

Year Group	The Key Knowledge that will be explored is...	The Key Skills to be developed are... (Assessment Objectives?)	This will be assessed by... (Formative or Summative?)
<p>7 <i>Autumn</i></p>	<p>Science key skills Safety in a lab Using lab equipment Carrying out and writing up experiments Tables, graphs and interpreting data Atomic Chemistry The atom The periodic table Elements, mixtures and compounds Key reactions</p>	<p>Literacy Key scientific terms, writing extended answers Oracy Key scientific terms, describing and explaining key concepts Numeracy Graphs, tables, percentages, formulas Scientific skills of measuring, Working Scientifically: Measuring, observing Practical skills Using equipment correctly, recognising and selecting equipment.</p>	<p>Skills will be assessed formatively. In every topic there will be opportunities to show these skills. Knowledge will be assessed by : Key tasks Do Nows End of topic tests which will also include sections from previous topics.</p>
<p><i>Spring</i></p>	<p>Atomic Chemistry Elements, mixtures and compounds Key reactions Cells Plant, animal, bacterial cells Microscopes and how to use them Unicellular organisms Diffusion How cells make larger organisms</p>	<p>Literacy Improvement of extended writing, comparisons and evaluations Oracy Improvement of descriptions, explanations and arguments Numeracy Improvement of presenting continuous and discontinuous data. Rearranging formulas Working Scientifically: Extended practicals with several stages, writing own methods, risk assessments</p>	<p>Skills will be assessed formatively. In every topic there will be opportunities to show these skills. Knowledge will be assessed by : Key tasks Do Nows End of topic tests which will also include sections from previous topics.</p>
<p><i>Summer</i></p>	<p>Energy Stores and transfers The main energy stores How energy is transferred Conduction, convection and radiation</p>	<p>Literacy To be independently scientifically literate using correct terms for this level. Oracy Improvement of descriptions, explanations and arguments Numeracy Independently present data in the most appropriate form Working Scientifically: Extended practicals with several stages, writing own methods, risk</p>	<p>Skills will be assessed formatively. In every topic there will be opportunities to show these skills. Knowledge will be assessed by : Key tasks Do Nows End of topic tests which will also include sections from previous topics.</p>

		assessments, conclusions and evaluations	
8 <i>Autumn</i>	<p>Chemical Reactions Word equations Chemical equations Oxidation and combustion Acids and alkalis Separation techniques</p> <p>Processes in organisms Plant structure Photosynthesis Transport in plants Respiration – aerobic and anaerobic The effect of smoking.</p>	<p>Literacy Improvement of extended writing, comparisons and evaluations</p> <p>Oracy Improvement of descriptions, explanations and arguments</p> <p>Numeracy Improvement of presenting continuous and discontinuous data. Rearranging formulas</p> <p>Working Scientifically: Extended practicals with several stages, writing own methods, risk assessments</p>	<p>Skills will be assessed formatively. In every topic there will be opportunities to show these skills. Knowledge will be assessed by : Key tasks Do Nows End of topic tests which will also include sections from previous topics.</p>
<i>Spring</i>	<p>Processes in organisms Adolescence Reproduction Heredity DNA</p> <p>Speed and gravity Forces Speed calculation Factors effecting speed Distance time graphs Gravity Weight</p>	<p>Students should independently be able to demonstrate mastery of the scientific skills detailed above Development of scientific knowledge and conceptual understanding will be developed through the Biology, Chemistry and Physics disciplines. Development of the nature, processes and methods of science through scientific enquiry. Development of the understanding of the uses and implications of science.</p>	<p>Skills will be assessed formatively. In every topic there will be opportunities to show these skills. Knowledge will be assessed by : Key tasks Do Nows End of topic tests which will also include sections from previous topics.</p>
<i>Summer</i>	<p>Climate and Environment Fossil Fuels Climate change Pollution Renewable energy Where do products come from Reduce, reuse and recycle</p>	<p>Students should have by now built up an extensive scientific vocabulary that they can use when demonstrating oracy and literacy. Awareness of the development of scientific method, ideas and theories. Linking this to the importance of publishing results and peer review.</p>	<p>Skills will be assessed formatively. In every topic there will be opportunities to show these skills. Knowledge will be assessed by : Key tasks Do Nows</p>

