



	Acids and alkalis	Mixtures and separations	The particle model	Atoms, elements and compounds
Key concepts	Acids and alkalis and how they are described using a pH number. It looks at neutralisation reactions and some of their uses, and also introduces standard hazard symbols.	Materials, specifically mixtures, solutions and separation techniques. This provides opportunities to introduce the methods of working in a science lab, which will differ from the science learning experience that most students will have had previously.	This unit develops an understanding of the different properties of solids, liquids and gases. Scientific method and ideas on experiments, observation, hypotheses and theories are discussed, leading to an understanding of the particle theory of matter.	Introduce ideas about the make-up of matter. It expands on particle theory and explains the differences between atoms, and molecules, elements and compounds. It looks at the symbols and formulae for elements and compounds. The involvement of chemical reactions in the formation and decomposition of compounds is also covered. It links these with the more abstract ideas of particle models, naming compounds and word equations.
Themes	Hazardous substances	Providing clean drinking water.	Waste management and disposal	Resources from the Earth and atmosphere
Challenge	Outcomes, questioning, tasks and worksheets in all lessons. Regular progress checks.	Outcomes, questioning, tasks and worksheets in all lessons. Regular progress checks.	Understanding sentence construction in order to develop sentences that can be used as part of a fluid writing style that communicates information clearly.	Outcomes, questioning, tasks and worksheets in all lessons. Regular progress checks.
Support				
Literacy focus	Identify nouns and noun phrases. Develop titles for text, diagrams, charts and graphs in order to present ideas and opinions clearly.	Use conventions and symbols when communicating science.	How scientists use language to measure and compare by applying adjectives, comparatives and superlatives.	The use of facts and opinions to inform and persuade
Numeracy focus	Reading and plotting line graphs. Drawing bar charts.	N/A	Converting between metres and nanometres. Calculating volumes using simple formulae.	Qualitative and quantitative data. The use of: tables; line graphs; scatter graphs; pie charts; and bar charts.
Cross-curricular links	Geography (liming fields). Food technology – taste tests, complimentary ingredients	D&T – design and construction of a solar still. Geography - Economy and the availability of drinking water	Geography – use of land/environmental pollution/air pressure/weather History – changing nature of rubbish/funding for science pre 1800s Art – recycling waste into art – looking at how the ideals of art have changed over time.	Geography – composition of the atmosphere/consumption of resources. Maths – data handling. History – Use of metals during the Bronze/Iron Ages.
SMSC & MBV	Various group work and problem-solving skills such as investigations and experiments. Symbols and their meanings – rule of law/moral. Discussion of cleaning products; is it advisable to use in a well ventilated	Various group work and problem-solving skills such as investigations and experiments. Explore the different materials that could be used to filter water within the environment.	Various group work and problem-solving skills such as investigations and experiments. Consider some history within science such as the ideas and inventions of specific scientists Discuss why the Higgs Boson particle is otherwise known as the 'God Particle'	Various group work and problem-solving skills such as investigations and experiments. Consider some history within science such as the ideas and inventions of specific scientists

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	room. Explore the use of symbols in industry/life.	Students investigate methods of providing safe drinking water for disadvantaged communities around the world and the impact that this can have on their lives		
ASSESSMENTS	Waterfall assessment 3	Waterfall assessment 1	Waterfall assessment 4	Waterfall assessment 6
Out of school learning	Seneca and Educake	Seneca and Educake	Seneca and Educake	Seneca and Educake

Scheme of Work

SUBJECT - CHEMISTRY

YEAR - 7



Mixtures and separation				
Lesson	Key concepts	Learning outcomes	Differentiation	Resource
1	Mixtures - introduces the unit in the context of providing clean drinking water, revising the concepts of mixtures, sieving and filtering from KS2.	B1 Describe mixtures B2 Classify mixtures B3 Describe how insoluble solids can be separated from a liquid	Outcomes, questioning, tasks and worksheets in all lessons.	U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Mixtures and separation\Lesson 1 - Mixtures
2	Solutions - covers solutions as a specific type of mixture, and introduces related terminology. How the solubility of salts is affected by the temperature of the solution.	B1 Describe how soluble substances can form solutions B2 Identify the solute and solvent in a solution B3 Describe the effects of different variables on solubility		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Mixtures and separation\Lesson 2 - Solutions
3	Evaporation - consider hazards, risks and safety in the lab, particularly in relation to using a Bunsen burner for heating and carrying out evaporation to dryness of a salt solution. Evaporation, using the context of producing table salt from brine, is looked at, with the introduction of boiling and boiling points.	B1 Describe evaporation and boiling B2 Describe how solutes can be separated from a solution by evaporation B3 Describe differences between evaporation and boiling		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Mixtures and separation\Lesson 3 - Evaporation
4	Chromatography - looks at chromatography as a way of identifying the substances within mixtures.	B1 Describe chromatography B2 Describe how chromatography can be used to identify substances in a mixture B3 Explain how chromatography works		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Mixtures and separation\Lesson 4 - Chromatography
5	Distillation - as one example of desalination, in order to produce drinking water from salty water. The range of problems we need to overcome so that we can produce clean drinking water for everyone.	B1 Describe desalination B2 Explain how distillation can be used to separate a solvent from a solution B3 Give examples of where distillation is used		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Mixtures and separation\Lesson 5 - Distillation



