

## **Chapter 4: Three Major Classes of Chemical Reactions**

This chapter covers the basic ideas of solutions which will be crucial to understanding AP concepts in later chapters including those on acids and bases, reactions, and equilibria. Solutions are homogeneous mixtures that can be stable or reacting. Their properties vary with concentrations and external conditions, such as temperature. The chapter covers recognizing types of reactions, molarity, and the basics of aqueous systems. Even though this chapter deals with aqueous solutions where water is the solvent, it is important to recognize water is not always the solvent in a solution. Knowledge of the types of bonds and the concept of electrolytes will help to understand how different species behave in an aqueous system. This will include knowing how to write equations properly and what happens in hydration.

Part of this chapter deals with the difference between balanced molecular equations, balanced total ionic equations, and balanced net ionic equations. It also explains the terms used to describe the various types of chemical reaction including acid-base, precipitation, and the various types of reduction-oxidation (redox) reactions including combination, decomposition, and displacement, all of which are tested on the AP Exam.