

Brief overview how the intended learning over the year		The year 9 science journey continues to follow the 10 big ideas of science. It will revisit and build on units that have been covered in years 7 and 8.												
	Trinity 2		Michaelmas 1			Michaelmas 2			Lent 1		Lent 2		Trinity 1	
Topic/Big Question	June Earth's resources and climate	July Magnetism	Sept Work, heating and cooling	Waves	Oct Evolution and inheritance	Nov Cell Biology - Structure	Dec Atomic structure	Jan Energy stores and resources	Feb Organisation - Health	Mar Cell Biology - Movement in cells	Apr Energy calculations	May Periodic table	June Organisation - Systems	
Theme(s)	Earth	Electromagnetism	Energy	Waves	Genes	Organisms	Matter	Energy	Energy Organisms	Organisms	Energy	Matter	Organisms	
<b>Key Knowledge</b>	Impact of human activity on the atmosphere and the importance of the carbon cycle, the ways that we use the Earth's resources and how we can reduce this to preserve them, polymers, composite materials and ceramics.	Properties of magnets, magnetism and magnetic fields, electromagnets and investigate how to increase their strength and how this links to their uses.	Simple machines and measuring the work done, energy and temperature, the processes of convection and radiation.	Key properties of waves, how microphones and loudspeakers use waves, ultrasound, the electromagnetic spectrum, the uses of the different waves in the spectrum and what happens when waves interact with each other.	The process of natural selection and how it leads to evolution, extinction and methods to preserve biodiversity. Pupils will also learn about the structure of DNA, genetics, inheritance and genetic modification.	The structure of animal and plant cells and the function of the organelles, the differences between eukaryotic and prokaryotic cells, the use of microscopes, specialised cells, stem cells and the process of mitosis.	Representing reactions through equations, the structure of the atom, electron arrangement and the development of the atomic model.	Different energy stores, pathways between stores. They will also learn about energy dissipation and efficiency, energy resources and how to prevent energy transfer in homes.	Levels of organisation in living organisms, the components of blood, the blood vessels and the structure of the heart and heart diseases and treatments, types of cancer.	Movement of substances in cells through diffusion, osmosis and active transport.	Amount of energy in kinetic stores, gravitational stores, elastic stores and thermal stores, work done, power and how these link to energy.	Development of the periodic table, the properties of the elements in groups 1, 7, 0 and the transition metals.	The digestive system, nutrients in a balanced diet and the role of enzymes in this process, structure of plants and the movement of substances through transpiration and translocation.	
<b>Key Skills</b>	Use scientific vocabulary, models and diagrams to explain scientific concepts, evaluate the impact of human activities and discuss the methods that are being used to tackle these issues.	Identify variables in an investigation, collect data, analyse data and make conclusions, use scientific models and key vocabulary to explain scientific concepts.	Identify variables, collect and analyse data to allow them to draw suitable conclusions, use scientific models and key vocabulary to explain scientific concepts.	Recognise, interpret and construct wave diagrams and draw conclusions from them, use scientific models and key vocabulary to explain scientific concepts.	Use scientific models and key vocabulary to explain scientific concepts, explain how models and theories change over time with new evidence and the importance of peer review.	Use scientific models, diagrams and key vocabulary to explain scientific concepts, identify variables in an investigation, collect data, analyse data to draw conclusions, consider the ethical arguments surrounding scientific developments.	Identify variables in an investigation, collect data, analyse data and make conclusions, use scientific models, diagrams and key vocabulary to explain scientific concepts and link observations to key substantive knowledge, evaluate the advantages and disadvantages of scientific developments.	Identify variables in an investigation, collect data, analyse data to make repeatable measurements, use an appropriate number of significant figures, calculate mean averages and use a range of mathematical techniques to enable them to answer scientific questions. Use SI units and to convert measurements when necessary, use scientific models, diagrams and key vocabulary to explain scientific concepts and link observations to key substantive knowledge.	Identify variables in an investigation, collect data, analyse data and make conclusions, use scientific models, diagrams and key vocabulary to explain scientific concepts and link observations to key substantive knowledge, surrounding scientific developments.	Use scientific models, diagrams and key vocabulary to explain scientific concepts, identify variables in an investigation, collect data, analyse data to draw conclusions, consider the ethical arguments surrounding scientific developments.	Identify variables in an investigation, collect data, analyse data to make a conclusion, make repeatable measurements, use an appropriate number of significant figures, calculate mean averages and use a range of mathematical techniques to enable them to answer a scientific question. Use SI units and to convert measurements when necessary, use scientific models, diagrams and key vocabulary to explain scientific concepts and link observations to key substantive knowledge.	Identify variables in an investigation, collect data, analyse data and make conclusions, use scientific models, diagrams and key vocabulary to explain scientific concepts and link observations to key substantive knowledge.	Identify variables in an investigation, collect data, analyse data and make conclusions, use scientific models, diagrams and key vocabulary to explain scientific concepts and link observations to key substantive knowledge, evaluate the advantages and disadvantages of scientific developments.	
