

Plant STEMS and LEAVES



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Stem

- the main trunk of a plant that serves to support the plant body and transport nutrients
- crucial to the transport and storage of water, minerals, and food from photosynthesis



Stem Structures

- Nodes – attachment for leaves
- Internodes – regions between the nodes
- Buds – undeveloped tissue
- Xylem and phloem – transport water and nutrients

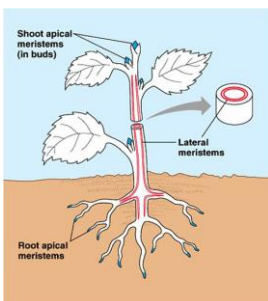


Types of Stems



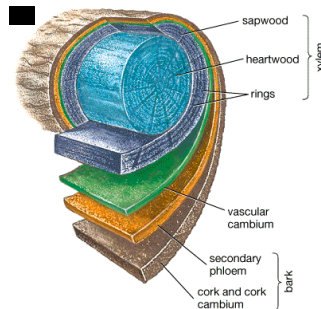
- Soft, flexible and green – called Herbaceous Stems
- Hard, rigid, and brown – called Woody Stems
- Both have xylem and phloem, but woody stems have extra layers (for protection)

Growth of a Stem



- Primary growth – new cells produced at the root tips and shoots
 - Increases length
 - called Apical meristems
- Secondary growth – lateral cylinders within the plant
 - increases width
 - called Lateral meristems

Wood and Bark are Products of Lateral Meristem

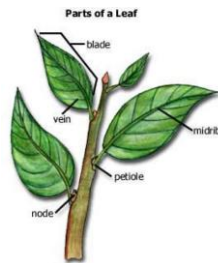


Leaves

□ organs of photosynthesis in plants

□ Made of:

- a flattened blade
- a petiole (stalk that attaches the blade to the stem)
- epidermis (outer cells)
- cuticle (waxy coating that reduces water loss)

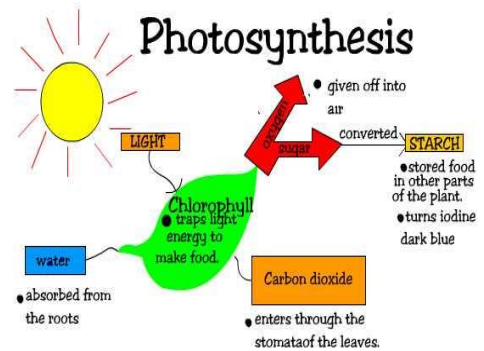


Photosynthesis

- is the process in which a plant absorbs light energy and converts it to chemical energy.
- In order to photosynthesize, plants need water (from plant roots), carbon dioxide (from tiny holes in the underside of leaves), and chlorophyll (comes from chloroplasts in the leaves).
- Chlorophyll serves to trap light energy from the sun.

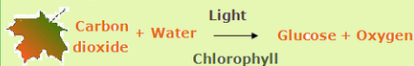
Photosynthesis

- Photosynthesis produces glucose and oxygen.
- Glucose, a form of sugar, is needed by the plant for energy. Plants change this glucose into starch, fats, and proteins. These nutrients are then stored in the plant.
- Oxygen is released to the atmosphere.

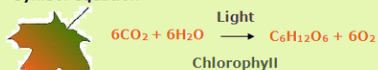


Photosynthesis

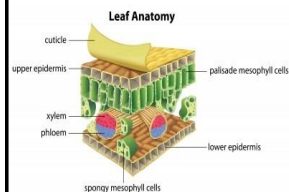
Word equation



Symbol equation



Photosynthesis occurs in the mesophyll (middle tissue) of a leaf.



- A. **Palisade mesophyll** – contains chloroplasts that absorb light
- B. **Spongy mesophyll** – beneath palisade level
- C. **Stomata** – openings in the underside of the leaf for gas exchange
- D. **Guard Cells** – control the opening/closing of stomata

