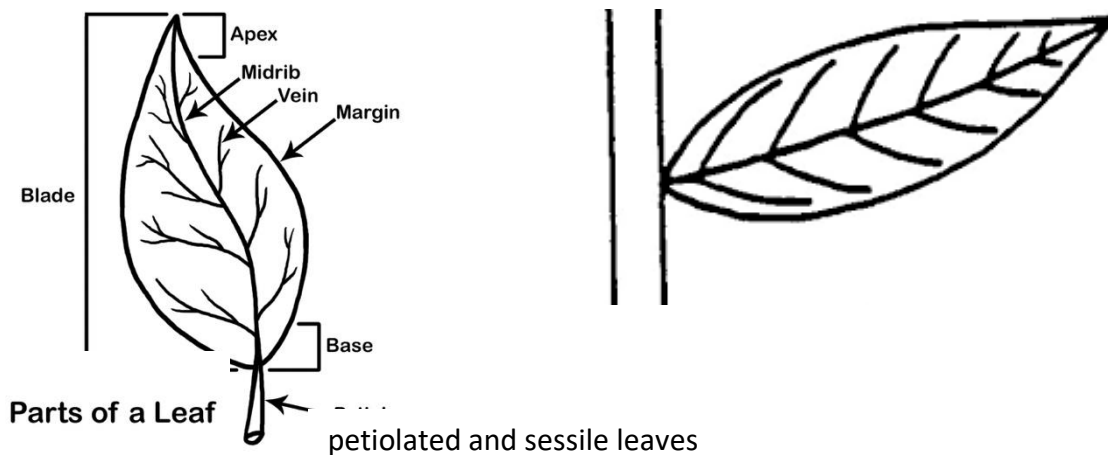


## Exploring leaves

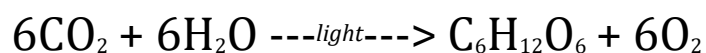
All of a plant's major life functions occur as a result of leaves. A plant uses them to convert sunlight into energy during the process of photosynthesis and to discard excess moisture from the plant during transpiration.

Leaves have two main classifications: simple and compound. A simple leaf is a single, undivided leaflet while a compound leaf is comprised of multiple leaflets.

A leaf can also be petiolated or sessile in structure. A petiolated leaf is one that has a short stem to extend the leaf outward. A sessile leaf attaches directly to the stem without a petiole or stem.

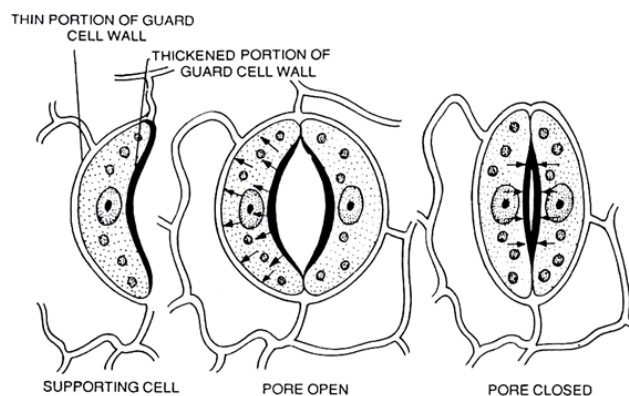


Photosynthesis is the production of carbohydrates by plants. The leaves collect water and carbon dioxide and use light energy to produce sugars which the plant will use for growth.



The glucose which is not used immediately by the plant is rapidly converted to starch for energy storage and in cell structures.

Transpiration is a process where moisture is back into the atmosphere through evaporation from the leaf's surface. Water necessary for plants but only a small of water taken up by the roots is used for and metabolism. Close to 99% of the water through transpiration. The movement of carries nutrients through the plant and the evaporation from leaves cools the plant



released  
is  
amount  
growth  
is lost  
water  
down.

Gases and liquids pass in and out of the leaf through openings called stomata. These pores are surrounded by Guard Cells which regulate their size.

## Seeing stomata

Apparatus:

Nail varnish  
Leaves  
Sticky tape  
Microscope

Brush a thin layer of nail varnish on the underside of a leaf.

Wait for it to dry then place a piece of tape over the top. Peel off the tape which now has an impression of the leaf surface.

Place on a microscope slide, cover with a slip and view under a microscope.

Draw a picture of what you see. Can you identify stomata and guard cells?

## Photosynthesis

Apparatus:

Glass  
Water  
Sodium hydrogen carbonate (baking soda)  
Lamp  
pondweed

1. Make a weak solution of sodium hydrogen carbonate in the glass by stirring 1 tablespoon into a water
2. Cut a 5cm piece of pondweed and place in the solution
3. Stand the tube in a rack in front of a lamp.

Watch what happens. Can you record the rate of bubbling?

What happens if you move the lamp closer to the glass?

Can you find a way to catch the bubbles so that they can be tested?