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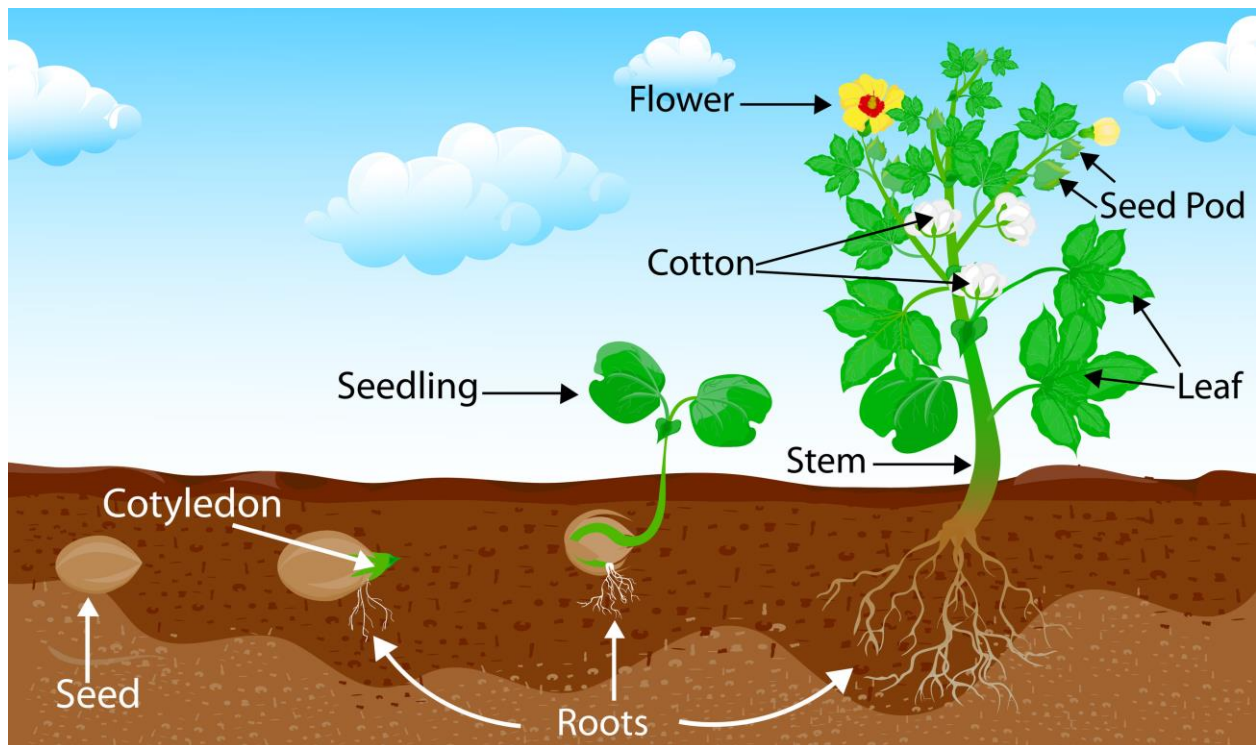
Nuture your dreams

P4 Integrated Science

Term 1

THEME: World of Living Things

Topic 1/4: Plant Life



Plants are living things. As living things, plants show characteristics shown by other living things.

Characteristic of living things

1. **Plants grow.**
2. They **reproduce** through seeds, fruits and vegetative reproduction
3. Plants **move** by growing either upwards or sideways. Plants move towards light by

growing and they even make curves in order to reach things like water and sunlight

4. They **respire**: respiration is the burning of food in the body to produce energy.
5. Plants **feed** by taking in nutrients like carbon dioxide from the air, water and mineral salts from the soil and make their food by the processes called **photosynthesis**
5. Plants **remove wastes**. They excrete. During the day, plants remove oxygen as a waste product in the process of photosynthesis. At night, plants release carbon dioxide as waste. The stomata are very important in the removal of wastes from plants.
7. Plants **respond to changes in the environment**, for example, they respond to shortage of water by their roots growing towards the source of water. When it is too hot, plants close their stoma (stomata - singular) so that they don't lose too much water

Uses of plants

- Food (Fruit like oranges, guava, mangoes, pawpaw etc., leaves like vegetables, root tubers like cassava and sweet potatoes, stem tubers like sugar cane)
- Shelter and shades
- Building material
- Herbal medicine
- Wind breakers
- Decoration and beauty using flowers and leaves

Revision exercise 1

1. Give one way in which flowering plants are useful to man.

They provide decoration

They provide food

Provide oxygen

Provide medicine

2. Give any one reason you think a plant is a living thing.

It grows

It reproduces

Feeds

Respires

Excretes

Responds to stimuli

3. Give one main difference between plants and animals.

Plants manufacture their food whereas animals do not.

Plants have chlorophyll, animals do not have chlorophyll

4. Name any cereal which is used as food.

Maize, rice, sorghum, wheat oats, barley

5. Apart from the animal kingdom, which other of organisms makes up living things?

Plants, fungi, unicellular organism

6. Give any one reason why people plant trees around their houses.

Trees act as wind breakers

Trees produce fruits

Trees are used for beauty

Trees provide firewood

Trees provide medicine

7. (a) Give two benefits of planting trees in your school compound

(i) work as wind breaks

(ii) for timber, for fruits, shade, fence, beauty, herbal medicine, study purpose

(b) What two things can you do to protect plants in your school compound?

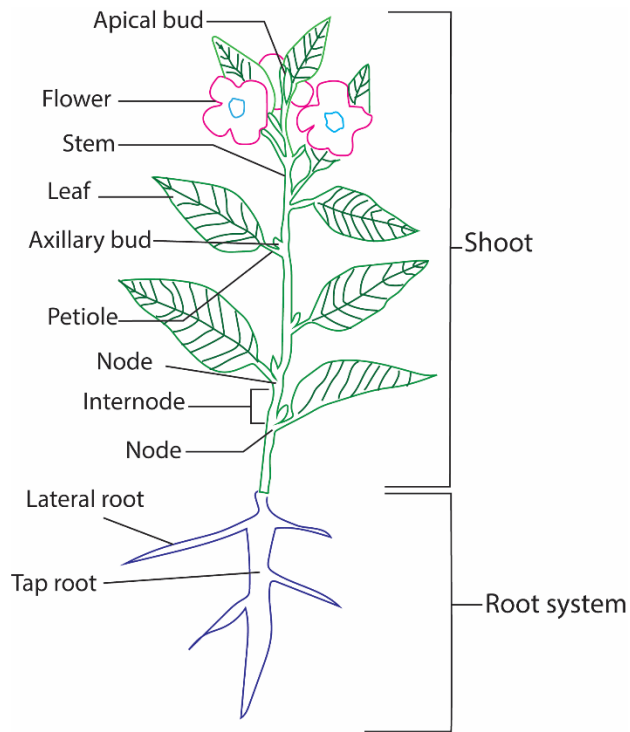
Fencing, watering, mulching, pruning, manuring, spraying, staking, pegging

Parts of a plant

The parts of a plant include:

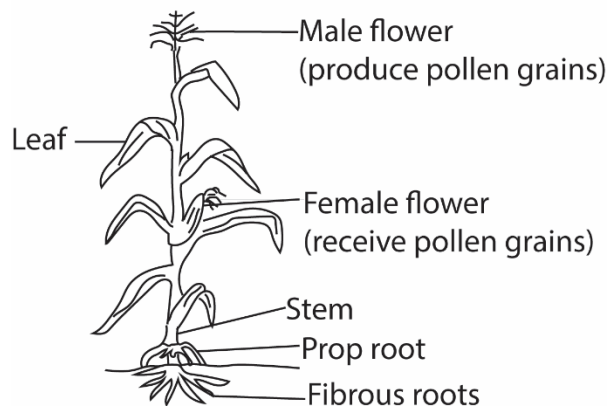
- Roots
- Flowers
- Stem
- Bud
- Leaves
- Fruit

Dicotyledonous plant, e.g. bean, soya, pea



Monocotyledonous plant, e.g. maize

Maize plant

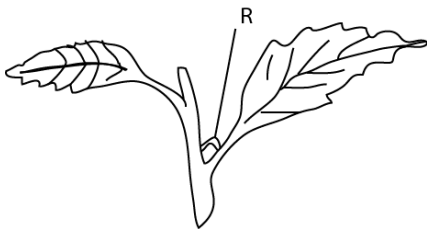


Differences between monocotyledonous and dicotyledonous plants

Monocotyledonous plant	Dicotyledonous plant
One seed leaf or cotyledon	Two seed leaves
Leaves with parallel veins	Leaves with network veins
Has fibrous root system	Has tap root system
Examples are maize, millet, banana	Examples are beans, mango, avocado

