PPs 9.1 #1 Name:_____

1) Define the following terms:

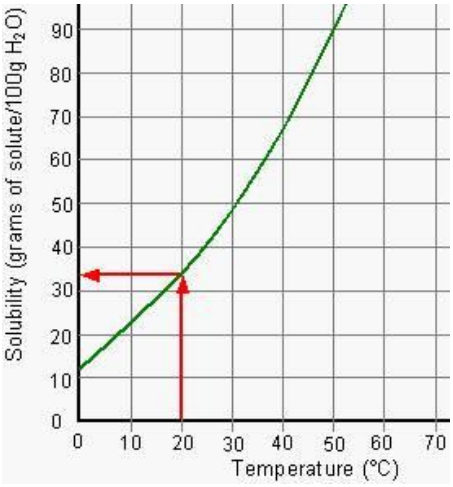
Solute: a s, l, or g that is dissolved in a solvent

Solvent: a s, l, or g that dissolves the solute

Homogeneous: completely uniform

2) Give an example of each solution:

a. Solute is a liquid and Solvent is a liquid = rubbing alcohol, hydrogen peroxide
b. Solute is a gas and Solvent is a liquid = oxygen in water (so fishies don't die)
c. Solute is a solid and Solvent is a solid = brass, steel, bronze
d. Solute is a gas and Solvent is a gas = your exhale (carbon dioxide in water vapor)



3) Define SATURATED. Label where this particular solute is saturated at 50 Degrees Celsius on the graph by marking an X.
saturated = maximum amount of solute is dissolved (X should be on the curve at 50 degrees)

4) Define UNSATURATED. Label a place where this particular solute is unsaturated at 40 degrees Celsius by marking an O. more solute can be dissolved. O should be anywhere under the curve at 40 degrees.

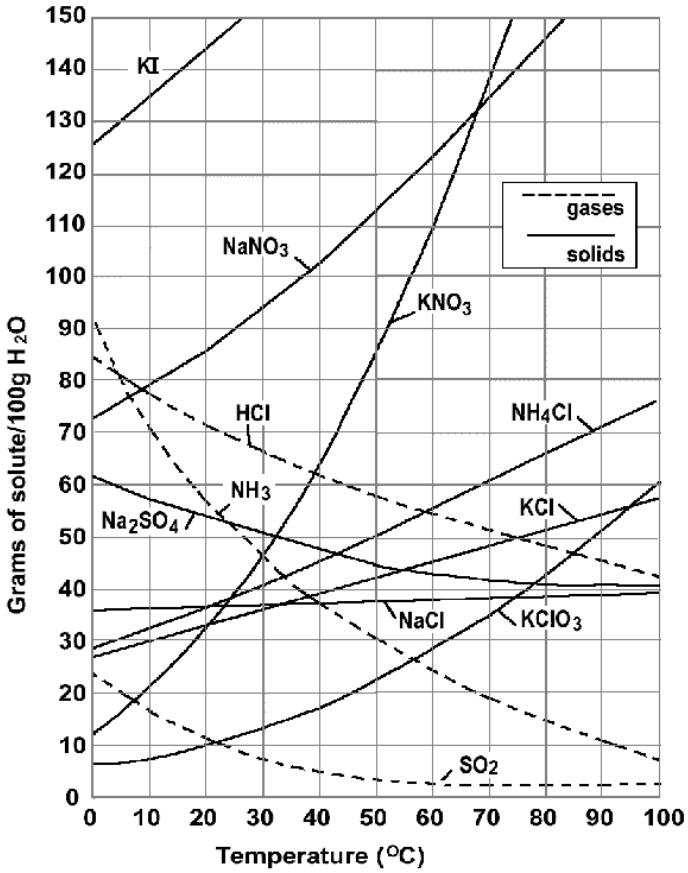
5) What is the solubility of this solute at 20 degrees Celsius? (use the correct units)
33 g/100 g water

6) How many grams of this solid would dissolve in 450 g of water at 20 degrees Celsius? (show work)

33/100 = x/450 ... x = 148.5 g/450 g water

7) For each, choose whether the solution would be (a) saturated, (b) unsaturated, or (c) saturated with a precipitate on the bottom.

a. 20 g in 100 g of water at 15 degrees Celsius B
b. 50 g in 100 g of water at 20 degrees Celsius C
c. 40 g in 100 g of water at 25 degrees Celsius A
d. 10 g in 50 g of water at 10 degrees Celsius B



1) What solid is most soluble at 60 degrees Celsius?
sodium nitrate
2) What compound is least soluble at 10 degrees Celsius?
potassium chlorate
3) Suppose 80 g of KNO_3 is added to 100 g of water at 30 degrees Celsius. Would you see a precipitate? If so, how many grams of precipitate?
Yes, about 35 g of ppt

4) Suppose 100 g of $NaNO_3$ are added to 100 g of water at 20 degrees Celsius. If you gradually warmed up the solution, at what temperature would you see all of the solute dissolve?
about 37 degrees celsius

5) Label the following solutions as saturated or unsaturated. If unsaturated, write how much more solute could be dissolved (in g).

a. 70 g of $NaNO_3$ in 100 g of water at 30 degrees = unsaturated, about 22 g
b. 50 g of NH_4Cl in 100 g of water at 50 degrees = saturated
c. 20 g HCl in 50 g of water at 50 degrees (careful) = unsaturated, 20 g
d. 70 g of KI in 200 g of water at 10 degrees (careful) = unsaturated, 100 g

6) A saturated solution of sodium sulfate is made with 100 g of water at 20 degrees Celsius. If the temperature of the solution is raised to 90 degrees, how many grams of sodium sulfate would fall out of
the solution?
15 g should come out of solution (55 g vs. 40 g that can be held at 90 degrees)

7) A saturated solution of KCl is made with 100 g of water at 10 degrees Celsius. If the temperature of the solution is raised to 80 degrees, how much more KCl must be added to the solution so that it stays saturated? About 20 g
8) How many grams of NH_4Cl are required to make a saturated solution with 38 g of water at 70 degrees?
60 g /100 g = x g/38 g ... x = 22.8 g