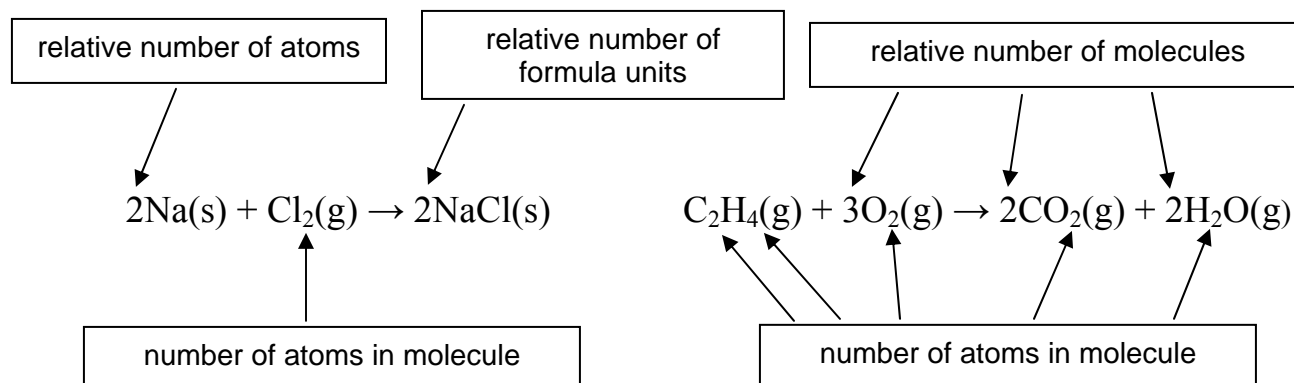


A balanced equation gives you many details about chemical reactions. Some of these details are listed here:

- The formula of each reactant and product tells you exactly how many atoms of each element comprise one molecule or formula unit of the compound.
- The symbol in brackets tells you the state of the compound when it is undergoing the reaction.
- The coefficient of each reactant and product tells you the mole ratios of the compounds in the reaction. For example, in the second equation you know that one mole of ethene gas ( $\text{C}_2\text{H}_4(\text{g})$ ) reacts with three moles of oxygen gas to produce two moles of carbon dioxide gas and two moles of water vapour.



Another way to describe a chemical reaction involves energy. As you know, when some reactions occur in a test tube, the test tube feels warmer than it did before you added the reactants. The reaction generated heat, thus raising the temperature of the solution. Such a reaction is called *exothermic*. Conversely, some reactions make the solution cooler by absorbing heat. These reactions are called *endothermic*.