

<b>Subject</b>	<b>Chemistry</b>		<b>Year Group:</b>	<b>7</b>		
<b>Unit/Topic</b>	<b>Particles and their Behaviour</b>	<b>Elements, Atoms, Compounds</b>		<b>Reactions</b>	<b>Acids and Alkalis</b>	
<b>Skills</b>	<p>AF1 – Thinking scientifically. Practical skills gained in ‘How does the volume of water affect the time taken to reach boiling?’ Potential crossover with ‘Thermal energy and temperature’ in the Energy module of Physics.</p>	<p>AF4 – Using investigative approaches. Research project to investigate metals, their properties and uses.</p> <p>Explain choices in equipment/ information sources.</p> <p>Making repeat measurements/ observations.</p> <p>Assessing risk.</p>	<p>AF4 – Using investigative approaches -. Identify control variables. Select equipment or information sources from those provided to address a question or idea under investigation e. Make some accurate observations or whole number measurements relevant to questions or ideas under investigation. Recognise obvious risks when prompted.</p>	<p>AF4 – Using investigative approaches -. Identify control variables. Select equipment or information sources from those provided to address a question or idea under investigation e. Make some accurate observations or whole number measurements relevant to questions or ideas under investigation. Recognise obvious risks when prompted.</p>		
<b>Knowledge</b>	<p>The properties of materials can be explained by their particles, specifically their motion, arrangement and energy. A substance is solid below its melting point and liquid below boiling point (but above melting point) and a gas above the boiling point.</p>	<p>Knowledge of properties of elements and exceptions/ oddities.</p> <p>Using ideas of states of matter to deduce or explain the state of a material at room temperature.</p> <p>Reactions of metals with oxygen and acids.</p> <p>Reactivity series.</p> <p>Describing physical or chemical change using scientific terminology.</p>	<p>During a chemical reaction, bonds are broken (requires energy) and new bonds are formed (releasing energy). If the energy released is greater than the energy required, the reaction is exothermic. If the opposite is true, the reaction is endothermic.</p>	<p>The difference between an acid and alkali and what the pH scale is. Understanding what an indicator is and how it is used in science. Mixing an acid and an alkali produces a chemical reaction, neutralisation, which forms a chemical called a salt and water.</p>		
<b>Recall/review from previous learning</b>	<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p> <ul style="list-style-type: none"> <li>Be able to compare and group materials together</li> </ul>	<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p> <ul style="list-style-type: none"> <li>Making comparisons.</li> </ul>	<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p>	<p>1-5 recall starters (recall from previous lessons)</p> <p>Lessons building on from KS2</p>		

	<p>based on whether they are a solid, liquid or a gas.</p> <ul style="list-style-type: none"> <li>Observe that materials can change state when either heated or cooled.</li> <li>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Using keywords to describe the properties of materials; such as hardness, solubility, transparency, conductivity and response to magnets.</li> <li>Describing the uses of materials specific to their properties.</li> </ul>	<ul style="list-style-type: none"> <li>Distinguish between an object and the material it is made from.</li> <li>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</li> <li>Describe the simple physical properties of a variety of everyday materials.</li> <li>Compare and group together a variety of everyday materials based on their simple physical properties.</li> </ul>	<ul style="list-style-type: none"> <li>Naming acids and alkalis</li> <li>Identifying hazards</li> </ul>
<b>Assessment</b>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis)</p> <p>Summative Interleaving Assessments</p> <p>In class questioning</p> <p>Literacy – extended writing tasks.</p> <p>Self and peer assessment.</p>
<b>Cultural Capital</b>	<p>To be able to describe and explain changes in the world around us including the states of water eg, ice, liquid water and steam/ vapour, which may also relate to weather.</p> <p>Link to condensation after boiling the kettle/ taking a shower.</p> <p>How chocolate melts in the mouth.</p>	<p>Being able to classify materials around us as an atom, element or compound</p>	<p>Identify chemical reactions used in every day life Links to chemical industry – companies that produce household products such as Unilever and Johnson and Johnson.</p>	<p>Classifying everyday materials such as orange juice or bleach as acids or alkalis. What acids and alkalis are used for.</p>
<b>Literacy/Numeracy</b>	<p>Literacy – extended writing assessments, describe and explain work.</p>	<p>Literacy – extended writing assessments e.g. big write, describe and explain work, spelling tests</p>	<p>Literacy – extended writing assessments e.g. big write, describe and explain work, spelling tests</p>	<p>Literacy – extended writing assessments e.g. big write,</p>

