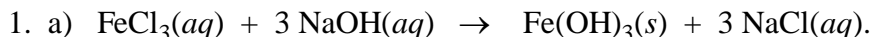
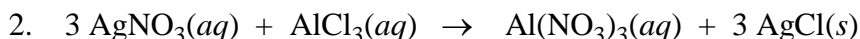


Answers to More Chapter 4 Study Questions



$$\text{b) } 30.0 \text{ mL} \times \frac{0.500 \text{ moles NaOH}}{1000 \text{ mL solution}} \times \frac{1 \text{ mol FeCl}_3}{3 \text{ mol NaOH}} \times \frac{1000 \text{ mL solution}}{0.200 \text{ mol FeCl}_3} = 25.0 \text{ mL}$$

$$\text{c) } 30.0 \text{ mL} \times \frac{0.500 \text{ moles NaOH}}{1000 \text{ mL solution}} \times \frac{1 \text{ mol Fe}(\text{OH})_3}{3 \text{ mol NaOH}} \times \frac{106.8 \text{ g Fe}(\text{OH})_3}{1 \text{ mol Fe}(\text{OH})_3} = 0.534 \text{ g}$$

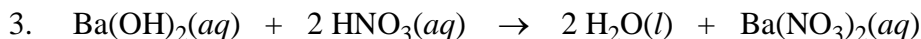


This is a limiting reactant problem, so first determine which reactant is limiting.

$$25.0 \text{ mL} \times \frac{0.200 \text{ mol AgNO}_3}{1000 \text{ mL solution}} \times \frac{3 \text{ mole AgCl}}{3 \text{ mole AgNO}_3} \times \frac{143.3 \text{ g AgCl}}{1 \text{ mole AgCl}} = 0.716 \text{ g AgCl}$$

$$10.0 \text{ mL} \times \frac{0.150 \text{ mol AlCl}_3}{1000 \text{ mL solution}} \times \frac{3 \text{ mole AgCl}}{1 \text{ mol AlCl}_3} \times \frac{143.3 \text{ g AgCl}}{1 \text{ mole AgCl}} = 0.645 \text{ g AgCl}$$

Therefore, 0.645 g AgCl is formed.

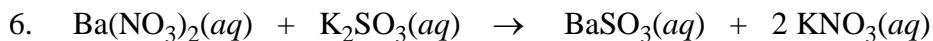


$$25.0 \text{ mL} \times \frac{0.300 \text{ mol HNO}_3}{1000 \text{ mL solution}} \times \frac{1 \text{ mole Ba}(\text{OH})_2}{2 \text{ mol HNO}_3} \times \frac{1000 \text{ mL solution}}{0.0500 \text{ mole Ba}(\text{OH})_2} = 75.0 \text{ mL}$$

4. $50.0 \text{ mL} \times \frac{2.00 \text{ mol KCl}}{1000 \text{ mL solution}} \times \frac{74.5 \text{ g KCl}}{1 \text{ mol KCl}} = 7.45 \text{ g KCl}$

5. $V_1 \times M_1 = V_2 \times M_2 \quad V_1 \times 6.00 \text{ M HCl} = 30.0 \text{ mL} \times 0.500 \text{ M HCl}$

$$V_1 = (30.0 \text{ mL} \times 0.500 \text{ M}) / 6.00 \text{ M} = 2.50 \text{ mL}$$



$$40.0 \text{ mL} \times \frac{0.250 \text{ mol Ba}(\text{NO}_3)_2}{1000 \text{ mL solution}} \times \frac{1 \text{ mol BaSO}_3}{1 \text{ mol Ba}(\text{NO}_3)_2} \times \frac{217.4 \text{ g BaSO}_3}{1 \text{ mol BaSO}_3} = 2.17 \text{ g}$$