



Balancing Equations

$$H_2SO_4 + 2NaOH \rightarrow$$

$$Na_2SO_4 + 2H_2O$$

Balancing equations



When a chemical reaction occurs, it can be described by a a symbol equation.

The balanced symbol equation for a chemical reaction shows the ratio of reactants and products involved. For example:

sulfuric acid + sodium hydroxide
$$\rightarrow$$
 sodium sulfate + water H_2SO_4 + $2NaOH$ \rightarrow Na_2SO_4 + $2H_2O$

An 'unbalanced' equation can be balanced by multiplying the different atoms and molecules on each side by different amounts, so that they match.





Balancing equations



If you count the number of atoms of each type on each side of this equation, you will see that they do not match.

$$H_2SO_4$$
 + NaOH \rightarrow Na₂SO₄ + H_2O

So, multiply the sodium atoms on the left by 2:

$$H_2SO_4$$
 + $2NaOH$ \rightarrow Na_2SO_4 + H_2O

Now that the number of sodium atoms on each side is equal the number of hydrogen atoms on the left side has increased. So multiply the number of hydrogen atoms on the right by 2.

$$H_2SO_4$$
 + $2NaOH$ \rightarrow Na_2SO_4 + $2H_2O$





Balancing equations for making salts





Balance these equations for making salts

$$H_2SO_4$$
 + B \checkmark LiOH \rightarrow Li₂SO₄ + 2H₂O

C
$$\blacksquare$$
 HCI + Fe(OH)₂ \rightarrow FeCl₂ + 2H₂O

2HCI + Ca(OH)₂
$$\rightarrow$$
 CaCl₂ + D \checkmark H₂O

2HNO₃ + Mg(OH)₂
$$\rightarrow$$
 Mg(NO₃)₂ + F \blacktriangle H₂O





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