KAZO DISTRICT LOCAL GOVERNMENT

LESSON NOTES

P.6 INTEGRATED SCIENCE TERM TWO 2023

LESSON ONE

TOPIC : PLANT KINGDOM

SUBTOPIC : CLASSIFICATION OF PLANTS

Read and Write

-Bear
-Dicotyledonous
-Monocotyledonous

GROUPS OF PLANTS

1. Flowering plants
2. Non-flowering plants

FLOWERING PLANTS

Flowering plants are plants which bear flowers.

NON-FLOWERING PLANTS

Non-flowering plants are plants which do not bear flowers.

Classification of flowering plants

1. Dicotyledonous plants
2. Monocotyledonous plants

Classification of non-flowering plants

1. Spore bearing plants
2. Non-spore bearing plants.

ACTIVITY

1. Define the following terms
(i) Flowering plants
(ii) Non-flowering plants.

2. Identify one class of flowering plants.

3. Why are plants living things?

LESSON TWO

TOPIC : PLANT KINGDOM

SUBTOBIC : CLASSIFICATION OF NON-FLOWERING PALNTS

Read and write

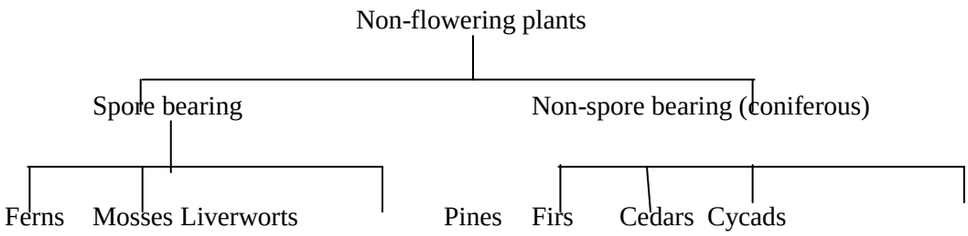
Spores
Ferns
Mosses
Liverworts

Non-flowering plants are plants which do not bear flowers.
Examples of non-flowering plants.

1. Mosses
2. Liverworts
3. Ferns
4. Lichens
5. Conifers.

GROUPS OF NON-FLOWERING PLANTS

1. Spore bearing plants
2. Non-spore bearing plants (coniferous)



ACTIVITY

1. What are non-flowering plants?

2. Identify two spore bearing plants

3. Mention one example of non-spore bearing plant.

4. Name any one non-flowering plant that does not reproduce by means of spores

5. How is reproduction of firs different from that one of ferns?-

LESSON THREE

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : SPORE BEARING PLANTS

Read and write

Bear
Damp
Gametes

SPORE BEARING PLANTS

These are plants that reproduce by means of spores.

Examples of spore bearing plants

1. Mosses
2. Liverworts
3. Ferns

CHARACTERISTICS OF SPORE BEARING PLANTS

1. They bear spores

2. They grow on damp moist shady habitats

3. They require water for transfer of gametes

4. Roots are usually fibrous

5. The plants depend on water for fertilization

ACTIVITY

1. What are spore bearing plants?

2. Mention the three examples of spore bearing plants

3. Outline three characteristics of spore bearing plants

4. How do spore bearing plants reproduce?

LESSON FOUR

TOPIC : CLASSIFICATION OFPLANTS
SUB TOPLC ; NON-SPORE BEARING PLANTS

Read and write

1. Pines
2. Firs
3. Cedars
4. Cones

Non-spore bearing plants are called naked seed plants.
Examples of naked seed plants.

1. Pines
2. Firs
3. Cedars
4. Cycads

-They are called seed bearing non-flowering plants.
-They produce their seeds in cones
-cones are produced at the end of the stems
-cycads are unique among naked seed plants because they do not make wood but are supported by stiff stems
-They have needle like leaves.

ECONOMIC IMPORTANCE OF CONITERS.

- Coniferous trees like pines and cedar provide timber for making furniture and for building.
- Conifers produce wood pulp for making papers
- They act as natural fences
- Conifers are used in the making of insecticides and wood varnishes.
- Most naked seed plants are permanent trees grown for decoration.

ACTIVITY
1. What are coniferous plants?
2. Name the structures in which pines produce their seeds
3. Write down any three economic importance of conifers
4. What type of wood is got from conifers?

LESSON FIVE

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : CLASSIFICATION OF FLOWERING PLANTS

LEGUMES

Read and Write

- Legumes
- Root nodules
- Nitrogen
- Nitrates

What are legumes?
These are plants which have root nodules on their roots.
Examples of legumes

1. Beans
2. Groundnuts
3. Soya beans
4. Peas
5. Castor

A picture of a plant showing root nodules on page 1001 integrate science book pupi;s Book 6.

- Legumes are a group of dicotyledonous plants
- They bear seeds in pods
- Their root nodules store nitrogen fixing bacteria
- These bacteria trap free nitrogen from air and convert it to nitrates hence improves soil fertility.
- Nitrates are used by plants to make proteins.

USES OF LEGUMES

- Are source of food to people and livestock?
- Groundnuts are used to make oil
- Legumes keep the soil fertile by fixing nitrates into the soil.

ACTIVITY

1. Name the structures found on the roots of legumes

2. Which bacteria is found in the root nodules of legumes?

3. What is the importance of the bacteria found in the root nodules of legumes?

4. Write down three examples of legumes

5. How do legumes improve soil fertility?

LESSON SIX

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : CLASSIFICATION OF FLOWERING PLANTS

Read and Write

- Grains
- Carbohydrates
- Monocotyledonous
- Cereals

CEREALS

- Cereals are plants which have grains
- Cereals are monocotyledonous
- Their grains provide carbohydrates to people.

Examples of cereals;

Maize, wheat, sorghum, Rice, Millet and Barley

IMPORTANCE OF CEREALS

- They are rich source of carbohydrates to human beings and animals
- They are used in production of alcoholic drinks like beer
- They are used as farm feeds for animals.

DIFFERENCES BETWEEN MONOCOTS AND DICOTS

MONOCOTS	DICOTS
- They have one cotyledon - Their leaves have parallel venation - They have fibrous root system - They undergo hypogeal germination	- They have seeds with two cotyledons - Their leaves have a network venation - They have tap root system - They undergo epigeal germination.

ACTIVITY

1. What do people benefit from cereals?
2. Write down any two differences between monocots and dicots?
3. State any three examples of cereals.

LESSON SEVEN

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : FRUITS AND SEED DISPERSAL

Read and Write

- Dispersal
- Explosion
- Mechanism
- Scattering

Definition of the term seed dispersal

Seed dispersal is the scattering of mature fruits and seeds from the mather plant to other places.

TYPES OF SEED DISPERSL

- Self-explosion, animal dispersal, wind dispersal ,water dispersal

Agents of seed dispersal

1. Wind
2. Moving animals
3. Flowing water

Characteristics of seeds which are dispersed by wind

- They are small in size
- They are light in weight
- They have wings like structures
- They are paracute like.

Examples of seeds dispersed by wind;

Cotton, Jacaranda, Tridax dandelion

Characteristics of seeds dispersed by animals

- They have hooks and spines e.g. Black jack
- They are edible egg. Guavas, passion fruits and tomatoes.

Characteristics of seeds dispersed by water

- They float on water e.g. Coconut.

IMPORTANCE OF SEED DISPERSAL

- Seed dispersal reduces overcrowding and competition between plants of the same kind
- Seed dispersal enables plants to colonize nearby areas.
- Seed dispersal reduces competition for sunlight and soil nutrients.

ACTIVITY

1. Identify two types of seed dispersal
2. How are Jacaranda seeds dispersal?
3. What helps tridax seeds to be dispersed by wind?
4. Mention one agent of seed dispersal which is a living organism.

LESSON EIGHT

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : PLANT PROPAGATION

Read and Write

- Propagation
- Suckers
- Rhizomes

Definition of plant propagation
Plant propagation is a way of raising a new plant from the parent plant.

Types of propagation

1. Seed propagation
2. Vegetative propagation

Seed propagation is when seeds from a specific plant are planted to give rise to new plants.

Vegetative propagation is when part of a plant is used to give rise of new plants.

