Solutions Review

Molarity = $\frac{\text{\# moles solute}}{\text{Liters solutions}}$

Dilution: Molarity $_1$ x Volume $_1$ = Molarity $_2$ x volume $_2$

Solubility of gas: $\frac{S_1}{P_1} = \frac{S_2}{P_2}$ or $S_1P_2 = S_2P_1$

1. What is solubility?
2.
2. A. What 3 main factors increase the rate at which a solid dissolves in a liquid? B. A gas in a liquid?
3. What occurs between the molecules to cause the solubility of a solid/liquid solution increase? What 1 factor will increase the rate and amount of solute able to dissolve in the liquid?
4. What is the difference between the solute and the solvent? Give an example
5. What is the difference between a saturated solution, unsaturated and supersaturated?
6. Explain how, when reading the solubility graph you can tell if a substance is sat., un-sat, or super sat.?
7. What 1 test could you perform to identify a solution as sat. un-sat. or super sat.? Give the results as proof
8. What evidence will you observe that indicates a solution is saturated?
9. Use the solubility graph to answer :

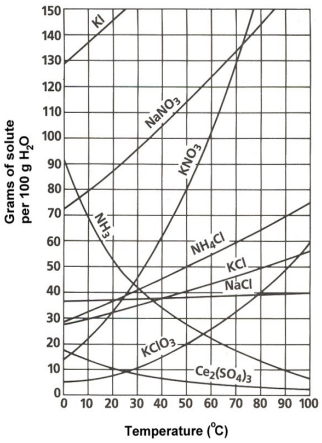
A. How many grams of NH_4Cl will form a saturated solution in 100 g H_2O at 50.0 ^oC?

B. If a solution if formed with 140 g of KI in 100 g H_2O. Is it saturated, unsaturated, supersaturated?

C. If a saturated solution of KNO_3 is cooled from 70.0^oC to 40.0^oC, how much solute will fall out of solution or precipitate?

D. How many grams of $KClO_3$ would be required to form a saturated solution at 80oC in 300 g H2O? *Show your work*

E. If 100 grams of KNO3 remain dissolved in 100 grams of H_2O at 50.0oC is sat, unsat, super sat?



10. Draw 2 beakers 1 concentrated and 1 with a dilute solution. Explain and show the difference

11. Explain what happens when an ionic compound dissolves. When a covalent compound dissolves.

12. Explain how to make 1.0L of a 2.5 molar solution of NaCl?

13. What is the molarity of 0.50 moles of NaCl dissolved in 0.50 L of solution?

14. Find the moles of NaCl in 1.50 liters of a 2.50 molar solution.

15. 734 grams of NaCl are dissolved in 2500 grams or mL of H_2O, find the molarity.

16. The solubility of a gas is 0.58g/L at 1.04 atm pressure. What is the new solubility if the pressure increases to 2.50 atm.?

17. Find the solubility of a gas at 760 mmHg , if the original solubility is 0.69 g/L at 1850 mmHg.

18. If I dilute 550 mL of a 0.75 M solution to a volume of 750 mL what is the new molarity?

19. I need 2.50 liters of 0.50 M HCl. What volume of 2.5 M HCl will I need?

20. Use the dilution equation and explain how to make 25 mL of a 050 M solution from a 1.0 M solution.