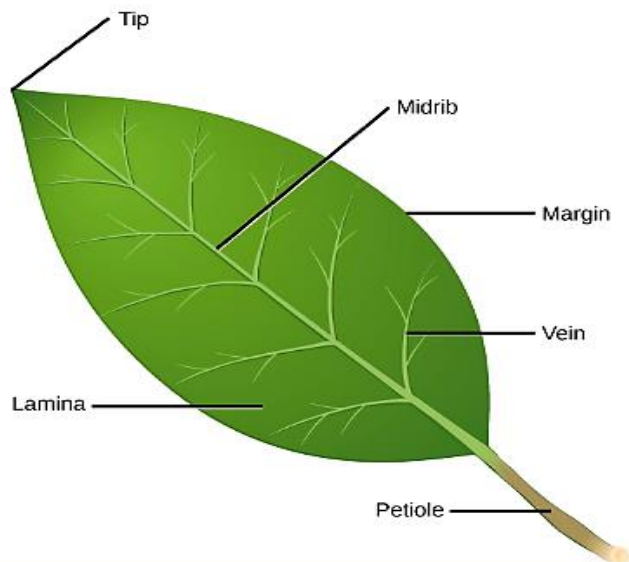
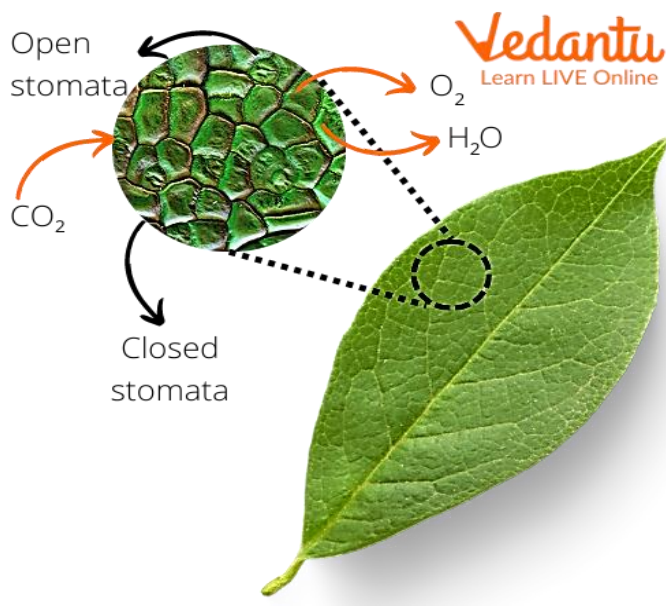


A leaf is one of the flat, usually green parts of a plant that are joined at one end to the stem or branch.



Leaves are responsible for producing food for the plant through a process called **photosynthesis**. The leaves of different plants vary widely in size, shape, and color.

Functions :

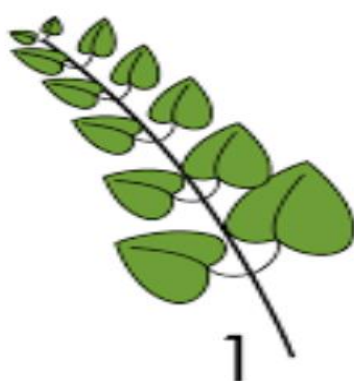
- **Photosynthesis:** Converts light, water, CO₂ and into Carbohydrate (energy) .
- **Gas Exchange:** Stomata on the leaf surface allow for the exchange of oxygen and carbon dioxide.
- **Transpiration:** Water evaporates through leaves, helping to transport nutrients up from the roots.



Types of leaves by arrangement on the stem:

Leaf arrangement on a stem refers to the pattern نمط of leaves, optimizing يحسن sunlight exposure for photosynthesis.

The primary types :are Alternate تبادليه (one leaf per node), Opposite تقابليه (two leaves per node), and Whorled دورانيه (three or more per node).



