Name: _____
Date: _____ Score ___ / 5

AP Chemistry: *Precipitate Reactions and Net Ionic Equations*

For each problem below, write the equation and show your work. Always use units and box in your final answer.

1. Using solubility guidelines, predict whether each of the following compounds is soluble or insoluble in water:
    a. $NiCl_2$
    b. Ag_2S
    c. $CsPO_4$
    d. $SrCO_3$
    e. $(NH_4)_2SO_4$

2. Will precipitation occur when the following solutions are mixed? If so, write a balanced chemical equation for the reaction:
    a. Na_2CO_3 and $AgNO_3$
    b. NaOH and K_2SO_4
    c. $FeSO_4$ and $Pb(NO_3)_2$

3. Write the balanced complete ionic equations and net ionic equations for the reactions that occur when each of the following solutions are mixed.
    a. Na_2CO_3 (aq) and $MgSO_4$ (aq)

b. $Pb(NO_3)_2$ (aq) and Na_2S (aq)

c. $(NH_4)_3PO_4$ (aq) and $CaCl_2$ (aq)

4. Separate samples of a solution of an unknown ionic compound are treated with dilute $AgNO_3$, $Pb(NO_3)_2$, and $BaCl_2$. Precipitates form in all three cases. Which of the following anions could be the anion of the unknown salt: Br^{1-}; CO_3^{2-}, NO_3^{1-}?

5. Separate samples of a solution of an unknown salt are treated with dilute solutions of HBr, H_2SO_4, and NaOH. A precipitate forms only with H_2SO_4. Which of the following cations could the solution contain: K^{1+}; Pb^{2+}; Ba^{2+}?