Primary 6 Integrated Science

Term 2

Theme: The World of Living Things

Topic 1/4 – Classification of Plants

Learning Outcomes

The learner;

- acquires scientific skills and knowledge of classifying plants.
- develops an understanding of plant propagation.
- appreciates the economic values of plants

Plants

Plants are living things.

Characteristics of plants as living things

(i) **They grow** – Plants increase in size from seedlings to mature plants.

(ii) **They reproduce** – Plants make new plants through seeds or spores.

(iii) **They respond to stimuli** – For example, plants bend toward light.

(iv) **They feed** – Plants make their own food through photosynthesis.

(v) **They respire** – Plants burn food materials to obtain energy in presence of oxygen.

(vi) **They excrete** – Plants remove waste products like oxygen during photosynthesis and carbon dioxide during respiration

Exercise 1

State any two features that identify plants as living things.

Uses of plants

- Food
- Shelter
- Building material
- Medicine
- Wind breakers
- Decoration and beauty

Exercise 2

Mention any two uses of plant on your school compound.

Classification of Plants

They are grouped into two main classes: **flowering plants** and **non-flowering plants**.

Flowering Plants

These plants produce flowers. ✿

They also produce seeds inside fruits.

Examples of flowering plants




Bean plant	Mango tree	Sunflower	Hibiscus.

Classification of Flowering Plants

Flowering plants can be grouped into **two classes** based on the number of seed leaves (cotyledons):

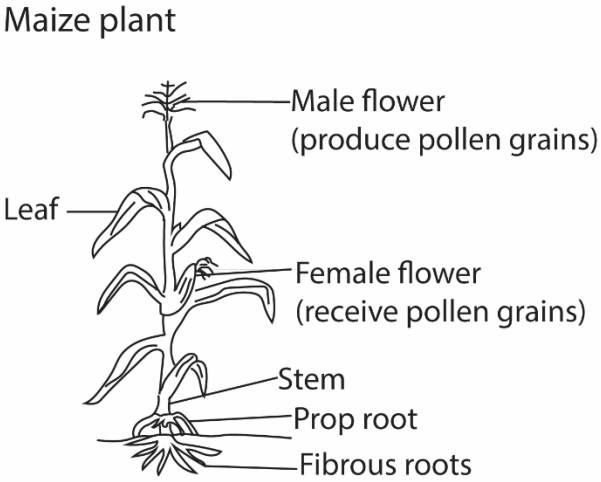
- **Monocotyledons (Monocots)**
- **Dicotyledons (Dicots)**

Monocotyledons (Monocots)

- Have **one seed leaf** (cotyledon).
- Leaves have **parallel veins**.
- Roots are **fibrous**.
- Flowers usually in **multiples of 3**.

Example monocots: maize, rice, sugarcane, onion.

Maize plant



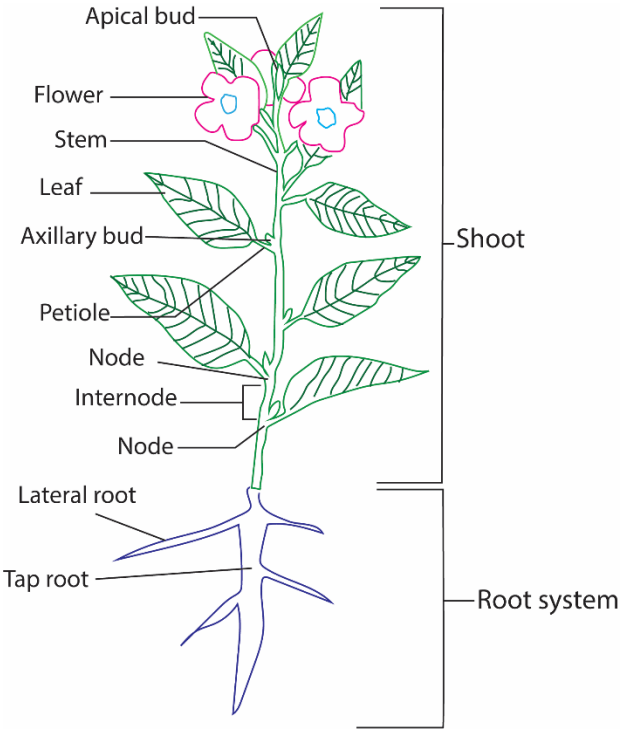
Dicotyledons (Dicots)

- Have **two seed leaves** (cotyledons).
- Leaves have **net-like veins**.
- Roots are **tap roots**.
- Flowers usually in **multiples of 4 or 5**.
- Example: beans, sunflower, mango, hibiscus.

Exercise 3

(a) State two major classes of flowering plants
(b) Give two examples of plants in each class of flowering plants in (a).

Parts of dicotyledonous plant



Differences between monocotyledonous and dicotyledonous plants

Monocotyledonous plant	Dicotyledonous plant
One seed leaf or cotyledon	Two seed leafs
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 tree

Exercise 4

State two differences between monocots and dicots

The roots

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

Functions of the root

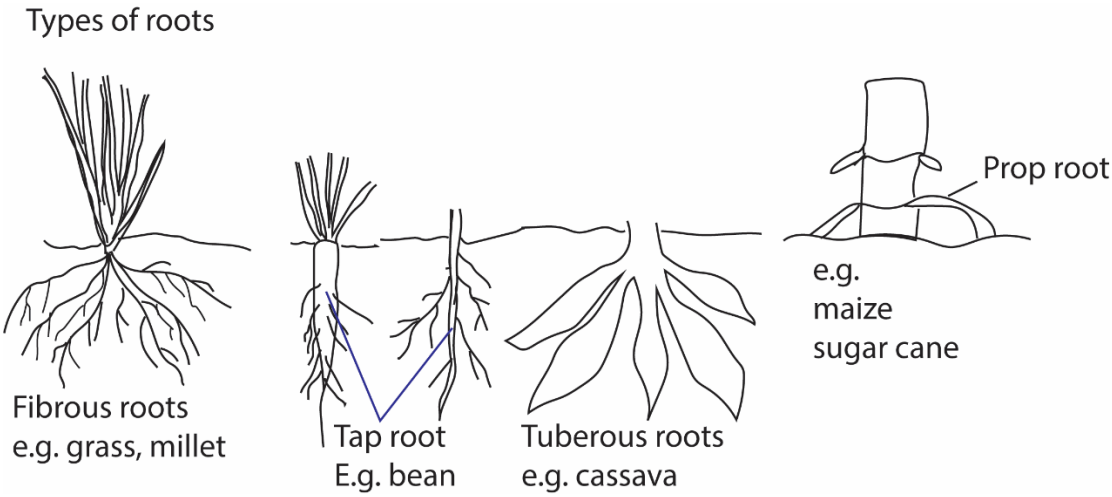
(i) To anchor the plant firmly in the soil,

(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 tike the mangrove. These roots are called breathing roots.

(v) Prop root offer extra support



Exercise 5

(a) Mention two functions of roots.

(b) Differentiate between tap root system and fibrous root system

(c) Give two examples of plants with taproot system.

