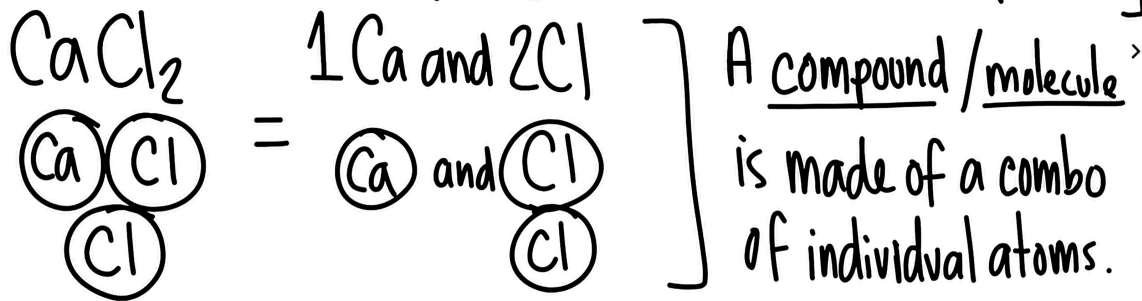


Conserving Matter

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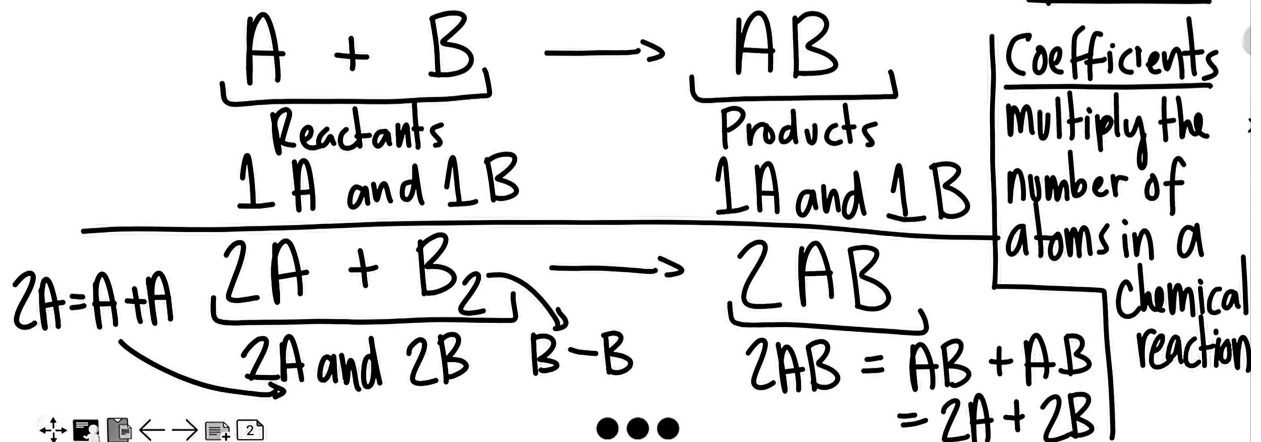
In nature matter (atoms, compounds, molecules) cannot be created or destroyed [Law of conservation of matter.]



Conservation of Matter in a chemical reaction

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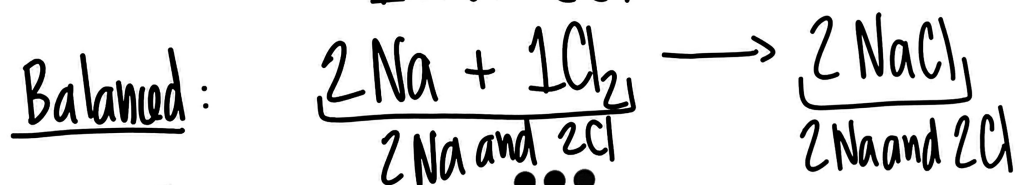
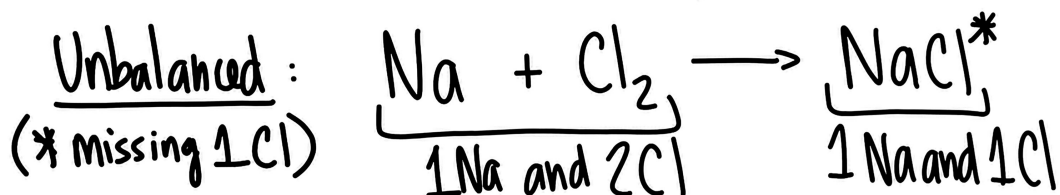
The reactants contain the same # atoms as the products