		At this point students should be able to evaluate data and identify sources of error. They should also be able to identify further questions arising from their results.	End of topic tests which will also include sections from previous topics.
9 Autumn	<p>Cell Biology Cell structure. Cell division. Transport in cells.</p> <p>Organisation Principles of organisation. Animal tissues, organs & organ systems. Plant tissues, organs & systems.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Algebra; Graphs; Geometry.</p> <p>Working Scientifically: Development of Scientific thinking; Experimental skills; Analysis & Evaluation; Scientific vocabulary, quantities, symbols, nomenclature.</p> <p>Practical skills: Measuring; observing Biological changes; safe and ethical use of living organisms; measurement of rates; observing Biological specimens; careful handling of gases.</p> <p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>Required Practical: Microscopy; Osmosis.</p> <p>Food tests; Enzymes</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
Spring	<p>Energy Energy changes in a system. Energy stores. Conservation and dissipation of energy. National & global energy resources.</p> <p>Atomic structure & radiation Atoms & isotopes. Atoms & nuclear radiation.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Graphs; Algebra</p> <p>Working Scientifically: Development of Scientific thinking; Experimental Skills and strategies; Analysis & Evaluation; Scientific vocabulary, quantities, symbols, nomenclature</p> <p>Practical skills: Measuring; measuring; heating; measuring energy changes</p> <p>Literacy:</p>	<p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style</p>

		Use of Scientific vocabulary; extended writing.	questions. Teacher/peer assessed Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given
Summer	<p>Fundamentals of Chemistry. (This unit combines the following two topics)</p> <p>Periodic Table and the atom Model of the atom. Symbols. Relative atomic mass. Electronic charge. Isotopes. The periodic table.</p> <p>Structure and Bonding Types of chemical bonds. How bonding and structure relates to the properties of substances. Structure & bonding of Carbon.</p>	<p>Numeracy: Arithmetic and numerical computation; Graphs; Geometry</p> <p>Working Scientifically: Development of Scientific thinking; Experimental skills and strategies; Scientific vocabulary, quantities, symbols, nomenclature.</p> <p>Practical skills: Separation techniques; Handling of gases, liquids, solids safely to explore chemical changes.</p> <p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
10 Autumn	<p>Atomic structure & radiation Atoms & isotopes. Atoms & nuclear radiation.</p> <p>Triple content (extra) Required practical: Thermal insulators Growing microorganisms Hazards & uses of radioactive emissions; nuclear fusion & fission; Culturing microorganisms; Transition metals; nanoparticles</p> <p>Infection and Response Types of infectious disease. Human defence systems.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Graphs; Geometry</p> <p>Working Scientifically: Development of Scientific thinking.</p> <p>Practical skills: measuring; heating; monitor chemical reactions; separation techniques; safe exploration of chemical change; electrolysis; identification of unknown chemicals; recording observations of chemical reactions; measure current, pd, resistance.</p>	<p>Required Practical: Preparing a pure sample of a salt; Electrolysis; Exothermic and endothermic reactions Resistance; Titrations; Thermal Insulators; I-V characteristics;</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are</p>

	<p>Vaccinations. Drugs to fight disease.</p> <p>Electricity Current, potential difference and resistance. Series and Parallel circuits. Domestic uses and safety. Energy transfers.</p> <p>Chemical Changes Reactivity of metals. Reactions of acids. Electrolysis.</p> <p>Energy Changes Exothermic reactions. Endothermic reactions.</p>	<p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
<i>Spring</i>	<p>Bioenergetics Photosynthesis. Respiration.</p> <p>Quantitative Chemistry Chemical measurements. Conservation of mass. Quantitative interpretation of equations. Use of amount of substance related to masses of pure substances.</p> <p>Particle Model of Matter Changes of state & the particle model. Internal energy & energy transfers. Particle model & pressure.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Algebra; Graphs.</p> <p>Working Scientifically: Development of Scientific thinking; Analysis & Evaluation; Scientific vocabulary, quantities, symbols, nomenclature.</p> <p>Practical skills: measuring; heating; measure & observe biological changes; safe & ethical use of living organisms; measure rates of reaction; safe exploration of chemical change; measure energy changes.</p> <p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>Required practical: Density; Specific heat capacity; Photosynthesis.</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
<i>Summer</i>	<p>Homeostasis and Response Homeostasis. Human nervous system. Hormones in humans.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Algebra; Graphs; Geometry</p>	<p>Required Practical: Reaction time; Effect of light on seedling growth; rate of reaction and</p>

