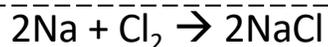


Conservation of Matter in Reactions

In a chemical reaction the atoms in the reactants must equal the reactants in the products (*conservation of matter*)



2 Na reacts with 1 Cl₂ to yield 1 NaCl

The **coefficient** (*large number before atoms*) allows the atoms on one side of the reaction to balance with the other side of the reaction.

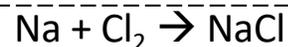


Balancing Reactions is a very important part of chemical reactions

2

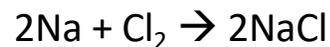
Balancing Chemical Reactions

Balancing a chemical reaction is the process of making both sides of a reaction (*reactants and products*) have the same number of atoms (*matter is conserved*)



Na reacts with Cl₂ to yield NaCl

Unbalanced Reaction
Different number of Cl on each side of reaction



2 Na reacts with 1 Cl₂ to yield 1 NaCl

Balanced Reaction
Same number of Na and Cl on both sides of rxn

3

Atomic Ratios in Chemical Equations

The balancing process requires making the number of atoms the same on both sides using atomic ratios.

Ratio	Balance	Ratio	Balance	Ratio	Balance
1/1	Balanced	1/2	2	2/3	6
2/2	Balanced	1/3	3	3/4	12
3/3	Balanced	1/4	4	2/6	6
4/4	Balanced	1/6	6	3/6	6

The balance ratio between atoms makes both sides of the equation and balancing chart equal (*balanced equation*)

4

Balancing Equations Process

The process for balancing equations follows this procedure:

1. Write complete reaction (*reactants and products*)
2. Draw Balancing Chart
3. Use ratios to balance 1 atom
4. Change other atoms affected by balancing first atom
5. Balance additional atoms
6. Check overall balance of reaction

Balancing Chart



A -	A -
B -	B -
C -	C -
D -	D -

This chart is required for all reactions that are balanced

5