

LONG TERM CURRICULUM PLANNING OVERVIEW:

Science					
	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
Autumn A Topic	B1.1 - Cells C1.1 - Particles	B2.1 – Tissues and Organs C1.2 – Atoms, Elements and Compounds	B3.1 – Growth and Differentiation C3.1 – The periodic Table	Chemistry 1 – Resources and water Biology 1 – Respiration, digestion and the heart Chemistry 2 – Trends in the periodic table	Chemistry 5 - Chromatography, Hydrocarbons and the atmosphere Biology 5 – Human impact on the world around us
Autumn A Knowledge	<p>B1.1 - Pupils will learn to appreciate how all living things are made of cells which, in some instances, build to form more complex organisms. Pupils will learn more about the processes that occur within all cells, such as respiration and photosynthesis, and within specialised cells.</p> <p>C1.1 - Pupils will start this unit looking at the three states of matter and using the particle model to describe and explain the properties of each. They will then start to consider how substances change state, learning how to explain this in terms of energy and forces</p>	<p>B2.1 - Pupils will begin this unit looking at the skeletal and muscular system. Pupils will then learn the important relationship between breathing and respiration, exploring how the lungs are adapted for efficient gas exchange before investigating how the composition of air changes as it passes in and out of the lungs. Pupils will use their new learning about the breathing system to explain the effect of asthma, smoking and exercise on breathing. The unit finishes with pupils looking into a range of different drugs and how these affect organ systems.</p>	<p>B3.1 - In this unit, pupils will develop their understanding of cell structure and specialisation. Pupils will learn to classify cells as eukaryotic or prokaryotic according to some basic features and revisit the function of the main sub-cellular structures. Pupils will have another opportunity to use microscopes to investigate cells and learn how scientists now use electron microscopes to study cells in more detail. Pupils will also have the opportunity to investigate bacterial growth using agar and develop their skills in using aseptic techniques.</p>	<p>Chemistry 1 – Pupils begin by looking at renewable and non-renewable resources and considering their advantages and disadvantages before moving on to look at how we obtain clean drinking water. The unit then goes on to consider the environmental impact of the products that we use and how we can make better choices.</p> <p>Biology 1 – In this unit pupils will learn about process that are necessary for human live. This starts with a recap of cells before moving on to respiration and the effect of exercise on our bodies. They then go on to learn about</p>	<p>Chemistry 5 – In this unit pupils will learn about the science behind the separation technique of chromatography and its real life applications. They will then go on to learn about how we obtain fuel from crude oil and how these molecules can be used to make other products. Pupils will then learn about the Earths atmosphere and how and why it has changed since the Earth was formed. They will then link their learning to the chemistry of pollutants and the changes that pollution continues to have on our atmosphere.</p>

