

## Definitions and Concepts for WJEC (Wales) Chemistry GCSE

### Topic 1.2 - Atomic Structure and the Periodic Table

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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<sup>-</sup>, Br<sup>-</sup> and I<sup>-</sup>.

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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 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. 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.