(d) Name two examples of fibrous root sstem,

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

The stem

The stem performs the following functions:

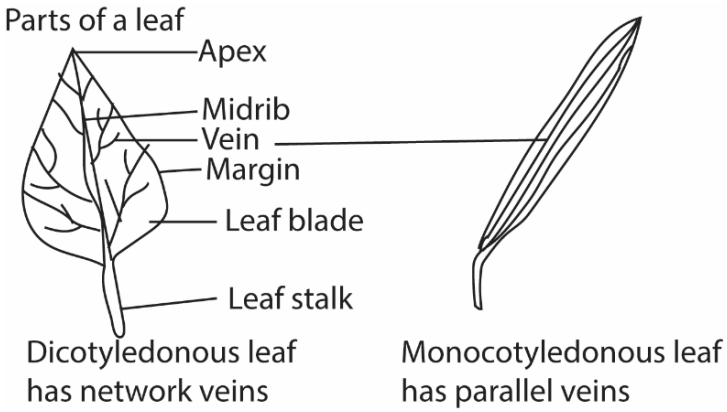
(i) It supports the other parts of the plant (leaves, flowers and fruits).
(ii) It helps in transporting water and dissolved nutrients from the roots to the other parts of the plant.
(iii) Transports food that is made in the leaves to the roots for storage.
(iv) Stores food in plants like sugarcane.

Exercise 6

Mention two functions of stems

The leaves

Leaves are the main photosynthetic organs of the plant



Exercise 7

Draw and name main parts of a leaf,

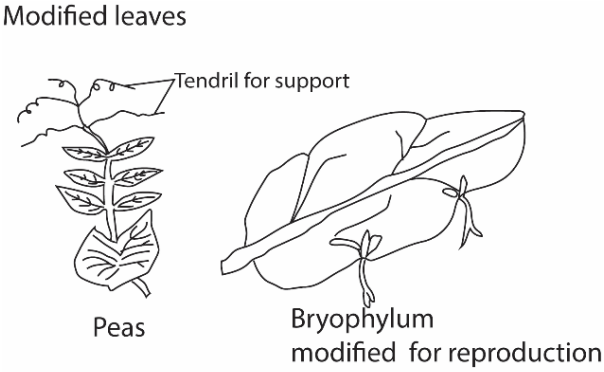
Functions of the leaves

1. Carry out photosynthesis with subsequent production of organic materials
2. Carry out gaseous exchange through the stomata
3. Transpiration takes place mainly through the leaves resulting in the cooling of plant and absorption of mineral salts and water
4. Some leaves such as those of peas are modified by tendrils for support.
5. Some leaves such as for bryophyllum are modified for vegetative reproduction
6. Some leaves are colored to attract pollinators.

Exercise 8

State any two functions of leaves.

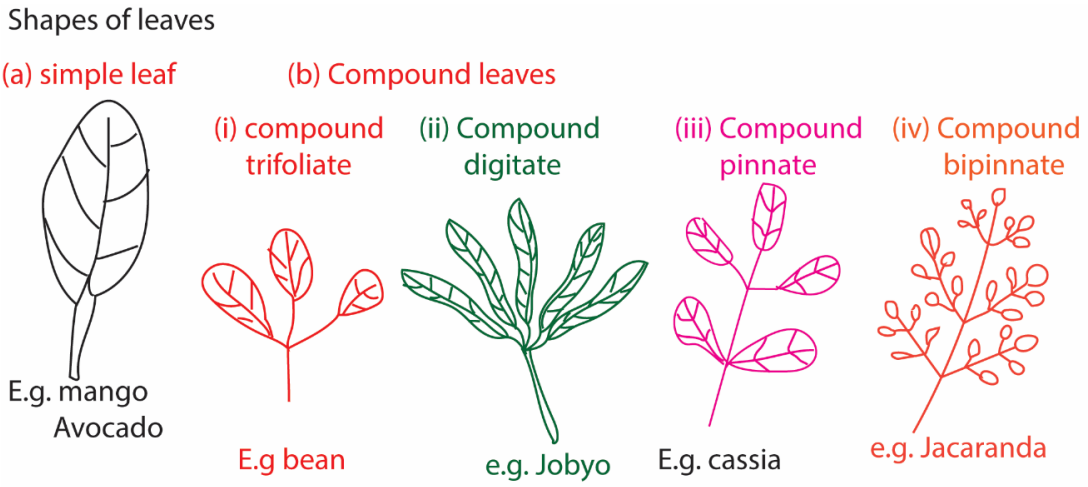
Modified leaves



Simple and compound leaves

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

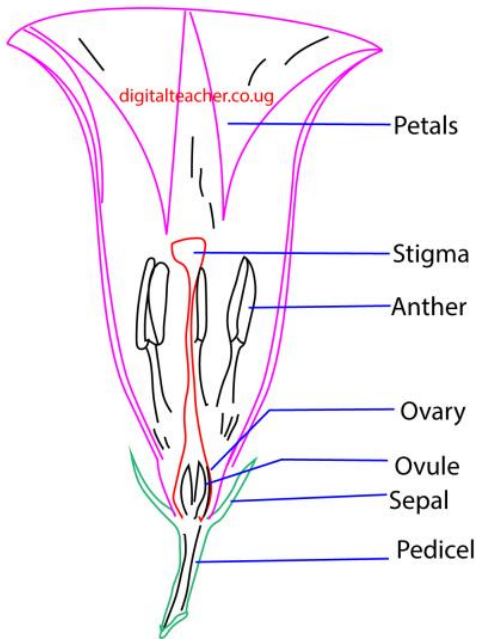
Shapes of leaves



The flower

This is the reproductive part of the plant.

Cross section of potato flower



Parts of the flower are:

(i) **Petal a**re colored and have scent that to attract insect for pollination. Petals are collectively called **corolla**

(ii) **Sepals** are often small and green. Sepals protect the young flower when in bud. Sepals are collectively called calyx.

(iii) **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.

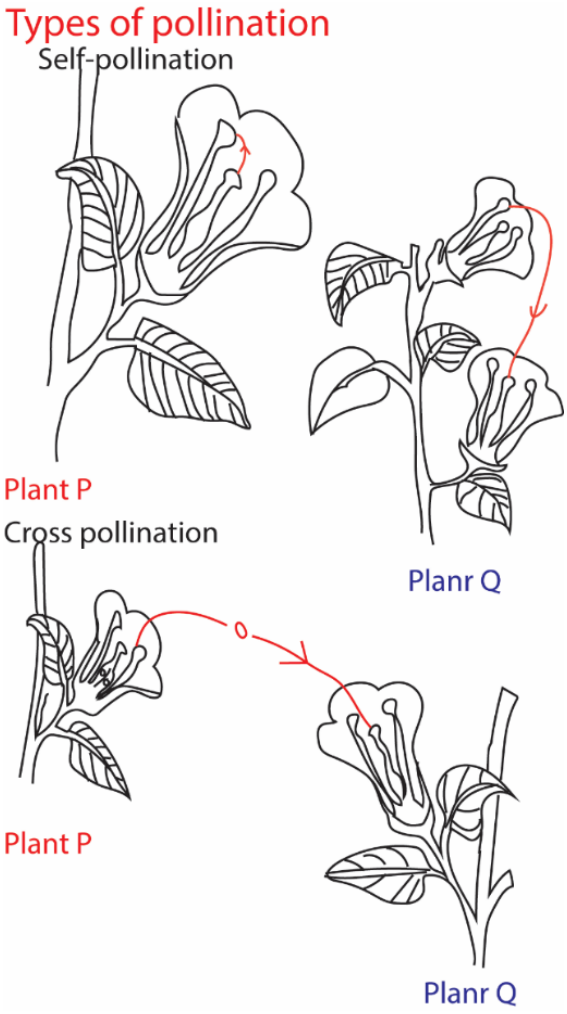
(iv) 4. The **pistil** is the female part of the flower. It is made of the stigma, the **style** and the **ovary.** The **ovules** (the female sex cells) are produced and held inside the ovary. The style is the tube that connects the stigma to the ovary. The stigma receives the pollen.

