

Answer each of the following questions using the equation provided. BE SURE TO BALANCE EACH EQUATION BEFORE SOLVING ANY PROBLEMS. SHOW ALL WORK.



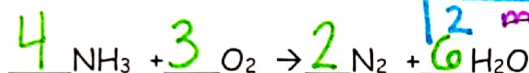
1. How many moles of NO_2 will be produced if 3.6 moles NO react?

given \rightarrow
$$\frac{3.6 \text{ mol NO}}{2 \text{ mol NO}} \times \frac{2 \text{ mol NO}_2}{2 \text{ mol NO}} = \frac{7.2}{2} = 3.6 \text{ mol NO}_2$$

NO₂ from coefficient

2. How many moles of NO must react to form 4.67 moles of NO₂?

$$\frac{4.67 \text{ mol NO}_2}{2 \text{ mol NO}_2} \times \frac{2 \text{ mol NO}}{2 \text{ mol NO}_2} = \frac{9.34}{2} = 4.67 \text{ mol NO}$$

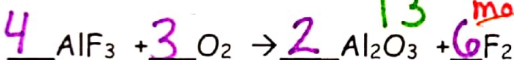


3. How many moles of H_2O are produced from 20 moles of NH₃?

$$\frac{20 \text{ mol NH}_3}{4 \text{ mol NH}_3} \times \frac{6 \text{ mol H}_2\text{O}}{4 \text{ mol NH}_3} = \frac{120}{4} = 30 \text{ mol H}_2\text{O}$$

4. How many moles of N_2 will be produced if 3.5 moles of O₂ react?

$$\frac{3.5 \text{ mol O}_2}{3 \text{ mol O}_2} \times \frac{2 \text{ mol N}_2}{3 \text{ mol O}_2} = \frac{7}{3} = 2.3 \text{ mol N}_2$$

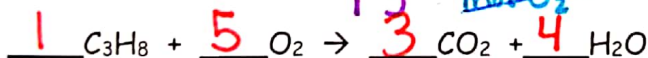


5. 15 moles of AlF₃ will produce how many moles of F_2 ?

$$\frac{15 \text{ mol AlF}_3}{4 \text{ mol AlF}_3} \times \frac{6 \text{ mol F}_2}{4 \text{ mol AlF}_3} = \frac{90}{4} = 22.5 \text{ mol F}_2$$

6. How many moles of AlF_3 will react with 0.6 moles of O₂?

$$\frac{0.6 \text{ mol O}_2}{3 \text{ mol O}_2} \times \frac{4 \text{ mol AlF}_3}{3 \text{ mol O}_2} = \frac{2.4}{3} = 0.8 \text{ mol AlF}_3$$



7. How many moles of oxygen react with 11 moles of C₃H₈?

$$\frac{11 \text{ mol C}_3\text{H}_8}{1 \text{ mol C}_3\text{H}_8} \times \frac{5 \text{ mol O}_2}{1 \text{ mol C}_3\text{H}_8} = \frac{55}{1} = 55 \text{ mol O}_2$$

8. How many moles of CO_2 are produced if 3.5 moles of water are produced?

$$\frac{3.5 \text{ mol H}_2\text{O}}{4 \text{ mol H}_2\text{O}} \times \frac{3 \text{ mol CO}_2}{4 \text{ mol H}_2\text{O}} = \frac{10.5}{4} = 2.625 \text{ mol CO}_2$$



9. How many moles of O_2 are required to produce 3.0 moles of iron (III) oxide?

$$\frac{3.0 \text{ mol Fe}_2\text{O}_3}{2 \text{ mol Fe}_2\text{O}_3} \times \frac{3 \text{ mol O}_2}{2 \text{ mol Fe}_2\text{O}_3} = \frac{9}{2} = 4.5 \text{ mol O}_2$$