



Science


Key Stage 4 Framework for Learning

Year 10 2017-2018: Successful Foundations

Syllabus:


AQA GCSE Trilogy
SPECIFICATION 8464

Autumn 1

<p>Knowledge</p>	<p>Biology</p> <p>Sexual and Asexual reproduction Advantages and disadvantages of reproduction DNA and the genome Variation Classification Evolution Evidence for evolution Fossils Extinction selective breeding genetic engineering genetic engineering ethics Meiosis</p>
<p>Skills</p>	<p>Comprehension exercises. Understanding data and surveys. Describing and explaining graphs based on the menstrual cycle.</p>
<p>Assessment</p>	<p>Marking Point 1 selective breeding</p> <p>Marking Point 2 MCT</p> <p>Marking Point 3 EOT</p>
<p>Cultural enrichment</p>	<p>Discussing inherited genetic disorders and the treatment of these. Discussing the increased prevalence of some genetic disorders in different countries where customs varied. Discussion of the ethical and moral implications of using stem cells for research.</p>
<p>Character</p>	<div style="text-align: center;">  <p>QofS – Optimism</p> </div> <p>Optimism – students continuously track their own progress throughout the year and reflect on their learning journey. This for many can provide optimism and motivation. Students will use PLC's after every sub topic to monitor their own learning and set targets for future revision. Teachers will encourage students to be optimistic as they approach the start of their exams.</p>





Autumn 2

<p>Knowledge</p>	<p>Chemistry</p> <p>GROUP 1 GROUP 7 COMPARING GROUP 1 AND 7 metallic bonding ionic bonding Covalent bonding Chemical bonds Chemical bonds comparison properties (pt1) properties (pt2) comparing diamond with graphite graphite and fullerene MCT PROGRESS TEST</p>
<p>Skills</p>	<p>Numeracy Graphs Calculations Describing and explaining data from graphs</p>
<p>Assessment</p>	<p><i>Marking Point 1</i> <i>COMPARING GROUP 1 AND 7</i></p> <p><i>Marking Point 2</i> <i>Chemical bonds comparison</i></p> <p><i>Marking Point 3</i> <i>MCT</i> <i>PROGRESS TEST</i></p>
<p>Cultural enrichment</p>	<p>Understanding the possible risks of the new technology of nanoscience. To know why certain industrial processes have come about and the importance of them to society e.g. the extraction of metals and the effects on society and the planet.</p>
<p>Character</p>	<div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>QofS – Empathy</p> </div> </div> <p>Empathy – In this unit students will show empathy for the world that we live in. They will learn about the manufacturing of plastics and combustion of fossil fuels and how this affects the environment. They will also learn about the ethics of diamond mining and relate this to its uses.</p>



Spring 1

<p>Knowledge</p>	<p>Physics</p> <p>Atomic structure mass and atomic number model of the atom radioactive decay nuclear equations uses of nuclear radiation Radioactive contamination half-life and decay</p> <p>EOT properties of waves</p>
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	<p>transverse and longitudinal waves types and uses of EM radiation properties of EM waves waves for detection and exploration</p> <p>investigating the speed of a wave EOT</p>
Skills	<p>Numeracy Graphs Calculations Describing and explaining data from graphs</p>
Assessment	<p><i>Marking Point 1</i> <i>investigating the suitability of apparatus to measure the interaction of waves</i></p> <p><i>Marking Point 2</i> <i>investigating the speed of a wave</i></p> <p><i>Marking Point 3</i> <i>EOT</i></p>
Cultural enrichment	<p>Have an appreciation and discussions as to whether we need to pursue Nuclear Power as a means of generating electricity to meet the demands of 21 century life. Have a knowledge of the uses of EM radiation in the 21 century and how we use them to support the latest technologies in terms of information transfer.</p>
Character	<div style="display: flex; align-items: center;">   <div style="margin-left: 20px;"> <p>QofS – Creativity & Curiosity</p> </div> </div> <p>In this term there will be a focus on practical experiments and group activities; students will develop skills of teamwork, practising data analysis and carrying out investigations. This will develop students curiosity as they make predictions and explain practical results to evidence their understanding.</p>
<h2>Spring 2</h2>	
Knowledge	<p>Biology</p> <p>diffusion osmosis</p> <p>investigating osmosis</p> <p>digestive system digestive enzymes</p> <p>digestive system big write</p> <p>respiratory system heart and blood vessels blood and heart rate heart disease</p> <p>EOT</p> <p>face transplant</p> <p>face transplant big write</p> <p>contraception</p>



