

St Mary's CE High School Curriculum Map 2023-24

Year 8 Science



GREEN = CROSS CURRICULAR LINKS TO EXPLORE

Intent


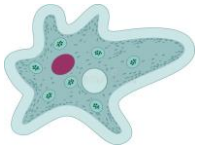




The understanding of scientific thinking is fundamental to making decisions in society that affect us all. This enables students to broaden their minds to make informed decisions about all aspects of the world in which we live. We are passionate about the subject as a way of understanding the universe and the excitement and enjoyment it can bring to how we view the world around us. We encourage the study of Biology, Chemistry and Physics equally and separately but recognise the common skills required by all three.

We believe the study of Science give students the skills they need that are useful to them for later learning and decision making for any subjects they study in the future. The study of Science also paves the way for a vast array of careers and job opportunities whether they require pure scientific knowledge or an application of the skills and understanding gained through the study of the subjects.

Fundamental skills essential for Science include analysis of data, communication of ideas through speech and writing, application of knowledge to explain natural phenomena and make predictions, use of evidence to come to conclusions and the use of practical skills to carry out experiments.

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At Key Stage 3 students develop scientific knowledge and conceptual understanding by studying a broad range of topics covering Biology, Chemistry and Physics. At St Mary's students follow the Exploring Science scheme of learning by Pearson Publishing which develops an understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them. The course is designed to lead students seamlessly into their GCSE Science studies and ensures students are equipped with the scientific knowledge and skills required to understand the uses and implications

	Autumn 1	Autumn 2	Spring 3	Spring 4	Summer 5	Summer 6
						
CONTENT	The Periodic Table	Electricity	Metals and their uses Fluids	Food and Nutrition Combustion	Energy Transfers	Earth and Space

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<i>Declarative Knowledge – 'Know What'</i>	Plants and their reproduction	Unicellular organisms			Breathing and respiration	Revision and Preparing for Year 9
Skills <i>Procedural Knowledge – 'Know How to'</i>	<ul style="list-style-type: none"> Explain what is meant by 'reproducible results' and their significance. Draw and interpret line graphs for two sets of data. 'of suitable apparatus to carry out a practical investigation. Explain why a method is well designed for purpose. Understand and confidently use the terms 'precision and accuracy.' <p><u>Maths Skills</u> Ratios, use of formulae, substitution of values into an equation. Measuring angles. Calculation of area. English – use of Tier 2 and 3 vocabulary. History – the Black Death</p>	<ul style="list-style-type: none"> Be able to interpret and plot scatter graphs. Identify and explain correlation. Understand correlation is not the same as causation. <p><u>Maths Skills</u> Drawing graphs, plotting data points, calculating percentages. English – use of Tier 2 and 3 vocabulary. Technology – properties and uses of metals and non – metals. Students explore the Eat well plate in Food technology and look at vitamins and minerals. PE – breathing and respiration for exercise. Religious Studies – the concept of Stewardship and caring for the planet. Geography – the effects of combustion on air quality and the atmosphere. History – the role played by combustion in the Industrial Revolution.</p>			<ul style="list-style-type: none"> Drawing and interpreting pie charts. Evaluating a method. <p><u>Maths Skills</u> Drawing and interpreting pie charts, histograms. Calculation of median and mode. English – use of Tier 2 and 3 vocabulary. Religious Studies – How does the Big Bang theory fit in with the Creation story? Geography – how can we harness renewable energy to meet our needs?</p>	
Key Questions	What are atoms like? How are elements arranged in the Periodic Table? What do we do with anomalous results?	What makes metals useful? What happens during rusting and corrosion? What makes alloys so useful?			What is the difference between internal energy and temperature? How is energy transferred by heating?	

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	<p>What kinds of trends occur in physical and chemical properties?</p> <p>How is classification useful?</p> <p>What is the difference between sexual and asexual reproduction?</p> <p>What are flowers for?</p> <p>How are seeds formed?</p> <p>When does germination occur?</p> <p>How do animals use plants?</p> <p>How do we measure electricity?</p> <p>How can we use models to help us think about electricity?</p> <p>What are the differences between series and parallel circuits?</p> <p>How do we use electricity safely?</p> <p>What is a unicellular organism?</p> <p>How do we use fungi?</p> <p>What are the features of bacteria and protists?</p> <p>How are microorganisms important in the carbon cycle?</p>		<p>How do metals react with water?</p> <p>What happens when metals react with acids?</p> <p>How do we explain the properties of solids, liquids and gases?</p> <p>How can we find the density of an object?</p> <p>How do materials change from one state to another?</p> <p>How do fluids exert pressure?</p> <p>Why do some things float and others sink?</p> <p>What is drag and how can it be reduced?</p> <p>What are nutrients?</p> <p>Why do we need different nutrients?</p> <p>Why is a balanced diet important?</p> <p>How does the digestive system work?</p> <p>How are surface areas calculated?</p> <p>How does digested food get into the blood?</p> <p>Should fireworks be banned?</p> <p>What forms when a fuel reacts with oxygen?</p> <p>How do metals react with oxygen?</p> <p>How do you stop a combustion reaction?</p> <p>Why are fair tests carried out?</p> <p>How can burning fuels cause pollution?</p> <p>Is pollution causing climate change?</p> <p>How can we reduce pollution from cars?</p>		<p>How can we control energy transfers?</p> <p>How much energy do different appliances use?</p> <p>How do we pay for energy?</p> <p>How does our energy use affect the planet?</p> <p>How can we survive in extreme conditions?</p> <p>What is aerobic respiration?</p> <p>How are gases exchanged in the lungs?</p> <p>How does anaerobic respiration occur?</p> <p>How does training change the body's systems?</p> <p>How was our model of the solar system worked out?</p> <p>What causes the seasons?</p> <p>What is the Earth's magnetic field?</p> <p>How does gravity affect the solar system?</p> <p>What is beyond our solar system?</p> <p>Should we be spending more money on exploring space?</p>	
Assessment	<p>Formative assessment: weekly low stakes 'progress checks' for students in the form of exit tickets.</p> <p>This will be marked by the class teacher</p>	<p>Summative assessment: End of unit assessments.</p>	<p>Formative assessment: weekly low stakes 'progress checks' for students in the form of exit tickets.</p> <p>This will be marked by the class teacher</p>	<p>Summative assessment: End of unit assessments. Year 8 Examinations MARCH</p>	<p>Formative assessment: weekly low stakes 'progress checks' for students in the form of exit tickets.</p> <p>This will be marked by the class teacher and used as a diagnostic</p>	<p>Summative assessment: End of unit assessments.</p> <p>END OF YEAR 8 EXAM</p>

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	and used as a diagnostic tool. Students will have opportunities to redraft their work.		and used as a diagnostic tool. Students will have opportunities to redraft their work.		tool. Students will have opportunities to redraft their work.	SUMMER 6 – June.
Extended Learning /Extension Activities	<p>(ALL EXTENDED LEARNING, BLENDED LEARNING TASKS, HOMEWORK and CHALLENGE ACTIVITIES - SET VIA GOOGLE CLASSROOM</p> <p>STEM CLUB – begins in Autumn Term, open to all Year 7 and 8 students.</p>					