Balancing Chemical Reactions

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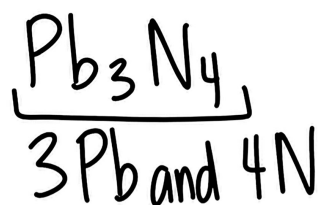
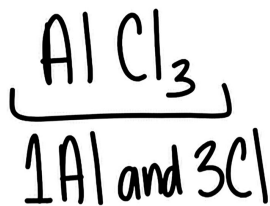
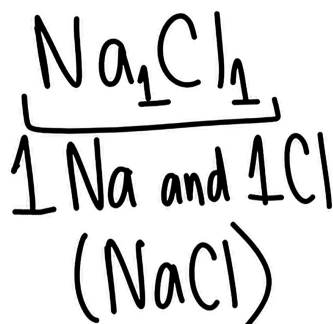
A chemical reaction is not balanced (same atoms on both sides)
Coefficients balance (make the same) the atoms in a reaction



Counting Atoms

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To determine the number of atoms in a compound or molecule we have to break the structure apart.



Coefficients "count" number of atoms

Balancing Chemical Reactions

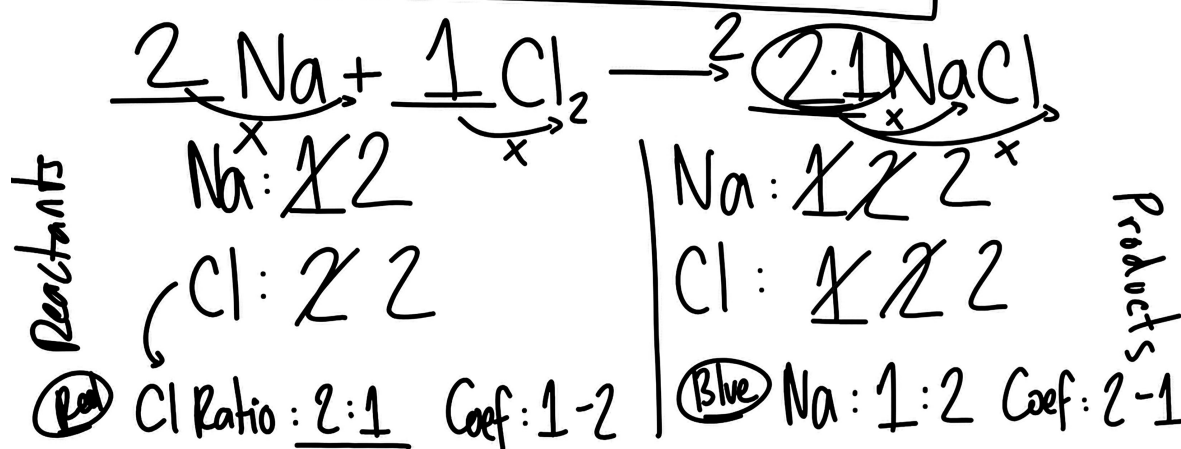
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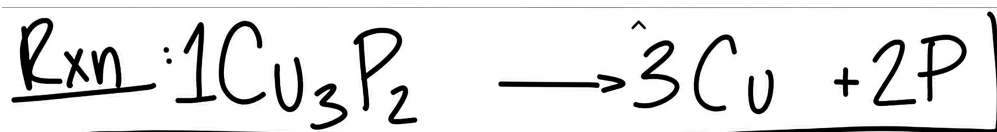
Balancing Steps

- | | |
|---------------------------------|-----------------------------|
| ① Determine # atoms | ← Count Atoms |
| ② Determine Current ratio | ← From count 2A and 1B |
| ③ Add coefficients (chart) | ← Look at chart (2:1 ratio) |
| ④ Multiply by coefficient | ← Check new # atoms |
| ⑤ Check Balance / Continue to ② | ← Check balance |
- ...

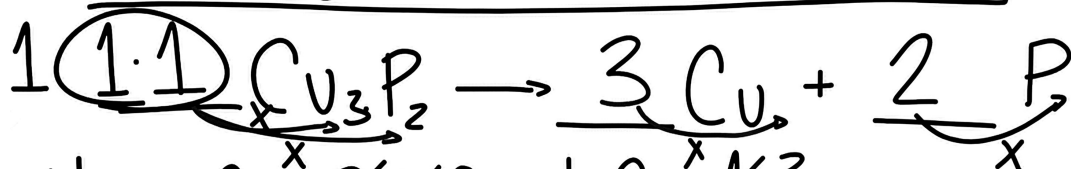


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Reactants

$\text{Cu}: 3$

$\text{P}: 2$

$\text{Cu}: 3$

$\text{P}: 2$

Products

$\text{Cu}: 3:1 \text{ Coef. } 1-3$ $\text{P}: 2:1 \text{ Coef. } 1-2$