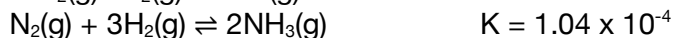
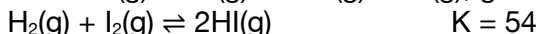
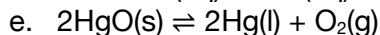
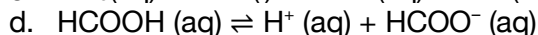
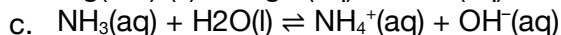
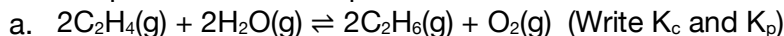


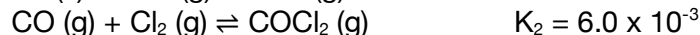
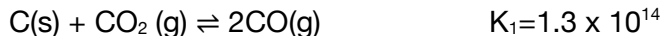
1. Find K_c for the reaction: $2\text{NH}_3(\text{g}) + 3\text{I}_2(\text{g}) \rightleftharpoons 6\text{HI}(\text{g}) + \text{N}_2(\text{g})$, given the information below.



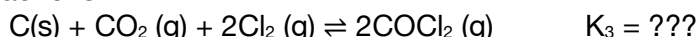
2. Write an expression for the equilibrium constant of each of the following reactions:



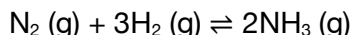
3. The following equilibrium constants were determined at 1123 K:



Calculate the equilibrium constant for the following reaction at 1123 K and write the K expression for ALL reactions:



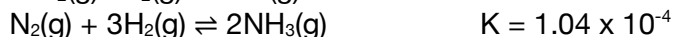
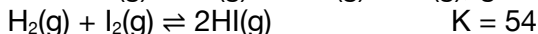
4. The equilibrium constant, K_c , for the reaction $\text{H}_2(\text{g}) + \text{F}_2(\text{g}) \rightleftharpoons 2\text{HF}(\text{g})$ has the value 2.1×10^3 at a particular temperature. When the system is analyzed at equilibrium at this temperature, the concentrations of $\text{H}_2(\text{g})$ and $\text{F}_2(\text{g})$ are both found to be 0.0021 M. What is the concentration of $\text{HF}(\text{g})$ in the equilibrium system under these conditions?
5. At 25°C , $K_p = 5.3 \times 10^5$ for the reaction



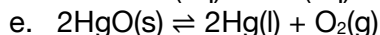
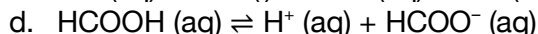
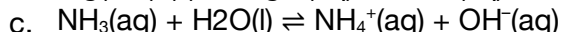
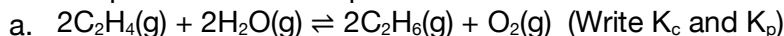
When a certain partial pressure of $\text{NH}_3(\text{g})$ is put into an otherwise empty rigid vessel at 25°C , equilibrium is reached when 50.0% of the original ammonia has decomposed.

What was the original partial pressure of ammonia before any decomposition occurred?

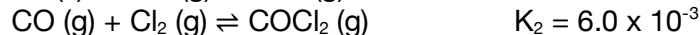
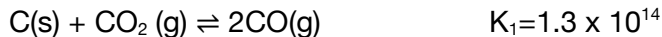
1. Find K_c for the reaction: $2\text{NH}_3(\text{g}) + 3\text{I}_2(\text{g}) \rightleftharpoons 6\text{HI}(\text{g}) + \text{N}_2(\text{g})$, given the information below.



