

Chapter 13

End-of-Chapter Questions

1. Calculate the concentration in moles per litre when 40.0 g of sodium sulfate is dissolved in water to give 500.0 mL of solution.
2. Calculate the concentration in moles per litre when 0.850 g of iron(III) nitrate is dissolved in water to give 25.0 mL of solution.
3. What mass of magnesium chloride is needed to prepare 125 mL of a $1.50 \text{ mol}\cdot\text{L}^{-1}$ solution.
4. What mass of copper(II) nitrate is needed to prepare 1.50 L of a $2.25 \text{ mol}\cdot\text{L}^{-1}$ solution.
5. Calculate the concentration of chloride ion when 5.64 g of aluminum chloride are dissolved in water to give 2.00 L of solution.
6. Calculate the concentration of potassium ion when 12.4 g of potassium carbonate are dissolved in water to give 1.25 L of solution.
7. Calculate the mass of solute needed to prepare 250.0 mL of a $0.1000 \text{ mol}\cdot\text{L}^{-1}$ solution of silver nitrate solution.
8. Calculate the mass of solute needed to prepare 100.0 mL of a $0.2000 \text{ mol}\cdot\text{L}^{-1}$ solution of potassium permanganate solution.
9. Calculate the final concentration of a nitric acid solution when 25.0 mL of a $16.0 \text{ mol}\cdot\text{L}^{-1}$ solution is placed in a 1.00 L flask and deionized water is added up to the mark.
10. Calculate the final concentration of a sodium hydroxide solution when 50.0 mL of a $5.00 \text{ mol}\cdot\text{L}^{-1}$ solution is placed in a 250.0 mL flask and deionized water is added up to the mark.
11. What volume of $6.00 \text{ mol}\cdot\text{L}^{-1}$ hydrochloric acid must be diluted to give 250.0 mL of $1.00 \text{ mol}\cdot\text{L}^{-1}$ solution.
12. What volume of $1.00 \text{ mol}\cdot\text{L}^{-1}$ zinc iodide can be prepared from 50.0 mL of $5.00 \text{ mol}\cdot\text{L}^{-1}$ solution.