	Numeracy – interpreting graphs is a major component. Taking measurements of temperature. Taking repeat measurements. Calculating means.	Numeracy – exploring data, constructing graphs and calculating means.	Numeracy – interpreting graphs, reading a scale, taking measurements, plotting results.	describe and explain work, spelling tests Numeracy – interpreting graphs, reading a scale, taking measurements, plotting results.
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<b>Subject</b>	<b>Chemistry</b>		<b>Year Group:</b>	<b>8</b>		
<b>Unit/Topic</b>	<b>Periodic table</b>	<b>Metals and materials</b>			<b>The Earth</b>	<b>Separation Techniques</b>
<b>Skills</b>	AF1 – Thinking scientifically. Describing the properties of different substances. Explaining the properties of different substances.	AF4 – Using investigative approaches. Research project to investigate metals, their properties and uses. Explain choices in equipment/ information sources. Making repeat measurements/ observations. Assessing risk.			AF1 – Thinking Scientifically Literacy and interpretation skills of recycling and global warming. Making observations from experiments and describing the results.	AF4 – Using investigative approaches – using a Bunsen burner to crystallisation, doing basic filtration using a funnel and learning how to use basic laboratory equipment safely. How to carry out a risk assessment.
<b>Knowledge</b>	Naming elements and compounds Structure of an atom Naming elements in group 1 and 7, describing elements and reactivity and explaining their reactivity. Describing polymers	Knowledge of properties of elements and exceptions/ oddities. Using ideas of states of matter to deduce or explain the state of a material at room temperature. Reactions of metals with oxygen and acids. Reactivity series. Describing physical or chemical change using scientific terminology.			Knowledge of the structure of the earth and different types of rock. Identifying and describing different stages in the rock cycle. Describing the earth's resources and how humans use them including recycling of materials. Why do humans use metals and how are metals extracted. What are greenhouse gases, how are they produced and what is their effect on the atmosphere.	Knowledge of how to tell if a substance is soluble or insoluble. The difference between a hazard and a risk. Understanding the difference between a solute, solvent and solution.
<b>Recall/review from previous learning</b>	1-5 recall starters (recall from previous lessons)  Lessons building on from KS2  Identify and compare different everyday materials. Give reasons, based on evidence from tests, for the uses of everyday objects.	1-5 recall starters (recall from previous lessons)  Lessons building on from KS2  Making comparisons. Using keywords to describe the properties of materials; such as hardness, solubility, transparency, conductivity and response to magnets. Describing the uses of materials specific to their properties.			1-5 recall starters (recall from previous lessons)  Lessons building on from KS2  Compare and group together different types of rock. Formation of fossils Know that rocks and soils are made from organic matter.  From Yr 7:	1-5 recall starters (recall from previous lessons)  Lessons building on from KS2  Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

	<p>From Yr 7: Describing substances (Particles and Separating Solutions topics). Describing chemical reactions (Chemical reactions topic).</p>	<p>Explaining new materials can be formed from reactions of burning and the action of acid.</p>	<p>Describing the different properties of substances (Separating Solutions)  From Yr 8: Properties of metals (Periodic table).</p>	<ul style="list-style-type: none"> <li>•Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>•Demonstrate that dissolving, mixing and changes of state are reversible changes</li> </ul>
<b>Assessment</b>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments In class questioning Literacy – extended writing tasks. Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments In class questioning Literacy – extended writing tasks. Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments In class questioning Literacy – extended writing tasks. Self and peer assessment.</p>	<p>Formative assessment – end of topic tests. (Pupil receives percentage, step and band taken for data analysis) Summative Interleaving Assessments In class questioning Literacy – extended writing tasks. Self and peer assessment.</p>
<b>Cultural Capital</b>	<p>Everything is made up of atoms and elements. Use of chemical symbols and formula instead of names of elements/compounds to communicate with scientists across the world. 'Job of the lesson' promoted each lesson.</p>	<p>The ability to accurately describe the properties of materials and predict what will happen during reactions, for example the reaction of metals and acids can link to pollution and erosion by acid rain. Reactions of metals and oxygen can link to rusting.</p>	<p>Extraction of metals – uses of particular metals in everyday life and how extraction of metals impacts the environment. Importance and need to recycle materials. What is global warming and how does human activity contribute to global warming. 'Job of the lesson' promoted each lesson.</p>	<p>Being able to classify materials around us (air, water, milk) as either pure or a mixture.  How we can separate mixtures in industry – e.g. oil, water treatment.</p>