	<p>of attraction between particles. Pupils will then apply this learning to two situations: diffusion and gas pressure. Finally, pupils are introduced to density.</p>	<p>C1.2 - This unit begins by defining some of the most fundamental terminology in chemistry: atoms and elements. Learning this first gives pupils the language and conceptual understanding (along with their prior learning of the particulate nature of matter) to be able to access topics later in this unit. From here, pupils are introduced to the periodic table which houses all of these different types of atoms (elements). Pupils will further explore different types of atoms here by looking at metals and non-metals and their differing properties. From here, pupils will be introduced to compounds – the result of two or more elements chemically combining – and will learn about the vast range of compounds that are possible, to create the variety of substances and materials we see (and don't see) around us.</p>	<p>This unit also introduces pupils to the three main methods of cell transport: diffusion, osmosis and active transport. Pupils will consider how different cells are adapted for efficient exchange and apply their learning about methods of cell transport to different contexts. Pupils will also study cell specialisation and learn how cells divide by mitosis to allow for growth and repair. Pupils will be introduced to cancers as a group of diseases that can arise from uncontrolled cell growth. They will also learn how scientists use stem cells to study and treat different diseases.</p> <p>C3.1 - Pupils will develop their knowledge of atomic structure. They will learn about the nuclear model of the atom, as well as the development of our understanding of the atom, with an overview of some of the key discoveries and scientists that have paved the way so far. Important here also is that pupils</p>	<p>the structure and function of the organs and enzymes in the digestive system with a focus on how each part has adapted to its role. The unit ends with the structure and function of the heart and blood vessels and links this back to respiration and digestion and the movement of substances around our bodies.</p> <p>Chemistry 2 – Pupils will develop a knowledge and understanding of the periodic table and the physical and chemical trends that we see in. They will then use this knowledge to help then make predictions. The unit then goes on to learn about the three types of chemical bonding and how this bonding leads to the properties of compounds.</p>	<p>Biology 5 – Pupils will continue to develop their knowledge of the impact that humans have on the world around us. In this unit they will learn about our impact on biodiversity, the carbon cycle and the water cycle. Pupils will also learn about the importance of clean drinking water and how this can be obtained.</p>
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<p>Autumn A Skills</p>	<p>B1.1 Know the difference between a scientific question and a non-scientific question. Define and understand the term 'hypothesis'. Assess risk. Identify names and uses of basic lab equipment. Use models to represent data and other scientific phenomena. Obtain a clear image using a light microscope. Recognise and use expressions in decimal form.</p>	<p>B2.1 Measure and observe the effects of forces including the extension of springs. Identify and assess risks to health. Describe representative sampling techniques. Apply representative sampling techniques.</p> <p>C1.2 Find the mean, mode, and range. Recognise and use expressions in decimal form.</p>	<p>B3.1 Application of aseptic technique. Suggest a hypothesis to explain given observations or data. Obtain a clear image using a light microscope. Prepare a slide with cells for viewing under the light microscope. Use an appropriate number of significant figures. Change the subject of an equation.</p>	<p>Explain why data is needed to answer scientific questions. Describe a practical procedure for a specified purpose. Identify names and uses of basic lab equipment. Measure volumes of liquids accurately. Read a scale accurately. Measure pH. Observing and measuring biological changes.</p>	<p>Construct and interpret bar charts, pie charts and histograms. Visualise and represent 2D and 3D forms, including 2 dimensional representations of 3D objects. Draw conclusions from given observations.</p>

	<p>Read a scale accurately. Use SI units and IUPAC chemical nomenclature. Recognise the importance of scientific quantities. Produce labelled scientific drawings. Describe a practical procedure for a specified purpose. Understand and use mathematical symbols</p> <p>C1.1 Use models to represent data and other scientific phenomena. Safe use of heating devices. Identify in a given context the variable in an investigation. Measure volumes of liquids accurately. Suggest a hypothesis to explain given observations or data. Substitute values into equations using appropriate units. Solve simple algebraic equations. Determine densities of solid and liquid objects. Measure mass accurately.</p>	<p>Draw conclusions from given observations. Measurement of rates of reaction. Assess risk.</p>	<p>Calculate areas of triangles and rectangles, surface areas and volumes of cubes. Use percentages. Identify in a given context the variable in an investigation. Measure mass accurately. Identify and assess risks to health. Outline a simple ethical argument. Explain the hazards associated with science-based technologies.</p> <p>C3.1 Recognise and use expressions in standard form. Use prefixes and powers of ten for orders of magnitude. Make order of magnitude calculations. Critique and evaluate models. Recognise that scientific methods and theories change over time. Measure pH. Interpret a line (scatter) graph. Understand and use mathematical symbols.</p>	<p>Safe use of equipment to separate mixtures using evaporation. Safe use of equipment to separate mixtures using crystallisation. Construct and interpret frequency tables and results tables. Construct and interpret bar charts, pie charts and histograms. Recognise that scientific methods and theories change over time. Critique and evaluate models</p>	
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	Calculate areas of triangles and rectangles, surface areas and volumes of cubes.				
Autumn A Assessment opportunity	AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit.	AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit.	AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit.	AfL throughout each lesson. Multiple choice questions to test knowledge on each specification point. End of unit assessment.	
Autumn B Topic	P1.1 - Forces B1.2 - Reproduction	P1.2 – Space P2.1 – Movement and Pressure C1.3 – Mixtures	P3.1 - Acceleration B3.2 – Human interaction	Chemistry 2 – Bonding Physics 1 – Electricity and magnetism	
Autumn B Knowledge	<p>P1.1 - The unit starts with an introduction of the different types of forces (contact and non-contact) and the common examples of each of these. Pupils then learn about balanced and unbalanced forces and practice interpreting force diagrams, before using these ideas to calculate resultant forces. Pupils then build on their knowledge of force diagrams to cover interaction pairs. Pupils are then introduced to Hooke's Law, followed by drag forces and friction, including practical activities for each.</p> <p>B1.2 – In this unit pupils will learn about the different types of reproduction in both</p>	<p>P2.1 - In this unit pupils will be introduced to speed as a measure of how much distance is covered in a given time and be able to calculate speed using these values. They will also be introduced to changing speeds, including relative motion and acceleration as the rate of change of speed. Pupils will also cover how to draw and interpret distance-time graphs and calculate speed from these.</p> <p>This unit also covers the fundamental ideas of pressure, including applications of pressure where high pressure and low pressure are required, and the equation used to calculate it.</p>	<p>P3.1 - In this unit pupils will learn how the effect of forces on the motion of objects, looking at Newton's First Law and the effects of balanced and unbalanced forces. They will also look at Newton's Third Law and describe forces in terms of action-reaction pairs.</p> <p>Pupils will learn about the differences between scalar and vector quantities and examples of each, particularly comparing speed and velocity and distance and displacement. They will also learn how to calculate resultant vectors from vectors acting at right angles and how to resolve single diagonal vectors into their horizontal and vertical</p>	<p>Chemistry 2 – Pupils will develop a knowledge and understanding of the periodic table and the physical and chemical trends that we see in. They will then use this knowledge to help then make predictions. The unit then goes on to learn about the three types of chemical bonding and how this bonding leads to the properties of compounds.</p> <p>Physics 1 – In this unit pupils will learn about electricity, how it is generated, how it gets to our homes and how we can use it safely. Pupils will learn how resistance can be calculated and will learn to build more complicated circuits that allow them to</p>	<p>From this point forward the content has been covered. During this half term students will follow a bespoke lesson plan on a class by class basis, based on QLA and PLCs for the group/individuals.</p>

