INTENT-

- To develop knowledge and understanding of key Biology, Chemistry and Physics topics
- Students to apply this knowledge and explain key ideas within Science, applying them to a range of typical and frequent assessment points.
- To develop basic practical skills and data analysis.
- practicals

The bigger picture:

The year 9 curriculum continues to develop an understanding of key scientific concepts needed throughout the curriculum and creating a building block for later years. The curriculum is also designed to start developing an enquiring mind through key practical's that will allow for skills needed for Required practical's at GCSE to be built on.

Bilton School Planning for Progress over Time
Programme of Study 2021/22

IMPLEMENTATION

	Term 1 Genetics and Variation, Metals and Reactivity.								HOLIDAY: 1 WEEK	Term 2 Electrolysis Investigation, Sound, Unicellular Organisms.							HOLIDAY: 2 WEEKS	Term 3 Unicellular Organisms, Enzyme Investigation, Types of Reaction.							HOLIDAY: 1 WEEK	Term 4 Types of Reaction, Pressure.						HOLIDAY: 2 WEEKS	Term 5 Acceleration Investigation, Magnets and Electromagnets, Light					HOLIDAY: 1 WEEK	Term 6 Light						
KS3	2/9/21	6/9/21	13/9/21	20/9/21	27/9/21	4/10/21	11/10/21	18/10/21		1/11/21	8/11/21	15/11/21	22/11/21	29/11/21	6/12/21	13/12/21		4/1/22	10/1/22	17/1/22	24/1/22	31/1/22	7/2/22	14/2/22		28/2/22	7/3/22	14/3/22	21/3/22	28/3/22	4/4/22		25/4/22	2/5/22	9/5/22	16/5/22	23/5/22		6/6/22	13/6/22	20/6/22	27/6/22	4/7/22	11/7/22	18/7/22
Year 9	(TTD x2)	Genetics and Variation L1, L2, L3	Genetics and Variation L4, L5, L6	Genetics and Variation L7RP, 8RP, Revision.	Review. Metals and Reactivity L1, L2.	Metals and Reactivity L3, L4, L5.	Metals and Reactivity L6, L7RP, L8RP.	Revision, ETT, Test Review.		Electrolysis Investigation L1, L2, L3	Electrolysis Investigation L4, L5, L6	Sound L1, L2, L3	Sound L4, L5, L6	Sound L7RP, L8RP, Revision.	ETT, Test Review. Unicellular Organisms L1	Unicellular Organisms L2, L3, L4.		Unicellular Organisms L5, L6, L7RP	Unicellular Organisms L8RP, Revision, Review.	Enzyme Investigation L1, L2, L3.	Enzyme Investigation L4, L5, L6.	Revision, ETT, Test Review.	Types of Reaction L1, L2, L3	Types of Reaction L4, L5, L6		Types of Reaction L7RP, L8RP, 9 Revision.	Review. Pressure L1, L2	Pressure L3, L4, L5	Pressure L6, L7RP, 8RP.	Revision, ETT, Test Review.	Acceleration Investigation L1, L2, L3.		Acceleration Investigation L4, L5, L6	Magnetism L1, L2, L3	Magnetism L4, L5, L6	Magnetism L7RP, L8RP, Revision.	ETT, Test Review. Light L1		Light L2, L3, L4.	Light L5, L6, L7RP	Light L8RP, Revision, Review.	EOY Assessment Revision	End of Year Assessments.	Transition Topics	Transition Topics
Progress and assessment	**End of topic test (ETT)** **Follow on questions to test previous knowledge through the Unit.** **6/9/21 – FAR 1** **20/9/21 – FAR 2** **4/10/21 – FAR 3** **18/10/21 – FAR 4**									**End of topic test (ETT)** **Follow on questions to test previous knowledge through the Unit.** **8/11/21 – FAR 1** **22/11/21 – FAR 2** **6/12/21 – FAR 3**								**End of topic test (ETT)** **Follow on questions to test previous knowledge through the Unit.** **4/1/22 – FAR 1** **17/1/22 – FAR 2** **31/1/22 – FAR 3** **14/2/22 – FAR 4**								**End of topic test (ETT)** **Follow on questions to test previous knowledge through the Unit.** **7/3/22 – FAR 1** **21/3/22 - FAR 2** **4/4/22 – FAR 3**								**End of topic test (ETT)** **Follow on questions to test previous knowledge through the Unit.** **2/5/22 – FAR 1** **23/5/22 – FAR 2**							**End of Year Assessment (EOY)** **Follow on questions to test previous knowledge through the Unit.** **20/6/22 - FAR 1** **4/7/22 - FAR 2** **18/7/22 - FAR 3**						
