Photosynthesis

\[ 6H_2O + 6CO_2 \rightarrow C_6H_{12}O_6 + 6O_2 \]

**Light Reaction**

In Thylakoids

H\(_2\)O is split by Light into H\(_2\) and O\(_2\)

H\(^+\) is captured by NADP+

\[ \text{NADP}^+ + H^+ \rightarrow \text{NADPH} + H^+ \]

Also, energy units called ATP are created for future use.

\[ \text{ATP} - \text{Adenosine Triphosphate} \]

\[ \text{ADP} + \text{Phosphate} \rightarrow \text{ATP} \]

\[ \text{Adenosine diphosphate (ADP) + Phosphate} \rightarrow \text{Adenosine triphosphate (ATP)} \]

**Dark Reaction**

Or Calvin Cycle

CO\(_2\) and the captured H\(^+\) are combined with the help of enzymes to make SugarC\(_6\)H\(_{12}\)O\(_6\)

The energy units of ATP are used up to do this. They become less energetic ADP.
Respiration

\[ \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{H}_2\text{O} + 6\text{CO}_2 + \text{Energy} \]

Glucose + Oxygen \rightarrow Water + Carbon Dioxide + Energy

In Cytoplasm:
- Anaerobic - No Oxygen
  - Glycolysis
    - Splits Glucose Into 2 Pyruvic Acids
    - \( \text{H}^+ \) that come off are caught by 2 Energy Units called ATP
    - Are Created

In Mitochondria
  - Kreb’s Cycle
  - Or Citric Acid Cycle
    - 2 Molecules from glycolysis are broke down into \( \text{CO}_2 \)
    - Electron Transport takes Place.
      - \( \text{H}^+ \) that have been caught are funneled into transport chain on inner membrane and \( \text{H}_2\text{O} \) is created
      - 34 Units of ATP are created