

Balancing Equations Notes

Background Info

Diatomic Elements- Elements that exist in pairs when not bonded to any other different element.

BrINClHO_F

Br₂ I₂ N₂ Cl₂ H₂ O₂ F₂

Acids

Hydrochloric Acid- HCl

Sulfuric Acid- H₂SO₄

Nitric Acid- HNO₃

Phosphoric Acid H₃PO₄

Acetic Acid- HC₂H₃O₂

Carbonic Acid- H₂CO₃

Balanced Chemical Equations

1. Word Equation

Zinc added to hydrochloric acid yields zinc chloride and hydrogen gas

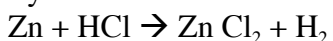
Zinc + hydrochloric acid → zinc chloride + hydrogen gas

Reactants

Products

2. Unbalanced Equation

-Correctly write chemical formulas:



1 atom Zn 1 atom Zn

1 atom H 2 atom H

1 atom Cl 2 atom Cl

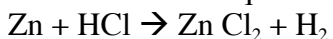
- Never change subscripts of correctly written formulas.

-Violates law of Conservation of Matter

3. Balanced Chemical Equation

- Both sides of the equation must have the same number of atoms of each element.

- To balance the equation, add coefficients in front of correctly written formulas.



1 atom Zn 1 atom Zn

1 atom H 2 atom H

1 atom Cl 2 atom Cl



1 atom Zn 1 atom Zn

2 atom H 2 atom H

2 atom Cl 2 atom Cl

Writing word equations procedure

1. Identify the ions. (Use ion sheets)
2. Write the correct chemical formulas for all reactants and products.
3. Count atoms of each type on each side. If a polyatomic ion appears on both sides, treat it as a single unit.
4. Start with the elements that appear only once and then move on to others. Other elements that appear several times will balance themselves out.
5. Place coefficients in front of compounds and/or free elements as necessary.