



Master Lesson Plan

For

Getting to Know Plants

Board	Standard	Subject	Chapter	Language	Reference Link	Creation
CBSE	STD VI	Science	Getting to Know Plants	English	Getting to Know Plants	2020-10

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Getting to Know Plants

1. MS_Objectives_Getting to know plants

Notes to the teacher: This asset lays down the proposed plan for transacting this chapter. It states the asset objectives of the MLP. This asset is for teacher's reference and need not be taught to the students:

Students will be able to...

- infer the questions on plant stem
- explain the types of plants
- illustrate the structure of leaf
- show the process of transpiration in plants
- describe the process of photosynthesis
- recognize the importance of caring and preserving all life forms
- identify the two types of root systems and the functions of root
- appreciate the different types of roots
- examine the structure of a flower
- enjoy the beauty of flowers
- develop different methods of taking care of plants
- empathise the importance of caring and preserving all life forms
- take delight in knowing the interesting facts about plants
- assess themselves on the topic 'Getting to know plants'

Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Main Script	The Plant Kingdom	

2. IQ_Plant stem

[Notes to the teacher – Teacher may enable the students to think and come out with as many answers as possible before giving out the right answer/answers]

1. Why should a plant have stem?

Suggested Answer: Stem gives support to branches, leaves, flowers and fruits.

2. How do you think water and food reaches various plant parts?

Suggested Answer: Water and food reaches all the parts of the plant by a process of transportation through the stem from the roots. The roots get water from the soil.

3. What happens if the stem is broken or bent?

Suggested Answer: If the stem is broken or bent, it interrupts this flow and can cause the plant to die.

4. What is the importance of stem to man?

Suggested Answer:

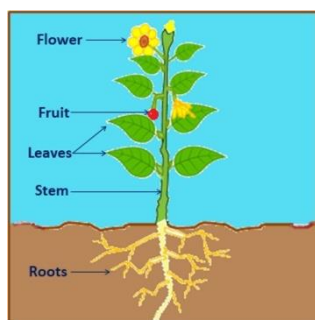
1. Source of Construction Materials(Rosewood)
2. Source of Synthetic Materials/Products(rubber)
3. Source of Fuel(firewood)
4. Source of Medicine(neem)
5. Source of Food(sugar cane, bamboo)
6. Source of Fibre (Jute)

Time to teach	Asset Type	Theme	SubTheme
4 Minutes	Inquisitive Questions	The Plant Kingdom	Structure and function of stem function of stem

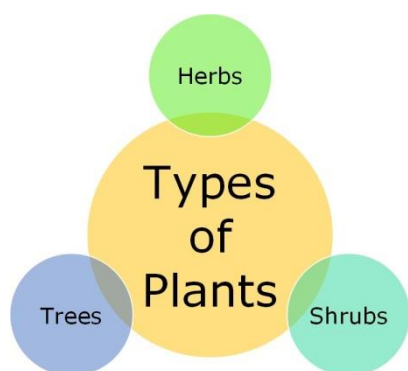
3. MS_Plant and its Types

The two main parts of a plant are the root system and the shoot system. The root system grows under the ground and the shoot system grows above the ground.

The root system arises from the radical of the plant and the shoot system arises from the plumule of the plant. The root system consists of the roots and shoot system consists of stem, leaf, flowers and fruits.



On the basis of the structure of stem, plants may be classified into 3 types.

**Herb:**

The herb does not have a firm stem but has a flexible juicy structure which does not have the woody hard part. A Herb is a plant without persistent stems above ground, generally, any non – woody plant. Herbs are mainly used as food.



Shrub:

Shrubs have multiple stems, shoots or branches from its base, it forms a sort of bush. A woody plant produces multiple stems but does not have a distinct single trunk. That is the reason why it is planted as a barricade.

Eg: Rose, Hibiscus Etc



Tree:

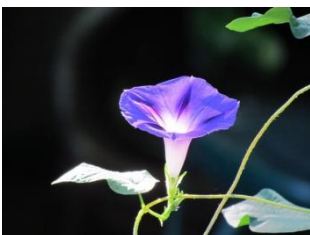
A woody perennial plant with a single main stem generally with branching at some distance from the ground and possessing a more or less distinct & elevated crown is called a tree. The tree has a firm single stem called trunk. The whole tree stands on the trunk.

E.g.: Neem, Mango Coconut etc.



Climbers and creepers

Plants with weak stem that grow over a support are called climbers. They cannot stand on their own and rely on other structures for support. Example Morning glory



Any plant that grows along the ground or spread over the ground are called creepers.

E.g.: Watermelon, Pumpkin, Money plant, bitter gourd etc



Image Source

Parts of a plant –Original contribution@srideviandkarthik@gmail.com

<https://www.flickr.com/photos/amandaszo/2566780954> (Attribution - [Amanda Kae's Photoz](#))

<https://www.maxpixel.net/Herb-Spice-Garden-Oregano-Cooking-Leaf-Kitchen-3338813>

<https://pixabay.com/photos/oregano-spice-aromatic-herbs-2662890/>

<https://pixabay.com/photos/mint-herb-healthy-eat-tee-field-3872376/>

<https://pixnio.com/flora-plants/flowers/roses-flower-pictures/flower-garden-nature-summer-rose-flora-leaf-plant>

<https://pixnio.com/flora-plants/bushes-and-shrubs/branch-shrub-leaf-tree-fruit-garden-nature-berry>

<https://pixabay.com/photos/mango-mango-tree-tropical-food-2562592/>

<https://pixabay.com/photos/beach-tree-palm-coconuts-1281680/>

<https://pixabay.com/photos/morning-glory-flower-bloom-blossom-1151791/>

<https://www.maxpixel.net/Garden-Fruits-Fresh-Watermelon-Vines-Plants-174898>

<https://pixabay.com/photos/pumpkin-vegetables-plant-healthy-3649232/>

Time to teach	Asset Type	Theme	SubTheme
7 Minutes	Main Script	The Plant Kingdom	Herbs, shrubs and trees., Herbs trees.

4. SA_Transpiration Experiment

ACTIVITY I

Aim: To observe the process of transpiration.

Materials required:

- Three small, thin-leaved plants
- Three small, broad-leaved plants
- Small watering can
- A pair of Scales
- 6 plastic bags large enough to fit completely around each plant pot
- Masking tape

Setting of the activity: Classroom/Whole class

Procedure:

1. Teacher has to bring 6 small sized potted plants.
2. 3 plants should have wide leaves and other 3 plants should have narrow leaves.
3. Number the plants with a pen.
4. Water the plants well. The plants should not be dry.
5. When the pots have soaked enough water, sufficient water should be there in all the pots.
6. Weigh the plants.
7. Make a table as follows showing how much each plant weighs before and after the experiment. Record the weight in the table.

Plant name	Weight before	Weight after
1. Thin leaf		
2. Broad leaf		

8. Put the plants in full, warm sunlight for an hour, then take off the plastic and weigh each plant again.

Points to observe and ponder:

1. **If you water plants and then place them in the sun, what will happen to the water?**

Answer: Water will evaporate from the plants when we put the plants in sun.

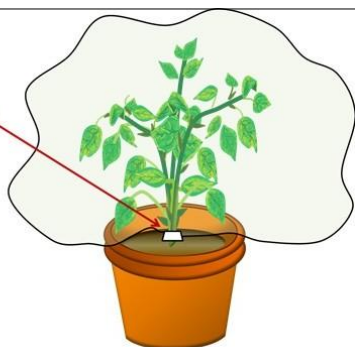
2. **Would anything change if you put a plastic bag around the base of the plant?**

Answer: Water droplets will be formed on the inner surface of the plastic

3. **What was the difference you observe in the loss of water, between the plants with broad leaves and thin leaves?**

Answer: The area of the leaves getting exposed to the Sun being more in the broad leaf plants, they lose more water.

Tape seals plastic bag at the base of the plant stem.



Observation:

During the experiment, the plants will lose water, even though they are in the bags. The broad leafed plants will lose a little more than the thin-leafed plants, but depending on the size of the plant, it may not be measurable. The reason for collection of water is due to transpiration.

Inference: This activity helps the students to understand the process of transpiration.

ACTIVITY II

(Teacher can also use one glass with coloured water, if not three glasses.)

AIM: To observe the transpiration pathway in a celery plant.

Materials required: 3 empty glasses, water, fresh celery stems with leaves, 3 different food colours

Class setting: Whole class/demonstration

Procedure:

1. Fill half of the empty glasses with water.
2. Add food colour in the glass. (One glass should have one colour)
3. Cut the stem of the celery stick in such a way, that more surface area is exposed.
4. Keep the glasses aside for half an hour.
5. Observe the plants carefully.

Observation: We see that the coloured watered starts moving along the stem and reaches the leaves

Inference : This experiment demonstrates how plants use transpiration to suck up water.

Transpiration.

Question to ponder :

1. How did the leaves above get the colour from the water?

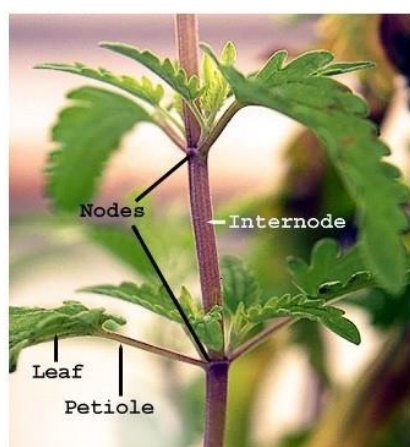
The leaves acquire the colour due to the plant sucking up the water, which is the process of Transpiration.

Original contribution - rushmish@gmail.com

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Suggested Activity	The Plant Kingdom	Excretion in plants (transpiration plants(transpiration))

5. MS_Structure of leaf

1. Leaf is a flattened part of a plant. It grows from the node in the stem. It is attached to the stem with a petiole/stalk.



2. Most of the leaves are flat. They contain tiny organelles called chloroplasts.

3. Chloroplast makes food through photosynthesis.

4. The first leaf to grow from a seed is called the cotyledon.

6. The epidermis or the top most layer of the leaf secretes a waxy substance called the cuticle.

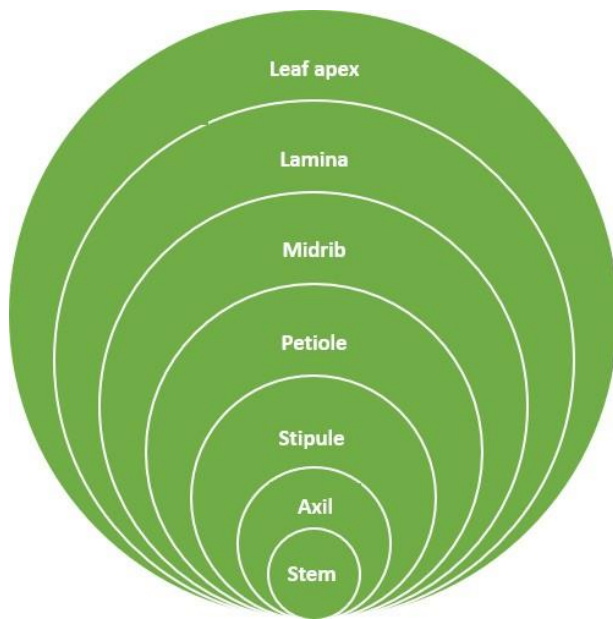
7. The epidermis protects the leaf from insects, bacteria, virus, and other organisms.

8. The epidermal cells have specialized bean shaped cells called guard cells.

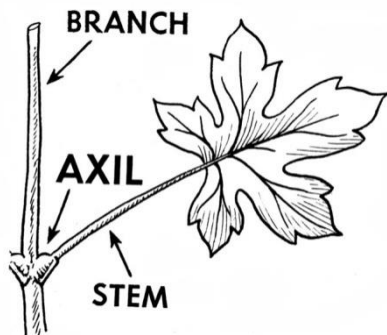
9. The guard cells are produced in pairs. Each pair of guard cells forms a pore (called stoma; the plural is stomata).

10. Gases such as carbondioxide and oxygen enter and exit the leaf through the stomata.

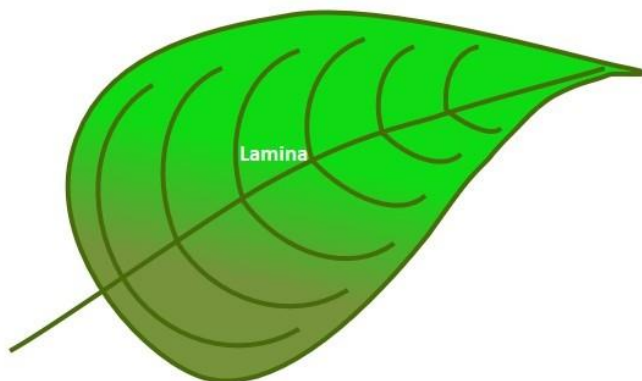
11. Production of food usually takes place in elongated cells called palisade cells.