NATURAL VEGETATIVE PROPAGATION
It involves;

- Suckers in plants like bananas, sisal
- Stem cuttings in plants like cassava, sugar canes, sweet potatoes
- Stem tubers in Irish potatoes, coco-yam
- Rhizomes in ginger, can lily, turmeric
- Corms in gladiolus
- Bulbs in onions, garlic, shallots, spiderlily
- Leaves in Bryopyllum

ACTIVITY

1. Give the meaning of the term propagation
2. List down two types of plant propagation
3. Mention any two ways Natural vegetative propagation can be done.

LESSON NINE

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : ARTIFICIAL VEGETATIVE PROPAGATION

Read and Write

- Budding
- Scion
- Stock
- Layering

Artificial Vegetative Propagation
It involves

- Budding in this method a bud is used. A bud from a good tree with desired quality such as producing good fruit. The bud selected is scientifically called scion. While the part of plant that is in the soil is called stock
- Pictures showing budding on page 106 integrated science pupils Book 6 (second Edition). Layering it involves simple and air layering (marcotting)
- Pictures to show the process of simple layering on page 106 integrated science pupils Book 6 (second Edition)
- Pictures to show marcotting on page 107 integrated science pupils boo 6 (second Edition)

ACTIVITY

1. Suggest methods used in artificial vegetative propagation
2. Name the part of a plant that is in the soil during budding.
3. State two systems used in layering as means of plant propagation.

LESSON TEN

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : TRANSPIRATION IN PLANTS

Read and Write

- Osmosis
- Transpiration
- Atmosphere

Transpiration is the process by which plants lose excess water to the atmosphere in form of water vapour through the plant leaves.

How plants benefit from the process of transpiration

- Transpiration cools the plant during a hot day
- Plants are able to absorb water and mineral salts from the soil through their roots (osmosis).

Importance of transpiration to man

- It cools the environment surrounding man
- It leads to the formation of rainfall

ACTIVITY

Project about transpiration

Pupils with the help of their teacher do an experiment showing transpiration process. Material to use are; polythene bag, a string (thread).

After three hours pupils write down their observations. Teacher Marks pupils work and awards them

LESSON ELEVEN

TOPIC : CLASSIFICATION OF PLANTS

SUBTOPIC : TRANSPIRATION

Read and Write

- Humidity
- Temperature
- Cuticles

Dangers of transpiration

- Drying up of plants due to loss of useful water.
- Transpiration lowers crop yields due to less water left in the plant.

Factors that affect the rate of transpiration in plants

- Sunlight
- Wind
- Temperature
- Surface area of the leaf
- Number of stomata
- Humidity

How plants reduce the rate of transpiration

- Plants shed their leaves during the dry season e.g. deciduous trees.
- Some leaves have a layer of wax that covers the stomata.
- Some plants reduce the size of their leaves to thorn e.g. Cactus
- Stems have tough cuticles and lenticels to guard against water loss.

ACTIVITY

1. Suggest one danger of transpiration
2. State two factors that affect the rate of transpiration
3. Mention one way of how plants reduce the rate of transpiration

LESSON TWELVE

TOPIC : OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : COMMON TUBER CROPS (ROOT TUBER)

Read and Write

- Tuber
- Pruning
- Weeding

Tuber crops are crops which store food in a given part of a plant.

ROOT TUBERS

These are crops with swollen roots. They store food for the plant in the roots as starch abd sugars.

Examples of root tubers

Cassava, sweet potatoes, carrots, turnips

GROWING AND CARING FOR ROOT TUBER CROPS

-Sweet potatoes are drought-tolerant crops

- Sweet potato can be propagated by stem cuttings (vines)

CARE FOR SWEET POTATO

- By weeding
- By pruning
- By spraying

ACTIVITY

1. State two examples of root tubers
2. What are root tubers?
3. Mention any two ways of caring for root tubers.

LESSON THIRTEEN

TOPIC : OCCUPATION IN OUR COMMUNITY

SUBTOPIC : STEM TUBER

Read and Write

- Swollen
- Irish potatoes

STEM TUBER

- These are crops with swollen underground stems
- The stems store food for the plants
- People eat stem tubers

Examples of stem tubers

- Irish potatoes
- Yams (coco yams)

CARE FOR STEM TUBERS (GROWING)

- The stem tubers are grown
- Weeding
- Pruning
- Spraying

ACTIVITY

1. State two examples of stem tubers
2. What are stem tubers?
3. Mention two uses of stem tubers to man
4. What food value do we get from eating Irish potatoes?

LESSON FOURTEEN

TOPIC : OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : WEEDING AND PRUNING TUBER CROPS

Read and Write

- Pests
- Yields
- Pruning

Weeding is the removal of unwanted plants from the garden

Examples of weeds

- Couch grass, star grass

IMPORTANCE OF WEEDING

- To prevent pests and diseases
- To improve on crop yields
- To reduce competition for sunlight, water and mineral salts between weeds and crops.

Pruning is the removal of excess leaves and branches from a plant.

Importance of pruning

-Pruning prevents competition for sunlight, carbon dioxide and oxygen.

ACTIVITY

1. Define the term weeding

2. Give one example of weeds
3. How useful are weeds to people
4. Give any one tool used to carry out pruning

LESSON FIFTEEN

TOPIC : OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : CARING FOR CARROTS AND TURNIPS

Read and Write

- Weeding
- Thinning
- Fiber
- Potassium

CARROTS

Carrot seeds need a nursery bed to develop into seedling.

A seedling is a young plant. Carrots can grow in areas with well drained soils and cool climate.

Carrots are sources of vitamin A

They need some care in form of thinning, weeding and spraying.

TURNIPS

Turnips are white root vegetable.

They grow in areas with well drained soils.

They need care in thinning and pruning.

They are sources of vitamin A and minerals e.g. Potassium, iron and calcium.

ACTIVITY

1. Which food value is obtained from eating carrots?

2. How can a farmer care for turnips and carrots?

3. What do we call a young plant?

4. Which soils favour proper growth of carrots?

LESSON SIXTEEN

TOPIC : OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : DISEASES AND PESTS OF SWEET POTATOES AND CASSAVA

Read and Write

- Pesticides
- Rodents
- Mosaic

Diseases and pests of sweet potatoes

- Potato blight. Spreads fast in rainy season

Pests of sweet potato

- Sweet potato weevil. Feeds on leaves and soft parts of the vines

CONTROL

- Plant clean vines (use of traps)
- Encourage crop rotation
- Use pesticides to kill the adult weevils.

Other pests of sweet potatoes are;

- Butter flies, moths and caterpillars, rodents, wild pigs, goats and cows.

DISEASES PESTS OF CASSAVA

- Cassava mosaic
- Brown streak
- Green cassava mite

Control
- Spraying with pesticides

ACTIVITY

1. Mention disease of potatoes
2. State one disease of cassava
3. State one pest of sweet potatoes
4. How does crop rotation help to control crop pests?

LESSON SENTEEN

TOPIC : OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : DISEASES AND PESTS OF CARROTS AND IRISH POTATOES

Read and Write

- Aphids
- Nematodes
- Wilt
- Blight

PESTS AND DISEASES OF CARROTS

1. Aphids attack the bases of the shoots
2. 2. Nematodes damage roots causing swelling

Control of diseases of carrots

- Practice crop rotation
- Plant healthy carrots
- Spraying using pesticides.

DISEASES OF IRISH POTATOES

1. Late blight
2. Bacterial wilt

PESTS OF IRISH POTATOES

- Potato aphids
- Rats and monkeys

Control of potato pests and diseases

- Spray with agro-chemicals
- Plant resistant varieties

- Practice crop rotation

ACTIVITY
1. Name the two pests of Irish potatoes
2. How can a farmer control diseases in carrots?

3. What general name is given to Irish potatoes and coco yams?

4. Mention any one pest that damages root crops.

LESSON EIGHTEEN

TOPIC: OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : METHODS OF CONTROLLINGPESTS AND DISEASES OF ROOT TUBER CROPS

Read and Write

- Uprooting
- Spraying
- Scare crow
- Crop rotation

METHODS OF CONTROLLING PESTS AND DISEASES OF ROOT TUBER CROPS

1. Uprooting and burning infected plants
2. Practicing crop rotation
3. Use of scare crows
4. Use of other living organism to feed on others
5. Spraying and dusting the crops.

