

## Collision Theory Notes

### A. Rate of Reactions

1. The rate of a reaction is the \_\_\_\_\_ at which a chemical or physical change occurs.
2. Measured by...
  - a) Number of moles of a reactant \_\_\_\_\_ (used up) per unit \_\_\_\_\_
  - b) Number of moles of product \_\_\_\_\_ per unit \_\_\_\_\_
3. Chemical and physical changes occur at different \_\_\_\_\_. Many factors affect the speed in which a reaction occurs.

### B. Collision Theory

1. Collision theory states: For a chemical reaction to occur between reactants there must be \_\_\_\_\_ collisions between the reacting particles. (*An effective collision means that reactants turn into products*)
2. Effective collisions occur if the particles...
  - a) \_\_\_\_\_ with each other
  - b) have the correct \_\_\_\_\_ (angle)
  - c) have enough \_\_\_\_\_ energy
3. The rate of reaction depends on the \_\_\_\_\_ (how often) of effective collisions between reactants.
4. Any factor that can change how often effective collisions can occur will change the reaction rate.

### C. Activation Energy

1. Activation energy is the energy needed to \_\_\_\_\_ a chemical reaction.
  - a) Chemical reactions that require \_\_\_\_\_ activation energy are \_\_\_\_\_ than those that require high activation energy
  - b) Any factor that can change the amount of \_\_\_\_\_ energy needed for a reaction will change the \_\_\_\_\_ of that reaction.

## Factors that Affect Reaction Rate Notes

The following factors increase reaction rate because...

### A. Increasing Concentration

1. Increases the number of \_\_\_\_\_
2. Increases the \_\_\_\_\_ of effective collisions

### B. Increasing Pressure (gases only)

1. Decreases \_\_\_\_\_ of gaseous reactants.
2. Increases the \_\_\_\_\_ of gaseous reactants
3. Increases the \_\_\_\_\_ of effective collisions

### C. Increasing Temperature

1. Increases \_\_\_\_\_ of reacting particles.
2. Increases \_\_\_\_\_ of effective collisions.

### D. Increasing surface area

1. \_\_\_\_\_ more area for reactions to occur.
2. Increases \_\_\_\_\_ of effective collisions.

### E. Addition of a catalyst

1. Provides a \_\_\_\_\_ activation energy (alternate) pathway for a reaction to occur.
2. It does not get \_\_\_\_\_ (used up) in the reaction. After it is finished it can be used again.

### Enzymes and Inhibitors

1. Enzymes are \_\_\_\_\_ catalysts.
2. An Inhibitor has the \_\_\_\_\_ affect, it inhibits or slows down the reaction by blocking the pathway.

### How Do You Speed Up a Reaction Video

1. Pressure/volume: \_\_\_\_\_
2. Concentration: \_\_\_\_\_
3. Temperature: \_\_\_\_\_
4. Surface Area: \_\_\_\_\_
5. Catalyst: \_\_\_\_\_