

Long Term Plan: Physics Year 8

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	States of Matter	<p>The difference between chemical and physical changes</p> <p>The structure of solids, liquids and gasses on a particle level</p> <p>The properties of solids, liquids and gasses, with explanations based on their structure.</p> <p>Changes of state</p>	<p>Record accurate experimental data</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p>		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 gasses, and will have explored simple changes of state	<p>This unit builds directly onto the Paper One Unit, "The Particulate Model of Matter".</p> <p>In this unit students will study particle arrangement in greater depth, and explore concepts of specific heat capacity and latent heat.</p>	<p>Students could be asked to consider materials that sublime.</p> <p>Extended writing, linking properties to structure</p>	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

Two	States of Matter	<p>The difference between chemical and physical changes</p> <p>The structure of solids, liquids and gasses on a particle level</p> <p>The properties of solids, liquids and gasses, with explanations based on their structure.</p> <p>Changes of state</p>	<p>Record accurate experimental data</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p>		<p>That particles change in their properties when they change states, rather than change arrangement and movements.</p>	<p>During the KS2 programme of study, students will have looked at the simple properties of solids, liquids and gasses, and will have explored simple changes of state</p>	<p>This unit builds directly onto the Paper One Unit, "The Particulate Model of Matter".</p> <p>In this unit students will study particle arrangement in greater depth, and explore concepts of specific heat capacity and latent heat.</p>	<p>Students could be asked to consider materials that sublime.</p> <p>Extended writing, linking properties to structure</p>	<p>Working safely in a lab and respecting each other's work space</p>	<p>The ubiquity of the three states of matter means that problems can be framed in a variety of familiar and unfamiliar contexts</p>	<p>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</p>
Three	Waves	<p>The properties of waves, including amplitude, frequency and wavelength</p> <p>Sound waves and light waves</p> <p>Reflection, absorption and emission</p>	<p>Record accurate experimental data</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p> <p>Drawing scientific</p>		<p>That waves move matter - rather than just energy.</p>	<p>Students will have studied light and sound at KS2, but this will be the first time considering them as waves</p>	<p>This unit builds directly into the GCSE Waves and Electromagnetic Waves topic, which forms a large part of Paper Two.</p>	<p>Students could be asked to consider what sound travels at different speeds in different materials.</p> <p>Students could be asked to explain why lenses have the effects</p>	<p>Working safely in a lab and respecting each other's work space</p>	<p>The ubiquity of waves means that problems can be framed in a variety of familiar and unfamiliar contexts</p>	<p>As an introductory course, the KS3 physics programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and</p>

		Refraction, lenses and colour	diagrams to the correct scale					they do.			mechanical sciences
Four	Waves	<p>The properties of waves, including amplitude, frequency and wavelength</p> <p>Sound waves and light waves</p> <p>Reflection, absorption and emission</p> <p>Refraction, lenses and colour</p>	<p>Record accurate experimental data</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p> <p>Drawing scientific diagrams to the correct scale</p>		That waves move matter - rather than just energy.	Students will have studied light and sound at KS2, but this will be the first time considering them as waves	This unit builds directly into the GCSE Waves and Electromagnetic Waves topic, which forms a large part of Paper Two.	<p>Students could be asked to consider what sound travels at different speeds in different materials.</p> <p>Students could be asked to explain why lenses have the effects they do.</p>	Working safely in a lab and respecting each other's work space	The ubiquity of waves 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	Magnetism	<p>Bar magnets and the magnetic field around them.</p> <p>Magnetic attraction and repulsion</p> <p>The Earth's magnetic field</p>	<p>Record accurate experimental data</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p>		That all metals are magnetic, rather than just iron, nickel and cobalt.	In KS2, students will have studied magnets and the effects of repulsion and attraction, but this is the first time that they will have looked at the idea of	This unit builds directly onto the deeper study of magnets and electromagnets, which is the final Paper Two topic in GCSE Physics	Students could be asked to explore the difference between magnetic and true north	Working safely in a lab and respecting each other's work space	The ubiquity of magnets 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

		Electromagnets Electric Motors				magnetic fields					engineering, architecture and mechanical sciences
Six	Magnetism	Bar magnets and the magnetic field around them. Magnetic attraction and repulsion The Earth's magnetic field Electromagnets Electric Motors	Record accurate experimental data Present and interpret data in tabular and graphical form. Extended writing		That all metals are magnetic, rather than just iron, nickel and cobalt.	In KS2, students will have studied magnets and the effects of repulsion and attraction, but this is the first time that they will have looked at the idea of magnetic fields	This unit builds directly onto the deeper study of magnets and electromagnets, which is the final Paper Two topic in GCSE Physics	Students could be asked to explore the difference between magnetic and true north	Working safely in a lab and respecting each other's work space	The ubiquity of magnets 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