

## Year 8 Curriculum Overview [2019-2020] – Planning for Progression

### Subject – Science

Schedule	Term	Knowledge & Understanding	Literacy Skills Building vocabulary Developing oral skills Developing reading skills Developing writing skills	Key Skills Subject Skills Numeracy Skills 21 <sup>st</sup> Century Skills Employability Skills	Assessment Formative Interim Summative
Autumn Term	Half Term 1	<p><b>Biology 1: Enzymes</b></p> <ol style="list-style-type: none"> <li>1. Anaerobic and aerobic respiration.</li> <li>2. Enzymes</li> <li>3. Enzymes how they work.</li> <li>4. Enzymes and digestion</li> <li>5. Factors affecting enzymes.</li> <li>6. Amylase practical.</li> <li>7. Digestion</li> </ol> <p><b>Chemistry 1: Periodic table</b></p> <ol style="list-style-type: none"> <li>1. Intro lesson</li> <li>2. Elements, compounds and mixtures</li> <li>3. Structure of the atom</li> <li>4. Atomic mass</li> <li>5. The periodic table</li> <li>6. Mendeleev</li> <li>7. Group 1</li> <li>8. Transition metals</li> <li>9. Noble gases.</li> </ol>	<p><b>Vocabulary</b> Extensive list of vocabulary for each topic including respiration, energy, enzyme, active site, denatured, periodic table, mixture</p> <p><b>Oral skills</b> Presenting work on anaerobic and aerobic respiration.</p> <p>Team work during practical lessons on amylase, group 1 metals. Extended answers to questioning the periodic table.</p> <p><b>Reading skills</b> Reading methods/equipment lists. Exam style questions.</p> <p>Pair reading.</p> <p><b>Writing skills</b> Formulate a conclusion and evaluation. Lessons focus on extended writing skills, Osmosis, explaining the effect of temperature, pH, substrate concentration on enzyme activity,</p>	<p><b>Numeracy</b> Calculate the rate of enzyme activity from experimental data. Calculating the atomic mass and atomic number. Calculating the number of protons, neutrons and electrons in a given atom.</p> <p><b>21<sup>st</sup> Century Skills</b> Taking the initiative to apply practical observations on the factors affecting enzymes to real life situations. Collaborative team work in a Practical Setting. Enhancing practical skills questioning. Use of biological catalysts in industry</p> <p><b>Employability skills</b> IT Skills-iPad research Independent tasks. Leadership work.</p> <p><b>Link to Cultural Capital:</b> Dalton's Atomic theory / model of the Atom</p>	<p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>• Self-evaluation</li> <li>• Think-Pair-Share</li> <li>• Key words and definitions – games / matching tasks</li> <li>• Quick quizzes</li> <li>• Quizlet</li> <li>• Gap fills (from scheme)</li> <li>• Whiteboard activity to enhance numeracy skills</li> <li>• Exam-style questions – linked to practical tasks</li> <li>• Extended answer tasks</li> <li>• Assessment of practical skills including observation.</li> </ul> <p><b>Summative Assessment</b></p> <p><b>Year 8 HT1 Class Assessment</b></p> <p>Laboratory equipment, Periodic table and Enzymes.</p> <p>October 2019</p>
	Half Term 2	<p><b>Physics 1: Electromagnets</b></p> <ol style="list-style-type: none"> <li>1. Magnetic fields</li> <li>2. Electromagnets</li> <li>3. Dynamos</li> </ol> <p><b>Biology 2: Animal relationships</b></p>	<p><b>Vocabulary</b> Extensive list of vocabulary for each topic including magnetic field, magnet, conservation, predator, prey</p> <p><b>Oral skills</b> Presentation on food chains and food webs. Explaining how electromagnets work. Teamwork during practical lessons on electromagnets and dynamos.</p>	<p><b>Numeracy</b> Use plotting compasses to show the shape and direction of the field around a magnet. Data analysis Interpret data from predator-prey cycles and explain correlations.</p> <p><b>21<sup>st</sup> Century Skills</b> Team work to conduct the steps needed to view onion cells under a microscope.</p>	<p><b>Year 8 HT2 Linear Assessment</b></p> <p>Enzymes, atomic structure and the Periodic table.</p> <p>Assessment will cover units from HT1.</p>

