Skill Practice 62

Equilibrium Practice

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hour: \_\_\_\_\_

1. What is meant when we say that a reaction has reached “equilibrium”?
2. Consider the following chemical equation: 2 N2O5 🡨🡪 2 N2 + 5 O2. At equilibrium, the concentration of O2 is 0.45 M, the concentration of N2O5 is 1.20 M, and the concentration of N2 is 0.71 M. Calculate the equilibrium constant, K.
3. In an experiment, 0.100 mol of H2 and 0.100 mol of I2 are mixed in a 3.00-L container according to the following equation: H2 + I2 🡨🡪 2 HI. If K = 50.0 for this reaction, what is the equilibrium concentration of I2, H2 and HI?
4. How many moles of each substance is in a 1.0 L vessel if you start with 0.500 mol of H2 and 0.500 mol of I2 to synthesize HI. K is 49.7.
5. Consider the following reaction: PCl5 (g) 🡨🡪 PCl3 (g) + Cl2 (g). If the initial concentration of PCl5 is 1.00 mol/L, what is the equilibrium composition (i.e. the concentration of each substance at equilibrium) of the gaseous mixture? K is 0.0211.