	<p>factors affecting health</p> <p>lifestyle choices</p> <p>Cancer</p>
Skills	<p>Calculations.</p> <p>Equations.</p> <p>Rearranging equations.</p> <p>Drawing and using graphs.</p>
Assessment	<p><i>Marking Point 1</i> <i>investigating osmosis</i></p> <p><i>Marking Point 2</i> <i>digestive system big write</i></p> <p><i>Marking Point 3</i> <i>face transplant big write</i></p> <p><i>EOT</i></p>
Cultural enrichment	<p>Have an appreciation of the wider effects of poor diet and health on society. The costs of dealing with many illnesses developing later in life.</p>
Character	<div style="display: flex; align-items: center;">   <div style="margin-left: 20px;"> <p>QoS – Responsibility & Reflection</p> <p>Students will take responsibility for their Year 10 learning by reflecting on their Year 9 progress and revising this material to prepare for their progress test. Students will start to become self-motivated to take ownership for their achievements.</p> </div> </div>
Summer 1	
Knowledge	<p>Chemistry</p> <p>Pure substances</p> <p>paper chromatography</p> <p>potable water</p> <p>sustainable development</p> <p>waste water treatment</p> <p>distillation</p> <p>chemical tests</p> <p>EOT</p> <p>Mr</p> <p>conservation of mass</p> <p>balancing equations</p> <p>Moles</p> <p>empirical formula</p> <p>MCT</p> <p>EOT</p>
Skills	<p>Numeracy.</p> <p>Evaluating.</p> <p>Analysis of data.</p> <p>Graphs.</p> <p>Describing trends.</p> <p>Cause and effect.</p>




Assessment	<p><i>Marking Point 1</i> <i>Sustainable development</i></p> <p><i>Marking Point 2</i> <i>Distillation write up</i></p> <p><i>Marking Point 3</i> <i>EOT</i></p>
Cultural enrichment	<p>To realise the effects that the human race is having on the planet and the fact that we are at a stage at the moment where it would be possible to reverse many of the human impacts. The reality is that we have to act now.</p>
Character	<div style="display: flex; align-items: center;">   <div style="margin-left: 20px;"> <p>QoS – Practice & Resiliency</p> </div> </div> <p>Group work will take a primary focus in this half term as students collaborate to investigate a variety of Chemistry and Physics investigations. Students will be encouraged to be resilient and optimistic as they approach their final Year 10 progress test and prepare themselves for their final. Students will be required to creatively manage their own time to prepare fully for their summer examinations.</p>

Summer 2

Knowledge	<p>Physics</p> <p>circuit symbols</p> <p>building circuits and testing voltage</p> <p>voltage in series and parallel</p> <p>current in series and parallel</p> <p>resistance</p> <p>calculating the resistance in a wire</p> <p>circuits revision</p> <p>circuit problems</p> <p>voltage current graphs</p> <p>investigating the IV characteristics of a filament bulb</p> <p>EOT</p> <p>AC/DC</p> <p>Mains</p> <p>energy transfer</p> <p>power</p> <p>PROGRESS TEST</p> <p>(physics)</p> <p>circuit symbols</p> <p>building circuits and testing voltage</p> <p>voltage in series and parallel</p> <p>current in series and parallel</p> <p>resistance</p> <p>calculating the resistance in a wire</p> <p>circuits revision</p> <p>circuit problems</p> <p>voltage current</p>
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	<p>graphs</p> <p>investigating the IV characteristics of a filament bulb</p> <p>EOT</p> <p>AC/DC</p> <p>Mains</p> <p>energy transfer</p> <p>power</p> <p>PROGRESS TEST</p>
Skills	<p>Evaluation.</p> <p>Drawing conclusions.</p> <p>Exam questions</p> <p>Application of knowledge.</p>
Assessment	<p><i>Marking Point 1</i></p> <p><i>calculating the resistance in a wire</i></p> <p><i>Marking Point 2</i></p> <p><i>circuit problems</i></p> <p><i>Marking Point 3</i></p> <p>PROGRESS TEST</p>
Cultural enrichment	<p>Know that our reliance for energy increasing as it is now has the potential for devastating effects on the future of our planet. The control of CO₂ emissions is paramount to improving the current situation.</p>
Character	<div style="display: flex; align-items: center;">QoS – Motivation</div> <p>Group work will take a primary focus in this half term as students collaborate to investigate a variety of Chemistry and Physics investigations. Students will be encouraged to be resilient and optimistic as they approach their final Year 10 progress test and prepare themselves for their final. Students will be required to creatively manage their own time to prepare fully for their summer examinations.</p>