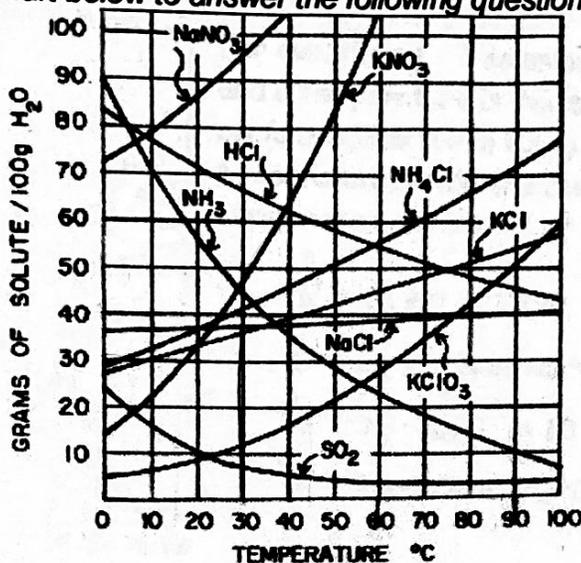


# Solubility Curve Worksheet

Use the solubility chart below to answer the following questions:



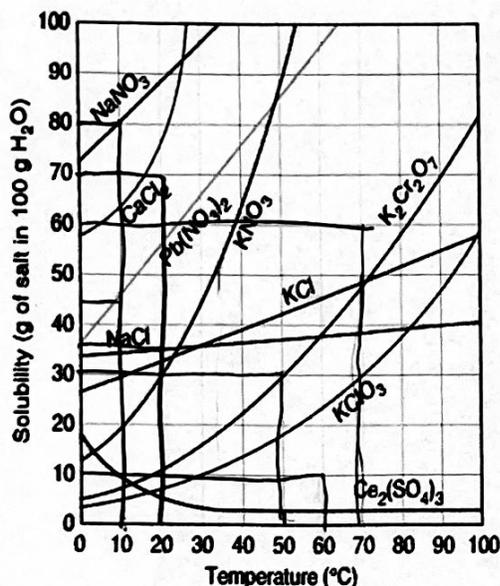
Graph from U. Va Department of Physics.

- 1) What is the solubility of potassium nitrate at 30° C? Approximately 46g / 100g H<sub>2</sub>O
- 2) How many grams of ammonia can I dissolve in 200 grams of water at a temperature of 45° C?  
2.32g / 100g H<sub>2</sub>O     64g / 200g H<sub>2</sub>O
- 3) At what temperature is the solubility of sodium chloride the same as the solubility of potassium chloride?  
34 °C
- 4) How many grams of ammonium chloride would I need to make 300 grams of a saturated solution at 70° C?  
? 183g / 300g H<sub>2</sub>O
- 5) What do all of the compounds that decreased in solubility over the temperature range in the graph have in common?  
All are gases
- 6) What compound is least soluble at 40° C? SO<sub>2</sub>
- 7) What ionic compound is least soluble at 40° C? KClO<sub>3</sub>

Worksheet: Solubility Graphs

Name Jasiah Dudley

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 Supersaturated
2. 10 g KClO<sub>3</sub> at 60 °C unsaturated
3. 80 g NaNO<sub>3</sub> at 10 °C Saturated
4. 70 g CaCl<sub>2</sub> at 20 °C unsaturated

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 45g
6. Ce<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> at 50 °C 3g
7. NaCl at 20 °C 35g
8. K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> at 50 °C 30g

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.

- ~52g = 35°C  
115g - 52g = 63g ~
11. If 115 g KNO<sub>3</sub> are added to 100 g of water at 35 °C, how many grams do not dissolve? 63g

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?

2. ~52g KCl / 100g H<sub>2</sub>O  
~104g KCl / 200g H<sub>2</sub>O