Thomas Mills
High School & Sixth Form

CURRICULUM OVERVIEW: Chemistry

Develop Scientific Knowledge and Understanding:
We aim to ensure that pupils build a strong understanding of the key concepts in Chemistry, including acids and bases, combustion, energy changes, the reactivity of metals, and conservation of mass. These ideas are taught progressively, starting with core principles such as the particle model and chemical reactions, and extending to more complex ideas such as oxidation, displacement, and the environmental impact of chemical processes.
Curiosity, Inquiry and Skills Development:
Through practical investigations, demonstrations, and enquiry-based learning, we aim to ignite pupils' curiosity and encourage them to question, explore, and investigate chemical change. Pupils develop their ability to work safely in a laboratory, use equipment such as Bunsen burners and pH meters confidently, and construct word and symbol equations. They also strengthen their mathematical and analytical skills through graph drawing, interpreting data, and applying models to real-life chemical scenarios.
Prepare for Future Learning:
We ensure that pupils are well-prepared for their future learning in Chemistry, whether they pursue further study or simply wish to understand the chemical world more deeply. By linking chemical ideas to everyday life – such as pollution, corrosion, quarrying, and energy use – we aim to foster an appreciation of the relevance of Chemistry and nurture a lifelong interest in science.

Important Note: At Key Stage 3, Science is taught in a carousel model. This means that different classes may study the Chemistry units at different times of the year.

Year 8

Term	Topic	Knowledge and Skills	Useful Links
1	**8C3 – It burns!**	**Knowledge:** The Key Stage 3 It Burns! topic introduces pupils to the Chemistry of acids, alkalis, combustion and chemical reactions involving fuels and metals. Pupils learn to identify and describe the properties of acids and bases, and investigate how indicators and the pH scale are used to classify substances. They explore neutralisation reactions, and study how acids react with metals, metal oxides and carbonates to form salts and gases. The unit also	Unit: Acids and bases | KS3 Science | Oak National Academy Unit: Fuels and energetics | KS3 Science | Oak National Academy

		examines combustion and incomplete combustion, introducing pupils to key environmental impacts such as carbon monoxide, acid rain and the effects of fuel use. Throughout the topic, pupils make links between real-life applications and chemical principles. **Skills:** Through practical work and problem-solving activities, pupils develop confidence in planning and conducting experiments, interpreting results, and applying chemical knowledge to everyday contexts. They write and balance symbol equations for a range of chemical reactions, use indicators and pH scales to classify substances, and interpret combustion products using chemical tests. Pupils also develop evaluative skills as they consider the environmental impact of fuel use, analyse the causes and effects of acid rain, and compare different fuels for domestic use. Basic calculations involving concentration and dilution are introduced to build numeracy within a Chemistry context.	Chemical reactions - KS3 Chemistry - BBC Bitesize Acids and alkalis - KS3 Chemistry - BBC Bitesize
Assessments		A mid-unit low-stakes test and a more formal end-of-unit test completed under exam conditions. These assessments are designed to check understanding of key concepts and identify areas for improvement. Pupils receive feedback on both assessments, with time allocated in class to review answers and address misconceptions. Topic Summary Checklists are used throughout the unit to help pupils monitor their own progress and reflect on their understanding of the content.	
2	**Reactive Metal**	**Knowledge:** The Key Stage 3 Reactive Metals topic builds on pupils' understanding of chemical reactions by exploring patterns in reactivity and how metals are	

		extracted, used, and protected. Pupils learn how metals react with acids, oxygen and other compounds, and apply the reactivity series to explain displacement and extraction processes. The unit introduces key ideas such as conservation of mass, thermal decomposition, catalysts, and the difference between exothermic and endothermic reactions. Pupils also investigate the prevention of rusting and explore how alloying changes the properties of metals. Real-world links include the environmental impact of quarrying, the use of metals in industry, and the Chemistry of materials like limestone. **Skills:** Through investigations and data analysis, pupils develop the skills to plan and carry out chemical reactions, interpret patterns in reactivity, and predict the outcomes of displacement and extraction processes. They practise writing and balancing symbol equations and apply mathematical reasoning to problems involving conservation of mass. Pupils also evaluate industrial and environmental issues such as mining, alloy use, and rust prevention. Throughout the topic, they build their confidence in using the periodic table to explain reactivity trends and selecting appropriate materials for different uses based on their physical and chemical properties.	What is a chemical reaction? - BBC Bitesize What are exothermic and endothermic reactions? - BBC Bitesize What are exothermic and endothermic reactions? - BBC Bitesize What is thermal decomposition? - BBC Bitesize What is a displacement reaction? - BBC Bitesize What are metals and non-metals on the periodic table? - BBC Bitesize BBC Bitesize - KS3 Chemistry - Metal oxides - BBC Bitesize Making a reactivity series - The reactivity series - KS3 Chemistry - BBC Bitesize Extracting metals - The reactivity series - KS3 Chemistry - BBC Bitesize

			Displacement reactions guide for KS3 chemistry students - BBC Bitesize Materials KS3 | Y9 Science Lesson Resources | Oak National Academy Patterns in the periodic table KS3 | Y9 Science Lesson Resources | Oak National Academy Earth's resources KS3 | Y8 Science Lesson Resources | Oak National Academy Fuels and energetics KS3 | Y8 Science Lesson Resources | Oak National Academy
Assessments		A mid-unit low-stakes test and a more formal end-of-unit test completed under exam conditions. These assessments are designed to check understanding of key concepts and identify areas for improvement. Pupils receive feedback on both assessments, with time allocated in class to review answers and address misconceptions. Tests will contain a mixture of exam questions, matched to the format seen in end of key stage assessments. Topic Summary Checklists are used throughout the unit to help pupils monitor their own progress and reflect on their understanding of the content.	