

Work Sheet IV (Stoichiometry of Reactions in Solutions)

- 1) A 0.1025-g sample of copper metal is dissolved in 35 mL of concentrated HNO₃ solution to form Cu²⁺ ions and then water is added to make the total volume of 200.0 mL. Calculate the molarity of copper ions in the final solution.
- 2) How many grams of NaOH are contained in 250.0 mL of a 0.400 M sodium hydroxide solution?
- 3) How would you prepare 2.00 L of 0.100 M K₂CrO₄ solution from 1.75 M K₂CrO₄ solution?
- 4) A solution is prepared by dissolving 10.8 g of ammonium sulfate in enough water to make 100.0 mL of stock solution. A 10.00 mL of that stock solution is added to 50.00 mL of water. Calculate the concentration of ammonium ions and sulfate ions in the final solution.
- 5) When the following solutions are mixed together, what precipitate will form?
- (a) Hg₂(NO₃)₂ (aq) + CuSO₄ (aq)
 - (b) Ni(NO₃)₂ (aq) + CaCl₂ (aq)
 - (c) K₂CO₃ (aq) + MgI₂ (aq)
 - (d) Na₂CrO₄ (aq) + AlBr₃ (aq)

6) What mass of Na_2CrO_4 is needed to precipitate all of the silver ions from 75.0 mL of a 0.100 M solution of AgNO_3 ?

7) What mass of solid aluminum hydroxide is produced when 50.0 mL of 0.200 M $\text{Al}(\text{NO}_3)_3$ is added to 200.0 mL of 0.100 M KOH .

8) What volume of 0.0200 M calcium hydroxide is required to neutralize 35.00 mL of 0.0500 M nitric acid.

9) Hydrochloric acid (75.0 mL of 0.250 M) is added to 225.0 mL of 0.0550 M $\text{Ba}(\text{OH})_2$ solution. What is the concentration of the excess H^+ or OH^- ions left in the final solution?