Combination Reaction

Reaction	Fe + N_2 → Fe = +2		
A + B → AB			
A	Fe	B	N

Formula	A	B
Ion Charge	+2	−3
Cross Method	Fe	N
AB	Fe_3N_2	

(SA)

Combo Reaction

A + B → AB

Reactant A	Reactant B
Representative Metals	Representative Non-Metals
Transition Metals	Negative Polyatomic Ions
Positive Polyatomic Ions	

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Decomposition Reaction

Reaction	MnF_3 → +				
AB → A + B					
AB	MnF_3	A	Mn	B	F_2

Mn | F_3
A | B
Mn | F_2

Diatomic Elements
H_2, N_2, O_2 F_2, Cl_2, Br_2, I_2

Always check for diatomic w/ decomp

Decomp Reaction

AB → A + B

Reactant AB	Products A + B
Ionic Compound	Metal or Hydrogen Ion
Covalent Molecule	Non-Metal, Diatomic Element, or poly. ion

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Single Replacement Reaction

Reaction	Ti + Na_2CO_3 → + Ti = +4				
A + BC → AC + B					
A	Ti	BC	Na_2CO_3	B	Na

Na_2CO_3 (B | C)

Formula	A	C
Ion Charge	+4	−2
Cross Method	Ti	(CO_3)
AC	$Ti(CO_3)_2$ *	

(Poly)

*Reduce $Ti_{\frac{2}{2}}(CO_3)_{\frac{4}{2}}$

SR Reaction

A + BC → AC + B

Reactant A	Reactant BC
Single More Active Element	Ionic Compound or Acid

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Single Replacement Reaction

Reaction	Ti + Na_2CO_3 → + Ti = +4				
A + BC → AC + B					
A	Ti	BC	Na_2CO_3	B	Na

Na_2CO_3 (B | C)

Formula	A	C
Ion Charge	+4	−2
Cross Method	Ti	(CO_3)
AC	$Ti(CO_3)_2$ *	

(Poly)

*Reduce $Ti_{\frac{2}{2}}(CO_3)_{\frac{4}{2}}$

SR Reaction

A + BC → AC + B

Reactant A	Reactant BC
Single More Active Element	Ionic Compound or Acid

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Double Replacement Reactions

Double Replacement Reaction

A chemical reaction where two compounds switch their positive ions creating two new compounds.

Acid Base Reaction

A double replacement reaction where an acid (HX or HXO_y) react with a base (YOH) to produce water (H_2O) and an ionic compound, called a salt.

$$HX + YOH \rightarrow HOH + YX$$

DR Reaction

$$AB + CD \rightarrow AD + CB$$

Reactants	Products
AB + CD	AD + CB
Two Compounds	Two Compounds

Acid/Base Reaction

$$HX + YOH \rightarrow HOH + YX$$

Reactants	Products
Acid + Base	Salt + H_2O

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