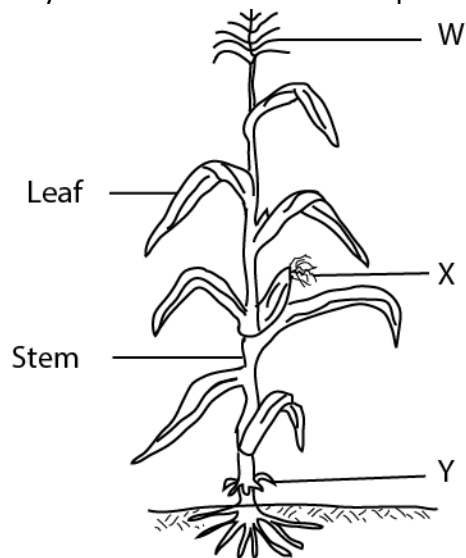
Revision exercise 2

1. The diagram below shows parts of a plant stem, name the structure marked R.



R. **axillary bud**

2. The diagram below shows a flowering plant
Study and use it to answer the questions that follow.



- (a) To which group of flowering plants does the above plant belongs?
Monocotyledonous plant
- (b) What type of root system does the plant have?
Fibrous roots
- (c) State the importance of root marked Y to the plant.
Provide extra support
- (d) In which **one** way is part **W** different from X in their reproductive function?
W produces pollen grains whereas X receive pollen grains

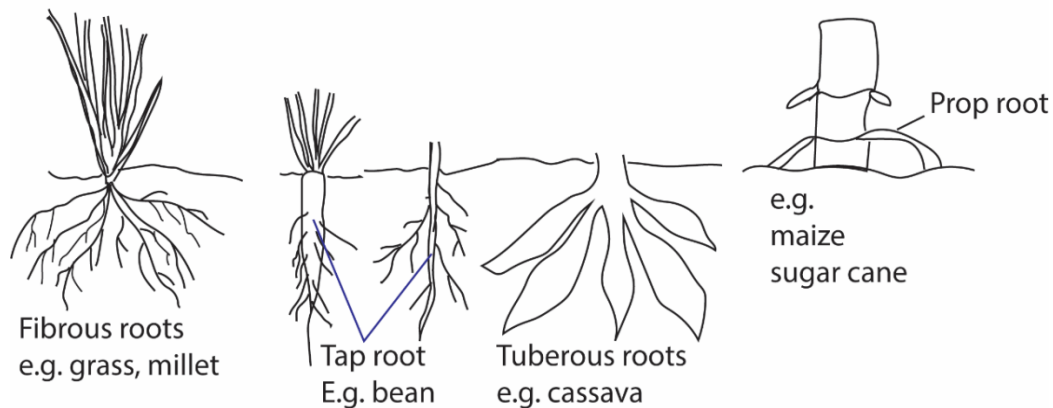
The roots

Roots of a plant are found below the ground (in the soil).

Functions of the root

- i) To anchor the plant firmly in the soil,
- ii) To absorb water and nutrients from the soil and pass them to the stem.
- iii) In some plants such as carrots and cassava, the roots are used to store food.
- iv) To help in the taking in of air by water plants like the mangrove. These roots are called breathing roots.
- v) Prop root offer extra support

Types of roots



Taproot

The tap root is the main root which grows from the radicle and continues to grow bigger than its branches. It grows vertically down into the soil, producing smaller side branches.

Most dicotyledonous plants have this type of root. The best example is the carrot.

Fibrous root

Fibrous roots have no main root. Instead all the roots grow to almost the same size. The roots grow from the base of the stem and spread into the soil.

Adventitious Roots

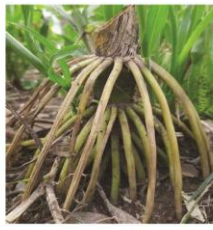
These are roots that arise from plant organs such stem, leaves other than roots

Modified roots

Examples of roots for support



Buttress roots



Prop roots



Clasping roots



Stilt roots

Breathing root: The allow plants in water logged places such as mangrove to respire.



Breathing roots of mangrove forests



Roots of leguminous plant

Leguminous roots contain root nodules where bacteria that fix nitrogen are sheltered.

Reproduction: sweet potato roots and others are used for reproduction

Revision exercise 3

1. Give the importance of bacteria found in root nodules of leguminous plants to the soil.
They fix nitrogen to the soil
2. (a) in the space below, draw an example of:

Tap root



Fibrous roots



(b) Give one use of roots to a plant and one use to man.

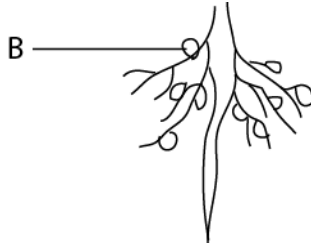
Uses of roots to the plant

- **absorption of water and mineral salts from the soil**
- **anchorage of the plant into the soil**
- **storage of food such as cassava roots**

Uses of roots to man:

food, medicine

3. The diagram below shows the root of a plant. Use it to answer the questions that follow.



(a) Name the part labeled B.

Root nodules

(b) What group of plants have such roots

Leguminous plants

(c) What does part labelled B contain?

bacteria

(d) What is the function of what you named in (c) above?

Fix nitrogen to the soil

4. (a) How can you tell by looking at the roots, that a plant is a legume?

Root of legumes have root nodules

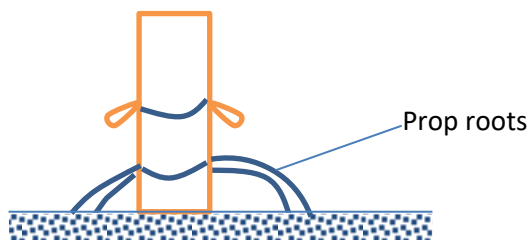
(b) Give any two examples of crops which are legumes.

Beans, soya bean, Ground nuts, cowpeas

(c) How do legumes increase the fertility of the soil?

Root nodules contain bacteria that fix nitrogen into the soil

5. Draw a prop root system in the space provided below.



6. Name any one crop with a root system similar to the one you have drawn above

Rice, wheat, sorghum, millet, maize, sugar cane

7. Why does a farmer cut off leaves of a banana sucker before planting it?

To reduce the rate of transpiration

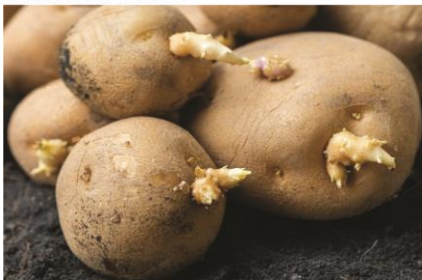


The stem

The stem performs the following functions:

- i) It supports the other parts of the plant (leaves, flowers and fruits).
- ii) It helps in transporting water and dissolved nutrients from the roots to the other parts of the plant.
- iii) Transports food that is made in the leaves to the roots for storage.
- iv) Stores food in plants like sugarcane, Irish potatoes

Modified stems



Irish potatoes for vegetative reproduction



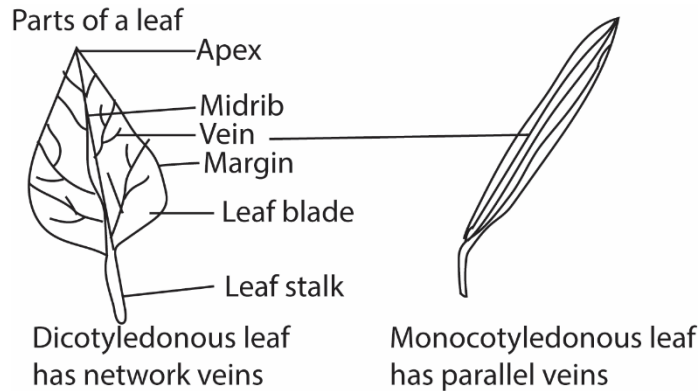
Sugarcane for food storage



Stems with thorns for protection

The leaves

Leaves are the main photosynthetic organs of the plant



Differences between dicotyledonous and monocotyledonous leaves

	Dicotyledonous leaf	Monocotyledonous leaves
1.	Has networked veins	Has parallel veins
2.	Has leaf stalk	Has leaf sheath
3	Example: mango, avocado, coffee	Examples: Maize, banana, grass

Functions of the leaves

- (i) Produce food by photosynthesis
- (ii) Carry out gaseous exchange through the stomata
- (iii) Transpiration takes place mainly through the leaves resulting in the cooling of plant and absorption of mineral salts and water
- (iv) Some leaves such as those of peas are modified by tendrils for support.
- (v) Some leaves such as for bryophyllum are modified for vegetative reproduction
- (vi) Some leaves are colored to attract pollinators.

