

Year 7 Chemistry Curriculum – 2020-21

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

	<p>between solids, liquids and gases</p> <ul style="list-style-type: none"> * Brownian motion in gases * Diffusion in liquids and gases driven by differences in concentration * The difference between chemical and physical changes * The differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice-water transition * Atoms and molecules as particles. 			<p>produce a salt plus hydrogen</p> <ul style="list-style-type: none"> * Reactions of acids with alkalis to produce a salt plus water 		
Assessment	<p>End of Unit Assessment</p> <p>Badger Assessment</p>	<p>End of Unit Assessment</p> <p>Badger Assessment</p> <p>End of term Summative Assessment</p>	<p>End of Unit Assessment</p> <p>Badger Assessment</p>	<p>End of Unit Assessment</p> <p>Badger Assessment</p> <p>End of term Summative Assessment</p>	<p>End of Unit Assessment</p> <p>Badger Assessment</p>	<p>End of Unit Assessment</p> <p>Badger Assessment</p> <p>End of term Summative Assessment</p>

<p>Why this? Why now?</p>	<p>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 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</p>	<p>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 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</p>	<p>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. 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</p>	<p>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 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>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 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</p>	<p>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.</p>
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	<p>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>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 that only oxygen is inhaled.</p>	<p>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>Atoms, Elements and Compounds.</p>	
<p>Skills & Characteristics</p>	<p>Listening 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>Problem Solving 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>Aiming High 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>Teamwork: 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	The science involved in this area correlates with:- * Particle physicist * Coffee manufacturing	The science involved in this area correlates with:- * Vaccine production * Food technology * Testing beverages	The science involved in this area correlates with:- * Pharmaceuticals * Pottery * Production of paints	The science involved in this area correlates with:- * Chemical technician * Medicines	The science involved in this area correlates with:- * Geologist * Geophysics * Volcanologist	The science involved in this area correlates with:- * Cosmology * Astrobiology * Travel and Tourism

Year Group	Basic (Lower Ability End Points)	Clear (Middle Ability End Points)	Detailed (Higher Ability End Points)
7	Pupils use their knowledge and understanding of chemistry concepts related to materials, their properties, and the Earth, to recognise, and identify and state similarities and differences between some common materials, and their sensory properties, such as the texture and appearance of rocks. They can use basic scientific terminology about matter, reactions, and the Earth. 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 use simple scientific ideas with evidence they have collected to give simple explanations of their observations, linking cause and effect, for example adding universal indicator to a substance, will cause the indicator to change colour depending on the pH of the liquid.	Pupils use their knowledge and understanding of chemistry concepts related to materials, their properties and the Earth to describe similarities and differences between the materials they observe, using these to sort them into groups, for example they can use chemical and physical properties to determine whether a substance is a metal or non-metal. They can use a range of scientific terminology correctly about matter, reactions and the Earth. They recognise and describe ways in which some materials are changed by heating or cooling or by reacting them together. Pupils use questions based on their own ideas and evidence they have collected such as in neutralisation reactions with evidence to give scientific explanations of their observations. They recognise some applications and implications of science, such as the use of antacid tablets and why only a specific amount would be consumed.	Pupils use knowledge and understanding of chemistry concepts, processes and phenomena related to materials, their properties and the Earth to explain similarities and differences between the materials they observe using these to sort them into groups. For example they can use chemical and physical properties to justify the use of specific metals and non-metals for different applications, using data provided. They can use a wide range of scientific terminology correctly about matter, reactions and the Earth. Pupils can explain ways in which some materials are changed by heating or cooling or by reacting them together and can suggest the identity of an unknown metal, given information about their reactions. They apply and use knowledge and understanding to make predictions in unfamiliar contexts, such as predicting planetary conditions from the descriptions of rocks on other planets.
	Working Scientifically	Working Scientifically	Working Scientifically

	<p>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 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 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 out and suggest improvements in their work.</p>
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