	<p>Rate and Extent of Chemical Change Rate of reaction. Reversible reactions and dynamic equilibrium.</p> <p>Forces Forces & their interactions. Work done & energy transfer. Forces & elasticity. Forces and motion. Momentum.</p>	<p>Working Scientifically: Development of Scientific thinking; Analysis & Evaluation</p> <p>Practical skills: measuring; measure & observe biological changes; monitor chemical reactions; recording observations of chemical reactions; safe exploration of chemical change;</p> <p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>concentration; Effect of force on a spring; Acceleration;</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
<p>11 <i>Autumn</i></p>	<p>Organic Chemistry Carbon compounds as fuels and feedstock.</p> <p>Inheritance, Variation & Evolution Reproduction. Variation & Evolution. The development & understanding of genetics & evolution. Classification of living things.</p> <p>Chemical Analysis Purity. Formulations. Chromatography. Identification of common gases.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Algebra; Graphs; Geometry; Trigonometry.</p> <p>Working Scientifically: Development of Scientific thinking; Experimental skills; Analysis & Evaluation; Scientific vocabulary, quantities, symbols, nomenclature.</p> <p>Practical skills: measuring; heating; measure & observe biological changes; safe & ethical use of living organisms; monitor chemical reactions; recording observations of chemical reactions; safe exploration of chemical change; measure effects of forces; measuring motion.</p> <p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>Required Practical: Chromatography; Purification of water; Identification of ions</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative :</p>

			End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given
<i>Spring</i>	<p>Waves Waves in air, fluids & solids. Electromagnetic waves.</p> <p>Chemistry of atmosphere Composition & evolution of the Earth's atmosphere. Carbon dioxide and methane as greenhouse gases. Atmospheric pollutants & their sources.</p> <p>Using Resources Using the Earth's resources Obtaining potable water Life cycle assessment & recycling</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Algebra; Graphs.</p> <p>Working Scientifically: Development of Scientific thinking; Experimental skills; Analysis & Evaluation; Scientific vocabulary, quantities, symbols, nomenclature.</p> <p>Practical skills: measuring; heating; monitor chemical reactions; separation techniques; measuring waves.</p> <p>Literacy: Use of Scientific vocabulary; extended writing.</p>	<p>Required Practical: Speed of waves in solids and liquids; Infra-red emission; Reflection and refraction.</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p> <p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative : End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
<i>Summer</i>	<p>Ecology Adaptations, interdependence & competition. Organisation of a ecosystem. Biodiversity & the effect of human interaction on ecosystems.</p> <p>Magnetism & Electromagnetism Permanent & induced magnetism, magnetic forces & fields.</p>	<p>Numeracy: Arithmetic and numerical computation; Handling data; Algebra; Graphs; Trigonometry.</p> <p>Working Scientifically: Development of Scientific thinking; Experimental skills; Analysis & Evaluation.</p> <p>Practical skills: measuring; measure & observe biological changes; safe & ethical use of living organisms; sampling techniques; identify biological molecules;.</p> <p>Literacy:</p>	<p>Required practical: Sampling techniques. Decay</p> <p>Formative <u>Level assessed tasks</u></p> <p>For each topic, level assessed tasks are completed and peer assessed/teacher assessed.</p> <p><u>Exam style questions</u></p>

	<p>The motor effect.</p> <p>Space Physics</p> <p>Solar system, stability of orbital motion, satellites.</p> <p>Red-shift.</p>	<p>Use of Scientific vocabulary; extended writing.</p>	<p>For each topic there are a selection of exam style questions. Teacher/peer assessed</p> <p>Summative :</p> <p>End of Topic Test for each topic. Either higher or Foundation. This is marked by the teacher and improvement tasks/questions are given</p>
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