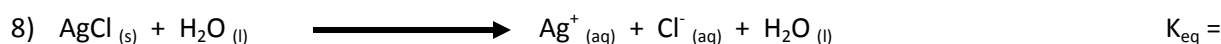
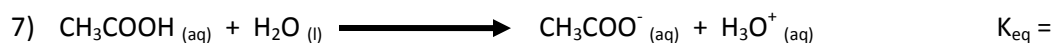
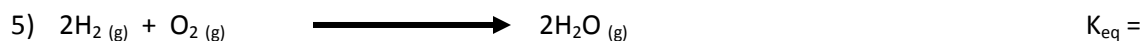
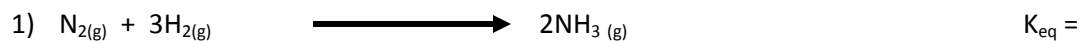


# Equilibrium Constant Worksheet

Name: \_\_\_\_\_ Per: \_\_\_\_\_

**Part 1:** Write out the expression for the equilibrium constants of these reactions:



**Part 2:** Use some of the equilibrium expressions you wrote above to calculate the equilibrium constants using the concentrations given.



If at equilibrium and 25°C, you have  $[\text{FeSCN}^{2+}] = 0.25 \text{ M}$ ,  $[\text{Fe}^{3+}] = 0.046 \text{ M}$ , and  $[\text{SCN}^{-}] = 0.046 \text{ M}$ , what is the equilibrium constant,  $K_{\text{eq}}$ ?

Using the equilibrium constant you just calculated, calculate the concentration of  $\text{FeSCN}^{2+}$  ions if the concentrations of  $\text{Fe}^{3+}$  and  $\text{SCN}^{-}$  are 0.096M each:

10) Equilibrium constants change with the temperature. If, for the same reaction in #9, at 200°C,  $[\text{Fe}^{3+}] = 0.076 \text{ M}$ ,  $[\text{SCN}^{-}] = 0.056 \text{ M}$ , and  $[\text{FeSCN}^{2+}] = 6.3 \text{ M}$ . What is the new  $K_{\text{eq}}$ ?



At 300°C, you have a 2.00L balloon filled, at equilibrium, with 0.0023 moles of  $\text{N}_2$ , 0.0050 mol of  $\text{H}_2$ , and 0.00042 mol of  $\text{NH}_3$ . What is the equilibrium constant?