<b>Literacy/Numeracy</b>	<p>Literacy – extended writing assessments, describe and explain work and a Big Write.</p> <p>Numeracy – interpreting graphs</p> <p>Two spelling tests of key words per topic.</p>	<p>Literacy – the big write extended writing.</p> <p>Numeracy – exploring data, constructing graphs and calculating means.</p>	<p>Literacy – interpreting information about recycling in the Skills lesson and information about global warming and a Big Write.</p> <p>Numeracy – interpreting graphs and identifying trends.</p> <p>Two spelling tests of key words per topic.</p>	<p>Literacy – extended writing assessments e.g. big write, describe and explain work, spelling tests</p> <p>Numeracy – interpreting graphs, taking measurements, plotting results.</p>
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<b>Subject</b>	<b>Chemistry</b>		<b>Year Group:</b>	<b>9</b>		
<b>Unit/Topic</b>	<b>Particle model and state change</b>	<b>Atomic structure and the periodic table</b>			<b>Chemical changes</b>	<b>Useful chemical reactions</b>
<b>Skills</b>	<p>AF4 – using investigative approaches</p> <p>Practical skills – using thermometers and investigating melting / boiling points.</p> <p>Math skills – calculating and interpreting data from graphs and investigations.</p>	<p>AF5 – working critically with evidence</p> <p>Practical skills – separation techniques. And reactivity of elements</p> <p>Research skills – development of the atom and why reactivity changes within groups.</p>			<p>AF3 – communicating and collaborating in science.</p> <p>Practical skills – investigating conservation of mass and energy changes in a chemical reactions. Reading equipment e.g. thermometer or stopwatch</p> <p>Maths skills – interpreting graphs and tables with data. Calculating energy changes from experimental data</p>	<p>AF1 – thinking scientifically</p> <p>Practical skills – reactivity of elements in different groups and displacement reactions and extracting metals.</p> <p>Research skills – metals ores and their uses.</p> <p>Maths skills – calculating yields and relative mass calculations.</p>
<b>Knowledge</b>	<p>Use of the particle model</p> <p>Substances and states of matter</p> <p>Sublimation and changes of state</p> <p>Limitations of the particle model</p>	<p>Atomic structure (proton, neutron, electrons)</p> <p>Ions (cover more in year 10) and isotopes</p> <p>How the periodic table has developed</p> <p>How the electronic structure links with reactivity</p> <p>Properties of alkali metals, halogens and why Nobel gases are unreactive.</p>			<p>Chemical and Physical changes</p> <p>Chemical equations</p> <p>Conservation of mass</p> <p>Energy in chemical reactions</p> <p>Definitions of exothermic and endothermic.</p>	<p>Chemical reactions</p> <p>Using metals</p> <p>The reactivity series</p> <p>Displacement reactions</p> <p>Extracting metals</p> <p>Catalysts</p> <p>Relative mass</p> <p>Calculating yields</p>
<b>Recall/review from previous learning</b>	<p>Knowledge from previous work on simple states of matter and investigating particles and from year 7 and 8.</p>	<p>Knowledge from previous work on atoms and periodic table from year 7 and 8.</p>			<p>Knowledge from previous learning on reactants/products and recognising if simple reactions have occurred from year 7 and 8</p>	<p>Knowledge from previous learning on metals and their reactivity from year 7 and 8</p>
<b>Assessment</b>	<p>Formative assessment (end of topic tests)</p> <p>Questioning during class</p>	<p>Formative assessment (end of topic tests)</p> <p>Questioning during class</p>			<p>Formative assessment (end of topic tests)</p> <p>Questioning during class</p> <p>Extended writing and literacy activities</p>	<p>Formative assessment (end of topic tests)</p> <p>Questioning during class</p>

