

PHASE 3 P.6 SCIENCE NOTES 2021

WEEK ONE:

LESSON 1: STARTING A LIVESTOCK FARM

Livestock refers to the animals kept on a farm. These may include;

- Poultry
- Goats –
- Sheep
- Pigs and
- Cattle

Livestock farming is the rearing of farm animals.

It's important to people in the following ways;

- It's a source of income when animals and their products are sold
- It's a source of food
- It provides employment opportunities to people

Requirements for starting a livestock farm.

Land this is a place on which the farm is started. It may be obtained in the following ways;

- By buying
- Through inheritance
- From donation

Capital, this is the money used to buy things needed to start a farm.

Some of the things the money may be used for include; – Buying land if it is to be bought

- Constructing animal houses, stores, office and stationery. –
- Preparation of pasture
- Bringing water on the farm
- Paying workers and experts for the treatment and vaccination of the farm animals before the farm starts producing.

– Buying drugs, acaricides and necessary equipments for the farm.

Labour, this includes people who do activities on a farm both skilled and unskilled workers.

Market, in live stock farming, marketing refers to the demand for cattle or their products.

Demand for cattle products means the desire and ability to pay for the products.

Therefore, it's important to know whether people are ready to buy the products from the farm.

The type of livestock, the farmer needs to identify which animals he or she wishes to keep.

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Learner's activity

1. Give a difference between livestock and livestock farming
2. Today in Uganda, many people prefer livestock farming to crop growing. Give two reasons for this.
3. Identify any two ways of obtaining land for starting a livestock farm.
4. List any two activities done by skilled and non-skilled worker on a farm.
5. Give two ways in which capital can be used in starting a livestock farm

THEME : THE HUMAN BODY

TOPIC : RESPIRATORY SYSTEM

LESSON 2 : ORGANS OF THE RESPIRATORY SYSTEM

The respiratory system:

Respiration is the process by which the body uses food and oxygen to release energy, heat, carbon dioxide and water vapour. Respiration takes place in the body cells.

Organs/ major parts of the respiratory system.

- Nose
- Trachea Or Wind Pipe
- Bronchus
- Lungs
- Diaphragm

A drawn structure showing the respiratory system.

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Functions of the parts

The nose:

- It contains mucus and tiny hair (cilia)
- Cilia traps dust that enters with air
- Mucus helps to moisten and warm air.
- The wind pipe/trachea
- It's made up of soft bones called cartilage to keep it open all the time
- It also contains hair and mucus

The epiglottis:

- Closes to prevent the food from entering into the wind pipe on swallowing.

The lungs:

- This is the organ where gaseous exchange takes place. – It has got air sacs (alveoli) with a net work of blood capillaries to absorb oxygen and pass out carbon dioxide.

Rib cage:

- Protect the lungs and heart against external harm. – It's also covered with a pleural fluid to prevent friction between the thorax and lungs to the ribs.

Note:

Gaseous exchange takes place at the air sacs.

Learner's activity

1. State the importance of respiration to the body

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2. Give a reason why it's not advisable to breathe through the mouth

3. How are cilia useful to people during breathing?

4. State the importance of the following organs of the respiratory system;

a) Nose

b) Rib cage

c) Epiglottis

WEEK : 2**LESSON 1: BREATHING**

Breathing is the act of taking in of oxygen and sending out of carbon dioxide from the body.

Breathing involves exchange of gases in an organism Breathing starts from taking in air through the nose to the lungs.

Types of breathing:

There are two types namely;

Inspiration (inhalation) and

Expiration (exhalation)

Breathing in / inspiration / inhalation.

Inspiration is the act of drawing in air into the lungs through the nose.

The air we breathe in contains more oxygen than carbon dioxide. We breathe in to increase oxygen supply in the body Oxygen is used by the body to burn food and produce energy during respiration

Respiration is the oxidation of food to produce energy in the body cells

Events during inhalation / breathing in.

- The diaphragm moves downwards. (Diaphragm contracts and flattens)
- Ribs move upwards and outwards.
- Lungs expand
- The chest increases in volume
- Air is drawn into the lungs.

