

- 1) Write the balanced equation and solubility product expressions for the following solubility equilibria for the following compounds.
 - a) Ag_2CrO_4

 - b) AuCl_3

- 2) Calculate the concentration of ions in the following saturated solutions:
 - a) $[\text{I}^-]$ in AgI solution with $[\text{Ag}^+] = 9.1 \times 10^{-9} \text{ M}$. ($K_{sp} : 8.3 \times 10^{-17}$)

 - b) $[\text{Al}^{3+}]$ in $\text{Al}(\text{OH})_3$ solution with $[\text{OH}^-] = 2.9 \times 10^{-9} \text{ M}$. ($K_{sp} : 1.8 \times 10^{-33}$)

- 3) Calculate the solubility products (K_{sp}) for the following compounds:
 - a) SrF_2 $7.3 \times 10^{-2} \text{ g/L}$

 - b) Ag_3PO_4 $6.7 \times 10^{-3} \text{ g/L}$

- 4) The molar solubility of MnCO_3 is $4.2 \times 10^{-6} \text{ M}$. What is the K_{sp} for this compound?

5) The solubility of an ionic compound MX (mol mass = 346 g/mol) is 4.63×10^{-3} g/L. What is the K_{sp} for this compound?

6) What is the pH of a saturated zinc hydroxide solution? ($K_{sp} : 1.34 \times 10^{-14}$)

7) The solubility product of PbBr_2 is 8.9×10^{-6} . Determine the molar solubility in:
a) pure water,

b) 0.20 M KBr

c) 0.20 M $\text{Pb}(\text{NO}_3)_2$.

8) If 20.0 mL of 0.10 M $\text{Ba}(\text{NO}_3)_2$ is added to 50.0 mL of 0.10 M Na_2CO_3 , will BaCO_3 precipitate? ($K_{sp} : 8.1 \times 10^{-9}$)

9) Which of the following ionic compounds will be more soluble in acid solution than pure water:

a) BaSO_4

b) PbCl_2

c) $\text{Fe}(\text{OH})_3$

d) CaCO_3 .