Parts of a Leaf:

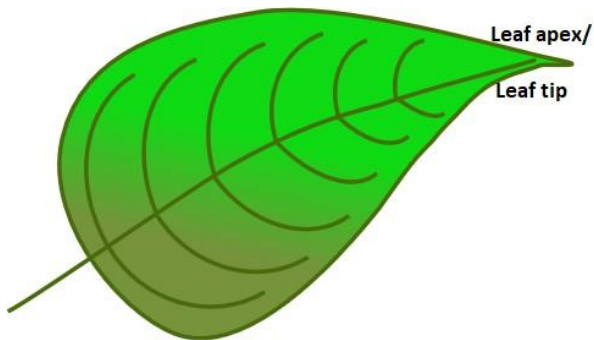
(a) Axil - the angle that you see between the stem and the leaf.



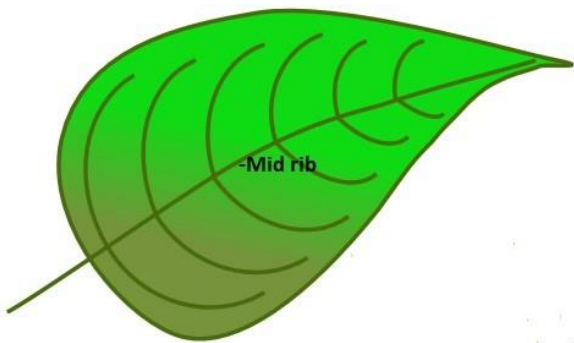
(b) Lamina - It is the thin flat layer of the leaf.



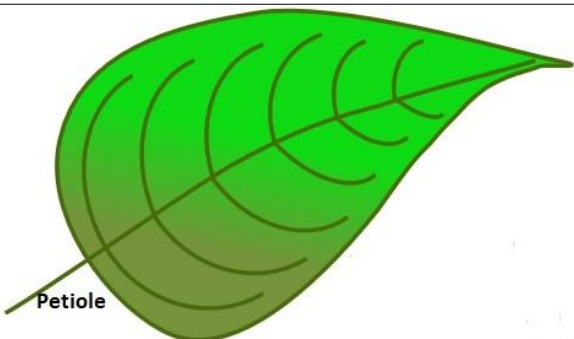
(c) Leaf apex - It is the sharp tip of the leaf.



(d) Midrib - the central thick rib of a leaf.

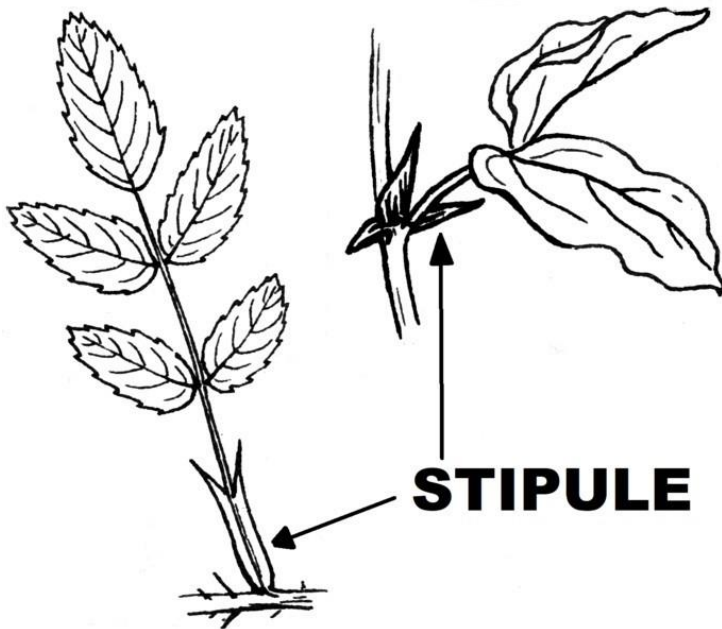


(e) Petiole-It is the stalk of the leaf. It attaches the leaf to the plant.



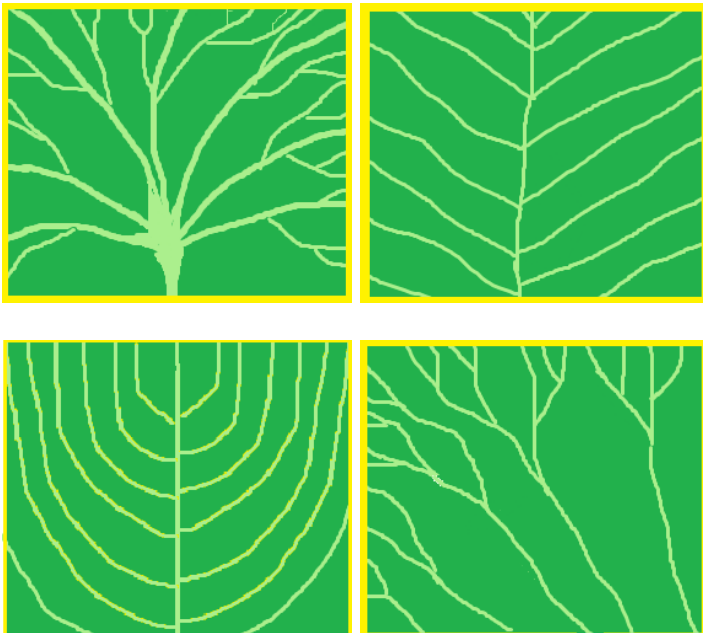
(f) **Stem** - It is the main support of the plant.

(g) **Stipule**-Stipules are small leaf-like structures found at the base of the petiole.



Venation

The arrangement of veins and veinlets on the leaf is called venation.



Types of Venation:**Reticulate Venation**

- Veins are arranged in a net-like pattern on both sides of the midrib
- Found in Dicot plants such as rose, hibiscus, mango

Parallel Venation

- Veins run parallel to one another from the base to the tip of the leaf.
- Found in Monocot plants such as grass, maize

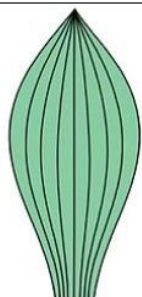
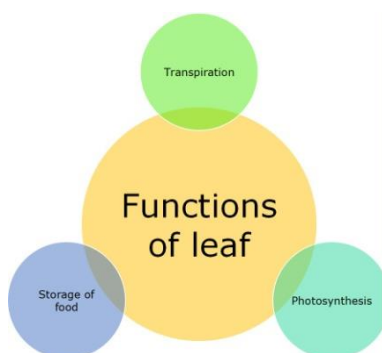
**Reticulate venation****Parallel venation**

Image Source:

Node: https://commons.wikimedia.org/wiki/File:Plant_nodes_c.jpg

Lamina: OC: srideviandkarthik@gmail.com

Midrib: OC: srideviandkarthik@gmail.com

Leaf apex: OC: srideviandkarthik@gmail.com

Petiole: OC: srideviandkarthik@gmail.com

Stipule: [https://commons.wikimedia.org/wiki/File:Stipule_\(PSF\).png](https://commons.wikimedia.org/wiki/File:Stipule_(PSF).png)

Leaf Venation 1 – SSSVV Gallery

Leaf Venation 2 – SSSVV Gallery

Leaf Venation 3 – SSSVV Gallery

Leaf Venation 4 – SSSVV Gallery

Reticulate venation and parallel venation: https://commons.wikimedia.org/wiki/File:Figure_30_04_02abc.jpg (Attribution - CNX OpenStax)

Time to teach	Asset Type	Theme	Sub Theme
8 Minutes	Main Script	The Plant Kingdom	Structure and function of leaf function of leaf

6. VC_The Grand Old Tree

Learning Domain: Class room



There was once a King who had a great palace with wonderful gardens. In those gardens there lived thousands of creatures from hundreds of different species. They were of great variety and colour, and they turned that place into a kind of paradise that everyone could enjoy.

