Name_____

Date_____ Period_____

Solubility Graph Worksheet

Refer the graph to answer the following questions.

1. Why do the temperatures on the graph only go from 0° C to 100° C?

2. Which substance is most soluble at 60° C?

3. Which two substances have the same solubility at 80° C?

4. Which substance's solubility changes the most from 0° C to 100° C?

5. Which substance's solubility changes the least from 0° C to 100° C?

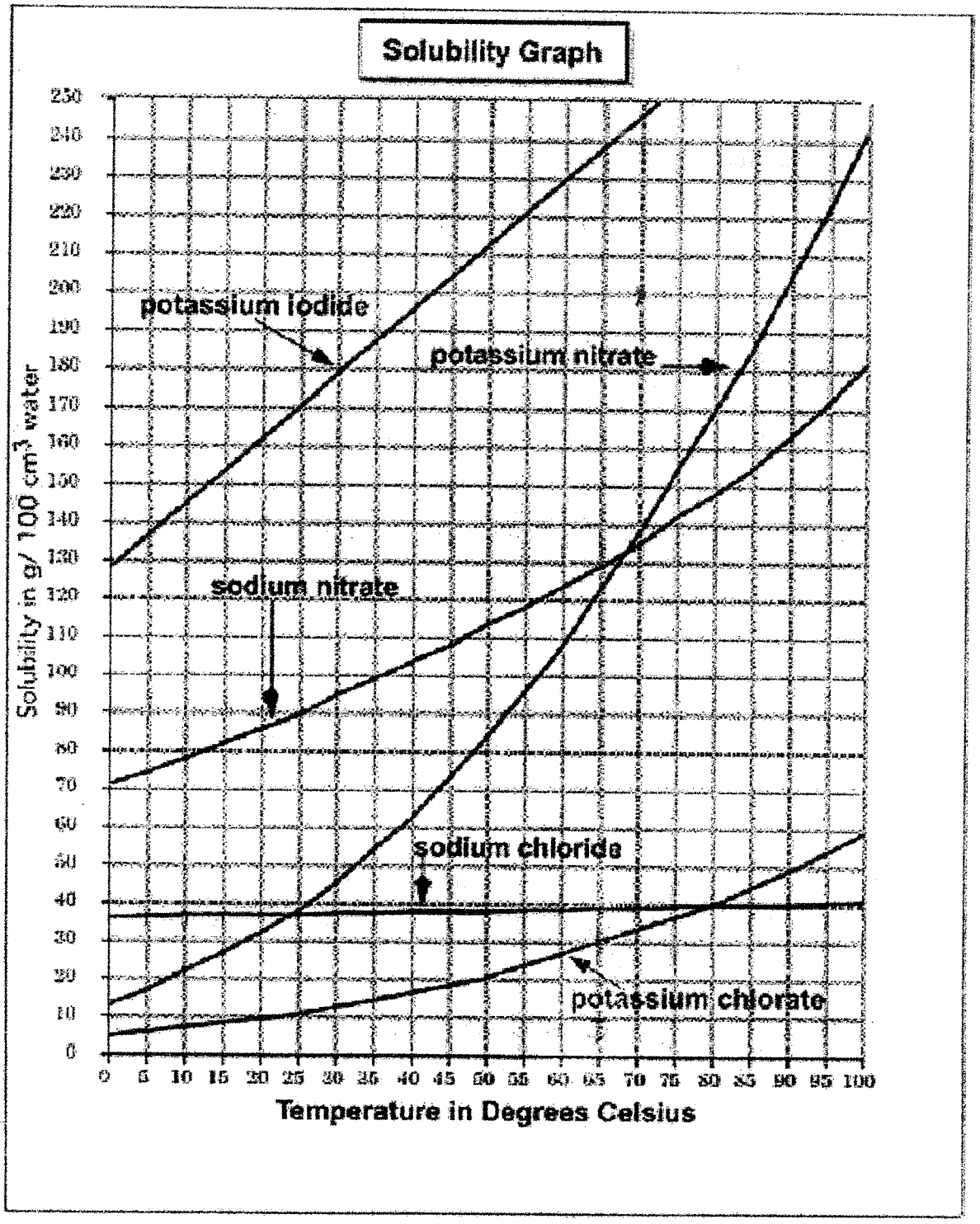
6. What is the solubility of potassium nitrate at 90° C?

7. At what temperature does potassium iodide have a solubility of 150 g/ 100 cm3 water?

8. You have a solution of sodium nitrate containing 140 g at 65° C. Is the solution saturated, unsaturated, or supersaturated?

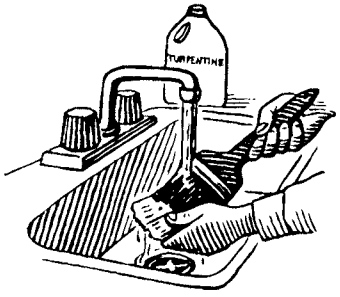
9. You have a solution of potassium chlorate containing 4 g at 65° C. How many additional grams of solute must be added to it, to make the solution saturated?

10. A solution of potassium iodide at 70° C contains 200 g of dissolved solute in 100 cm^3 water. The solution is allowed to cool. At what new temperature would crystals begin to start forming?


Solubility Graph
Solubility in g/ 100 cm³ water
Temperature in Degrees Celsius
potassium iodide
potassium nitrate
sodium nitrate
sodium chloride
potassium chlorate
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Molarity and Heat Practice Problems

Calculate the molarities of the following solutions:



1. 2.3 moles of sodium chloride in 0.45 liters of solution.
2. 1.2 moles of calcium carbonate in 1.22 liters of solution.
3. 0.09 moles of sodium sulfate in 0.012 L of solution.
4. 0.75 moles of lithium fluoride in 0.065 L of solution.
5. 0.8 moles of magnesium acetate in 5 liters of solution.
6. 120 moles of calcium nitrite in 0.24 L of solution.
7. 98 moles of sodium hydroxide in 2.2 liters of solution.

Perform these calculations using the formula ***q=mcΔT****. Also, state whether each reaction is exothermic or endothermic.*

8. Gold has a specific heat of 0.129 J/g°C. How many joules of heat energy are required to raise the temperature of 15 g of gold from 22°C to 85°C?
9. Graphite has a specific heat of 0.709 J/g°C. If a 25 g piece of graphite is cooled from 35°C to 18°C, how much energy was lost by the graphite?
10. If the temperature of 34.4 g of ethanol increases from 25°C to 78.8°C, how much heat has been absorbed by the ethanol? The specific heat of ethanol is 2.44 J/g°C.

Acid Base Worksheet

Convert the following H^+ concentrations to pH ***and*** state whether the substance is an Acid or a Base

1. $[H^+] = 1 \times 10^{-5}$
2. $[H^+] = 1 \times 10^{-13}$
3. $[H^+] = 1 \times 10^{-10}$
4. $[H^+] = 1 \times 10^{-2}$

Convert the following OH^- concentrations to pOH ***and*** state whether the substance is an Acid or a Base

5. $[OH^-]=1 \times 10^{-2}$
6. $[OH^-]=1 \times 10^{-8}$
7. $[OH^-]=1 \times 10^{-9}$
8. $[OH^-]=1 \times 10^{-3}$

Convert pH to pOH or pOH to pH

9. pH= 3
10. pH=5
11. pOH=7
12. pOH=12
13. pH=11
14. pOH=9

Complete the following chart

$[H^+]$	$[OH^-]$	pH	pOH	Acid or Base
	1×10^{-4}			
		4		
1×10^{-13}				
			8	
			2	