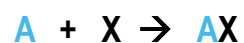


Types of Chemical Reactions

Mr. Sudbury

Synthesis Rxn

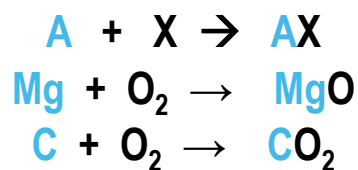
- In a **synthesis reaction**, (also known as a **composition reaction** or **combination reaction**), two or more substances combine to form a new compound.



Synthesis Rxn



Synthesis

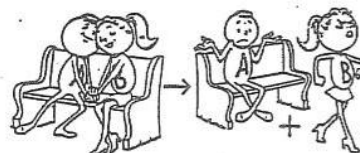


Decomposition Rxn

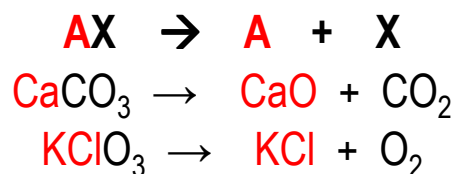
- In a **decomposition reaction**, a single compound undergoes a reaction that produces *two* or more *simpler substances*.



Decomposition Rxn



Decomposition Rxn

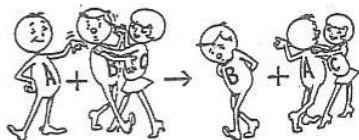


Single Replacement Rxn

- ▶ In a *single-replacement reaction*, one element replaces a similar element in a compound.
- ▶ Also called *single-displacement reactions*...



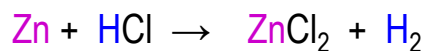
Single Displacement Rxn



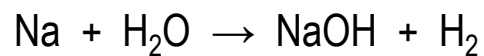
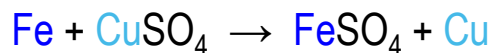
Single-Replacement Rxn

- ▶ Can be CATIONIC or ANIONIC Single-replacement.
- ▶ In Cationic replacement, the CATION (+) is replaced by another CATION (+)
- ▶ In Anionic replacement, the ANION (-) is replaced by another ANION(-)

Single-Displacement Reaction

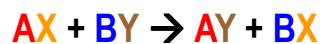


Single Displacement Reaction

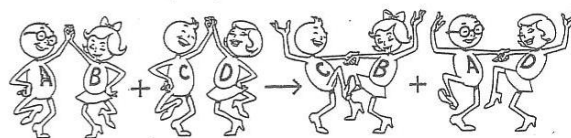


Double-Replacement Rxn

- ▶ In **double-replacement** reactions, the *ions* of **two** compounds *exchange* places in an aqueous solution to form **two new** compounds.



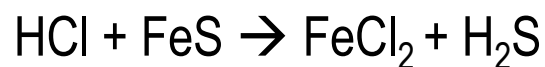
Double-Replacement Rxn



Double Displacement Reaction



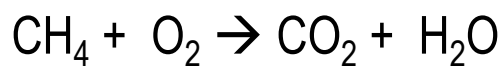
Double-replacement Reactions



Combustion Rxn

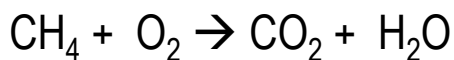
- ▶ In a **combustion reaction**, a substance (*usually a hydrocarbon*) combines with OXYGEN, Releasing a large amount of **light and heat**.
- ▶ Products are always water and CO₂ or CO

Combustion

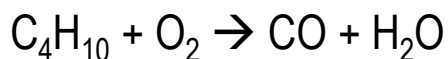


Combustion

Complete



Incomplete



What type of Reaction is this?

1. $\text{AlBr}_3 + \text{K}_2\text{SO}_4 \rightarrow \text{KBr} + \text{Al}_2(\text{SO}_4)_3$
2. $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
3. $\text{NaCl} + \text{F}_2 \rightarrow \text{NaF} + \text{Cl}_2$
4. $\text{HCl} + \text{FeS} \rightarrow \text{FeCl}_2 + \text{H}_2\text{S}$
5. $\text{FeCl}_3 + \text{NaOH} \rightarrow \text{Fe}(\text{OH})_3 + \text{NaCl}$

What type of Reaction is this?

6. $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$
7. $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
8. $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
9. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
10. $\text{AgNO}_3 + \text{MgCl}_2 \rightarrow \text{Mg}(\text{NO}_3)_2 + \text{AgCl}$

What type of Reaction is this?

11. $\text{N}_2 + \text{O}_2 \rightarrow \text{N}_2\text{O}_3$
12. $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$
13. $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
14. $\text{C}_8\text{H}_{18} + \text{O}_2 \rightarrow \text{CO} + \text{H}_2\text{O}$
15. $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

The End

