

WORKSHEET 8

Chemistry 110

Name _____

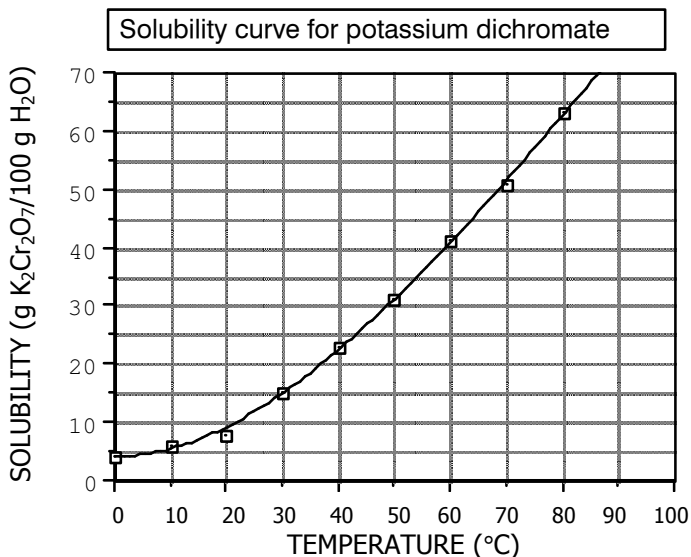
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Due date: _____

Answer the following questions, giving **complete set-ups, including all units**, and using correct significant figures for those that require calculations. Show all work.

A. Solubility: Answer the questions below with respect to the following solubility curve for potassium dichromate.



1. What is the solubility of $K_2Cr_2O_7$ in water at $55^\circ C$? 1. _____
2. What mass, in grams, of $K_2Cr_2O_7$ will dissolve in 35 g water at $30^\circ C$? 2. _____
3. What mass, in grams, of $K_2Cr_2O_7$ will precipitate when a solution containing 90 g $K_2Cr_2O_7$ dissolved in 300 g water at $60^\circ C$ is cooled to $20^\circ C$? 3. _____
4. For each of the following, indicate whether the solution is **S** (saturated) or **U** (unsaturated).
 - a. A solution containing 2 g $K_2Cr_2O_7$ in 10 g water at $40^\circ C$ 4a. _____
 - b. A solution containing 7.5 g $K_2Cr_2O_7$ in 50 g water at $30^\circ C$. 4b. _____
 - c. A solution containing 90 g $K_2Cr_2O_7$ in 300 g water at $70^\circ C$. 4c. _____

B. Solution Concentration

1. What mass, in grams, of sodium sulfate is needed to make 275 g of a 1.5% (m/m) aqueous solution of sodium sulfate? 1. _____

2. What is the molar concentration of a barium chloride solution that is prepared by adding 20.0 mL of water to 50.0 mL of a 10.0 M barium chloride solution? (Assume volumes are additive) 2. _____
3. What mass, in grams, of calcium nitrate are there in 867 mL of a 2.00 M calcium nitrate solution? (Molar mass calcium nitrate = 164.09 g/mole) 3. _____
4. Two sulfuric acid solutions are mixed as follows: 25.0 mL of a 0.50 M sulfuric acid solution are added to 0.075 L of a 0.25 M sulfuric acid solution. What is the molarity of the resulting mixture? (Assume volumes are additive) 4. _____
5. What is the molality of a solution made by dissolving 20.0 g silver nitrate in 225 g water? (Molar mass AgNO_3 = 169.87 g/mole) 5. _____
6. What is the molarity of a 2.80%(m/v) ammonia solution? (Molar mass NH_3 = 17.03 g/mole) 6. _____
7. What volume, in liters, of a 2.00 M KCl solution contains 2.5 kg of KCl? (Molar mass KCl = 74.55 g/mole) 7. _____
8. A solution of ethanol, $\text{C}_2\text{H}_6\text{O}$, is prepared by dissolving 14.0 g $\text{C}_2\text{H}_6\text{O}$ in 100.0 g water. (Molar mass ethanol = 46.07 g/mole)
- a. Find the molality of the solution 8a. _____
- b. Find the % (m/m) concentration of the solution. 8b. _____