Exercise 16.2

Q_{sp}, K_{sp}, & Precipitation

Name: _____

Date: _____ Per: _____

DIRECTIONS: Complete the following in the space provided.

1. Will a precipitate of $CaSO_4$ form in solution if the Ca^{2+} concentration is 0.0025 *M* and the SO_4^{2-} concentration is 0.030 *M*? (K_{sp} of $CaSO_4 = 2.4 \times 10^{-5}$.)

2. Will a precipitate form in a solution containing 3.4×10^{-4} *M* CrO_4^{-2} and 4.8×10^{-5} *M* Ag^+? (K_{sp} of $Ag_2CrO_4 = 2.0 \times 10^{-12}$.)

3. Will a precipitate of $PbSO_4$ form if 100 mL of 1.0×10^{-3} *M* $Pb(NO_3)_2$ solution is added to 100 mL of 2.0×10^{-3} *M* $MgSO_4$ solution? (K_{sp} of $PbSO_4 = 1.8 \times 10^{-8}$.)

4. Silver acetate, $AgCH_3COO$, has $K_{sp} = 4.4 \times 10^{-3}$. Does a precipitate form when 0.010 mol of $AgNO_3$ and 0.30 mol of $Ca(CH_3COO)_2$ are dissolved in a total volume of 1.00 L of solution?

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5. Will a precipitate of $PbCl_2$ form if 50.0 mL of 0.10 *M* $Pb(NO_3)_2$ solution is added to 20.0 mL of 0.040 *M* NaCl solution? (K_{sp} of $PbCl_2 = 1.2 \times 10^{-5}$.)

6. 25.0 mL of 0.0020 *M* potassium chromate are mixed with 75.0 mL of 0.000125 *M* lead(II) nitrate. Will a precipitate of lead(II) chromate form? (K_{sp} of lead (II) chromate is 1.8×10^{-14}.)

7. A volume of 75 mL of 0.060 *M* NaF is mixed with 25 mL of 0.15 *M* $Sr(NO_3)_2$. Calculate the concentrations in the final solution of NO^{3-}, Na^{+}, Sr^{2+}, and F^{-}. (K_{sp} for $SrF_2 = 2.5 \times 10^{-9}$)