

Predicting a Precipitate - Worksheet

1. Determine whether or not a precipitate forms in each of the following:
 - a. 10.0 mL of 0.0100 mol/L AgNO_3 + 10.0 mL of 0.100 mol/L Na_2SO_4 .
 $K_{\text{sp}} (\text{Ag}_2\text{SO}_4) = 1.2 \times 10^{-5}$
 - b. 500 mL of 0.0004 mol/L BaCl_2 + 500 mL of 0.0004 mol/L Na_2SO_4 .
 $K_{\text{sp}} (\text{BaSO}_4) = 1.0 \times 10^{-10}$
 - c. 50.00 mL of 0.0020 mol/L AgNO_3 + 250.0 mL of 0.020 mol/L KBrO_3 .
 $K_{\text{sp}} (\text{AgBrO}_3) = 5.4 \times 10^{-5}$
 - d. 10 mL of 0.1 mol/L AgNO_3 + 90 mL of 1×10^{-10} mol/L KI
 $K_{\text{sp}} (\text{AgI}) = 8.3 \times 10^{-17}$
2. If 0.010 mol of AgNO_3 and 0.00052 mol of NaIO_3 are dissolved in 2.00 L of water, will a precipitate form?
 $K_{\text{sp}} (\text{AgIO}_3) = 2.1 \times 10^{-8}$
3. If 2×10^{-6} mol of $\text{Cu}(\text{NO}_3)_2$ and 2×10^{-6} mol of Na_2S are dissolved in 10 L of water, will a precipitate form?
 $K_{\text{sp}} (\text{CuS}) = 2.5 \times 10^{-41}$
4. A chemist dissolved 0.0010 mol of AgNO_3 in 500 mL of 0.00050 mol/L solution of NaBrO_3 . Did the resulting solution form a precipitate?
 $K_{\text{sp}} (\text{AgBrO}_3) = 5.4 \times 10^{-5}$
5. The K_{sp} for calcium sulfate is 2.6×10^{-4} . If 1.0 L of 2.0×10^{-3} M calcium nitrate is added to 1.0 L of 2.0×10^{-3} M aluminum sulfate, will a precipitate form?
6. Will a precipitate form if 0.010 mol of $\text{Sr}(\text{NO}_3)_2$ is added to 1.0 L of a 0.10 mol/L $\text{Al}_2(\text{CrO}_4)_3$ solution?
 $K_{\text{sp}} (\text{SrCrO}_4) = 2.6 \times 10^{-3}$
7. Will a precipitate be formed if 0.084 g of sodium fluoride is dissolved in 1.00 L of 0.010 mol/L CaCl_2 ?
 $K_{\text{sp}} (\text{CaF}_2) = 3.9 \times 10^{-11}$