

Year 12 Chemistry

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
	<p>Content delivered: Unit 2.1: Isotopes Atomic structure RAM Ionic formulae Balancing equations Avogadro's number Empirical formulae Ideal gas equation Stoichiometric relationships Percentage yield Atom economy Formulae of acids and alkalis Dissociations in acids Neutralisation Preparing standard solutions Unit 2.2: Electron configurations Orbitals Order of filling orbitals Ionic bonding as electrostatic attraction Giant ionic lattices Structure and physical properties of ionic compounds Covalent bonding (single, multiple and dative) Shapes and bond angles Electron pair repulsion</p>	<p>Content delivered: Unit 2.1: Acid-base titrations Titration calculations Oxidation numbers Redox Unit 2.2: Electronegativity Polar bonds Hydrogen bonding Anomalous properties of water Structure and bonding in covalent compounds Unit 3.1: Periodic table Ionisation energies Metallic bonding Physical properties of giant metallic and giant covalent lattices Variations in melting points Unit 4.1: Application of IUPAC Types of formulae</p>	<p>Content delivered: Unit 3.1: Trends in reactivity Reactivity of group 2 Halogens as diatoms Group 7 electron configuration Group 7 trends in reactivity Disproportionation Using chlorine in water treatment Precipitation reactions Qualitative analysis of ions Unit 4.1: Movement of electron pairs Diploes Alkanes Tetrahedral shapes Bond angles Dipole-dipole interactions Reactivity of alkanes Combustion of alkanes Radical substitution</p>	<p>Content delivered: Unit 3.2: Enthalpy Standard conditions Enthalpy change of formation Enthalpy change of reaction Enthalpy change of combustion Enthalpy change of neutralisation $q = mc\Delta T$ Average bond enthalpy Hess' law Unit 4.1: Alkenes Trigonal planar shapes Stereoisomerism Reactivity of alkenes Addition reactions in alkenes Electrophilic addition by heterolytic fission Markownikoffs rule Addition polymerisation Sustainability of processing waste polymers Polarity of alcohols Classification of alcohols Combustion of alcohols Oxidation of alcohols</p>	<p>Content delivered: Unit 3.2: Determining enthalpy change directly and indirectly Factors affecting rate Calculating reaction rate Homogenous and heterogeneous catalysts Boltzmann distribution Dynamic equilibrium Unit 4.2: Eliminating water from alcohols Hydrolysis of haloalkanes Mechanism of nucleophilic substitution in hydrolysis Trends in rates of hydrolysis Halogen radicals Quickfit Identification of functional groups Interpreting the IR spectrum Monitoring air pollution using IR spectroscopy Using mass spec Analysing fragmentation peaks Structures of organic compounds Synthetic routes for preparing organic compounds IR radiation and covalent bonds Absorption of IR radiation by atmospheric gases</p>	<p>Content delivered: Unit 3.2: Le Chatelier's principle Use of catalysts Equilibrium constant Estimating position of equilibrium Unit 4.2: IR radiation and covalent bonds Absorption of IR radiation by atmospheric gases</p> <p>Revise all Y12 content</p>
<p>Key Words Level 2 Level 3</p>	<p>2.1: Atomic number, isotope, neutron, proton, electron, relative abundance, relative atomic mass, relative isotopic mass, relative molecular mass, mass spectrometer/y, relative isotopic mass, compound ion, state symbol, nitrate, sulfate, phosphate, hydroxide, mole, balancing, Avogadro's Constant, ideal gas 2.2: Electron configuration, shell, sub-shell, Enthalpy, bonding pair, lone pair, dative covalent bond.