	<p>Extended writing and literacy activities.</p> <p>Both peer and self-assessment</p> <p>Summative interleaving assessment.</p>	<p>Extended writing and literacy activities.</p> <p>Both peer and self-assessment .</p> <p>summative interleaving assessment.</p>	<p>Both peer and self-assessment.</p> <p>Summative interleaving assessment.</p>	<p>Extended writing literacy activities.</p> <p>Both peer and self-assessment interleaving assessment.</p>
<b>Cultural Capital</b>	<p>Understanding how energy links to particles and an objects property.</p> <p>Job of the lesson promoted at the beginning of a lesson.</p> <p>Cross curricular – DT (resistant materials), DT (Food)</p>	<p>Everything is made up of atoms and elements.</p> <p>Use of balanced symbol equations to communicate with scientists across the world.</p> <p>‘The principles underpinning the Mendeleev Periodic table and how the current periodic table came to be.</p> <p>How the reactivity of elements in the same group can be predicted by looking at the periodic table</p> <p>Job of the lesson’ promoted each lesson.</p> <p>Cross curricular – English, History,</p>	<p>Most things involve chemical reactions and this involves transfer of energy and the mass of reactants and products stays the same.</p> <p>Cross curricular – DT (food), DT (resistant materials) ,</p>	<p>Understanding of need for a compromise between yield and rate in industry and about resources like metals running out and why this is problematic.</p> <p>Cross curricular – DT(resistant materials), Geography, computing, Maths</p>
<b>Literacy/Numeracy</b>	<p>Literacy – Extended writing assessments, describe and explain work.</p> <p>Numeracy – Interpreting graphs and collecting data to analyse.</p>	<p>Literacy - Extended writing comparing reaction questions</p> <p>Numeracy – balancing equations, interpreting graphs - to identify how atomic mass links to boiling and melting point/</p>	<p>Literacy - Extended writing including describing analysisng and explaining.</p> <p>Numeracy – weighing and using various scales and converting units</p>	<p>Literacy -Extended writing comparing the reactivity of various metal elements and how they can link to use and quantity of resources.</p> <p>Numeracy – calculating relative mass values and calculating yields from investigations.</p>

<b>Subject</b>	<b>Chemistry</b>	<b>Year Group:</b>	<b>10</b>	
<b>Unit/Topic</b>	<b>Chemical Changes</b>	<b>Structure and Bonding</b>		<b>Electrolysis</b>
<b>Skills</b>	Mixing of reagents to explore chemical changes and/or products	Learning how to represent different types of bonding e.g., using dot and cross diagrams.		Higher only – write half equations for electrolysis. Measuring of solutions and using a power pack safely to conduct electrolysis. Interpreting results.
<b>Knowledge</b>	Acids are neutralised by alkalis and bases. Salt solutions by reacting solid insoluble substances with acids. Salt solutions can be crystallised to produce solid salts. A strong acid completely ionises in water whereas a weak acid only partially ionises in water.	Describe the process of melting, freezing, boiling and condensing. Explain, in terms of particles, the energy and temperature of a substance when it is at the melting point or boiling point. Use the particle model to describe how energy, movement, and attraction between particles change as a substance is heated or cooled. Describe, with an example of each, ionic, simple covalent, giant covalent and metallic bonding. Draw dot and cross diagrams for ionic and covalent bonding.		When an ionic compound is melted or dissolved in water, the ions are free to move. When an ionic compound is a solid, the ions aren't free to move. Passing an electric current through electrolytes causes the ions to move to electrodes. Positive ions move to the negative electrode, negative ions move to the positive electrodes. Aluminium is extracted from aluminium oxide using electrolysis as aluminium is more reactive than carbon. This process requires cryolite to reduce the melting point of aluminium oxide and the positive electrode need to be continually replaced.
<b>Recall/review from previous learning</b>	1-5 recall starters pH of acids and alkalis. Naming of acids and salts.	1-5 recall starters. Electronic structure (y9)		1-5 recall starters Definition of an ion (y9) Ionic bonding (structure and bonding)
<b>Assessment</b>	End of topic test	End of topic test		End of topic test
<b>Cultural Capital</b>	Having a greater understanding of how household cleaning chemicals work.	Linking the properties of familiar substances (such as graphite in a pencil or diamond) to bonding and structure.		How metals are extracted for use in everyday products such as mobile phones or jewellery.
<b>Literacy/Numeracy</b>	Reading an instructional method to do a practical. Reading off measurements	Counting numbers of electrons and numbers of bonds.		Descriptions of what happens at each electrode, measuring solutions.

