

19 • Precipitation Reactions

PRACTICE TEST

- Which one of the following is the solubility product constant for $\text{Mn}(\text{OH})_2$?
 - $K_{\text{sp}} = [\text{Mn}^{2+}][\text{OH}^-]^2$
 - $K_{\text{sp}} = [\text{Mn}^{2+}][2 \text{OH}^-]^2$
 - $K_{\text{sp}} = [\text{Mn}^{2+}]^2[\text{OH}^-]^2$
 - $K_{\text{sp}} = [\text{Mn}^{2+}]^2[\text{OH}^-]$
 - $K_{\text{sp}} = [\text{Mn}^{2+}]^2[2 \text{OH}^-]^2$
- The solubility of HgS is 5.5×10^{-27} mol/L. What is K_{sp} for HgS ?
 - 4.0×10^{-3}
 - 8.2×10^{-4}
 - 1.3×10^{-13}
 - 7.4×10^{-14}
 - 3.0×10^{-53}
- Which expression best describes the relationship between solubility product, K_{sp} , and the solubility, s , of MgF_2 ?
 - $K_{\text{sp}} = 2s$
 - $K_{\text{sp}} = s^2$
 - $K_{\text{sp}} = 2s^3$
 - $K_{\text{sp}} = 4s^2$
 - $K_{\text{sp}} = 4s^3$
- Calculate the molar solubility of Fe_2S_3 . $K_{\text{sp}} = 1.4 \times 10^{-88}$
 - 5.5×10^{-62} M
 - 1.2×10^{-44} M
 - 5.2×10^{-30} M
 - 4.8×10^{-24} M
 - 1.1×10^{-18} M
- What is the concentration of CrO_4^{2-} in a saturated solution of PbCrO_4 ? $K_{\text{sp}} = 1.8 \times 10^{-14}$?
 - 1.3×10^{-7} M
 - 7.5×10^{-6} M
 - 1.8×10^{-4} M
 - 1.3×10^{-4} M
 - 5.1×10^{-3} M
- Calculate the equilibrium constant for the reaction:

$$\text{CuCl}(s) + \Gamma(\text{aq}) \rightleftharpoons \text{CuI}(s) + \text{Cl}\Gamma(\text{aq})$$

$$\text{CuCl}; K_{\text{sp}} = 1.9 \times 10^{-7}$$

$$\text{CuI}; K_{\text{sp}} = 5.1 \times 10^{-12}$$
 - 8.4×10^{-2}
 - 2.3×10^{-6}
 - 3.7×10^4
 - 4.4×10^{17}
 - 9.7×10^{-19}
- For BaSO_4 , $K_{\text{sp}} = 1.1 \times 10^{-10}$. If you mix 200. mL of 1.0×10^{-4} M $\text{Ba}(\text{NO}_3)_2$ and 500. mL of 8.0×10^{-2} M H_2SO_4 , what will be observed?
 - A precipitate forms because $Q_{\text{sp}} > K_{\text{sp}}$
 - A precipitate forms because $Q_{\text{sp}} < K_{\text{sp}}$
 - No precipitate forms because $Q_{\text{sp}} = K_{\text{sp}}$
 - No precipitate forms because $Q_{\text{sp}} < K_{\text{sp}}$
 - No precipitate forms because $Q_{\text{sp}} > K_{\text{sp}}$

8. A saturated solution of $\text{Ca}(\text{OH})_2$, has a pH of 12.40. What is the K_{sp} for $\text{Ca}(\text{OH})_2$?
- a) 2.5×10^{-2} d) 2.0×10^{-6}
b) 1.3×10^{-2} e) 4.0×10^{-13}
c) 8.0×10^{-6}

Answers: (Please use CAPITAL letters) V1

1.		6.	
2.		7.	
3.		8.	
4.		9.	
5.		10.	

9. Calculate the molar solubility of AgCl in a 0.10 M solution of NaCl
 K_{sp} of AgCl is 1.8×10^{-10}
- a) $1.3 \times 10^{-5} \text{ M}$ d) $4.2 \times 10^{-5} \text{ M}$
b) $5.5 \times 10^8 \text{ M}$ e) $4.8 \times 10^{-4} \text{ M}$
c) $1.8 \times 10^{-9} \text{ M}$

10. The solubility of salts can be affected by other equilibria. Addition of all of the following will affect the solubility of FeCO_3 EXCEPT:
- a) NaHCO_3 d) Na_2CO_3
b) NaCl e) HCl
c) H_2CO_3

Answers: 1.A 2.E 3.E 4.E 5.A 6.C 7.A 8.C 9.C 10.B