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Balancing Chemical Equations

What are chemical equations?

Chemical equations show what is happening in a chemical reaction. They provide you with the identities of the reactants (substances entering the reaction) and the products (substances formed by the reaction). They also tell you how much of each substance is involved in the reaction. Chemical equations use symbols for elements and formulas for compounds. The reactants are written to the left of the arrow. Products go on the right side of the arrow.

$H_2 + O_2 \rightarrow H_2O$ (not balanced)

The arrow should be read as "yields" or "produces." This equation, therefore, says that hydrogen gas (H_2) plus oxygen gas (O_2) yields or produces the compound water (H_2O).

PRACTICE

Write chemical equations for the following reactions:

BALANCED

Reactants	Products	Chemical Equation
Hydrochloric acid **HCl** and Sodium hydroxide **NaOH**	Water **H_2O** and Sodium chloride **NaCl**	1 HCl + 1 NaOH → 1 H_2O + 1 NaCl
Calcium carbonate **$CaCO_3$** and Potassium iodide **KI**	Potassium carbonate **K_2CO_3** and Calcium iodide **CaI_2**	1 $Ca(CO_3)$ + 2 KI → 1 $K_2(CO_3)$ + 1 CaI_2
Aluminum fluoride **AlF_3** and Magnesium nitrate **$Mg(NO_3)_2$**	Aluminum nitrate **$Al(NO_3)_3$** and Magnesium fluoride **MgF_2**	2 AlF_3 + 3 $Mg(NO_3)_2$ → 2 $Al(NO_3)_3$ + 3 MgF_2

In a balanced chemical equation, the # of atoms on the left should equal the # of atoms on the right.