

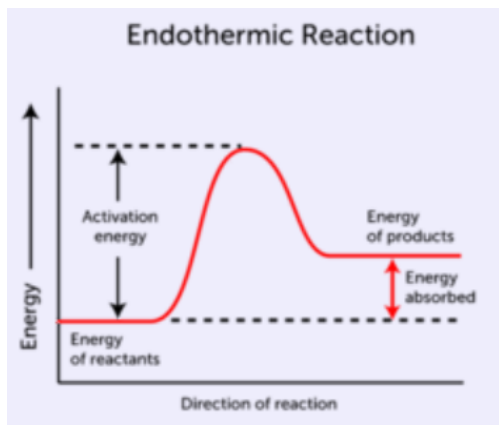
Notes - Chemical Reactions and Energy

Chemical reaction - when two or more atoms interact, they create new forms of matter

Reactant(s) -----> Product(s)

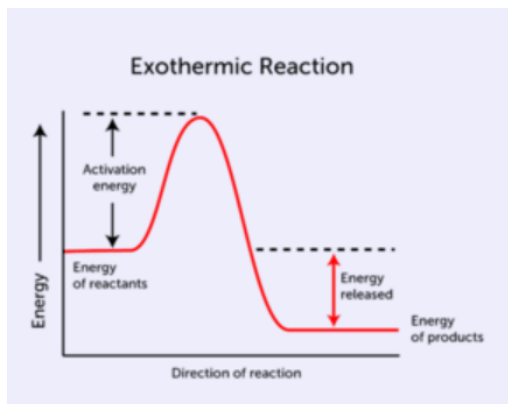
(original matter/energy absorbed) → "yields or produces" → (rearranged matter/energy released)

Endothermic - energy is absorbed by the reactants



ex. Photosynthesis: $\text{H}_2\text{O} + \text{CO}_2 + \text{SUNLIGHT (radiant energy)} \rightarrow \text{Glucose sugar} + \text{O}_2$

Exothermic - energy released with the products



ex. cellular respiration: $\text{Glucose Sugar} + \text{O}_2 \rightarrow \text{H}_2\text{O} + \text{CO}_2 + \text{ATP (chemical energy)}$

Energy and Phase Changes -

Solid → Liquid → Gas is Endothermic // Gas → Liquid → Solid is Exothermic

Law of Conservation of Energy and Mass

The universe is a "closed system," so the amount of matter and energy are constant. Matter and energy are united and neither can be created or destroyed.

(The earth is essential CLOSED to matter, but is receiving energy from the sun)