

# **Chapter 6**

# **Chemical Equations and Reactions**

Sec 6.3 Notes

# Section 6.3

## Reversible Reactions

When no net change occurs in the amount of reactants and products, a system is said to be in equilibrium.

A dynamic equilibrium is a system in which opposite actions are taking place at the same rate.

# Section 6.3

## Reversible Reactions (cont.)

The reversible reaction will favor the direction that produces the most stable products, which are those that are least likely to change.

Le Châtelier's principle states that if a stress is applied to a system at equilibrium, the system shifts in the direction that relieves the stress.

# Section 6.3

## Reversible Reactions (cont.)

A product that does not dissolve in water can be removed if all other products and the reactants dissolve in water.

- A compound is soluble in a liquid if it dissolves in it.
- A compound is insoluble if it does not dissolve in a liquid.

# Section 6.3

## Reversible Reactions (cont.)

Adding or removing energy, usually in the form of heat, can also influence the direction of a reaction.

# Section 6.3

## Activation Energy

For a reaction to occur between two substances, particles of those substances must collide with each other with enough force to cause a change to take place.

The amount of energy the particles must have when they collide is called the activation energy of the reaction.

# Section 6.3

## Speed Rate

To determine how fast a reaction is taking place, you can measure how quickly one of the reactants disappears or how quickly one of the products appears.

Most reactions go faster at higher temperatures.

# Section 6.3

## Speed Rate (cont.)

Raising the concentration, or amount of the substance present in a certain volume, will speed up a reaction because there are more particles per volume.

# Section 6.3

## Speed Rate (cont.)

When the limiting reactant, or the reactant in limited supply, is used up, the reaction stops and no new product is formed.

Available tools



Sets of tools



Set 1



Set 2



Set 3



Set 4

Extra tools



# Section 6.3

## Speed Rate (cont.)

A catalyst is a substance that speeds up the rate of a reaction without being permanently changed or used up itself.

- Biological catalysts are called enzymes.
- A substance that slows a reaction is called an inhibitor.