

Definitions and Concepts for OCR (B) Chemistry GCSE

Topic 2 - Chemical Patterns

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Definitions have been taken, or modified from the [OCR \(B\) Specification for GCSE Chemistry, J258, Version 3.2 April 2020](#)

Alkali metals: The elements in Group 1 of the periodic table. They are typically soft and have relatively low melting points.

Atom: The smallest part of an element that can exist. All substances are made up of atoms. Typical atomic radii are in the order of 10^{-10} m. Atoms contain a positively charged nucleus surrounded by negatively charged electrons. The nuclear radius is much smaller than the atomic radius and most of the mass is in the nucleus.

Atomic nucleus: Positively charged object composed of protons and neutrons at the centre of every atom with one or more electrons orbiting it.

Atomic number: The number of protons in the nucleus.

Bohr: Developed the Bohr model as a modification of Rutherford's model, proposing that electrons exist in shells of fixed energy around the nucleus.

Covalent bond: A shared pair of electrons between two non-metals.

Dalton: Developed an early atomic model, which described atoms as solid spheres, stating that different spheres made up the different elements. He also stated that atoms of an element were identical and that atoms could not be divided.

Displacement: A chemical reaction in which a more reactive element displaces a less reactive element from its compound.

Electron: Negatively charged subatomic particle which orbits the nucleus at various energy levels. Very small relative mass (negligible).

Electron shell: Different energy levels in atoms occupied by electrons.

Electrostatic forces: The strong forces of attraction between oppositely charged ions.

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Halides: The ions formed by halogen atoms when they gain an electron. They have a 1- charge. E.g. Cl⁻, Br⁻ and I⁻.

Halogens: The elements in Group 7 of the periodic table. The halogens gain an electron to form halide ions with a 1- charge. Down the group the halogens get more reactive and have higher melting and boiling points.

Ion: An atom or molecule with an electric charge due to the loss or gain of electrons.

Ionic bond: The bond formed between the oppositely charged ions when a metal atom loses electron(s) to form a positively charged ion and a non-metal gains these electron(s) to form a negatively charged ion.

Ionic compound: Chemical compound formed of ions, held together by strong electrostatic forces.

Isotope: Atoms of the same element with the same number of protons but a different number of neutrons.

Mass number: The total number of protons and neutrons in the nucleus.

Metals: Elements that react to form positive ions. Found to the left and towards the bottom of the periodic table.

Neutron: Neutral subatomic particle present in the nucleus of the atom. Relative mass of 1.

Noble gases: The elements in Group 0 of the periodic table. They have a stable full outer shell of electrons which makes them very unreactive.

Non-metals: Elements that react to form negative ions. Found towards the right and top of the periodic table.

Periodic table: Table of elements arranged in order of increasing atomic number and such that elements with similar properties are in the same column (group).

Proton: Positively charged subatomic particle present in the nucleus of the atom. Relative mass of 1.

Rutherford: Designed the gold foil experiment which led him to propose the nuclear atomic model which stated that atoms were made up of a small positively charged nucleus which was surrounded by mostly empty space and a layer of orbiting electrons.

Simple molecules: Molecules containing a fixed number of atoms covalently bonded together.



Thomson: Developed the plum pudding atomic model which said the atom was a positively charged sphere with small negatively charged electrons dotted through it. He used a cathode ray tube to prove that there are small particles inside atoms, disproving Dalton's idea that atoms could not be split.

***Transition metal:** A metal found between Groups 2 and 3 of the periodic table. Typical properties include high melting points, high densities, ability to form coloured compounds and catalytic activity.

