

Definitions and Concepts for WJEC (Wales) Chemistry GCSE

Topic 1.2 - Atomic Structure and the Periodic Table

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

Definitions have been taken, or modified from the [WJEC \(Wales\) Specification for GCSE Chemistry. 3410. Version 2 March 2019](#)

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. Atoms contain a positively charged nucleus surrounded by orbiting negatively charged electrons.

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.

Displacement: A chemical reaction in which a more reactive element displaces a less reactive element from its compound. **Can be used to deduce the relative reactivities of the halogens.**

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

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

Flame test: Qualitative test used to identify metal ions (cations). Carried out by inserting a nichrome wire loop with the unknown compound on into a flame and observing the colour.

Group (periodic table): A column of the periodic table. Elements in the same group have similar chemical properties.

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

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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 less 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. A positive ion is formed when an atom loses electrons, and a negative ion is formed when an atom gains electrons.

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.

Particle model: Models the three states of matter by representing the particles as small solid spheres. The particle model can help to explain melting, boiling, freezing and condensing.

Period (periodic table): A row of the periodic table. Elements in the same period have the same number of electron shells.

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.

Relative atomic mass: An average value that takes account of the abundance of the isotopes of the element. The relative atomic mass is the average mass of an atom of an element compared to 1/12th the mass of an atom of carbon-12.