Effects of pests and diseases on tuber crops

1. They burrow into the tubers
2. They make tubers rot
3. Leaves turn pale yellow leading to severe wilting
4. They destroy leaves stopping food making in the crop.

ACTIVITY

1. Identify two methods of controlling pests and diseases of tuber crops

2. Name the two effects of pests and diseases on tuber crops.

3. Write any one biological method of controlling tuber crop pests.

LESSON NINETEEN

TOPIC: OCCUPATION IN OUR COMMUNITY (CROP GROWING)

SUBTOPIC : HARVESTING, PROCESSING AND STORAGE OF TUBER CROPS

Read and Write

- Sorage
- Mature
- Sharp
- Granary

HARVESTING TUBER CROPS

- Digging up tuber using a hoe
- Sharp sticks (sweet potatoes)

- Uprooting using hands

PROCESSING TUBER CROPS

- Sweet potatoes are peeled and cooked as food.
- Sweet potatoes can be dried and stored
- Cassava can be roasted, steamed as food
- Cassava can be preserved by sundrying
- Carrots can be up rooted and eaten when they are fresh.

Storage of tuber crops

- Dried tuber crops can be stored in the granary, silos and stores.

ACTIVITY

1. At which stage should tuber crops be harvested?
2. Name the garden tools used in harvesting cassava
3. Identify any two places where tuber crops can be stored.

LESSON TWENTY

TOPIC : OCCUPATION IN OUR COMMUNITY

SUBTOP : SCIENCE ORIENTED CLUBS

Read and Write

- Wild life
- Patrons
- Equipment
- Careers

1. YOUNG FARMER‘S’ CLUB IN SCHOOLS

Young farmers clubs are associations in schools where members learn practical skills on crop growing and livestock rearing.

2. WILD LIFE CLUB

The wildlife club is an association which enables learners to learn more about wild animals.

Aims of science oriented clubs in schools

1. To promote learning of science in the school
2. To enable children know how scientists work
3. To boost children’s interest in science
4. To equip learners with knowledge and skills for future careers.

Activities of science clubs in schools

1. They teach how to care for crops in a school garden
2. They encourage conservation of the environment
3. Science clubs organize field trips to other agricultural centers
4. Their patrons organize internal competitions
5. They initiate crop growing projects in schools.

ACTIVITY

1. Name one science oriented club in your school
2. How is the school benefiting from young farmers club?
3. Identify any two activities of science clubs in a school
4. Who are young farmers?

LESSON TWENTY ONE

TOPIC : SCIENCE IN HUMAN ACTIVITIES AND OCCUPATIONS (KEEPING GOATS, SHEEP AND PIGS)

SUBTOPIC : GOAT KEEPING

Read and Write

- Billy
- Nanny
- Leather
- Muzzle
- Sheath

EXTERNAL PARTS OF A GOAT

- Ears
- Horns
- Muzzle
- Beard
- Tail
- Limbs
- Hooves
- Neck
- Nostril
- Sheath (males)

USES OF GOATS

- They provide us with meat
- They are sold to get money
- Some breeds provide milk
- Goat's skins are used for making leather
- The droppings of goats are used as manure
- They used for cultural purposes e.g. paying bride price.
- Other goats e.g. Angora goats provide mohair

ACTIVITY
1. What name is given to a male goat?
2. List down any four external parts of a goat
3. Identify any three uses of goat to people
Name the wool got from goats.

LESSON TWENTY TWO

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : BREEDS OF GOATS

Read and Write

- Indigenous
- Hybrid
- Saanen
- Toggernburg
- Anglo-Nubian

BREEDS OF GOATS

A breed of goat is a clan of goats with similar characteristics.

There are three breeds of goats, namely;

1. Local breeds or Indigenous
2. Exotic breeds
3. Hybrid or cross breeds

LOCAL BREEDS

These are breeds which have existed in Uganda for many years.

They are also called Indigenous

Local breeds can be improved by Cross breeding

When a female local breed is mated with a male exotic breed, the breed obtained is A hybrid or Cross breed.

Examples of local breeds of goats

1. Turkan
2. Mubende
3. Galla
4. Kigezi
5. Anglo –Nubian
6. Somali

EXOTIC BREEDS

Exotic breeds are those got into Uganda from other countries. Some farmers keep exotic breeds for meat, milk, and others for Mohair production.

Examples of exotic breeds of goats

- Angora goat
- Toggernburg
- Boer goat
- Saanen

ACTIVITY

1. What is a breed?
2. How can a farmer improve on the local breeds of goats?
3. Identify two examples of exotic breeds of goats.

LESSON TWENTY THREE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : TYPES OF GOATS

Read and Write

- Dairy
- Dual purpose

TYPES OF GOATS

Three main types of goats

- Dairy goats
- Meat production goats
- Dual purpose goats

Dairy goats are kept for milk production examples; Saanen and Toggernburg.

Meat production goats are kept for production of meat e.g. East African goats.

Dual purpose are mainly kept for both meat and milk production examples are; Somali goats, Mubende goats, Galla goats.

ACTIVITY
1. Mention the type of goats kept for milk production
2. What are dual purpose goats?
3. Which type of goats are kept for meat production

LESSON TWENTY FIVE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : TYPES OF GOATS

Read and Write

- Diary
- Dual purpose
- Mohair
- Textile

A type of goat is the grouping of goats basing on the purpose for keeping them.

TYPES OF GOATS

- Dairy goats
- Meat goats
- Dual purpose goats

Dairy goats are kept purposely for milk production e.g. Saanen and Toggernburg

Meat goats are kept purposely for meat production examples; Boar goat, Galla goat, Mubende goat and Somali goat.

Goat meat is called Chevon

Dual purpose goats are for both milk and meat production e.g. Somali, Mubende and Galla goats.

The Angora goats are good for production of Mohair. It is important in the textile industry.

ACTIVITY

1. Identify only two examples of goats kept for milk production
2. Which product from goats is a raw material for textile industry?
3. Name the goats' meat
4. What are dual purpose goats?

LESSON TWENTY SIX

TOPIC: KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : HOUSING AND MANAGEMENT OF GOATS

Read and Write

- Barn
- Breeding
- Gestation
- Kidding

The house of a goat is called a barn

Qualities of a good barn

- It should be well ventilated to allow in enough air and lights.
- The floor should be well cemented and slanting to allow easy flow of waste e.g. Urine.
- Locally made goat sheds should be raised above the ground.

Breeding in goats

- It is a process where by a male goat (Billy) males with a female goat (nanny) .

Heat period in goats

- Heat period is the time when a nanny goat is ready for mating.

Signs of a Nanny goat on Heat

- Loss of appetite
- Mounting others
- It becomes restless
- Standing still when mounted
- Whitish discharge from the vulva
- The vulva swells and becomes reddish

Signs of pregnancy in goats and sheep

- Gestation is the period between fertilization and birth of the young goat. In goats, the gestation period lasts for 5 months.

During the gestation period the nanny /ewe shows these signs

- It stops the heat period
- Tight belly in front of the udder (bigger)
- Swelling of the udder
- Presence of milk from the udder.

ACTIVITY

1. Give any two signs of a goat on heat
2. How long is the gestation period for a goat or sheep?
3. Write the meaning of the term breeding in goat keeping.

LESSON TWENTY SEVEN

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUB TOPIC : SHEEP KEEPING

Read and Write

- Hock
- Loin
- Nostril

Sheep keeping is the keeping of sheep.

Terms used in sheep keeping

- A male sheep is called a Ram
- A female sheep is called an Ewe

The structure of a sheep showing external parts

- Eye
- Nostril
- Mouth
- Neck
- Back
- Loin
- Tail
- Hock
- Hind and fore limbs
- Muzzle

ACTIVITY

1. List down any four external parts of a sheep

2. Name the male sheep

3. Draw a picture of a sheep and label the following parts;

- Muzzle
-Loin
- Hock

LESSON TWENTY EIGHT

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : IMPORTANCE OF KEEPING SHEEP

Read and Write

- Wool
- Droppings
- Leather

IMPORTANCE OF KEEPING SHEEP

- Merino sheep are kept for wool production
- Sheep are kept for cultural purpose e.g. rituals and sacrifices.
- Sheep droppings are used as manure by farmers
- For mutton production
- For sale to get money
- Skins from sheep are used for making leather products like bags and belts even shoes.
- Horns and Hooves are used for making glue and buttons.

