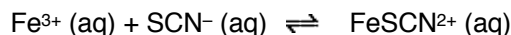


## Post-Lab Questions

1. Does your calculated average value of  $K_c$  indicate that the equilibrium of the reaction is reactant-favored or product-favored?

since  $K_c = 13.15$ , it is very product favored as concentrations of products is greater than reactants.

2. A student does an experiment to determine the equilibrium constant for the same reaction that you will studied, but at a higher temperature.



The student mixes 5.00 mL of  $2.00 \times 10^{-3}$  M  $\text{Fe}(\text{NO}_3)_3$  solution with 5.00 mL of  $2.00 \times 10^{-3}$  M KSCN solution, heats the mixture, and finds that the equilibrium concentration of  $\text{FeSCN}^{2+}$  in the mixture is  $5.00 \times 10^{-5}$  M. Calculate the equilibrium constant for the reaction under the conditions in this experiment

3. Using your average calculate value of  $K_c$ , calculate the concentration of  $\text{FeSCN}^{2+}$  that will form if 15 mL of 0.00150 M  $\text{Fe}(\text{NO}_3)_3$  is mixed with 22 mL of 0.00100 M KSCN.

$$2.00 \times 10^{-3} - 5.00 \times 10^{-5} = 1.95 \times 10^{-3}$$

$$2.00 \times 10^{-3} - 5.00 \times 10^{-5} = 1.95 \times 10^{-3}$$

$$K_c = \frac{[\text{FeSCN}^{2+}]}{[\text{Fe}^{3+}][\text{SCN}^{-}]}$$

$$K_c = \frac{5.00 \times 10^{-5}}{(1.95 \times 10^{-3})(1.95 \times 10^{-3})} = \frac{5.00 \times 10^{-5}}{3.8025 \times 10^{-6}}$$

$$K_c = 13.15$$

$$13.15 = \frac{x}{(0.00150)(0.00100)}$$

$$x = 0.001429$$