Chemical Reactions

Section 6.2

Chemical Reactions

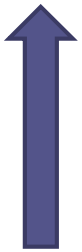
- Bill Nye video https://www.youtube.com/watch?v=JSiBSSFKRwE
- What did Bill say is the particle that is important in reactions?
  - ELECTRON!
- What was given off or put into the reactions?
  - ENERGY!

Chemical Reactions

- What is a chemical reaction?
  - Atoms or groups of atoms are reorganized
  - New substances are formed
  - Bonds are broken OR formed
  - Energy can be put into the reaction OR released from the reactions
- Examples???

Reactants and Products

- <u>Reactants</u>
- Chemical that goes INTO a reaction
- Found on the LEFT side of the equation
- **$C_6H_{12}O_6 + O_2$** → $CO_2 + H_2O$



Reactants

- <u>Products</u>
- Chemical that is MADE from a reaction
- Found on the RIGHT side of the equation
- $C_6H_{12}O_6 + O_2$ → **$CO_2 + H_2O$**

Products

Chemical Equations

- The way a reaction is expressed to a scientist
- Has formulas and numbers on both sides of an arrow
  - Arrow shows which way the reaction is going
- Matter cannot be created or destroyed – law of conservation of mass
  - An equation is BALANCED to show this
  - The number of atoms on one side = atoms on the other side

Chemical Equations

- $1\ C_6H_{12}O6 + 6\ O_2 \rightarrow$
- $6\ CO_2 + 6\ H_2O$

C – 6

C – 6

H – 12

H – 12 (6 x 2)

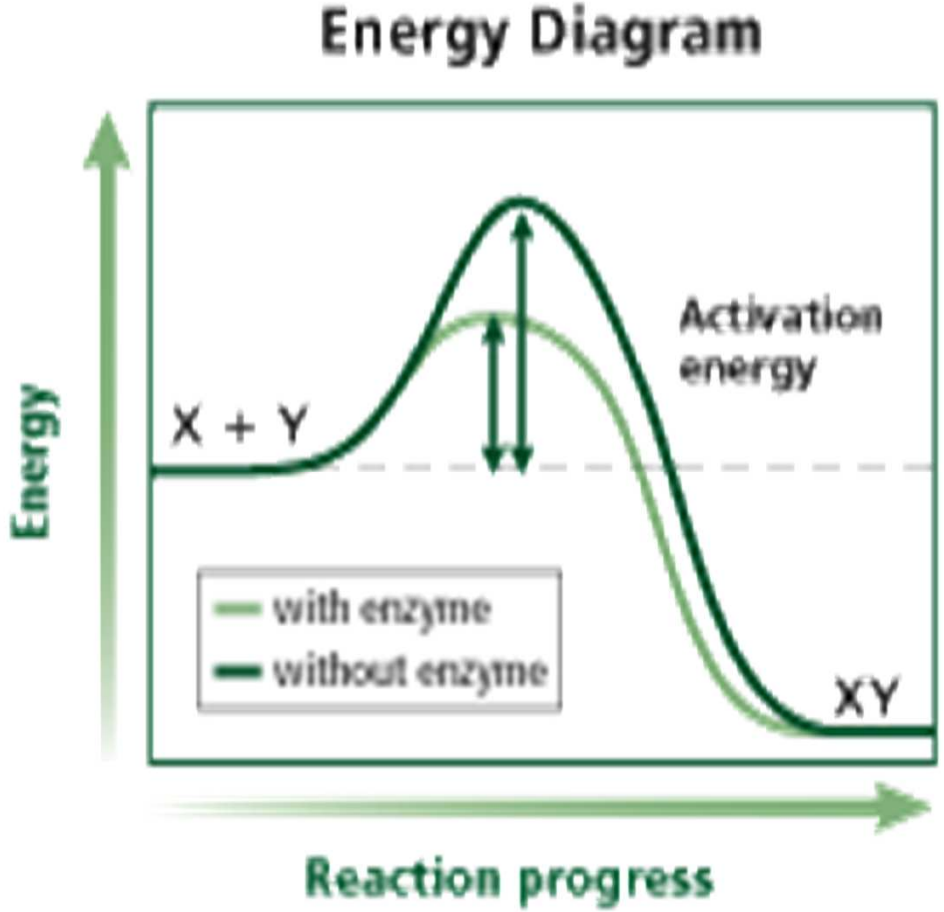
O – 18 (6 + 12)

O – 18 (12 + 6)

Energy of Reactions

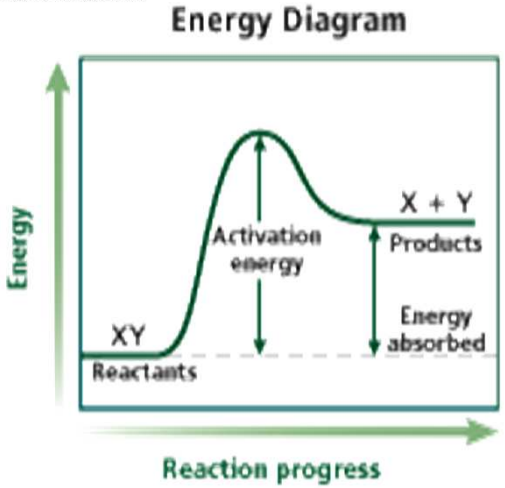
- The key to starting a reaction is ENERGY!
  - Heat, electricity, etc
- Activation energy – minimum amount of energy (E) needed to form a product
  - Some reactions need very little and happen quickly
  - Some reactions rarely happen because they need so much

Energy of Reactions (draw this!)



Energy of Reactions

- <u>Endothermic</u>
- E is going "IN" to the reaction
- E is added to get it started
- E of the product is higher on the graph than E of the reactant



- <u>Exothermic</u>
- E is "EXIT"ing the reaction
- E is given off when reaction goes
- E of the product is lower on the graph than E of the reactant
- *Still need to put SOME E in to get the reaction to go!*