Unit 11: Ch 16 – Entropy & Potential Energy Diagrams

REVIEW OF ENTHALPY:

- **Enthalpy (ΔH)** - _____ of heat content _____ or _____.
  - Nature favors _____ energy
    - _____thermic → _____

KINETICS:

- **Collision (Kinetic) Theory –** In order to _____ , particles must _____ with sufficient _____.

ENTROPY:

- **Entropy (ΔS) –** Measure of _____ or _____ of particles.
  - Nature favors _____ disorder/randomness
    - _____ entropy → _____
- **Which has *MORE* disorder? *(Higher ΔS)***
  - #1: *Increase* or *decrease* in temperature?
    - Answer: _____ temperature
      - Why? → _____
  - #2: *Reactants* or *products*? $2\ NH_{3\ (g)} \rightarrow 1\ N_{2\ (g)} + 3\ H_{2\ (g)}$
    - Answer: _____
      - Why? → _____
  - #3: *Increase* or *decrease* in entropy?
    - Solid → Liquid = _____
    - Liquid → Gas = _____
    - However, ΔS g → g _____ ΔS s → l or l → g
      - Why? → _____

POTENTIAL ENERGY DIAGRAMS:

- **Activated Complex *(A.C.)* – *Old*** _____ bonds are _____ and ***new*** _____ bonds are _____.
  - _____ (peak) energy point along the _____ path.
- **Activation Energy (E_a)** - _____ energy required to _____ the reaction to form the _____.
  - **E_a *(reactants)* =** _____
- **Enthalpy of Reaction (ΔH_{rxn}):**
  - **ΔH_{rxn} =** _____
    - ***ENDO***thermic = _____
    - ***EXO***thermic = _____
      - Assume moving in the direction of _____ reaction.

FACTORS THAT *INCREASE* RATE OF REACTION:

- 1. Surface Area:
  - _____ surface area = _____ number of points of collision
- 2. Temperature:
  - _____ temperature = _____ kinetic energy = _____ # of collisions
- 3. Concentration:
  - _____ concentration = _____ # of particles = _____ # of collisions
- 4. Adding Catalyst:
  - _____ activation energy *(E_a)* = _____ activated complex *(AC)* = _____ # of collisions