

RULES OF BALANCING EQUATIONS

In all games there are rules, and balancing equations is no exception!

RULE #1. You may only add **COEFFICIENTS** when balancing chemical equations! Remember, coefficients are the numbers that go in **FRONT** of a molecule.

2H₂O = 2 molecules of water... There are 4 Hydrogen atoms and 2 Oxygen atoms

2(H₂) = 4 Hydrogen atoms 2(O) = 2 Oxygen atoms

RULE #2. Coefficients DO NOT go in the middle of a molecule! They always must go in front of the entire molecule

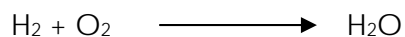
4NaCl **NOT** \longrightarrow ~~Na4Cl~~

RULE #3. You may NEVER, EVER add subscripts or parenthesis or anything other than a coefficient to a chemical equation to balance it!

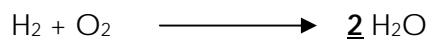
If you want to say there are 2 water molecules you would write it like this... **2H₂O**. You would **NOT** write it **H₂O₂**. This is incorrect because H₂O₂ is the chemical formula for *hydrogen peroxide*. So if you wrote this you would be saying there is one molecule of hydrogen peroxide instead of saying there are two molecules of water... **TOTALLY** different!

RULE #4: You may NEVER change numbers that are already part of a chemical formula.

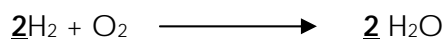
So let's balance this equation...



I would start by attempting to balance my Oxygen molecules. The only way I can do that is by putting a coefficient of 2 in front of the product, H₂O.



But now we have a problem because, our Hydrogen atoms are no longer balanced. The reactant side has two and the product side has 4. I cannot take away atoms, so the only way to even the Hydrogen atoms out is to put the coefficient 2 in front of H₂



Now everything is balanced... 4 Hydrogen atoms and two Oxygen atoms on each side.

What about this one?

