

**Subject: General Chemistry**  
**Grade: 11 & 12, Level 1**  
**Unit: Solutions, Acids & Bases**

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**Lesson: Solutions: Solubility & Concentration**

**Objectives:** The students will be able to:

1. Identify and describe three types of solutions.
2. Define solubility and apply the concept of solubility to a solubility of curve of various solutes dissolved in water.
3. Calculate the molarity and molality of solutions given appropriate quantities.

**Academic Standards:**

- 3.4.12.A** – Quantify the properties of matter (e.g., density, solubility coefficients) by applying mathematical formulas.

**Content:** Mixtures (homogeneous, heterogeneous), suspensions, colloids, solutions (unsaturated, saturated, supersaturated), solvent, solute, concentrations, dilute, concentrated, solubility, factors affecting solubility, solubility curves, molarity, molality.

**Materials and Equipment:** Matter diagram, worksheet p. 67 “Solubility Curves,” worksheet p. 68 “Molarity,” worksheet p. 70 “Molality.”

**Activity:**

1. Introduction to New Unit
  - distribute objective list to students and review the material that will be studied in this unit.
2. Matter Worksheet
  - place matter worksheet transparency on overhead;
  - most of this diagram is a review from an earlier unit, the parts that are not review will be discussed in class to complete the graphic organizer of information pertaining to solutions.
3. Solubility Notes
  - discuss factors affecting solubility (temperature and pressure);
  - relate these concepts to bottling soda; how soda manufacturers employ chemical concepts to process and bottle soda;
  - solubility curves worksheet p. 67 – go through the first example as a class. Students will work together to complete the remaining questions.
4. Molarity & Molality Notes
  - define terms;
  - perform a sample calculation;
  - guided practice on the first problem from each worksheet;
  - partner work to complete the remaining worksheet items;
  - review the answers as a class.

**Assessment:**

1. Teacher observation via in-class participation.
2. How well the students complete the worksheet; appropriateness of results
3. Quiz on Friday.