Solutions : Review-10

1) Define : solution, solute, solvent, molarity.

2)a) What are the units for solubility?

b) Find the molarity if 1.7 moles of NaCl are added to 2.9 liters of water.

c) Find the molarity if 84.0g of NaCl are added to 2.50 l of water.

d) How many more grams of NaCl must be added in part c) above to increase the molarity to 2.00M ?

3)a) Find the molarity if 350 grams of Na_2CO_3 are added to 55 liters of water.

b) Find the molarity of Na^+ ions in problem 3)a).

4) Is $CuBr_2$ soluble or insoluble? (soluble means > 0.1 M)

5) If you add 250 ml of 5.0 M HCl to 3.5 L of water, what is the new molarity?

6) Find the concentration of F^- in a mixed solution of 3.5 L of 0.50 M NaF and 2.0 L of 0.75 M CaF_2.

7)a) Write the dissociation equation : $Ag_2CO_3(s)$ <->

b) Give the K_{sp} expression for the reaction in a) above.

8)a) Use the tables to find the K_{sp} for strontium carbonate.

b) Find the solubility of strontium carbonate.

9) True or false : All compounds that contain sodium (an alkali) are soluble.

10) How would you separate Ag^+ ions from Ca^{2+} in solution ? (hint : add a salt)

11) Write the net ionic equation for Na_2CO_3(aq) added to $AgNO_3$(aq).

12) True or false : If the **Trial Ion Product** is less than K_{sp}, a precipitate will form.

13) What is the **Common Ion Effect**? Explain in your own words, using the equilibrium : $BaCrO_4$(s) <-> Ba^{2+}(aq) + CrO_4^{2-}(aq) as some solid $BaCl_2$ is added to the solution.

Answers : 1) homogeneous mixture, solid dissolved in water, water (usually), moles of solute per liter of water, 2)a) mol/l or g/l, b) 0.59M, c) 0.574M, d) 209g, 3a) 0.060M, b) 0.12M, 4) soluble, 5) 0.33M, 6) 0.86 M, 7)a) Ag_2CO_3(s) <-> $2Ag^+$(aq) + CO_3^{2-}(aq), b) K_{sp} = $[Ag^+]^2[CO_3^{2-}]$, 8)a) 5.6×10^{-10}, b) 2.4×10^{-5} M, 9) true, 10) add NaCl, AgCl will precipitate, 11) $2Ag^+$(aq) + CO_3^{2-}(aq) -> Ag_2CO_3(s), 12) false, 13) It is the lowering of the solubility of a salt in a saturated solution by adding another salt which has one ion in **common** with the first salt. In this case Cl^- is a spectator ion and the Ba^{2+} ions added will cause a shift to the left causing more $BaCrO_4$(s) to precipitate.