

Chapter 4 Section 2 Notes - Overview of Photosynthesis

- Plants are producers – they produce their own source of energy.
- **Photosynthesis** – the process by which light energy is converted to chemical energy; produces sugar and oxygen from carbon dioxide and water – takes place in chloroplasts
- **Chlorophyll** – molecule **in chloroplasts** that absorbs some of the energy in visible light (made of different wavelengths or colors of light)
- Plants use energy in visible light for photosynthesis

* **2 Main parts of chloroplasts are needed for photosynthesis:**

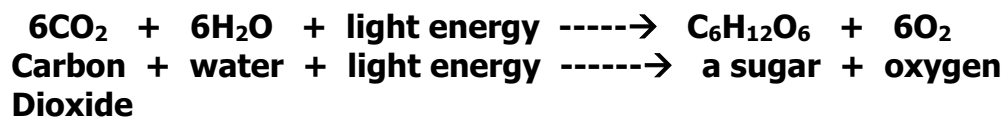
1. **grana** (granum, singular) – stacks of compartments called **thylakoids** – shaped like coins, flat and circular and they are enclosed by membranes that contain chlorophyll
2. **stroma** – fluid that is all around the grana inside the chloroplast

• **2 stages** of photosynthesis:

1. **Light-dependent reactions** – capture energy from sunlight
- takes place **in the thylakoids** and their membranes
 - chlorophyll **absorbs energy** from sunlight, energy moves along the thylakoid membrane and **is transferred to molecules** that carry energy, **such as ATP**
 - during this process **H₂O molecules are broken down** and **O₂ molecules are released**

2. Light-independent reactions – use the energy from the light-dependent reactions to make sugars (Calvin Cycle)

- takes place **in the stroma**
 - **CO₂ and energy** from the light-dependent reactions are used to **build sugars**, usually glucose (C₆H₁₂O₆)



* Plants often use the simple sugars produced by photosynthesis to build starch and cellulose molecules.