<b>Subject</b>	<b>Chemistry</b>	Year Group:	<b>10</b>	
<b>Unit/Topic</b>	<b>Chemical Calculations</b>			
<b>Skills</b>	Recognise and use: expressions in decimal form, standard form, significant figures. Change the subject of an equation. Understanding and being able to manipulate ratios.			
<b>Knowledge</b>	Definition of relative formula mass, moles, understanding how Avogadro's constant is linked to moles, calculating empirical formula.			
<b>Recall/review from previous learning</b>	1-5 recall starters. Basic SI units (grams, seconds, ml) from KS3			
<b>Assessment</b>	End of topic test			
<b>Cultural Capital</b>	Skills that are taught in this topic relate to real life concepts such as changing ratios for a recipe.			
<b>Literacy/Numeracy</b>	Converting between different units. See skills.			

<b>Subject</b>	<b>Chemistry</b>	Year Group:	<b>11</b>	
<b>Unit/Topic</b>	<b>Hydrocarbons</b>	<b>Chemical analysis</b>		<b>The Earths atmosphere</b>
<b>Skills</b>	WS 1.2	WS 2.2, 4.1, 1.4, 3.1, 2.3		WS 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3.5, 3.6, 4.1
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>Crude oil is a mixture of hydrocarbons</li> <li>Crude oil is a finite resource</li> <li>Recognise formula and structure of (alkanes and alkenes)</li> <li>Fractional distillation</li> <li>Properties of hydrocarbons (viscosity, boiling point, flammability)</li> <li>Cracking</li> </ul>	<ul style="list-style-type: none"> <li>Pure substances and formulations</li> <li>Chromatography</li> <li>Testing for gases</li> </ul>	<ul style="list-style-type: none"> <li>Early and evolving atmosphere</li> <li>Present day composition of atmosphere</li> <li>Greenhouse gases and Greenhouse effect</li> <li>global warming evidence</li> <li>Carbon footprint and atmospheric pollution</li> </ul>	
<b>Recall/review from previous learning</b>	Y9 Covalent bonding Y7 Energy in fuels	Y7 Separating mixtures		Y8 Earth Topic – Greenhouse gases
<b>Assessment</b>	Mid-topic assessment Educake Science End of topic test Mock exam In-class questioning In-class exam Q and self-assessing	Mid topic assessment Educake science Seneca learning End of topic test Mock exam Teacher questioning Required practical – testing for ions		Mid-topic assessment Educake science End of topic test Mock exam Questioning In-class AfL
<b>Cultural Capital</b>	Awareness of supply 'v' demand for fuels. Suitability for different hydrocarbons for specific purposes. Environmental impact of burning hydrocarbons.	Formulations specially designed for a purpose Importance of testing food colourings for safety		Effect of human actions on climate change. Examining data of carbon footprint form different countries. Reducing carbon footprint is a worldwide problem.
<b>Literacy/Numeracy</b>	Terminology of naming homologous series Calculating formula of alkanes from structure Balancing equations for cracking of hydrocarbons	MS 1a, 1c, 1d, 2a		Key terms: naming gases in atmposphere and greenhouse gases Graphs of temperature change Graphs of carbon dioxide levels Internation carbon footprint data MS 1c

<b>Subject</b>	<b>Chemistry</b>	Year Group:	<b>11</b>	
<b>Unit/Topic</b>	<b>The Earths resources</b>			
<b>Skills</b>	WS 1.3, 4, 5, 3.2 Required prac 13			
<b>Knowledge</b>	Finite and renewable resources			

	Recycling Potable water Treating waste water Ores Life Cycle Assessments Recycling		
<b>Recall/review from previous learning</b>	Y8 Earth topic – resources and recycling		
<b>Assessment</b>	Mid-topic assessment, educake, end of topic test, questioning, AfL within lesson. Required practical 13		
<b>Cultural Capital</b>	Appreciation that not all countries have fresh water sources so must obtain clean water by desalination of sea water.		
<b>Literacy/Numeracy</b>	MS 1a, 1c, 1d, 2a, 2c, 4a, 2h Key terms: finite, potable, desalination, Life cycle assessment		