Products got from sheep

- Meat (mutton)
- Droppings
- Skins

ACTIVITY

1. Which type of sheep are reaved for wool production
2. List down any two products got from sheep
3. Suggest one importance of keeping sheep
4. How do farmers benefit from sheep keeping?

LESSON TWENTY NINE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : BREEDS OF SHEEP

Read and Write

- Mature
- Resistant
- Pasture

BREEDS OF SHEEP

Breeds of sheep refer to the different clans or groups of sheep with similar characteristics

The two main groups of sheep breeds

- Local breeds (Indigenous)
- Exotic breeds

Characteristics of local breed of sheep

- They have different colours
- They grow and mature slowly
- They are more resistant to diseases.
- They survive on poor pasture and little water.
- They produce little milk, meat and wool.

Examples of local breeds of sheep

- East African sheep
- Black head Persian
- Somali sheep
- Masai sheep

ACTIVITY

1. What is the origin of local breeds of sheep kept in Uganda?
2. Suggest two characteristics of local breeds of sheep.
3. Give two examples of local breeds of sheep kept in Uganda

LESSON THIRTY

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : EXOTIC BREEDS OF SHEEP

Read and Write

- Specific colour
- Imported
- Dorper

Exotic breeds of sheep are those which are imported from other countries.

Examples of exotic breeds of sheep

- Merino sheep
- Corriedale
- Rambouillet
- Dorper sheep

Characteristics of exotic breeds of sheep

- They have specific colour
- They grow and mature fast
- They are less resistant to diseases
- They need good pasture and plenty of water
- They produce a lot of milk, wool and their meat is soft.

ACTIVITY

1. Suggest two characteristics of exotic breeds of sheep.
2. Give two differences between exotic breeds and local breeds of sheep.
3. What is the origin of exotic breeds of sheep?

LESSON THIRTY ONE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : HOUSING AND MANAGEMENT OF SHEEP

Read and Write

- Off spring
- Temporary
- Permanent

Housing is the way of providing an animal with shelter. The shelter can be in form of temporary or permanent house.

Houses protect sheep from bad weather conditions like strong sunshine, heavy rainfall.

MANAGEMENT OF SHEEP

- Breeding is the process of obtaining an offspring from the parents. The ewe mates will a rain to produce a young one
- The gestation period in sheep is 5 months.

Weaning: Giving semi-solid food to the young one besides milk from the mother. Weaning should be done at eight months.

Routine activities in sheep rearing

Docking is the cutting of a sheep's tail short. It eases the mating process of the sheep.

Shearing –is the practice of removing or cutting off wool from a sheep. A tool called a shear is used.

Foot treaming –Removal of overgrown hooves using a troof trimmer.

ACTIVITY

1. What is sheep shearing?
2. What is weaving?
3. What is the importance of housing in animal keeping?

LESSON THIRTY TWO

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : PARASITES AND DISEASES OF GOATS AND SHEEP

Read and Write

- Mites
- Ticks
- Liver flukes
- Worms

A parasite is a living organism which depends on other living organism by sucking blood

TYPES OF PARASITES

1. Endo (Internal parasites)
2. Ecto (External parasites

These are parasites that live inside the body of a host.

Examples of Endo parasites

1. Tape worms
2. Hook worms
3. Thread worms
4. Liver flukes

Ecto parasites

These are parasites that live outside the body of a host.

Examples are controlled by,

- Spraying using a caricides
- Practicing rotational grazing
- Endo parasites are controlled by;
- De-worming

ACTIVITY

1. How do parasites depend on the hosts?

2. Suggest one type of parasites.
3. How are parasites harmful to hosts?
4. Identify one example of an endo parasite

LESSON THIRTY THREE

TOPIC: KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : DISEASES OF GOATS, SHEEP AND PIGS

Read and Write

- Vaccination
- Antibiotics
- Carcasses
- Quarantine

A disease is unhealthy condition of the body.

Common diseases that affect goats and sheep

Referred to the table on page 173 -4 integrated science learners Book 5.

ACTIVITY

1. Name at least one disease caused by bacteria

2. How can worm infestation be controlled on a farm of sheep and goats?

3. In which ways can farmers prevent the spread of nagana on their farms?

4. Why should farmers Bern or bury the anthrax carcasses of animals deep in soil?

5. What do you understand by the term quarantine as used in animal husbandry?

LESSON THIRTY FOUR

TOPIC: KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : PIG KEEPING

Read and Write

- Piggery
- Boar
- Sow

The keeping pigs is called Piggery

Terms used in pig keeping

- A male pig is called a Boar
- A female pig is called a Sow

External parts of a pig

Referred to the pictures on page 171- integrated science book 5 (pupils)

Importance of rearing pigs

- For meat known as Pork
- For sale to get money
- People get farm yard manure from droppings of pigs.
- For lard and sausages

ACTIVITY

1. Suggest two uses of pigs to farmers
2. How do crop farmers benefit from piggery?
3. Write down any four external parts of a pig
4. What name is given to male pig?

LESSON THIRTY FIVE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : BREEDS OF PIGS

Read and Write

- Cross breeding
- Hybrid

A breed is a group of living organisms with similar characteristic

BREEDS OF PIGS

Local breeds

- These have existed in Uganda for many years
- They can be improved by cross breeding
- Cross breeding is where by a female local breed mates with a male exotic breed.

The breed obtained after mating is called a hybrid or crossbreed.

Characteristics of local breeds of pigs

- They are more resistant to diseases
- They are smaller in size
- They take a long time to mature
- They have different colour

ACTIVITY

1. Explain hoe local breeds can be improved
2. Suggest one reason why farmers prefer keeping local breeds of pigs
3. What is a hybrid?

LESSON THIRTY SIX

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : EXOTIC BREEDS OF PIGS

Read and Write

- Commercial
- Fast
- Pinkish
- White band

Exotic breeds are breeds of (animals) pigs imported from other countries.

Characteristic of exotic breeds

- They grow fast and have high quality pork
- They are less resistant to diseases
- They gain weight and become fat quickly

Examples of exotic breeds of pigs

- Land race pig –white in colour with pinkish skin.
- Large white – white in colour and large in size. It has upright ears, silky fur and a dished face.
- Poland china –is got after cross breeding. It has highly desired qualities.
- Large black –it is entirely black in colour
- Hampshire –black with white baud around the middle.
- Wessex saddle back –black with a white baud over the shoulder.

ACTIVITY

1. Identify any two characteristics of exotic breeds of pigs
2. Which exotic breed of pigs produces highly desired qualities?
3. Mention two exotic breeds which are purely white.

LESSON THIRTY SEVEN

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : MANGEMENT OF PIGS

Read and Write

- Pigsty
- Reproduction
- Farrowing

Housing

A house for pigs is called Pigsty

Qualities of a good pigsty

- To be constructed with strong materials
- Flour should be well cement and slanting to allow urine to drain easily.
- It should always be kept clean to avoid the spread of germs and worms.

Reproduction in pigs

A sow can produce (give birth) twice in a year.

Steaming up should carried out when the sow is pregnant (giving extra feeds to pregnant sow)

The gestation period of a sow is 3 months, 3 weeks and 3 days (115) days.

The act of giving birth to young ones in pigs is called farrowing.

Feeding pigs

- Pigs are fed on balanced diet
- Pigs can feed on both plant materials and meat
- They should be fed on fattener feeds, creep feeds and sow feeds

ACTIVITY

1. Write one good quality of a good pigsty
2. What is farrowing in pig rearing?
3. Mention any one feed for pigs

LESSON THIRTY EIGHT

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : PARASITES AND DISEASES OF PIGS

Read and Write

- Diarrhea
- Cysts
- Disposal

Common parasites of pigs

A parasite is a living organism that depends on another living organism for food without causing harm.

Examples of parasites in pigs include;

- Tape worms (a cyst is formed in the pigs muscles)
- Hook worms
- Round worms
- Lice

Animal with worms suffers from diarrhea.

Ways of controlling parasites

- By de-worming
- By spraying using acaricides
- Proper disposal of human faeces.

ACTIVITY

1. Mention the common parasites of pigs
2. Suggest any two ways of controlling endo parasites in pigs
3. How can exo-parasites be controlled in pig keeping?

LESSON THIRTY NINE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : DISEASE OF PIGS AND THEIR CONTROL

Read and Write

- Swine fever
- Anaemia
- Dullness.

A disease is unhealthy condition of the body.

COMMON DISEASES THAT AFFECT PIGS

- Anthrax
- Pneumonia
- Piglet anaemia
- African swine fever
- Nagana .

For causes, signs and symptoms, control and prevention even treatment it is reffered to the table found on page 177 Baroque integrated science pupils Book 5.

ACTIVITY

1.Give the effect of African Swine fever disease to pigs
2. Mention other two examples of diseases that affect pigs.
3. How can Nagana disease be controlled in pig keeping.

LESSON FORTY

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : SYSTEM OF KEEPING GOATS, SHEEP AND PIGS.

Read and Write

- Free range
- Starve
- Stray
- Over graze

FREE RANGE SYSTEM

This is where animals are allowed to move on their own looking for food water.

Advantages of free range system

- Animals graze on different pastures of their choice
- It is cheaper to maintain. No buying feeds.
- Animals are able to do physical exercises.
- It does not require fencing
- It requires little labour input.

Disadvantages of free range method

- Animals can easily stray and destroy crops
- In case of a small piece of landanimals can starve
- It is difficult to control in breeding
- Easy spread of diseases and parasites.

ACTIVITY

1. Define the term free range system in animal keeping.
2. Mention two ways pigs benefit from free range system.
3. Suggest two disadvantages of free range system.

LESSON FORTY ONE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : ZERO GRAZING

Read and Write

- Over worked
- Out break
- Monitor

Zero grazing system

Zero grazing system is where animals are kept and fed in shed /indoors.

Advantages of zero grazing system.

- Animals are protected from bad weather
- It is easy to collect animal droppings
- It is easy to identify sick animals
- Animals are easy to control and monitor.
- Spread of diseases in controlled.

Disadvantages of Zero grazing system

- It is expensive to start and maintain
- It requires a lot of labour to feed animals
- Diseases can spread fast in case of an outbreak.

ACTIVITY

1. Explain what zero grazing is?
2. State two advantages of zero grazing system in pig keeping
3. Suggest any two disadvantages of zero grazing in pig keeping.

LESSON FORTY TWO

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : TETHERING.

Read and Write

- Tethering
- Peg

Tethering

Tethering is a system of grazing where an animal is tied on a peg using a rope and left to graze.

Advantages of tethering

- It is easy and cheap
- It controls spread of parasites and diseases
- It allows pasture to grow in other areas where there are no animals.
- It controls soil erosion
- It allows conservation of pasture
- It ensures proper use of pasture.

Disadvantages of tethering

- Tethering is tiresome
- Animals may not get enough pasture
- Ropes cause injuries and sometimes death.
- Animals are easily attached by wild animals.

ACTIVITY

1. Write the meaning of the term tethering in animal keeping
2. Identify any two advantages of tethering
3. Suggest any three disadvantages of tethering

LESSON FORTY THREE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : ROUTINE ACTIVITIES IN GOATS, SHEEP AND PIGS

Read and Write

- Castration
- Dehorning
- Trimming

Routine activities in goat, sheep and pig management

- These are good management practices carried out on a livestock farm.
- They include; Castration

Castration is the removal of testes from a male animal.

Methods of castration

- Closed castration by using a burdizzo
- Open castration by using a knife to cut the scrotum.

Advantages of castration

- Castrated animals grow fatter and faster
- Castration improves on the quality of meat
- It makes male animal docile and easy to handle
- It controls inbreeding on the farm.

Dehorning /disbudding

It is the removal of horn buds to prevent growth of the horns. Dehorning prevents animals from injuring other animals.

It helps in identification of animals and creates space on the farm.

Hoof trimming is the cutting off of the overgrown hooves. It reduces chances of infections and injuries.

LESSON FORTY FOUR

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : KEEPING RECORDS

Read and Write

- Records
- Sales
- Purchases
- Accounts

Record keeping

Records comprise the written information about things that happen on a farm daily.

Types of farm records

- Production records to show the number of young ones born.
- Health records about the sick animals on a farm and treatment programme.
- Sales and purchases /accounts records –deal with anything relate to buying and selling of goods.
- Human resource records-deal with employment of workers.
- Foreman records –indicate how many tools and other equipments are needed, lost or damaged.

Importance of farm records to a farmer

- Help the farmer to monitor the growth of animals on the farm.
- To know whether the farm is making profits or losses.
- To tell the history of the farm
- To know the income and expenditure.
- Help the farmer to make decisions about the development of the farm.

ACTIVITY

1. Identify any two types of farm record
2. In which way are health records important on the farm?
3. Why is it important?

t for a farmer to keep farm records? (Give two reasons).

LESSON FORTY FIVE

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : STARTING GOAT, SHEEP AND PIG PROJECT

Read and Write

- Skilled
- Unskilled
- Capital

Requirements for starting a goat, sheep or piggery

1. Land –where animals will be kept
2. Capital –money needed to buy things on the farm and paying workers. It can also mean physical tools and equipments used on a farm.
3. Labour –workers on the farm ie. The skilled and unskilled workers.
4. Transport and communication-to transport the products to the market.
5. Market –where to sell farm products
6. Management –the system to follow for better farm production.

ACTIVITY

1. What is the important of land when one is starting an animal farm?
2. Why is market important to farmers? (Give two reasons)
3. What is the work of the unskilled workers?

LESSON FORTY SIX

TOPIC : KEEPING GOATS, SHEEP AND PIGS

SUBTOPIC : EXTERNAL FEATURES OF A COW AND A BULL

Read and Write

- Cattle
- Dewlap
- Hump
- Flank
- Brisket

The term cattle means cows, bulls, heifers, bullocks, calves and oxen

Therefore cattle keeping are the rearing of cows, bulls, heifers, bullocks, calves and oxen on a farm.

Terms used in cattle keeping -cows, bulls, heifers, bullocks, calves and oxen

External parts of a bull and a cow

Referred to pictures on page 115 integrated science pupils book 6.

ACTIVITY

1. Give two types of animals considered as cattle
2. List down any four external parts of a cow
3. What are heifers?
4. What are bullocks?

LESSON FORTY SEVEN

TOPIC : KEEPING CATTLE

SUBTOPIC : BREEDS OF CATTLE

Read and Write

- Indigenous
- Exotic
- Cross breeds

A breed is a group of organisms which have similar inherited characteristics such as shape, size and colour.

Breeds of cattle

1. Local breeds /Indigenous breeds
2. 2. Exotic breeds.

Local breeds of cattle

These are those which have been bred in the country through many years

Examples of local breeds of cattle in Uganda include the;

- Ankole long horned cattle
- Zebu
- Boran
- Karamajong cattle

Characteristics of local breeds of cattle

- They are resistant to many tropical diseases.
- They can feed or survice on little pasture and water
- They take long to mature
- They produce little milk

ATIVITY

1. Give any two examples of local breeds of cattle
2. Identify three characteristics of local breeds of cattle.

LESSON FORTY EIGHT

TOPIC : KEEPING CATTLE

SUBTOPIC : EXOTIC BREEDS AND CROSS BREEDS

Read and Write

- Charolais
- Aberdeen angus
- Hereford
- Guernsey

Exotic breeds

Exotic breeds of cattle are those which have been imported from far countries to Uganda.

Examples of exotic breeds

- Charolais
- Aberdeen Angus
- Hereford
- Sahiwal
- Guernsey
- Jersey
- Friesian
- Ayrshire

Characteristics of exotic breeds

- They need enough pasture and water
- They produce a lot of milk
- They produce a lot of meat (high quality meat)
- They grow and mature fast.

Cross breeds

These are breeds which are obtained from two different pure breeds. The offspring is a cross breed.

ACTIVITY
1. Explain how farmers get cross breeds

2. Give two characteristics of exotic breeds of cattle

3. Write down any four examples of exotic breeds of cattle.

LESSON FORTY NINE

TOPIC : KEEPING CATTLE

SUBTOPIC : TYPES OF CATTLE

Read and Write

- Dairy
- Beef
- Dual purpose

A type of cattle refers to the purpose the cattle are kept for.

Examples of types of cattle

1. Beef cattle
2. Dairy cattle
3. Draught cattle
4. Dual purpose cattle

Beef cattle are kept for meat production.