(v) The **nectary** is the part of the flower that produces nectar. The nectary is located near the ovary.

Exercise 9

Draw and label the main parts of a flower.

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.

Exercise 10

(a) What is pollination
(b) Distinguish between self and cross pollination.
(c) Give one characteristics of insect pollinated flowers

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 scent
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

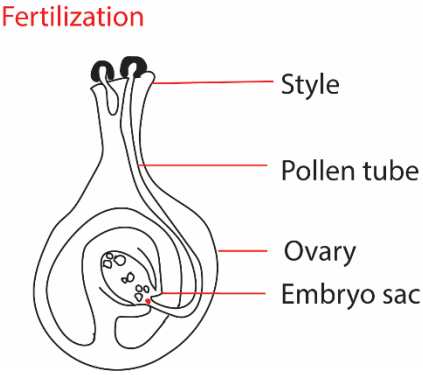
Exercise 11

Give any two differences between insect pollinated and wind pollinated flowers

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

1. The fertilized ovule becomes a **seed** containing an embryo.
2. The ovule wall becomes the **testa** or seed coat.
3. The ovary grows to become a **fruit.**
4. The ovary wall becomes the **pericarp** or fruit wall.
5. The petals, sepal, anthers withers and dies.

Exercise 12

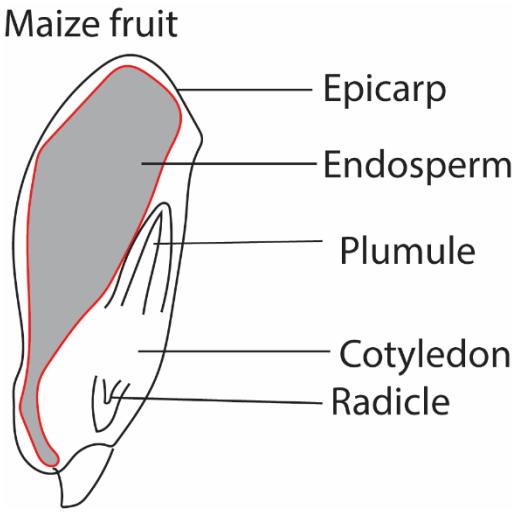
(a) What is fertilization?

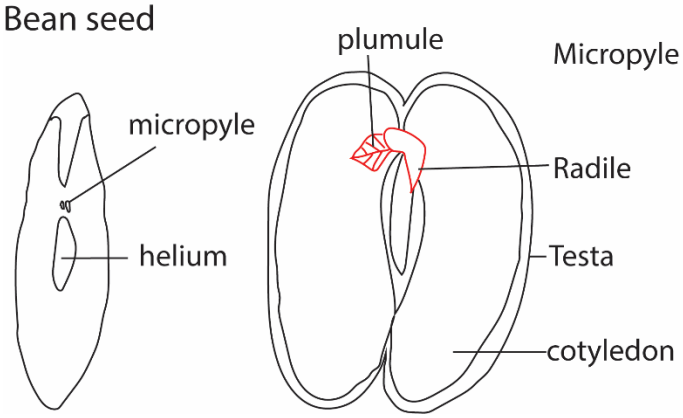
(b) Mention any two changes in a flower after fertilization.

The seed

The seed is the fertilized ovule containing the embryo. The **embryo** is made up of a **plumule** (grows to be the shoot) and a **radicle** (grows to be the root). The embryo is usually covered by one or two cotyledons, which are stored food for the embryo (the tiny plant in the seed). On the outside of the seed there is a scar called **hilum,** where the seed was attached to the fruit wall, and a small hole called the **micropyle.**

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.

Differences between seeds and fruits

Seed

- Contains the embryo and its food store
- Can germinate under favorable conditions
- Has a scar (hilum) where it was attached to the fruit wall
- Has a micropyle (a tiny hole for taking in water during germination)

Fruit

- Contains seeds in it

- The seeds germinate after being released from the fruit
- Has two scars: one where it was attached to the flower stalk and the other where it was attached to the style

- Does not have a micropyle.

Exercise 13

(a) Distinguish between a fruit and a seed.

Fruit and Seed Dispersal

Plants produce fruits and seeds. For new plants to grow well, seeds must be spread away from the parent plant. This process is called **seed dispersal**.

Mechanisms of Dispersal

- Seeds are carried from one place to another by different methods.
- This prevents overcrowding and competition for food, water, and sunlight.

Agents of Dispersal

1. **Wind** – Light seeds with wings or hairs are blown away.

   Example


Dandelion


Cotton


Winged seeds


Winged fruits

2. **Water** – Seeds that can float are carried by rivers or lakes.

Example: coconut.

Coconut float and is carried away

3. **Animals**– Some seeds/fruit have hooks or sticky hairs to stick to animal fur or have bright colors and sent to attract animal for food and later dropped.

   Example: mango, guava, burr seeds.

Hooked fruits	adhesive hairy fruit	attractive colors

4. **Explosive mechanism** – Some fruits burst open and scatter seeds.

   Example: bean pods, balsam.

Fruits break to expose their seed

Exercise 14

(a) What a fruit and seed dispersal?

(b) Identify any 3 adaptations of wind dispersed seeds or fruit.

Importance of Seed Dispersal

- Prevents overcrowding of plants.
- Reduces competition for nutrients, water, and sunlight.
- Helps plants spread to new areas.
- Ensures survival of plant species.

Class Activity

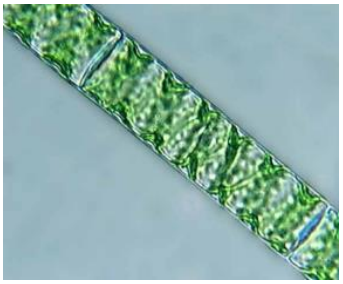
- Pupils collect different seeds from around the school.
- Identify how each seed is dispersed (wind, water, animals, or explosive).
- Draw and label at least two examples.

Non-flowering Plants

- These plants do not produce flowers.
- They reproduce using spores instead of seeds.

Examples of nonflowering plants






Ferns	Mosses	Algae	Pine trees.

1. **Ferns**
   - Have large leaves called **fronds**.
   - Reproduce by **spores** found under their leaves.
   - Grow in damp, shady places.
2. **Mosses**
   - Very small plants that form soft green carpets.
   - Do not have true roots, stems, or leaves.
   - Reproduce by spores and need moist areas.
3. **Algae**
   - Simple plants that live mostly in water.
   - Can be green, brown, or red.
   - Some are tiny, while others like seaweed are large.
4. **Lichens**
   - A mixture of algae and fungi living together.
   - Grow on rocks, tree bark, and walls.
   - Can survive in harsh conditions like deserts.
5. **Pine Trees**
   - Tall evergreen trees with needle-like leaves.
   - Do not produce flowers but have **cones** that carry seeds.
   - Stay green throughout the year.

Activity for Pupils

- Go outside and observe plants around the school.
- Identify at least one fern, moss, or lichen.
- Draw and label them in your exercise books.

