Review for Solutions Test

1. What is the K_{sp} of $PbCl_2$ if, in a saturated solution of lead (II) chloride, the $[Cl^-]$ is 0.032 mol/L?

2. The solubility of calcium sulfate is 0.67 g/L. Calculate the K_{sp} for calcium sulfate.

3. The solubility of copper (II) hydroxide is 1.8×10^{-6} g/100 mL. Calculate the K_{sp} for $Cu(OH)_2$.

4. Calculate the calcium ion concentration in a saturated solution of calcium carbonate.

5. What is the solubility, in g/L, of calcium phosphate? K_{sp} for calcium phosphate is 1.2×10^{-26}.

6. Which is more soluble, calcium fluoride or silver chloride?

7. The concentration of Ag^+ in a saturated solution of Ag_2CrO_4 is 1.5×10^{-4} mol/L. Calculate the K_{sp} for Ag_2CrO_4.

8. 1.0×10^{-3} moles of Ba^{2+} are added with 6.0×10^{-3} moles of SO_4^{2-} to make a 1 L solution. What is the nature of the solution?

9. If 2.00 mL of 0.200M NaOH are added to 1.00 L of 0.100M $CaCl_2$, will a precipitate form?

10. How much precipitate of BaCO3 will form when 20.0 mL of 0.10 M $Ba(NO_3)_2$ is added to 50.0 mL of 0.10 M Na_2CO_3?

11. Consider #10. When equilibrium is reached, what will a) $[CO_3^{2-}]$ be? b) $[Ba^{2+}]$ be?

12. What mass of $BaSO_4$ precipitate will form when 50 mL of 0.10M Na_2SO_4 is mixed with 50 mL of 0.20 M $BaCl_2$?

13. Calculate the molar solubility of $BaSO_4$ in a) pure water b) in 1.0 M SO_4^{2-}.

14. Calculate the molar solubility of AgCl in a 1.0 L solution containing 10.0 g of $CaCl_2$.

15. How many grams of $CaCO_3$ will dissolve in 300 mL of 0.050 M $Ca(NO_3)_2$?

16. a) Calculate the molar solubility of MgF_2.

    b) Calculate the solubility of MgF_2 in g/100 mL.

    c) How many grams of MgF_2 will dissolve in a 350 mL solution of 0.25 M NaF?

    d) If 50 mL of 0.50 M solution of $CaCl_2$ are added to 250 mL of a saturated solution MgF_2, will a precipitate form? K_{sp} for CaF_2 is 3.9×10^{-11}. Show your calculations.