Modified leaves



Leaf modified for vegetative reproduction



Thorny leaf for protection



Fleshy leaves for water storage



Venus fly trap leaves trap insects to obtain nitrogen



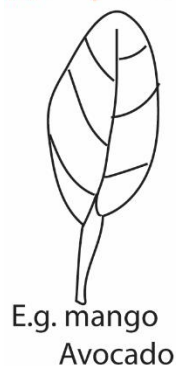
Colored leaves of bougainville attract pollinators

Simple and compound leaves

Simple leaves have a single blade undivided lamina while compound leaves have their lamina divided into leaflets.

Shapes of leaves

(a) simple leaf



E.g. mango
Avocado

(b) Compound leaves

(i) compound trifoliate



E.g. bean

(ii) Compound digitate



e.g. Jobbo

(iii) Compound pinnate



E.g. cassia

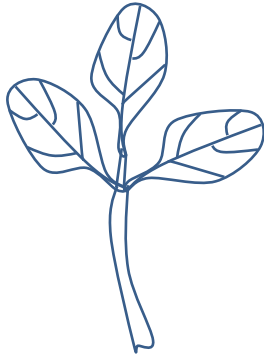
(iv) Compound bipinnate



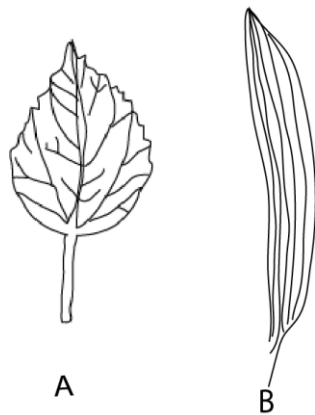
e.g. Jacaranda

Revision exercise 4

1. In the space provide below, draw a compound leaf.

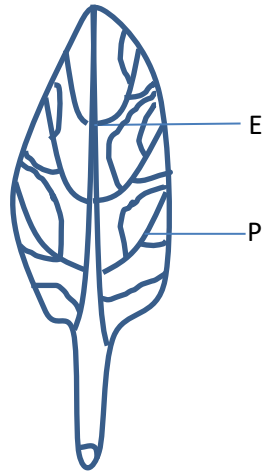


The diagram below shows different leaves, A and B. use it to answer questions 2, 3, and 4

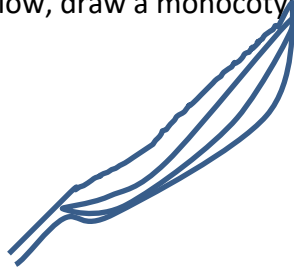


2. Which of the following leaves is from monocotyledonous plant?
Leaf B
3. Apart from the leaf structure, give one other difference between monocotyledonous plant and dicotyledonous plant.
 - **Monocot seeds have one cotyledon while those dicotyledonous seed have two cotyledons**
 - **Monocots have fibrous roots while dicots have net veined leaves**
 - **Monocots have floral parts in 3s while dicots have floral parts in 4s or 5s**
4. Give the main use of leaves to the plant.
They carry out photosynthesis
They carry out gaseous exchange

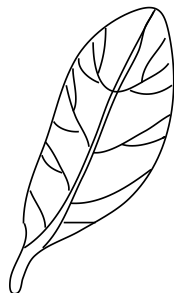
Use the diagram of a leaf below to answer questions 5 and 6



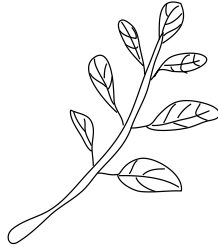
5. What is part marked P?
vein
6. Give one function of part E.
Provides support to the leaf
Transports water and mineral salts to the leaf
Transports manufactured food from the leaf
7. In the space below, draw a monocotyledonous plant leaves.



8. (a) in the space below, draw an example of:
(i) A simple leaf



(ii) A compound leaf



(b) State any one use of a leaf to a plant other than photosynthesis.

Food storage

Water storage

Vegetative reproduction

Gaseous exchange

Transpiration

(c) Apart from being eaten as food, name one other use of leaves to man.

Herbal medicine

9. Give any one use of leaves to a plant.

For transpiration

For photosynthesis

For support

Colored leaves attract pollinators to the plants

For gaseous exchange.

For vegetative reproduction

10. What is the importance of leaves to a plant?

For photosynthesis

For transpiration

For vegetative reproduction

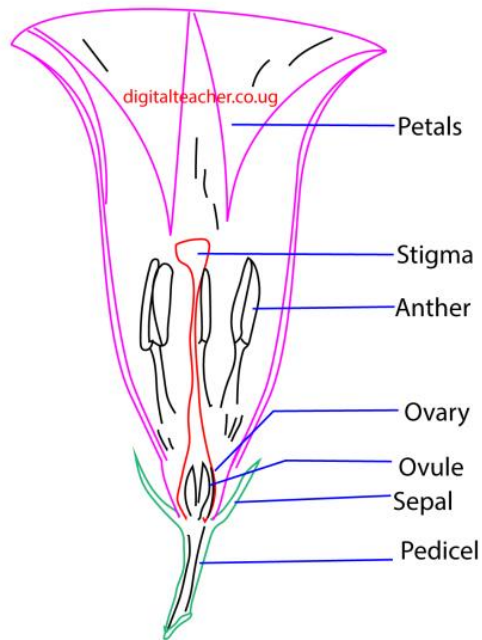
Some have tendrils for support

Leaves have stomata for gaseous exchange

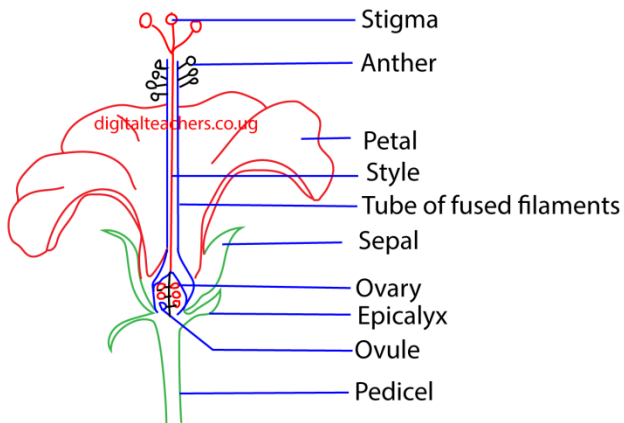
The flower

This is the sexual reproductive part of the plant.

Cross section of potato flower



Longitudinal section of hibiscus flower



Parts of hibiscus flower



Parts of the flower are:

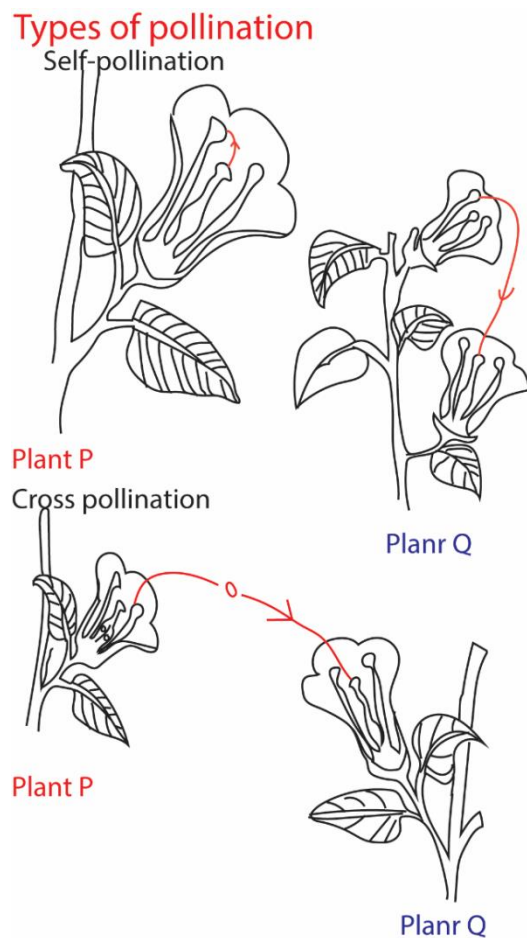
1. **Petals** are colored and have scent that to attract insect for pollination. Petals are collectively called **corolla**
2. **Sepals** are often small and green. Sepals protect the young flower when in bud. Sepals are collectively called calyx.
3. **The stamen** is the male part of the flower. It is made of the filament and anther. The anther produces **pollen grains** (the male sex cells). The pollen grains are held in pollen sacs, in the anther.
4. The **pistil** is the female part of the flower. It is made of the stigma, the **style** and the **ovary**. The **ovules** (the female sex cells) are produced and held inside the ovary. The style is the tube that connects the stigma to the ovary. The stigma receives the pollen.
5. The **nectary** is the part of the flower that produces nectar. The nectary is located near the ovary.

