**Unit 8 – Worksheet 5 – Solutions & Solubility**

**Use the graph to the left to answer questions 1-9.**

1. How many grams of the following substances will dissolve at the given temperature?
	1. KNO3 at 70˚C = \_\_\_\_\_\_\_ g. NH3 at 20˚C = \_\_\_\_\_\_\_
	2. NH4Cl at 90˚C = \_\_\_\_\_\_\_ h. KClO3 at 75˚C = \_\_\_\_\_\_
	3. NaCl at 100˚C = \_\_\_\_\_\_\_ i. KCl at 75˚C = \_\_\_\_\_\_\_
	4. KI at 20˚C = \_\_\_\_\_\_\_ j. HCl at 10˚C = \_\_\_\_\_\_\_
	5. NaNO3 at 35˚C = \_\_\_\_\_\_\_ k. KNO3 at 10˚C = \_\_\_\_\_\_
	6. SO2 at 50˚C = \_\_\_\_\_\_\_ l. NH4Cl at 65˚C = \_\_\_\_\_\_
2. \_\_\_\_\_ According to Table G, which solution is saturated at 30˚C?
	1. 12 g of KClO3 in 100 g of H2O
	2. 12 g of KClO3 in 200 g of H2O
	3. 30 g of NaCl in 100 g of H2O
	4. 30 g of NaCl in 200 g of H2O
3. \_\_\_\_\_ 100 g of H2O is saturated with NH4Cl at 50˚C. According to Table G, if the temperature is lowered to 10˚C how much NH4Cl will precipitate?
	1. 5 g b. 17 g c. 30 g d. 50 g
4. Which solute is least affected by temperature?
5. Which solute is most affected by temperature?
6. Which solute(s) have solubilities that decrease as temperature increases?
7. At 23˚C, 60 g of NaNO3 is dissolved in 100 g of H2O. How many more grams of NaNO3 must be added to make the solution saturated?
8. At what temperature will NH4Cl and HCl have the same solubility?
9. At what temperature will 29 g of NH3 dissolve in 100 g of H2O to make a saturated solution?

**Use the data table to answer question 10.**

1. Which salt is most soluble at 60˚C?
2. A student uses 200 g of water at 60˚C to prepare a saturated solution of KCl.
	1. Identify the solute in this solution.
	2. According to Table G, how many grams of KCl must be used to create this solution?
	3. This solution is cooled to 10˚C and the excess KCl settles out. If the resulting solution is saturated, how many grams settled out? (Use Table G)

**Base your answers to questions 12-13 on the table to the left.**

1. Graph the data from the table on the grid below. Be sure to label your graph axes and give it a title.



1. Based on the data table, if 15 g of solute is dissolved in 100 g of H2O at 40˚C, how many more grams can be dissolved to make a saturated solution at 40˚C?
2. According to Table G, which substance forms an unsaturated solution when 80 g of the substance dissolves in 100 g of water at 10˚C?

**A student conducts an experiment to determine how the temperature of water affects the rate of dissolving for antacid tablets. Use their collected data to the left to answer questions 16-18.**

1. Describe the effect of temperature on the rate of dissolving.
2. Explain, in terms of the kinetic molecular theory, how temperature influences the rate of dissolving.
3. What changes, other than temperature, would affect the rate of dissolving?
4. \_\_\_\_\_ According to Table G, a temperature change from 60˚C to 90˚C has the least effect on the solubility of which substance?
	1. SO2 b. NH3 c. KCl d. KClO3