

56. Will a precipitate form if 1.0 L of 3.0×10^{-10} M Fe^{2+} is added to 1.0 L of 1.2×10^{-8} M S^{2-} ?
58. What F^- concentration must be present to just start precipitating CaF_2 from a 3.0×10^{-3} M solution of $\text{Ca}(\text{NO}_3)_2$? $K_{\text{sp}} = 1.5 \times 10^{-10}$ for CaF_2 .
59. Will a precipitate form when 10.0 mL of 1.0×10^{-3} M $\text{Pb}(\text{NO}_3)_2$ is added to 40.0 mL of 1.5×10^{-4} M Na_2SO_4 ?
60. A precipitate barely forms when 20.0 mL of 3.00×10^{-3} M Ni^{2+} is added to 60.0 mL of 2.52×10^{-4} M CO_3^{2-} . What is K_{sp} for NiCO_3 ?
61. Does a precipitate form when 25.0 mL of 1.0×10^{-4} M $\text{Zn}(\text{NO}_3)_2$ is added to 45.0 mL of 2.4×10^{-5} M $\text{Ca}(\text{OH})_2$? $K_{\text{sp}} = 4.1 \times 10^{-17}$ for $\text{Zn}(\text{OH})_2$.

62. When 100.0 mL of 4.0×10^{-2} M CaCl_2 is added to 150.0 mL of 2.9×10^{-2} M NaOH , a precipitate of $\text{Ca}(\text{OH})_2$ just starts to form. What is K_{sp} for $\text{Ca}(\text{OH})_2$?
64. Predict whether a precipitate will form when 20.0 mL of 5.0×10^{-5} M Ca^{2+} is added to 35.0 mL of 2.5×10^{-4} M $\text{C}_2\text{O}_4^{2-}$ and the resulting solution is boiled down to a total volume of 25.0 mL.
65. If a precipitate can be detected as soon as it begins to form, what is the minimum concentration of CO_3^{2-} that can be detected in a solution having $[\text{Ag}^+] = 0.050$ M?
69. If 0.02 M AgNO_3 is added to a solution containing 1.0 M CO_3^{2-} , 1.0 M IO_3^- and 1.0 M CrO_4^{2-} , which precipitate will form first?