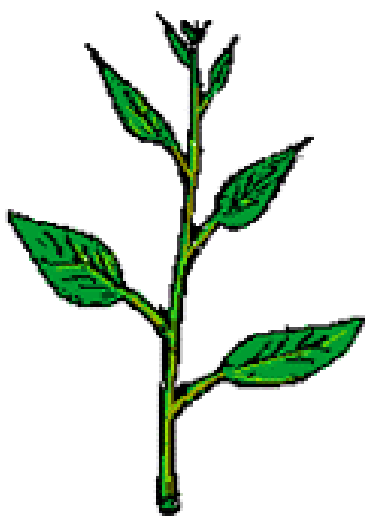
Opposite



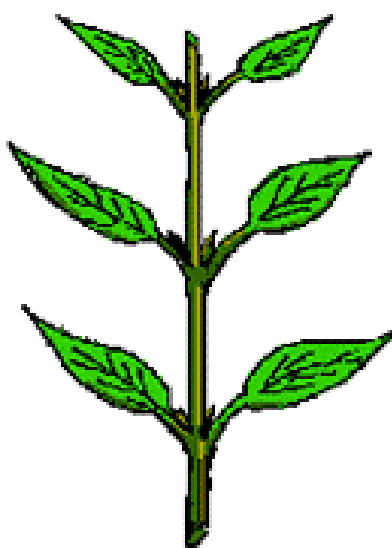
Alternate



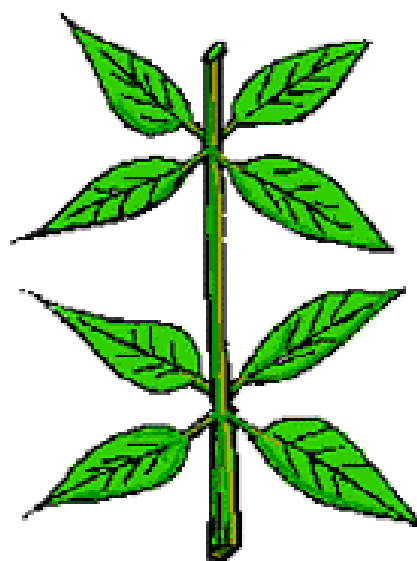
Whorled



Alternate



Opposite



Whorled

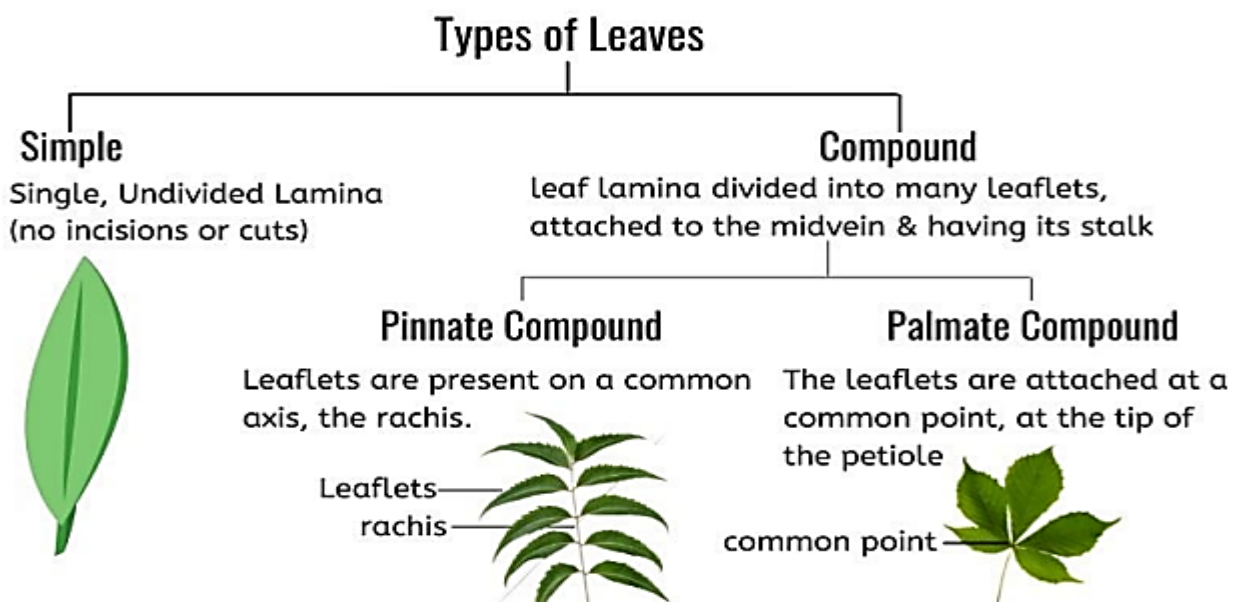
Types of leaves by Structure:

The lamina/ blade is the flat and green part of the leaf with veins.

(blade / النصل) يشير إلى الجزء العريض والمسطح من الورقة النباتية، وهو المسؤول بشكل أساسي عن عملية البناء الضوئي.

Types of Leaves

The leaves are broadly classified into two types: **Simple Leaves** and **Compound Leaves**.



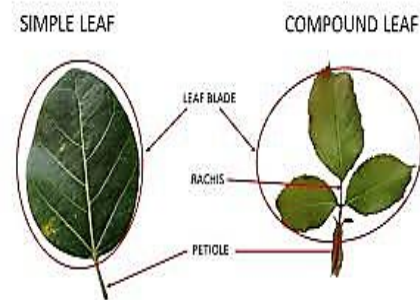
Leaf Types:

1-**Simple** – only one Leaf from base /node as continuous unit .

