

SOLUBILITY AND CONCENTRATION

1. SOLUBILITY

- max amount of solute that will dissolve in a given amount of solvent at a certain temperature and pressure. (see table 1 page 240)
- for water standard is at 20C and one atmosphere of pressure

2. CONCENTRATION

- refers to how much solute is dissolved in a solvent.
- Concentrated (STRONG) a lot of solute
- Dilute (WEAK) little solute
- *More accurate methods:

$$\text{Molarity} = \frac{\text{moles of solute}}{\text{Liters of solution}}$$

$$\text{Mass Percent} = \frac{\text{grams of solute}}{100 \text{ grams of solution}}$$

3. HOW MUCH CAN DISSOLVE?

- depends on chemical, temperature and pressure.
- A. Unsaturated- more can dissolve at that temp and press.
- B. Saturated- can't dissolve any more at that temp and press.
- C. Supersaturated- has more dissolved than normal. HOW?
Heat a solution, dissolve solute, cool the solution

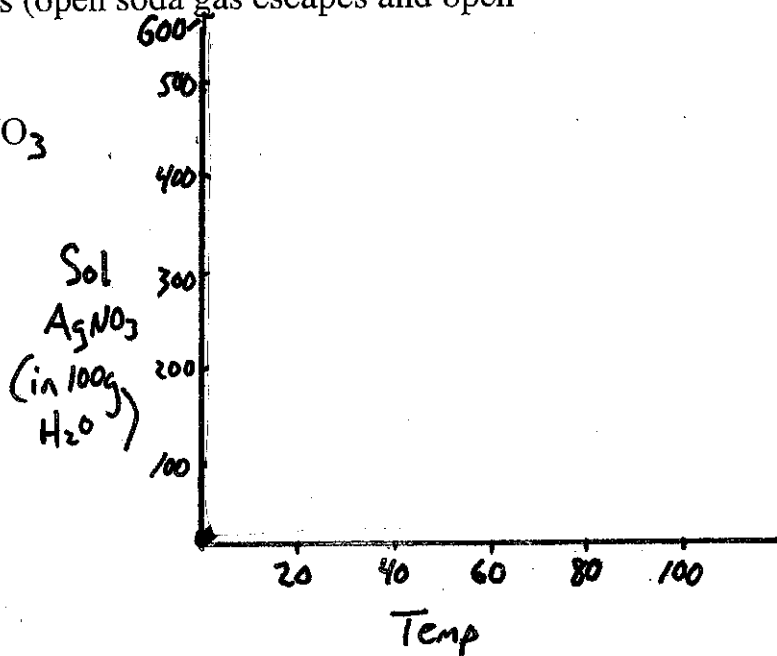
4. SOLUBILITY CURVES

- shows how much of a solute can dissolve as temperature changes
- Usually HIGH temperatures Increase solubility of Solids and Decrease solubility of gases (hot water dissolves lots salt, hot soda is flat soda)
- High pressure, more gas dissolves (open soda gas escapes and open cockpit your dead)

Ex) graph the following data

Temperature C Solubility of AgNO_3
In 100g of water

0	122
20	216
40	311
60	440
80	585



Name: _____ Date: _____ Class: _____

Solubility Curve Practice Problems Worksheet 1



You'll notice that for most substances, solubility increases as temperature increases. As discussed earlier in solutions involving liquids and solids typically more solute can be dissolved at higher temperatures. Can you find any exceptions on the graph? _____

Here's an example of how to read the graph. Find the curve for KClO_3 .

At 30°C approximately 10g of KClO_3 will dissolve in 100g of water. If the temperature is increased to 80°C , approximately _____ of the substance will dissolve in 100g (or 100mL) of water.

Directions: Use the graph to answer the following questions. REMEMBER UNITS!

1) What mass of solute will dissolve in 100mL of water at the following temperatures?

a. KNO_3 at 70°C = _____

b. NaCl at 100°C = _____

c. NH_4Cl at 90°C = _____

d. Which of the above three substances is most soluble in water at 15°C . = _____

