

	What will I learn?	How will I learn it?	Why is it important that I learn this?	Why am I learning this now?
<b><u>HT1:</u></b> <b><u>8B1 Food and Digestion</u></b>	<p>You will look at the 7 components of a balanced diet and calculate energy requirements.</p> <p>You will use chemical tests to identify carbohydrates, fats, sugar and protein in food samples.</p> <p>You will look at the role of enzymes in digestion and label the main organs of the digestive system.</p>	<p>Through class discussions and debates.</p> <p>Through teacher demonstrations of the food tests.</p> <p>Through practical investigations, testing samples of food.</p> <p>Through carrying out experiments, making predictions and drawing conclusions.</p> <p>By using models of the digestive system.</p>	<p>To understand the importance of a healthy balanced diet.</p> <p>To be able to explain how the digestive system works including the role of enzymes and gut bacteria.</p> <p>So you can use models and experiments to make predictions, carry out accurate observations and draw conclusions.</p>	<p>You will build upon your work in KS2 and begin to use more advanced terminology when discussing the human digestive system.</p> <p>You will build on the work you did in year 7 on cells, tissues and organs and now start to apply this to the human digestive system.</p> <p>Knowing the importance of food in the body will help you understand how the body functions and this is vital for understanding the process of respiration. (8B2)</p>
<b><u>HT1:</u></b> <b>8C1: Gas Tests and the environment</b>	<p>You will learn about how human activity is affecting the world we live in and what we can do to combat this</p> <p>You will evaluate your own impact on the environment when studying carbon footprints, recycling and the carbon cycle.</p> <p>You will learn how to test for gases and how to safely carry out these as practicals.</p>	<p>Through independent research when writing a scientific article.</p> <p>Through teacher and class discussion.</p> <p>Through practical activities and observations.</p> <p>Through the making and use of revision resources to conclude the topic</p>	<p>To develop critical and evaluative skills involving debate about global warming and other environmental issues.</p> <p>To build on the knowledge of chemical equations from year 7.</p> <p>To inform and inspire students to see how they can make a</p>	<p>You will build on the basic chemistry skills from year 7 including writing word equations.</p> <p>Many will have covered to varying amounts in primary school and in geography. There is slight differences to how this topic is learned in chemistry so students must be made aware of these differences. (eg the greenhouse effect not reflecting).</p>

	<p>You will use gas tests to write work and symbol equations building on prior learning.</p>		<p>positive difference to the world around them.</p>	
<p><b>HT1:</b> <b>8P3 Energy</b></p>	<p>You will learn that what the difference is between heat and temperature.</p> <p>You will gain an understanding of how heat energy is transferred through solids, liquids and gases.</p> <p>You will know what the efficiency is and how to calculate it</p> <p>You will learn about how biomass can release energy when burnt and how a solar cell works.</p>	<p>Through teacher input and demonstration.</p> <p>Through experimental analysis and drawing and interpreting graphs</p> <p>Through practical investigations of bouncing balls to measure their efficiencies.</p> <p>By more experiments to learn by observations and making measurements of quantities.</p>	<p>Knowing the difference between heat and temperature will help you to understand other areas of Physics.</p> <p>Present observations and data using appropriate methods, including tables and graphs.</p> <p>Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions</p> <p>Use a simple equation to carry out calculations</p>	<p>You will build on practical skills acquired in Year 7 and the concept of energy to consider how thermal energy can be transferred through substances.</p> <p>Understanding how to perform simple calculations will set a good foundation for more complex calculations in Physics at GCSE and A Level.</p> <p>A good grasp of the concept of heat and temperature can relate to topics studied in Chemistry when considering states of matter.</p>

			of measurements.	
<b>HT2/3: 8B2 : Gas Exchange and Respiration</b>	<p>You will look at the structure of the human breathing system and look at the differences between the air we breathe in and out.</p> <p>You will carry out investigations into one of the most important Biological reactions-Respiration and how energy is released for Cells</p> <p>You will look at the impact that lifestyle and diseases can have on a persons gas exchange system</p>	<p>Through investigation and experimentation to compare the energy in different food substances</p> <p>Through teacher demonstration of the breathing system</p> <p>By using models of the breathing system</p> <p>Through independent research and enquiry</p> <p>Through class discussion and debate.</p> <p>Through planning your own investigations into Respiration</p>	<p>To understand the importance of a chemical reaction carried out by all living things.</p> <p>To be able to explain the importance of our breathing system and factors which may damage it.</p> <p>To be able to plan investigation and work safely in a laboratory.</p> <p>So you can use models and experiments to carry out accurate observations and draw conclusions.</p>	<p>In this topic you will build on the work you did in Cells in 7B1 and now start to look at what Cells do with the nutrients that they obtain (8B1)</p> <p>You will build upon your work in KS2 and begin to use more advanced terminology when discussing human anatomy.</p> <p>Respiration is an important chemical reaction that is carried out by all Cells. Understanding this process will help you in future leaning, it is revisited all the way up to A level!</p>

