\_\_

d. Name three types of clouds.

(i) \_\_\_\_\_



(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

3a. What are natural changes?

\_\_\_\_\_

b. Mention four examples of natural changes in the environment

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(iii) \_\_\_\_\_ (iv) \_\_\_\_\_

c. At what time of the day does the moon appear on the sky?

\_\_\_\_\_

d. Give three ways of maintaining floods in an environment.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

e. Give two proper farming methods.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

4a. Define rusting.

\_\_\_\_\_

b. State the two conditions necessary for rusting.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

c. Mention four methods of preventing metals from rusting.

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

5. What is an accident?

\_\_\_\_\_

b. Outline four causes of accidents.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

c. Give two ways of controlling accidents on roads.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

6a. State three properties of air.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

b. Which property of air helps us to drink soda from bottles using straws?

\_\_\_\_\_

c. Which property of air is shown in the diagram below.

d. Which property of air is used to inflate car tyres.

\_\_\_\_\_

e. Name the type of air used in preserving food.

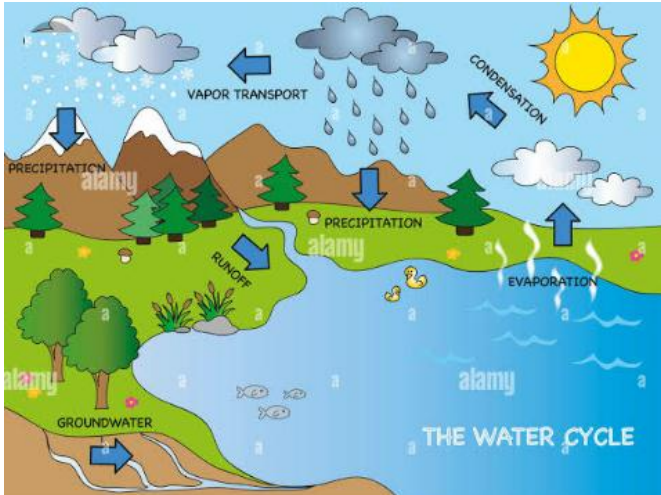
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- f. Give three uses of air.
- (i) \_\_\_\_\_ (ii) \_\_\_\_\_
- (iii) \_\_\_\_\_
- g. Name the gas used in fire extinguishers.
- \_\_\_\_\_
- 7a. Mention the two diseases spread by air.
- (i) \_\_\_\_\_ (ii) \_\_\_\_\_
- b. Give three dangers of wind to people.
- (i) \_\_\_\_\_
- (ii) \_\_\_\_\_
- (iii) \_\_\_\_\_
- c. Name the source of energy got from the sun.
- \_\_\_\_\_
- d. Define the following words.
- (i) shadow
- \_\_\_\_\_
- (ii) opaque objects
- \_\_\_\_\_

### Water

Water is a colourless liquid with good taste.

## Water cycle/rain



### Evaporation

Is the process by which water changes to vapour.

### Condensation

This is the process by which water vapour changes to water droplets to form clouds.

### Rain

Is the water falling in separate droplets from the sky.

### Transpiration

This is the process by which plants lose water to the atmosphere in form of water vapour.

**NB:** Water cycle is the natural process by which rain is formed.

### Steps through which rain is formed

- ✓ The sun heats the water body.
- ✓ Water evaporates to form vapour.
- ✓ Water vapour rises and condense to form nimbus clouds.
- ✓ Clouds become heavy and eventually fall as rain.

### Rain

Rain is the main natural source of water.

Rain is formed from clouds.

### Importance of rain

- Rain provides water for drinking.
- For washing.
- For watering plants.
- For softening the soil to ease planting.
- Rain washes away dust from air.
- Cools down temperature.
- Reduces dust on murram roads.

### Dangers of heavy/too much rainfall.

- ❖ Leads to soil erosion.
- ❖ Leads to floods.
- ❖ Makes murram roads muddy.
- ❖ Breaks down houses and crops.

### Solutions to the above problems

- Practice good farming methods.
- Tarmaking roads.
- Avoid swamp drainage.
- Practice afforestation.
- Using lightening conductors.

## Clouds.

There are four types of clouds i.e.

1. Nimbus clouds  $\Rightarrow$  brings steady rainfall.
2. Cirrus clouds  $\Rightarrow$  are the highest clouds.
3. Stratus clouds  $\Rightarrow$  they are dark grey.
4. Cumulus clouds  $\Rightarrow$  Bring a clear day; are commonly white in colour

## How clouds affect the environment.

Nimbus clouds bring steady rainfall.

A cloudy weather brings low temperature.

Cummulus clouds bring a clear day.

