

## Equation Challenge Answer Key

- $\text{Cl}_2 + 2\text{NaBr} \rightarrow 2\text{NaCl} + \text{Br}_2$
- Hydrogen – 4, Sulfur – 2, Oxygen – 8
- $2\text{HCl} + \text{CaCO}_3 \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$
- Calcium – 4, Carbon – 4, Oxygen - 12
- $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$
- $2\text{NaClO}_3 \rightarrow 2\text{NaCl} + 3\text{O}_2$
- $8\text{Ag}_2\text{S} \rightarrow 16\text{Ag} + \text{S}_8$
- $\text{CuCl}_2 + \text{H}_2\text{S} \rightarrow \text{CuS} + 2\text{HCl}$
- $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
- $2\text{Al}_2\text{O}_3 \rightarrow 4\text{Al} + 3\text{O}_2$
- Aluminum – 3, Oxygen -9, Hydrogen -9
- Aluminum – 8, Oxygen – 12
- $2\text{Al} + \text{Fe}_3\text{N}_2 \rightarrow 2\text{AlN} + 3\text{Fe}$
- $\text{P}_4 + 5\text{O}_2 \rightarrow \text{P}_4\text{O}_{10}$
- Synthesis
- $\text{SiCl}_4 \rightarrow \text{Si} + 2\text{Cl}_2$
- Decomposition
- $3\text{H}_2 + \text{N}_2 \rightarrow 2\text{NH}_3$
- $\text{P}_4 + 3\text{O}_2 \rightarrow \text{P}_4\text{O}_6$
- $\text{C} + 2\text{H}_2 \rightarrow \text{CH}_4$
- $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$
- $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$
- Single Replacement
- $2\text{HgO} \rightarrow 2\text{Hg} + \text{O}_2$
- Magnesium Chloride
- $\text{Mg} + 2\text{HCl} \rightarrow \text{H}_2 + \text{MgCl}_2$
- Sodium Hydroxide
- $2\text{Na} + \text{Br}_2 \rightarrow 2\text{NaBr}$
- Sulfuric Acid
- $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$
- Sodium Chloride (Salt)
- $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$
- Dihydrogen Monoxide (Water)
- $4\text{P} + 4\text{O}_2 \rightarrow \text{P}_4\text{O}_8$
- Aluminum – 8, Oxygen – 12
- $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- Single Replacement
- $2\text{NaCl} + \text{F}_2 \rightarrow 2\text{NaF} + \text{Cl}_2$
- Carbon Monoxide
- $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
- Double Replacement
- $4\text{P} + 5\text{O}_2 \rightarrow 2\text{P}_2\text{O}_5$
- Carbon Dioxide
- $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$
- Hydrogen – 4, Sulfur – 2, Oxygen - 8
- $2\text{Ag}_2\text{O} \rightarrow 4\text{Ag} + \text{O}_2$
- Magnesium – 4, Oxygen – 8, Hydrogen - 8
- $2\text{HgO} + \text{Cl}_2 \rightarrow 2\text{HgCl} + \text{O}_2$
- $2\text{H}_2\text{O} + \text{O}_2 \rightarrow 2\text{H}_2\text{O}_2$
- $\text{S}_8 + 12\text{O}_2 \rightarrow 8\text{SO}_3$
- Barium – 4, Sulfur – 4, Oxygen – 16
- $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$
- Nitrogen – 6, Hydrogen – 24
- ★  $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$
- ★  $2\text{NH}_3 + \text{H}_2\text{SO}_4 \rightarrow (\text{NH}_4)_2 + \text{SO}_4$
- ★  $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$
- ★  $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$
- ★  $3\text{ZnS} + 2\text{AlP} \rightarrow \text{Zn}_3\text{P}_2 + \text{Al}_2\text{S}_3$
- ★  $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$
- ★  $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$

★ = Bonus Problem = 2 points