CHEM 1032 – Week 6 Questions

1. What is the value of K for the second reaction?

   $N_{2\,(g)} + 3\ H_{2\,(g)} \text{ <--> } 2\ NH_{3\,(g)}$ K 5.6×10^{-5}

   $NH_{3\,(g)} \text{ <--> } 1/2\ N_{2\,(g)} + 3/2\ H_{2\,(g)}$ K ????

2. For the reaction and conditions below determine the value of K.

   A (aq) <--> 2 B (aq)

	[A]	[B]
Initial	1.00	0.00
Equilibrium	0.75	?

3. For the reaction and conditions below determine the equilibrium concentrations.

   A (aq) <--> 2 B (aq) K 0.33

	[A]	[B]
Initial	0.98	0.00
Equilibrium	?	?

4. For the reaction and conditions below determine the al of the equilibrium concentrations.

   H_2 (aq) + I_2 (aq) <--> 2 HI (aq) K = 50

	[H_2]	[I_2]	[HI]
Initial	0.670	0.670	0
Equilibrium	???	???	???

5. For the reaction and conditions below determine the equilibrium concentrations.

   C (aq) <--> 2 D (aq) K 3.3×10^{-7}

	[A]	[B]
Initial	0.98	0.00
Equilibrium	?	?

6. If a reaction mixture contains 0.041 atm H_2, 0.037 atm S_2, and 0.615 M H_2S, is the reaction at equilibrium?

$$2\ H_2S_{(g)} \rightleftharpoons 2\ H_{2\,(g)} + S_{2\,(g)} \qquad K_P\ 2.4 \times 10^{-4}$$

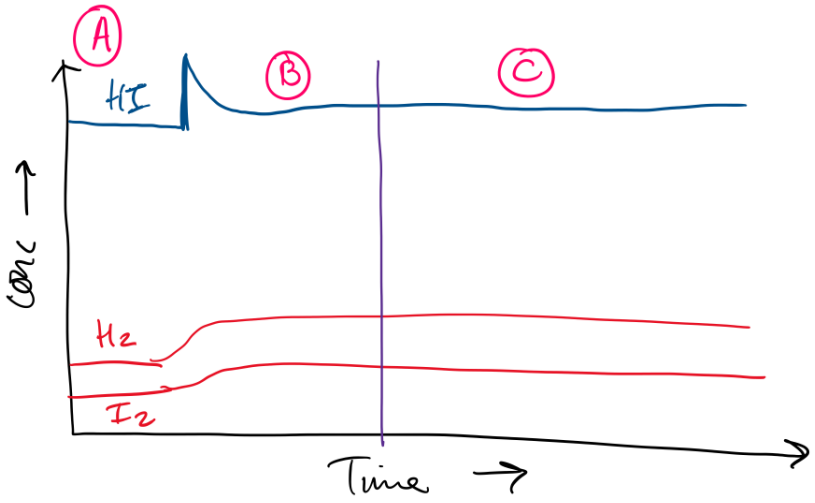
7. For the example we just completed….What is the value of ΔG?

"If a reaction mixture contains 0.041 atm H2, 0.037 atm S2, and 0.615 atm H2S, is the reaction at equilibrium?"

$$2\ H_2S_{(g)} \rightleftharpoons 2\ H_{2\,(g)} + S_{2\,(g)} \qquad K_P\ 2.4 \times 10^{-4}$$

8. What is the definition of equilibrium?
    a. Rate forward = rate backward
    b. Concentration reactants = concentration products

9. For the graph below…
    a. What happens when you add HI?
    b. In region A, what is the relationship between Q and K?
    c. In region B, what is the relationship between Q and K?



10. For the following reaction what happens to equilibrium as a result of the stress?

$$CO\ (g) + Cl_2\ (g) \leftrightarrow COCl_2\ (g)$$

    1. Remove $COCl_2$?
    2. Double the size of the container?