There was only one thing in those gardens that the King disliked: near the centre stood there mains of what had been, centuries ago, a huge tree. Now it was withered and dry, and detracted from the colour and beauty of its surroundings. This bothered the King so much that he finally ordered it to be cut down and replaced by a series of fountains.

The gardens now looked beautiful with the fountains. But now came a problem. With the huge tree gone, there were hardly any creatures and animals in the gardens like before.

Many years later, a young man presented himself to the King, assuring him that he could explain what had happened, and how the animals could be returned. He started explaining how the garden's big animals fed mainly on the little brightly- coloured birds, who owed their appearance to their own food, composed of colourful Worms from the big tree, who inturn fed on various rare species of plants and flowers that could only growing thatpartoftheworld. Thewormsencouragedtheappearanceofnewspeciesofplantsthatfedotherinsects and animals, and which were, In turn, vital to the existence of other species.

The young man then narrated how his father collected the old tree that was up rooted from the King's garden and planted it in their home, even before he was born. Since then, every spring, from that tree come thousands and thousands of months. With time, the moths attracted the birds. With pollination, new plants and trees grew, providing food for other animals. These inturn, became food for others. And now, over several years, his father's old place was filled with life and colour. All thanks to the moths from the big old tree that was there in the King's garden ages ago.

The king was happy to hear this and told the young man that he would reward him if the young man could recreate the King's garden in a similar manner. The young man said that it was possible to recreate it but that I would take many years for the natural balance to reestablish itself. He added that it was also possible that it would happen beyond the life time of the king. The monarch may not live to see it!

The King understood how important and delicate the balance in nature was; and how careless he had been to break it so thoughtlessly. The king decided to build a huge palace next to the young man's garden. He also supervised its construction so that it could be completed quickly. He then enjoyed the grandeur of the garden and the creatures. Thus, he was able to restore the balance in nature.

Quotation

May I realise the greatness of the world around me

The vast ocean, the sturdy mountain, and the mighty Tree,

We belong to one world, one universe, eternally,

Only then we can live together in Peace and Harmony.

Image Source
<https://pixabay.com/vectors/tree-nature-ecological-animals-2789704/>

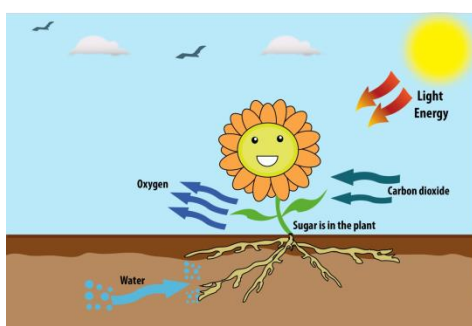
Time to teach	Value Type	Value Sub Type	Value Attribute
10 Minutes	Non-Violence		Stories

7. MS_Making food

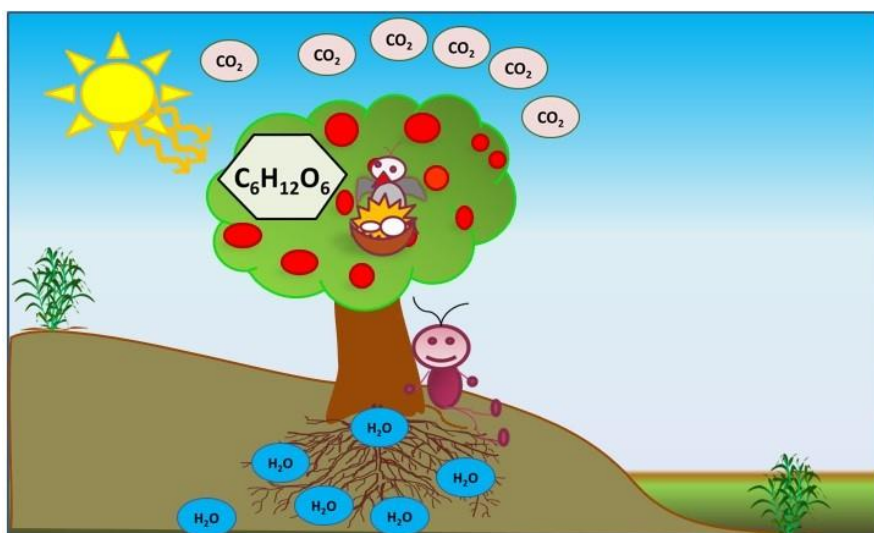
Leaves are the power house of plants. In most plants, leaves are the major site of food production for the plant. Leaves convert the light energy into chemical energy

Leaves contain tiny organelles called chloroplasts, which contain a green substance called chlorophyll. Chlorophyll uses the energy in sunlight to turn water(H_2O) and carbondioxide gas (CO_2) in to sugar and oxygen gas (O_2).

This process is called photosynthesis. Photosynthesis happens in leaf cells.

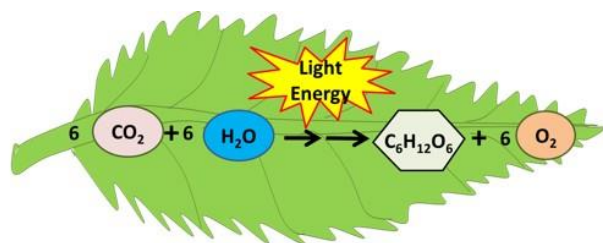


During photosynthesis, the green plants and some algae absorb the light from the sun to fix carbondioxide with hydrogen and water. When the carbondioxide is fixed organic compounds such as glucose are formed. Glucose then provides food for not only the plant itself but also all animals.



Photosynthesis is a chemical reaction, in which carbondioxide and water are converted to glucose and oxygen by the energy provided from the light absorbed by chlorophyll.

Carbon dioxide + water + (light energy) $\rightarrow$ glucose + water.



Chlorophyll in the plants helps absorb the sunlight.



Oxygen is released as a byproduct of photosynthesis.

The light energy is an essential requirement for photosynthesis.

Plants absorb water through their roots, and it moves through the plant and into the leaves by transpiration.

