

Unit 7 – Chapter 13: Chemical Equilibrium

Name _____

Experiment 20 Conclusion questions

Period _____

1. Calculate K_c at 303 K for:

 $K_p = 34.5$ at this temperature

2. The equilibrium constant for the reaction

 $K_p = 1.48 \times 10^4$ at 184°C

- Calculate K_p for the reverse reaction
- Does the equilibrium favor the production of NO and O_2 or does it favor NO_2 at this temperature?

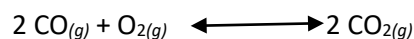
3. A mixture of 1.374 g of H_2 and 70.31 g of Br_2 is heated in a 2.00-liter vessel at 700 K. The substances react as follows:



At equilibrium the vessel is found to contain 0.566 g of H_2 .

- Calculate the equilibrium concentrations of all the reactants and products
- Calculate the value of K_c .

4. At 100°C , K_c for the following reaction is 2.0×10^{-4}



Calculate the concentrations of all the species at equilibrium for each of the following original mixtures: 2.0 moles of CO, 2.0 mol of O_2 in a 5-liter container.

5. Using the equilibrium equation in #4, calculate the direction the reaction will go at the following concentrations: $[\text{CO}] = 1.94 \text{ M}$, $[\text{O}_2] = 0.78 \text{ M}$, $[\text{CO}_2] = 0.007 \text{ M}$

6. A mixture of 0.36 M H_2 and 0.30 M Br_2 is heated at 600 K . The equilibrium reaction is:



Calculate the equilibrium concentrations of all reactants and products.

7. A mixture of 0.200 moles of CO_2 , 0.100 moles of H_2 , and 0.160 moles of H_2O is placed in a 2.00 -liter vessel. The following equilibrium is established at 500 K .



- Calculate the initial pressures of CO_2 , H_2 , and H_2O (Hint: Use $pV = nRT$)
- At equilibrium $P_{\text{H}_2\text{O}} = 3.51 \text{ atm}$, calculate the equilibrium partial pressures of CO_2 , H_2 , and CO .
- Calculate K_p for the reaction.