

Classifying Chemical Reactions

Name: Key

Part I – Classify each of the following reactions:

- $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \longrightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$ Combustion
- $\text{Mg}(\text{s}) + \text{PbCl}_2(\text{aq}) \longrightarrow \text{MgCl}_2(\text{aq}) + \text{Pb}(\text{s})$ Single Replace.
- $\text{CaCl}_2(\text{aq}) + 2\text{AgNO}_3(\text{aq}) \longrightarrow 2\text{AgCl}(\text{aq}) + \text{Ca}(\text{NO}_3)_2(\text{aq})$ Double Repl.
- $2\text{KClO}_3(\text{s}) \longrightarrow 2\text{KCl}(\text{s}) + 3\text{O}_2(\text{g})$ Decomposition
- $\text{Mg}(\text{s}) + \text{I}_2(\text{g}) \longrightarrow \text{MgI}_2(\text{s})$ Synthesis
- $\text{Br}_2(\text{l}) + \text{CaCl}_2(\text{aq}) \longrightarrow \text{CaBr}_2(\text{aq}) + \text{Cl}_2(\text{g})$ Single Replacement
- $2\text{HNO}_3(\text{aq}) + \text{Sr}(\text{OH})_2(\text{aq}) \longrightarrow \text{Sr}(\text{NO}_3)_2(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$ Neutralization
- $2\text{Sr}(\text{s}) + \text{O}_2(\text{g}) \longrightarrow 2\text{SrO}(\text{s})$ Synthesis
- $\text{Ba}(\text{OH})_2(\text{aq}) \longrightarrow \text{BaO}(\text{s}) + \text{H}_2\text{O}(\text{l})$ Decomposition
- $2\text{C}_{15}\text{H}_{30}(\text{g}) + 45\text{O}_2(\text{g}) \longrightarrow 30\text{CO}_2(\text{g}) + 30\text{H}_2\text{O}(\text{g})$ Combustion
- $2\text{Na}(\text{s}) + \text{NiCl}_2(\text{aq}) \longrightarrow 2\text{NaCl}(\text{aq}) + \text{Ni}(\text{s})$ Single Replacement
- $2\text{Na}_2\text{CO}_3(\text{aq}) \longrightarrow 4\text{Na}(\text{s}) + \text{O}_2(\text{g}) + 2\text{CO}_2(\text{g})$ Decomposition

Part II – Predict the products of, balance, and classify each of the following reactions (at room temperature):

- $\underline{\quad} \text{Al}_2(\text{SO}_4)_3 + \underline{3} \text{Ba}(\text{NO}_3)_2 \longrightarrow \underline{2} \text{Al}(\text{NO}_3)_3 + \underline{3} \text{BaSO}_4$
Type of Reaction: Double Replacement
- $\underline{2} \text{KOH} + \underline{\quad} \text{H}_2\text{SO}_4 \longrightarrow \underline{\quad} \text{K}_2\text{SO}_4 + \underline{2} \text{H}_2\text{O}$
Type of Reaction: Neutralization
- $\underline{2} \text{HCl} + \underline{\quad} \text{Sr}(\text{OH})_2 \longrightarrow \underline{\quad} \text{SrCl}_2 + \underline{2} \text{H}_2\text{O}$
Type of Reaction: Neutralization
- $\underline{2} \text{C}_{12}\text{H}_{26} + \underline{37} \text{O}_2 \longrightarrow \underline{24} \text{CO}_2 + \underline{26} \text{H}_2\text{O}$
Type of Reaction: Combustion

5. $2\text{Na} + \text{CuCl}_2 \longrightarrow 2\text{NaCl} + \text{Cu}$
 Type of Reaction: Single Replacement
6. $3\text{Cl}_2 + 2\text{AlBr}_3 \longrightarrow 2\text{AlCl}_3 + 3\text{Br}_2$
 Type of Reaction: Single Replacement
7. $\text{Mg} + \text{ZnCl}_2 \longrightarrow \text{MgCl}_2 + \text{Zn}$
 Type of Reaction: Single Replacement
8. $\text{Ni} + \text{Na}_2\text{SO}_4 \longrightarrow \text{NO RXN.}$
 Type of Reaction: NO RXN.
9. $2\text{H}_2\text{O} \longrightarrow 2\text{H}_2 + \text{O}_2$
 Type of Reaction: Decomposition
10. $\text{AgNO}_3 + \text{KCl} \longrightarrow \text{KNO}_3 + \text{AgCl}$
 Type of Reaction: Double Replacement
11. $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
 Type of Reaction: Combustion
12. $\text{H}_2 + \text{Cl}_2 \longrightarrow 2\text{HCl}$
 Type of Reaction: Synthesis
13. $\text{Mg} + 2\text{HCl} \longrightarrow \text{MgCl}_2 + \text{H}_2$
 Type of Reaction: Single Replacement
14. $2\text{Al}_2\text{O}_3 \longrightarrow 4\text{Al} + 3\text{O}_2$
 Type of Reaction: Decomposition
15. $\text{O} + \text{O}_2 \longrightarrow \text{O}_3$
 Type of Reaction: Synthesis
16. $2\text{NaI} + \text{Pb}(\text{NO}_3)_2 \longrightarrow 2\text{NaNO}_3 + \text{PbI}_2$
 Type of Reaction: Double Replacement