Key Differences between flowering and nonflowering plants

Feature	Flowering Plants	Non-flowering Plants
Reproduction	By seeds in fruits	By spores or cones
Presence of flowers	Yes	No
Examples	Beans, mango, maize	Ferns, moss, pine

Exercise 15

(a) Name any two examples of nonflowering plants
(b) Name any two ways nonflowering plants can reproduce

Plant Propagation

Plant propagation means **making new plants from existing ones**. Farmers and gardeners use different methods to grow crops, fruits, and flowers. Some methods use seeds, while others use parts of the plant like stems, leaves, or roots.

Methods of propagation

1. **Seeds**

   Plants grow from seeds when they germinate.

   Examples: maize, beans and ground nuts

2. **Suckers**

   New shoots grow from the base of the parent plant.

Examples

Banana suckers

Pineapple suckers

3. **Cuttings**

A piece of stem or branch is cut and planted to grow roots.

Examples

Cassava cuttings

Sugar cane cuttings

4. **Leaves**

Some plants can grow new plants from their leaves.

Examples

Bryophyllum (leaf of life)

5. **Budding**

A bud from one plant is joined to another plant to grow together.

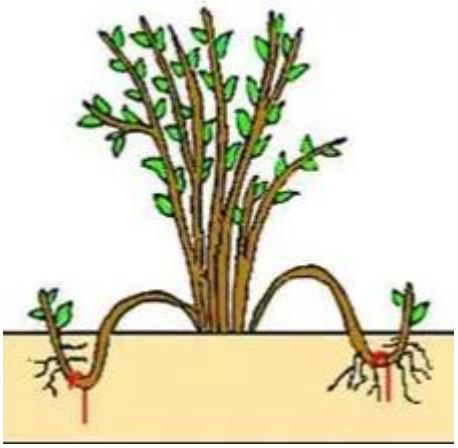
Examples: Citrus fruits, roses

6. **Layering**

Procedures

(i) **Choose a healthy branch** of the plant.
(ii) **Bend the branch down** so that part of it touches the soil.
(iii) **Cover the middle part with soil** but leave the tip of the branch above the ground.

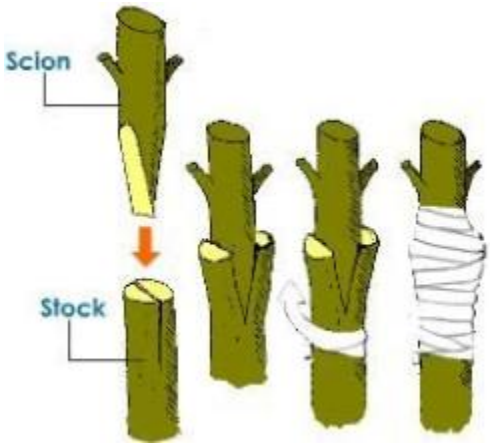
(iv) **Wait for roots to grow** from the buried part.
(v) **Cut the new plant** from the parent once roots are strong, then plant it separately.



Example of plants propagated by layering: Bougainvillea, Strawberry, Jasmine, Guava

7. Grafting

A stem of one plant is joined to another plant so they grow as one.



Examples: oranges, Mango, avocado

8. Bulbs

Underground storage organs that grow into new plants.

Examples: onion, garlic

Activity for Pupils

1. **Class Discussion:** Ask pupils to name plants they know that grow by each method.
2. **Practical Work:** Bring samples (onion bulb, cassava cutting, maize seed, banana sucker) and let pupils identify the method.
3. **Group Work:** Pupils draw diagrams of each method in their exercise books.
4. **Quiz Question:** Which method is used to grow bananas? (Answer: Suckers)

Economic Values of Plants to People

1. Food

- Plants give us food such as maize, beans, rice, bananas, fruits, and vegetables.
- These foods provide energy and keep us healthy.

2. Medicine

- Many plants are used to make traditional and modern medicines.
- Example: Aloe vera for skin, neem leaves for treating fever.

3. Building Materials

- Trees provide timber for building houses, furniture, and tools.
- Bamboo and reeds are also used for construction.

4. Clothing

- Cotton plants give us fibers for making clothes.
- Other plants like flax are used to make linen.

5. Fuel

- Firewood and charcoal come from trees and are used for cooking.
- Some plants produce oil that can be used as fuel.

6. Income and Employment

- Farmers sell crops like coffee, tea, sugarcane, and cotton to earn money.
- Plant industries provide jobs to many people.

7. Environmental Benefits

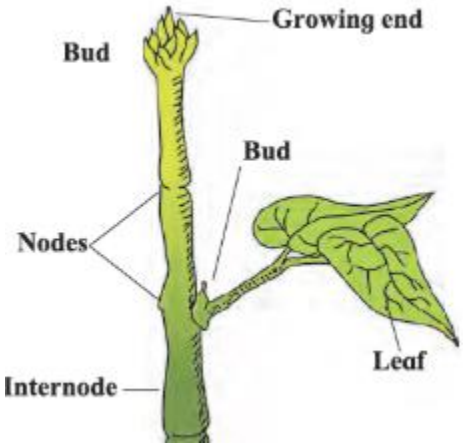
- Plants give us oxygen, reduce carbon dioxide, and help control soil erosion.
- They also provide shade and beauty in our environment.

Activity for Pupils

1. **Class Discussion:** Ask pupils to list plants in their community and explain their uses.
2. **Group Work:** Pupils draw a chart showing different economic values of plants.
3. **Quiz Question:** Which plant is used to make clothes? (Answer: Cotton)

Revision questions

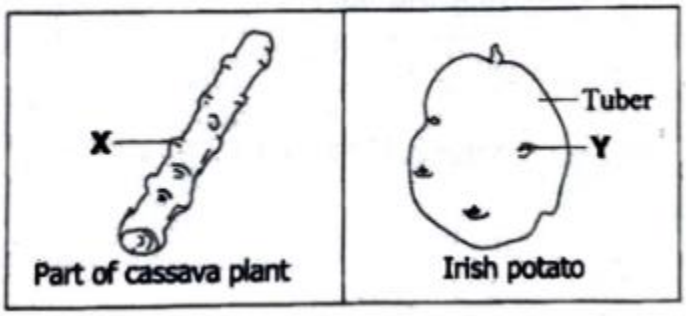
1. Name one function of stigma to a flower.
   It receives pollen grains
2. Give one way moulds are similar to fern
   Both reproduce by spores
3. Name the part of a flowering plant which grows into a side branch.
   Bud



4. Name the flower part that produces male gametes.
   Anthers
5. What is the function of endosperm in maize grain.
   Stores food
6. State one way in which flowers planted in a compound are important.
   (ii) They make the compound look beautiful
   (iii) For study purpose.
7. (a) Apart from animals, mention two other agents of seed dispersal.
   Water, wind, self-explosion

   (b) Stay any two characteristics of seeds dispersed by animals
   - Have hard slippery coat e.g. passion fruit seed
   - Reside in a brightly colored fruit when ripe e.g. mango
   - Reside in a sweet scented fruit e.g. pawpaw.

8. The diagrams below show part of a cassava plant and an Irish potato that are used for propagation. Study and use them to answer the questions that follow



(a) Name the part of the cassava plant marked X.
Bud

(b) State the method of vegetative propagation where the part of cassava plant shown above is used.
Cuttings

(c) In which one way is the function of part X of the cassava plant similar to that of Part Y of the Irish potato?
Both grow into new plants

(d) Give the importance of the tuber in propagation of the Irish potato.
It is the initial source of food to the new plant.

