Name_____

CH 18 CHEM EQUILIBRIUM: *Study Guide*

Terms to know and their symbols:

reaction quotient	***equilibrium expression***
equilibrium constant	***reversible reaction***
concentration	***equilibrium position***
homogeneous equilibrium	***heterogeneous equilibrium***

1. What is happening when a system is in chemical equilibrium?

2. Describe a reversible reaction.

3. Describe the relationship between rate and concentration for the forward reaction. The reverse reaction. *Be able to interpret the graph.*

4. What is the equilibrium expression for the following reaction, $eE+fF \leftrightarrow gG + hH$?

5.a. Write the equilibrium expression for $2CO_{(g)} \leftrightarrow C_{(s)} + CO_{2(g)}$

b. What is the reaction quotient if [CO] = .200M and CO_2 = 1.5M?

c. If K_{eq} = 45.9, is the system at equilibrium? If not, will the reaction proceed to the right or to the left?

d. Does the K_{eq} for this reaction indicate whether reactants are favored or that products are favored? *Know why!*

6. Find the concentration of I_2 in the following reaction at equilibrium given that K_{eq} = .975, $[H_2]$ = 2.0M, and [HI] = 1.5M:

$$H_{2(g)} + I_{2(g)} \leftrightarrow 2HI_{(g)}$$

7. Why aren't solids or liquids included in the equilibrium expression?

8. If $K_{eq} << 1$, then what is favored, reactants or products?

9. If $K_{eq} >> 1$, then what is favored, reactants or products?

10. If $Q < K_{eq}$, will the reaction proceed left or right?

11. If $Q > K_{eq}$, will the reaction proceed left or right?

12. Can K_{eq} or Q ever be zero? Less that zero? Equal to one?

13. What is the purpose of the reaction quotient?

14.a. Which of the three factors can actually change an equilibrium constant? *Pressure, temperature, or concentration?*

b. How do the others affect the reaction?

15. Describe LeChatelier's principle.

16. According to LeChatelier's principle, how will a system in equilibrium react if the following conditions are imposed on it? Assume all substances in the system are gases and the reaction is endothermic.

a. Increase reactants	b. Decrease products
C. Increase pressure	d. Decrease volume
e. Decrease temp	f. Remove reactants