Dairy cattle are kept for milk production

Draught cattle are kept for doing work

Dual purpose cattle are kept for producing both milk and meat.

ACTIVITY

1. What dual purpose cattle?

2. Suggest one reason why farmers keep dairy cattle

3. List down any two types of cattle

LESSON FIFTY

TOPIC : KEEPING CATTLE

SUBTOPIC : CHARACTERISTICS OF DIFFERENT TYPES OF CATTLE

Read and Write

- Butterfat
- Guernsey

Characteristics of dairy type of cattle

- Body is broad at the back (triangular body shape) large hind parts.
- They produce large quantities of milk
- The body weight is lower than that of other breeds
- Have large hid quarters to accommodate the big udder.

- The udder is well developed

Examples of dairy cattle

- Guernsey
- Jersey
- Friesian
- Ayrshiren

ACTIVITY

1. Mention any three examples of dairy cattle

2. What do farmers benefit from dairy cattle?

3. Suggest three characteristics of dairy cattle.

LESSON FIFTY ONE

TOPIC: KEEPING CATTLE

SUBTOPIC : CHARACTERISTICS OF BEEF AND DUAL PURPOSE CATTLE

Read and Write

- Hereford
- Aberdeen Angus
- Rectangular

Characteristics of beef type of cattle

- Beef cattle have a lot flesh all over their body
- They have rectangular shaped bodies short legs and a short neck
- They grow fast and mature early

Examples of beef cattle

- Hereford
- Aberdeen Angus
- Boran

Dual purpose breeds

These are breeds of cattle which are kept for both milk and meat production.

Examples of dual purpose cattle

- Red poll
- Zebu
- Sahiwal

ACTIVITY

1. Name two examples of beef cattle
2. Why do some farmers prefer keeping dual purpose breeds of cattle?
3. What is the major importance of beef breads of cattle?

LESSON FIFTY TWO

TOPIC : KEEPING CATTLE

SUBTOPIC : DROUGHT (WORKING TPE)

Read and Write

- Flanks
- Luggage
- Plough

DROUGHT CATTLE (WORKING ANIMALS)

These are cattle which are trained to do work such as; pulling a plough, transporting language on their back and flanks or pulling carts.

Some cattle are also used to rotate a machine which crushes sugarcane to extract the sugar juice.

Examples of cattle used in this way are

- Zebu
- Sahiwal
- Boran

ACTIVITY

1. Name any two examples of drought cattle
2. Mention any two ways drought cattle can help farmers
3. Why do some farmers prefer keeping drought cattle?

LESSON FIFTY THREE

TOPIC : KEEPING CATTLE

SUBTOPIC : BREEDING IN CATTLE

Read and Write

- Agricultural
- Performance
- Breeding
- Resistance

Breeding is allowing mature animals to mate and give rise to young ones.

Advantages of breeding in cattle

1. Increasing agricultural production in terms of milk and beef.
2. It improves animal performance
3. It increases animal population
4. It improves animal resistance to diseases.

Disadvantages of breeding in cattle

- Production of unfavorable characters
- Loss of favorable characters
- It can result in production of weaker springs.

LESSON FIFTY FOUR

TOPIC : KEEPING CATTLE

SUBTOPIC : FERTILISATION, GESTATION, PREGNANCY AND CALVING.

Read and Write

- Fertilization
- Calving

In cattle reproduction occurs sexually involving two parents.

A young one is born alive

Fertilization is the union of two gametes to form a zygote.

The gestation period in cattle is nine months.

Pregnancy starts at the time when fertilization has occurred.

The reproductive system of s female (cow) page 121 integrated science book 6 (pupils)

Calving in cattle

This is the act of giving birth in cows.

A cow shows the following sign during calving.

- It isolates its self
- The udder appears swollen and the teats open
- The vulva enlarges.
- A jelly like liquid comes out of the vulva.

ACTIVITY

1. Define the term fertilization
2. How long is the gestation period in cattle?
3. What is calving in cattle keeping?

LESSON FIFTY FIVE

TOPIC: KEEPING CATTLE

SUBTOPIC : INSEMINATION

Read and Write

- Insemination
- Servicing

Insemination

Insemination or servicing is the act of depositing sperms into the vagina of a cow on heat.

Types of insemination

1. Natural insemination
2. Artificial insemination

Advantages of natural insemination

- It saves time
- It is cheap
- A bull can easily detect a cow on heat and mounts it.

Disadvantages of natural insemination

- More sperms are wasted in one cow
- It is expensive to buy and maintain a bull
- Heavy bulls can injure weak cows
- Easy spread of venereal diseases.

ACTIVITY

1. Mention one type of insemination
2. Why is it good to use natural insemination?
3. Give a disadvantage of natural insemination

LESSON FIFTY SIX

TOPIC : KEEPING CATTLE
SUBTOPIC : MILKING

Read and Write

- Parlour
- Restrain
- Milk let down

Milking is the process of removing milk from the udder of a cow

Steps taken to obtain clean milk

- Clean the milking parlour
- Wash all milking utensils
- Drive the cow to the milking palour
- Tie the hind legs to restrain movement during milking
- Wash the udder
- Allow a calf to first suckle
- Smear butter on the teats to reduce friction
- Draw the first milk into a strip cup to check the presence of mastitis.
- Clean the milking pour again after milking
- Milk is filter, measured and transported to consumers.

Methods of milking

- Hand milking
- Machine milking

Qualities of a good milkman

- Should be clean
- Should be healthy
- Should have milking attire
- Should be a good time keeper.

ACTIVITY

1. Give the first three steps taken during the process of milking
2. Identify the only two methods of milking
3. Suggest two qualities of a good milk man.

LESSON FIFTY SEVEN

TOPIC : KEEPING CATTLE

SUBTOPIC : MILK PRODUCTS

Read and Write

- Fermented
- Yoghurt
- Powdered milk

Milk products are things that we obtain from milk. Fresh milk is processed to obtain other products.

Examples of milk products

- Fermented milk-made by boiling fresh milk, cooling it and add in some bacteria.
- Yoghurt –fermenting milk using special bacteria.
- Powdered milk- obtained by drying milk

- Butter
- Cheese and whey
- Ghee.

ACTIVITY

1. Write down any four products got from milk (milk products)
2. Which milk product is obtained by drying milk first?

LESSON FIFTY EIGHT

TOPIC : KEEPING CATTLE

SUBTOPIC : DIGESTIVE SYSTEM OF A COW

Read and Write

- Oesophagus
- Rumen
- Recticulum
- Omasum

Digestion is the breakdown of food into smaller simpler particles that can easily be absorbed into the blood stream.

Digestive system of a cow

Picture on page 137 integrated science book 6 (pupils)

Functions of the parts of the digestive system of a cow.

- Mouth-food is chewed and mixed with salira.
- Oesophagus-food moves to the rumen.
- Rumen –food is stored, fermented by bacteria
- Reticulum –small particles of food are collected and moved to the omasum
- Omasum –grinds food until it is fine enough to proceed to the abomasums.
- Abomasum –(tru stomach) fourth chamber digests food chemically using enzymes.

ACTIVITY

1. Name any four parts of the digestive system in a cow
2. What takes place in the mouth during digestion?
3. Give the use of the rumen during digestion.

LESSON FIFTY NINE

TOPIC : KEEPING CATTLE

SUBTOPIC : INTRODUCING CONCENTRATES

Read and Write

- Concentrates
- Commercial feeds

Concentrates are feeds in which specific nutrients or minerals have been added

Examples of concentrates are

- Dairy cubes
- Dairy mash
- Wheat bran
- Cotton seed cake

- Groundnut cake
- Sun flower
- Soya bean cake

Advantages of proper feeding

- Good health
- Fast growth
- High quality products
- Higher productivity

ACTIVITY

1. Give three examples of concentrates
2. Outline two advantages of proper feeding.

LESSON SIXTY

TOPIC : KEEPING CATTLE

SUBTOPIC : CATTLE PARASITES AND DISEASES

Read and Write

- Irritation
- Uncomfortable
- Malnourished

A parasite is a living organism which depends on a host.