<b>Subject</b>	<b>A-level Chemistry</b>		<b>Year Group:</b>	<b>12</b>	
<b>Unit/Topic</b>	<b>Inorganic</b>	<b>Organic</b>		<b>Physical</b>	
<b>Skills</b>	Use and application of scientific methods and practices	Independent thinking Use and application of scientific methods and practices Instruments and equipment		Independent thinking Use and application of scientific methods and practices Numeracy and the application of mathematical concepts in a practical context Instruments and equipment	
<b>Knowledge</b>	Periodicity Group 2 Group 7	Introduction to Organic Alkanes Halogenoalkanes Alkenes Alcohols Organic analysis		Atomic structure Amount of substance Bonding Energetics Kinetics Chemical equilibria, Le Chatelier's principle, Kc Oxidation, reduction and redox equations	
<b>Recall/review from previous learning</b>	KS4: Atomic structure and the periodic table KS4: Chemical analysis	KS4: Organic chemistry KS4: Chemical analysis		KS4: Atomic structure and the periodic table KS4: Bonding, structure and properties of matter KS4: Energy changes KS4: Quantitative chemistry KS4: The rate and extent of chemical change	
<b>Assessment</b>	Formative assessments – end of topic tests Summative assessments – mock exams In class questioning Exam question homework tasks	Formative assessments – end of topic tests Summative assessments – mock exams In class questioning Exam question homework tasks		Formative assessments – end of topic tests Summative assessments – mock exams In class questioning Exam question homework tasks	
<b>Cultural Capital</b>	Job link each lesson University course links University visits National Field work week British science week	Job link each lesson University course links University visits National Field work week British science week		Job link each lesson University course links University visits National Field work week British science week	
<b>Literacy/Numeracy</b>	Handling data	Handling data Graphs		Arithmetic and numerical computation Handling data Algebra Graphs Geometry and trigonometry	



<b>Subject</b>	<b>A-level Chemistry</b>		<b>Year Group:</b>	<b>13</b>	
<b>Unit/Topic</b>	<b>Inorganic</b>		<b>Organic</b>		<b>Physical</b>
<b>Skills</b>	Independent thinking Use and application of scientific methods and practices Numeracy and the application of mathematical concepts in a practical context Instruments and equipment		Independent thinking Use and application of scientific methods and practices Instruments and equipment		Independent thinking Use and application of scientific methods and practices Numeracy and the application of mathematical concepts in a practical context Instruments and equipment
<b>Knowledge</b>	Properties of period 3 elements and their oxides Transition metals Reactions of ions in aqueous solution		Optical isomerism Aldehydes and ketones Carboxylic acids and derivatives Aromatic chemistry Amines Polymers Amino acids, proteins and DNA Organic synthesis Nuclear magnetic resonance spectroscopy Chromatography		Thermodynamics Rate equations Equilibrium constant $K_p$ , for homogenous systems Electrode potentials Acids and bases
<b>Recall/review from previous learning</b>	KS4: Atomic structure and the periodic table KS4: Chemical analysis KS5: Inorganic (Y12)		KS4: Organic chemistry KS4: Chemical analysis KS5: Organic (Y12)		KS4: Atomic structure and the periodic table KS4: Bonding, structure and properties of matter KS4: Energy changes KS4: Quantitative chemistry KS4: The rate and extent of chemical change KS4: Chemical changes KS5: Physical (Y12)
<b>Assessment</b>	Formative assessments – end of topic tests Summative assessments – mock exams In class questioning Exam question homework tasks		Formative assessments – end of topic tests Summative assessments – mock exams In class questioning Exam question homework tasks		Formative assessments – end of topic tests Summative assessments – mock exams In class questioning Exam question homework tasks
<b>Cultural Capital</b>	Job link each lesson University course links University visits National Field work week British science week		Job link each lesson University course links University visits National Field work week British science week		Job link each lesson University course links University visits National Field work week British science week
<b>Literacy/Numeracy</b>	Arithmetic and numerical computation		Arithmetic and numerical computation		Arithmetic and numerical computation

	Handling data Algebra Graphs	Handling data Graphs	Handling data Algebra Graphs
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