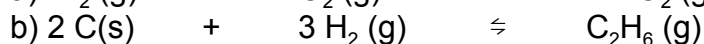
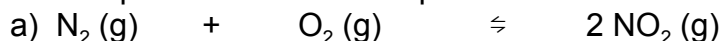
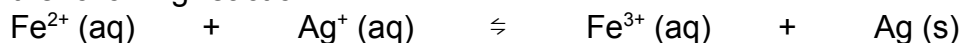


EQUILIBRIUM CONSTANT - WORKSHEET 2

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



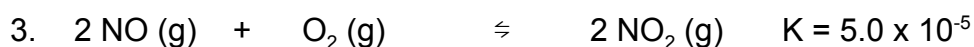
2. For the following reaction:



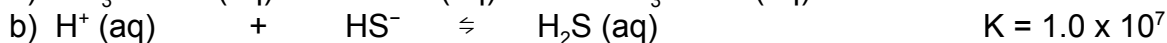
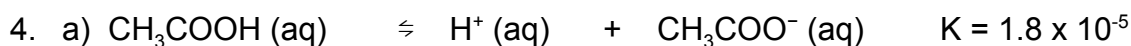
At equilibrium, $[\text{Fe}^{2+}] = 0.50 \text{ M}$, $[\text{Ag}^+] = 1.0 \text{ M}$, $[\text{Fe}^{3+}] = 1.50 \text{ M}$

a) Calculate the equilibrium constant for the reaction.

b) If at equilibrium, $[\text{Fe}^{2+}] = 0.20 \text{ M}$ and $[\text{Ag}^+] = 0.30 \text{ M}$, what must be the concentration of Fe^{3+} ?

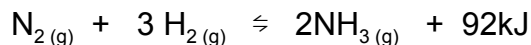


Calculate the equilibrium concentration of oxygen gas if the NO and NO_2 concentrations are equal at equilibrium.



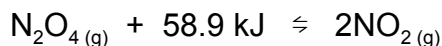
Which of the above reactions would have the greatest amount of products present at equilibrium compared to reactants?

5. For the reaction:



at an equilibrium temperature of 1000°C , a 1.00 L flask contains 0.120 moles of ammonia, 1.03 moles of nitrogen and 1.62 moles of hydrogen. Calculate the equilibrium constant at this temperature.

6. For the following equilibrium reaction:



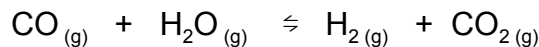
a one litre flask at 55°C is found to contain 3.6 moles of $\text{N}_2\text{O}_4(\text{g})$ in equilibrium with 1.75 moles of $\text{NO}_2(\text{g})$. Calculate the value of K_{eq} for this reaction.

7. For the following reaction at equilibrium at 2000°C , $K_{\text{eq}} = 1.6 \times 10^3$.



The concentration of NO is 0.13 mol/L. If the concentrations of N_2 and O_2 are equal, calculate the concentration of N_2 .

8. At equilibrium at 1120°C the concentration of the reactants and products are measured and found to be $\text{CO} = 0.010 \text{ M}$, $\text{H}_2\text{O} = 0.020 \text{ M}$, $\text{CO}_2 = 0.010 \text{ M}$, and $\text{H}_2 = 0.010 \text{ M}$. For the following reaction, does the equilibrium favour the formation of the products or the reactants?



9. At 800°C the equilibrium constant for the following reaction is 0.279.



At a different temperature the equilibrium constant is 0.100. Is this different temperature higher or lower than 800°C? Give your reasoning.