47. A 1.0 L reaction vessel contains 0.750 mol of CO(g) and 0.275 mol of $H_2O(g)$. After 1 h, equilibrium is reached according to the equation $CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$. Analysis shows 0.250 mol of CO_2 present at equilibrium. What is K_{eq} for the reaction?

48. A 5.0 L reaction vessel was initially filled with 6.0 mol of SO_2, 2.5 mol of NO_2 and 1.0 mol of SO_3. After equilibrium was established according to the equation $SO_2(g) + NO_2(g) \rightleftharpoons SO_3(g) + NO(g)$, the vessel was found to contain 3.0 mol of SO_3. What is Key for the reaction?

49. Consider the equilibrium $N_2(g) + 3\ H_2(g) \rightleftharpoons 2\ NH_3(g)$.

    (a) At a certain temperature 3.0 mol of N_2 and 2.0 mol of H_2 are put into a 5.0 L container. At equilibrium the concentration of NH_3 is 0.020 M. Calculate K_{eq} for the reaction.

    (b) At a different temperature, 6.0 mol of NH_3 were introduced into a 10.0 L container. At equilibrium 2.0 mol of NH_3 were left. Calculate K_{eq} for the reaction.

56. A student obtained the following data at 25°C while studying the equilibrium $2TI^+(aq) + Cd(s) \rightleftharpoons 2TI(s) + Cd^{2+}(aq)$.

Volume Moles	TI^+ Moles	Cd^{2+}
1.00 L	0.316	0.414
5.00 L	?	0.339

Calculate the number of moles of TI^+ present in the second data set.