



Balancing Chemical Equations

Topic Summary

- Chemical equations must be balanced because of the Law of Conservation of Mass, which states that atoms are not created or destroyed during a chemical reaction.
- To balance an equation, you first need to be able to count the number of atoms in each chemical formula, including formulae containing subscripts and brackets.
- Chemical formulae cannot be changed when balancing an equation;** only the coefficients placed in front of formulae can be adjusted.
- A correctly balanced equation contains exactly the same number of each type of atom on both sides of the reaction.
- The best method is to count the atoms on each side and identify any imbalances, then pick one element (it doesn't matter which one) and add coefficients to balance it, and then recheck. Repeat this process working through one element at a time until everything matches.
- More complex equations may require balancing several elements in stages.
- If your final step ends up requiring a fraction for the coefficient then simply multiply all the coefficients to remove the fraction.



General Recall

Count the number of atoms of each element in this formula



Potassium (K) : _____

Sulphur (S) : _____

Oxygen (O) : _____

And again in this tricky example

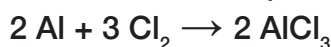


Calcium (Ca) : _____

Nitrogen (N) : _____

Oxygen (O) : _____

Complete the table to show that this equation is correctly balanced



Element	Atom count in reactants	Atom count in products
Aluminium		
Chlorine		

Balance this equation (you can use the table provided to help you).



Element	Atom count in reactants	Atom count in products
Hydrogen		
Magnesium		
Chlorine		





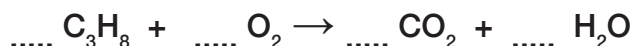
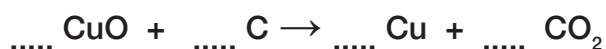
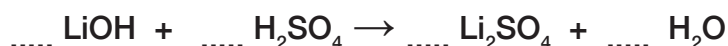
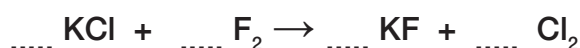
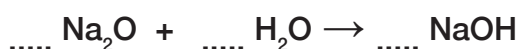
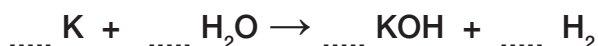
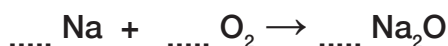
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Balance all of these equations

Add integer (whole number) coefficients to balance these equations. Remember you don't need to write the number '1'. All of these equations are taken from other places in your GCSE chemistry course so they are the ones likely to turn up in examinations too. There is no need to show your working out but it may be useful to use a bit of scrap paper handy as you go through them. Enjoy...



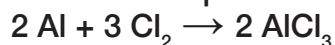
Notes



Do this later...

Give your brain a break and come back to these questions later. Cover the rest of the sheet while you have a go. By doing this 24-48 hours after watching the video you will boost your chances of remembering the key points in an exam. If you struggle with these questions, re-watch the video and then try again.

Complete this table to show that the equation is correctly balanced



Element	Atom count in reactants	Atom count in products
Aluminium		
Chlorine		

Balance these 3 equations