Pollination

Pollination is the transfer of pollen grains from the **anthers** to the **stigma** of the same type of flower. There are two types of pollination:-

Self-pollination occurs when pollen from the anthers of a flower are transferred **to** the stigma of the **same flower or a flower** of the same plant.

Cross pollination occurs when pollen from the anthers of one flower are transferred to the stigma of a flower on **another plant** of the same type.



Agents of pollination

These are the things that help in pollination. They include

Wind, Insects, Water

Differences between wind and insect pollinated flowers

Wind pollinated flowers	Insect pollinated flowers
Have small dull flowers	Have large and brightly colored flowers
Have no nectar and no scent	Produce nectar and often have a strong
The stigma below the anthers	Stigma above the anthers
Produce small and smooth pollen	Produce large sticky pollen
Produce pollen grains in abundance	Produce few pollen grains

Methods that promote cross pollination

- (i) Stigma taller than anthers
- (ii) Stigma ripen before anthers
- (iii) Anthers ripe before stigma
- (iv) Brightly colored petals to attract pollinators
- (v) Strongly scented flowers

Revision exercise 5

1. How is a habit of bee visiting flowers important to the plant?

Pollinate the plants

2. Apart from having bright colors, state any other characteristic of insect –pollinated flowers.

Have strong scent

Stigma is longer than the anthers

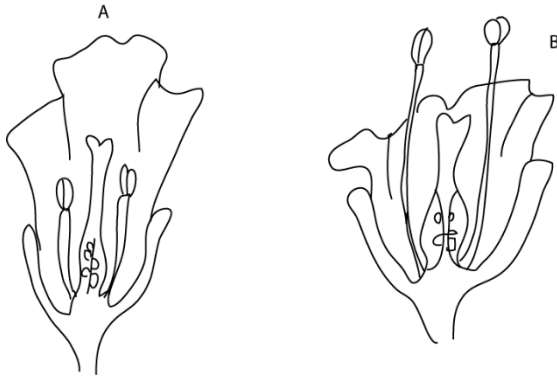
3. Name the male reproductive cell in flowers.

Pollen grain

4. What is the role of brightly colored petals in pollination?

The attract agent (bird, insects) pollination

The diagram below are of flowers A and B. Use them to answer questions 5, 6 and 7.



5. Which of the two flowers is likely to be insects pollinated?

Flower A

6. Give one reason for your answer to question 19.

The stigma is higher than the anthers

7. How is the other flower likely to be pollinated?

By wind because anthers are shorter than the stigma that the pollen grain can easily fall on the stigma

8. Give any one way in which flowers are important to a plant.

Flowers are sexual reproductive parts of the plant

9. What is the importance of bees to plant?

Bees pollinate flowers

10. Why is a moth able to pollinate plants at night?

They detect strong scent from flowers

11. Give one agent of pollination

Wind, water,

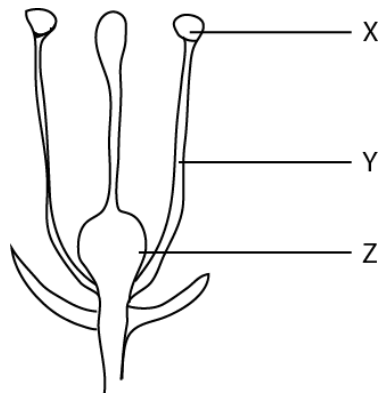
12. State four characteristics of insect pollinated flowers

- Brightly colored petals
- Have scents
- Have sticky stigmas
- Have sticky pollen grain

13. List four characteristics of wind pollinated flowers.

- Large amount of pollen grain
- Feathery stigma
- Small uncolored petals

The diagram below is of a flower. Use it to answer question 14 to 16.



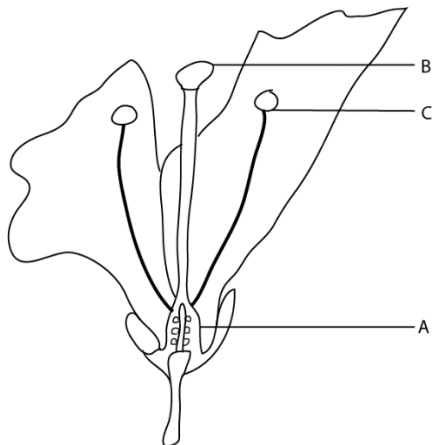
14. Name the part labeled **X anther head**
15. What is the use of the part labeled Y to the flower?

To hold the anther head

16. What does the part labeled Z become after fertilization?

Fruit

17. The diagram below is of a flower. Use it to answer the questions that follow.



- (a) What does the part labelled A become after fertilization?

Fruit

- (b) What is the function of the parts labelled B and C?

B receives pollen grains

C produces pollen grain

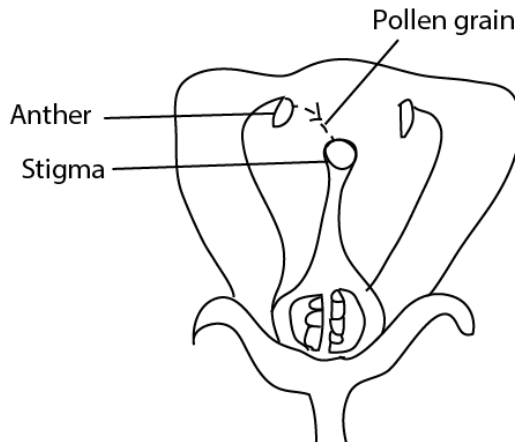
- (c) Of what value are flowers to man?

Flowers are used for decoration

Flowers are sources of income

Flowers are give as gifts

18. In the space below, draw a diagram to show self –pollination in a flower.



(a) How is the function of anthers in flowers similar to that of testes in humans?

Both produce male gametes

(b) (a) Give two characteristics of insect pollinated flowers.

(i) **brightly colored petals**

(ii) **they have strong scent**

(iii) **they have nectar**

(iv) **sticky stigma**

(c) Why is a moth able to pollinate plants at night?

They detect strong scent from flowers

(d) State the difference between self-pollination and cross –pollination.

Self-pollination is the transfer of pollen grains from the anthers to the stigma of the same flower while cross pollination is the transfer of pollen grain from the anther of one flower to the stigma of another flower of the same kind.

19. (a) State any one characteristics of social insects.

Live and move together such as ants and bees

(b) Give any two characteristics of flowers which attract bees to visit them.

Good scent

Brightly colored petals

Contains nectar

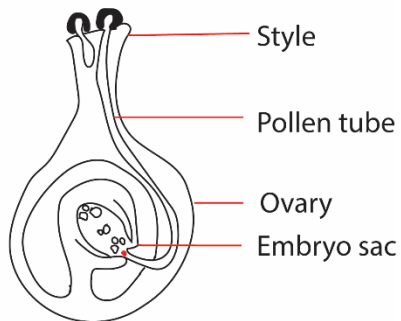
(c) Why is a worker bee not able to reproduce?

They are sterile

Fertilization

This is the fusion or joining of the male and the female gametes (Sex cells of the plants). During pollination, the pollen grain lands on the stigma. The pollen grains then start to germinate producing a **pollen tube**. The pollen tube grows into and through the style into the ovary. The pollens then move through the pollen tube to the ovary where they are released to join the ovules. When the pollens and the ovules (male and female sex cells) fuse, then fertilization takes place.

Fertilization



Changes after fertilization

- (i) The fertilized ovule becomes a **seed** containing an embryo.
- (ii) The ovule wall becomes the **testa** or seed coat.
- (iii) The ovary grows to become a **fruit**.
- (iv) The ovary wall becomes the **pericarp** or fruit wall.
- (v) The petals, sepal, anthers withers and dies.