		<ol style="list-style-type: none"> <li>1. Food chains &amp; webs</li> <li>2. Relationships</li> <li>3. Predator &amp; prey</li> <li>4. Competition/biodiversity &amp; humans</li> <li>5. Conservation</li> <li>6. Prac</li> </ol>	<b>Reading skills</b> Comprehension of texts on communicable diseases <b>Writing skills</b> Written plan for electromagnet practical.	<b>Employability</b> Matching appropriate relationships to their definitions.	November 2019
Spring Term	Half Term 3	<b>Chemistry 2: Acids &amp; Alkalis</b> <ol style="list-style-type: none"> <li>1. Acids</li> <li>2. Alkalis</li> <li>3. Indicators</li> <li>4. Neutralisation</li> <li>5. Importance of salts</li> <li>6. Preparing a soluble salt.</li> <li>7. Acids and metals</li> </ol> <b>Physics 2: Pressure</b> <ol style="list-style-type: none"> <li>1. Pressure in solids</li> <li>2. Pressure in liquids</li> <li>3. Pressure in gases</li> <li>4. Floating &amp; sinking</li> <li>5. Density</li> </ol>	<b>Vocabulary</b> Extensive list of vocabulary for each topic including acid, litmus, neutralisation, surface area, alkali, float, pressure <b>Oral skills</b> Team work during practical on preparing a soluble salt. Comparing indicators. <b>Reading skills</b> Matching key vocabulary to definitions <b>Writing skills</b> Working scientifically skills, plotting graphs, drawing crystallisation and filtration equipment, describing hazards and risks (crystallisation, distillation), discussion of observations. Extended answers to questioning.	<b>Numeracy</b> Formulate chemical equations. Using the pressure triangle to calculate – pressure, area and force. <b>21<sup>st</sup> Century Skills</b> Communication whilst preparing a soluble salt. Enhancing practical skills questioning <b>Employability</b> Analyse factors that affect states of matter. IT Skills-iPad research Assessing Hazards and Risks in practical investigations. <b>Link to Cultural Capital:</b> Contributions of influential government figures and scientists in the implementation of conservation programmes.	<b>Formative Assessment</b> <ul style="list-style-type: none"> <li>• Key words and definitions – games / matching tasks</li> <li>• Jigsaw</li> <li>• Traffic lights</li> <li>• Quick quizzes</li> <li>• Quizlet</li> <li>• Gap fills (from scheme)</li> <li>• Whiteboard activity to enhance numeracy skills</li> <li>• Exam-style questions – linked to practical tasks</li> <li>• Extended answer tasks</li> </ul> Assessment of practical skills including observation.  <b>Summative Assessment</b>
	Half Term 4	<b>Biology 3: Plants and transport</b> <ol style="list-style-type: none"> <li>1. Photosynthesis recap</li> <li>2. Photosynthesis - simple core practical</li> <li>3. Diffusion</li> <li>4. Osmosis</li> <li>5. Active transport</li> </ol> <b>Physics 3: Electricity</b> <ol style="list-style-type: none"> <li>1. Series</li> <li>2. Parallel</li> <li>3. Resistance</li> <li>4. R in series</li> </ol>	<b>Vocabulary</b> Extensive list of vocabulary for each topic including stomata, chlorophyll, gas exchange, concentration gradient, series, parallel circuit <b>Oral skills</b> Team work during practical, discussion of observations, Extended answers to questioning <b>Reading skills</b> Comprehension of texts on atomic theories. <b>Writing skills</b> Plan/draft/edit/re-draft	<b>Numeracy</b> Interpretation of graphical and numerical data –Light intensity, photosynthesis and limiting factors. Working out resistance in a circuit. <b>21<sup>st</sup> Century Skills</b> Critical thinking applying theatrical ideas on diffusion and osmosis to practical situations. Practical team work <b>Employability</b> Ordering the steps involved in the starch practical. IT Skills-iPad research	<b>Year 8 HT3 Linear Assessment</b> Enzymes, relationships, atomic structure, acids, electromagnets, pressure  February 2020

