CH 105 SI

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1. What 3 conditions does the collision theory say are necessary for a chemical reaction? Which of those conditions can be related to activation energy?

1. Collision must occur
2. Collisions must be strong enough to break bonds.
3. Molecules must be oriented properly while colliding.

Activation energy: #'s 2 & 3 Above

2. What is the equation for reaction rate?

$$\text{Rate} = \frac{\Delta \text{ concentration}}{\Delta \text{ time}}$$

3. State how reactions are affected by the following:
   a. Temperature: higher temp, faster rate because of high energy reactant molecules moving faster creating more collisions.
   b. Concentration: The higher reactant concentration, the faster reaction rate b/c of more molecules making more collissions.
   c. Catalysts: increase reaction rate by lowering Activation energy. The catalyst does not change.
4. Describe a reversible reaction. What happens?
   The forward and reverse reaction can both occur.
5. When will equilibrium occur?
   When the reaction rates of the forward and reverse reactions are equal. No change in concentrations, but reactions still occur.
6. What is the equilibrium constant?

$$K_c = \frac{[\text{products}]}{[\text{reactants}]}$$

$\Rightarrow$ [ ] means concentration.