Chemistry Overview

Year 10						
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Topic	· States of Matter · Methods of Separating and Purifying Substances	· Atomic Structure · The Periodic Table · Calculations involving Masses	· Ionic Bonding · Covalent Bonding · Types of Substances	· Acids and Alkalis	· Electrolytic Processes · Obtaining and Using Metals · Reversible Reactions and Equilibria · Transition Metals, Alloys and Corrosion	· Quantitative Analysis · Dynamic Equilibria Calculations · Chemical Cells and Fuel Cells
Key concept	**Materials and their properties**	**Materials and their properties**	**Materials and their properties**	**Chemical changes**	**Our Earth and its atmosphere**	**Materials and their properties**
Learning Objectives	· Predict the state of a substance. · Describe the arrangement, movement and energy of particles during changes of state. · Explain the choice of separating technique for different mixtures.	· Describe how ideas about atoms have changed · Calculate relative atomic mass for an element · Describe how to use the periodic table to predict and model the arrangement of electrons in atoms · Calculate the mass of reactants or products in a reaction · Use the Avogadro constant	· Describe how ionic, covalent and metallic bonds are formed · Describe the formation of lattice and molecular structures · Show how the properties of a substance are linked to its bonding and structure	· Describe the ions in acids and alkalis and how their concentrations are linked to pH · Complete reactions between acids and different types of bases · Discuss the role of different indicators in acid-alkali titrations · Describe how to prepare different soluble and insoluble salts.	· Describe how metals are extracted from ores · Describe electrolysis and electroplating · List the advantages of recycling · Devise half equations Describe the properties and uses of metals	· Reason why the actual yield of a reaction is less than the theoretical yield · Calculate percentage yield of a reaction · Show how to carry out an acid-alkali titration and calculate unknown concentration or volumes · Convert between g dm^{-3} and mol dm^{-3}

Scaffolding SEND	glossaries, targeted questions, knowledge organisers, recall quizzes	glossaries, targeted questions, knowledge organisers, recall quizzes	glossaries, targeted questions, knowledge organisers, recall quizzes	glossaries, targeted questions, knowledge organisers, recall quizzes	glossaries, targeted questions, knowledge organisers, recall quizzes	glossaries, targeted questions, knowledge organisers, recall quizzes
Key Vocabulary	particle model, attractive forces, physical properties, solute, solvent, solution, crystallisation, residue, mobile phase, stationary phase, fractional distillation, chlorination, aquifers	Subatomic particles, relative atomic mass, nuclear fission, electronic configuration, empirical formula, Avogadro constant,	Cations, anions, electrostatic forces, polyatomic ions, lattice structure, aqueous solution, dot and cross diagrams, monomers, polymers, allotropes, fullerenes, graphene	Indicators, dissociate, crystallisation, titration, pipette, effervescence, precipitate	Oxidation, reduction, electrolysis, electrolyte, displacement reactions, extraction, bioleaching, phytoextraction, malleable, ductile	Theoretical yield, actual yield, volumetric flask, calibrated, Avogadro's Law, fuel cell
Formative Assessment	6 mark question with teacher feedback	6 mark question with teacher feedback	6 mark question with teacher feedback	6 mark question with teacher feedback	6 mark question with teacher feedback	6 mark question with teacher feedback
Summative Assessment	End of unit test	End of unit test	End of unit test	End of unit test	End of unit test	End of unit test
Careers	Forensic scientist, geoscientist, lab technician, urologist	Forensic scientist, geoscientist, lab technician, paramedic, sports scientist, zoologist	Forensic scientist, geoscientist, lab technician, forensic scientist, geoscientist, lab technician, neuroscientist, urologist, zoologist	Aeronautical engineer, equine dentist, robotist, sports, scientist	Aeronautical engineer, equine dentist, robotist, sports scientist, yacht master	Forensic scientist, geoscientist, lab technician
Links	To build on particle arrangements in solids, liquids and gases.	To build on particle model of matter.	To build on the particle model of matter.	To build on solubility, solutes, solvents and solutions. In	To build on oxidisation and displacement reactions.	To build on oxidisation and displacement reactions.

	To prepare for differences between pure substances and mixture. In addition, separating techniques of filtration, distillation and chromatography.	To prepare for understanding that the elements are arranged in a periodic table. In addition, the position of metals and non-metals in the periodic table absorption and reflection.	To prepare for Dalton's ideas about atoms and molecules used to explain properties of matter. In addition, how elements are arranged in the periodic table.	addition, the use of common international hazard symbols. To prepare for common acids and alkalis and neutral solutions. In addition, the use of indicators to test the pH of solutions.	To prepare for the reactivity series.	To prepare for the reactivity series.