

A Voyage through Equations ANSWER KEY

Section 1: Identify the type of reaction

- 1) $\text{Na}_3\text{PO}_4 + 3 \text{KOH} \rightarrow 3 \text{NaOH} + \text{K}_3\text{PO}_4$ **DOUBLE DISPLACEMENT**
- 2) $\text{MgCl}_2 + \text{Li}_2\text{CO}_3 \rightarrow \text{MgCO}_3 + 2 \text{LiCl}$ **DOUBLE DISPLACEMENT**
- 3) $\text{C}_6\text{H}_{12} + 9 \text{O}_2 \rightarrow 6 \text{CO}_2 + 6 \text{H}_2\text{O}$ **COMBUSTION**
- 4) $\text{Pb} + \text{FeSO}_4 \rightarrow \text{PbSO}_4 + \text{Fe}$ **SINGLE DISPLACEMENT**
- 5) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ **DECOMPOSITION**
- 6) $\text{P}_4 + 3 \text{O}_2 \rightarrow 2 \text{P}_2\text{O}_3$ **SYNTHESIS**
- 7) $2 \text{RbNO}_3 + \text{BeF}_2 \rightarrow \text{Be}(\text{NO}_3)_2 + 2 \text{RbF}$ **DOUBLE DISPLACEMENT**
- 8) $2 \text{AgNO}_3 + \text{Cu} \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$ **SINGLE DISPLACEMENT**
- 9) $\text{C}_3\text{H}_6\text{O} + 4 \text{O}_2 \rightarrow 3 \text{CO}_2 + 3 \text{H}_2\text{O}$ **COMBUSTION**
- 10) $2 \text{C}_5\text{H}_5 + \text{Fe} \rightarrow \text{Fe}(\text{C}_5\text{H}_5)_2$ **SYNTHESIS**
- 11) $\text{SeCl}_6 + \text{O}_2 \rightarrow \text{SeO}_2 + 3\text{Cl}_2$ **SINGLE DISPLACEMENT**
- 12) $2 \text{MgI}_2 + \text{Mn}(\text{SO}_3)_2 \rightarrow 2 \text{MgSO}_3 + \text{MnI}_4$ **DOUBLE DISPLACEMENT**
- 13) $\text{O}_3 \rightarrow \text{O}^- + \text{O}_2$ **DECOMPOSITION**
- 14) $2 \text{NO}_2 \rightarrow 2 \text{O}_2 + \text{N}_2$ **DECOMPOSITION**

Section 2: Practicing equation balancing

- 1) $2 \text{C}_6\text{H}_6 + 15 \text{O}_2 \rightarrow 6 \text{H}_2\text{O} + 12 \text{CO}_2$
- 2) $4 \text{NaI} + 1 \text{Pb}(\text{SO}_4)_2 \rightarrow 1 \text{PbI}_4 + 2 \text{Na}_2\text{SO}_4$
- 3) $4 \text{NH}_3 + 5 \text{O}_2 \rightarrow 4 \text{NO} + 6 \text{H}_2\text{O}$
- 4) $2 \text{Fe(OH)}_3 \rightarrow 1 \text{Fe}_2\text{O}_3 + 3 \text{H}_2\text{O}$
- 5) $2 \text{HNO}_3 + 1 \text{Mg(OH)}_2 \rightarrow 2 \text{H}_2\text{O} + 1 \text{Mg}(\text{NO}_3)_2$
- 6) $1 \text{H}_3\text{PO}_4 + 3 \text{NaBr} \rightarrow 3 \text{HBr} + 1 \text{Na}_3\text{PO}_4$
- 7) $3 \text{C} + 4 \text{H}_2 \rightarrow 1 \text{C}_3\text{H}_8$
- 8) $2 \text{CaO} + 1 \text{MnI}_4 \rightarrow 1 \text{MnO}_2 + 2 \text{CaI}_2$
- 9) $1 \text{Fe}_2\text{O}_3 + 3 \text{H}_2\text{O} \rightarrow 2 \text{Fe(OH)}_3$
- 10) $1 \text{C}_2\text{H}_2 + 2 \text{H}_2 \rightarrow 1 \text{C}_2\text{H}_6$

- 11) $\underline{2} \text{VF}_5 + \underline{10} \text{HI} \rightarrow \underline{1} \text{V}_2\text{l}_{10} + \underline{10} \text{HF}$
- 12) $\underline{1} \text{OsO}_4 + \underline{2} \text{PtCl}_4 \rightarrow \underline{2} \text{PtO}_2 + \underline{1} \text{OsCl}_8$
- 13) $\underline{1} \text{CF}_4 + \underline{2} \text{Br}_2 \rightarrow \underline{1} \text{CBr}_4 + \underline{2} \text{F}_2$
- 14) $\underline{2} \text{Hg}_2\text{l}_2 + \underline{1} \text{O}_2 \rightarrow \underline{2} \text{Hg}_2\text{O} + \underline{2} \text{l}_2$
- 15) $\underline{1} \text{Y}(\text{NO}_3)_2 + \underline{1} \text{GaPO}_4 \rightarrow \underline{1} \text{YPO}_4 + \underline{1} \text{Ga}(\text{NO}_3)_2$