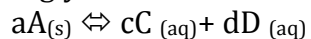


**Solubility Product Worksheet**  
**CHEM 212**

1. Write a generalized equilibrium solubility product expression ( $K_{sp}$ ) for the following reaction describing the dissolution of a sparingly soluble salt in water.



2. Write the reaction and solubility product equilibrium expression for slightly soluble  $BaSO_4(s)$  dissolved in water.

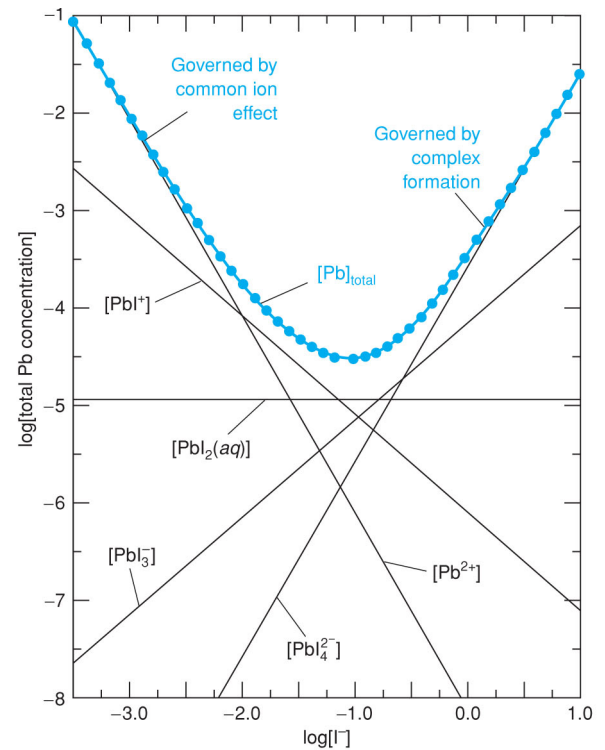
If the  $pK_{sp} = 9.96$  for the above reaction, calculate the  $[Ba^{2+}]$  at equilibrium.

3. Write the reaction and solubility product equilibrium expression for slightly soluble  $Y_2(CO_3)_3$  dissolved in water.

If the  $K_{sp} = 1.03 \times 10^{-31}$  for the above reaction, calculate the  $[Y^{3+}]$  at equilibrium.

4. Look up the  $K_{sp}$  value for  $\text{CaCO}_3$ ,  $\text{PbI}_2$  in the back of your textbook (Appendix F, pg AP9).

5. Consider the diagram shown to the right. Locate the  $K_{sp}$  value. Is it constant? Is what you observe in the diagram consistent with your understanding of  $K_{sp}$ ?



6. Identify and describe the effect of iodine concentration on aqueous Pb concentration at low  $\text{I}^-$  concentration. What is this phenomena called?

7. Identify and describe the effect of iodine concentration on aqueous Pb concentration at high  $\text{I}^-$  concentration. What is this phenomena called?

8. In problem 2, if there were already  $2.4 \times 10^{-3}\text{M}$   $\text{SO}_4^{2-}$  in solution, what would be the equilibrium  $[\text{Ba}^{2+}]$ ?