

Year Group: 10	Subject: Combined Science	Term: Spring 2022
Topic	Key Learning points	Assessment
Biology: Genetics and Natural Selection	<p><i>End Point: To understand how sexual reproduction leads to genetic variation and explain how genetic variation is the key to evolution through natural selection.</i></p> <ul style="list-style-type: none"> • Know that organisms use meiosis to produce gametes for sexual reproduction • Know that DNA is the genetic code common to all living organisms and that it gives instructions for making proteins. • Know that sections of DNA form genes and that genes can come in different form called alleles. • Understand the interaction between dominant and recessive alleles during inheritance • Know that Meiosis and sexual reproduction generate genetic variation in a population • Understand the evidence for evolution, including fossil evidence of the pentadactyl limb showing a common ancestor for many animals. • Know the evidence for human evolution and how human tools give correlating evidence for an increase in intelligence over time. • Understand that overuse of antibiotics has led to the evolution of antibiotic resistant bacteria 	<p>Students will be formatively assessed during each topic by past paper question end of topic tests completed in lesson time.</p> <ul style="list-style-type: none"> • Students will complete a variety of consolidation homework throughout the term • After each end of topic test there will be an opportunity for students to review their understanding • Teachers will provide students with targeted feedback, based on their test performance
Chemistry: Bonding, Types of substance and Electrolytic processes	<p><i>End Point: To understand how different substances are formed through ionic bonding, covalent bonding and metallic bonding. To be able to describe the process of electrolysis and it's applications.</i></p> <ul style="list-style-type: none"> • Know that when an atom loses or gains an electron it becomes a charged ion • Know that an ionic bond forms when electrons are donated or accepted leading to electrostatic forces holding molecules together • Know the properties of an ionic lattice including the fact that they have high melting and boiling points and cannot conduct electricity whilst solid. • Know that a covalent bond is formed when non-metal atoms share electrons to gain a full outer shell. • Understand how to draw diagrams of ionic and covalent bonds. • Know that metallic bonding arises from the electrostatic attraction of positive metal ions delocalised electrons. • Describe the process of electrolysis including the oxidation and reduction reactions that occur at each electrode. 	<p>At the end of the term students will have a summative assessment. This will be a 60-mark exam paper (20 marks from each discipline), which will be marked by their teacher.</p>
Physics: Forces and Motion	<p><i>End Point: To understand how motion can be calculated and represented graphically. To be able to apply knowledge of Newtons first three Laws to describe the interactions of different forces.</i></p> <ul style="list-style-type: none"> • Know that quantities that have a size and a direction are defined as vectors and that quantities with just a size are scalars. • Understand that acceleration is a vector that can be calculated if the change in velocity and time is known. • Know how to interpret a distance time graph including how to use it to calculate velocity. • Know how to interpret a velocity time graph including how to use it to calculate acceleration. • Understand the concept of resultant forces as the magnitude and direction of a combination of forces. • Understand Newton's first law in relation to balanced forces. • Know that acceleration depends on the size of the force acting on it and the mass of the object. • Understand the concept of action and reaction forces in the context of two objects touching or being influenced by a force-field. • Know how to calculate momentum given the mass of an object, change in velocity and time. • Apply knowledge of forces to real world scenarios such as stopping distances and car safety mechanisms. 	