

Pre-AP Chemistry/Chemistry I  
Unit #11--Solutions

**Solubility Curves for Ionic Solids**

*Directions:* Graph the following information with Temperature on the x-axis and Solubility on the y-axis. Make each line a different color. Be sure to include a title for your graph, axes labels with units, and a key.

Line #1 Ammonium Chloride NH <sub>4</sub> Cl		Line #2 Potassium Nitrate KNO <sub>3</sub>		Line #3 Sodium Nitrate NaNO <sub>3</sub>		Line #4 Copper (II) Sulfate CuSO <sub>4</sub>	
Temperature (Celsius, °C)	Mass (Grams, g)	Temperature (Celsius, °C)	Mass (Grams, g)	Temperature (Celsius, °C)	Mass (Grams, g)	Temperature (Celsius, °C)	Mass (Grams, g)
0	29.4	0	13.9	0	73.0	0	14.3
10	33.3	10	21.2	10		10	17.4
20	37.2	20	31.6	20	87.6	20	20.7
30		30		30		30	24.2
40	45.8	40	61.4	40	102.0	40	
50		50	83.5	50		50	33.8
60	55.2	60	106	60	122.0	60	40.0
70		70		70		70	
80		80		80	148.0	80	56.0
90		90		90		90	67.5
100	77.3	100		100	180.0	100	80.0

1. Which salt is the least soluble at 50 °C?
2. Which salt is the least soluble at 90 °C?
3. Which salt is the most soluble at 10 °C?
4. Which salt is the most soluble at 100 °C?
5. How many grams of ammonium chloride can be dissolved at 80 °C?
6. How many grams of potassium nitrate can be dissolved at 30 °C?
7. How many grams of sodium nitrate can be dissolved at 40 °C?
8. How many grams of copper (II) sulfate can be dissolved at 100 °C?
9. Which salt shows the least change in solubility from 0 °C – 100 °C?
10. At 30 °C, 90 g of sodium nitrate is dissolved in 100 mL of water. Is this solution saturated, unsaturated or supersaturated?
11. Do any compounds show a decrease in solubility from 0 °C to 100 °C?