<b>Assessment</b>	End of unit learning checkpoint. Extended answer on the greenhouse effect.	End of unit learning checkpoint. Extended answer on electromagnets.	End of unit learning checkpoint. Extended answer on conduction.	End of unit learning checkpoint. Extended answer on the electromagnetic spectrum.	End of unit learning checkpoint. Extended answer on natural selection.	End of unit learning checkpoint on cell structures	End of unit learning checkpoint on atomic structure. Extended answer on the atomic models.	End of unit learning checkpoint on energy stores and resources.	End of unit learning checkpoint on organisation health. Extended answer on coronary heart disease.	End of unit learning checkpoint on transport in cells. Extended answer on osmosis.	End of unit learning checkpoint on energy calculations.	End of unit learning checkpoint on the periodic table. Extended answer on reactivity of groups 1 and 7.	End of unit learning checkpoint on organisation tissues. Extended answer on the enzymes.	
<b>Careers</b>	Climate scientist Composite engineer Meteorologist Recycling worker Dentist	MRI technologist Recycling worker Robotics engineer	Glass artist Heating engineer	Dentist Radiographer	Conservationist Geneticist	Stem cell researcher Embryologist IVF technician	Renewable energy engineer. Geophysicist	Biomedical engineer Sport scientist	Cell biologist	Research scientist	Gastrointestinal physiologist			
<b>Personal and Spiritual Development</b>	Stewardship. Koinonia. Spirituality - awe and wonder of the earth. Relationship with God, environment and others. Citizenship - looking after the earth. Rule of law - laws around recycling	Relationship with others during practical work. Rule of law - health and safety during practical work	Relationship with others during practical work. Rule of law - health and safety during practical work	Relationship with others during practical work. Rule of law - health and safety during practical work. Healthy living - dangers of UV radiation.	Compassion. Spirituality - wonder of creation and evolution. Courageous advocates - protecting endangered species. Citizenship - use of gene banks. Equality - work of Rosalind Franklin in the discovery of DNA	Compassion. Spirituality - relationship with creation and evolution. Mutual respect - tolerance of different religious beliefs about where life began. Citizenship - ethical debates regarding stem cells.	Spirituality - relationship with creation. Mutual respect - development of the atomic model. Equality - collaboration of different scientists to develop the atomic model.	Stewardship. Relationship with creation. Courageous advocacy - cost of energy bills. Mutual respect and rule of law - use of renewable fuels. Citizenship - use of renewable fuels.	FBVs - mutual respect over choices regarding treatments. Healthy living - diet impacts on coronary heart disease. Equality - Charles Richard Drew set up blood banks but not allowed to use them due to the colour of his skin. Courageous advocacy - setting up food banks during war time	Wisdom. Compassion. Relationship with others during practical work. Rule of law - health and safety during practical work	Relationship with others during practical work. Rule of law - health and safety during practical work	Wisdom. FBVs - mutual respect over different ideas of the atomic model. Spirituality - relationship with creation	Healthy living - components of a balanced diet. Spirituality - relationship with others and self	
<b>Any other key information (if relevant)</b>						Builds on previous unit of movement and cells		Builds on cells unit from KS3		Builds on energy costs unit from KS3	Builds on previous unit of elements and the periodic table from KS3			