

### Key Stage 3 – Overview Chemistry

Year 8	Unit 1 – Chemistry in our lives	Unit 2 - Chemistry changes things	Unit 3 – What are we made of?	Unit 4 - Water
	<p><u>Managing information, thinking, problem-solving and decision making, working with others.</u> Students will understand what Chemistry involves; explore safety in the laboratory and world around us; understand the concept of hazard symbols – chemical changes; be able to safely light a Bunsen burner.</p>	<p><u>With attention to thinking, problem solving, decision making, working with others.</u> Pupils will: appreciate that materials change both temporarily or permanently, be able to recall essential features and terminology of chemical change develop safe handling skills in practical work, appreciate the conservation of mass during chemical reactions, understand the need for scientific method, appreciate the work of chemists in manufacturing, recognize the important of the chemical industry to economy, comprehend that physical change can be reversed.</p>	<p>With emphasis on <u>thinking, problem solving, working with others.</u> Pupils will: learn that matter is made of particles, classify substances as solids, liquids and gases, understand the terms colloid and suspension, learn about emulsions and emulsifiers, appreciate the meaning and properties of gels, learn about changes in state.</p>	<p><u>Demonstrating creativity and working effectively with others.</u> Pupils will: understand the water cycle and the importance of clean water, comprehend that dirty water is a killer, learn how water is purified, understand water conservation and pollution, learn about solutions and dissolving, understand factors affecting dissolving, solubility and saturated solutions.</p>
Year 8	Unit 5 – Elements, Mixtures, Compounds, and Separating Techniques		Unit 6 – Amazing gases	
	<p><u>Demonstrating creativity and working effectively with others.</u> Pupils will: appreciate the composition of the elements, learn symbols for the elements, understand what compounds are and their creation from the chemical reaction of elements, learn the definition of mixtures, learn separation techniques.</p>		<p>With emphasis on <u>critical thinking and working effectively with others.</u> Pupils will: become familiar with properties of gases, revise and recall the arrangement of particles inside gases, appreciate that gases have a mass, understand pressure and explosions.</p>	
Year 9	Unit 1 – Farming and Chemistry	Unit 2 – The Chemistry of Metals – Fizzes & Bangs	Unit 3 – Chemistry and Cars	
	<p><u>Demonstrating creativity, working with others, information management.</u> Pupils will: measure soil acidity and understand that substances may be acidic, alkaline or neutral; learn the pH scale; understand the neutralisation of acidic soils, understand how natural and artificial fertilizers improve yield, recognize the advantages and disadvantages of both types of fertilizer.</p>	<p><u>Working effectively with others.</u> Pupils will: learn the properties and uses of metals and understand that different metals behave differently; learn the reactivity series; recognise the characteristic colours of metal compounds; learn displacement reactions, predict equations and observations of displacement reactions.</p>	<p><u>Demonstrating creativity and good communication.</u> Pupils will: acknowledge that Chemistry is used in many aspects of life, learn about materials – particularly the density and malleability of plastics and metals; understand the oxidation process of rusting, rust prevention, learn about alloys, appreciate the properties and sources of petroleum based fuels; fractional distillation; understand bio-fuels, choosing fuels and recognize future fuel sources.</p>	

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<b>Year 9</b>	<b>Unit 4 – Consumer Chemistry</b>		
	<p>Demonstrating <u>creativity in experimental design</u>, and with emphasis on <u>problem solving</u>, <u>information management</u>. Pupils will: develop an investigation to determine how we decide which soft drink to buy – involves classifying, comparing and evaluating information about different soft drinks; conduct tests for acidity, sugar content and fizziness. Furthermore: conduct investigations to determine the salt content of different crisps; conduct titration experiments to determine which vinegar contains the most ethanoic acid.</p>		
<b>Year 10</b>	<b>Unit 1 – Forensic Science</b>	<b>Unit 2 – Chemical Engineering</b>	<b>Unit 3 – Atomic Structure</b>
	<p>Using <u>investigative skills</u>, <u>maths</u>, a <u>range of practical skills</u> and <u>working effectively with others</u>. Pupils will: learn what Forensic Science is; deduce skills needed by the Forensic Scientist; understand the characteristics of fingerprints, learn about natural and synthetic fibres; examine the properties of rocks, minerals and powders, appreciate the use of chromatography in Forensic Science, conduct and investigation using the above skills to determine who kidnapped the Headmaster.</p>	<p>With emphasis on <u>self management</u>, <u>making predictions</u>, <u>examining evidence</u>, <u>working with others</u> and <u>problem solving</u>. Pupils will be able to: understand the role of chemical engineering in industry; understand the importance of purifying chemicals and checking their purity (quality assurance), making chemical products safely (risk assessment); understand the rate of chemical synthesis i.e. Rate of Reaction; recognize and recall factors which affect the rate of chemical reaction.</p>	<p>Focussing on self-management, listening actively, sharing opinions, information management and demonstrating creativity. Pupils will: learn atomic structure – mass number and atomic number for elements; draw diagrams of electron arrangement in elements, understand the structure and terminology of the Periodic Table; learn how to write formulae and understand valency.</p>
<b>Year 10</b>	<b>Unit 4 - Medicinal Chemistry</b>	<b>Unit 5 – Polymer Chemistry</b>	
	<p>Working with others, demonstrating creativity and decision making. Pupils will: learn the history of drugs and medicines (non-synthetic and synthetic drugs); learn about the administration of drugs and how drugs treat different illnesses; conduct experiment to make Epsom salts; investigate antacids and devise an experiment to determine which antacid is most effective; appreciate the importance of drug labelling (<i>Activity: Medicine Box Challenge</i>)</p>	<p><b>TBC by Head of Chemistry</b></p>	