



Use this alongside our Walkthrough Guides to tick off the concepts you're confident with to plan your study and find areas of improvement!

### Electron Configuration

- I can write the electron configuration for the first 36 elements
- I can write the electron configuration for ions of 36 elements
- I can use s, p, d notation
- I understand which elements are exceptions to the usual s, p, d orbital arrangement
- I can define **electronegativity**

### Periodic Trends

- I can describe and explain the trend in atomic radius across the periodic table
- I can describe and explain the trend in atomic radius down the periodic table
- I can describe and explain the trend in ionisation energy down the periodic table
- I can describe and explain the trend in ionisation energy across the periodic table
- I can describe and explain the trend in electronegativity across the periodic table
- I can describe and explain the trend in electronegativity down the periodic table
- I can describe and explain the differences in ionic radii compared to atoms

## Lewis Structures

- I can draw Lewis structures for molecules with up to 6 areas of negative charge around the central atom
- I can draw Lewis structures for polyatomic ions
- I can describe and explain the shapes of molecules with up to 6 areas of negative charge around the central atom
- I can state the bond angles in molecules with up to 6 areas of negative charge around the central atom
- I can describe and explain whether a covalent atom bond is polar or nonpolar
- I can describe and explain whether a molecule overall is polar or nonpolar

## Intermolecular Forces

- I can list the three types of intermolecular forces in order of strength
- I can describe **hydrogen bonding** and which kind of molecules have them
- I can describe **instantaneous dipole forces** (Van der Waals forces) and state which kind of molecules have them
- I can describe and explain how intermolecular forces impact the boiling point and melting point of a substance
- I can describe **permanent dipole forces** and state which kind of molecules have them

## Thermochemistry

- I can define the terms **endothermic** and **exothermic**
- I can define the term **standard conditions**
- I can define enthalpy of formation ( $\Delta_f H^\circ$ ) and write formation equations
- I can define enthalpy of combustion ( $\Delta_c H^\circ$ ) and write combustion equations
- I can define enthalpy of vaporisation ( $\Delta_{\text{vap}} H^\circ$ ), enthalpy of fusion ( $\Delta_{\text{fus}} H^\circ$ ) and enthalpy of sublimation ( $\Delta_{\text{sub}} H^\circ$ ) and write these equations
- I can define the term **heat capacity**
- I can calculate the enthalpy of a reaction using the equation  $q = mc\Delta T$
- I can define **entropy**
- I can describe whether entropy is increasing or decreasing for a given reaction
- I can define the terms **spontaneous** and **non-spontaneous**
- I can describe and explain whether a given reaction is spontaneous or nonspontaneous
- I can use Hess' Law to calculate the enthalpy of a reaction given the enthalpy of other reactions