

Stoichiometry Review – Ch. 9

****YOUR ANSWERS MUST INCLUDE THE PROPER NUMBER OF SIG FIGS AND COMPLETE UNITS IN ORDER TO RECEIVE CREDIT FOR THE PROBLEM.****

BALANCE THE FOLLOWING EQUATIONS TO USE IN QUESTIONS 5 – 14:

1. $\text{___ Al} + \text{___ O}_2 \rightarrow \text{___ Al}_2\text{O}_3$
2. $\text{___ Cu} + \text{___ AgNO}_3 \rightarrow \text{___ Ag} + \text{___ Cu(NO}_3)_2$
3. $\text{___ Zn} + \text{___ HCl} \rightarrow \text{___ ZnCl}_2 + \text{___ H}_2$
4. $\text{___ Fe} + \text{___ Cl}_2 \rightarrow \text{___ FeCl}_3$

PERFORM THE FOLLOWING STOICHIOMETRIC CALCULATIONS:

5. Zinc reacts with hydrochloric acid to produce zinc chloride and hydrogen. How many moles of HCl are required to produce 7.50 moles of ZnCl₂?
6. Copper metal reacts with silver nitrate to form silver and copper(II) nitrate. How many grams of copper are required to form 250 g of silver?
7. When aluminum is burned in excess oxygen, aluminum oxide is produced. How many grams of oxygen are required to produce 0.75 moles of Al₂O₃?
8. How many grams of iron(III) chloride are produced when 15.3 g of iron react with excess chlorine gas?
9. Copper metal reacts with silver nitrate to form silver and copper(II) nitrate. How many moles of silver will be produced from 3.65 moles of silver nitrate?
10. Zinc reacts with hydrochloric acid to produce zinc chloride and hydrogen gas. How many milliliters of 3.00M HCl are required to react with 12.35 g of zinc?
11. How many grams of iron are needed to react with 31.0 L of chlorine gas at STP to produce iron(III) chloride?
12. When 9.34 g of zinc react with excess hydrochloric acid how many grams of zinc chloride will be produced?
13. How many liters of oxygen gas at STP are required to react with 65.3 g of aluminum in the production of aluminum oxide?
14. Copper reacts with silver nitrate to form silver and copper(II) nitrate. How many grams of copper are required to react with 50.0 mL of 8.0M AgNO₃?
15. Nickel nitrate and potassium carbonate react to form nickel carbonate and potassium nitrate. How many milliliters of 0.55M Ni(NO₃)₂ are needed to react with 85 mL of 0.25M K₂CO₃? First, write a balanced equation.
16. Zinc metal reacts with chromium(III) nitrate in a single replacement reaction. How many grams of zinc are required to react with 425 mL of 0.25M Cr(NO₃)₃? First, write a balanced equation.