

Chemistry 12

Unit III: Solubility Learning Log

The following table contains all the prescribed learning outcomes for the Solubility unit of Chemistry 12. Use this table to help you stay organized and on track throughout the unit. Use it along with the Solubility Study Guide to determine your level of competence and understanding of each learning outcome. Once you are confident that you completely understand each learning outcome, place a check mark in the square provided.

Essential Learning Goals	Achievement Indicators	Practice	Evidence	Study Guide Equivalent	Status			
C1: Determine the solubility of a compound in aqueous solution	Classify a solution as ionic or molecular, given its conductivity or the formula of the solute	Review: III.1 p.73-76 #1-7 Solubility & [ion]: III.2 p. 77-81 #8-20	Quiz #1 Unit Test	G1	<input type="checkbox"/>			
	Describe the conditions necessary to form a saturated solution			G2	<input type="checkbox"/>			
	Describe the solubility as the concentration of a substance in a saturated solution			G3	<input type="checkbox"/>			
	Use appropriate units to represent the solubility of substances in aqueous solution			G4	<input type="checkbox"/>			
C2: Describe a saturated solution as an equilibrium system	Describe the equilibrium that exists in a saturated aqueous solution	Predicting Solubility: III.3 p. 81-84 #21-24 Writing Equations: III.4 p.84-87 #25		Quiz #2 Unit Test	G6	<input type="checkbox"/>		
	Describe a saturated solution using a net ionic equation				G7	<input type="checkbox"/>		
C3: Determine the concentration of ions in a solution	Write dissociation equations				N/A	G8	<input type="checkbox"/>	
	Calculate the concentration of the positive and negative ions given the concentration of the solute in an aqueous solution						<input type="checkbox"/>	
C4: Determine the relative solubility of a substance, given solubility tables	Describe a compound as having high or low solubility relative to 0.1 M by using a solubility chart		H1				H2	<input type="checkbox"/>
	Use a solubility chart to predict if a precipitate will form when two solutions are mixed, and identify the precipitate							<input type="checkbox"/>
	Write a formula equation, complete ionic equation, and net ionic equation that represent a precipitation reaction							H3

C5: Apply solubility rules to analyse the composition of solutions	Use a solubility chart to predict if ions can be separated from solution through precipitation, and outline an experimental procedure that includes <ul style="list-style-type: none"> ○ Compound added ○ Precipitate formed ○ Method of separation 	Separating Ions: III.5 p. 88-91 #26-39	Quiz #3 Unit Test	H4	<input type="checkbox"/>
	Predict qualitative changes in the solubility equilibrium upon the addition of a common ion or the removal of an ion	Common Ion: III.10 p.105-108 #81-86		H5	<input type="checkbox"/>
	Identify an unknown ion through experimentation involving a qualitative analysis scheme	Pollution: III.9 p. 102-104 #76-80		H6	<input type="checkbox"/>
	Devise a procedure by which the calcium and/or magnesium ions can be removed from hard water			H7	<input type="checkbox"/>
C6: Formulate equilibrium constant expressions for various saturated solutions	Describe the Ksp expression as a specialized Keq expression	Solubility Product: III.6 p.91-95 #40-41	Quiz #4 Unit Test	I1	<input type="checkbox"/>
	Write a Ksp expression for solubility equilibrium			I2	<input type="checkbox"/>
C7: Perform calculations involving solubility equilibrium concepts	Calculate the Ksp for a compound given its solubility	Ksp calculations: III.6 p.91-95 #42-55		I3	<input type="checkbox"/>
	Calculate the solubility of a compound from its Ksp			I4	<input type="checkbox"/>
	Predict the formation of a precipitate by comparing the trial ion product to the Ksp value using specific data	Trial Ksp: III.7 p.96-99 #56-69		I5	<input type="checkbox"/>
	Calculate the maximum allowable concentration of one ion given the Ksp and the concentration of the other ion just before precipitation occurs			I6	<input type="checkbox"/>
C8: Devise a method for determining the concentration of a specific ion	Determine the concentration of chloride ion (by titration or gravimetric methods) using a precipitation reaction with silver ion	Titrations: III.8 p.99-102 #70-75	Unit Test	I7	<input type="checkbox"/>
End of Unit Test					

Note: The Chemistry 12 Study Guides are based on OLD PLO's. Use the "Study Guide Equivalent" column to match up old PLO's to the new ones. For example, essential learning goal C1: "Determine the solubility of a compound in aqueous solution" matches up to G1-G4 on study cards and review questions.