

# Long Term Plan: Physics Year 7

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	Forces and Motion	<p>Simple force diagrams</p> <p>The effect of balanced and unbalanced forces</p> <p>Air resistance, drag and friction</p> <p>Moments and turning forces</p> <p>Hooke's Law</p> <p>Calculating speed</p> <p>Distance-Time graphs</p>	<p>Changing the subject of simple equations with three terms.</p> <p>Simple multiplication and division</p> <p>Record accurate results in an appropriate format</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Calculate the gradient of a</p>		<p>Students often state that an object will be still if there is no force acting upon it, so it is important to stress that if it is moving it will remain moving.</p>	<p>At KS2 students will already have explored the ideas of contact and non-contact forces.</p> <p>They will also have investigated resistive forces such as air resistance, with simple practical investigations such as making parachutes</p>	<p>This unit builds directly into the deeper exploration of forces that students will undertake at KS4, with forces and motion forming 50% of Paper Two GCSE Physics.</p>	<p>Students could be asked to consider cases where forces which are not perpendicular are acting on an object.</p> <p>Students could be asked to find the spring constant from a graph of experimental data</p>	<p>Working safely in a lab and respecting each other's work space</p>	<p>The ubiquity of forces 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>

			line								
Two	Forces and Motion	<p>Simple force diagrams</p> <p>The effect of balanced and unbalanced forces</p> <p>Air resistance, drag and friction</p> <p>Moments and turning forces</p> <p>Hooke's Law</p> <p>Calculating speed</p> <p>Distance-Time graphs</p>	<p>Changing the subject of simple equations with three terms.</p> <p>Simple multiplication and division</p> <p>Record accurate results in an appropriate format</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Calculate the gradient of a line</p>		<p>Students often state that an object will be still if there is no force acting upon it, so it is important to stress that if it is moving it will remain moving.</p>	<p>At KS2 students will already have explored the ideas of contact and non-contact forces.</p> <p>They will also have investigated resistive forces such as air resistance, with simple practical investigations such as making parachutes</p>	<p>This unit builds directly into the deeper exploration of forces that students will undertake at KS4, with forces and motion forming 50% of Paper Two GCSE Physics.</p>	<p>Students could be asked to consider cases where forces which are not perpendicular are acting on an object.</p> <p>Students could be asked to find the spring constant from a graph of experimental data</p>	<p>Working safely in a lab and respecting each other's work space</p>	<p>The ubiquity of forces 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	Stores and Pathways	<p>Energy stores</p> <p>Pathways by which energy moves between stores</p> <p>The conservation of energy</p>	<p>Changing the subject of simple equations with three terms.</p> <p>Simple multiplication and division</p> <p>Record accurate</p>		<p>Students often speak of "types" of energy. This is fundamentally incorrect. Students must talk about energy in the context of stores and pathways</p>	<p>The concept of Energy will not be new to students, but this will be the first time they have studied it in a scientific concept</p>	<p>This unit builds directly onto the Energy topic that forms 25% of Paper One</p>	<p>Students could be asked to consider more complex energy transfers involving more than two stores.</p>	<p>The impact of non-sustainable resources and the everyday changes that can be made to promote the use of more sustainable resources</p>	<p>The ubiquity of energy 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</p>

		Heat transfer and impact of insulation  Power  Renewable and non-renewable sources of energy	results in an appropriate format  Present and interpret data in tabular and graphical form.		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.			Students could be asked to use data on efficiency and cost to evaluate appliances			engineering, architecture and mechanical sciences
Four	Stores and Pathways	Energy stores  Pathways by which energy moves between stores  The conservation of energy  Heat transfer and impact of insulation  Power  Renewable and non-renewable sources of energy	Changing the subject of simple equations with three terms.  Simple multiplication and division  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 in the 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.	The concept of Energy will not be new to students, but this will be the first time they have studied it in a scientific concept	This unit 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 be asked to use data on efficiency and cost to evaluate appliances	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

Five	The Universe	<p>A simple structure and life cycle of stars</p> <p>The solar system, including it's organisation and details of the planets</p> <p>The day and night cycle</p> <p>The lunar cycle</p> <p>The Earth's tilt as a cause of seasons</p> <p>Gravity</p> <p>The wider universe, including galaxies outside our own.</p>	<p>Changing the subject of simple equations with three terms.</p> <p>Simple multiplication and division</p> <p>Record accurate results in an appropriate format</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p> <p>Reading for comprehension</p>		<p>Some students think the sun must be special in some way, when it is in reality, a very average star.</p> <p>The status of pluto.</p> <p>That the "dark side" of the moon is in perpetual darkness.</p>	<p>In year 5, students previously studied the movement of the Earth and how this links to the day/night cycle.</p> <p>Students will also have studied the order of the planets in the solar system.</p>	<p>If students go on to study Triple Science, then this unit will feed directly onto the "Space Physics" unit, which sits in Paper Two of GCSE Physics</p>	<p>Students may be asked to consider more complex gravity calculations.</p>	<p>The contribution of British Scientists to the understanding of the universe.</p>	<p>This unit provides a fundamental explanation for phenomena that students experience every day - The Day/Night, The Moon and the Seasons.</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>
Six	The Universe	<p>A simple structure and life cycle of stars</p>	<p>Changing the subject of simple equations with three terms.</p>		<p>Some students think the sun must be special in some way,</p>	<p>In year 5, students previously studied the movement of</p>	<p>If students go on to study Triple Science, then this unit will feed</p>	<p>Students may be asked to consider more complex</p>	<p>The contribution of British Scientists to the</p>	<p>This unit provides a fundamental explanation for</p>	<p>As an introductory course, the KS3 physics programme</p>

		<p>The solar system, including its organisation and details of the planets</p> <p>The day and night cycle</p> <p>The lunar cycle</p> <p>The Earth's tilt as a cause of seasons</p> <p>Gravity</p> <p>The wider universe, including galaxies outside our own.</p>	<p>Simple multiplication and division</p> <p>Record accurate results in an appropriate format</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p> <p>Reading for comprehension</p>		<p>when it is in reality, a very average star.</p> <p>The status of pluto.</p> <p>That the "dark side" of the moon is in perpetual darkness.</p>	<p>the Earth and how this links to the day/night cycle.</p> <p>Students will also have studied the order of the planets in the solar system.</p>	<p>directly onto the "Space Physics" unit, which sits in Paper Two of GCSE Physics</p>	<p>gravity calculations.</p>	<p>understanding of the universe.</p>	<p>phenomena that students experience every day - The Day/Night, The Moon and the Seasons.</p>	<p>opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences</p>
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