

# Long Term Plan: Physics Year 10

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	Radiation	<p>The development of the atom</p> <p>Alpha, Beta and Gamma radiation; how these alter the nucleus and the properties of these types of radiation</p> <p>Activity and half life</p> <p>(Triple Only) Nuclear fusion and fission</p>	<p>Record accurate experimental data</p> <p>Present and interpret data in tabular and graphical form.</p> <p>Extended writing</p> <p>Calculating the gradient of a graph</p>		<p>That Alpha radiation does not cause damage to cells.</p> <p>That gamma decay affects changes in the nucleus.</p>	<p>This will be the first time students have studied radiation, but the history of the atom as studied in Year 9 chemistry builds up into this unit.</p>	<p>The standard model and interaction between subatomic particles are studied in the first year of A-Level Physics</p>	<p>Construction of decay equations.</p> <p>Calculation of half life using standard form</p>	<p>The impact of radiation and how we can stay safe while using it.</p> <p>The ethics of nuclear power</p>	<p>The use of radioactivity and nuclear power globally; including the approach of the UK and other nations</p>	<p>Radiologist</p> <p>Radiograph technician</p> <p>Nuclear technician</p> <p>A wide range of careers in nuclear research</p>
Two	Forces	Scalar and vector	Changing the subject of		Students often state that an	This unit builds directly	Forces and mechanics	Resolving forces in	Working safely in a lab	The ubiquity of forces	This programme

		<p>quantities</p> <p>Newton's first and third laws</p> <p>(Triple Only) Turning forces</p> <p>(Higher Only) Resolving forces</p> <p>(Triple Only) Gears and levers</p> <p>Hooke's Law</p>	<p>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>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>from the study of forces and motion at key stage three; extending students knowledge to look at more quantitative analysis and the affect of forces in more complex</p>	<p>forms a unit at A-Level, where the same concepts will be covered in more depth</p>	<p>situations where they are not parallel or perpendicular</p>	<p>and respecting each other's work space</p>	<p>means that problems can be framed in a variety of familiar and unfamiliar contexts</p>	<p>opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences</p>
Three	Forces	<p>Scalar and vector quantities</p> <p>Newton's first and third laws</p> <p>(Triple Only) Turning forces</p> <p>(Higher Only) Resolving forces</p> <p>(Triple Only) Gears and</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>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>This unit builds directly from the study of forces and motion at key stage three; extending students knowledge to look at more quantitative analysis and the affect of forces in more</p>	<p>Forces and mechanics forms a unit at A-Level, where the same concepts will be covered in more depth</p>	<p>Resolving forces in situations where they are not parallel or perpendicular</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>This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences</p>

		levers  Hooke's Law	Present and interpret data in tabular and graphical form.  Calculate the gradient of a line			complex					
Four	Motion	Motion-Time graphs  Newton's second law  Acceleration  Terminal velocity and stopping distance  (HT Only) Momentum	Changing the subject of equations  Record accurate results in an appropriate format  Present and interpret data in tabular and graphical form.  Calculate the gradient of a line  Draw tangents to a line		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.	This unit builds directly from the study of forces and motion at key stage three; extending students knowledge to look at more quantitative analysis and the affect of forces in more complex	Forces and mechanics forms a unit at A-Level, where the same concepts will be covered in more depth	Multi-Step momentum calculations	Working safely in a lab and respecting each other's work space	The ubiquity of forces means that problems can be framed in a variety of familiar and unfamiliar contexts	This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Five	Motion	Motion-Time graphs  Newton's second law  Acceleration	Changing the subject of equations  Record accurate results in an appropriate		Students often state that an object will be still if there is no force acting upon it, so it is important to	This unit builds directly from the study of forces and motion at key stage three; extending	Forces and mechanics forms a unit at A-Level, where the same concepts will be covered in	Multi-Step momentum calculations	Working safely in a lab and respecting each other's work space	The ubiquity of forces means that problems can be framed in a variety of familiar and unfamiliar	This programme opens doors to a wide range of STEM field careers; particularly

		Terminal velocity and stopping distance  (HT Only) Momentum	format  Present and interpret data in tabular and graphical form.  Calculate the gradient of a line  Draw tangents to a line		stress that if it is moving it will remain moving.	students knowledge to look at more quantitative analysis and the affect of forces in more complex	more depth			contexts	those in engineering, architecture and mechanical sciences
Six	Half Term Six is dedicated revision of content covered so far, preparation for PPEs, PPEs and DIRT/Improvement Work										