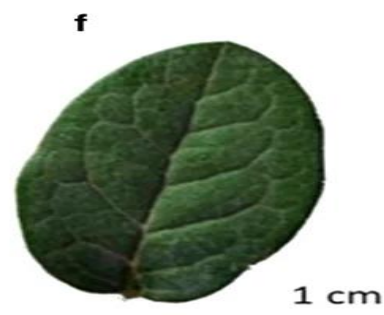
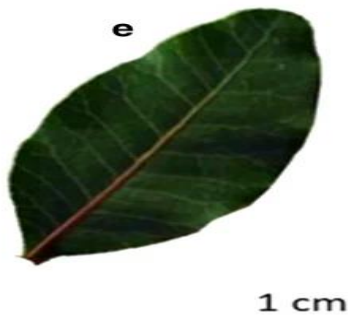
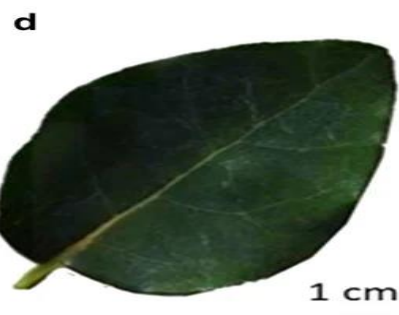
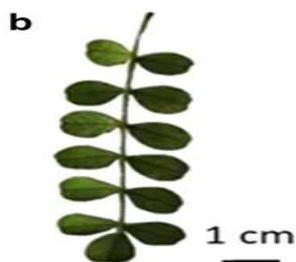
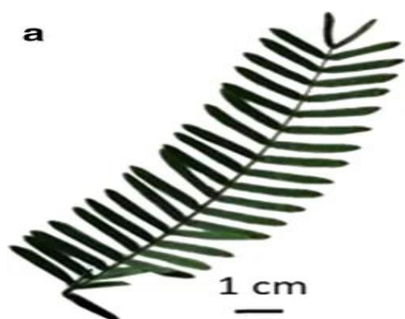
2-**Compound** – Several leaflets وريقات arise from the same node.

Palmately Compound – Leaflets like fingers from a palm. راحية

Pinnately Compound – Leaflets arranged like a feather. ريشية



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Rose Leaf



Aloe Vera Leaf



Maple Leaf



Mango Leaf



Mint Leaf

Name Of Leaves



Grapes Leaf



Lotus Leaf



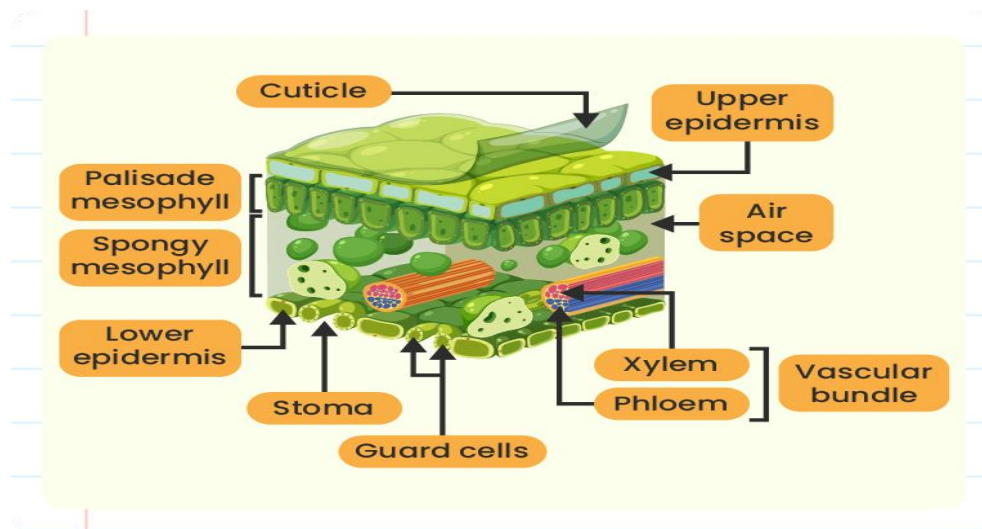
Tea Leaf



Lemon Leaf



Coconut Leaf

The Internal Structure of a Leaf Lamina/ leaf anatomy :

1-Epidermis – Outer layer of cells

2- Waxy protective: outer layer of epidermis that prevents water loss from leaves. The amount of cutin or wax increases with light intensity.

3-Leaf Hairs/Trichomes –physical defense .

4-Stomates (Stomata) – Most stomates are found on the underside of leaves. Natural openings in leaves ,allow for gas exchange (water vapor, carbon dioxide and oxygen) and plant cooling.

5- Guard Cells – Specialized kidney-shaped cells that open and close the stomata.

Modified Leaves :

Spines: Protective (e.g., cactus صبار شوكي).

Tendrilsالمحاليق: Specialized for climbing (e.g., pea plants).

من أبرز أمثلتها: العنب (محاليق ساقية)، الخيار والقرعيات (محاليق ساقية)، البازلاء الحلوة (محاليق ورقية)