External parasites in cattle

- Ticks
- Mites
- Fleas
- Tsetse flies

How to control external parasites

- By spraying or dipping (using acaricides)
- By hand picking
- Burn old pastures

ACTIVITY

1. Give two ways of controlling external pests in cattle
2. Suggest two names of external parasite in cattle.

LESSON SIXTY ONE

TOPIC : KEEPING CATTLE

SUBTOPIC : INTERNAL PARASITES IN CATTLE

Read and Write

- Liver fluke
- Tape worm

Internal parasites attack animals from inside their bodies. They are also called endo parasites.

Examples of internal parasites

- Liner fluke
- Tape worm

Ref. table on page 141 integrated science book 6 (pupils)

Ways of controlling internal parasites

By de-worming

- Drenching using liquid medicine
- Dozing using solid medicine.

ACTIVITY

1. Suggest two ways of controlling internal parasites
2. Where do endo parasites live in the body of a cow?

LESSON SIXTY TWO

TOPIC : KEEPING CATTLE

SUBTOPIC : CATTLE DISEASES

Read and Write

- East cost fever
- Rinder pest

Cattle disease

- Food and mouth disease
- East coast fever
- Nagana
- Rinderpest
- Anthrax

For causes, signs and symptoms and control –referred to a table on page 142 -143 integrated science pupils book 6.

ACTIVITY

1. Identify two examples of cattle diseases
2. Suggest two ways of controlling cattle diseases.

LESSON SIXTY THREE

TOPIC : KEEPING CATTLE

SUBTOPIC : IDENTIFICATION OF LIVESTOCK

Read and Write

- Branding
- Notching
- Tagging

Animals on the farm should be identified. Helps to identify your animal in case it gets lost.

Six ways of identifying live stock

- Branding
- Ear notching
- .
- Ear tagging
- Tail docking
- Necklaces
- Ear tattooing

ACTIVITY

1. State four ways of identifying animals on the farm (cattle)
2. Why should farmers carry out identification on their animals?

LESSON SIXTY FOUR

TOPIC : TYPES OF CHANGES

SUBTOPIC : CHANGES IN THE ENVIRONMENT

Read and Write

- Physical
- Chemical
- Biological

Changes in the environment

Change means the process of becoming different e.g. baby grows into an adult.

The four types of changes

- Biological changes
- Physical changes
- Chemical changes
- Changes in the atmosphere.

Biological change takes place in living things. These are irreversible eg. A seed developing into a seedling.

- Growth and development
- Respiration
- Germination
- Reproduction

ACTIVITY

1. Give one change that takes in growth and development as a biological change.
2. What change takes place during germination as a biological change?

LESSON FIVE

TOPIC : TYPES OF CHANGES

SUBTOPIC : CHEMICAL AND PHYSICAL CHANGES.

Read and Write

- Irreversible
- Permanent

Chemical changes are permanent and irreversible. New substance is formed.

Examples

- Rusting
- Burning
- Rotting /decaying
- Digestion of food

Physical changes are changes where no new substances are formed.

Examples of physical changes

- Freezing
- Melting
- Evaporation
- Condensation
- Sublimation

ACTIVITY

1. Give one difference between a chemical and physical change.
2. What change takes place when ice melts?

LESSON SIXTY SIX

TOPIC : TYPES OF CHANGES

SUBTOPIC : CHANGES IN THE ATMOSPHERE

Read and Write

- Atmosphere

Atmosphere is the space around us filled with gases such as oxygen, carbon dioxide, nitrogen and rare gases.

Examples of changes which take place in the atmosphere are;

1. Rainy
2. Sunny
3. Cloudy
4. Windy

ACTIVITY

1. Define the term atmosphere
2. List down all gases found in the atmosphere
3. Give two examples of changes that place in the atmosphere.

LESSON SIXTY EIGHT

TOPIC : TYPES OF CHANGES

SUBTOPIC : CHANGES IN STATES OF MATTER

Read and Write

- Melting
- Evaporation
- Freezing
- Solidification
- Condensation

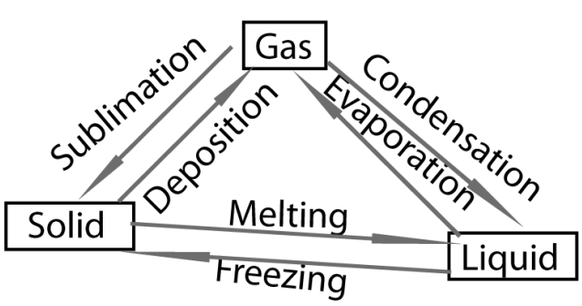
Changes in states of matter

These are changes that may occur to matter

Examples of these changes include;

- Melting
- Evaporation
- Sublimation
- Condensation
- Freezing
- Solidification

Illustration showing changes in states of



Refer to integrate science book 5 page 156

ACTIVITY

1. What is sublimation?
2. Why would you say that water exists in all the three states of matter?

LESSON SIXTY NINE

TOPIC : TYPES OF CHANGES

SUBTOPIC : OTHER CHANGES IN THE ENVIRONMENT

Read and Write

- Foods
- Volcanic eruptions
- Earth quakes
- Land slides

Natural changes are changes which occur by themselves.

Examples of natural changes

- Floods, earth quakes, landslides, volcanic eruptions.

Effects of changes in the environment

Positive effects of changes.

- Organic matter decomposes to form fertile soils
- Young ones of animals are born to replace the old ones.
- Weathering of rocks helps to form soil
- Changes in weather lead to soil formation
- Houses are built to protect people from bad weather

Negative effects of changes

Some changes such as landslides lead to loss of life and properly.

- Some changes lead to soil erosion
- The changes reduce the amount of rainfall.
- Some changes lead to the death of living organisms in the soil.

ACTIVITY

1. Identify the type of change which leads to each of the following

a) Pollution of air
b) Soil erosion
c) Rusting

d) Death of living organisms.

LESSON SEVENTY

TOPIC : RESOURCES IN THE ENVIRONMENT

SUBTOPIC : IDENTIFYING RESOURCES IN OUR COMMUNITY

Read and Write

- Fuel
- Minerals
- Extracted
- Obtained
- Medicines

Non-living things as resources

Some things in our environment are non-living things. Some are readily available whereas others need to be extracted from natural sources.

Examples of non-living resources

- Soil
- Sun fuel
- Water and air

Living things as resources

- Plants and animals are living resources
- Plants are sources of materials such as fibers, wood, food and medicine.

Resources obtained from animals include;

- Meat, skins and hides, horns, milk, honey and medicines.

ACTIVITY

1. Name one non-living resource used in production of solar energy.
2. Identify two resources obtained from animals
3. Mention three plant resources.

LESSON SEVENTY ONE

TOPIC : RESOURCES IN THE ENVIRONMENT

SUBTOPIC : HARVESTING NON-LIVING RESOURCES

Read and Write

-Solar heaters
-Cookers
- Gutters
- Petrol

A) Harvesting building sand

-Obtaining sand from dry riverbeds
-Mining sand from the ground

B) Harvesting minerals

- Open mining
-Closed mining

C) Harvesting oil

- Oil is obtained from deep down the earth's surface.

A hole is drilled into the ground until the ground oil is reached. The crude oil is pumped through the pipes to the surface.

e) Harvesting water

- It can be controlled from roof tops of houses and put into the tanks.

Gutters collect the rain water from the edges of the roof.

ACTIVITY

1. How is the tank useful in harvesting water?
2. What is the use of gutters in water harvesting?
3. Mention one way of harvesting energy from the sun.

LESSON SEVENTY TWO

TOPIC : RESOURCES IN THE ENVIRONMENT

SUBTOPIC : HARVESTING LIVING RESOURCES

Read and Write

- Fibers
- Sisal
- Cotton

Harvesting is the removal of mature and ready crops from the garden.

Harvesting food crops;

- Coffee - hand picking
- Tea -Plucking off the leaves using machine
- Maize -using hands

Harvesting fibre crops

- Cotton –hand picking
- Sisal –cut off fibers

Harvesting animal resources

- Animals are slaughtered the skin is removed and meat curved. A place where many cows are slaughtered is called a abattoir.

Horns. The horns are cut off with a saw from the head of the slaughtered cow or bull

Skins and hides. The animal is slaughtered and the skin is carefully removed from the carcass..

Honey. Honey is extracted from honey combs of bees.

Milk. Milk is obtained from animals by milking.

