

Name: _____

Blk: _____ Date: _____

CHEMISTRY 12
SOLUBILITY PLOs

Your weekly assessments will be based on the following PLOs that have been covered in the course. You are to “answer” each PLO as a component of your “HOMEWORK” after the lesson that it is taught in. At the end of each unit (and the course) the answered PLOs will serve as an excellent study guide.

G: SOLUBILITY EQUILIBRIA (Concept of Solubility)

It is expected that students will:

- G1. Classify solutions as ionic or molecular given the formula of the solute
- G2. Describe the conditions necessary to form a saturated solution
- G3. Describe solubility as the concentration of a substance in a saturated solution
- G4. Use appropriate units to represent the solubility of substances in aqueous solutions
- G5. Measure the solubility of a compound in aqueous solution
- G6. Describe the equilibrium that exists in a saturated aqueous solution
- G7. Write a net ionic equation that describes a saturated solution
- G8. Calculate the concentration of the cations and anions give the concentration of a solute in an aqueous solution

H: SOLUBILITY EQUILIBRIA (Solubility and Precipitation)

It is expected that students will:

- H1. Describe a compound as having high or low solubility relative to 0.1 M by using the solubility chart
- H2. Use a solubility chart to predict if a precipitate will form when two solutions are mixed, and identify the precipitate
- H3. Write a formula equation, complete ionic equation, and net ionic equation that represent a precipitation reaction
- H4. Use a solubility chart to predict if ions can be separated from solution through precipitation, and outline the process
- H5. Predict qualitative changes in the solubility equilibrium upon the addition of a common ion
- H6. Identify an unknown ion through experimentation involving a qualitative analysis scheme
- H7. Devise a procedure by which the contaminating ions in hard or polluted water can be removed

I: SOLUBILITY EQUILIBRIA (Qualitative Aspects)

It is expected that students will:

- I1. Describe the K_{sp} expression as a specialized K_{eq} expression
- I2. Write a K_{sp} expression for a solubility equilibrium
- I3. Calculate the K_{sp} for AB and AB_2 type compounds when given the solubility of the compound
- I4. Calculate the solubility of AB and AB_2 type compounds from the K_{sp} value
- I5. Predict the formation of a precipitate by comparing the trial ion product to the K_{sp} value using specific data
- I6. Calculate the maximum concentration of one ion given the K_{sp} and the concentration of the other ion.
- I7. Demonstrate and describe a method for determining the concentration of a specific ion