	plants and animals. They will learn about different processes connected to reproduction including the menstrual cycle and the development of an embryo.	C1.3 - This unit begins by defining and describing mixtures and solutions. This forms the foundation for the rest of the unit, which focuses on the separation of mixtures and solutions. The separation techniques increase in complexity, starting with decanting and evaporation, and concluding with chromatography which also has a quantitative element to it.	components. Pupils will also learn about acceleration as the rate of change of velocity and how to calculate it using the change of velocity over time. They will also investigate acceleration themselves including measuring initial and final velocity. They will also learn how to describe motion using velocity-time graphs and interpret these qualitatively and quantitatively. They will also learn how to describe the forces acting on an object based on its motion. B3.2 – In this unit student will learn about the importance of biodiversity and the impact that we have on it. They will consider the causes and effects of pollutants and the problems associated with global warming.	collect data that can be used in these calculations. Pupils finish the unit by learning about magnetic fields and the real life applications of electromagnets.	
Autumn B Skills	P1.1 Use SI units and IUPAC chemical nomenclature. Define the terms precise, accurate and valid, and be able to use these terms. Understand and use mathematical symbols.	P1.2 Measure and observe the effects of forces including the extension of springs. Construct and interpret frequency tables and results tables.	P3.1 Recognise the importance of scientific quantities. Change the subject of an equation. Measure motion, including speed and rate of change.	Critique and evaluate models. Read a scale accurately. Use of appropriate apparatus to measure current, potential difference and resistance.	

