Long Term Plan: Physics Year 9

ARCHBISHOP SENTAMU ACADEMY
CHURCH OF ENGLAND

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Link to subject ethos and driver (rename)	Anticipated misconceptions	Links to previous KS	Links to future KS	Opportunity for stretch for high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Energy	Stores, Pathways and energy transfers. Kinetic, Gravitational and Elastic energy calculations. Heat transfer and insulation Renewable and non-renewable resources.	Changing the subject of simple equations with three terms. Evaluation of an equation involving multiplication, division, squares and square roots Record accurate results in an appropriate format Present and interpret data in tabular and		Students often speak of "types" of energy. This is fundamentally incorrect. Students must talk about energy inthe context of stores and pathways Students often frame renewable and non-renewable in terms of "able to be used again" rather than in terms of the finite or infinite pool of	This unti builds directly from year seven study of energy stores and pathways.	This until builds directly onto the Energy topic that forms 25% of Paper One.	Students could be asked to consider more complex energy transfers involving more than two stores. Students could aksed to use data on efficiency and cost to evaluate appliances Changing the subject of energy	The impact of non-sustainable resources and the everyday changes that can be made to promote the use of more sustainable resources	The ubiquity of energy means that problems can be framed in a variety of familiar and unfamiliar contexts	As an introductory course, the KS3 physics programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences

			graphical form.		resources.			equations to calculate theoretical maximum speed			
Two	Energy	Stores, Pathways and energy transfers. Kinetic, Gravitational and Elastic energy calculations. Heat transfer and insulation Renewable and non-renewable resources.	Changing the subject of simple equations with three terms. Evaluation of an equation involving multiplication, division, squares and square roots Record accurate results in an appropriate format Present and interpret data in tabular and graphical form.		Students often speak of "types" of energy. This is fundamentally incorrect. Students must talk about energy inthe context of stores and pathways Students often frame renewable and non-renewable in terms of "able to be used again" rather than in terms of the finite or infinite pool of resources.	This unti builds directly from year seven study of energy stores and pathways.	This until builds directly onto the Energy topic that forms 25% of Paper One.	Students could be asked to consider more complex energy transfers involving more than two stores. Students could aksed to use data on efficiency and cost to evaluate appliances Changing the subject of energy equations to calculate theoretical maximum speed	The impact of non-sustainable resources and the everyday changes that can be made to promote the use of more sustainable resources	The ubiquity of energy means that problems can be framed in a variety of familiar and unfamiliar contexts	As an introductory course, the KS3 physics programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Three	The Particulate Model of Matter	Density The properties of	Record accurate experimental data		That particles change in their properties	During the KS2 programme of study,	This unit builds directly onto the Paper One	Extended writing, linking properties to structure	Working safely in a lab and respecting each other's	The ubiquity of the three states of matter means	As an introductory course, the KS3 physics

		solids, liquids and gases; as explained by their structure Specific heat capacity and specific latent heat. Gas pressure, and the impact of temperature on gas pressure.	Present and interpret data in tabular and graphical form. Extended writing Change the subject of an equation, and evaluate an equation with three or four terms.		when they change states, rather than change arrangement and movements.	students will have looked at the simple properties of solids, liquids and gasess, and will have explore simple changes of state	Unit, "The Particulate Model of Matter". In this unit students will study particle arrangement in greater depth, and explore concepts of specific heat capacity and latent heat.	Multi-step calculations involving energy and temperature change	work space	that problems can be framed in a variety of familiar and unfamiliar contexts	programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Four	The Particulate Model of Matter	Density The properties of solids, liquids and gases; as explained by their structure Specific heat capacity and specific latent heat. Gas pressure, and the impact of temperature on gas pressure.	Record accurate experimental data Present and interpret data in tabular and graphical form. Extended writing Change the subject of an equation, and evaluate an equation with three or four terms.		That particles change in their properties when they change states, rather than change arrangement and movements.	During the KS2 programme of study, students will have looked at the simple properties of solids, liquids and gasess, and will have explore simple changes of state	This unit builds directly onto the Paper One Unit, "The Particulate Model of Matter". In this unit students will study particle arrangement in greater depth, and explore concepts of specific heat capacity and latent heat.	Extended writing, linking properties to structure Multi-step calculations involving energy and temperature change	Working safely in a lab and respecting each other's work space	The ubiquity of the three states of matter means that problems can be framed in a variety of familiar and unfamiliar contexts	As an introductory course, the KS3 physics programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences

Five	Electricity	Static electricity Current, potential difference and resistance Ohms Law Circuit components and their resistance characteristics Series and parallel circuits Electricity in the home, and calculations of appliance power	Record accurate experimental data Present and interpret data in tabular and graphical form. Extended writing Change the subject of an equation, and evaluate an equation with three or four terms.		How current and potential difference split across series and parallel circuits	In upper Key Stage two students will have studied simple circuits and how the number of cells affects the brightness of bulbs. They will also have studied simple component symbols	This unit builds directly onto the electricity unit at GCSE, which forms a large part of Paper One	Multistep calculations, involving two or more electricity equations	Working safely in a lab and respecting each other's work space	The ubiquity of electricity means that problems can be framed in a variety of familiar and unfamiliar contexts	As an introductory course, the KS3 physics programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Six	Electricity	Static electricity Current, potential difference and resistance Ohms Law Circuit components and their	Record accurate experimental data Present and interpret data in tabular and graphical form. Extended writing		How current and potential difference split across series and parallel circuits	In upper Key Stage two students will have studied simple circuits and how the number of cells affects the brightness of bulbs. They will also have studied	This unit builds directly onto the electricity unit at GCSE, which forms a large part of Paper One	Multistep calculations, involving two or more electricity equations	Working safely in a lab and respecting each other's work space	The ubiquity of electricity means that problems can be framed in a variety of familiar and unfamiliar contexts	As an introductory course, the KS3 physics programme opens doors to a wide range of STEM field careers; particularly those in engineering,

		resistance characteristics Series and parallel circuits Electricity in the home, and calculations of appliance power	Change the subject of an equation, and evaluate an equation with three or four terms.			simple component symbols					architecture and mechanical sciences