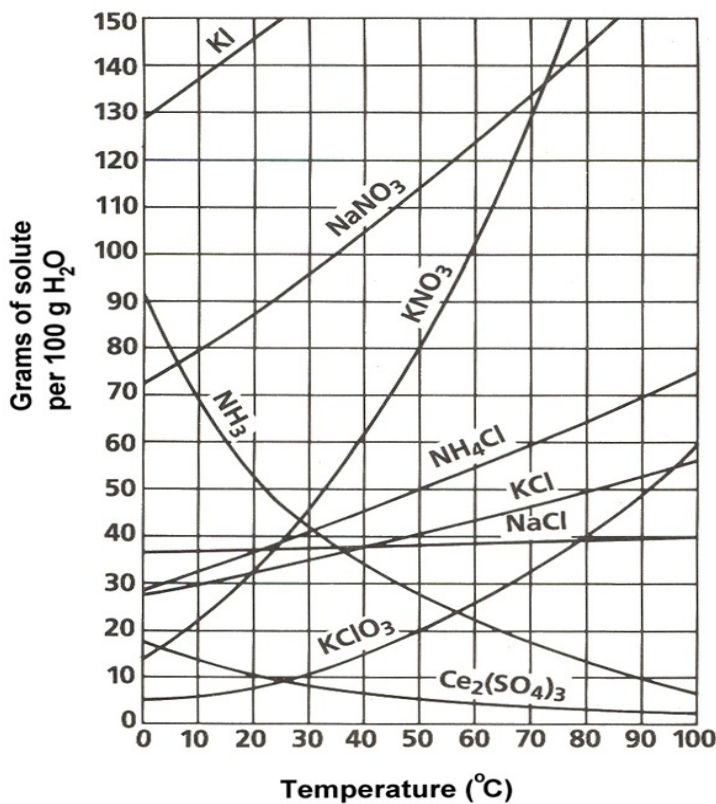


## Exercise 2 - Reading Solubility Curves



15°C. = \_\_\_\_\_

1. For most substances, solubility increases as temperature increases. Can you find any exceptions on the graph? How do you know?

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

a. KNO<sub>3</sub> at 70°C =

\_\_\_\_\_

b. NaCl at 100°C =

\_\_\_\_\_

c. NH<sub>4</sub>Cl at 90°C =

\_\_\_\_\_

d. Which of the **above** three substances is most soluble in water at

3. Identify 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 NaNO <sub>3</sub> at 30°C (in 100 mL H <sub>2</sub> O)		
a solution that contains 50g of NH <sub>4</sub> Cl at 50°C (in 100 mL H <sub>2</sub> O)		

a solution that contains 20g of $\text{KClO}_3$ at $50^\circ\text{C}$ (in 100 mL $\text{H}_2\text{O}$ )		
a solution that contains 70g of $\text{KI}$ at $0^\circ\text{C}$ (in 100 mL $\text{H}_2\text{O}$ )		

4. a. What is the solubility of  $\text{KCl}$  at  $5^\circ\text{C}$ ? \_\_\_\_\_
- b. What is the solubility of  $\text{KCl}$  at  $25^\circ\text{C}$ ? \_\_\_\_\_
- c. What is the solubility of  $\text{Ce}_2(\text{SO}_4)_3$  at  $10^\circ\text{C}$ ? \_\_\_\_\_
- d. What is the solubility of  $\text{Ce}_2(\text{SO}_4)_3$  at  $50^\circ\text{C}$ ? \_\_\_\_\_
5. At  $90^\circ\text{C}$ , you dissolved 10 g of  $\text{KCl}$  in 100. g of water. Is this solution saturated or unsaturated?  
How do you know?
6. A mass of 100 g of  $\text{NaNO}_3$  is dissolved in 100 g of water at  $80^\circ\text{C}$ . Is the solution saturated or unsaturated?
7. Use the graph on page 1 to answer the following three questions:
- a. Which compound is most soluble at  $20^\circ\text{C}$ ? \_\_\_\_\_
- b. Which is the least soluble at  $40^\circ\text{C}$ ? \_\_\_\_\_
- c. Which substance on the graph is **least** soluble at  $10^\circ\text{C}$ ? \_\_\_\_\_
8. A mass of 80 g of  $\text{KNO}_3$  is dissolved in 100 g of water at  $50^\circ\text{C}$ . The solution is heated to  $70^\circ\text{C}$ . How many more grams of potassium nitrate must be added to make the solution saturated? Explain your reasoning.