



Subject: Year 7 Elements

Prior key Stage 2 Knowledge			
<p>States of Matter - Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>Properties and changes of their materials - Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p>			
Overarching Topic: Elements			
<p>Why is this topic being studied at this time?</p> <p>How does it fit into the wider subject curriculum?</p>	<ul style="list-style-type: none"> Elements are everything. Literally. At least everything made of matter. No elements, no matter. The knowledge of elements is important because it contains the key components to understand that a huge range of materials are made from a relatively small number of elements. Knowing that elements are made up of only one type of atoms the students can explore the physical and chemical properties of elements. They can also use their understanding of particle theory to explain what happens when elements combine. As one of the fundamental principles of Chemistry, the knowledge of elements fits into all aspects of future KS3 and KS4 content. Students have also studied Periodic Table prior to this Unit, so students are aware of names and symbols of some elements. 		
	Essential	Core	Ambitious
<p>The Big Questions (What questions will students be able to answer upon mastery of the topic?)</p>	<p>What is an element, a compound and a mixture? Can I define what are atoms and molecules? Can I identify symbols of elements on the periodic table? Can I differentiate between physical and chemical properties of a substance?</p>	<p>How do you name compounds using their chemical formulas? Using formulae, can I identify what kinds of elements are present in a compound and their proportions? Can I draw before and after diagrams for atoms, molecules and elements, compounds and mixtures? Can I use observations from chemical reactions to decide if an unknown substance is an element or a compound?</p>	<p>Why is a variety of elements important?</p> <p>In the Sun what could be added to atoms to create a new element?</p> <p>How is magnesium oxide (a white solid) different from carbon dioxide. What new compounds could you make from given reactants. E.g. Glucose (C₆H₁₂O₆)</p>
The Key Skills/ Techniques	The sophistication and application of skills will become more advanced as students' progress through the essential, core and ambitious knowledge		
	Skill/Technique	How will this skill be developed?	
	1. Graphing & Drawing	Draw graphs with suitable scales, axes and units. Correct line of best fit. Appreciation of anomalies and processed data. Scientific drawing of cells, concepts and scientific equipment.	
	2. Variables	Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.	
	3. Data Analysis	Describe, explain and predict trends. Graph and table data interpretation. Identify links and patterns within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.	
	4. Application	Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.	
5. Working Scientifically	Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking in to account data analysis.		