Expiration / breathing out / exhalation

This is the act of taking out of air from the Lungs through the nose. –

We breathe out to reduce carbon dioxide in the body. – Air we breathe out contains more carbon dioxide than oxygen – During breathing out, we also lose excess heat and vapour from the body.

Events during expiration / breathing out / exhalation ▪

- The diaphragm moves upwards to its domed shape.
- The ribs move downwards and inwards
- The lungs reduce in size

Note:

- Carbon dioxide dissolved in the blood plasma diffuses from the capillaries into the alveoli and exhaled out.
- Abrupt coughing is caused when an external matter enters the trachea or wind

Learner's activity

1. Differentiate between breathing and respiration
2. State what happens to the following parts during breathing in
 - a) Diaphragm
 - b) Lungs

c) Intercostal muscles

3. By what process does carbon dioxide move from capillaries to lungs?

LESSON 2: ADAPTATION OF THE AIR SACS TO THEIR WORK

Gaseous exchange in the alveolus

Gaseous exchange takes place in the alveoli and in the air sacs of lungs.

When blood reaches the alveoli, carbon dioxide is lost and oxygen is added to blood.

Oxygen is able to be added to blood and carbon dioxide is lost by a process called diffusion.

An illustration showing gaseous exchange at the alveoli.

Note:

- Alveoli are plural while alveolus is singular.

How are air sacs suitable for gaseous exchange

- They are thin walled to allow gaseous diffusion through.
- They are surrounded by a network of blood capillaries.
- They are many in number to provide a large surface area to ease gaseous exchange.

Summary of the composition of inhaled and exhaled air

Gas	Inhaled air	Exhaled air
Oxygen	21%	16%
Carbon dioxide	0.03%	4%

Nitrogen	78%	78%
Water vapour	Less	More
Rare gases	0.97%	0.97%

Note:

- As we breathe out, more carbon dioxide is expelled because some is added from the body cells.
- Nitrogen is left unchanged because it is not necessary in the body.
- We breathe out less oxygen because most of it is used by the body during respiration process.

Learner's activity.

1. State two ways in which air sacs are adapted for exchange of gases.
2. Study the table below and answer the questions that follows;

Component	Inhaled air	Exhaled air
Oxygen	21%	16%

Nitrogen	78%	78%
Carbon dioxide	0.03%	4%

Briefly explain why;

- a) Exhaled air contains little oxygen
- b) Concentration of nitrogen remained unchanged
- c) Exhaled air contains more carbon dioxide

LESSON 3 : DISEASES OF THE RESPIRATORY SYSTEM.

Respiratory diseases are diseases that affect people's respiratory organs i.e. the lungs, trachea, nostrils, and bronchioles.

- Some respiratory diseases are communicable diseases spread through contaminated air while others are non-communicable caused by smoking.
- Some respiratory diseases are hereditary spread from parents to the babies.

Diseases of the respiratory system.

Diseases	Signs and symptoms	Prevention / control
Lung cancer (caused by smoking)	<ul style="list-style-type: none"> · Chest pain · High fever · Coughing 	<ul style="list-style-type: none"> · Avoid smoking tobacco · Seek medical treatment
Influenza (flu) (caused by virus)	<ul style="list-style-type: none"> · Difficulty in breathing · Constant coughing and sneezing 	<ul style="list-style-type: none"> · Drink a lot of fluids
Pneumonia	<ul style="list-style-type: none"> · Difficulty in breathing 	<ul style="list-style-type: none"> · Wear warm clothes

caused by either bacteria or virus	<ul style="list-style-type: none"> · Coughing · Fever 	<ul style="list-style-type: none"> · during cold weather. · Treat using antibiotics.
Bronchitis (caused by bacteria)	<ul style="list-style-type: none"> · Difficulty in breathing 	<ul style="list-style-type: none"> · Avoid smoking · Avoid staying in ventilated places.

