



Types of Chemical Reactions



Five Types of Reactions

- Synthesis (Combination)
- Combustion
 - Type of synthesis
- Decomposition
- Single Displacement
- Double Displacement

Synthesis (Combination) Reactions

General Formula: $A + B \rightarrow AB$

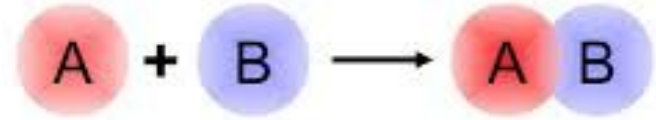
Examples: $H_2 + O_2 \rightarrow H_2O$ (combustion)

$Na + Cl_2 \rightarrow NaCl$

Lithium reacts with nitrogen to produce lithium nitride

Combustion requires oxygen gas as a reactant

Synthesis Reaction



A reaction where two reactants combine to make a larger, more complex product

Decomposition Reactions

General Formula: $AB \rightarrow A + B$

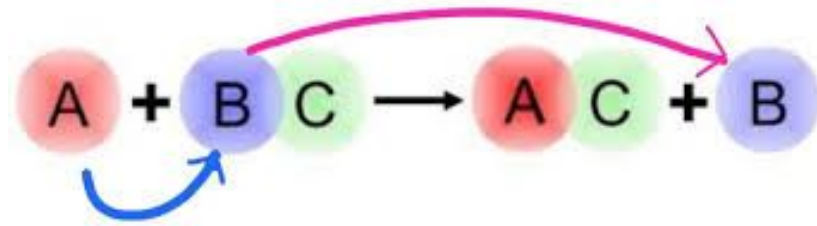


Examples:



Aluminum oxide decomposes into aluminum and oxygen

Single Displacement Reactions



General Formula: $A + BC \rightarrow AB + C$ (cation switch)

Lone metal must be more active than bonded metal


$Y + XZ \rightarrow Z + XY$ (anion switch)

Lone halogen must be more active than bonded halogen

7A
(17)

F
Cl
Br
I

Reactivity Increases




Reactivity Series of Metals

	Potassium	K	(Most reactive metal)
	Sodium	Na	
	Calcium	Ca	
	Magnesium	Mg	
	Aluminium	Al	
	Zinc	Zn	
	Iron	Fe	
	Tin	Sn	
	Lead	Pb	
	[Hydrogen]	[H]	
	Copper	Cu	
	Mercury	Hg	
	Silver	Ag	
	Gold	Au	
			(Least reactive metal)

These metals are more reactive than hydrogen

Decreasing chemical reactivity

These metals are less reactive than hydrogen



Single Displacement Reactions (use table given)



Cation Examples: Zinc reacts with hydrogen chloride

Magnesium reacts with copper (II) sulfate

Zinc reacts with Aluminum sulfate

Anion Examples: Sodium bromide reacts with chlorine

Sodium bromide reacts with iodine

Potassium chloride reacts with fluorine

Double Displacement Reactions

General Formula: $AX + BY \rightarrow AY + BX$

Examples: $AgNO_3 + K_2CrO_4 \rightarrow$

$KI + PbNO_3 \rightarrow$

Calcium chloride reacts with zinc sulfate

Cations switch positions