ACTIVITY

1. What do we call a place where many animals are slaughtered?
2. How is maize harvested?
3. Name one product got from skins and hides.

LESSON SEVENTY THREE

TOPIC : RESOURCES IN THE ENVIRONMENT

SUBTOPIC : HOW PEOPLE MAKE USE OF AVAILABLE RESOURCES

Read and Write

- Solar
- Ceramics
- Fossil
- Crude

i) Soil as a resource

-It supports plant growth

-It is used in construction.

-It is used to make bricks

-Clay is used for modelin

ii) Minerals as a resource

Examples of minerals; aluminum, iron, copper, tin silver lead and uranium. Uranium can be used to generate electricity.

N.B: Alloys

An alloy is the mixture of two or more metals.

Examples of alloys; Brass, bronze, solder and steel.

iii) Sun as resource

Sun is the main source of energy in the environment.

- It provides us with warmth
- It helps green plants to make their own food.
- It causes evaporation of water to maintain the water cycle.

ACTIVITY

1. What is an alloy?
2. Mention two examples of alloys
3. Which process in plants requires sunlight to occur?
4. How is soil used as a resource?

LESSON SEVENTY FOUR

TOPIC : RESOURCES IN THE ENVIRONMENT

SUBTOPIC : HOW PEOPLE MAKE USE OF AVAILABLE RESOURCES

Read and Write

- Coal
- Crude
- Paraffin
- Textile

Fossil fuel as a resource

- A fuel is anything that can be burnt to produce energy
- Coal is used to produce electricity and heat.
- Crude oil is refined to obtain petrol, diesel and kerosene (paraffin)

Water as a resource

- Fast flowing water help in production of hydroelectricity.
- Kinetic energy from steam is used to drive machines.

Air as a resource

- Wind can be used to generate electricity. Wind can also be used for transport by moving dhows.
- We need air to breathe.

ACTIVITY

1. What is a fuel?
2. Who is wind used as a resource?
3. How is water used as a resource?

LESSON SEVENTY FIVE

TOPIC : RESOURCES IN THE ENVIRONMENT

SUBTOPIC : LIVING RESOURCES

Read and Write

- Fiber
- Jute
- Sisal
- Bark

Plant fibers. These are raw materials from plants used to make other products.

Examples of plant fibers

- Sisal
- Cotton wool
- Banana fibers
- Raffia
- Jute
- Bark from fig tree
- Wood

Animal fibers. These are products got from animals which are used to make other products.

Examples of animal fibres

- Skins and hides
- Horns
- Wool
- Silk
- Mohair

ACTIVITY

1. Name the plant fiber which is used in textile industry.
2. Mention two products got from sisal
3. How are hides and skins important to the leather industry?

LESSION SEVENTY SIX

TOPIC : RESOURCES IN THE ENVIRONMENT.

SUB TOPIC : CLASSFICATION OF RESOURCES.

Read and write.

- Usually
- Exhaustible
- Renewable
- Evaporates

There are two major classes of resources, namely;

i). Exhaustible resources

In exhaustible resources.

ii). Renewable resources.

These are resources that can be regenerated from a small stock after being used up

Examples of renewable resources.

Animals, wind, water and sunshine.

- They are usually replaced by natural process
- They continue to be available as long as man needs them.

Non -renewable resources.

These are resources which once used up cannot be regained

They exist in limited quantities

Examples of non-renewable resources

- Minerals
- Crude Oil
- Natural gas
- Rocks

ACTIVITY.

1. What are renewable resources?
2. Mention two examples of renewable resources.

3. How renewable resources are replaces?
4. Name two classes of resources.

LESSON SEVENTY SEVEN

TOPIC : RESOURCES IN THE ENVIRONMENT

SUB TOPIC : SUSTAINABLE USE OF RESOURCES

Read and write

- Misuse
- Sustain
- Wastage
- Patterns

To sustain means to keep something alive.

Sustainable use of resources means being user friendly

Reasons for sustainable use of resources

1. To avoid misuse
2. To avoid wastage
3. To avoid over use
4. To avoid damage

Reasons for conservation of resources

1. To maintain the beauty of nature
2. To maintain stable environment for food
3. To maintain stable climate patterns
4. To pass on the quality of nature we inherit.

ACTIVITY

1. Give the meaning of term “sustain”
2. How does the conservation of resources help to maintain stable climate?
3. Mention <u>two</u> reasons for conserving the resources.

LESSION SEVENTY EIGHT

TOPIC : RESOURCES IN THE ENVIRONMENT

SUB TOPIC : CONSERVING ANIMALS AS RESOURCES

<u>Read and write.</u>

- Poaching
- Existence
- Destruction
- Waste

Conservation means preventing loss or waste of something.

Animal existence must be ensured to allow for continued use of the resource

Ways of conserving animal resources.

1. Animals need protection against diseases and pests
2. Hunting of animals should be controlled.
3. Poaching should be banned.
4. Wild animals should be provided with habitat e.g. game parks.

ACTIVITY

1. What is conservation?
2. Mention <u>two</u> ways of conserving animal resources.
3. How are diseases and pests controlled in animals?

THEME: THE WORLD OF LIVING THINGS.

Meaning of bacteria habitats and breeding.

Characteristics of bacteria.

Reproduction of bacteria.

Nature of bacteria

- Harmful bacteria.
- Useful bacteria.

Dangers of bacteria

Uses of bacteria.

Prevention of bacteria diseases.
Control of bacterial diseases.

Treatment of bacterial diseases.

FUNGI

Meaning of fungi, habitants for fungi and examples, seven structure of a mushroom, uses of each

Part.

Characteristics of fungi.

- Harmful fungi
- Useful fungi

Disadvantages of fungi.

Prevention of fungal diseases.

Control of fungal diseases.

Treatment of fungal diseases.

Similarities and differences between bacteria and fungi.

THE ENVIRONMENT.

Soil. (Meaning)

Components of soil.

Experiment showing each component.

Types of soil.

Properties of soil and experiments on each type.

THEME II

Importance of soil.

Soil erosion. (Meaning).

Agent of soil erosion.

Causes of soil erosion.

Effects of harmful materials (Meaning).

Examples of harmful materials.

Soil conservation. (Meaning)

Methods of soil conservations.

Soil fertility (meaning).

Ways of improving soil fertility.

(Artificial fertilizers meaning examples)

Natural fertilizers (meaning).

Farm yard manure.

Compost manure.

Green manure.

Organic mulches.

Advantages and disadvantages of artificial and natural fertilizers.

Making a compost manure (project)

THEME III

Managing changes in the physical and chemical changes.

Types of changes in the environment.

Biological changes (meaning)

Examples of biological changes, characteristics.

Physical changes (meaning)

Examples and characteristics.

Managing body changes.

Body care.

Guidance.

Carrying out an experiment on biological changes.

Chemical changes meaning.

Examples of chemical.

Characteristics of chemical changes.

Carrying out an experiment on chemical change.

Physical changes meaning.

Examples of physical change.

Characteristics of physical change.

Carrying out experiment on physical change.

Changes in weather.

Examples of weather.Changes in states of matter.

Carrying experiment on different states of matter.

THEME IV

Other changes in the environment.

Examples, landslides, Earthquakes, Volcanic actions and faulting.

Characteristics of various types of changes in environment.

Comparing physical and chemical changes.

Consequences of various types of changes to people, animals and plants.

Natural causes of changes in the environment.

Effects of natural changes.

Ways of managing changes.

Changes in the environment through human activities.

THEME HUMAN HEALTH

TOPIC: PRIMARY HEALTH CARE

Sanitation meaning

Importance of good sanitation in our environment

Germs and diseases.(meaning both)

Places where germs are found.

How germs are spread.

The 4 Fs germ path.

How germs cause rotting.

Ways of protecting ourselves against germs and diseases in the environment, school and at home.

THEME V

PRIMARY HEALTH CARE (MEANING)

Elements of Primary Health Care

Principles of Primary Health Care.

Activities in Primary Health Care in promotion of community hygiene.

Individual responsibilities in health promotion.

Family responsibilities in health promotion.

Community responsibilities in health promotion.

Suitable life styles and good health practices.

People with special needs. Caring for people with special needs.

THEME VII

Effects of food taboos on nutrition.

Eating habits in different communities.

Food consumption patterns in the community.

The staple foods.