	<p>Decide on a suitable scale for the x and y-axis when drawing a graph. Measure and observe the effects of forces including the extension of springs. Identify in a given context the variable in an investigation. Read a scale accurately.</p> <p>B1.2 Produce labelled scientific drawings. Construct and interpret frequency tables and results tables.</p>	<p>Substitute values into equations using appropriate units. Solve simple algebraic equations. Construct and interpret bar charts, pie charts and histograms. Decide on a suitable scale for the x and y-axis when drawing a graph.</p> <p>P2.1 Understand the terms mean, mode and median. Measure time accurately. Measure motion, including speed and rate of change. Recognise the importance of scientific quantities. Interpret a line (scatter) graph. Plot two variables from experimental or other data. Draw conclusions from given observations.</p> <p>C1.3 Measure temperature accurately. Plot two variables from experimental or other data. Assess risk. Identify names and uses of basic lab equipment.</p>	<p>Any anomalous values should be examined. Measure time accurately. Understand that $y = mx + c$ represents a linear relationship. Determine the slope and intercept of a linear graph. Plot two variables from experimental or other data. Understand the significance of area between a curve and the x-axis and measure it by counting squares.</p> <p>B3.2 Use percentages. Understand that whenever a measurement is made, there is always uncertainty about the result. Use the range about the mean as a measure of uncertainty. Find the mean, mode, and range. Interconvert units. Use an appropriate number of significant figures. Describe a practical procedure for a specified purpose. Identify names and uses of basic lab equipment.</p>	<p>Use of circuit diagrams to construct and check series and parallel circuits. Assess whether sufficient, precise measurements have been taken in an experiment. Use an appropriate number of significant figures. Substitute values into equations using appropriate units. Change the subject of an equation. Any anomalous values should be examined. Recognise and use expressions in decimal form. Recognise the importance of scientific quantities.</p>	
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Autumn B Assessment opportunity	<p>AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit.</p> <p>Formative assessment 1 Format: 1 paper Section A - 30 MCQs Section B - standard and extended response</p>	<p>AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit.</p> <p>Formative assessment 1 Format: 1 paper Section A - 30 MCQs Section B - standard and extended response</p>	<p>AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit.</p> <p>Formative assessment 1 Format: 1 paper Section A - 30 MCQs Section B - standard and extended response</p>	<p>AfL throughout each lesson. Multiple choice questions to test knowledge on each specification point. End of unit assessment.</p>	
Spring A Topic	<p>C1.2 – Atoms, Elements and Compounds P1.2 - Space</p>	<p>P2.2 - Magnetism B1.3 – Interdependence</p>	<p>C3.2 – Introduction to Quantitative Chemistry P3.2 - Heating</p>	<p>Biology 2 – Health and disease Chemistry 3 – Extracting metals and making salts</p>	

<p>Spring A Knowledge</p>	<p>C1.2 - This unit begins by defining some of the most fundamental terminology in chemistry: atoms and elements. Learning this first gives pupils the language and conceptual understanding (along with their prior learning of the particulate nature of matter) to be able to access topics later in this unit. From here, pupils are introduced to the periodic table which houses all of these different types of atoms (elements). Pupils will further explore different types of atoms here by looking at metals and non-metals and their differing properties. From here, pupils will be introduced to compounds – the result of two or more elements chemically combining – and will learn about the vast range of compounds that are possible, to create the variety of substances and materials we see (and don't see) around us.</p> <p>P1.2 - This unit begins with developing pupil understanding of the force of gravity, including a review of</p>	<p>P2.2 - In this unit pupils will learn about the fundamentals of magnetism as a non-contact force. They will cover the different magnetic materials and the rules of attraction and repulsion. They will also learn about magnetic fields and their properties, including how to interpret and draw them. They will also learn the differences between permanent magnets and electromagnets, and how electromagnets can be turned on and off using simple circuits. They will also learn about the factors that affect the strength of an electromagnet and investigate these factors for themselves. Pupils will also learn the very basics about how the Earth's magnetic field functions because of the structure of the core and the difference between a geographic north pole and a magnetic north pole.</p> <p>B1.3 - Pupils will begin this unit by learning about the levels of organisation within an ecosystem, before</p>	<p>C3.2 - At the beginning of this unit, students will be introduced to state symbols in reactions which will then be used throughout the rest of this unit in varying contexts. Following on from the introduction to concentration, students will carry out some basic concentration calculations, using the last lesson's learning to convert between units of volume where required. Students will use the learning of rearranging equations to rearrange the equation where required.</p> <p>P3.2 - In this unit pupil will learn about internal energy of substances and how these are affected by heating. They will learn about the different methods of energy transfer: conduction, convection and radiation and the similarities and differences between each process. They will learn about specific heat capacity and investigate the specific heat capacity of different materials, use the specific heat capacity equation and explain what these different values can tell us about</p>	<p>Biology 2 – In this unit pupils will learn about human health and disease including how diseases are spread and how we can prevent the spread. Pupils will learn about our immune system and how our bodies have adapted to help us deal with disease as well as learning about drugs and how new medicines are developed.</p> <p>Chemistry 3 – Pupils will start this unit by learning about the reactivity of metals and how we extract them so that they can be used. They will then go on to recap their knowledge of the pH scale and use this to learn more about the reaction of metals and acids to produce salts. The units finishes with learning about electrolysis and its uses.</p>	
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	<p>contact and non-contact forces and the relationship between the force and distance of objects. Pupils then go on to cover the difference between mass and weight using their understanding of gravitational field strength. They then move on to learn about how gravity keeps objects in orbit as well as more detail about our solar system, including using a number of models to represent different phenomena. Pupils then learn about natural and artificial satellites, applying their knowledge of how objects stay in orbit. Finally, they cover the movement of the Earth itself and the effect of its tilt on seasons, before looking at how the movement of the Earth and the Moon results in eclipses.</p>	<p>considering how we can use different sampling techniques to study a place in more detail. Pupils will then build upon their knowledge of ecosystems by learning how organisms within an ecosystem rely on each other and their environment for survival. Pupils will finish the unit considering how different organisms compete for survival.</p>	<p>materials. They will also learn about specific latent of heat, both of fusion and vaporisation, and calculate these for a number of different materials. They will also compare the ideas of specific heat capacity and specific latent heat in terms of energy changes.</p>		
<p>Spring A Skills</p>	<p>C1.2 Find the mean, mode, and range. Recognise and use expressions in decimal form. Draw conclusions from given observations.</p>	<p>P2.2 Visualise and represent 2D and 3D forms, including 2 dimensional representations of 3D objects. Select the best procedure from given options.</p>	<p>C3.2 Use percentages. Understand that whenever a measurement is made, there is always uncertainty about the result.</p>	<p>Identify and assess risks to health. Describe a practical procedure for a specified purpose. Identify names and uses of basic lab equipment.</p>	