<p>Tuberculosis · (caused by bacteria)</p>	<ul style="list-style-type: none"> · Coughing for a longtime · Thick mucus spitting with spotted blood · Chest pain 	<ul style="list-style-type: none"> · Isolate the infected ones · Immunise using children BCG · Vaccine · Avoid drinking unboiled milk.
<p>Whooping cough (caused by bacteria)</p>	<ul style="list-style-type: none"> · Blocked nose · Coughing spasm · Difficulty in breathing · Running nose 	<ul style="list-style-type: none"> · Drink fluids rich in vitamins · Immunise children with DPT vaccine. · Avoid overcrowded and poorly ventilated houses/places.
<p>Asthma (allergies)</p>	<ul style="list-style-type: none"> · Difficulty in breathing · Body weakness during cold weather. · Mucus flow 	<ul style="list-style-type: none"> · Go for medical attention · Keep away from sources of allergies

		<p>e.g. cold pollen grains.</p>
<p>Diphtheria (caused by bacteria)</p>	<ul style="list-style-type: none"> · Sore throat · Convulsion 	<ul style="list-style-type: none"> · Immunise the infants using DPT vaccine · Go for medical treatment in time.

Learner's activity.

1. Identify any two diseases of the respiratory tract
2. Describe any two ways of keeping the respiratory system in a healthy working condition.
3. Draw the structure of the respirator system and name the parts;
 - a) Trachea
 - b) Left bronchus
 - c) Diaphragm
 - d) Lung

WATCHING DOWN LOADED INFORMATION ON HOW LUNGS/ ALVEOLI WORK (PRACTICAL)

THEME : THE ENVIRONMENT

TOPIC : RESOURCES IN THE ENVIRONMENT

LESSON 1 : DESCRIPTION OF RESOURCES

Resources

□ A resource is any material used for certain purpose. □ A resource is anything that can satisfy people's needs. □ A resource can be any object or living component of the environment.

Types of resources

- Renewable resources / inexhaustible resources
- Non- renewable resources / exhaustible resources *Renewable*

resources are resources that can be replaced naturally when used up.

Renewable resources include;

- | | | |
|---------|-----------|------------|
| – Water | – Animals | – Soil |
| – Plant | – Air | – Sunshine |

Importance of plants as resources.

- Some plants are eaten as food.
- Plants provide wood fuel to people when dried
- Some plants are used as herbal medicine to cure animal diseases.
- Plants provide raw materials for furniture and crafts – Plants help

in the rain cycle through transpiration. *Non-renewable resources.*

These are resources that cannot be replaced naturally when used up.

These resources can be exhausted in case they are not properly handled and preserved.

Examples include;

- Rocks
- Petroleum
- Clay Soil

Ways people use animals a resource

- Minerals – Sand

- Animals products (meat and milk) are good sources of proteins to people's diets.
- Animals provide labour such as pulling carts, ploughing and for transport.

Examples of such animals include;

- Horses,
- Camels,
- oxen.
- Donkeys.

Learner's activity

1. Differentiate between renewable and non renewable resources
2. Give two examples of renewable resources in your environment
3. Write one sentence to explain why copper is regarded as a non renewable resource.
4. Stat one way in which the following can be used as a resource.

a) Water

b) Soil

LESSON 2: NON LIVING THINGS AS RESOURCES Non-living components in the environment are used by people for certain purpose.

These include: air, water, soil, sun and minerals.

- Water is a renewable resource because it can be replaced naturally through the rain cycle.
- Air is also a renewable resource because it can't get exhausted in the environment.
- Air is a mixture of gases such as, oxygen, carbon dioxide, nitrogen, argon, krypton, neon etc.
- Wind is air in motion caused due to difference in temperature of places.

Ways air is used as a resource in the environment. ▪ Air from the environment is breathed in by people and animals ▪ Oxygen from the atmosphere helps in the processes of germination, burning and rusting.

- Carbon dioxide gas is also used as a preservative gas for tinned or canned foods.
- Carbon dioxide is used in fire extinguishers.

Ways water is used as a resource.