Cross and self-fertilization

Self-fertilization is the union of gametes from the same individual flower.

Advantage:

- (i) it increases the chances of fertilization and formation of new organism.

- (ii) Only one parent is required, and that beneficial qualities are more likely to be passed on to the offspring since all offspring are genetically identical to the parent.

Disadvantage:

- (i) it reduces genetic variability, so the organism will be less adapted to changes in the environment.
- (ii) It may transfer diseases to the offspring

Cross fertilization:

It is the union of gametes from the different individual or flower of the same species. This brings in genetic mixing and genetic variability which increase the hybrid vigour.

Advantages of sexual reproduction

- Genetic mixing
- Seeds can go through adverse conditions in a dormant stage.
- Allow genetic improvement.

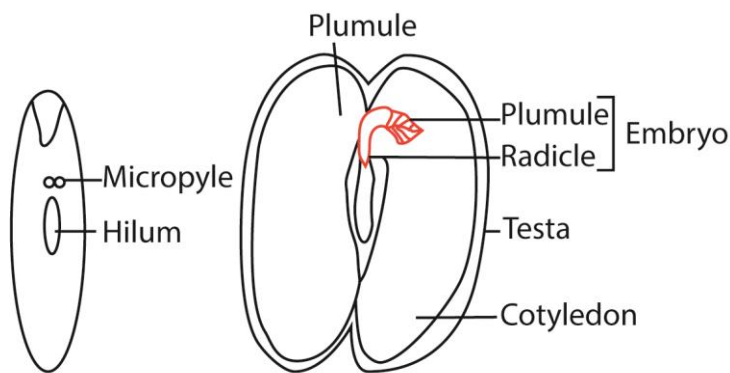
Revision exercise 6

1. Where does fertilization take place in a flowering plant?
In the ovary

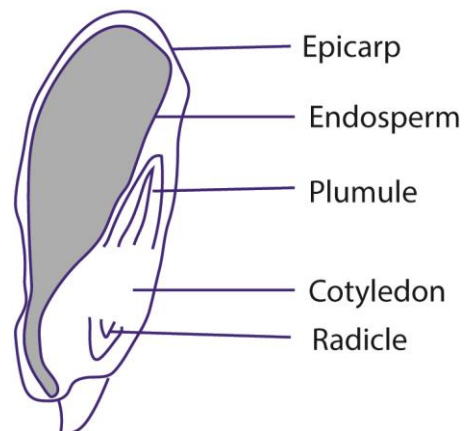
The seeds

The seed is the fertilized ovule containing the embryo.

Bean seed



Maize fruit



- (i) Testa is the outer covering of the seed for protection

- (ii) Micropyles are small holes in the testa that allows entry of water and air during germination
- (iii) Hilum is a part where the seed is attached to the fruit wall
- (iv) The **embryo** is made up of a **plumule** (grows to be the shoot) and a **radicle** (grows to be the root).
- (v) Cotyledons store food for the embryo (the tiny plant in the seed). Bean seed has two cotyledons while maize seed has one cotyledon
- (vi) Endosperm is part of the maize fruit where food is stored

The bean seed has two cotyledons. The maize seed is actually a fruit and it contains one cotyledon, which is small compared to that of the bean. The role of the cotyledon in maize is to transfer food to the embryo. It stores food in the endosperm.

Plants that produce seeds with one cotyledon are called **monocotyledonous plants**. Examples of monocotyledons are maize, barley, wheat, rice and millet.

Plants that produce seeds with two cotyledons are called **dicotyledonous plants**. Examples of dicotyledonous plants are groundnuts, beans and castor oil.

Fruits

A fruit is a fertilized Ovary

Differences between seeds and fruits

	Seed	Fruit
1.	Has one scar where a seed is attached to the fruit	Has two scars, attachment to the style and to the stem
2.	It is fertilized ovum	It is fertilized ovary
3.	Has micropyles	Has no micropyles
4.	Covered by tests	Covered by pericarp

Revision exercise 7

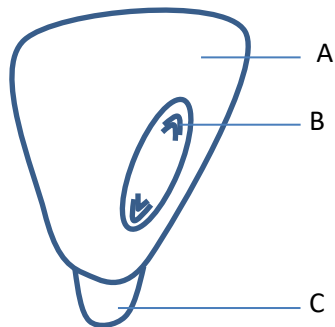
1. What part of maize grain has similar function as cotyledons of a bean seed?

Endosperm

2. Where does a ground nut store most of its food?

In the seeds

3. The diagram below is for a maize grain. Study it and answer the questions (a) to (d) which follows



(a) How is the part marked C useful to the grain?

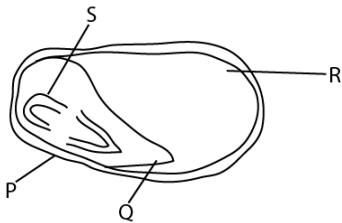
It attaches the seed to the cob.

(b) What does part marked B become during germination?

It becomes a shoot

- (c) What is the importance of the part marked A?
For food storage
- (d) Which of the marked parts is not important in germination?
Part C

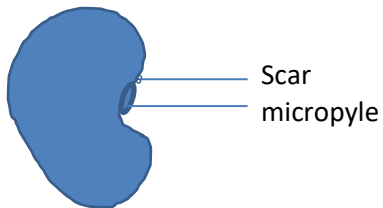
4. The diagram below is a cross section of a maize grain. Study it and answer the questions that follow.



- (a) Name the part marked P and R.
P: **Testa**
R: Endosperm
- (b) What will S grow into?
Root system
- (c) What is the function of Q?
Stores food for the embryo

5. (a) Draw bean seed and show:

(i) a scar

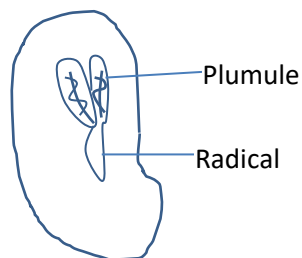


(ii) a micropyle.

(b) Draw a spilt bean seed and show:

(i) a plumule

(ii) a radical



Germination

This is the growth of a plant from a seed.

Factors that favor germination

- water
- Warmth
- oxygen

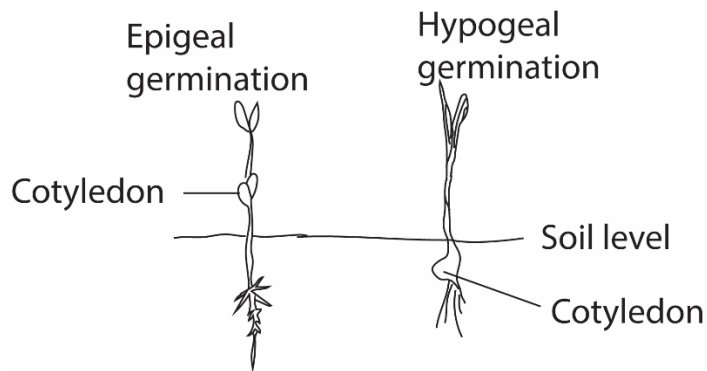
Types of germination

There are two types of germination namely:

Epigeal germination - the cotyledons are pushed above the ground when the seed germinates for example in beans and castor oil.

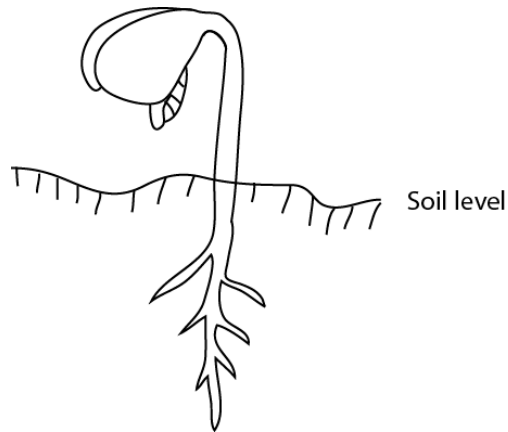
Hypogeal germination - the cotyledons remain below the ground when the seed germinates for example in maize, grasses and onions.

Types of germination



Revision exercise 8

The diagram below shows a germinating seed. Study and use it to answer questions 1 and 2.



