	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Year 13 Chemistry	**Content delivered:** **Unit 5.1:** Rate of reaction Rate order Rate equations Rate constant Rate graphs Deducing orders from rate graphs Multistep reactions Arrhenius equation Equilibrium **Unit 6.1:** Kekulé model of benzene IUPAC rules for naming Electrophilic substitution of aromatic compounds Electrophilic substitution in arenes Electrophilic substitution in aromatic compounds Acidity of phenols Electrophilic substitution of phenol Directing effects of electron groups Oxidation of aldehydes Nucleophilic addition Detecting carbonyls Detecting aldehydes	**Content delivered:** **Unit 5.1:** The effects on equilibrium when temperature is changed Equilibrium constants Bronsted-Lowry Acid dissociation constant pH logs Calculating pH Buffer solutions Controlling blood pH Titration curves **Unit 6.1:** Solubility of carboxylic acids Reactions of carboxylic acids Esterification Hydrolysis of esters Formation of acyl chlorides Using acyl chlorides **Unit 6.2:** Basicity of amines Aliphatic amines Aromatic amines Amino acids Amides Optical isomerism Chiral centres	**Content delivered:** **Unit 5.2:** Lattice enthalpy Enthalpy change of solution Ionic charge effect on exothermic values Using oxidising and reducing agents Redox equations and half equations Oxidation numbers Redox titrations Standard electrode potentials Measuring cell potentials **Unit 6.2:** Condensation polymerisation Acid-base hydrolysis C-C bond formation C–C≡N bond formation Reaction of nitriles Formation of substituted aromatic C-C Friedel-Crafts reaction Preparation and purification of organic solids Identification of organic groups Multi-stage synthetic routes for preparation	**Content delivered:** **Unit 5.2:** Cell potentials Electrode potentials Fuel cells **Unit 6.3:** TLC Interpreting chromatograms Qualitative analysis of functional groups **Unit 5.3:** Electron configuration of period 4 Transition elements Ligands	**Content delivered:** **Unit 5.3:** Complex ions Coordination numbers Stereoisomerism Ligand substitution reactions Ionic equations Redox reactions Qualitative analysis of ions **Unit 6.3:** Carbon 13 NMR High resolution proton NMR Use of TMS Deducing structures from analytical data	
Key Words **Level 2** **Level 3**	**5.1:** Rate of reaction, order, overall order, rate constant, half-life, rate-determining step, Arrhenius equation, tangent, gradient, instantaneous, equilibrium, homogeneous, heterogeneous, mole fraction, partial pressure **6.1:** Delocalised, aromatic, electron density, Electron donating, electron withdrawing	**5.1:** Equilibrium, homogeneous, heterogeneous, mole fraction, partial pressure, Bronsted-Lowry, acid, base, buffer, conjugate, end point, equivalence point, ionic equation **6.1:** Bronsted-Lowry, acid, base, hydrolysis, esterification **6.2:** Amine, proton acceptor	**5.2:** Enthalpy, lattice enthalpy, enthalpy of formation, enthalpy of combustion, enthalpy of solution, Born-Haber cycle, electron affinity, oxidising/reducing agent, oxidation, reduction, disproportionation, entropy, Gibbs free energy, standard hydrogen electrode, half-cell, electrode, oxidation, reduction, feasibility, potential difference **6.2:** Condensation, polymerisation, monomer, esterification, repeating unit, hydrolysis, alkylation, acylation, nucleophile, addition, substitution, reduction, distillation, reflux, recrystallisation, melting point,	**5.2:** Standard hydrogen electrode, half-cell, electrode, oxidation, reduction, feasibility, potential difference **6.3:** Mobile phase, stationary phase, retention time, Rf value, TLC	**5.3:** Transition metal, complex, ligand, mono-/bi-/multi-dentate, co-ordination number, dative covalent bond, planar, trigonal, trigonal pyramidal, trigonal bipyramidal, octahedral, substitution, precipitation, redox **6.3:** Chemical shift, coupling, deuterated solvent, singlet, doublet, triplet, quartet, multiplet, n+1, TMS, spin-spin splitting	
Where previous knowledge has occurred and future development **KS2 → KS3 → KS4 → KS5**	KS2: Drawing graphs KS3: Chemical reactions KS4: Energy changes, rates, organic chemistry KS5: Unit 3.2	KS2: Drawing graphd KS3: Acids and alkalis KS4: Chemical changes, organic chemistry KS5: Unit 2.1	KS2: Changes of state, electricity KS3: Chemical reactions, physical and chemical changes KS4: The atom, energy changes, organic chemistry KS5: Unit 3.2	KS2: Electricity KS3: Electricity, separations KS4: Chemical analysis, chemical changes, the atom KS5: Unit 2.1	KS2: KS3: Metals KS4: Bonding, chemical analysis, the atom KS5: Unit 4	
Common Misconceptions	5.1: Initial rate compared to continuous data 6.1: Curly arrow direction	5.1: Buffer calculations 6.1: Acid/Base hydrolysis 6.2: Trend in basicity	5.2: Calculating LE 6.2: Position of carbon in nitriles	5.2: Calculating E_0 by subtracting the wrong way 6.3: Miscalculating R_f 5.3: d block classification	5.3: Mixing the chemical tests 6.3:Applying the n+1 rule the wrong way round	
Literacy	NHTW reviews as starter activities	Scientific writing (HSW): PAG 11 NHTW reviews as starter activities	Scientific writing (HSW): PAG 11 Scientific writing (HSW): PAG 6 Scientific writing (HSW): PAG 8 NHTW reviews as starter activities	Scientific writing (HSW): PAG 12 Scientific writing (HSW): PAG 7 NHTW reviews as starter activities	Scientific writing (HSW): PAG 4 NHTW reviews as starter activities	
Numeracy	Drawing and interpreting graphs Calculating gradients Rearranging equations	Logs Drawing and interpreting graphs	Calculating means Negative numbers	Rearranging equations	Rearranging equations Calculating means	
Homework	Completion of Doddle section quizzes	Completion of Doddle section quizzes	Completion of Doddle section quizzes	Completion of Doddle section quizzes	Completion of Doddle section quizzes	
Assessment this half-term	Test on content delivered so far	Mock exams – paper 1, 2 & 3 PAG 11	Mock exams PAG 11 PAG 6	Mock exams PAG 12 PAG 7	Test on content delivered so far PAG 4	

			PAG 8			
Career opportunities Employment Links	LIFE SKILLS: Understanding how to determine the speed of a reaction EMPLOYMENT: Industrial chemist	LIFE SKILLS: Understanding the effects of pH on the blood EMPLOYMENT: Phlebotomist	LIFE SKILLS: Understanding how to identify different chemicals EMPLOYMENT: Forensic scientist	LIFE SKILLS: Understanding the energy output of different fuel cells EMPLOYMENT: Fuel cell engineer	LIFE SKILLS: Understanding how to identify different compounds EMPLOYMENT: NMR spectroscopist	
Enrichment						
Practical activities/HSW		PAG 11	PAG 11 PAG 6 PAG 8	PAG 12 PAG 7	PAG 4	
Employability Skills	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	
IT Skills	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	
Notes/developments /standardisation comments						