Dougherty Valley • AP Chemistry

**S-33**

Equilibrium: A Dynamic Process

**STUDY LIST From Paul Groves**

I can…

Law of Mass Action:

🞏 write the Law of Mass Action for concentration terms.

🞏 write the Law of Mass Action for pressure terms.   


🞏 remember to exclude solids and liquids in the law of mass action.

🞏 use the Law of Mass Action to solve for the equilibrium constant, or to solve for concentrations at equilibrium.

Equilibrium Constant:

🞏 use the size of the equilibrium constant to determine if it is a product favored or reactant favored reaction.   
K > 1 product favored  
K < 1 reactant favored

🞏 convert between Kc and Kp  
Kp = Kc(RT)∆n Where ∆n =   
mol of (g) products – mol of (g) reactants

🞏 modify the value of K when a chemical reaction has been modified:  
Reverse rxn = 1/Kforward  
Multiply rxn by a number n = Kn  
Adding rxns = K1 x K2 x ...

Reaction Quotient, Q:

🞏calculate Q for a reaction not at equilibrium (or if you don’t know whether it is at equilibrium or not)

🞏 use the size of K versus Q to determine which way a reaction will proceed to reach equilibrium, or to determine if it is already at equilibrium  
K < Q, too many products,   
reverse rxn favored, “shift left”  
K > Q, too many reactants,   
forward rxn favored, “shift right”  
K = Q, already at equilibrium

Le Chatelier’s Principle:

🞏 define Le Chatelier’s Principle.

🞏 describe how changes in concentration, pressure, and temperature shift the equilibrium point of a reaction.

ICE Tables:

🞏 set up an ICE table to solve equilibrium problems.

🞏 remember to take the stoichiometric coefficients of the reaction into account when using an ICE table.

🞏 use the 5% rule to approximate changes to equilibrium to avoid using quadratic equations and other more complex algebra methods – only when 5% rule applies.

🞏 use “perfect squares” to help algebraically solve for ICE table values

Connection to Previous Chapters:

🞏 make connections between Equilibrium and the Thermochemistry, Thermodynamics, and Kinetics chapters.

*Equations from AP Equation Sheet on the back. Not enough space here!*

From the AP Exam:

