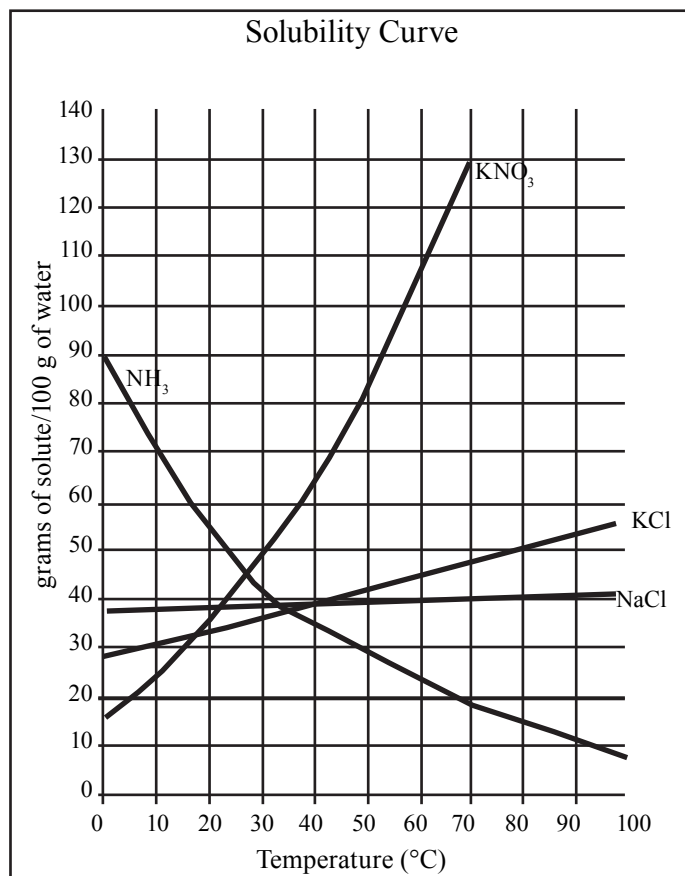


Solubility Curves

Name: _____

Date: _____ Per: _____

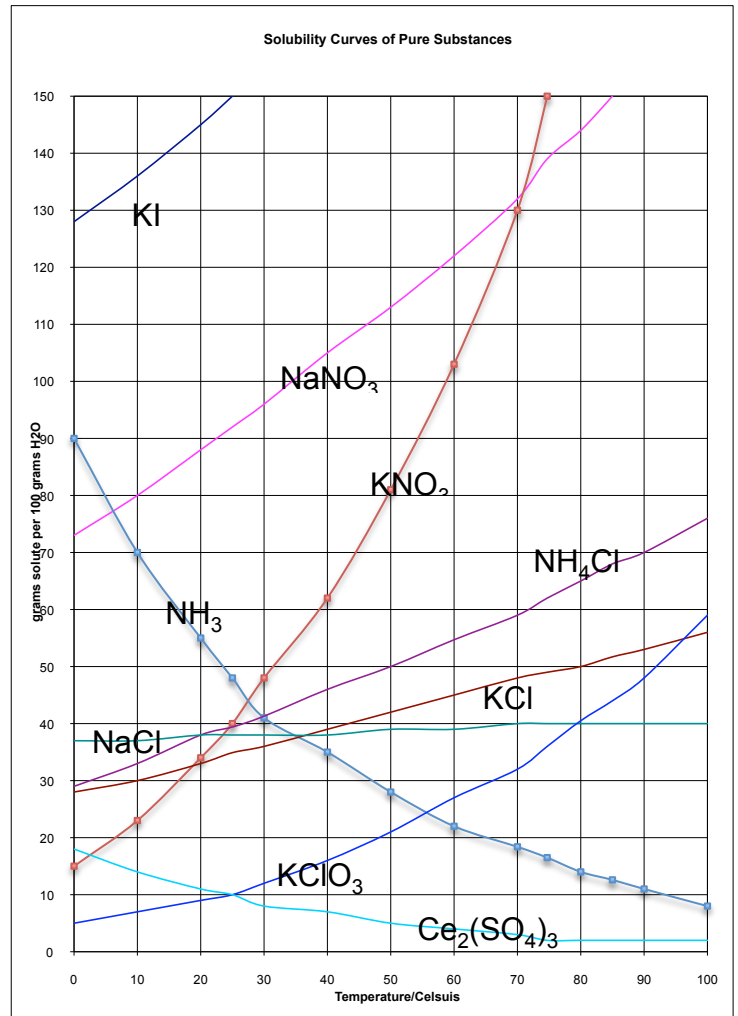
Directions: Use the solubility curve to answer the questions that follow.



1. What are the units for solubility?
2. Which compound varies the most in solubility over the range of the graph?
3. If KNO₃, KCl, and NaCl are all solids and NH₃ is a gas, then how does the solubility of most solids change as temperature increases? How does the solubility of gases change as temperature increases?
4. What is the solubility of NH₃ at 10°C?
5. What is the solubility of KCl at 50°C?
6. What is the change in solubility of KNO₃ from 40°C to 70°C?
7. At what temperature do NH₃ and KNO₃ have the same solubility in water?
8. How much more KCl can be dissolved in 100g of water at 80°C than NH₃?
9. Which compound has solubility values that are affected the least by changes in temperature?
10. If 40g of KCl were placed into a beaker with 100g of water at 60°C and then stirred, what type of solution would result (saturated, unsaturated, or supersaturated)?

Directions: Use the solubility curve to answer the questions that follow.

1. Which of the salts shown on the graph is least soluble in water at 10°C?
2. Which of the salts shown on the graph has the greatest increase in solubility as the temperature increases from 30°C to 60°C?
3. Which of the salts has its solubility affected the least by a change in temperature?
4. Approximately how many grams of potassium chloride must be added to 100g of water at 20°C to produce a saturated solution?
5. A saturated solution of potassium nitrate is prepared at 60°C using 100g of water. How many grams of solute will precipitate out of solution if the temperature is suddenly cooled to 30°C?



6. 30g of potassium chloride are dissolved in 100g of water at 45°C. How many additional grams of KCl must be added to make the solution saturated at 80°C?
7. What kind of solution, saturated, unsaturated, or supersaturated would be present if 40g of KCl were dissolved in 100g of water at 80°C?
8. What kind of solution, saturated, unsaturated, or supersaturated would be present if 120g of KNO₃ were dissolved in 100g of water at 60°C?
9. What kind of solution, saturated, unsaturated, or supersaturated would be present if 80g of NaNO₃ were dissolved in 100g of water at 10°C?
10. Which compounds on the graph are solids? Which are gases? Support your response.

Directions: Working as a group, use the information in the table to graph the solubility curves for barium hydroxide $\text{Ba}(\text{OH})_2$, copper (II) sulfate CuSO_4 , potassium chloride KCl , and sodium nitrate, NaNO_3 on the poster paper provided. Use a different color marker for each compound. Be sure you label each axis with units and values and give your graph an appropriate title. Once you have created your graph, answer the questions below the table.

Solubility in g/100g of Water				
Compound	Temperature			
	0°C	20°C	60°C	100°C
$\text{Ba}(\text{OH})_2$	1.67	3.89	20.94	101.4
CuSO_4	23.10	32.0	61.8	114.0
KCl	28.0	34.2	45.8	56.3
NaNO_3	73.0	87.6	122.0	180.0

1. At about what temperature will 100g of water dissolve equal amounts of potassium chloride and barium hydroxide?
2. At about what temperature will 37g of both copper (II) sulfate and potassium chloride dissolve in 100g of water?
3. If 100g of sodium nitrate are dissolved in 100g of water at 60°C is the solution formed saturated, unsaturated, or supersaturated?
4. If 32g of copper (II) sulfate are dissolved in 100g of water at 20°C is the solution produced saturated, unsaturated, or supersaturated?
5. What do each of the compounds displayed on this graph have in common?