1. What type of germination is shown in the diagram above?

Epigeal germination

2. Why is water necessary for germination?

To break the Testa

To dissolve nutrients

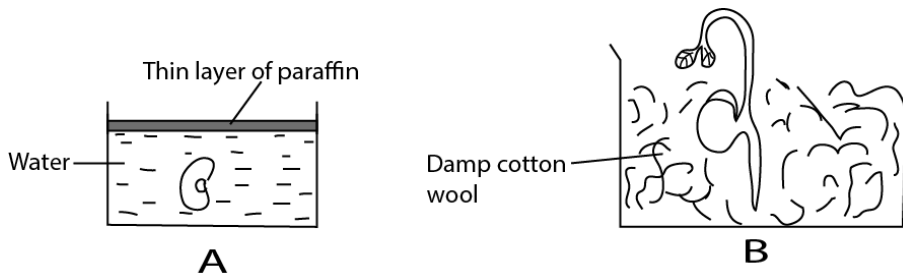
3. State one reason why germination and breathing are similar.

They need oxygen

4. To which group of flowering plants does the germinating seed belong?

Dicotyledonous plant

Student was finding out the conditions for germination of beans to take place. She set up the experiment as shown in the diagram below. Use it to answer questions, 5 and 6



5. Why did the seed A not germinate?

It lacked oxygen

6. What is the purpose of the wet cotton wool in B?

To provide water and allow oxygen needed for germination.

7. State one reason why air in the soil is important.

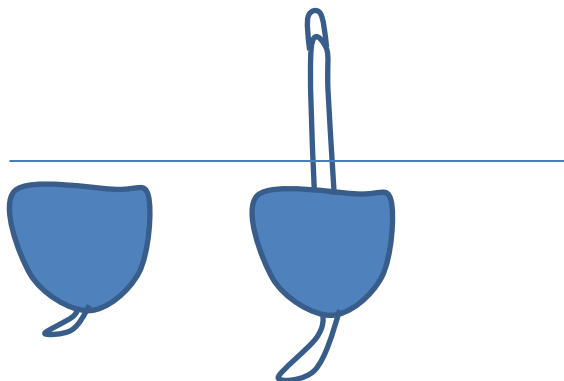
Needed by germinating seed for respiration

Used by plant roots for respiration

Used for respiration by microorganisms

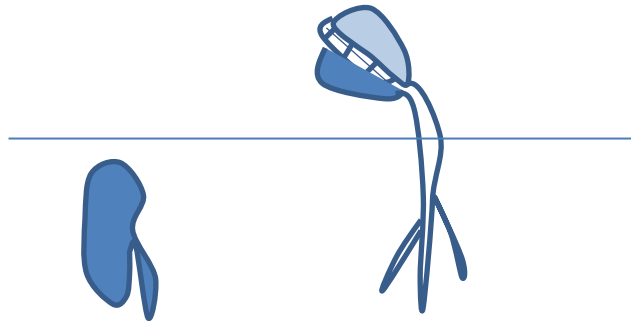
8. State the main reason for planting seeds in the soil.
Because soil contain water, air, nutrients for the plants.
9. (a) Give one process in plants in which:
- (i) Oxygen is used,
Respiration
Germination
 - (ii) Carbon dioxide is used.
Photosynthesis
- (b) What useful by-product in (a)(ii) above?
Starch, oxygen
- (c) Give any other natural process that uses oxygen
Respiration,
Rusting
Combustion
10. In the space provided below, draw a diagram to show the germination of:

- (a) a monocotyledonous seed.



Note: most monocotyledonous plants undergo hypogeal germination

(b) a dicotyledonous seed



Most dicotyledonous plant
undergo epigeal
germination

(c) What is the importance of a cotyledon in a seed?

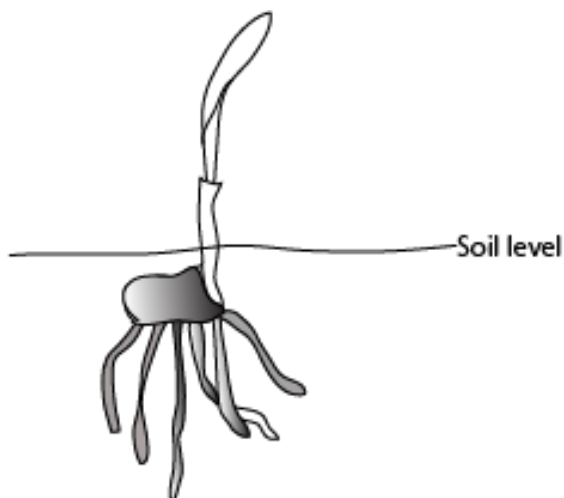
Store food to be used during germination

(d) In which way is a seed important to a plant?

It grows into another plants

11. The diagram below shows a germinating seed

Use it to answer the questions that follow



(a) State the type of germination shown above.

Hypogeal germination

(b) **Where** does the seed above store the food used during germination?

Endosperm

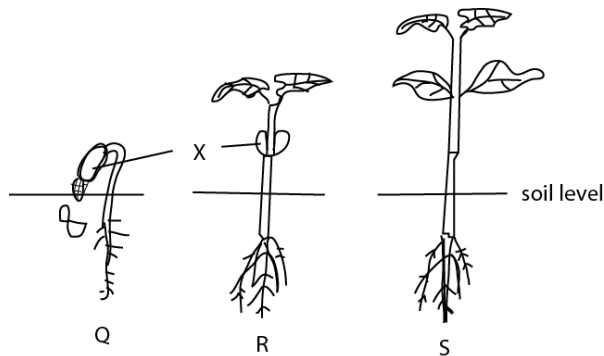
- (c) Give an example of a crop with the same types of germination.

Maize, millet, sorghum

- (d) (d) Apart from moisture, state any one other condition necessary for seed germination.

Oxygen, warmth

12. The diagram below Q, R and S show the stages of germination of a seed. Study and use it to answer the questions that follow.



- (a) Name the part marked X:
cotyledon
- (b) How the part marked X useful to the seedling at stage R.
Provides food to the plant
- (c) Why the part marked X useless at stage S?
The food in the cotyledon is used up
- (d) What type of germination is shown by the seed?

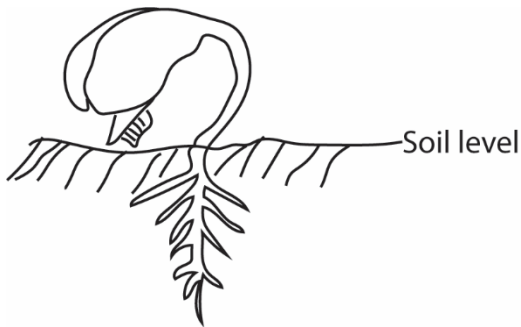
Epigeal germination

13. (a) Name the group of crops that are harvested year after.

Perennial crops

- (b) Give any two example of crops that belong to the group you have named in (a) above
- (i) **coffee, tea, mangoes, orange, Banana, sisal,**
- (ii) **coconut, pyrethrum, oil nut, paws**
- (c) State one way in which the above crops are harvested.
- (i) **By hand picking e.g. cotton**
- (ii) **Plucking e.g. maize**
- (iii) **Uprooting e.g. beans**
- (iv) **Cutting e.g. sugar cane**
- (v) **Digging e.g. cassava and Irish potatoes**

The diagram below shows a germinating seed. Study and use it to answer questions 15 and 16



14. What type of germination is shown in the diagram above?

Epigeal germination

15. To which group of flowering plants does the germinating seed belong

Dicotyledonous plants

16. (a) Give any two qualities of seeds that can germinate

Physical not damaged

Healthy/viable

(b) State any two farm practices which help in controlling insect pests in a garden

- **crop rotation**
- **scaring pests with scare crow**
- **trapping**

Seed Dormancy

Is the state in which a seed that is viable will not germinate even if the conditions that are necessary for germination are provided?

Dormant seed are usually dry, their metabolic activity is much reduced and they respire anaerobically.

Importance of seed dormancy

- Seed are able to withstand adverse external conditions such as very cold or very dry weather.
- It allows seed and fruits to disperse

Causes of seed dormancy

The main factors that causes the seed dormancy are:

1. **Seed coats impermeable to water:.**
2. **Seed coat impermeable to oxygen:**
3. **Immaturity of the embryo:**

Revision exercise 9

6. (a) Apart from the lack of conditions necessary for germination, give any two other factors that can make a seed fail to germinate.
 - (i) **immaturity of embryo**
 - (ii) **hard impervious cuticle**
 - (iii) **loss of viability**

Fruits and seed dispersal

This is the scattering of seed and fruits from the parent.