9. (a) Name the method of seed dispersal in;
   (i) Black jack: animal dispersal
   (ii) Coconut: water dispersal

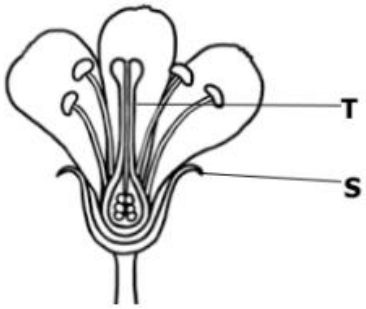
   (b) Give any two way in which seed dispersal is important to plants

   (i) Prevents overcrowding of plants.
   (ii) Reduces competition for nutrients, water, and sunlight.
   (iii) Helps plants spread to new areas.
   (iv) Ensures survival of plant species.

10. How is coconut adapted to water dispersal?

(i) **Fibrous husk (coir):** The outer husk is light and full of fibers, which helps the fruit float easily on water.
(ii) **Hard shell:** The tough shell protects the seed inside from damage while drifting in water.
(iii) **Air spaces:** The husk has air spaces that make the fruit buoyant, allowing it to travel long distances across seas and rivers.
(iv) **Durable seed:** The seed inside can remain alive for a long time, even while floating, until it reaches land where it can germinate.

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



(b) Name the part labelled T.
style
(c) Give the function of the part labelled S to a flower before it opens up
It protects inner parts

12. The diagram below shows a fruit crop. Use it to answers questions that follow

(a) How is the above crop propagated?

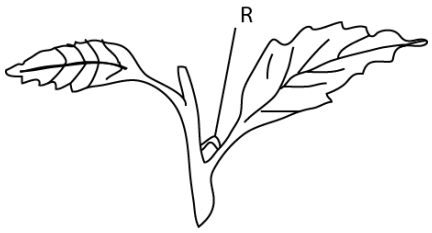
By suckers

(b) Give one other crop which is propagated in the same way as the crop shown above.
Banana

13. Name the male reproductive cells in a plant.
Pollen grain
14. Apart from helping in pollination, give one other way in which wind is useful to plants.
Seed dispersal
15. Which part of a maize grain has a similar function of the cotyledon of a bean seed
Endosperm
16. Give any three characteristics of living things
(i) they grow
(ii) they reproduce
(iii) they respond to the stimulus
(iv) they feed
(v) they respire
(vi) they excrete
(vii) they move
17. Besides carbon dioxide, name one other requirement for photosynthesis to take place in green plants.
Sun light,
Chlorophyll
18. What is the best natural conditions under which cereals like maize can be stored?
Dry conditions
19. Questions that follw are on a mushroom.
(a) Of what importance is it to man
Provide medicine
Provide food nutrients
(b) Why does it not obtain food in the same way as a green plant do?

It lacks chlorophyll while plants have chlorophyll for photosynthesis

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



R. (**auxiliary) bud**

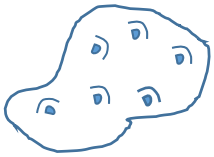
21. Why a maize grain is considered a fruit?

It has two scars

22. How does a cassava plant obtain its food when its leaves have fallen off?

From root tuber

23. The diagram below is of an Irish potato. Use it to answer questions (a) to (d)



(a) What part of the Irish potato is shown in the diagram?

Stem tuber

(b) Give a reason for your answer in (a)

Contain bud

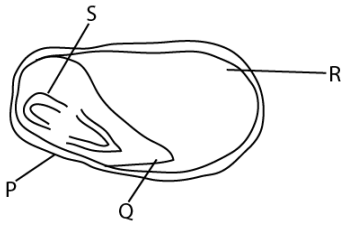
(c) What is the main food value does the Irish potato have?

Carbohydrates

(d) How does the method of propagation of Irish potato different from that of sweet potato?

Irish potato is propagated by stem tuber whereas sweet potatoes by stem cutting

24. 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**

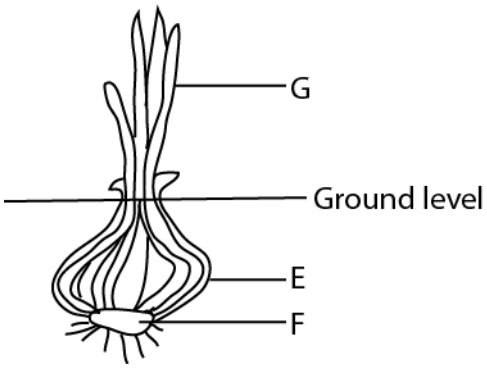
(b) What will S grow into?

Root system

(c) What is the function of Q?

Stores food for the embryo

25. The diagram below is of a cross section of an onion. Use it to answer the questions that follow



(a) Name the parts marked E and F

E: **Scale leaves**

F: **stem**

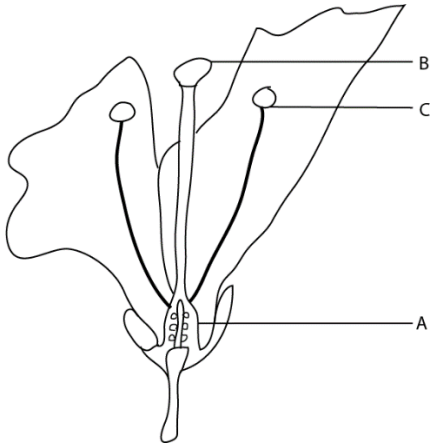
(b) What type of root system does it have?

Adventitious root system

(c) Give the function of the part labelled G?

Carry out photosynthesis

26. 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?

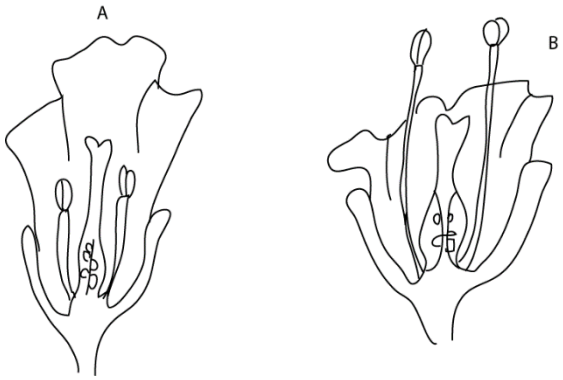
Flowers are used for decoration

Flowers are sources of income

Flowers are given as gifts

For study purpose

27. The diagram below are of flowers A and B. Use them to answer questions that follow:



(a) Which of the two flowers is likely to be insects pollinated?

Flower A

(b) Give one reason for your answer to question (a).

The stigma is higher than the anthers

(c) How is the other flower likely to be pollinated?

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

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

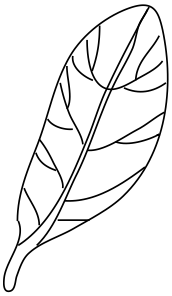
In the seeds

29. State the main reason for planting seeds in the soil.

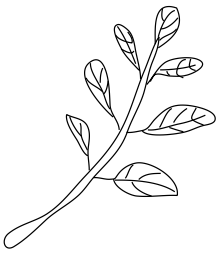
Because soil contain water, air, nutrients for the plants.

30. (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

31. 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

32. Mrs. Bbosa has anemia, which food from the list would you advise her to eat?

Green dodo and beans

33. Give reason for your answer in question 32.

They are both source of iron for formation of hemoglobin.