Required Practical (RP)	**Genetics and Variation: Variation in Seedlings** Analysing Data **Metals and Reactivity: Extracting Copper** Writing a risk assessment.									**Electrolysis Investigation** **Sound: Investigating Waves** Making Observations								**Unicellular Organisms: Skills** Accuracy, Precision and Resolution. **Enzyme Investigation**								**Types of Reaction: Rate of Reaction** Comparing to Secondary Data **Pressure: Investigating Pressure** Calculations								**Acceleration Investigation** **Magnetism: Making Electromagnets** Graph/Method Writing							**Light: Skills** Variables						
Homework *(ensure that this is NOT stand alone, but clearly advances or embeds knowledge and understanding)*	**Seneca** **6/9/2021 – 1.6.7, 1.2.6** **13/9/2021 – 1.3.6, 1.3.7** **20/9/2021 – 1.3.8, 1.2.6** **27/9/2021 – 2.2.1, 2.6.4** **4/10/2021 – 2.6.5, 2.6.6** **11/10/2021 – 2.5.11, 2.5.12** **18/10/2021 - Revision**									**Seneca** **1/11/2021 – 2.3.1, 2.6.1** **8/11/2021 – Uses of Electrolysis Research** **15/11/2021 – 3.3.1, 3.3.2** **22/11/2021 – 3.3.4, 3.3.5** **29/11/2021 – 3.3.6, 3.3.7** **6/12/2021 – 1.1.5, 1.1.7** **13/12/2021 – 1.1.4, 1.1.3**								**Seneca** **4/1/2022 – 1.3.2, 1.3.3** **10/1/2022 – 1.1.12** **17/1/2022 – 1.1.2, 1.4.4** **24/1/2022 – 1.4.5** **31/1/2022 - Revision** **7/2/2022 – 2.2.1, 2.7.6** **14/2/2022 – 2.3.4, 2.7.1**								**Seneca** **28/2/2022 – 2.7.2, 2.7.3** **7/3/2022 – 3.2.4, 2.1.5** **14/3/2022 – 3.5.7** **21/3/2022 – 3.5.2, 3.2.11** **28/3/2022 - Revision** **4/4/2022 – 3.2.1, 3.2.5**								**Seneca** **25/4/2022 – 3.2.2, 3.2.6** **2/5/2022 – 3.4.4, 3.4.5** **9/5/2022 – 3.4.6, 3.4.7** **16/5/2022 Revision** **23/5/2022 – 3.3.8**							**Seneca** **6/6/2022 – 3.3.11** **13/6/2022 – 3.3.9, 3.3.10** **20/6/2022 – 3.3.12** **27/6/2022 - Revision** **4/7/2022 - Revision** **11/7/2022 - Revision** **18/7/2022**						
Key Vocabulary/literacy opportunities	**Genetics and Variation:** *Variation, Inherited Variation, Environmental Variation, Continuous Variation, Discontinuous Variation, Genes, Adaptation, Competition, Natural Selection, Evolution, Extinction, Inherited Disorders, Cloning* **Metals and Reactivity:** *Chemical change, Physical Change, Word Equation, Reactants, Products, Endothermic, Exothermic, Displacement, Ceramic, Polymer.* ,									**Electrolysis:** *Electrolysis, Electrode, Electrolyte, Anode, Cathode, Ions.* **Sound:** *Sound, Vibration, Waves, Longitudinal, Transverse, Amplitude, Pitch, Frequency, Ear, Echo, Ultrasound* **Unicellular Organisms:** *Organism, Unicellular, Multicellular, Antibiotic, Budding.*								**Unicellular Organisms:** *Organism, Unicellular, Multicellular, Antibiotic, Budding.* **Enzymes:** Digestion, Digestive System, Enzyme, Protein, Active Site, Substrate, Product, Denature. **Types of Reaction:** *Chemical change, Physical Change, Word Equation, Reactants, Products, Fuel, Combustion, Conservation of Mass, Rate of Reaction, Thermal Decomposition.*								**Types of Reaction:** *Chemical change, Physical Change, Word Equation, Reactants, Products, Fuel, Combustion, Conservation of Mass, Rate of Reaction, Thermal Decomposition.* **Pressure:** *Pressure, Particle, Solid, Liquid, Gas, Fluid, Atmosphere, Surface Area, Floating, Sinking.*								**Magnets and Electromagnets:** *Magnet, Electromagnet, Magnetic Field, Coil, Current, Static Electricity* **Light:** *Light, Wave, Reflection, Refraction, Spectrum, Convex, Concave, Eye.*							**Light:** *Light, Wave, Reflection, Refraction, Spectrum, Convex, Concave, Eye.*						