Acids and alkalis				
Lesson	Key concepts	Learning outcomes	Differentiation	Resource
1	Hazards - some of the reasons why dangerous chemicals are kept in the home. The main part of the topic looks at some of the hazards of acids and alkalis, and how the hazard can be reduced by dilution. The meanings of some standard hazard symbols are introduced, and ways of recognising and reducing risks in laboratory work are discussed.	B1 Recognise some common hazard symbols B2 Explain why hazard symbols are necessary B3 Recognise some common acids	Outcomes, questioning, tasks and worksheets in all lessons.	U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Acids and alkalis\Lesson 1
2	Indicators - use of indicators to determine whether a liquid is an acid, an alkali or neutral.	B1 Describe an indicator B2 Name examples of indicators made from plants B3 Describe how indicators can be used to test for acidic, alkaline or neutral solutions		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Acids and alkalis\Lesson 2
3	Acidity and alkalinity- introduces the pH scale as a way of describing how acid or alkaline a substance is and the use of universal indicator to measure pH.	B1 Name some common examples of acids and alkalis B2 Describe the pH scale and how it is useful B3 Describe how pH can be measured		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Acids and alkalis\Lesson 3
4	Neutralisation - introduces the idea of neutralisation and shows how word equations can be used to model chemical reactions.	B1 Describe what happens during neutralisation B2 Write word equations for neutralisation reactions B3 Explain the pH changes taking place during neutralisation		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Acids and alkalis\Lesson 4
5	Neutralisation in daily life - introduces the term 'base' and explains some practical uses of neutralisation reactions.	B1 Identify some acids and antacids B2 Describe some examples of everyday acids and bases B3 Describe and explain some everyday neutralisation reactions		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Acids and alkalis\Lesson 5



The particle model				
Lesson	Key concepts	Learning outcomes	Differentiation	Resource
1	Solids, liquids and gases - describes the different properties of solids, liquids and gases, in terms of shape, volume and compressibility. It is presented in the context of waste management and disposal.	B1 Name the three states of matter and give examples of each B2 Describe what the three states of matter are like, based on their properties B3 Identify materials that are difficult to classify as solids, liquids or gases	Outcomes, questioning, tasks and worksheets in all lessons.	U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\The particle model\Lesson 1 - States of Matter
2	Particles - explains the concepts of hypotheses and theories in the context of scientific methods and introduces the particle theory of matter to explain the basic properties of solids, liquids and gases.	B1 Recognise that all matter is made up of particles B2 Describe, draw and recognise the arrangement of particles in solids, liquids and gases B3 Use the particle theory to explain the properties of the three states of matter		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\The particle model\Lesson 2 - Particles
3	Brownian motion - discusses Brownian motion, and how its explanation using particle theory finally established the theory within the scientific community.	B1 Explain how Brownian motion supports particle theory B2 Explain how scientific theories evolve B3 Convert between nanometres and metres		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\The particle model\Lesson 3 -
4	Diffusion - uses the particle theory to explain diffusion in different situations.	B1 State what is meant by diffusion and recall some of its effects B2 Use particle theory to explain diffusion in liquids and gases B3 Use particle theory to explain why diffusion is faster in some materials than others		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\The particle model\Lesson 4 - Diffusion
5	Air pressure - looks at explanations and applications of gas pressure.	B1 Describe pressure B2 Say what is meant by gas pressure and recall some of its effects B3 Describe the cause of gas pressure using particle theory		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\The particle model\Lesson 5 - Air pressure



Atoms, elements and compounds				
Lesson	Key concepts	Learning outcomes	Differentiation	Resource
1	The air we breathe - reviews chemical and physical change and introduces basic definitions of atoms, molecules, element, compounds and mixtures.	B1 Describe atoms B2 Recognise the difference between atoms and molecules B3 Identify elements, mixtures and compounds from descriptions and particle diagrams	Outcomes, questioning, tasks and worksheets in all lessons.	U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Atoms, elements and compounds\Lesson 1
2	Earth's elements - investigates elements and provides some examples with their symbols. The periodic table is introduced as a special list of all known elements.	B1 Use chemical symbols for common elements and explain why they are an international code B2 Recall that different elements have different properties and uses B3 Explain that our resources of elements are limited and can run out		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Atoms, elements and compounds\Lesson 2
3	Metals and non-metals - uses the properties of elements to classify them into metals and non-metals. It also looks at how the properties of substances are linked to their uses.	B1 Describe some common properties of metals B2 Describe and identify metals and non-metals by their properties B3 Relate the use of an element to its properties		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Atoms, elements and compounds\Lesson 3
4	Making compounds - looks at the formation of compounds from elements and the difference in properties between elements and compounds. It also introduces ideas about naming simple compounds.	B1 Describe changes you might see when compounds are formed B2 Identify elements, compounds and mixtures from descriptions and particle diagrams B3 Name simple compounds		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Atoms, elements and compounds\Lesson 4
5	Chemical reactions - reviews chemical reactions and applies them to thermal decomposition reactions. It also extends ideas about naming compounds and further develops the idea of word equations from Acids and Alkalis.	B1 Describe a chemical reaction B2 Use and understand word equations for chemical reactions B3 Describe examples and uses of decomposition reactions		U:\Subject Areas\Science\Schemes of work\2019 onwards\Year 7\Chemistry\Atoms, elements and compounds\Lesson 5