	<p>Measurement of rates of reaction. Assess risk.</p> <p>P1.2 Measure and observe the effects of forces including the extension of springs. Construct and interpret frequency tables and results tables. Substitute values into equations using appropriate units. Solve simple algebraic equations. Construct and interpret bar charts, pie charts and histograms. Decide on a suitable scale for the x and y-axis when drawing a graph.</p>	<p>Identify in a given context the variable in an investigation.</p> <p>B1.3 Construct and interpret bar charts, pie charts and histograms. Describe representative sampling techniques. Apply representative sampling techniques. Interpret a line (scatter) graph. Plot two variables from experimental or other data. Draw a line or curve of best fit. Find the mean, mode, and range.</p>	<p>Use the range about the mean as a measure of uncertainty. Find the mean, mode, and range. Interconvert units. Use an appropriate number of significant figures. Describe a practical procedure for a specified purpose. Identify names and uses of basic lab equipment. Safe use of equipment to separate mixtures using evaporation. Safe use of equipment to separate mixtures using filtration. Safe use of equipment to separate mixtures using crystallisation. Measure volumes of liquids accurately. Measure mass accurately.</p> <p>P3.2 Change the subject of an equation. Any anomalous values should be examined. Measure temperature accurately.</p>	<p>Measure volumes of liquids accurately. Measure pH. Safe use of heating devices. Safe use of equipment to separate mixtures using crystallisation. Use of appropriate apparatus to set up electrolysis equipment. Preparation of a pure dry sample of a soluble salt. Draw conclusions from given observations.</p>	
Spring A	AfL throughout each lesson.	AfL throughout each lesson.	AfL throughout each lesson.	AfL throughout each lesson.	

Assessment opportunity	Exit ticket at the end of each lesson. Mastery quiz at end of unit.	Exit ticket at the end of each lesson. Mastery quiz at end of unit.	Exit ticket at the end of each lesson. Mastery quiz at end of unit.	Multiple choice questions to test knowledge on each specification point. End of unit assessment.	
Spring B Topic	B1.3 - Interdependence	B2.3 – Life Diversity	B3.3 - Genetics	Physics 2 – Density, internal energy and radioactivity Biology 3 – Homeostasis and the nervous system	
Spring B Knowledge	B1.3 - Pupils will begin this unit by learning about the levels of organisation within an ecosystem, before considering how we can use different sampling techniques to study a place in more detail. Pupils will then build upon their knowledge of ecosystems by learning how organisms within an ecosystem rely on each other and their environment for survival. Pupils will finish the unit considering how different organisms compete for survival.	B2.3 - Pupils will begin this unit learning about variation. They will consider how variation is affected by both the environment and heredity, how DNA controls inherited characteristics, and how variation can be either continuous or discontinuous. Pupils will have the opportunity to investigate variation amongst their peers. Pupils will then learn about artificial selection as a way of controlling variation, before studying natural selection. Pupils will finish this unit learning about how natural selection gives rise to evolution.	B3.3 - Students will take their knowledge of sexual and asexual reproduction further by considering the advantages and disadvantages of each method. They will be introduced to the process of meiosis and how this gives rise to the gametes of different organisms. Students will develop their understanding of the natural polymer, DNA, and its structure. Students will have the opportunity to explore the basics of protein synthesis, and how mutations alter the shape of proteins (separate science students will study these concepts in more detail at the end of the unit). Students will be introduced to Mendelian Inheritance and develop an understanding of how different combinations of alleles result in different	Physics 2 – In this unit pupils will learn about density of objects and how this can be measured experimentally. They will learn about energy contained within substances and how we can measure this. Pupils will end the unit by learning about radioactive substances and their dangers and uses. Biology 3 – Pupils will learn more about the structure and functions of the human body in this unit. The first part of the unit focusses on how our body maintains the optimal conditions while the second half of the unit looks at the nervous system and how messages are passed around our body so that reactions can happen.	

