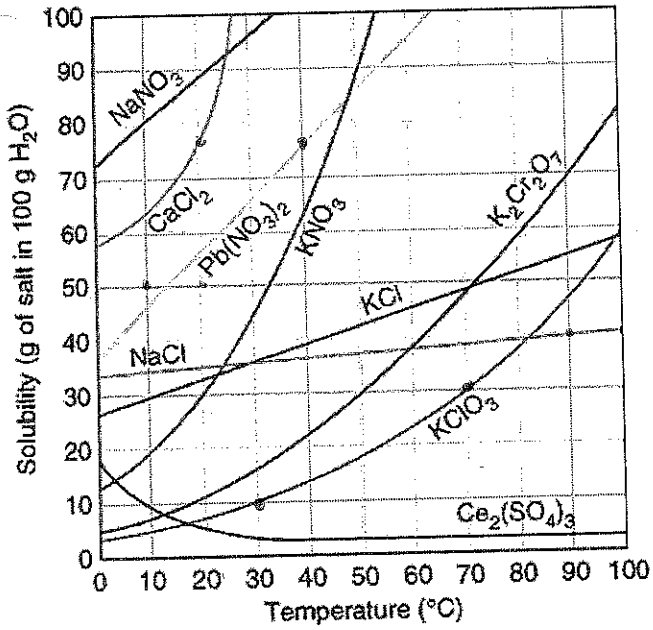
Solubility and Concentration Practice Name_____hour____

Obj: I can determine solubility of a salt or gas on a solubility chart.
Obj: I can calculate Molarity, amount of solute, or amount of solution using M=mol/liter.



1. What is the solubility of NaCl at 90°C? 40g NaCl in 100g H_2O don't forget units

2. At what temperature will 10 grams of $KClO_3$ dissolve to make a saturated solution? 30°C

3. What substance on the graph is most soluble at 10°C? $NaNO_3$ Least soluble? $KClO_3$

4. A solution becomes saturated when 58 grams of solute is added to water at 80°C. Using the graph to the left, determine the compound that is most likely the solute. $K_2Cr_2O_7$

5. A solution contains 50 g of $CaCl_2$ in 100 mL of water at 20°C. How much more $CaCl_2$ can dissolve at this temperature in this amount of water?
Solubility of $CaCl_2$ is 75g $CaCl_2$ per 100g H_2O at 20°C
75 − 50 = 25g $CaCl_2$

6. Calculate the additional amount of solute that could be dissolved in a solution of $KClO_3$ at 70°C compared to a solution of $KClO_3$ at 30°C.
70°C − 30°C = 40g more @ 70°C

7. What is the maximum amount of $Pb(NO_3)_2$ that will dissolve in 100 mL at 40°C?
76g $Pb(NO_3)_2$

8. What is the molarity of a solution with 1.1 moles of NaCl in 3.5 liters of solution? Show your calculation.
$\frac{1.1 mol}{3.5 L}$ = 0.31M NaCl

9. How many moles of NaCl are in 620 mL of a 0.5M solution? Show your calculation.
$0.5M = \frac{X mol}{0.620 L}$ X = 0.31 mol NaCl

10. What is the molarity of a solution if 25 grams of $Pb(NO_3)_2$ are dissolved in 243 mL of solution? Show your calculation.
243 mL = 0.243L
$25g\ Pb(NO_3)_2 \left|\frac{1 mol}{331.2 g}\right. = 0.075 mol$
Pb 1×207.2 = 207.2
N 2×14 = 28.0
O 6×16 = 96.0
331.2 g/mol
$\frac{0.075 mol}{0.243 L}$ = 0.31M NaCl

11. a. Use the graph to determine the solubility of $Ce_2(SO_4)_3$ at 10°C.
10 g in 100 g H_2O.

b. What is the molar mass of $Ce_2(SO_4)_3$? Show your work. (#58)
Ce 2×140.1 = 280.2
S 3×32.1 = 96.3
O 12×16.0 = 192.0
568.5 g/mol

c. (Assume that the volume is 0.1 Liter of solution) What is the molarity of the solution in 11a?
$10g\ Ce_2(SO_4)_3 \left|\frac{1 mol}{568.5 g}\right. = 0.0176 mol$
$\frac{0.0176 mol}{0.1 L} = 0.17M$ → 0.2M $Ce_2(SO_4)_3$