

KS3 Curriculum Overview: Chemistry

Rationale: In Year 7, our aim is to build on the knowledge and understanding of chemistry gained during Key Stage 2 and provide a firm foundation for further study at GCSE. Students begin by studying the particle theory of matter, and how particle arrangement can explain the properties of materials. Students continue to cover fundamental aspects of chemistry by looking at elements, compounds and mixtures, chemical reactions and acids & alkalis. In Year 8, students learn about the structure and patterns shown in the Periodic Table, how mixtures can be separated, the reactions of metals and acids, finally how the Earth was formed, the rock cycle and climate change, most of which is then studied in more depth at GCSE level. Throughout the course, the scientific process is taught, with many opportunities to plan, investigate, record, conclude and evaluate practical investigations, together with the relevant maths skills, and key subject-specific vocabulary that will enable students to be scientifically literate.

Reading in the curriculum: The Sciences offer many opportunities to develop and extend students' literacy skills. There is a large amount of new, subject-specific vocabulary, and so each unit includes a glossary which students will complete and learn during the unit. Students will use texts to find out information for themselves, using the functional layout of such texts, including index, contents and glossary sections of text books used in class, and also at home in an online format. Students will also review and connect information within topics, so knowledge organisers are provided for each topic.

Connected knowledge: Topics in the Sciences do not stand alone. Each topic connects to prior knowledge from primary school, other topics learnt or still to be learnt at this school both in the Sciences and in other subjects and also in the outside world. Connected knowledge is discussed in class, starting with the Context Summary which is shared with students at the start of each topic.

Diversity: Science belongs to everyone, regardless of background, and people from all walks of life contribute to its development and reap its benefits. This is reflected in the examples used in lessons and the Scientists whose work we consider.

Term / Length of Unit	Outline	Assessment	Home Learning	Resources	Knowledge/Skills End Points	Reading in the curriculum
Year 7 Autumn Term 7C1 Particle Theory to include H&S intro (8 lessons – 2 of Health and Safety + 1 assessment)	Introductory lessons on Health and Safety in the lab to include hazard symbols and lighting of a Bunsen Burner Students then recap their knowledge from KS2 about the particle arrangements for Solids, Liquids and Gases. This is extended to describe and explain the properties of matter and changes of state. Students will experience a range of practical techniques and equipment such as the Bunsen burner, and use of thermometers to accurately observe boiling and melting points.	End of topic test	Revision tasks from homework booklet	SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 1 textbook.	The particulate nature of matter - the properties of the different states of matter (solid, liquid and gas) in terms of the particle model - changes of state in terms of the particle model.	Glossary, context summary, knowledge organiser and guided reading tasks
Year 7 Spring Term 1 7C2 Elements, Atoms and Compounds (7 lessons inc assessment)	The module begins with lessons on diffusion and gas pressure to link back to 7C1 and further explain the properties of materials. The unit moves on to look at specific terminology for describing substances such as atom, element, compound and mixture. Students will use various models to help describe and explain the different concepts.	End of topic test	Revision tasks from homework booklet	SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 1 textbook.	Atoms, elements and compounds - a simple (Dalton) atomic model - differences between atoms, elements and compounds - chemical symbols and formulae for elements and compounds - diffusion in terms of the particle model	Glossary, context summary, knowledge organiser and guided reading tasks