<p><b><u>HT2/3:</u></b> <b><u>8C2 reactivity of metals and metal extraction</u></b></p>	<p>You will look at the properties of metals and how metals can react with different substances.</p> <p>You will learn how to use practical investigation and the periodic table to determine which metals are more reactive than others.</p> <p>You will look at how we can extract metals from metal containing compounds.</p>	<p>Through observation and comparison you will be able to identify different metals and non-metals.</p> <p>Through experimentation you will be able to determine the reactivity of metals.</p> <p>Through practical demonstrations by your teacher</p>	<p>To be able to understand the differences between metals and non-metals and the importance of being able to identify substance.</p> <p>To be able to predict the reactions that may occur between substances so that we can work safely.</p> <p>To understand the impact the discovery of metals has had on society and appreciate the importance of metal extraction</p>	<p>This unit will build on the work you have done in Year 7 when looking at properties of elements, compounds and mixtures.</p> <p>You will develop important experimental skills including making predictions, planning experiments and making observations which working safely.</p> <p>You will develop your own methods for remembering large amounts of information and specific orders e.g. mnemonics which can be applied to many different subjects.</p>
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<p><b>HT2/3: 8P4 Electrical Circuits</b></p>	<p>You will learn that all objects contain positive and negative charge and that static electricity is the effect of transferred negative charge</p> <p>You will gain an understanding of current as moving charges pushed by a potential difference</p> <p>You will compare the electrical potential energy of different fruit with different combinations of metals as electrodes</p> <p>You will learn the effect of increasing voltage, current and resistance in circuits and use them in calculations</p>	<p>Through making models of circuits</p> <p>Through teacher input and demonstration.</p> <p>Through experimental analysis and drawing and interpreting graphs</p> <p>Through practical investigations by building circuits and using voltmeters and ammeters to measure potential difference and current.</p> <p>Apply mathematical concepts and calculate results</p> <p>Through using scientific evidence to justify a choice.</p>	<p>Apply mathematical concepts and calculate results</p> <p>Present observations and data using appropriate methods, including tables and graphs.</p> <p>Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions</p> <p>Use and derive simple equations and carry out appropriate calculations</p> <p>Build on problem solving skills by using practical equipment</p>	<p>You will build on your understanding from KS2 by constructing more complex electrical circuits and identifying and naming its parts of the circuit you have not previously come across, such as ammeters and voltmeters.</p> <p>You will build on whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery and what happens when you add a second loop.</p> <p>Understanding the fundamentals of electricity is hugely important in modern life as our demand for electricity continues to grow</p>
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<p><b>HT3/4:</b> <b>8B4: Plants</b></p>	<p>How plants produce their own food</p> <p>How plants are designed to be able to produce their own food</p> <p>The effect of fertilisers on plant growth</p>	<p>Through testing leaves for the presence of this food (glucose)</p> <p>Through observation of plant tissues</p> <p>Through the use of information sources and independent enquiry</p> <p>Through the planning and analysis of investigative work</p>	<p>Photosynthesis is a key concept on the GCSE and A-Level specifications.</p> <p>Being able to assess and control risk is a skill required across all scientific practical work</p> <p>Being able to present and draw conclusions from data is a key skill for GCSE and A-Level Science</p>	<p>Builds on Y7 knowledge that plants make their own food by understanding how they do this</p> <p>Introduces a fundamental concept which is further explored in Y9 and Y10 in more depth</p> <p>Improves student skills at collecting data in a valid manner</p>
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<p><b>HT3/4:</b> <b>8C4:</b> <b><u>Reactions of Acids</u></b></p>	<p>To define acids and alkalis in terms of neutralisation reactions.</p> <p>Recap how the pH scale and indicators are used for measuring acidity and alkalinity.</p> <p>How acids react with metals to produce a salt plus hydrogen.</p> <p>How acids react with alkalis to produce a salt plus water.</p>	<p>Through teacher input and demonstration.</p> <p>Through practical work and a mini investigation to make sodium chloride via neutralisation.</p> <p>Through independent learning and research about bee and wasp stings.</p> <p>Through the making and use of revision resources and the completion of past exam questions to conclude the topic.</p>	<p>Chemical reactions are used to make useful substances from everyday resources. Reactions of acids are some of the most common and important reactions.</p> <p>You will gain practical skills carrying out a range of different activities, selecting appropriate equipment and carrying out risk assessments.</p>	<p>This learning will build on knowledge of acids and alkalis from year 7 and will prepare for further work on acids, alkalis and salts in the GCSE C4 topic Chemical Changes.</p> <p>You will develop your practical skills making salts and using acids and alkalis safely which will be needed in future investigations required for GCSE.</p>
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<p><b>HT3/4:</b> <b>8P1 Sound</b></p>	<p>Sound travels as a “longitudinal wave”</p> <p>Sound travels at different speeds in different media, related to how closely packed the particles are. Sound cannot travel through empty space.</p> <p>Humans have quite a limited range of hearing compared to other animals, and our rather small outer ears mean that we cannot detect very quiet sounds.</p> <p>The human ear has similarities to a microphone</p> <p>Echo location helps animals navigate their environment, and Sonar copies nature so that sailors can also use echoes to explore the oceans.</p>	<p>Making sounds with home-made instruments</p> <p>Teacher demonstration: the oscilloscope</p> <p>Practical investigations – echoes, big ears</p> <p>Identify “ghosts” from the shape of their sound waves</p> <p>Watch videos about how ears and microphones work</p>	<p>Understand that animals have adapted to suit their environment, and appreciate how form relates to function</p> <p>Apply mathematical equations to make predictions</p> <p>Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions</p>	<p>In Y4 you learnt that sounds are caused by vibrations, and that sound travels as waves through air and other media to our ears.</p> <p>Now you are discovering how and why the speed of sound in different media varies.</p> <p>You also discovered in Y4 the features of a vibrating object that affect the pitch of the sound it makes, and found that larger vibrations make louder sounds.</p> <p>Now in Y8 you will visualise sound waves using a machine called an oscilloscope, and will be able to identify high or low pitch sounds and high or low volume sounds from the shape of the wave.</p> <p>You will build on this knowledge at GCSE, and will learn to calculate the frequency or speed of sound waves just from their oscilloscope traces.</p> <p>Also in Y8 you will learn about the structure of the ear, and how it relates to a microphone. You will learn that humans have a quite limited hearing range compared to other animals, and this links to your work in</p>
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				<p>Biology on adaptation to environment.</p> <p>If you choose the Separate Science route at GCSE (optional extra science), you will learn about how we can use ultrasound (with too high a pitch for humans to hear) for medical imaging.</p> <p>If you continue your study of Physics at A Level, you will learn why we can hear round corners!</p>
<p><b><u>HT5/6:</u></b> <b><u>8B3 – The Body</u></b></p>	<p>The structure of the human skeleton</p> <p>How muscles and joints work together to control our movements</p> <p>The ways that drugs can affect the body</p>	<p>Through matching the names of bones to a model skeleton</p> <p>By using their own bodies as a reference</p> <p>By carrying out an investigation into finger muscle strength</p> <p>Through research and independent enquiry</p> <p>Through the analysis of data and the drawing of relevant conclusions</p>	<p>To be able to understand the way in which their own body works</p> <p>To be able to better understand the nature of sports performance and injury in everyday life</p> <p>To be able to use sources of information to gather answers to questions</p> <p>To be able to formulate valid</p>	<p>Through building on their existing KS2 knowledge of the skeleton</p> <p>To develop understanding of how the systems of the body work which can be used in GCSE and A-Level PE</p> <p>Through continuing the use of research sources to further develop students' skills at identifying and using key information</p> <p>To provide students which further opportunity to test a</p>

