

Ravens Wood School

KS3 Curriculum Plan



Subject: Year 7 Periodic Table

Prior Key stage 2 Knowledge			
<p>Properties and changes in 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: Periodic Table			
<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"> When the French novelist Balzac wrote ‘without numbers, the whole edifice of our civilisation would fall to pieces’, he might have been anticipating an insight by the Russian chemist Dmitri Mendeleev. On 17 February 1869, Mendeleev jotted down the symbols for the chemical elements, putting them in order according to their atomic weights. He wrote down the sequence in such a way that they ended up grouped on the page according to known regularities or ‘periodicities’ of behaviour. It was perhaps the greatest breakthrough in the history of chemistry. The Periodic Table is one of the most important, fundamental tools in the history of chemistry. In a student’s hands, they can use it to articulate atomic structure, chemical and physical properties of elements, trends, bonding, work out formulae of compounds and molecules and carryout quantitative calculations. Getting it right, at the beginning, is essential. Other topics that relate to Periodic Table are Particle model of solids, liquids and gases, Patterns of reactivity, Reactions of metals and metal compounds. There are important scientific skills that are developed in this topic; using data and evidence to analyse trends down groups is a key principle. The Periodic table links into most Chemistry topics in Key Stage 3 and Key Stage 4 as it can be used to provide information on atomic structure, bonding and reactions. 		
	Essential	Core	Ambitious
<p>The Big Questions (What questions will students be able to answer upon mastery of the topic?)</p>	<p>Why are compounds and mixtures not found on the periodic table? Why are elements ordered into groups in terms of properties? Where are metals and non-metals found on the periodic table How do you use symbols for elements? What are the elements in group 1, 7 and 0?</p>	<p>How was the periodic table developed? Using data what are the trends in physical and reactive properties of groups 1 and 7? What part of the periodic table contains unreactive elements? What are patterns that form on the periodic table?</p>	<p>How are you both part star and mostly empty space Which properties of an unknown element would help us decide where it should go in the periodic table? Is the periodic table complete? Mendeleev left gaps, should we? Will it ever be complete? What would happen if you threw a large block of lithium into a lake? If it is poisonous, why is it safe to add chlorine to swimming pools and drinking water? Why was the entire group of nobles gases not discovered until long after most other elements?</p>
<p>The Key Skills/ Techniques</p>	<p>The sophistication and application of skills will become more advanced as students’ progress through the essential, core and ambitious knowledge</p>		
	<p>Skill/Technique</p>	<p>How will this skill be developed?</p>	
	<p>1. Graphing & Drawing</p>	<p>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.</p>	
	<p>2. Variables</p>	<p>Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.</p>	
	<p>3. Data Analysis</p>	<p>Describe, explain and predict trends. Graph and table data interpretation. Identify links and patters within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.</p>	
	<p>4. Application</p>	<p>Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.</p>	
<p>5. Working Scientifically</p>	<p>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.</p>		

