

## LESSON – 1 THE LEAF

### A. Give reasons

1. Leaves are usually green in colour due to presence of a green pigment called chlorophyll which is necessary to make food for the plant.
2. Leaves of some plants are modified into thin wire like structures called tendrils. These tendrils coil around any structure or another plant to provide support to the stem. This helps the plant to climb up and grow easily.
3. Cactus is desert plant. These sharp and pointed spines protect the plant from grazing animals as well as reduce loss of water due to transpiration.
4. Insectivorous plants have special types of leaves like pitcher and bladder like structures to catch and digest insects to fulfil their nitrogen requirements.
5. Bryophyllum leaves are broad with the presences of notches at the margins. These notches give rise to buds called epiphyllous buds. A new plant emerges from these buds.

### B. Distinguish between

1. **Petiole:** Petiole is a leaf stalk. It is a short cylindrical part that attaches the leaf base to the stem.  
**Auxiliary bud:** An auxiliary bud arises between the leaf base and the stem.
2. **Leaf blade:** The broad, extended, flat part of the leaf is known as leaf blade or lamina  
**Leaf apex:** The tip of the leaf lamina is known as leaf apex.
3. **Simple leaves:** In some plants, one complete lamina is not divided into smaller parts. These leaves are known as simple leaves. Ex: mango  
**Compound leaves:** In some plants, the lamina is divided into smaller parts known as leaf lets. These leaves are known as compound leaves. Ex: rose.
4. **Leaf tendrils:** Due to the weak stem in some plants, leaves are modified into thin, wire like structures known as tendrils. These tendrils coil around any structure or another plant to provide support to the stem. This helps the plant to climb up and grow easily.  
**Storage leaves:** Due to the limited supply of water, some plants have thickened and succulent leaves with water storage tissues. This helps the plant to save water. These leaves are called storage leaves.
5. **Opposite arrangement:** In some plants, two leaves develop at each node and they are placed opposite to each other. This is known as opposite arrangement. Ex: guava.

**Whorled arrangement:** In some plants a set of three or more leaves develop at each node which forms a whorl or a circle. This is known as whorled arrangement. Ex: Liliium.

6. **Phyllode:** In some plants, petiole of a compound leaf becomes a flattened leaf like structure called Phyllode, and helps in photosynthesis. Ex: Australian acacia

**Hooks:** In some plants, the three terminal leaf lets of a leaf get modified claw – like hooks which help in climbing onto the support. Ex: Begonia.

### C. Questions and answers:

1. A leaf consists of three main parts.
  - Leaf blade or lamina
  - Petiole
  - Midrib
2. Several branches arise from the veins are known as vein lets. The conduction of food, water and minerals in a leaf is carried out with the help of vein lets.
3. The arrangement of veins and vein lets in the leaf blade or lamina is known as its venation.
4. In some plants, where the stem is weak, leaves are modified into thin, wire like coiled structures known as tendrils. These tendrils coil around any structure or another plant to provide support to the stem. This helps the plant to climb up and grow easily.
5. Bladderwort is an example of a plant with highly segmented leaves.
6. The process of producing new plant lets with the help of vegetative parts of the plants, such as, stems, roots or leaves, is known as vegetative propagation.

### D. Challenge :

1. Cactus is a desert plant. These sharp and pointed spines protect the plant from grazing animals as well as reduce loss of water due to transpiration.
2. Leave make their own food using carbon dioxide and water in the presence of sunlight and chlorophyll.

We make cannot make food by ourselves, as we use plant products as raw materials for our food. So we directly and indirectly depend on plants for our food.
3. Yes. It is true. A leaf with larger surface area possesses more stomata for gaseous exchange. This will result in greater water loss, because more stomata will provide more pores for transpiration. So, a leaf with a larger surface area will transpire faster than a leaf with smaller surface area.