Why dispersal?

- (i) To avoid overcrowding
- (ii) To increase the distribution of plants so that they can colonise better places
- (iii) To preserve species by spreading them and preventing them from extermination by natural hazard e.g. fire.

Dispersal agents

1. Wind

Fruits and seed dispersal by wind have the following features.

- They are small and light
- They have, flattened wing like structures e.g. Tecoma or a parachute of fine hair e.g. Tridax to increase their surface area and air resistance.

2. Animal

Fruits and seed dispersal by animal have the following features

- May have sticky hairs e.g. Desmodium
- May have hooks to stick on fur e.g. black jack
- Some fruits have attractive colour, scent and sweet mesocarp when ripe, e.g.
- May have small indigestible seed which are deposited in faeces, e.g. passion fruit.
- Some plants have seed enclosed in woody endosperm that cannot be chewed, e.g. mango

3. Water

Fruits dispersed by water

- Have floating devices, e.g. the seeds of the water lily have aril, small float, that have in air. The seed can float on water until the aril decays, then it sinks to the bottom and germinate

4. Explosive mechanism of dispersal

e.g. balsam, bean

Revision exercise 10

1. Name one type of seed dispersal.

Animal dispersal

Water dispersal

Wind dispersal

Self-mechanism

2. Apart from helping in pollination, give one way in which wind is useful to plants

Helps in seed and fruit dispersal

3. State any one characteristic of seeds dispersed by wind

They are light

May have wing extensions

Conifers

These are seed bearing non flowering plant. They bear naked seeds in cone instead of flowers.



Conifer trees

Cone

Fern, liverwort, moss

They are green non flowering plants.

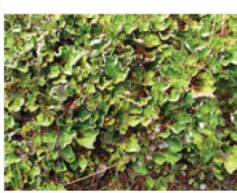
They make their food by photosynthesis

They reproduce by production of spores

Spore are tiny structures that can grow into a new plant under favorable conditions



Fern



Liverwort



Moss

Fern, liverwort, moss are producers in a food chain

Mushrooms and moulds

They are classified as kingdom Fungi

They lack chlorophyll

They are saprophytes because they feed on dead decomposing organic matter

They reproduce by production of spores. Mushroom produce spores in the gills while moulds produce spores in the

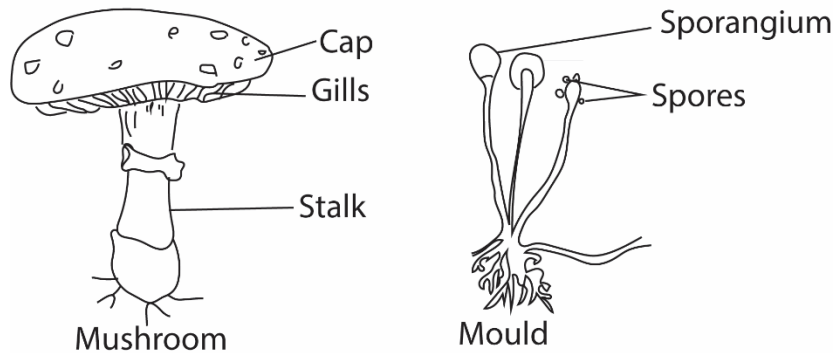


Mushrom



Mould

Mushroom and mould



Mushroom and moulds are decomposers in a food chain. They decompose and recycle nutrients in the environment.

Uses of mushrooms

Food

Medicine

Revision exercise 11

1. Give one reason you think mushrooms are similar to Moulds.
Both lack chlorophyll
They both do not manufacture their own food.
They both reproduce by spore formation
2. Give one example of a green plant which reproduces by means of spores.
Fern, mosses, liverwort
3. Why is a mushroom not a true plant?

Does not have chlorophyll

Does not manufacture its food



4. Give one difference between algae and fungi.
 - Algae has chlorophyll while fungi do not
 - Algae manufacture their food whereas fungi do not.
5. Mention any **one** similarity between fungi and animals in the way they feed.

Both do not make own food or feed on already manufactured food

6. Name the fungi which normally grow on the left over foods.

Mould

7. (a) To which group of plants do ferns and liverwort belong?

Spore forming non flowering plants

- (b) How is the reproduction in ferns similar to that of liverworts?

Both produce spores

- (c) Give two other plants that reproduce in the same way as ferns and liverworts

Mushroom, Mould

8. Apart from causing diseases, give one other way in which fungi are harmful to people

Some are poisonous

9. Mention any **one** similarity between fungi and animals in the way they feed.

Both do not make own food or feed on already manufactured food

10. Apart from causing diseases, give one other way in which fungi are harmful to people?

- (i) Provide food nutrients
- (ii) Provide medicine
- (iii) Decompose sewage into non-poisonous substances
- (iv) Used for baking
- (v) Used for brewing

Question 11 and 12 are on a mushroom.

11. Of what importance is it to man

Provide medicine

Provide food nutrients

12. Why does it not obtain food in the same way as a green plant do?

It lacks chlorophyll while plants have chlorophyll for photosynthesis

13. Why mushrooms do not carry out photosynthesis?

They lack chlorophyll

14. Use the list of plants given below to answer the questions that follow

Beans, mosses, conifers, mushrooms

- (a) Which two plants would you group together as members of one family

Beans and conifer are seed bearing plant
Mosses and conifer are non-flowering plants

- (b) Give a reason for your answer in (a) above
- (c) Which one of the above plants reproduces by means of flowers?

Bean

- (d) In what kind of environment would you find mosses?

Wet and damp environment

15. (a) Give any one example of fungi.

Mould, Mushroom, Yeast, Toadstool

- (b) How do fungi reproduce?

By means of spores

- (c) Give one way in which fungi are different from ferns

Fungi do not make their own food whereas ferns do

Fungi do not contain chlorophyll whereas ferns do

16. (a) Give any one example of fungi.

Mould, Mushroom Yeast, Toadstool

- (b) How do fungi reproduce?

By means of spores

- (c) Give one way in which fungi are different from ferns

Fungi do not make their own food whereas ferns do

Fungi do not contain chlorophyll whereas ferns do

17. Apart from mosses, give one other example of a spore bearing non-flowering plant

Fern



Moss



Type of crops

1. Food crops include
 - Cereals - wheat and maize,
 - Legumes - peas and beans,
 - Vegetables - cabbages and kales,
 - Fruits - oranges and mangoes and
 - Tuber crops - yams and cassavas.
2. Cash crops include: coffee, cocoa, sisal, cotton

Revision exercise 12

18. Use the list of crops given below to answer the questions that follow

Conifer, coffee, cassava, ground nuts

- (a) Which crop on the list is propagated by use of stem cutting?

Cassava

- (b) Identify any one crop on the list which is

- (i) An annual crop: **ground nuts**
- (ii) A perennial crop: **conifer, coffee**

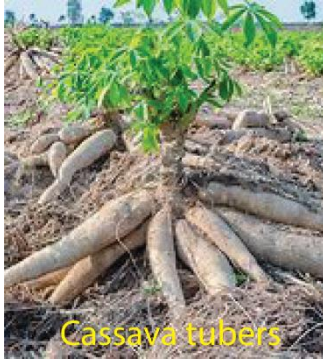
- (c) Give any one way in which a conifer is different from all the other crops on the list

Does not bear flower

Bears naked seed

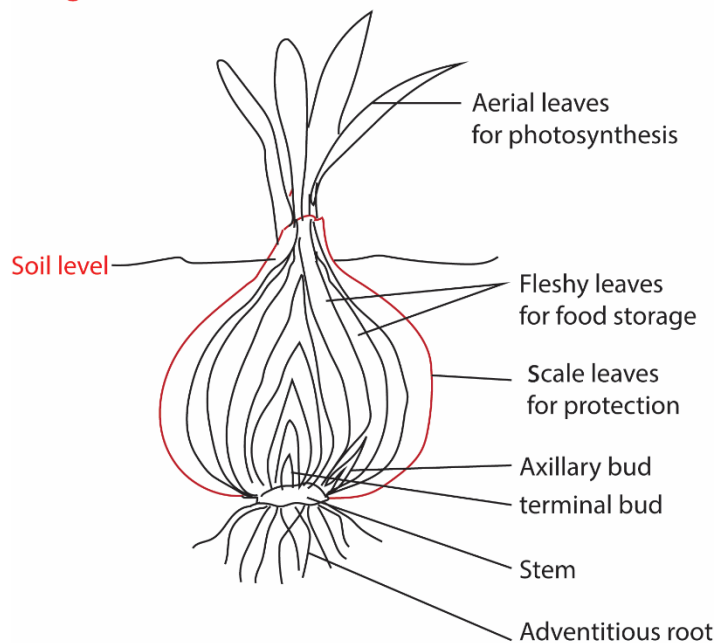
Plant storage parts include

Root tubers - these include carrots, cassava and sweet potatoes. They store their food in the swollen root.