Carbon dioxide enters into leaves from the air, through the stomata present on the bottom of the leaf.

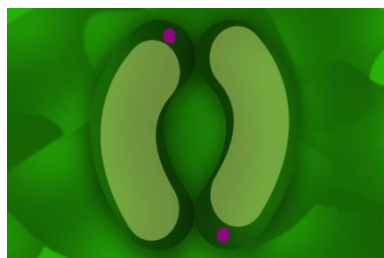


Image source:

Photosynthesis: SSSVV Gallery

Photosynthesis: OC: rushmish@gmail.com

Photosynthesis: OC: rushmish@gmail.com

Stomata: SSSVV Gallery

Time to teach	Asset Type	Theme	SubTheme
8 Minutes	Main Script	The Plant Kingdom	Photosynthesis, Photosynthesis

8. IA_Interesting facts on roots

*Mangroves are various tree species which live in tropical tidal mud flats, often near river mouths. The mud in which they grow is anoxic-it contains very little oxygen. The different mangrove species have developed specialized roots called pneumatophores.

*Many species of fig trees (Ficus spp.) have specialized support roots at the base of their trunks which lend extra support to the tree trunk. They are known as buttress.



1. In some plants such as beetroots, the roots are also a food store.
2. When a seed begins to grow, its first root is called a primary root. These branches grow into secondary roots.
3. Roots are protected at the end by a thimble shaped root cap as they probe through the soil. One very root there are tiny hair that help it to take up water and minerals.
4. Some plants, such as carrots, have a single large root, called a tap root, with just a few fine roots branching off.
5. Some plants, such as grass, have lots of small roots, called fibrous roots, branching of final directions.
6. Some kinds of orchid that live on trees have 'aerial' roots that cling to the branches.
7. Mistletoe has roots that penetrate its host tree.
8. Roots are delicious when boiled or pickled. The roots of the South African wild fig tree can grow 120m down into the ground.

Image source:

<https://www.pexels.com/photo/mangroves-low-tide-seedlings-767863/>

<https://pixabay.com/photos/mangroves-sundarbans-forest-1225627/>

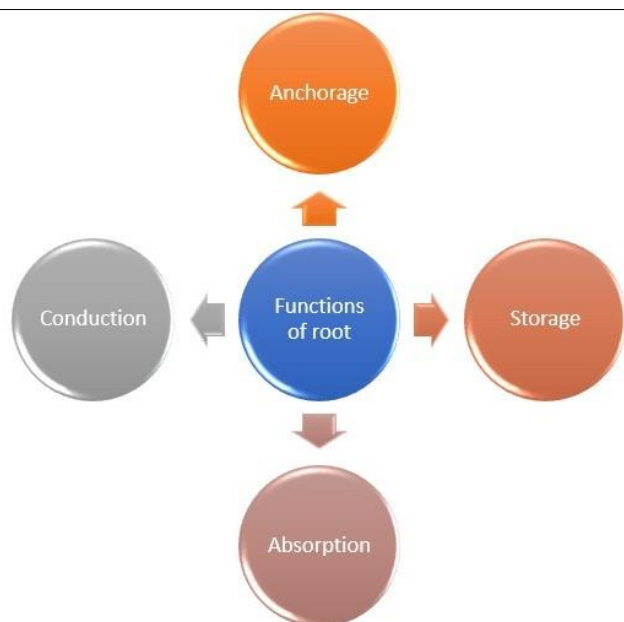
Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	The Plant Kingdom	Roots(kinds with examples) Roots(kinds with examples)

9. MS_Root System

A root is a plant structure that obtains food and water from the soil, stores food, and provides support to the plant. Most roots grow underground.



The root system of a tree is vitally important for its continued survival. Here are four of the most important functions which the roots perform for the plant.



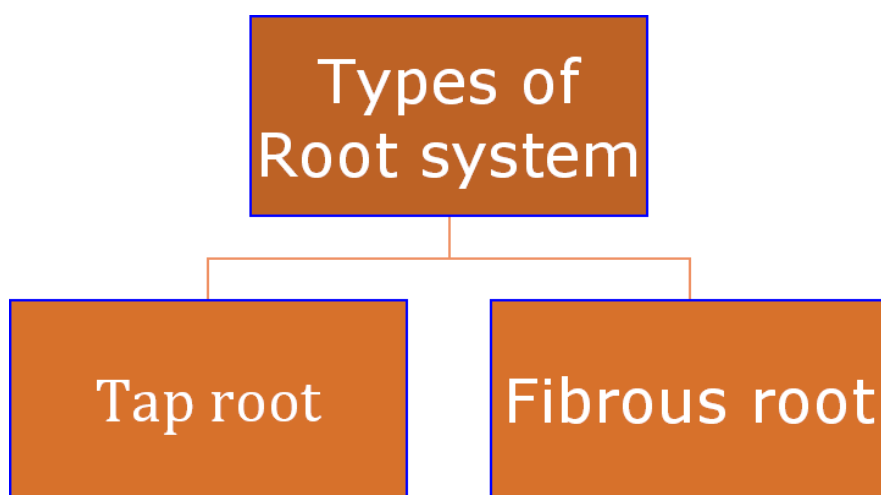
1. Anchorage: Roots help to anchor the tree in the soil. As they penetrate the soil in search of water and mineral nutrients, they help to further secure the tree in the soil.

2. Storage: Roots may store large amounts of energy reserves below the ground for the plant. Some common vegetables, e.g. the carrot, is a good example. These vegetables are often biennials (they live for two years). During their first year they store reserved food underground. In the second year they flower, set seed and die. We harvest them after their first year. Some trees have reserves stored underground which enables them to re sprout when they are cut down or in some cases burned down.

3. Absorption: The roots of the tree absorb both water and mineral nutrients for use by the rest of the tree. The root hair which is found in most tree species is especially important in the absorption of these products by the roots.

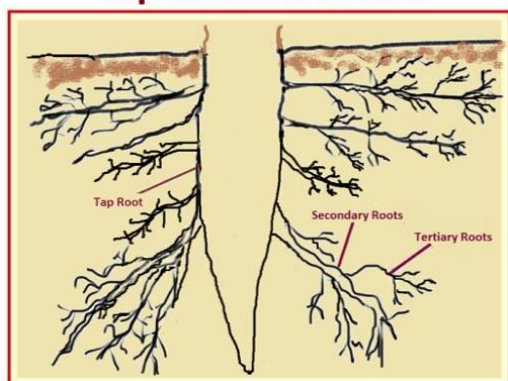
4. Conduction: The roots transport the water and dissolved mineral nutrients they have absorbed, to the stem and to the rest of the tree.

The roots of a plant are connected differently in different plant species and this is known as the root system. There are two main types of root systems.



