Calculation of Kc/Kp

1. Calculate K_p for the following reaction at 125°C.

$$2 \text{ NH}_3 (g) \rightleftarrows \text{ N}_2 (g) + 3 \text{ H}_2 (g)$$

The equilibrium pressures are: $P_{NH_3}=0.541\,atm,\ P_{N_2}=3.73\,atm, and\ P_{H_2}=11.2\,atm$

2. Consider the following reaction at 100° C. The initial concentration of $[CO_2] = 0.325$ M and $[H_2] = [H_2] = 0.00768$ M. The equilibrium concentration of [CO] = 0.0821 M.

$$CO_2(g) + H_2(g) \rightleftarrows CO(g) + H_2O(g)$$

a) Write an ICE table.

$$CO_2(g) + H_2(g) \rightleftharpoons CO(g) + H_2O(g)$$

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- b) Calculate the equilibrium concentrations of each species.
- c) Calculate Kc.
- d) Are there more reactants or products at equilibrium?