- Fast flowing water helps in turning turbines used in generation of hydro-electric power.
- Water serves as a habitat for aquatic life (fish, amphibian, marine mammals etc)
- Water helps in plant processes such as germination and photosynthesis.
- Water is used as a raw material in industries and for cooling machines.

- Water is used for domestic activities.

LESSON 3: NON LIVING THINGS AS RESOURCES Minerals in the environment

- Minerals are resources dug from underground
- Minerals were formed from the remains of animals and plants that lived many years ago after their death and decomposition. □

Minerals are non-renewable resources in the environment **Examples include;**

Oil, clay, chalk, copper, gold, petroleum, uranium, coal, rocks, tin etc

- Minerals from which metals are made are got from ores which contains more than one metal.
- Coal and oil are used to provide fuel in many ways. Coal can also be burnt to produce thermal electricity.
- Crude oil is taken to refinery to obtain pure oil by a process called fractional distillation.

Products obtained from petroleum.

- Petrol – Diesel – Kerosene
- Oil

A **rock** is made up of many minerals tightly packed to form a solid.

Fossils are remains of plants and animals that had lived many years ago.

Their remains include; bones, teeth, roots, stems or leaves.

Fossils are mainly found in stone quarries

Uses of rocks

- Rock contains minerals
- Rocks describe the earth's history
- Rocks are used as raw materials for construction work

Learner's activity

1. Write any one way in which each of the following can be used as a resource;

a) Water b) Sun c) Soil d) Air

2. How can rocks be useful to people? (Give one way)

3. Briefly explain the term fossils

LESSON 1 :

ALLOYS

Alloys

An alloy is a mixture of two or more metals

Examples of alloys include;

- Brass
- Bronze
- Cupronickel
- Alloys make the metal harder
- Solder
- Dentist amalgam

Importance of making alloys

- Alloys lower the melting points of metals.
- Alloys make the tear or wear of metals difficult

Metals used to make alloy include;

Copper Zinc Mercury and lead

Tin

A table showing an alloy, how it's made and its use.

Alloy	Combination	Importance
Brass	Copper and zinc	Decorating the ornaments Making wires, tubing cases of bullets

Bronze	Copper and tin	Decorating metals Making coins
Solder	Leas and tin	Filling dental cavity in the teeth
Cupronickel	Copper and nickel	Making silver coins
Manganese steel	Iron and manganese	Making garden gates etc.

Note:

Fuels are materials that can burn to give out heat and light.

Examples of fuels include; charcoal, coal oils, fire wood (petroleum)

Learner’s activity

1. Briefly explain the term alloy
2. Give two examples of alloys
3. State then importance of the following alloys;
 - a) Brass
 - b) Manganese steel
 - c) Cupronickel
4. Point out any two uses of alloys in our society

LESSON 2 : CONSERVATION OF RESOURCES

Conservation is the protection of the resources in the environment from exhaustion.

Conservation involves caring for the resources to avoid the exhaustion for future use.

Man uses resources from the environment to obtain useful energy.

Plants from the environment provide fibres such as sisal, jute, cotton

and linen.

A **fibre** is any material from plants or animals that is made up of threads and can be used as a resource.

Examples of plant fibres

Sisal, cotton wool, banana fibres, raffia, helm etc

Examples of animal fibres

Silk, mohair, wool, fur etc

- *Animals* provide energy for pulling carts and ploughing e.g. oxen
- Animals Also provide transport e.g. donkeys, horses and camels.
- We need to conserve plants, animals, minerals, water, soil, wildlife etc.
- Wildlife refers to animals and plants in the entire environment outside our homes.

Ways of conserving resources in the environment. ▪ Use of modern farming practices such as terracing, inter cropping etc.

- Enforcing laws against bush burning and swamp drainage.
- Gazetting and protecting swamps and forests.
- Practicing agro-forestry, reforestation and afforestation. ▪ Use of other alternatives to wood fuel such as use of solar electricity.

Learner's activity

1. What do you understand by the term conservation of resources?
2. Give two ways of conserving the following resources in our environment
 - a) Wild life
 - b) Soil
 - c) Minerals
3. Briefly explain the term fibre
4. Give two examples of plant fibres