



Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Other Notes
<b>Introduction to Chemistry</b>	<b>Autumn</b>	<ul style="list-style-type: none"> <li>Estimating risks</li> <li>Test hypotheses</li> <li>Collecting data</li> <li>Presenting data</li> <li>Draw conclusions</li> <li>Constructing explanations</li> </ul>	<p><b>Working Scientifically</b></p> <p><b>Scientific Attitudes</b></p> <ul style="list-style-type: none"> <li>pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility</li> <li>understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review</li> <li>evaluate risks</li> </ul> <p><b>Experimental skills and investigations</b></p> <ul style="list-style-type: none"> <li>ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience</li> <li>make predictions using scientific knowledge and understanding</li> <li>select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables</li> <li>use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety</li> <li>make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements</li> <li>apply sampling techniques</li> </ul> <p><b>Analysis and evaluation</b></p> <ul style="list-style-type: none"> <li>apply mathematical concepts and calculate results</li> </ul>	<ul style="list-style-type: none"> <li><i>These skills are applied to and developed across their entire WKGS science career</i></li> </ul> <p>Links to GCSE</p> <ul style="list-style-type: none"> <li>Working scientifically section 3 of the AQA specification</li> </ul>	<p><b>Prior Knowledge from KS2</b></p> <p>Students should have some ideas on scientific investigations from KS2.</p> <p>This introduction topic aims to establish a solid baseline of skills across all of our students upon which to build subsequent core knowledge and skills.</p>



			<ul style="list-style-type: none"> <li>● present observations and data using appropriate methods, including tables and graphs</li> <li>● interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions</li> <li>● present reasoned explanations, including explaining data in relation to predictions and hypotheses</li> <li>● evaluate data, showing awareness of potential sources of random and systematic error</li> <li>● identify further questions arising from their results</li> </ul> <p><b>Measurement</b></p> <ul style="list-style-type: none"> <li>● understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature</li> <li>● use and derive simple equations and carry out appropriate calculations</li> <li>● undertake basic data analysis including simple statistical techniques</li> </ul>		
<b>Particles</b>	<i>Spring</i>	<ul style="list-style-type: none"> <li>● Analyse patterns</li> <li>● Review theories</li> <li>● Discuss limitations</li> <li>● Test hypotheses</li> <li>● Draw conclusions</li> <li>● Construct explanations</li> </ul>	<ul style="list-style-type: none"> <li>● The properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure.</li> <li>● Changes of state in terms of the particle model.</li> <li>● Changes with temperature in motion and spacing of particles.</li> </ul>	<ul style="list-style-type: none"> <li>● Y8 Autumn: Elements, mixtures and compounds</li> </ul> <p>Links to GCSE Topic 1 – <b>Atomic Structure and the Periodic Table</b></p> <p><b>Year 9:</b></p> <ul style="list-style-type: none"> <li>● Mixtures</li> <li>● Development of the atomic model</li> </ul>	<p><b>Prior Knowledge from KS2</b></p> <p>Students should be able to:</p> <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>Observe that some materials change</p>



		<ul style="list-style-type: none"> <li>Collect data</li> <li>Present data</li> </ul>	<ul style="list-style-type: none"> <li>The differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice-water transition.</li> <li>Atoms and molecules as particles.</li> <li>Diffusion in terms of the particle model</li> </ul>	<p>Links to GCSE Topic 2 – <b>Structure and Bonding</b></p> <p><b>Year 9:</b></p> <ul style="list-style-type: none"> <li>The three states of matter</li> <li>State symbols</li> </ul>	<p>state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>
<b>Acids &amp; Alkalis</b>	<i>Summer</i>	<ul style="list-style-type: none"> <li>Estimating risks</li> <li>Test hypotheses</li> <li>Collecting data</li> <li>Presenting data</li> <li>Draw conclusions</li> <li>Constructing explanations</li> <li>Justifying opinions</li> </ul>	<ul style="list-style-type: none"> <li>Acids have a pH below 7, neutral solutions have a pH of 7, alkalis have a pH above 7.</li> <li>Acids and alkalis can be corrosive or irritant and require safe handling</li> <li>The pH of a solution depends on the strength of the acid: strong acids have lower pH values than weak acids.</li> <li>Identifying the best indicator to distinguish between solutions of different pH, using data provided.</li> </ul>	<ul style="list-style-type: none"> <li>Y8 Spring: Chemical reactions</li> </ul> <p>Links to GCSE Topic 4 – <b>Chemical Changes</b></p> <p><b>Year 9:</b></p> <ul style="list-style-type: none"> <li>Reactions of metals and acids</li> <li>Neutralisation</li> <li>Acids and Alkalis</li> </ul> <p><b>Year 11:</b></p>	<p><b>Prior Knowledge from KS2</b></p> <p>Students should be able to:</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the</p>



			<ul style="list-style-type: none"><li>• Using data and observations to determine the pH of a solution and explain what this shows.</li><li>• Defining acids and alkalis in terms of neutralisation reactions.</li><li>• Explaining how neutralisation reactions are used in a range of situations. Describe a method for how to make a neutral solution from an acid and alkali</li><li>• Reactions of acids with alkalis to produce a salt plus water</li><li>• Reactions of acids with metals to produce a salt plus hydrogen</li></ul>	<ul style="list-style-type: none"><li>• Strong and weak acids</li><li>• Titrations</li></ul>	action of acid on bicarbonate of soda
--	--	--	---	--	---------------------------------------