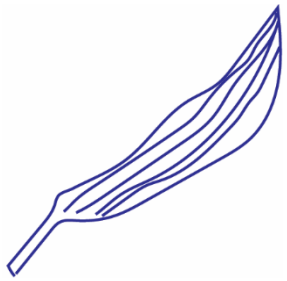
34. Which food from the list would you recommend for Bbosa's child suffering from Kwashiorkor to eat?

beans

35. Give a reason for your answer in question 34.

Source of proteins

36. In the space below, draw a monocotyledonous plant.



37. (a) How does a banana plant multiply?

By suckers

(b) what insect pest attacks banana

Banana weevil

(c) In which part of the plant would you find this pest?

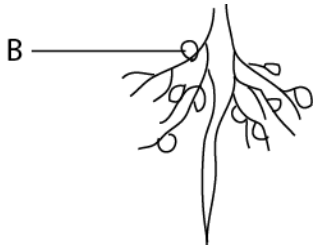
Stem

(d) State the method you would use to control the insect pest.

Use insecticide to kill the pest.

By destroying infected plant

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



(a) Name the part labelled 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**

39. Give one difference between algae and fungi

Algae **has** chlorophyll while fungi do not

Algae **manufacture** their food whereas fungi do not.

40. How is a vector different from a pest?

Vectors spread diseases while pests destroy crops

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

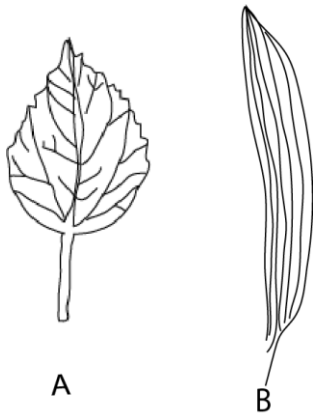
They provide decoration

They provide food

Provide oxygen

Provide medicine

42. The diagram below shows different leaves, A and B. Use them to answer the question that follow:



(a) Which of the following leaves is from monocotyledonous plant?
Leaf B

(b) Apart from the leaf structure, give one other difference between monocotyledonous plant and dicotyledonous plant.
Monocots have fibrous roots while dicots have net veined leaves
Monocots have floral parts in 3s while dicots have floral parts in 4s of 5s

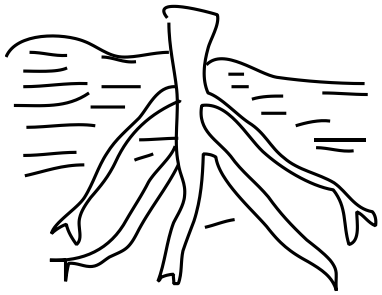
43. Give the main use of leaves to the plant.
They carry out photosynthesis
They carry out gaseous exchange

44. (a) Name three activities performed when preparing a school garden
Clearing bush
Digging
Sowing
Pruning
Spraying
Or watering

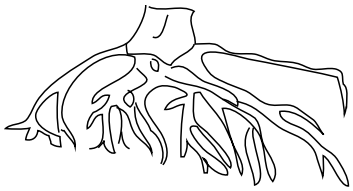
(b) why is a school garden fenced
The prevent pests like cow, goats
To prevent thieves.

45. (a) in the space below, draw an example of:

(i) A tap root system



(ii) A fibrous root system



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

Uses of the roots to plants are: absorption of water and mineral salts, anchorage of the plant, storage of food such as cassava roots

Uses of roots to man: food, medicine

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

Pollinate the plants

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

It grows

It reproduces

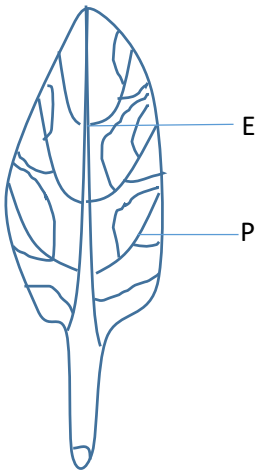
Feeds

Respires

Excretes

Responds to stimuli

48. Use the diagram of a leaf below to answer questions that follow



(a) What is part marked P?

Vein

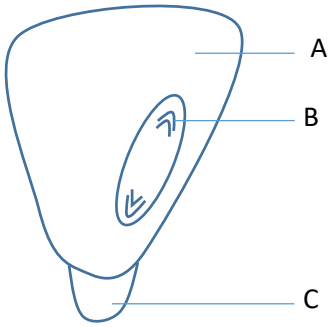
(b) Give one function of part E.

Provides support to the leaf

Transports water and mineral salts to the leaf

Transports manufactured food from the leaf

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



(a) How the part is 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

50. Give one main difference between plants and animals.

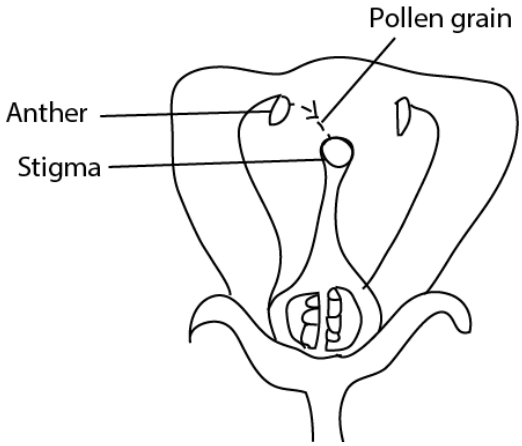
Plants manufacture their food whereas animals do not.

Plants have chlorophyll, animals do not have chlorophyll

51. 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

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



(a) Give two characteristics of insect pollinated flowers.

(i) brightly colored petals
(ii) they have strong scent
(iii) they have nectar
(iv) sticky stigma

(b) Why is a month able to pollinate plants at night?

They detect strong scent from flowers

(c) 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.

53. 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

54. Give one way in which the sun is important to plants.

Provide sunlight energy for photosynthesis

55. (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

56. (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

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

Flowers are sexual reproductive parts of the plant

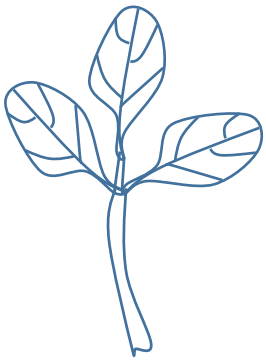
58. What is the importance of bees to plant?

Bees pollinate flowers

59. What is the disadvantage of having anthills near gardens?

Contain ants that destroy crops

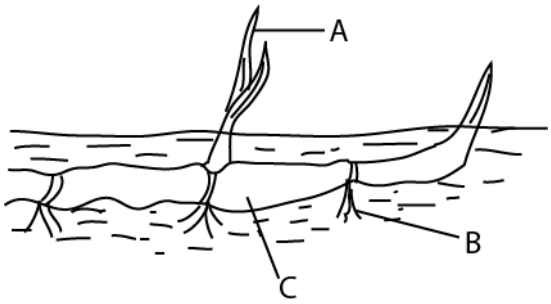
60. In the space provide below, draw a compound leaf.



61. Give an example of a plant which grows from stem cuttings.

Cassava, sugar cane, sweet potatoes

62. 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.