		5. <i>R in parallel</i> 6. <i>Different components.</i>			
<b>Summer Term</b>	Half Term 5	<b>Chemistry 3: The Atmosphere</b> <ol style="list-style-type: none"> <li><i>The early atmosphere</i></li> <li><i>Present day</i></li> <li><i>Global warming</i></li> <li><i>Fossil fuels.</i></li> <li><i>Renewable fuels</i></li> <li><i>Assessment</i></li> </ol> <b>Biology 4: Evolution</b> <ol style="list-style-type: none"> <li><i>Evolution</i></li> <li><i>Theory of evolution</i></li> <li><i>Evidence for evolution</i></li> <li><i>Classification</i></li> <li><i>Animals vs plants.</i></li> <li><i>Fungi, protists and prokaryotes.</i></li> </ol>	<b>Vocabulary</b> Extensive list of vocabulary for each topic including global warming, greenhouse gases, pollution, evolution, fungi, protist, prokaryotes <b>Oral skills</b> Team work during practical, discussion of observations, Extended answers to questioning <b>Reading skills</b> Scientific text analysed and annotated <b>Writing skills</b> Lessons which focus on extended writing: The evidence towards the theory of evolution.	<b>Numeracy</b> Interpret data on fossil fuels. <b>21<sup>st</sup> Century Skills</b> Practical team work building circuits Develop and improve experimental procedures such as the Work done practical. <b>Employability</b> Decision on most cost-effective form of insulation. IT Skills- iPad research <b>Link to Cultural Capital:</b> Contributions of scientists to the theory of evolution (Lamarck, Wallace, Darwin) and why Darwin's theory was accepted	<b>Formative Assessment</b> <ul style="list-style-type: none"> <li>Entry and exit tickets</li> <li>Concept maps</li> <li>Key words and definitions – games / matching tasks</li> <li>Quick quizzes</li> <li>Quizlet</li> <li>Gap fills (from scheme)</li> <li>Whiteboard activity to enhance numeracy skills</li> <li>Exam-style questions – linked to practical tasks</li> <li>Extended answer tasks</li> <li>Assessment of practical skills including observation.</li> </ul> <b>Summative Assessment</b> <b>Year 8 Science Examination</b> Units B1-3, C1-3, P1-2 and Scientific Skills Assessment will cover units of work in HT1 – HT4 April 2020
	Half Term 6	<b>Physics 4: Waves</b> <ol style="list-style-type: none"> <li><i>Transverse vs longitudinal</i></li> <li><i>Electromagnetic waves</i></li> <li><i>Uses of EM waves</i></li> <li><i>Low Energy waves</i></li> <li><i>High energy waves</i></li> <li><i>Dangers of EM waves.</i></li> <li><i>Refraction</i></li> </ol> <b>Chemistry 4: Crude oil</b> <ol style="list-style-type: none"> <li><i>Crude oil</i></li> <li><i>Fractions</i></li> <li><i>Uses of fractions</i></li> <li><i>Properties of fractions</i></li> </ol>	<b>Vocabulary</b> Extensive list of vocabulary for each topic including radio, microwaves, ultraviolet, refraction, hydrocarbons, properties <b>Oral skills</b> Team work during practical, discussion of observations, Extended answers to questioning Explaining the uses of EM waves, comparing the features of transverse and longitudinal waves. <b>Reading skills</b> Read and evaluate key scientific theories. <b>Writing skills</b> <i>Drawing refraction diagrams.</i> Comparing the properties of fractions.	<b>Numeracy</b> Working out the molecular formulae for a given alkane Graph interpretation on fractions. <b>21<sup>st</sup> Century Skills</b> Creativity-creating a Mnemonic on the order of the electromagnetic waves. Practical team work <b>Employability</b> Analyse factors that affect rates of reaction. IT Skills-iPad research <b>Link to Cultural Capital:</b> The fracking debate. Contributions of influential government figures and scientists in determining the viability of fracking towards our energy supply problem.	

		<div>5. <i>Hydrocarbons</i></div> <div>6. <i>Standard test.</i></div> <div>Topic 5: Mix Topic</div> <div><div>1. <i>The life cycle of a star</i></div><div>2. <i>Mars Landers</i></div><div>3. <i>The Skeleton</i></div><div>4. <i>Muscles</i></div><div>5. <i>Balloon car</i></div></div>			
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