			<p>conclusions from data</p> <p>To be able to make informed future choices about drug use by understanding the harm it can cause</p>	<p>hypothesis and analyse data</p>
<p><b>HT5/6:</b> <b>8C3 : Rocks</b></p>	<p>You will look at the structure of the Earth and the different types of rocks. This includes how to identify them, how they are all linked by the rock cycle and how fossils form.</p> <p>You will carry out practical activities analysing rocks, investigating crystal size and modelling weathering.</p>	<p>Through analysing and comparing different samples of rocks.</p> <p>Through investigation into crystal size.</p> <p>Through modelling the process of weathering.</p> <p>Through independent research.</p>	<p>To understand what different types of rocks are found in the Earth, how these form and how to identify them.</p> <p>You will also understand the importance of analysing rocks and what information can be learnt from this.</p> <p>You will also see how we can model processes.</p>	<p>You will build on your work from KS2 where you found out about different kinds of rocks, their appearance and properties.</p> <p>In GCSE Chemistry in the C7 Organic Chemistry topic you will go on to look at fossil fuels. Studying rocks will help you understand this.</p> <p>This also links to Geography looking at the Earth's structure and tectonic plates.</p>
<p><b>HT5/6:</b> <b>8P2 Light</b></p>	<p>In this unit you will look at Light and how it behaves.</p> <p>You will look at the electromagnetic spectrum and be able to explain why objects display different colours.</p> <p>You will look at the properties of surfaces and substances and how this affects light.</p> <p>You will learn about both the structure of</p>	<p>Through teacher led demonstrations</p> <p>Through practical activities allowing you to explore how light behaves</p> <p>Through investigation into reflection and refraction.</p> <p>Through independent research.</p>	<p>To appreciate the importance of light and how it affects our ability to observe the world around us.</p> <p>To understand how we have based technology on scientific principles.</p> <p>To be able to plan scientific investigations and make valid</p>	<p>This unit will build on the unit 8P1 which looks at Sound (another type of Wave)</p> <p>You will develop and understanding of part of the electromagnetic spectrum which will be expanded upon in future years.</p> <p>You will be able to appreciate the importance of light and colour in Art and how we see in colour in Biology.</p>

	the eye and camera and compare how they are similar and different.	Through the application of knowledge to everyday situations	conclusions for data you gather.	
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