

OCR B GCSE Chemistry

Topic 2: Chemical patterns

How are equations used to represent chemical reactions?

Notes





1. Use chemical symbols to write the formulae of elements and simple covalent and ionic compounds

- Elements
 - Substances that cannot be broken down into simpler substances by chemical means
 - The basic building blocks of all substances
 - Substances made up of only one type of atom
 - Represented by symbol on periodic table, e.g. Hydrogen represented as H and Potassium as K
- Compounds
 - Substances made of two or more different types of atom that are chemically joined and having completely different properties to its constituent elements

2. Use the formulae of common ions to deduce the formula of Group 1 and Group 7 compounds

- Metal + non-metal: electrons in the outer shell of the metal atom are transferred
 - Metal atoms lose electrons to become positively charged ions
 - non-metal atoms gain electrons to become negatively charged ions
- metals in group 1 will form +1 ions (lose one electron) and halogens in group 7 will gain this electron to form a -1 ion. These charges balance out, meaning that one atom from group 1 reacts with one atom from group 7 e.g. $\text{Na} + \text{Cl} \rightarrow \text{NaCl}$

3. Use the names and symbols of the first 20 elements, Groups 1, 7 and 0 and other common elements from a supplied Periodic Table to write formulae and balanced chemical equations where appropriate

**use above to predict formulae and balanced chemical equations of elements given*

- formulae for ionic compounds: work out what charge ion the elements will form and then use subscript numbers to balance the charges out
 - e.g. Mg forms 2+ ions (in group 2) and Br forms -1 ions (group 7)
 - to balance out the charges, you need 2x-1 ions and one 2+ ion, so 2 atoms of Br and one of Mg
 - therefore the formula is MgBr_2
- for covalent compounds, you can still use charges to find the formula of a compound, just remember they are reacting by sharing electrons not transferring them
 - e.g. H_2O : H forms +1 ions and O forms 2- ions



4. Describe the physical states of products and reactants using state symbols (*s*, *l*, *g* and *aq*)

- s means solid
- l means liquid
- g means gas
- aq means aqueous / in solution

