

Curriculum Map: Physics year 9

	Autumn 1	Autumn 2	Spring	Summer
<p>Content Declarative knowledge 'I Know'</p>	<p>Waves To know the difference between transverse and longitudinal waves To define key properties of a wave (amplitude, wavelength, crest, peak) To know the difference between reflection and refraction To list the parts of the electromagnetic spectrum To give a use of each part of the electromagnetic spectrum.</p>	<p>Particle model To know the differences between states of matter To define density To know the difference between latent heat for different states To define specific heat capacity To know what increases the pressure of a gas.</p>	<p>Energy To know the difference between energy and power. To define renewable and non renewable and to list examples. To list examples of energy stores and energy transfers and to define efficiency and conservation of energy. To define work done. Know the factors affecting the thermal energy of an object Know that energy transfers from a hotter object to the cooler object Know the 3 methods of heat transfer. Define specific heat capacity</p>	<p>Forces: Examples of different forces acting on objects. Know the factors affecting the size of drag forces and friction The definition of resultant force Know how materials behave as they are stretched or squashed Know what happens to the length of a spring when the force on it changes The definition of a scalar and a vector Examples of scalar and vectors</p>
<p>Skills Procedural Knowledge 'I know how to'</p>	<p>Calculate the speed of a wave Draw a diagram for reflection and refraction. Explain how reflection and refraction works using wave fronts. Experimentally measure the speed of a wave using a ripple tank and a wave on a string. Compare uses of the electromagnetic radiation. Explain what surface of a Leslie cube emits the most radiation Label a wave with the key features.</p>	<p>Draw diagrams and describe differences between states of matter. Calculate specific heat capacity and latent heat Conduct an experiment to measure the density of an object Draw a cooling curve for a material Tell the difference between latent of fusion and vaporisation. Describe what happens to the pressure of a gas in different conditions</p>	<p>Calculating kinetic energy, gravitational energy, work done, power and efficiency Interpreting data on different energy sources Making comparisons of different energy sources Explaining how heat is transferred through solids, liquids and gases. Describe the experiment to measure specific heat capacity. Use a graph to determine the specific heat capacity of a material.</p>	<p>Draw a force diagram Calculate resultant force Use resultant force to describe the motion of an object Conduct an experiment to conclude how force affects the extension of a material Describe the differences between an elastic and inelastic material Calculate the spring constant experimentally and using the equation</p>
<p>Strategies</p>	<p>Rearrange the equation for wave speed</p>	<p>Interpret a cooling curve</p>	<p>Interpret data and evaluate data on different devices in terms of their efficiency</p>	<p>Interpret experimental results to calculate spring constant or to draw conclusions about the material.</p>

<p>Conditional Knowledge 'I know when to'</p>	<p>Interpret data from the experiment and use to calculate wave speed To evaluate problems with the speed practical and find alternative solutions. Evaluate the pros and cons of using x rays and gamma rays in medicine Apply knowledge of infra red radiation to an external context</p>	<p>Evaluate the accuracy of density measurements following the experiment Compare different methods for finding density and decide which one is better. Interpret graph for specific heat capacity and use it to find a value for the material</p>	<p>Compare and contrast different renewable and non renewable energy sources and make recommendations Evaluate data collected during specific heat capacity experiment and use this to alter method</p>	<p>Make conclusions on the movement of an object from a diagram Evaluate method of stretching objects to comment on the accuracy of the results Decide on a suitable scale to draw accurate force diagrams, analysing them to get the resultant force.</p>
<p>Key Questions</p>	<p>What damage does electromagnetic radiation do to the human body?</p>	<p>How does the structure of a material change with temperature?</p>	<p>How can energy be used to explain the working of different situations? How can objects be made more efficient? How can the environment benefit from renewable energy sources?</p>	<p>What does the spring constant tell you about the behaviour and structure of materials?</p>
<p>Assessment topics</p>	<p>End of topic test after topic (7 lessons) and then again at end of year.</p>	<p>End of topic test after topic (7 lessons) and then again at end of year.</p>	<p>End of topic test after topic (14 lessons) and then again at end of year.</p>	<p>End of topic test after topic (7 lessons) and then again at end of year.</p>
<p>Cross curricular links/Character Education</p>	<p>Music – waves and frequency Art – drawing waves Maths – wave equation calculations Geography – water waves</p>	<p>Maths – calculations and graphical analysis Chemistry – states of matter Art – drawing diagrams Food tech – states of matter</p>	<p>Maths – calculations and graph skills PE – kinetic energy and work done Geography – renewable energy</p>	<p>Maths – force diagrams and calculations, graphical analysis Chemistry – structure of materials</p>