1. Tap root system- Mango, Neem, Rose, Shoe Flower (These plants belong to Dicots)

Tap Root Structure

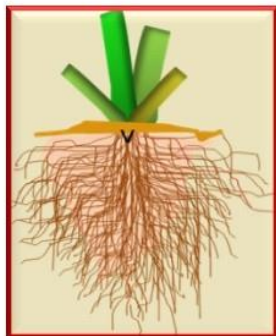


Tap roots have a large main central root.
They have many branching roots.
They go deep in the soil.
Examples of plants:
Large trees e.g. mango, avocado
Shrubs e.g. tomato, peppers

The first root produced from a seed is called the radicle. In many dicotyledonous plants this root greatly enlarges to become the most prominent root of the plant and is known as a taproot. Many smaller branch root may grow from the taproot.

2. Fibrous root system- Rice, Wheat, Maize, Bajra (These plants belong to Monocots)

Fibrous root structure



Looks like a tangled mass of roots

Examples of plants:

Banana, coconut

Example of grass:

Rice, corn, sugarcane

In monocotyledonous plants, the radical is short lived and is replaced by numerous roots of more or less equal size. These roots are adventitious which means they can grow from plant organs other than roots e.g.stems

Image source:

Root: SSSVV Gallery

Tap root structure: Original Contribution @ srideviandkarthik@gmail.com

Fibrousroot—OriginalContributionbyRashmiMishra@rushmish@gmail.com

Time to teach	Asset Type	Theme	SubTheme
6 Minutes	Main Script	The Plant Kingdom	Roots(kinds with examples Roots(kinds with examples

10. IA_Interesting facts About Flowers

1. Broccoli is a flower used as a vegetable.



2. Helianthus is the scientific name for sunflower, Helia means sun and anthus means flower. Sunflowers are able to absorb radiation.



3. Saffron is a spice that comes from a type of crocus flower.



4. Some orchids can grow over 65 feet in length. Orchids do not need soil to grow-they get all of their nutrients from the air.



5. Titanarums are the world's largest flowers. They grow almost 10feet in height. They have a horrible aroma of rotting flesh. So they are called corpse flowers.



6. The rose is the official National Floral emblem of the United States.



7. The world's largest and the most stinking flower is the Rafflesia.



8. It is said that there were no flowers in the beginning. Flowers were first seen about 140million years ago. In Holland, tulips were more valuable than gold.



Image Source

Broccoli: SSSVV Gallery

Sunflower: SSSVV Gallery

Crocus: <https://pixabay.com/photos/krokus-crocus-spring-flowers-4026324/>

Orchids: <https://pixabay.com/photos/orchid-orchidaceae-flower-bloom-4044209/>

Titan arums: <https://pixabay.com/photos/amorphophallus-titanum-2443620/>

Rose: SSSVV Gallery

Tulip: SSSVV Gallery

Rafflesia: SSSVV Gallery

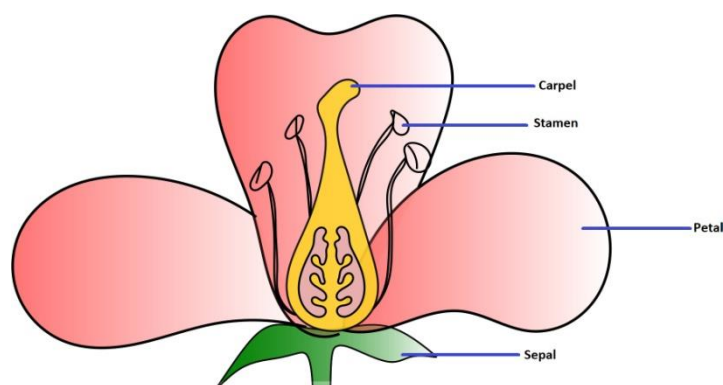
Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	The Plant Kingdom	Flower(structure, function of Flower(structure, function of Flower

11. MS_Flower

1. Flower is an important part of the plant. It is one of the reproductive organs in a plant.

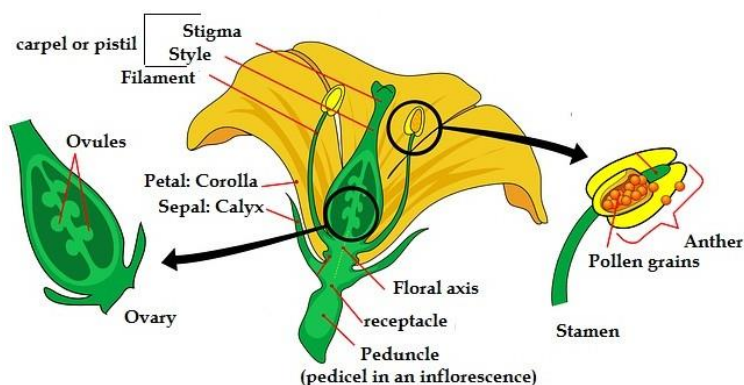


All flowers have four basic parts: sepals, petals, stamens and carpels.



2. The main parts of a flower are the carpels and stamens. These parts are often found in the centre of the flower. There are egg cells in the carpel and pollen cells in the stamen. These are the reproductive parts of a plant.
3. Flower petals and the fragrance of the flowers attract insects and bees to pollinate the flower.
4. After pollination, the petals fall off and seeds develop in the part of a flower called the ovary. The ovary itself usually becomes what we call the fruit.
5. Different flowers have different numbers and shapes of these parts.

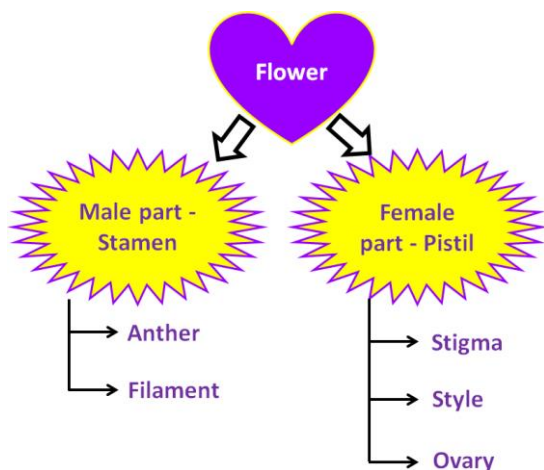
A typical flower has following parts:



Basic Flower Structure

1. Calyx: The outermost whorls is made up of green leaf- like structures called sepals. Many sepals come together to form the calyx. The function of the calyx is to protect the flower when it is in bud stage.

2. Corolla: The whorl next to calyx is corolla. This whorl consists of coloured units called petals. The petals are thin and soft. They produce nectar. The bright colour of the petals attract the insects that help in pollination.