<p>Year 7 Spring Term 2 7C3 Chemical Reactions (8 lessons inc Required Practicals and assessment)</p>	<p>This is a very practical based module in which students will consider the various ways that substances can interact and to write equations to illustrate the reactions taking place. Students will carry out several practicals to develop the skills they will need as they go through school including combustion reactions, thermal decomposition and making accurate observations of mass changes.</p>	<p>End of topic test</p>	<p>Revision tasks from homework booklet</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 1 textbook.</p>	<p>Chemical reactions - chemical reactions as the rearrangement of atoms - representing chemical reactions using formulae and using equations - combustion, thermal decomposition, oxidation and displacement reactions - conservation of mass changes of state and chemical reactions. - what catalysts do. Energetics - energy changes on changes of state (qualitative) - exothermic and endothermic chemical reactions (qualitative).</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks</p>
<p>Year 7 Summer Term 7C4 Acids and Alkalis (5 lessons to include assessment)</p>	<p>Another practical heavy module that again builds on work students may have covered in KS2 looking at the similarities and differences between acids and alkalis. Students will learn about and investigate the pH scale, use of indicators and the effectiveness of indigestion remedies. They will have the opportunity to plan and carry out investigations and evaluate their methods.</p>	<p>End of topic test</p>	<p>Revision tasks from homework booklet</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 1 textbook.</p>	<p>Chemical reactions - defining acids and alkalis in terms of neutralisation reactions - the pH scale for measuring acidity/alkalinity; and indicators</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks</p>
<p>Year 8 Autumn Term 8C1 The Periodic Table (7 lessons inc assessment)</p>	<p>In this unit, students will initially revisit their knowledge from Year 7 about elements and atoms but extend this to look at the way the Periodic Table is arranged – division into metals and non- metals, groups and periods. They will have the opportunity to observe and participate in practical work to collect data, analyse patterns and make predictions about the reactivity and properties of the elements found in Group 1, Group 7 and Group 0.</p>	<p>End of topic test</p>	<p>Revision tasks from homework booklet</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 2 textbook.</p>	<p>The Periodic Table - the varying physical and chemical properties of different elements - the principles underpinning the Mendeleev Periodic Table - the Periodic Table: periods and groups; metals and non-metals - how patterns in reactions can be predicted with reference to the Periodic Table - the properties of metals and non-metals - the chemical properties of metal and non-metal oxides with respect to acidity.</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks</p>

<p>Year 8 Spring Term 1 8C2 Separation Techniques (7 lessons inc assessment)</p>	<p>In this unit, students will initially revisit their knowledge from Year 7 about compounds and mixtures but extend this to look at the way that pure substances can be identified by means of melting point and other separation techniques. There is a lot of opportunity for practical work within this module looking at various different method of separation (distillation, evaporation, chromatography etc) which will be picked up again in GCSE.</p>	<p>End of topic test</p>	<p>Revision tasks from homework booklet</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 2 textbook.</p>	<p>Pure and impure substances - the concept of a pure substance - mixtures, including dissolving - diffusion in terms of the particle model - simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography - the identification of pure substances.</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks</p>
<p>Year 8 Spring Term 2 8C3 Metals and acids (9 lessons inc assessment)</p>	<p>In this unit, students will initially revisit their knowledge from Year 7 about acids and alkalis but extend this to look at the way acids react with various other materials and the products made. The unit goes on to look at other reactions and materials particularly the extraction and reactions of metals, and more recent developments in material science such as polymers and composites.</p>	<p>End of topic test</p>	<p>Revision tasks from homework booklet</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 2 textbook.</p>	<p>Chemical reactions - reactions of acids with metals to produce a salt plus hydrogen - reactions of acids with alkalis to produce a salt plus water Materials - the order of metals and carbon in the reactivity series - the use of carbon in obtaining metals from metal oxides - properties of ceramics, polymers and composites (qualitative).</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks</p>
<p>Year 8 Summer Term 8C4 The Earth (8 lessons inc assessment)</p>	<p>This module will build on work from KS2 about the Earth and the atmosphere and moves on to examine the different types of rocks and how they are formed in the rock cycle. Students will also link in with work from Biology about the carbon cycle and the effect on the environment.</p>	<p>End of topic test</p>	<p>Revision tasks from homework booklet</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Activate 2 textbook.</p>	<p>Earth and atmosphere - the composition of the Earth - the structure of the Earth - the rock cycle and the formation of igneous, sedimentary and metamorphic rocks - Earth as a source of limited resources and the efficacy of recycling - the carbon cycle - the composition of the atmosphere - the production of carbon dioxide by human activity and the impact on climate.</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks</p>