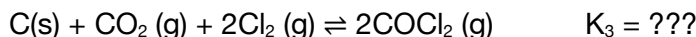
2. Write an expression for the equilibrium constant of each of the following reactions:



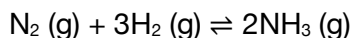
3. The following equilibrium constants were determined at 1123 K:



Calculate the equilibrium constant for the following reaction at 1123 K and write the K expression for ALL reactions:



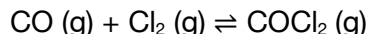
4. The equilibrium constant, K_c , for the reaction $\text{H}_2(\text{g}) + \text{F}_2(\text{g}) \rightleftharpoons 2\text{HF}(\text{g})$ has the value 2.1×10^3 at a particular temperature. When the system is analyzed at equilibrium at this temperature, the concentrations of $\text{H}_2(\text{g})$ and $\text{F}_2(\text{g})$ are both found to be 0.0021 M. What is the concentration of $\text{HF}(\text{g})$ in the equilibrium system under these conditions?
5. At 25°C , $K_p = 5.3 \times 10^5$ for the reaction



When a certain partial pressure of $\text{NH}_3(\text{g})$ is put into an otherwise empty rigid vessel at 25°C , equilibrium is reached when 50.0% of the original ammonia has decomposed.

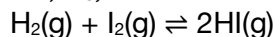
What was the original partial pressure of ammonia before any decomposition occurred?

6. For the following reaction:

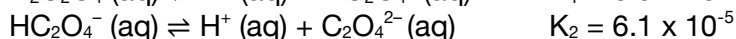
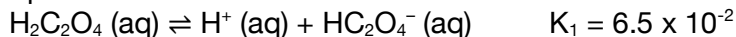


the equilibrium constant, K_c , has been determined to be 6.0×10^{-3} at 1123 K. If a mixture of 3.0 M CO, 2.0 M Cl_2 and 0.25 M COCl_2 is put in a vessel, which way will the reaction proceed to reach equilibrium?

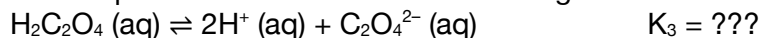
7. A mixture of 0.500 mol H_2 and 0.500 mol I_2 was placed in a 1.00 L steel container at 430°C. The equilibrium constant, K_c , for the reaction



8. The following equilibrium constants have been determined for oxalic acid at 25°C:



Calculate the equilibrium constant for the following reaction at the same temperature:

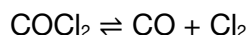


9. For the following reaction:



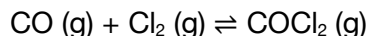
The initial concentration of PCl_5 is 0.200 moles per liter and there are no products in the system when the reaction starts. If the equilibrium constant is 0.030, calculate all the concentrations at equilibrium.

10. Given this equation:



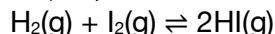
2.00 g of COCl_2 and 5.00 g of Cl_2 are placed in a 2.50 L flask. Calculate all three equilibrium partial pressures when $K_p = 0.680$ at 25°C.

6. For the following reaction:

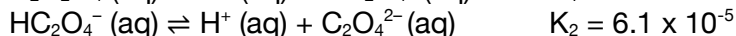


the equilibrium constant, K_c , has been determined to be 6.0×10^{-3} at 1123 K. If a mixture of 3.0 M CO, 2.0 M Cl_2 and 0.25 M COCl_2 is put in a vessel, which way will the reaction proceed to reach equilibrium?

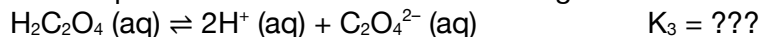
7. A mixture of 0.500 mol H_2 and 0.500 mol I_2 was placed in a 1.00 L steel container at 430°C. The equilibrium constant, K_c , for the reaction



8. The following equilibrium constants have been determined for oxalic acid at 25°C:



Calculate the equilibrium constant for the following reaction at the same temperature:

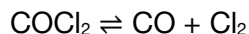


9. For the following reaction:



The initial concentration of PCl_5 is 0.200 moles per liter and there are no products in the system when the reaction starts. If the equilibrium constant is 0.030, calculate all the concentrations at equilibrium.

10. Given this equation:



2.00 g of COCl_2 and 5.00 g of Cl_2 are placed in a 2.50 L flask. Calculate all three equilibrium partial pressures when $K_p = 0.680$ at 25°C.