Chemistry Overview – Combined Science

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
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	· Devise half equations Describe the properties and uses of metals
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, malleable, ductile	Oxidation, reduction, electrolysis, electrolyte, displacement reactions, malleable, ductile
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 prepare for differences between pure substances and mixture. In	To build on particle model of matter. To prepare for understanding that the elements are arranged in a periodic table. In addition, the	To build on the particle model of matter. To prepare for Dalton's ideas about atoms and molecules used to explain properties	To build on solubility, solutes, solvents and solutions. In addition, the use of common international hazard symbols.	To build on oxidisation and displacement reactions. To prepare for the reactivity series.	To build on oxidisation and displacement reactions. To prepare for the reactivity series.

	addition, separating techniques of filtration, distillation and chromatography.	position of metals and non-metals in the periodic table absorption and reflection.	of matter. In addition, how elements are arranged in the periodic table.	To prepare for common acids and alkalis and neutral solutions. In addition, the use of indicators to test the pH of solutions.		