C. Stores food

63. 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

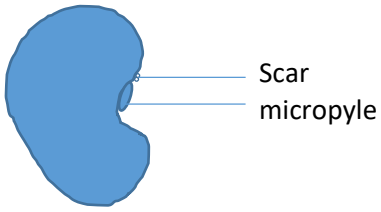
64. Why is transpiration important in green plants

To lose excess water

To cool the plant

65. (a) Draw bean seed and show:

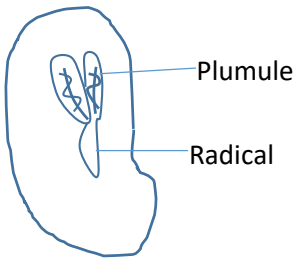
(i) a scar



(ii) a micropyle.

(b) Draw a spilt bean seed and show: (i) a plumule

(ii) a radical



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

Have strong scent

Stigma is longer than the anthers

67. How do animals benefit from photosynthesis?

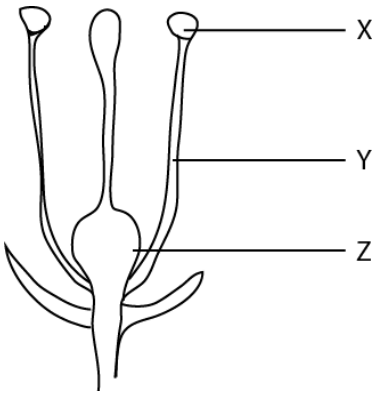
They obtain oxygen for breathing in

They obtain food

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

Plants, fungi, unicellular organism

69. The diagram below is of a flower. Use t to answer question that follow



(a) Name the part labeled **X anther head**

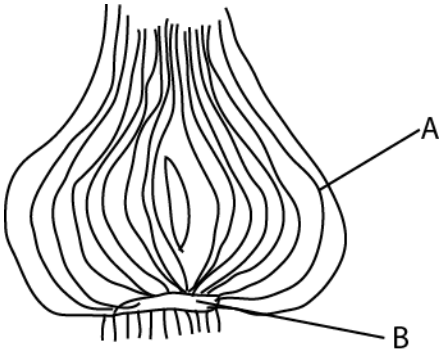
(b) What is the use of the part labelled Y to the flower?

To hold the anther head

(c) What does the part labeled Z become after fertilization?

Fruit

70. The diagram below shows as onions. ***Use it to answer the questions that follow***



(a) 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

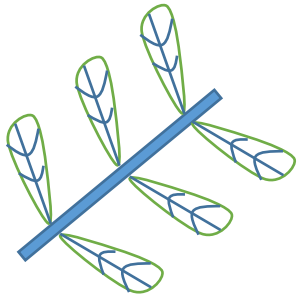
71. Give any one way in which bees benefit from plants.

Bees obtain nectar and pollen grain from the plant

72. 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

73. Draw a compound leaf in the space provided below.



74. Give any four ways in which plants depend on each other.

(i) tall plants provide shade for the others

(ii) trees provide support for climbing plants

(iii) Legumes fix nitrogen for others

(iv) plants produce oxygen for each other respiration

75. (a) Give any three characteristics of living things

(i) they grow
(ii) they reproduce
(iii) they respond to the stimulus
(iv) they feed
(v) they respire
(vi) they excrete
(vii) they move

(b) How are plants different from animals in the way they get their food?

Plants make their own food, while animals feed on ready manufactured food by the plants

76. 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

77. Give any one way in which soil is important to a plant.

Soil provide anchorage

Soil provides water to the plant

Soil provides nutrients to the plant

78. Give any one reason why plants are grouped among living things.

They grow

They respire

They feed

They respond to the stimulus

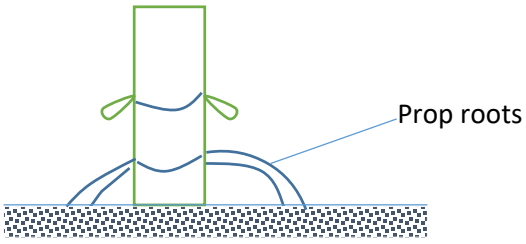
They reproduce

They excrete

79. Give any one example of a leguminous crop.

Soya peas, ground nuts, beans,

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



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

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

82. (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.

(iii) ferns
(iv) mosses

83. Give any one reason why plants and animals are classified as living things.

They feed

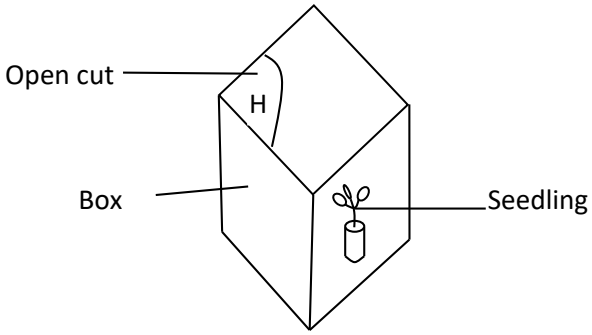
They grow

They respond to the stimulus

They respire

They reproduce

84. The diagram below, show a seeding in a box. ***Study it and answer the question that follow.***



(a) What colour will the leaves of the seeding be if left in this box with H covered for a week?

The color of the leaves turns yellow

(b) Give a reason for your answer in (a) above.

Absence of light prevents formation of chlorophyll

(c) Give any two things that are likely to happen to the seeding if the part marked with letter H is left is left open.

(i) It will bend and grow toward the open H

(ii) The leaves will turn green

85. Why is it maize grain grouped under monocotyledonous seeds?

Maize seed has one cotyledon

86. Write down the type of venation shown by the diagram below

Network venation

87. (a) Suggest two reasons why young farmers' clubs are important in schools

(i) to organize pupils in order to deliver information for school activities

(ii) to update them new method of agriculture.

(b) Give any two activities that can be done by young farmers` clubs in school

(i) learning better methods of farming

(ii) demonstration of farming on a school piece of land

88. Give the function of a micropyle to a germinating seed.

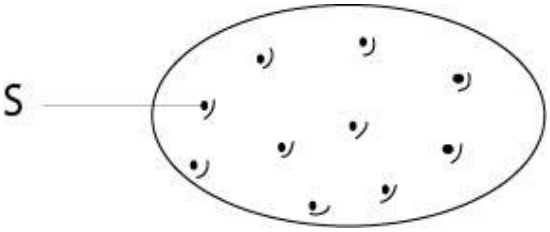
Allow entry of water and air into the seed during germination

89. How is reproduction in beans different from that in ferns?

Beans reproduce by seed whereas fern reproduce by spores

90. The diagram below is of an Irish potato tuber

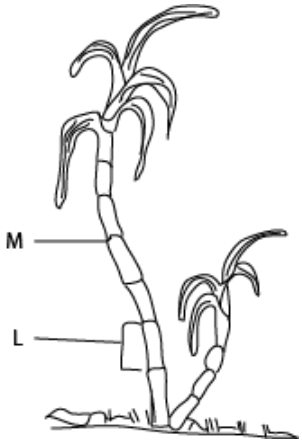
Use it to answer the question that follows.



What is the use of the part marked **S**?

It develops into a shoot system

91. 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

92. (a) State one way in which a nursery bed is important to a farmer.

