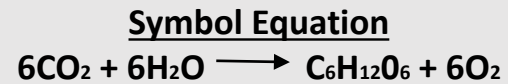
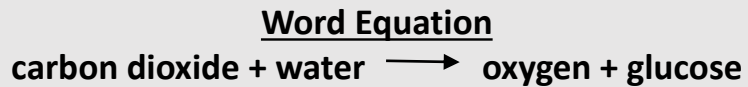
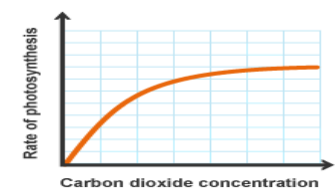
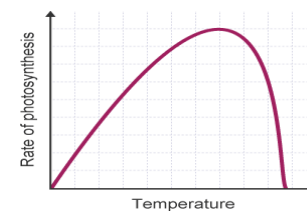
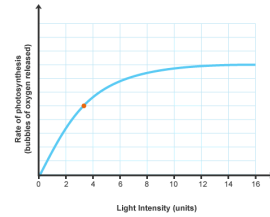


# Photosynthesis



## Section 1- Process of Photosynthesis

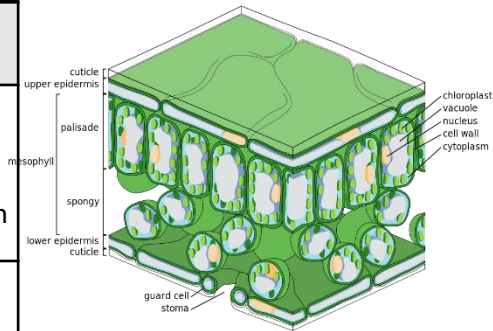
Key Word	Definition
1 Photosynthesis	A chemical, <b>endothermic</b> , reaction which takes place in plants and <b>algae</b> , which produces a source of food.
2 Chloroplasts	An <b>organelle</b> inside the cell- where photosynthesis takes place.
3 Chlorophyll	The <b>green</b> substance inside <b>chloroplasts</b> which <b>absorbs light</b> .
4 Glucose	A water-soluble <b>sugar</b> , which contains six carbons, used in <b>respiration</b> and can be made by photosynthesis.
5 Endothermic Reaction	Photosynthesis requires an <b>input of energy</b> from the environment.



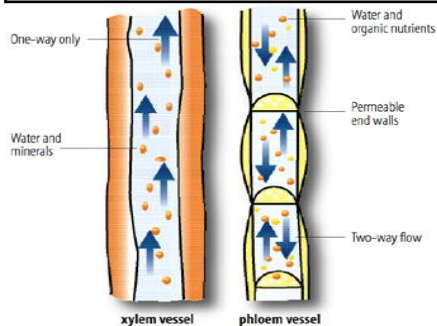
## Section 2- Leaf Adaptations

Structure	Adaptation for Photosynthesis
6 Leaf surface	The leaf itself is broad and thin, to give a large surface area for light to fall on and short diffusion distances for gases.
7 Veins	Carry water from <b>xylem</b> in the plant, to the cells of the leaves and remove products of photosynthesis in the <b>phloem</b> .
8 Air Spaces	Allow carbon dioxide to get into the cells and oxygen to leave the cells, by diffusion.
9 Guard Cells	These cells open and close the stomata (holes in the leaf), to regulate gas exchange.

## 10 Leaf Structure



## 11 Xylem & Phloem

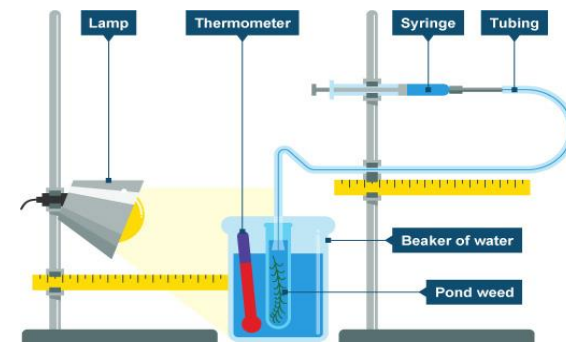


## Section 3- Rate of Photosynthesis

Limiting Factor	How does it affect the rate?
12 Light	For most plants, the brighter the light, the faster the rate of photosynthesis. If there is little/no light, photosynthesis will stop.
13 Temperature	As temperature increases, the rate of photosynthesis increases. However if the temperature is too high (40-50°C) then the enzymes controlling photosynthesis denature, slowing the rate.
14 Carbon dioxide concentration	The atmosphere is only 0.04% carbon dioxide, so it often limits the rate of photosynthesis. On a sunny day, carbon dioxide is the most common limiting factor. Increasing the CO <sub>2</sub> concentration, increases <b>photosynthesis</b> .
15 Chlorophyll levels	Less chlorophyll results in less photosynthesis. Minerals e.g. magnesium are used to make chlorophyll, so can affect the rate of photosynthesis.

## Section 4- Plant Materials & Glucose

Material	Use in Plant	Test?
16 Cellulose	A storage molecule made of glucose, strengthens cell walls.	
17 Starch	An insoluble molecule used for energy storage in plants.	<b>Iodine-</b> boil leaves in ethanol, look for blue-black colour.
18 Nitrates	Plants combine nitrates with glucose & other minerals to make <b>amino acids</b> .	<b>Biuret Test for Proteins-</b> purple colour change.
19 Lipids	Glucose is used to build up fats & oils, which are used as an energy store, often <b>in seeds</b> .	



**20 RP- Light Intensity & Rate of Photosynthesis.** The number of bubbles is measured by a syringe or upturned test tube.