</p>	<p>2.1: Acid, base, alkali, titration, neutralisation, burette, pipette, oxidation, reduction, redox 2.2: Electron configuration, shell, sub-shell, Enthalpy, bonding pair, lone pair, dative covalent bond, intermolecular forces 3.1: Electron configuration, Ionisation energy, atomic radius, shielding, lattice, electrostatic, electronegativity, disproportionation, redox, precipitation, intermolecular forces 4.1: Hydrocarbon, homologous series, alkane, alkene, alkyl, alicyclic, saturated, unsaturated, isomer/ism, structural isomer, organic compound,</p>	<p>3.1: Electron configuration, Ionisation energy, atomic radius, shielding, lattice, electrostatic, electronegativity, disproportionation, redox, precipitation, intermolecular forces 3.2: Enthalpy, lattice enthalpy, enthalpy of formation, enthalpy of combustion, enthalpy of solution, Born-Haber cycle, electron affinity 4.1: Curly arrow, reaction mechanism, substitution reaction, Radical, initiation, propagation, termination, addition, heterolytic, homolytic, isomerism, electrophile, primary, secondary, tertiary, CIP, Markownikoff, Hydrocarbon, homologous series, alkane, alkene, alkyl, alicyclic, saturated, unsaturated, isomer/ism, structural isomer, organic compound, displayed/structural/skeletal molecular formula(e)</p>	<p>3.2: Enthalpy, lattice enthalpy, enthalpy of formation, enthalpy of combustion, enthalpy of solution, Born-Haber cycle, electron affinity 4.1: Addition, heterolytic, homolytic, isomerism, electrophile, primary, secondary, tertiary, CIP, Markownikoff, Curly arrow, reaction mechanism, substitution reaction, Radical, initiation, propagation, termination</p>	<p>3.2: Enthalpy, lattice enthalpy, enthalpy of formation, enthalpy of combustion, enthalpy of solution, Born-Haber cycle, electron affinity, Boltzmann, gradient, tangent, collision theory, homogeneous, heterogeneous, catalyst, activation energy 4.2: Primary, secondary, tertiary, oxidation, combustion, aldehyde, ketone, carboxylic acid, addition, elimination, substitution, hydrolysis, reflux, distillation, liebig condenser, separating funnel, fragmentation, fragment ion, M peak, M+1 Peak</p>	<p>All key words so far</p>
<p>Where previous knowledge has occurred and future development KS2 → KS3 → KS4 → KS5</p>	<p>KS2: Properties of materials KS3: Composites, Polymers and Ceramics KS4: Organic chemistry, the atom KS5: Used through out all units</p>	<p>KS2: Solids, liquids and gases KS3: Acids and alkalis, chemical reactions KS4: Quantitative chemistry, the atom KS5: Balancing equations</p>	<p>KS2: Changes of state KS3: Metals and non-metals, periodic table KS4: Organic chemistry, bonding, the atom KS5: Electron configuration</p>	<p>KS2: Changes of state KS3: Chemical reactions, physical and chemical changes KS4: The atom, energy changes, organic chemistry KS5: Reactivity of alkanes</p>	<p>KS2: Drawing graphs KS3: Chemical reactions KS4: Energy changes, rates, organic chemistry KS5: Structures and physical properties of compounds</p>	<p>KS2: Drawing graphs KS3: Digestion KS4: Chemical analysis, rates, organic chemistry KS5: Covalent bonding</p>
<p>Common Misconceptions</p>	<p>2.1: Compound ions 2.1.: Moles due to dissociations 3.1: Difference between base and alkali</p>	<p>2.2: Oxidising agents/oxidised 3.1: Miscalculating ox. nos 3.2: Identifying types of enthalpy</p>	<p>2.2: Identifying IM forces 3.2: Confusing the – and + in the equation 4.1: Naming from the wrong end</p>	<p>3.2: Confusing the – and + in the equation 4.1: Intermolecular and intramolecular forces 4.1: conservation of charge</p>	<p>3.2: Confusing the – and + in the equation 4.2: identifying reaction types 4.2: Reversing the order of reactivity of halogens 4.2: Confusing peaks and troughs</p>	<p>All misconceptions so far</p>

