

Year 8

Timing	Unit Title	Key Question	Knowledge	Assessing Understanding
Autumn Half Term 1	Energy in our diets and The digestive system	What happens to the food we eat?	<ul style="list-style-type: none"> Content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed. Calculations of energy requirements in a healthy daily diet. The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food. Enzymes simply as biological catalysts. The importance of bacteria in the human digestive system. 	<p>Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> recall the knowledge covered interpret graphical and experimental data, make connections between different areas of understanding, explain the scientific processes covered evaluate experimental procedures and results. <p>Skills</p> <ul style="list-style-type: none"> Graph drawing. Data analysis. Description. Explanation. Evaluation. Comparison. Scientific literacy. <p>Assessment point information Students will be assessed using written exam questions in a one hour paper.</p>
	Compounds, formulae and equations	How do we use symbols to identify materials and reactions?	<ul style="list-style-type: none"> Safety review and introduction to the Periodic Table. How to determine the formula of a compound using valency. Using ideas about conservation of mass to write balanced equations for chemical reactions. 	
	Forces and Motion 2	How do we lift a heavy weight with very little effort?!	<ul style="list-style-type: none"> Describe turning forces as moments and calculate the moment of a force. Solve problems using the pressure equation. Describe how the pressure varies as the depth increases in a fluid. Use particle model to define density as how spread out the mass of a substance is. Describe what the different shapes of a speed time graph tell us. 	

Autumn Half Term 2	Photosynthesis introduction	Why don't plants walk?	<ul style="list-style-type: none"> Plants make carbohydrates in their leaves by photosynthesis. Word equation. Experiments used to investigate photosynthesis. 	
	Reactions of acids and alkalis	Why are acids and alkalis dangerous? What happens when you react acids with alkalis?	<ul style="list-style-type: none"> Defining acids and alkalis. Making indicators. The pH scale for measuring acidity/alkalinity; and indicators. Reactions of acids with bases to produce a salt plus water. 	
	Earth and Space 2	Is there anybody out there?	<ul style="list-style-type: none"> Appreciate the size of the universe and the objects within it. Be aware that gravity is different on different planets. Know what an eclipse is and why it happens. Be able to explain how a star is formed. Know what happens at the end of a star's life. Know a bit about how black holes form and why we have them. 	

Spring Half term 1	Further photosynthesis	What do plants need to live?	<ul style="list-style-type: none"> ● Limiting factors in photosynthesis. ● The mineral ions plants take up in their roots and their uses. 	<p>Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> ● recall the knowledge covered ● interpret graphical and experimental data, ● make connections between different areas of understanding, explain the scientific processes covered ● evaluate experimental procedures and results. <p>Skills</p> <ul style="list-style-type: none"> ● Graph drawing. ● Data analysis. ● Description. ● Explanation. ● Evaluation. ● Comparison. ● Scientific literacy. <p>Assessment point information Students will be assessed using written exam questions in a one hour paper.</p>
	Further neutralisation	What else reacts with acids?	<ul style="list-style-type: none"> ● Reactions of acids with carbonates to produce a salt plus water and carbon dioxide. ● Planning and carrying out an investigation. 	
	Waves 2	How do we see colours?	<ul style="list-style-type: none"> ● Consider the properties of light. ● Investigate the reflection of light. ● Investigate the refraction of light. ● Know that white light is made up of all the colours. ● How do we filter light into different colours? ● How do we mix colour to make new ones? ● How is the eye designed to see? 	
Spring Half term 2	Ecology	How plants and animals all are connected?	<ul style="list-style-type: none"> ● Classification of organisms. ● The interdependence of organisms in an ecosystem, including food chains, food webs and pyramids. ● How humans affect the environment, including the accumulation of toxic materials. ● The importance of plant reproduction through insect pollination in human food security. 	
	Reactions of metals	How do metals react?	<ul style="list-style-type: none"> ● What are the properties that distinguish metals and non-metals? ● Reactions of metals and acids. ● Reactions of metals and oxygen. ● Reactions of metals and water. ● Rusting and its prevention. 	
	Electricity and Magnetism 2	How do we use electricity?	<ul style="list-style-type: none"> ● Describe models that explain how electricity flows in circuits. ● Investigate resistance. ● Recap Circuits. 	

Summer Half term 1	Genetics and evolution	How does DNA make us who we are?	<ul style="list-style-type: none"> • 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. 	<p>Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> • Recall the knowledge covered • Interpret graphical and experimental data, • Make connections between different areas of understanding, explain the scientific processes covered • Evaluate experimental procedures and results <p>Skills</p> <ul style="list-style-type: none"> • Graph drawing. • Data analysis. • Description. • Explanation. • Evaluation. • Comparison. • Scientific literacy. <p>Assessment point information Students will be tested in their 1 hour end of year exam, which will be on all topics covered so far in year 7+8.</p>
	Further metal reactions Energy changes in reactions		<ul style="list-style-type: none"> • Reactivity Series. • Displacement reactions. • How to classify reactions as exothermic or endothermic. • Representing exothermic and endothermic reactions on energy level diagrams. • Calculations with bond energies. 	
	Electromagnetism	How do we use electromagnetism?	<ul style="list-style-type: none"> • Look at the link between current and magnetic fields. • Investigate the strength of an electromagnet. • Find out about uses of electromagnets. 	
Summer Half term 2	The brain	What's going on inside your brain?	<ul style="list-style-type: none"> • Structure and function of nerve cells. • Reflexes. • Structure and function of the different areas of the brain. • Brain disorders. 	
	Structure of the Earth and products from rocks	What chemicals can we get from the Earth?	<ul style="list-style-type: none"> • The composition of the Earth. • The structure of the Earth. • The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. • Earth as a source of limited resources and the efficacy of recycling. • the production of carbon dioxide by human activity and the impact on climate. 	

	Energy and Power 2	What do we mean by Energy?	<ul style="list-style-type: none">● Define energy stores and pathways.● Look at different energy scenarios and describe them in terms of their stores and pathways.● Know what is meant by power.● Know what is meant by the efficiency of an energy transfer and how to calculate it.	
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