

# Year 7 Chemistry Curriculum - 2022-23

	Autumn Term		Spring Term		Summer Term	
	1	2	1	2	1	2
Key Concepts	Matter		Reactions		Earth	
National Curriculum Knowledge & Understanding	<p><b>Particle Model</b></p> <ul style="list-style-type: none"> <li>* The properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure</li> <li>* Changes of state in terms of the particle model.</li> <li>* Conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving</li> <li>* Similarities and differences, including density differences, between solids, liquids and gases</li> <li>* Brownian motion in gases</li> </ul>	<p><b>Pure and Impure substances</b></p> <ul style="list-style-type: none"> <li>* The concept of a pure substance</li> <li>* Mixtures, including dissolving</li> <li>* Diffusion in terms of the particle model</li> <li>* Simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography</li> <li>* The identification of pure substances.</li> </ul>	<p><b>Acids and Alkalis</b></p> <ul style="list-style-type: none"> <li>* Defining acids and alkalis in terms of neutralisation reactions</li> <li>* The pH scale for measuring acidity/alkalinity; and indicators</li> <li>* Chemical reactions as the rearrangement of atoms</li> <li>* Representing chemical reactions using equations</li> </ul>	<p><b>Metals and Non-Metals</b></p> <ul style="list-style-type: none"> <li>* The Periodic Table</li> <li>* The properties of metals and non-metals</li> <li>* Chemical reactions as the rearrangement of atoms</li> <li>* Representing chemical reactions using equations</li> <li>* The chemical properties of metal and non-metal oxides with respect to acidity</li> <li>* Reactions of acids with metals to produce a salt plus hydrogen</li> <li>* Reactions of acids with alkalis to produce a salt plus water</li> </ul>	<p><b>Earths Structure</b></p> <ul style="list-style-type: none"> <li>* The composition of the Earth</li> <li>* The structure of the Earth</li> <li>* The rock cycle and the formation of igneous, sedimentary and metamorphic rocks</li> <li>* Properties of ceramics.</li> </ul>	<p><b>Beyond the Atmosphere</b></p> <ul style="list-style-type: none"> <li>* Our Sun as a star, other stars in our galaxy, other galaxies</li> <li>* The seasons and the Earth's tilt, day length at different times of year, in different hemispheres</li> <li>* The light year as a unit of astronomical distance</li> <li>* Use and derive simple equations and carry out appropriate calculations</li> <li>* Undertake basic data analysis including simple statistical techniques.</li> </ul>

	*Diffusion in liquids and gases driven by differences in concentration * The difference between chemical and physical changes					
Assessment	SKIMP (Southmoor Key Informative Marking Point for each unit of work covered) Separating Mixtures	End of Term / Unit Summative Assessment Matter	SKIMP Teacher Assessment Acids and Alkalis	End of Term / Unit Summative Assessment Reactions	SKIMP Teacher Assessment Earth	End of Year Summative Assessment
Why this? Why now?	A basic understanding of the particle model is the heart of all branches of chemistry which is why it is the first module to be taught in year 7 chemistry. This must be studied at this point as the module Pure and Impure Substances involves the movement of particles. It references links	Pupils have prior knowledge of solutions from KS2. This will be built on enabling pupils to explain how separation techniques work. Pure and Impure substances is taught early in year 7 as it develops aspects of the Particle Model module such as substances are made from particles and these can be a	Acids and Alkalis is taught at this point as pupils now know all substances are made up of particles, but an understanding of neutralisation has to be addressed before pupils can begin to study the Metals and Non-metals topic, when different types of neutralisation reactions are investigated.	This learning module is at this point as it takes concepts from each of the previous modules i.e particles, solutions, and neutralisation and sews them together, while still opening opportunities for continual learning in subsequent modules. For example, in Types of	From KS2 pupils will already know fossils are found in rocks. This unit is taught later in the year as pupils needed to previously learn about mixtures in Pure and Impure Substances and the concept of acids before chemical weathering in the rock cycle could be understood. This unit will explore	This topic links to KS2 as pupils were taught about Earth and Space. This now triangulates making ties with the previous topic of Earths Structure and the Particle Model, as pupils will discover that the outer planets are made from gas, whereas the inner planets are made from rock, like the Earth. This unit builds a

