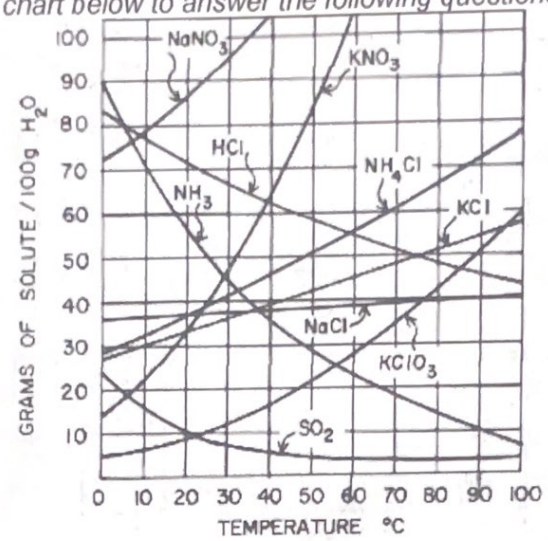
Andrew. R

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? 48 g/100g H_2O

2) How many grams of ammonia can I dissolve in 200 grams of water at a temperature of 45° C?

64g

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

5) What do all of the compounds that decreased in solubility over the temperature range in the graph have in common?

They're gasses

6) What compound is least soluble at 40° C?

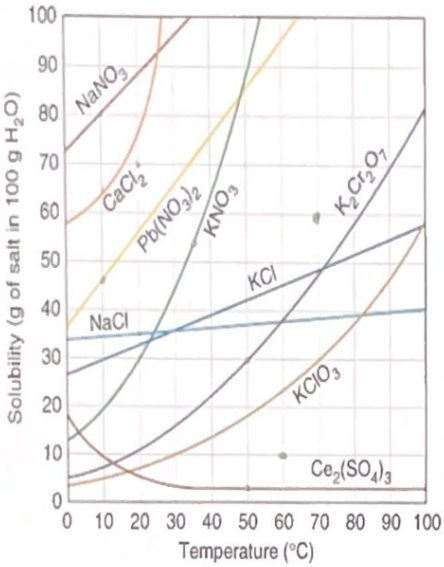
SO_2

7) What ionic compound is least soluble at 40° C?

$KClO_3$

Worksheet: Solubility Graphs Name Andrew R

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 Super Sat.
2. 10 g $KClO_3$ at 60 °C Unsat.
3. 80 g $NaNO_3$ at 10 °C Saturated
4. 70 g $CaCl_2$ at 20 °C Unsat.

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. $Pb(NO_3)_2$ at 10 °C $46g/100g\ H_2O$
6. $Ce_2(SO_4)_3$ at 50 °C $3g/100g\ H_2O$
7. NaCl at 20 °C $35g/100g\ H_2O$
8. $K_2Cr_2O_7$ at 50 °C $30g/100g\ H_2O$

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

9. At 10 °C: a saturated solution of KNO_3 or a saturated solution of $CaCl_2$.
10. At 50 °C: a saturated solution of KNO_3 or an unsaturated solution of $NaNO_3$ 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_3 are added to 100 g of water at 35 °C, how many grams do not dissolve?

$115g - 54g = 61g$

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?

$\frac{52g\ KCl}{100g\ H_2O} = \frac{104g\ KCL}{200g\ H_2O}$