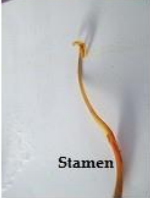
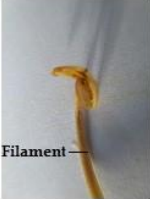


3. Androecium: The inner whorl of the corolla consists of individual units called stamens. Androecium is the male reproductive part of the flower. Stamen has two parts: anther and stalk. The stalk is also called as filament. Anther produces pollens by meiosis. These pollens are eventually dispersed.

4. Gynoecium: The innermost whorl of a flower, has units called carpels. Gynoecium is the female reproductive part of the flower. The carpel consists of stigma, style and ovary. The carpel forms a hollow structure called an ovary, which produce ovules. Inside the ovules are female gamete.

Parts of a flower:

Flower part	Form and function	Diagram
Peduncle	Stalk of the flower.	 Peduncle
Receptacle	The part of a flower stalk where the parts of the flower are attached.	 Receptacle
Sepal	The outer parts of the flower (often green and leaf-like) that enclose a developing bud.	 Sepal
Calyx	Group of sepals.	 Calyx

Petal	The parts of a flower that are often brightly coloured.	 Petal
Corolla	Group of petals.	 Corolla
Stamen	Male part of the flower, consisting of anther and filament makes pollen grains.	 Stamen
Filament	The stalk of the stamen that bears the anther.	 Filament

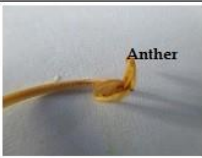
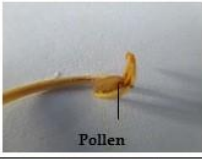
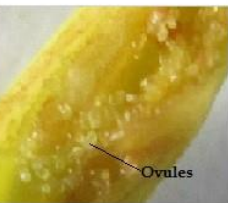
Anther	The part of the stamen where pollen is produced.	
Pollen	Grains containing the male gametes.	
Carpel/pistil	Female part of the flower. Consisting of stigma, style and ovary.	
Stigma	It is the part of the pistil that is present at the top. It bears the sticky substance to catch the pollen grains.	
Style	The stalk of a carpel between the stigma and ovary through which the pollen tube grows.	
Ovary	Enlarged basal portion of the pistil where ovules are produced.	
Ovule	Located in the ovaries. Ovules become seeds on fertilization	

Image source:

Water lily: SSSVV Gallery

Dissection of flower: SSSVV Gallery

Self clicked - [OC: puttyrevankar@gmail.com](mailto:puttyrevankar@gmail.com)

Original contribution: Using shapes from Powerpoint

Image source: <http://pixabay.com/en/science-diagram-plants-flower-41571/>

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Main Script	The Plant Kingdom	Flower(structure, function of Flower(structure, function of Flower

12. DD_Take Care of Plants

1. Protect plants. Gift saplings on birthdays and other important days to your near and dear ones.
2. Do not pluck flowers in gardens.
3. Remove the weeds regularly, if you maintain a garden or from your potted plants.
4. Water the plants daily and twice on very hot days.
5. Plants like neem, garlic, tulsi, aloe vera, etc., have medicinal properties. They are natural pesticides. Keep yourself healthy by consuming plant food as much as possible.
6. Plants are a source of food, shelter, clothing, and oxygen for breathing, without which, life does not exist.
7. Plants have aesthetic value.

Time to teach	Asset Type	Theme	SubTheme
3 Minutes	Day-to-day Relevance	The Plant Kingdom	Herbs, shrubs and trees., Herbs trees.

13. VC_Embrace the Nature

Learning Domain- Classroom

Introduction

We should respect all life forms, human beings, animals, birds, plants, etc. And in turn we too would be taken care of. We are all a part of this beautiful universe. Absence of anyone of these in creation will cause an imbalance in the environment. For example if there are no trees, we will lose the protection, they so naturally protect us from the scorching heat, strong winds and rain. People will never get to enjoy different kinds of fruits, vegetation life. We will suffocate since we will be unable to breathe fresh air, as plants help in the purification of air. In the end all this would lead to an eco-disaster.

There have been many movements that have happened in India to protect the environment and respect the nature.

Given below are a few of them.

1. The 'Chipko movement or Chipko Andolan' is a movement that practised the Gandhian methods of Satyagraha and non-violent resistance. The Chipko movement, derived from the Hindi word chipko, meaning to stick, where batches of men and women, led by the grass root environmental activist Sunder lal Bahuguna, hugged the trees to save them. The Chipko protests in Uttar Pradesh achieved a major victory in 1980 with a ban on green felling in the Himalayan forests of that state.

The primary objectives of the Chipko movement were to ensure an ecological balance and the survival of the Tribal people, who are totally depending on the trees because their economic activities revolved around these forests. Thus, the Chipko Movement is a significant environmental movement, which has gained considerable popularity success by adopting a Gandhian non-violent method. The move paved the way for many such environmental changes in the country.

2. An other movement called, 'Save Silent Valley' was a social movement aimed at the protection of Silent Valley, an evergreen tropical forest in the Palakkad district of Kerala, India. It was started in 1973 to save the Silent Valley Reserve Forest from being flooded by a hydroelectric project.

3. The 'Appiko' movement started in Sirsi and spread across the Western Ghats, including in places outside Karnataka. By linking up, campaigners managed to build awareness to conserve the sensitive environment in this region. Appiko was a movement similar to the more prominent Chipko movement of North India.

Time to teach	Value Type	Value Sub Type	Value Attribute
5 Minutes	Non-Violence		Stories

14. IA_Interesting facts About Plants

1. The bright orange colour of carrots tells you that they are a good source of Vitamin A which is important for good eyesight. Vitamin A helps your body fight infection, and keeps your skin and hair healthy.



2. Asparagus belongs to lily family. In lily family, onions, leeks, and garlic are also present. Asparagus has a unique mild flavour, not like the flavour of its onion cousins.



3. Onions contain a mild antibiotic. It helps to fight infections, gives relief from burns, itches from athlete's foot



4. The plants in snowy regions, due to heavy snow fall and low temperature, look dead. However, the roots of these plants are alive, though in a dormant or inactive state. When summer arrives, the roots of these plants come out of their dormant state and become active. Slowly, new plants arise from these roots.



Image Source:

Carrots: SSSVV Gallery

Asparagus: <https://pixabay.com/photos/asparagus-green-vegetable-food-700153/>

Onion: SSSVV Gallery

Snow: SSSVV Gallery

Time to teach	Asset Type	Theme	SubTheme
3 Minutes	Interesting Asides	The Plant Kingdom	Structure and function of stem and trees. Structure and function of Herbs, shrubs and trees.

15. QA_Getting to Know plants - A Questionnaire

I. Fill in the blanks

1. If the design on the leaf is net-like on both sides of midrib, the venation is_____.
2. If the design on the leaf veins are parallel to one another then it is called as_____.
3. Water comes out of leaves in the form of vapour by a process called_____.