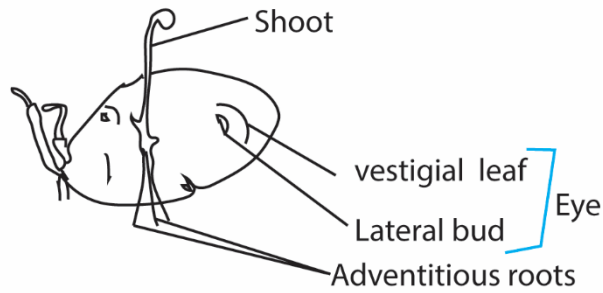
Bulbs - examples of bulbs are the onion which stores its food underground. The bulb contains the roots, flat stem and thick fleshy leaves.

Longitudinal section of onion bulb

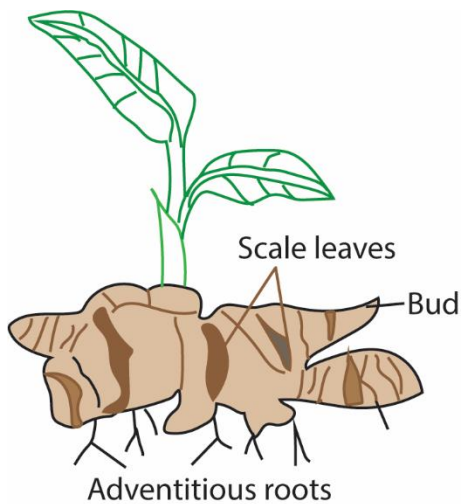


Stem tubers - an example is the irish potato. It is the swollen part of the stem that is found under the ground and it contains several buds (eyes).

Sprouting Irish potatoes



Rhizomes - an example is the ginger. It is an underground stem that grows horizontally.



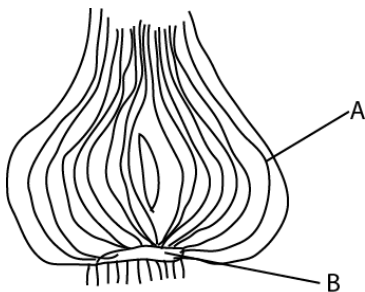
Revision question 14

1. How is the method of propagation of a sweet potato different from that of an Irish potato?

Sweet potatoes are propagated by stem cutting whereas Irish potatoes by stem tuber

2. The diagram below shows as onions

Use it to answer the questions that follow



(a) Name the part labeled **B**

Stem

(b) What is the function of the part labelled **A**?

Stores food

Protect the bud

(c) What types of root system does this plant have?

Adventitious root (adventitious root are those that develop from stem)

(d) How is this plant propagated?

By planting the bulb

By seeds

3. Beside use of seeds, what other part of a flowering plant can used for propagation?

Stem cutting such as sweet

Potatoes

Stem cutting

such as cassava

stem tuber

e.g. irish

leaves

e.g. bryophylum



4. (a) How can you tell by looking at the roots, that a plant is a legume?

Root of legumes have root nodules

(b) Give any two examples of crops which are legumes.

(i) beans

(ii) soya bean

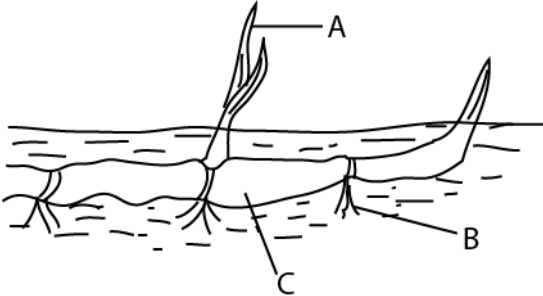
(iii) Ground nuts

(iv) cowpeas

(c) How do legumes increase the fertility of the soil?

Root nodules contain bacteria that fix nitrogen into the soil

5. The diagram below shows an underground stem.



(a) State the type of underground stem shown in the diagram

Rhizome

(b) Suggest the functions of the parts labelled A, B and C

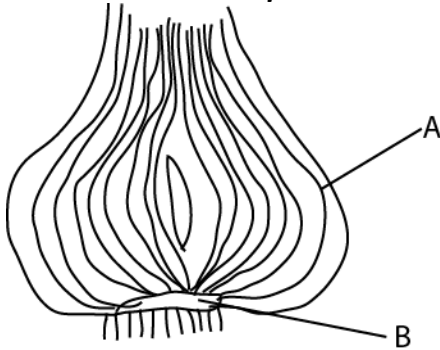
A. leaves manufacture food for the plant

B. adventitious root absorb water from the soil

roots anchor the stem into the soils that they are not uprooted easily.

6. The diagram below shows as onions

Use it to answer the questions that follow



(e) Name the part labelled B

Stem

(b) What is the function of the part labelled A?

Stores food

Protect the bud

(c) What types of root system does this plant have?

Adventitious root (adventitious root are those that develop from stem)

(d) How is this plant propagated?

By planting the bulb

By seeds

7. (a) Name any two part of a plant which provide human beings with food.

- (i) **Fruits e.g. mangoes**
- (ii) **roots e.g. cassava, carrot**
- (iii) **Stem e.g. sugar cane**
- (iv) **Leaves e.g. cabbage**

(b) Give any two ways in which plants benefits from animals.

- (i) **get carbon dioxide**
- (ii) **nitrogen from excreta**
- (iii) **When the animal die add to plant manure**

(c) Give any two reasons why a mushroom is not a plant.

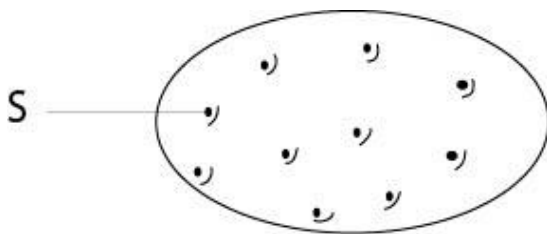
- (i) **they lack chlorophyll**
- (ii) **the do not make their food.**

(b) Give any two plants that reproduce in the same way like a mushroom.

- (i) ferns
- (ii) mosses

8. The diagram below is of an Irish potato tuber

Use it to answer the question that follows.

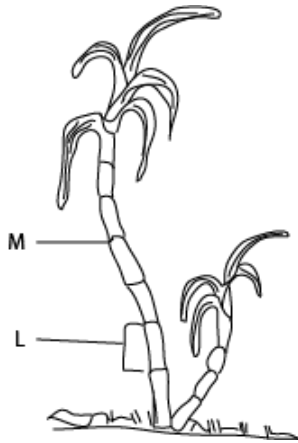


What is the use of the part marked S?

It develops into a shoot system

9. The diagram below is of a sugarcane plant.

Use it to answer questions that follow.



(a) Name the part marked with letters M and L

(i) M: **node**

(ii) L: **internode**

(b) What food value is got eating sugar cane?

carbohydrates

(c) How is such a sugarcane plant propagated?

By stem cutting

10. A part from absorption of water and mineral salts one other use of roots to a cassava plants.

Storage of food and Anchorage

11. Give any one example of a root tuber

Cassava



Sweet potato



carrot



12. Why does a farmer cut off leaves of a banana sucker before planting it?

To reduce the rate of transpiration

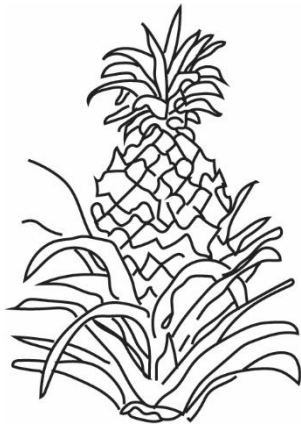


13. How is the propagation of Irish potatoes different from that of sweet potatoes?

Irish pot



The diagram below shows a fruit crop. Use it to answer the questions 171 and 172



14. How is the crop propagated?

By suckers

15. Give one other which crop propagated in the same way as the crop shown above

Banana

Thank you

Dr. Bbosa Science