			characteristics. Students will learn about particular genetic disorders, and use Punnett squares and family trees to describe inheritance in terms of probability.		
Spring B Skills	B1.3 Construct and interpret bar charts, pie charts and histograms. Describe representative sampling techniques. Apply representative sampling techniques. Interpret a line (scatter) graph. Plot two variables from experimental or other data. Draw a line or curve of best fit. Find the mean, mode, and range.	B2.3 Construct and interpret frequency tables and results tables. Use fractions. Use percentages.	B3.3 Use prefixes and powers of ten for orders of magnitude. Recognise that scientific methods and theories change over time. Use fractions. Use ratios. Understand simple probability. Explain the hazards associated with science-based technologies.	Define and understand the term 'hypothesis'. Identify in a given context the variable in an investigation. Measurement of rates of reaction. Determine densities of solid and liquid objects. Safe use of appropriate apparatus to measure energy transfers. Interpret a line (scatter) graph.	
Spring B Assessment opportunity	AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit. Formative assessment 2 Format: 1 paper Section A - 30 MCQs Section B - standard and extended response	AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit. Formative assessment 2 Format: 1 paper Section A - 30 MCQs Section B - standard and extended response	AfL throughout each lesson. Exit ticket at the end of each lesson. Mastery quiz at end of unit. Formative assessment 2 Format: 1 paper Section A - 30 MCQs Section B - standard and extended response	AfL throughout each lesson. Multiple choice questions to test knowledge on each specification point. End of unit assessment.	
Summer A Topic	C1.3 - Mixtures P1.3 – Energy Transfers	P1.4 – Electric Circuits – Current and Potential Difference	C3.3 – Using Resources P3.3 – Sound and Waves	Biology 4 – Reproduction and inheritance Chemistry 4 – Quantitative chemistry	

		P2.3 – Electric Circuits - Resistance C2.1 – Acids and alkalis			
Summer A Knowledge	<p>C1.3 - This unit begins by defining and describing mixtures and solutions. This forms the foundation for the rest of the unit, which focuses on the separation of mixtures and solutions. The separation techniques increase in complexity, starting with decanting and evaporation, and concluding with chromatography which also has a quantitative element to it.</p> <p>P1.3 - This unit begins with an introduction to energy. Students will then learn how energy can be stored and carried. A lesson here on energy in food, brings a familiar context in for students to apply their learning to. Now that students have a basic understanding of the nature of energy, the second part of this unit focuses on the efficiency of transfer of energy between stores, with a quantitative aspect. The 'wasted' energy often dissipates as heat into the</p>	<p>P1.4 - This unit starts with a bigger picture view of models of electricity, looking at electrical circuits as a whole, as a pathway by which energy is transferred. Pupils are then introduced to the two different types of circuit, drawing on their understanding of models of electricity. Then pupils are introduced to current as the rate of flow of charge, using the current, charge and time equation. Following on from this pupils then learn to represent electrical circuits using the correct diagrams and circuit symbols, before finally applying this to working with practical circuits.</p> <p>P2.3 - pupils are introduced to resistance as a qualitative concept, describing the relationship between current and resistance. Then pupils will look at the relationships between current, voltage and resistance and use Ohm's Law to look at resistance quantitatively. Pupils will</p>	<p>C3.3 - This unit covers how humans use different resources from the Earth, including metals, different materials and water, including the importance of water as a resource, how potable water is obtained, and how water can be tested. The second half of the unit introduces different resources that can be obtained from the Earth, with a particular focus on our responsibility to source these in a sustainable way. Pupils will be expected to be able to use life cycle assessments to determine the environmental impact of a material or product, and also to consider the advantages and disadvantages of various methods of disposal for waste.</p> <p>P3.3 - This unit starts with the different types of wave, comparing longitudinal and transverse waves with examples of each. From here pupils will go on to study the properties of waves,</p>	<p>Biology 4 – In this unit pupils will develop their knowledge and understanding of cells and cell division and then apply this to reproduction. Pupils will learn about the hormones involved in the stages of reproduction and fertility. Pupils will then go on to learn more about genes and DNA and how our characteristics are inherited. Students will apply their knowledge to inherited disease and will then extend their learning to include the advantages and disadvantages of selective breeding and genetic engineering. Pupils will also learn about the role of genetics in evolution and extinction.</p> <p>Chemistry 4 – Pupils will apply their knowledge of atoms to learn about units of amount in chemistry and how this can be used to determine masses of products or reactants needed in a chemical reaction.</p>	