National Curriculum Links	**Genetics and Variation:** • heredity as the process by which genetic information is transmitted from one generation to the next • a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model • differences between species • the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation • the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection • changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction • the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material. **Metals and Reactivity** • chemical reactions as the rearrangement of atoms • representing chemical reactions using formulae and using equations • the order of metals and carbon in the reactivity series • the use of carbon in obtaining metals from metal oxides • properties of ceramics, polymers and composites (qualitative). • the chemical properties of metal and non-metal oxides with respect to acidity. • exothermic and endothermic chemical reactions (qualitative). • reactions of acids with metals to produce a salt plus hydrogen		**Sound:** • frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound • sound needs a medium to travel, the speed of sound in air, in water, in solids • sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal • auditory range of humans and animals. **Unicellular Organisms:** • the structural adaptations of some unicellular organisms		**Unicellular Organisms:** • the structural adaptations of some unicellular organisms **Types of Reaction:** • chemical reactions as the rearrangement of atoms • representing chemical reactions using formulae and using equations • combustion, thermal decomposition, oxidation and displacement reactions		**Types of Reaction:** • chemical reactions as the rearrangement of atoms • representing chemical reactions using formulae and using equations • combustion, thermal decomposition, oxidation and displacement reactions **Pressure:** • atmospheric pressure, decreases with increase of height as weight of air above decreases with height • pressure in liquids, increasing with depth; upthrust effects, floating and sinking • pressure measured by ratio of force over area – acting normal to any surface.		**Magnets and Electromagnets:** • magnetic poles, attraction and repulsion • magnetic fields by plotting with compass, representation by field lines • Earth's magnetism, compass and navigation • the magnetic effect of a current, electromagnets, D.C. motors (principles only). **Light:** • the similarities and differences between light waves and waves in matter • light waves travelling through a vacuum; speed of light • the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface • use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye • light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras • colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.		**_Light:** • the similarities and differences between light waves and waves in matter • light waves travelling through a vacuum; speed of light • the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface • use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye • light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras • colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.
Connected knowledge	**<u>Maths</u>** To interpreting graphs To draw scatter graphs To identify correlation				**<u>Maths</u>** To find compound measures - speed, pressure and density			
	IMPACT: Students will be able to measure progress using tracking sheets in exercise books. As all assessments will use generic criteria, will be moderated through dept meetings it will be possible to measure progress over time within and across year groups.							