

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

Kim Dallas  
5-16-06

### 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

events that occur	13. What is <b>TRANSLATION</b> ? What <b>three main phases</b> is it divided into? List the <b>main</b> during <b>each</b> of these phases.
. What amino acids	14. The sense strand on a piece of DNA reads CCGTTAGGGCAAATTCGCTATTTTTT. What does this code for?
of <b>protein synthesis</b> .	15. Identify the roles of a) <b>DNA</b> , b) <b>mRNA</b> , c) <b>tRNA</b> and d) <b>ribosomes</b> in the processes
<b>f mutations</b>	16. a) What are <b>mutations</b> ? b) Define and differentiate between the <b>two main types</b> of mutations ( <b>chromosomal</b> and <b>gene</b> ).
cause mutations in	17. What are <b>mutagens</b> ? Give examples of <b>four environmental mutagens</b> which can cause mutations in humans.
A nucleotide can low could this lead to a es them.	18. a) <b>Make up a DNA sequence</b> to prove that the <b>addition</b> or <b>deletion</b> of a single DNA nucleotide can dramatically effect the structure and function of the resulting translated <b>protein</b> . b) How could a single nucleotide substitution cause a genetic disorder? c) Give two examples of genetic disorders, and explain what causes them. 19. Explain how a mutation could have a <b>no effect</b> at all on an organism. 20. What is the <b>importance</b> of mutations to the history and future of life on this planet?