

## Chapter 17 Vocabulary

**activated complex**•a short-lived, unstable arrangement of atoms that may break apart and re-form the reactants or may form products; also sometimes referred to as the transition state

**activation energy**•the minimum amount of energy required by reacting particles in order to form the activated complex and lead to a reaction

**catalyst**•a substance that increases the rate of a chemical reaction by lowering activation energies but is not itself consumed in the reaction

**collision theory**•states that atoms, ions, and molecules must collide in order to react

**complex reaction**•a chemical reaction that consists of two or more elementary steps

**heterogeneous catalyst**•a catalyst that exists in a different physical state than the reaction it catalyzes

**homogeneous catalyst**•a catalyst that exists in the same physical state as the reaction it catalyzes

**Inhibitor**•a substance that slows down the reaction rate of a chemical reaction or prevents a reaction from happening

**instantaneous rate**•the rate of decomposition at a specific time, calculated from the rate law, the specific rate constant, and the concentrations of all the reactants

**Intermediate**•a substance produced in one elementary step of a complex reaction and consumed in a subsequent elementary step

**method of initial rates**•determines the reaction order by comparing the initial rates of a reaction carried out with varying reactant concentrations

**rate-determining step**•the slowest elementary step in a complex; limits the instantaneous rate of the overall reaction

**rate law**•the mathematical relationship between the rate of a chemical reaction at a given temperature and the concentrations of reactants

**reaction mechanism**•the complete sequence of elementary steps that make up a complex reaction

**reaction order**•for a reactant, describes how the rate is affected by the concentration of that reactant

**reaction rate**•the change in concentration of a reactant or product per unit time, generally calculated and expressed in moles per liter per second

**specific rate constant**•a numerical value that relates reaction rate and concentration of reactant at a specific temperature

**transition state**•term used to describe an activated complex because the activated complex is as likely to form reactants as it is to form products