	<p>to aspects of cell transport i.e diffusion in Year 7 Biology; in physics pupils need to be able to apply this model to the Sound module which is taught later in the term when pupils need to be able to explain why sound travels at different speeds in solids, liquids and gases. Pupils will also use the particle model to help access changes in state in the module Heating and Cooling later in year 8.</p>	<p>mixture or pure substances. It is a prerequisite for the topic Acids and Alkalis, as separation techniques are studied, which need to be used to separate a salt from solution. Metals and Non-metals which comes later in the term as pupils will learn that these substances are pure and that their reactions can produce solutions. In year 8 pupils will study Climate and need to be aware that air is a mixture and there is a cross curricular link to Biology, where in the module Gas Exchange Systems in year 8 pupils will learn air is breathed in, challenging the misconception</p>	<p>They will be introduced to the concept of chemical equations which will continue throughout their studies of chemistry. Further application of Acids and Alkalis is needed for study in year 9 where pupils will build on prior knowledge that some gases are acidic and damage the environment in the topic of New Technology. Further cross curricular links are made to develop the use of word equation in Cellular Respiration in year 8 enabling pupils to complete equations to represent photosynthesis and respiration.</p>	<p>Reaction in year 8, where conservation of mass is covered. It introduces the basic periodic table leading to a more detailed study early on in Year 8 in the module The Periodic Table.</p>	<p>rock classification and the abstract notion that rock recycling can produce different types of rocks, leading to how materials can have different properties, which will be developed in more detail in year 8 when pupils study polymers in the early topic of Atoms, Elements and Compounds.</p>	<p>foundation to embed common everyday observations and occurrences to stimulate a natural curiosity in the world around them. An understanding of concepts within this topic will link abstractly to areas such as Energy transfer in year 8, when pupils learn that the Sun emits infra-red radiation and all other types of waves in the electromagnetic spectrum. At KS4, this is continued and some pupils will use pre-existing knowledge and understanding in the module of Space physics.</p>
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Skills & Characteristics	<p><b>Listening</b> Pupils will have opportunities to develop their listening skills throughout the academic year, specifically when being given instructions for investigative work for e.g melting and boiling points. They will also listen to each other throughout group work and opportunities for presenting their work.</p> <p><b>Problem Solving</b> Pupils will use problem solving skills when evaluating the results from investigative processes. They will work collaboratively to explain the results of their practical experiments using scientific reasoning.</p> <p><b>Aiming High</b> All pupils will set clear, tangible goals and which can especially be met during investigative work when following methods and use of level ladders in tasks.</p> <p><b>Teamwork:</b> Pupils will be required to work in a group whilst carrying out practical work or problem-solving activities showing that these skills are necessary in the world of work irrespective of career choice.</p>					
Aspirations & Careers	<p>The science involved in this area correlates with:-</p> <ul style="list-style-type: none"> <li>* Particle physicist</li> <li>* Coffee manufacturing</li> </ul>	<p>The science involved in this area correlates with:-</p> <ul style="list-style-type: none"> <li>* Vaccine production</li> <li>* Food technology</li> <li>* Testing beverages</li> </ul>	<p>The science involved in this area correlates with:-</p> <ul style="list-style-type: none"> <li>* Pharmaceuticals</li> <li>* Pottery</li> <li>* Production of paints</li> </ul>	<p>The science involved in this area correlates with:-</p> <ul style="list-style-type: none"> <li>* Chemical technician</li> <li>* Medicines</li> </ul>	<p>The science involved in this area correlates with:-</p> <ul style="list-style-type: none"> <li>* Geologist</li> <li>* Geophysics</li> <li>* Volcanologist</li> </ul>	<p>The science involved in this area correlates with:-</p> <ul style="list-style-type: none"> <li>* Cosmology</li> <li>* Astrobiology</li> <li>* Travel and Tourism</li> </ul>
	<p><b>CEIAG</b> Medical Experience days Careers Fairs Work Experience</p> <p><b>Cultural Capital</b> Pupils are encouraged to make links between current events, such as using hybrid vehicles and climate change and our Chemistry learning in the classroom. All pupils take advantage of our excellent links with the RSC and Newcastle University for off site visits and in school activities.</p>					

**Extracurricular**  
Stem Club  
Durham University  
Chemistry Lecture series

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
7	<p>Pupils use their knowledge related to materials, their properties and the Earth, to recognise, and describe some common materials, and their sensory properties, such as the texture and appearance of rocks. They communicate their descriptions and observations in terms of these properties. They recognise evidence that has been used to answer a question such as identifying similar materials and make links between science and everyday objects and experiences such as waterproof materials being used to keep things dry.</p> <p><b>Working Scientifically</b> Pupils respond to prompts to suggest practical ways to find answers to questions. They make observations about features of objects, living things and events. They communicate their findings in ways such as talking about their work in everyday terms, or through drawings or by completing pictograms</p>	<p>Pupils use their knowledge related to materials, their properties and the Earth to identify a range of common materials and some of their properties. They recognise, and describe similarities and differences between the materials they observe, using these to sort them into groups. They recognise and describe ways in which some materials are changed by heating or cooling or by processes such as bending or stretching. They suggest answers to questions, such as the best material to reflect light, based on their own ideas and evidence. They identify science in everyday contexts and say whether it is helpful, for example ice melting.</p> <p><b>Working Scientifically</b> Pupils respond to suggestions and make their own suggestions, with help, about how to collect relevant data and answer questions. They find information by using texts, with help. They follow direct instructions in order to stay safe. They make observations and measurements to compare living things, objects and events, using equipment provided for them. They record findings using prepared tables and communicate observations using scientific vocabulary. They say whether what happened was what they expected and, when prompted, suggest different ways they could have done things.</p>	<p>Pupils use knowledge and understanding of materials, their properties and the Earth to sort materials into groups in a variety of ways, according to their properties. They explain the ways in which some materials are suited to specific purposes such as glass for windows or copper for electrical cables. They classify changes in materials as reversible, such as water freezing, and non-reversible, such as baking of cakes. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example the evaporation of water. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example sustainable packaging.</p> <p><b>Working Scientifically</b> Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks with help. They make relevant observations and measure quantities, such as length or mass, selecting and using a range of simple equipment. They carry out fair tests with some help, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found</p>

			out and suggest improvements in their work.
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