

Chapter 8  
**Aqueous Solutions: Chemistry of the Hydrosphere**  
Learning Objectives

8.12.2022

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To satisfy the minimum requirements for this course, you should be able to:

1. **Define the following concentration units: molarity (M) and parts per million (ppm)**
2. **Apply your understanding of the properties of aqueous solutions to:**
  - identify the solvent and solute(s) in a solution
  - determine whether a substance is a strong electrolyte, weak electrolyte, or nonelectrolyte
  - write balanced chemical equations for the dissolving of molecular compounds, ionic compounds, and acids and bases in water
3. **Perform various types of calculations involving concentration.** Be able to
  - calculate the molarity, solution volume, or number of moles of solute given any two of these quantities
  - perform dilution calculations
  - perform stoichiometric calculations for reactions in aqueous solutions, e.g. titration calculations
  - use Beer's Law and absorbance data to determine the concentration of an unknown solution
4. **Recognize and interpret acid-base reactions** and be able to:
  - define Brønsted acids and bases and identify common examples of each.
  - explain the differences between strong and weak acids, and between strong and weak bases
5. **Write complete ionic and net ionic equations, and identify spectator ions** for:
  - precipitation reactions
  - strong acid/base neutralization reactions
6. **Recognize precipitation reactions and use solubility rules to predict when a precipitation reaction is likely to occur.** (Note - solubility guidelines are listed in Table 8.4 in the textbook and also summarized in the General Chemistry Reference Sheet)
7. **Define the meaning of the following terms: saturated, unsaturated and supersaturated.**

**Note - Section 8.7 (Oxidation-Reduction Reactions) is not assigned; material from this section will be covered next spring in SC112.**