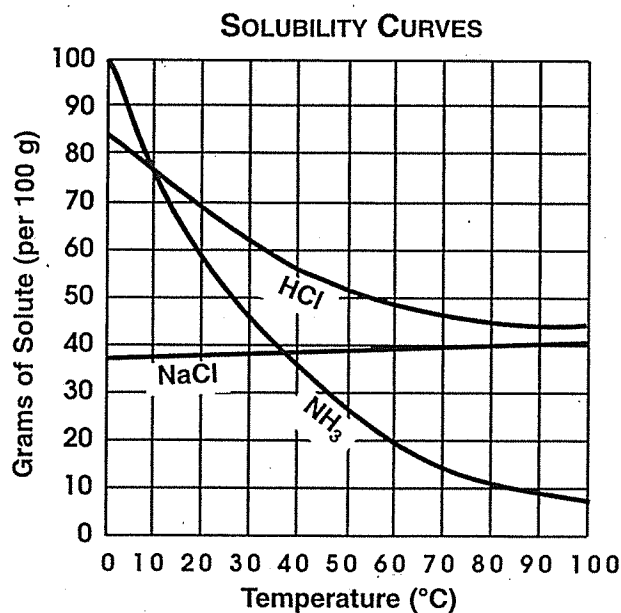


## SOLUBILITY GRAPHS

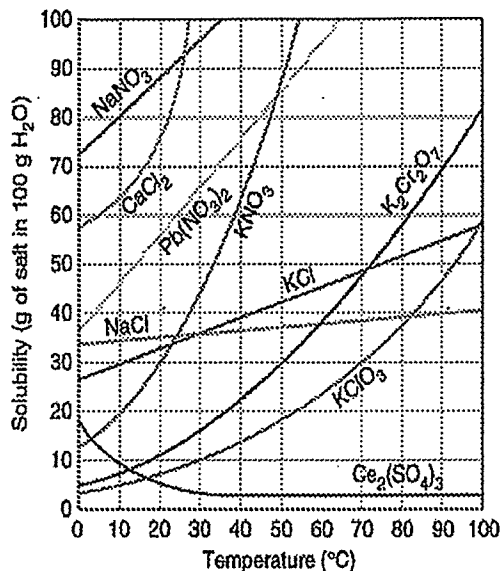
Solubility graphs have been developed by scientists to summarize the Solubility of various substances in a given mass of water at different temperatures. The X-axis of the graph gives the temperature while the Y-axis tells the grams of solute that can be dissolved in 100 grams of water. The curves on the graph show the number of grams needed to create a saturated solution in 100 grams of water. Solutions can be considered saturated, unsaturated or supersaturated.



### QUESTIONS:

1. How many grams of HCl can be dissolved in 100 grams of water at 55°C? \_\_\_\_\_
2. What is the solubility of NH<sub>3</sub> at 20°C? \_\_\_\_\_
3. At which temperature are the solubility's of NH<sub>3</sub> and NaCl the same? \_\_\_\_\_
4. Based on the graph, how would you describe the solubility of NaCl as the temperature changes?

Use the provided solubility graph to answer the following questions:



For questions 1 - 4 an amount of solute is given, and a temperature is stated. *If all of the solute could be dissolved in 100 g of water at the given temperature, would the resulting solution be unsaturated, saturated, or supersaturated?*

1. 60 g KCl at 70 °C \_\_\_\_\_
2. 10 g KClO<sub>3</sub> at 60 °C \_\_\_\_\_
3. 80 g NaNO<sub>3</sub> at 10 °C \_\_\_\_\_
4. 70 g CaCl<sub>2</sub> at 20 °C \_\_\_\_\_

For questions 5 - 8 a solute and temperature are given. Tell how many grams of each solute must be added to 100 g of water to form a saturated solution at the given temperature.

5. Pb(NO<sub>3</sub>)<sub>2</sub> at 10 °C \_\_\_\_\_
6. Ce<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> at 50 °C \_\_\_\_\_
7. NaCl at 20 °C \_\_\_\_\_
8. K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> at 50 °C \_\_\_\_\_

For questions 9 and 10 underline the solution that is more concentrated.

9. At 10 °C: a saturated solution of KNO<sub>3</sub> or a saturated solution of CaCl<sub>2</sub>.
10. At 50 °C: a saturated solution of KNO<sub>3</sub> or an unsaturated solution of NaNO<sub>3</sub> consisting of 90 g of the solute dissolved in 100 g of water.

For questions 11 - 12, show your work and circle your final answer.

11. If 115 g KNO<sub>3</sub> are added to 100 g of water at 35 °C, how many grams do not dissolve?
12. What mass of KCl would be needed to form a saturated solution if the KCl was dissolved in 200 g of water at 80 °C?