	<p>surroundings, and this fact leads nicely into the final portion of the unit where students explore heat, thermal energy and temperature.</p>	<p>then go on to measure resistance of a wire, linking back to previous learning of how to measure current and voltage, before calculating resistance of different lengths of wire and explaining this relationship. Finally pupils will cover resistance in series and parallel circuits, linking back to their knowledge of current and voltage in series and parallel circuits.</p> <p>C2.1 - This unit introduces pupils to acids and alkalis. They will learn about common acids and alkalis around the home and the use of indicators to assess the pH of a substance. Pupils will also learn about the most important reactions of acids, including neutralisation, reaction of acids, with metals and metal carbonates. A key focus throughout this unit will be the nature of a chemical reaction and how we can represent reactions using word equations.</p>	<p>including amplitude, wavelength and frequency. Students will then use wave properties and the wave equation to calculate the velocity or frequency of different waves, which helps them to understand the physics of refraction in more detail.</p>		
Summer A Skills	C1.3 Measure temperature accurately.	P1.4	C3.3	Recognise that scientific methods and theories change over time.	

	<p>Plot two variables from experimental or other data. Assess risk. Identify names and uses of basic lab equipment. Safe use of equipment to separate mixtures using evaporation. Produce labelled scientific drawings. Describe the technique or apparatus that should be used for a particular purpose. Safe use of equipment to separate mixtures using filtration. Safe use of heating devices. Safe use of equipment to separate mixtures using distillation. Measure volumes of liquids accurately. Safe use of equipment to separate mixtures using chromatography. Select the best procedure from given options.</p> <p>P1.3 Interconvert units. Construct and interpret bar charts, pie charts and histograms. Safe use of appropriate apparatus to measure energy transfers.</p>	<p>Use models to represent data and other scientific phenomena. Visualise and represent 2D and 3D forms, including 2 dimensional representations of 3D objects. Use of circuit diagrams to construct and check series and parallel circuits. Use of appropriate apparatus to measure current, potential difference and resistance. Select the best procedure from given options.</p> <p>P2.3 Use an appropriate number of significant figures. Describe mathematical relationships in terms of proportionality. Use of appropriate apparatus to measure current, potential difference and resistance. Use of circuit diagrams to construct and check series and parallel circuits. Use fractions. Explain examples of the technological applications of science.</p> <p>C2.1 Measure pH. Assess risk.</p>	<p>Safe use of equipment to separate mixtures using filtration. Safe use of equipment to separate mixtures using distillation. Understand that whenever a measurement is made, there is always uncertainty about the result. Use the range about the mean as a measure of uncertainty. Use technology such as MS Excel and data loggers to generate a graph of results digitally. Measure pH. Understand the terms mean, mode and median. Cite sources of information. Interpret the reliability of sources of information.</p> <p>P3.3 Visualise and represent 2D and 3D forms, including 2 dimensional representations of 3D objects. Relate derived quantities with the formulae to calculate those quantities. Making observations of waves in fluids and solids. Measure motion, including speed and rate of change.</p>	<p>Critique and evaluate models. Outline a simple ethical argument. Change the subject of an equation. Recognise and use expressions in decimal form. Recognise and use expressions in standard form. Use ratios. Solve simple algebraic equations. Recognise the importance of scientific quantities. Use prefixes and powers of ten for orders of magnitude. Interconvert units.</p>	
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	<p>Substitute values into equations using appropriate units.</p> <p>Recognise and use expressions in decimal form.</p> <p>Solve simple algebraic equations.</p> <p>Plot two variables from experimental or other data.</p> <p>Use SI units and IUPAC chemical nomenclature.</p> <p>Measure temperature accurately.</p> <p>Define the terms precise, accurate and valid, and be able to use these terms.</p>	<p>Preparation of a pure dry sample of a soluble salt.</p> <p>Describe a practical procedure for a specified purpose.</p> <p>Measure volumes of liquids accurately.</p> <p>Measure mass accurately.</p>			
