**Solubility Curves Questions NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Directions: Use the graph to answer the following questions. REMEMBER UNITS!

• What mass of solute will dissolve in 100mL of water at the following temperatures?

• KNO3 at 70°C = \_\_\_\_\_\_\_\_\_\_\_\_

• NaCl at 100°C= \_\_\_\_\_\_\_\_\_\_\_\_

• NH4Cl at 90°C= \_\_\_\_\_\_\_\_\_\_\_\_

• Which of the **above** three substances is most soluble in water at 15°C. = \_\_\_\_\_\_\_\_\_\_\_\_

**• Types of Solutions -** Label the following solutions as saturated or unsaturated. If unsaturated, write how much more solute can be dissolved in the solution.

**Solution**

**Saturated or Unsaturated?**

**If unsaturated: How much more solute can dissolve in the solution?**

a solution that contains 70g of NaNO3 at 30°C (in 100 mL H2O)

a solution that contains 50g of NH4Cl at 50°C (in 100 mL H2O)

a solution that contains 20g of KClO3 at 50°C (in 100 mL H2O)

a solution that contains 70g of KI at 0°C (in 100 mL H2O)

Using the previous solubility curve, answer these questions.

1. a. What is the solubility of KCl at 5C? \_\_\_\_\_

b. What is the solubility of KClat 25C? \_\_\_\_\_

c. What is the solubility of Ce2(SO4)3 at 10C? \_\_\_\_\_

d. What is the solubility of Ce2(SO4)3 at 50C? \_\_\_\_\_

2. At 90C, you dissolved 10 g of KCl in 100. g of water. Is this solution saturated or unsaturated? How do you know?

3. A mass of 100 g of NaNO3 is dissolved in 100 g of water at 80ºC.

a) Is the solution saturated or unsaturated?\_\_\_\_\_\_\_\_\_\_\_\_

b) As the solution is cooled, at what temperature should solid first appear in the solution? \_\_\_\_ Explain.

4. Which compound is most soluble at 20 ºC? \_\_\_\_\_ Which is the least soluble at 40 ºC? \_\_\_\_

5. Which substance on the graph is **least** soluble at 10C? \_\_\_\_\_\_\_\_\_\_

6. A mass of 80 g of KNO3 is dissolved in 100 g of water at 50 ºC. The solution is heated to 70ºC. How many more grams of potassium nitrate must be added to make the solution saturated?

**Graphing Questions**

1. Graph the following data on a piece of graph paper, on www.createagraph.com, or on LoggerPro. Your graph must include properly labeled axes ( x axis, y axis, name and scale), and a graph title, Use two different colored lines for each compound.

**Sodium Chloride Solubility**

Temperature

Solubility (g of solute/100 mL of H20)

0

35.7

10

35.8

20

35.9

30

36

40

36.4

60

37.1

80

38

90

38.5

100

39.2

**Copper Sulfate Solubility**

Temperature

Solubility (g of solute/100 mL of H20)

0

23

10

27.5

20

32

30

38

40

44.5

60

62

80

84

100

114

2. Use the data from your lab to answer these questions in the space below:

\_\_\_\_\_\_\_\_grams of sodium chloride dissolved in 100 mL of water

\_\_\_\_\_\_\_\_grams of or copper sulfate dissolved in 100 mL of water

• Which solution was saturated? Which was unsaturated? Explain.

• How much more solute could you add to the unsaturated solution?