



Subject: Year 8 Types of Reactions

Overarching Topic: Types of Reactions			
<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"> Chemical reactions are literally everything. Every part of your being, save the actual atoms themselves, is due to an incredibly complex series of reactions. While nuclear reactions also may produce new matter, nearly all the substances you encounter in daily life are the result of chemical changes. Chemical reactions help us understand the properties of matter. By studying the way a sample interacts with other matter, we can learn its chemical properties. Students require knowledge of the particle model, chemical and physical changes and what a reaction is prior to starting this topic which is covered in the year 7 scheme and thus this topics fits into the beginning of the year 8 curriculum to both revisit year 7 knowledge and apply it to a new concept. Students require the ability to use numerical data and manipulate it to calculate unknowns, this links in with the introduction of simple algebra in year 7 mathematics. The combustion of hydrocarbons and their environmental impact relates closely, not only to the science KS4 syllabus but also to Geography. 		
	Critical	Core	Pinnacle
<p>The Big Questions (What questions will students be able to answer upon mastery of the topic?)</p>	<p>What is combustion and what energy change takes place during this type of reaction? What is thermal decomposition? What is meant by the term <i>Chemical changes</i>? What is the principal of the conservation of mass?</p>	<p>How can combustion and thermal decomposition reactions be identified and the choice justified? Can the products of the combustion or thermal decomposition of a given reactant be predicted? Can changes occurring in a chemical reaction be shown using particle diagrams? Can students balance a symbol equation when given the reactants and products?</p>	<p>When ice melts or magnesium is burnt how do the masses change and why? How can the mass of magnesium oxide be used to determine the mass of oxygen that reacted with the magnesium strip? Why can gas cookers be dangerous when used for long periods of time? Why were local families told to keep their windows shut in the Orpington bus fire and whose health would be the greatest concern in these circumstances? If the Great Pyramid of Giza were to undergo thermal decomposition what effect would this have on the environment? How is the Great Pyramid of Giza linked to Dinosaur breath? How can coccolithophore shells be used to test for carbon dioxide?</p>
<p>The Key Skills/ Techniques</p>	<p>The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge.</p>		
	<p>Skill/Technique</p>	<p>How will this skill be developed?</p>	

	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.