

Chapter 4—Reactions in Aqueous Solutions 10/20/05 9:59 AM

After this chapter, you should be able to...

- Define and recognize the solute and solvent in a specified solution
- Explain what an electrolyte is
 - Explain why soluble ionic compounds are able to act as electrolyte
 - Explain the difference between a strong, weak, and non-electrolyte in terms of ion formation in solution
- Know the first two solubility rules given in table 4.2 (pg 97)
 - Use table 4.2 to determine whether a particular ionic compound is soluble or insoluble in water
- Write molecular, full ionic, and net ionic equations for a reaction, given either the *names* or *formulas* of the reactants
- Define an acid and a base according to the Arrhenius ~~and the Brønsted~~ viewpoint
 - Write the chemical reactions that occur when an acid dissolves in water
 - Explain how we classify some acids as weak, and others as strong, based on their chemical reactions with water
- Write chemical equations (molecular, full ionic, and net ionic) for the reactions of acids with bases, including hydroxides, carbonates, and bicarbonates
- Explain what oxidation and reduction means, in terms of electron loss or gain
 - Identify the atom being oxidized or reduced in a chemical reaction
 - Identify the species acting as the oxidizing or reducing agent in a chemical reaction
- Assign oxidation numbers to each atom in a specified chemical equation
 - Using the oxidation numbers, identify which atoms have been oxidized and reduced
 - ~~Using the activity series (Figure 4.14), predict whether a specified metal displacement reaction will occur~~
- Define what is meant by molar concentration
 - Know the units of molar concentration, and their common abbreviation

- Write a conversion factor, given a molar concentration
- Calculate the number of moles of solute in a specified volume of solution, or vice-versa (using the conversion factor method)
- Calculate and *explain* how to prepare dilute solutions from concentrated stock solutions
- Solve stoichiometry problems (see chapter 3's objectives) when volumes of solutions of specific molar concentrations are given

Make sure you can solve all the end-of-chapter homework problems!