Summer A Assessment opportunity	<p>AfL throughout each lesson.</p> <p>Exit ticket at the end of each lesson.</p> <p>Mastery quiz at end of unit.</p>	<p>AfL throughout each lesson.</p> <p>Exit ticket at the end of each lesson.</p> <p>Mastery quiz at end of unit.</p>	<p>AfL throughout each lesson.</p> <p>Exit ticket at the end of each lesson.</p> <p>Mastery quiz at end of unit.</p>	<p>AfL throughout each lesson.</p> <p>Multiple choice questions to test knowledge on each specification point.</p> <p>End of unit assessment..</p>	
Summer B Topic	P1.4 – Electric Circuits – Current and Potential Difference	C2.2 – Changing Substances	P3.4 – Home Electricity	Paper 1 revision	
Summer B Knowledge	<p>P1.4 - This unit starts with a bigger picture view of models of electricity, looking at electrical circuits as a whole, as a pathway by which energy is transferred. Pupils are then introduced to the two different types of circuit, drawing on their understanding of models of</p>	<p>C2.2 - In this unit, pupils will learn about the nature of chemical reactions. They will learn to interpret a chemical equation which uses symbols, numbers and chemical formulae. Pupils will learn about the Law of Conservation of Mass and to balance an existing chemical</p>	<p>P3.4 - In this unit, students will study mains electricity and its transfer to where we need it. This includes learning about alternating and direct current, the different wires within circuits in the home, and the wiring and design of plugs. They will learn about how the cost of</p>	<p>During this half term students will follow a bespoke lesson plan on a class by class basis in order to ensure that they are fully prepared for their Y10 mock exams.</p>	

	<p>electricity. Then pupils are introduced to current as the rate of flow of charge, using the current, charge and time equation. Following on from this pupils then learn to represent electrical circuits using the correct diagrams and circuit symbols, before finally applying this to working with practical circuits.</p>	<p>equation. Finally, pupils will revisit some chemical reactions from the previous chemistry unit (Acids and Alkalis) to apply their learning about balancing equations to those reactions.</p>	<p>electricity is calculated, and how this links to the power of and energy transferred by, appliances. From here, students will look at the generation of electricity and the various energy resources available to us. They will learn about the transport of that electricity to our homes via the National Grid, including the importance of step up and step down transformers. Finally students are introduced to static electricity.</p>		
Summer B Skills	<p>P1.4 Use models to represent data and other scientific phenomena. Visualise and represent 2D and 3D forms, including 2 dimensional representations of 3D objects. Use of circuit diagrams to construct and check series and parallel circuits. Use of appropriate apparatus to measure current, potential difference and resistance. Select the best procedure from given options.</p>	<p>C2.2 Measure mass accurately. Measure pH. Use of appropriate techniques to analyse and identify unknown samples or products.</p>	<p>P3.4 Change the subject of an equation. Interconvert units. Safe use of appropriate apparatus to measure energy transfers.</p>		
Summer B	AfL throughout each lesson.	AfL throughout each lesson.	AfL throughout each lesson.	AfL throughout each lesson.	

Assessment opportunity	Exit ticket at the end of each lesson. Mastery quiz at end of unit. Summative assessment Format: 2 papers 2 x 45 mark paper, standard and extended response	Exit ticket at the end of each lesson. Mastery quiz at end of unit. Summative assessment Format: 2 papers 2 x 45 mark paper, standard and extended response	Exit ticket at the end of each lesson. Mastery quiz at end of unit. Summative assessment Format: 3 papers 3 x 45 mark paper, standard and extended response (Bio. Chem and Physics)	Multiple choice questions to test knowledge on each specification point. Mock exam – full GCSE exam paper 1 for biology, chemistry and physics.	
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