It protects seedlings from harsh weather conditions like too much rainfall and sunshine

It enables easy monitoring of seedlings

Enable a farmer to know which seedling are ready for transplanting

(b) Name two vegetable crop commonly grown in a nursery bed

(i) vegetable
(ii) carrots
(iii) tomatoes
(iv) tomatoes

(c) Give one way in which a farmer can care for crops in nursery bed.

weeding

watering

sheltering

93. Name one type of seed dispersal.

Animal dispersal
Water dispersal
Wind dispersal
Self-mechanism

94. Sunbirds visit flowers to get nectar, how do plants benefit from these birds?

Plants get pollinated

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

Storage of food

Anchorage

96. (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

97. How do conifers differ from other non- flowering plants?

Produce seeds

98. Apart from getting food, give any one other way in which birds benefit from plants.

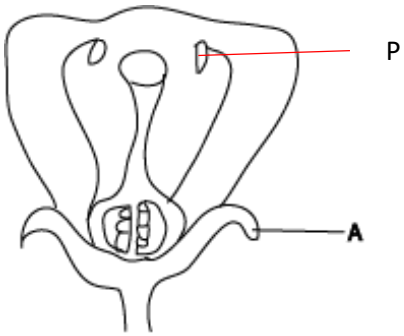
Building materials

Shelter

99. State an example of a crop which is a legume.

Bean, peas

100. The diagram below is a section of a flower. Use it to answer question that follow



(a) Name the part marked *A*

Sepal

(b) Use letter P to show the part that produces the male reproductive cells.

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

Fern

liverwort

moss

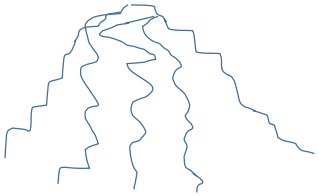
102. Why does a farmer cut off leaves of a banana sucker before planting it?

To reduce the rate of transpiration

103. What name is given to a place where seedlings are grown before transplanting?

Nursery bed

104. In the space below draw a simple diagram of a fibrous root system.



NB: In fibrous root system has small sized of the same size.

105. Give any one advantage of pruning tress.

- eases weeding
- reduce competition for light
- Reduces spread of diseases
- for better yield

106. What plant system does the plumule make when it grows?

Into a shoot system

107. Apart from making food, mention one other use of leaves to plants.
- For gaseous exchange
- For transpiration which remove excess water from the plant and also cools it.
- For vegetative reproduction

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

Irish potatoes are propagated by stem tuber while sweet potatoes by stem cutting

109. (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

(b) Write down any two ways farmers can control pests in the garden without using chemicals

(i) use biological enemies of the pest.

(ii) by burning infected crops

(iii) by crop rotation

(iv) by timely weeding

(c) Give one way in which plants benefit from animals for photosynthesis.

Get carbon dioxide

110. Why do some plants shed their leaves during dry season?

Plants shed off their leaves to reduce water loss

111. Give one way in which mosses are similar to mushrooms in the way they reproduce.

Both reproduce by means of spores

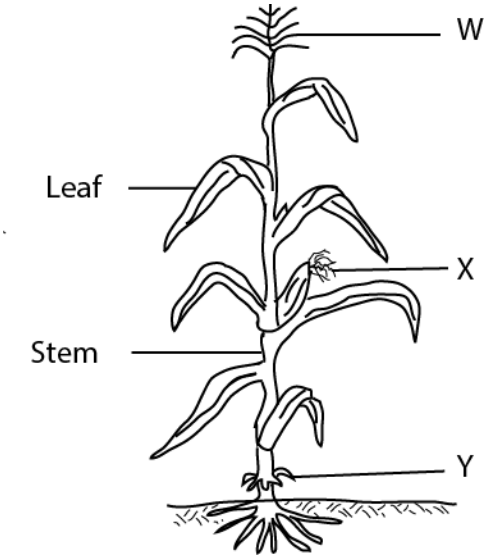
112. Why are sun bird able to suck nectar from the bottom of the flowers?

Sun bird has a long beak to reach nectar

113. Name the root crop which is attacked by the mosaic disease.
Cassava

(ii) they are cheap

114. 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

115. (a) What kind of food is made by green plants during photosynthesis?

Starch, glucose or sugar

(b) State any one raw material used by green plants for photosynthesis.

Carbon dioxide and water

(c) How is chlorophyll important during the process of photosynthesis?

Traps light for photosynthesis

(d) Give one reason why photosynthesis does **not** take place at night.

There is no light energy

116. Name the male reproductive cell in flowers.

Pollen grain

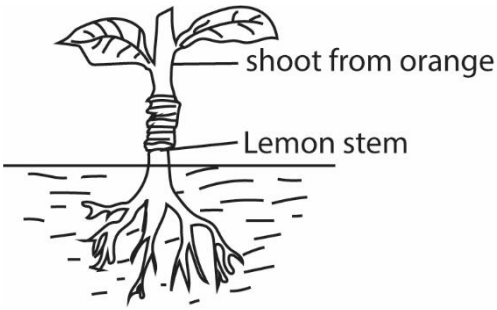
117. Apart from helping in pollination, give one way in which wind is useful to plants

Helps in seed and fruit dispersal

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

Endosperm

119. The diagram below shows a method of plant propagation. Use it to answer the question that follows



Name the method of plant propagation shown in the diagram above.

Grafting

120. (a) To whish group of plants do ferns and liverwort belong?

Spore forming non flowering plants

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

Both produce spores

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

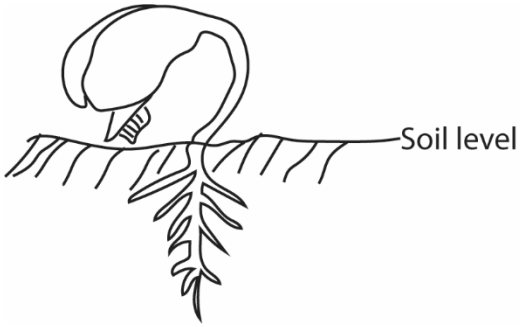
Mushroom

Mould

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

Some are poisonous

122. The diagram below shows a germinating seed. Study and use it to answer questions 162 and 163



(a) What type of germination is shown in the diagram above?

Epigeal germination

(b) To which group of flowering plants does the germinating seed belong

Dicotyledonous plants

123. Which method of harvesting trees allows shoot to grow from stump?
Coppicing

124. State any one characteristic of seeds dispersed by wind
They are light
May have wing extensions

125. (a) Use the living things below to complete the given food chain
Lion. Goat, grass

grass → Goat → **lion**

(b) Which one of the living things in the chain is a producer

Plant

(c) What is the source of energy for the producer in the food chain above>

Sunlight

126. 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

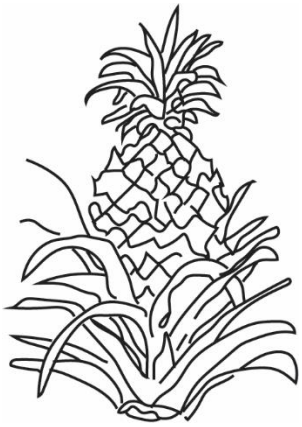
127. Where are seeds of coniferous plant found?

Cones

128. How is the function of anthers in flowers similar to that of testes in humans?

Both produce male gametes

129. The diagram below shows a fruit crop. Use it to answer the questions that follow



(a) How is the crop propagated?

By suckers

(b) Give one other which crop propagated in the same way as the crop shown above

Banana

130. Which part of a maize grain absorbs and supplies food to the embryo?
Cotyledon

131. How are plants important in a food chain?
Produce food

132. (a) Give any two qualities of seeds that can germinate
Physical not damaged
Healthy
(b) State any two farm practices which help in controlling insect pests in a garden
- **crop rotation**
- **scaring pests with scare crow**
- **trapping**

Thank You

Dr. Bbosa Science