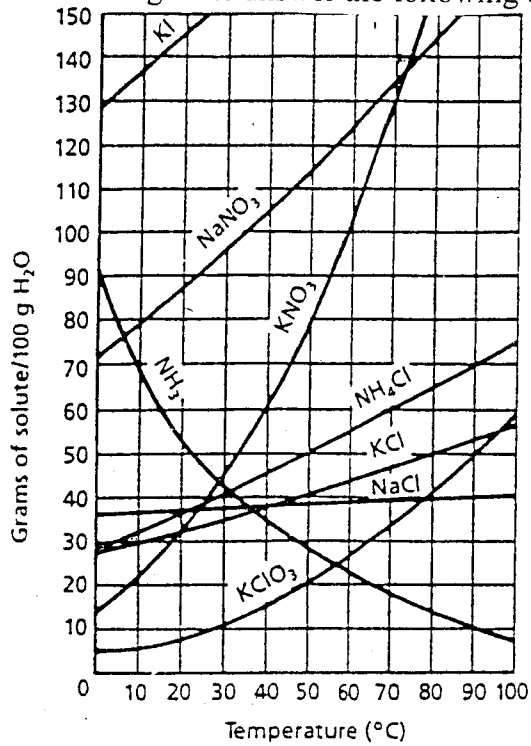
Solubility Curves

Use the solubility curves in the figure to answer the following questions.



1. What relationship exists between solubility and temperature for most of the substances shown?

2.a. What is the exception?

b. What general principle accounts for this exception?

3. What is the solubility of $NaNO_3$ in water at 10°C?

4. a. Approximately how many grams of $NaNO_3$ will dissolve in 100 g of water at 20° C?

b. How many grams will dissolve at 60° C?

5. How many grams of NH_4Cl will dissolve in 100 g of water at 50°C?

6. Ninety grams of $NaNO_3$ is added to 100 g of H_2O at 0°C. With constant stirring, to what temperature must the solution be raised to produce a saturated solution with no solid $NaNO_3$ remaining?

7. A saturated solution of $KClO_3$ was made with 300 g of H_2O at 40° C. How much $KClO_3$ could be recovered by evaporating the solution to dryness?

8. Five hundred grams of water is used to make a saturated solution of KCl at 10° C. How many more grams of KCl could be dissolved if the temperature were raised to 100°C?

9. A saturated solution of KNO_3 in 200 g of H2O at 50°C is cooled to 20°C. How much KNO_3 will precipitate out of solution?