## Dangers of clouds

Clouds cause accidents in air transport.

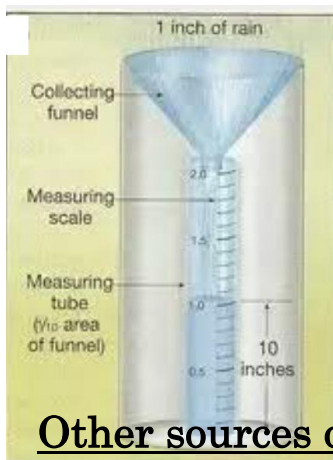
They cause lightening.

Bring heavy rains which cause flooding.

## How rain is measured

A rain gauge is the weather instrument for measuring rain.

## A drawing of rain gauge.



## Other sources of water.

- Lakes
- Streams
- Oceans
- Rivers

### Artificial sources of water.

- ❖ Bore holes.
- ❖ Spring well
- ❖ Valley dams
- ❖ Ponds

### Importance of water in our community to;

#### (i) People

- For cooking.
- For washing clothes.
- For drinking.
- For bathing.
- For washing utensils.

#### (ii) Plants

- ✓ Helps plants to make their own food.
- ✓ Helps the seeds to germinate.
- ✓ Cools the plants during hot days.
- ✓ Helps plants to absorb nutrients from the soil.

### Water harvesting.

Water can be harvested using;

- Tanks
- Buckets
- Basins
- Jerry cans
- Digging valley dams.

**Maintenance of water sources.**

- ❖ Fencing water sources.
- ❖ Cleaning water sources.
- ❖ Avoid dumping wastes on water sources.
- ❖ Repairing damaged sources.

**Topical questions**

1a. Name the three types of clouds.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

b. Identify the main natural source of water.

\_\_\_\_\_

c. Name two ways in which people can control floods.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

d. Give three uses of water to plants.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_



(iii) \_\_\_\_\_

2a. Name the instrument used to measure rainfall.

\_\_\_\_\_

b. Mention three ways of maintaining water sources.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

c. How important is water at home? (Give four)

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

e. Identify three other natural sources of water.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

f. Mention two artificial sources of water.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

g. Identify two ways of harvesting water.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

3a. Mention two effects of clouds to the environment.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

b. State two dangers of clouds to people.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

c. Why is a rain gauge important to farmers?

\_\_\_\_\_

4a. Which cloud brings steady rainfall?

\_\_\_\_\_

b. Name the clouds which causes drizzling.

\_\_\_\_\_

c. Mention the highest clouds.

\_\_\_\_\_

5a. Why should a rain gauge be put in an open space when measuring rainfall?

\_\_\_\_\_

b. Name the units for measuring rainfall.

\_\_\_\_\_

c. State any three importance of clouds.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

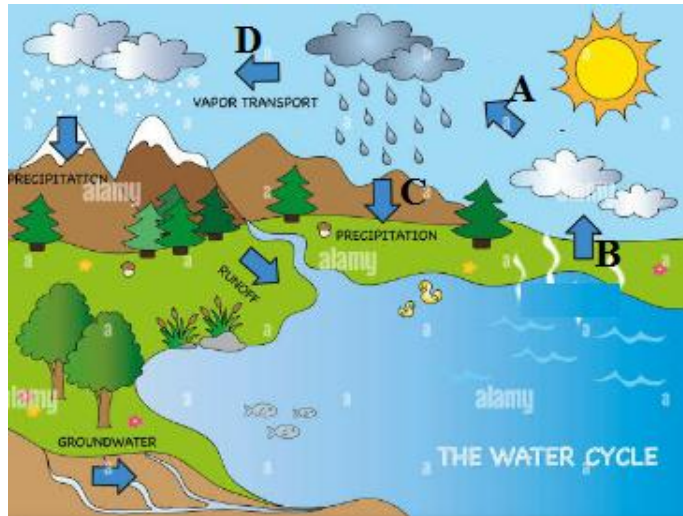
(iii) \_\_\_\_\_

d. Give any two dangers of clouds in the environment.

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

6. Study the water cycle below and answer the questions about it.



a. Name parts marked with letters A, B, C, D.

A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

D \_\_\_\_\_

b. Name the processes which take place at c and f.

C \_\_\_\_\_

F \_\_\_\_\_

7a. What do we call?

(i) The turning of water into vapour?

\_\_\_\_\_

(ii) The turning of water vapour into water?

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(iii) The loss of excess water by plants through their leaves to atmosphere.

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b. Define the following terms as used in the water cycle.

(i) Evaporation

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(ii) Transpiration

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(iii) Condensation.

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