Suggested Answer: 1. Reticulate 2. Parallel 3. Transpiration

II. Choose the correct answer:-

A. Plants are categorised into 3 categories,

1. Herb, shrub and tree

2. plant, tree and stem
3. leaf, flower and root
4. None of these

Suggested Answer: Herb, shrub and tree

B. The thick vein in the middle of leaf is known as _____.

1. Midrib
2. Mid vein
3. Mid lamina
4. Stem

Suggested Answer: Midrib

C. Which one has parallel venation from the pictures



Leaf A



Leaf B

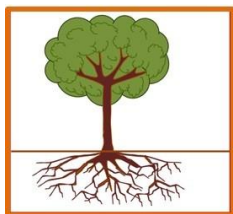


Leaf C

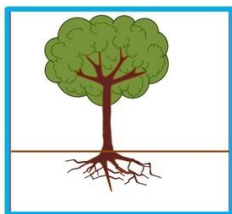
- a) Leaf A
- b) Leaf B
- c) Leaf C
- d) B and C

Suggested Answer: Leaf B

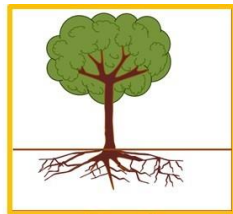
D. Which tree(s) would most likely fall over if there is a heavy storm?



Tree A



Tree B



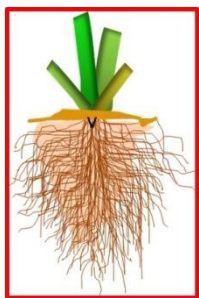
Tree C

- a) A
- b) B
- c) A and C

d) B and C

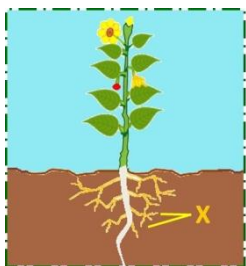
Suggested Answer: Tree B

III. Identify and differentiate:



Suggested Answer: Tap root –Main root found in Big trees/Fibrous root

IV. What is the function of the part marked X?



Suggested Answer: The lower part of the plant is root and formally it holds the tree and helps to absorb the water from soil.

V. Explain why the plant in the picture is growing on the fence? Name the category it belongs to.



Suggested Answer: Plant has weak stem /category is climber

VII. Identify Me

- i) I am a part of the plant and I prepare food for the plant.
- ii) I am a part of plant & I carry water and minerals to the leaves.
- iii) I am a part of plant & I am in the soil.
- iv) I cannot stand upright & spread on ground.
- v) I take support on the neighbouring structures & climb up.
- Vi) I am green pigment present in leaves
- vii) I am roots present in grass
- viii) I am a tall plant with woody stem
- ix) I am the Inner most part of the flower.
- x) Small bead like structure inside ovary.

Suggested Answer:

- i) Leaf ii) Stem iii) Root iv) Creeper v) Climber Vi) Chlorophyll vii) fibrous viii) Tree ix) carpel X) ovule

VIII. Answer the following questions

1. Name the male and female parts of the flower

Suggested Answer: The male parts are stamen (filament and anther) and the female parts are carpel (ovary, style & stigma)

2. State the functions of sepals & petals.

Suggested Answer: Sepals protect the flower during the bud stage & the petals help to attract insects to help in pollination.

3. What is the transport system in plants?

Suggested Answer: A tubular system that helps to carry food & water in plants is called the transport system. It is made up of xylem & phloem.

4. How do plants absorb minerals from the soil?

Suggested Answer: Plants absorb minerals from the soil in dissolved form with the help of root hair.

5. State the functions of stem.

Suggested Answer: The stem holds the plant upright, bears the branches & leaves and also transports food & water.

Image source:

Pear tree leaf: <https://pixabay.com/photos/leaf-pear-leaf-blattstruktur-963803/>

Hosta leaf: <https://pixabay.com/photos/hosta-plantain-lilies-plant-3456852/>

Red Maple Leaf: <https://pixabay.com/vectors/leaf-autumn-autumn-leaves-fall-red-984998/>

Trees A, B and C – Original Contribution @ srideviandkarthik@gmail.com

Fibrous root system – Original Contribution by Rashmi Mishra @ rushmish@gmail.com

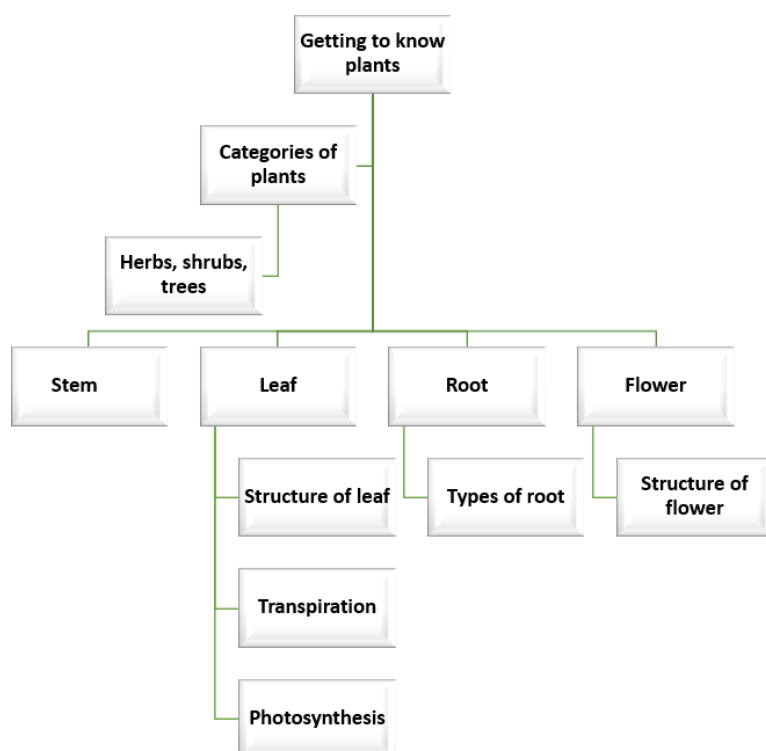
Beetroots: <https://pixabay.com/photos/beets-yellow-green-leaves-organic-1420381/>

Plant - Original Contribution @ srideviandkarthik@gmail.com

Creeper: <https://pixabay.com/photos/climber-plant-garden-ivy-background-1932751/>

Time to teach	Asset Type	Theme	Sub Theme
15 Minutes	Assessments	The Plant Kingdom	

16. MS_Summary_Getting to know plants



Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Main Script	The Plant Kingdom	Structure and function of stem function of leaf, Roots(kind and functions), Structure an stem, Structure and function kinds with examples and function