

CHAPTER 15 LEARNING OBJECTIVES

Learning Objectives (sections 15.1-15.6)

You should be able to:

1. Write the equilibrium expression for a balanced chemical equation. Classify any equilibrium as heterogeneous or homogeneous.
2. Numerically evaluate K_{eq} from knowledge of the equilibrium concentrations (or pressures) of reactants or products, or from the initial concentration and the equilibrium concentration of at least one substance.
3. Interpret the magnitude of K_{eq} and what this tells you about the composition of the equilibrium mixture.
4. Given a chemical reaction and its equilibrium constant, determine the new equilibrium constant when the reaction has been reversed or multiplied by a constant.
5. Use the equilibrium constant to calculate equilibrium concentrations (i.e., apply *ICE* tables).
6. Calculate the reaction quotient, Q , and by comparison with the value of K_{eq} determine whether a reaction is at equilibrium. If it is not at equilibrium, you should be able to predict in which direction it will shift to reach equilibrium.
7. Explain how the relative equilibrium quantities of reactants and products are shifted by changes in temperature, pressure, or the concentrations of substances in the equilibrium reaction (Le Chatelier's Principle).
8. Explain how the change in equilibrium constant with the change in temperature is related to the enthalpy change in the reaction.
9. Describe the effect of a catalyst on a system as it approaches equilibrium.
10. Understand and explain the boldface terms in the Summary and Key Terms section of Chapter 15 (page 604).