

## Balancing Chemical Equations

Species react with each other or spontaneously undergo changes and become new molecules. We represent this process with chemical equations:

“reactants” → “products”

The arrow means “becomes”. Sometimes there may be symbols over the arrow to show something else which helped the reaction to occur.

Chemical equations tell us what reacts to form what – but it is important that they show the ratio of species – that is, the number of each reactant needed to form the products.

An equation is *not balanced* if the amount of each element put in on the left doesn't match the amount put in on the right.

To balance it, we cannot change the species themselves, only the *number* of each species involved.

### How to balance:

1. Count all the elements on each side of the equation
2. Pick the unbalanced element which appears in the *least* number of species
3. Balance this element by multiplying the number of *species* put in or produced. Do *NOT* change anything inside the species.
4. Re-count the elements on both sides
5. Go back to step 2 and repeat until the equation is balanced.
6. Make sure that you have the lowest possible numbers.

Total charge should be balanced on both sides.