

# Balancing Chemical Equations



Chemical equations allow chemists to make several quantitative predictions about chemical reactions, so it is imperative to master chemical equation balancing.

Remember the **Law of Conservation of Mass** tells us that the combined masses of the products must equal the combined masses of the reactants. This idea is the guiding principle behind balancing.

We must be sure that the elements on the left equal the elements on the right in number of atoms. We do this by changing coefficients ONLY.

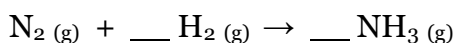
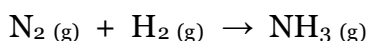
**CAVEAT:** Once the correct chemical formulas have been determined:

**YOU CANNOT CHANGE THE SUBSCRIPTS**

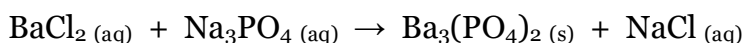
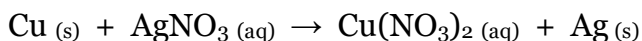
## Steps to balancing a chemical equation:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

### Example



## PRACTICE (always rewrite the equation)



**DIRECTIONS:** Write a chemical equation, balance it and tell which type of reaction occurred.

\_\_\_\_\_

Calcium hydroxide reacts with phosphoric acid to produce calcium phosphate and water.

\_\_\_\_\_

Aqueous sodium hydroxide reacts with lithium sulfate to yield sodium sulfate and lithium hydroxide.

\_\_\_\_\_

When solid sodium azide ( $\text{NaN}_3$ ) decomposes in a car airbag, it gives off sodium nitride powder and nitrogen gas.

***"Always do right! This will gratify some people and astonish the rest."***  
***-- Mark Twain***