



Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Other Notes
<b>Energy</b>	Autumn	<ul style="list-style-type: none"><li>• Devise questions</li><li>• Test Hypothesis</li><li>• Justify opinions</li><li>• Communicate ideas</li><li>• Collect data</li><li>• Plan variables</li></ul>	<ul style="list-style-type: none"><li>• processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels.</li><li>• energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change</li><li>• comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in chemical compositions</li><li>• using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes.</li></ul>	<ul style="list-style-type: none"><li>• Y8 – Autumn:</li><li>• Heating and cooling</li></ul>	Links to GCSE Topic 1 <b>Energy</b>  Year 10: <ul style="list-style-type: none"><li>▪ <i>Energy</i></li><li>▪ <i>Internal Energy</i></li></ul> <i>Energy resources</i>



<b>Forces</b>	Autumn	<ul style="list-style-type: none"><li>• Collect data</li><li>• Present data</li><li>• Analyse patterns</li><li>• Draw conclusions</li><li>• Construct explanations</li><li>•</li></ul>	<ul style="list-style-type: none"><li>• forces as pushes or pulls, arising from the interaction between two objects</li><li>• using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces</li><li>• forces measured in newtons, measurements of stretch or compression as force is changed</li><li>• non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets and forces due to static electricity.</li><li>• speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time)</li><li>• the representation of a journey on a distance-time graph</li><li>• opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface.</li><li>• forces being needed to cause objects to stop or start moving, or to change</li></ul>	<ul style="list-style-type: none"><li>• Y8 Summer: Forces Extension</li></ul>	Links to GCSE topic 3 and 4: <ul style="list-style-type: none"><li>○ <b>Forces</b></li><li>○ <b>Forces and motion</b></li></ul> Year 9: <ul style="list-style-type: none"><li>▪ <i>Pressure</i></li><li>▪ <i>Motion</i></li><li>▪ <i>Vectors and forces</i></li><li>▪ <i>Newton's laws</i></li></ul> Year 10: <ul style="list-style-type: none"><li>▪ <i>Forces</i></li><li>▪ <i>Elasticity</i></li></ul> Year 11: <ul style="list-style-type: none"><li>▪ <i>Vectors, moments and levers</i></li><li>▪ <i>Momentum</i></li><li>▪</li></ul>
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			<p>their speed or direction of motion (qualitative only)</p> <ul style="list-style-type: none"> <li>• change depending on direction of force and its size.</li> <li>• gravity force, weight = mass x gravitational field strength (g), on Earth <math>g=10 \text{ N/kg}</math>, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only)</li> <li>•</li> </ul>		
Electricity	Spring	<ul style="list-style-type: none"> <li>• Collect data</li> <li>• Present data</li> <li>• Analyse patterns</li> <li>• Draw conclusions</li> </ul> <p>Construct explanations</p>	<ul style="list-style-type: none"> <li>• separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects</li> <li>• the idea of electric field, forces acting across the space between objects not in contact. electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge</li> <li>• potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current</li> </ul>	<ul style="list-style-type: none"> <li>• Y9 Spring: Electricity</li> </ul>	<p>Further links to KS4 topic 5 and 6:</p> <ul style="list-style-type: none"> <li>○ <b>Electricity</b></li> <li>○ <b>Magnetism and electromagnetism</b></li> </ul> <p>Year 10:</p> <ul style="list-style-type: none"> <li>▪ <i>Electricity in the home</i></li> </ul> <p>Year 11:</p> <ul style="list-style-type: none"> <li>▪ <i>Magnetism</i></li> </ul> <p><i>Electromagnetism</i></p>



			<ul style="list-style-type: none"> <li>differences in resistance between conducting and insulating components (quantitative).</li> </ul>		
Waves	Summer	<ul style="list-style-type: none"> <li>Discuss and develop arguments</li> <li>Use real life examples as a basis for finding out about science</li> <li>Make links between other science and other subject areas of curriculum</li> <li>Research</li> <li>Experiment</li> <li>Collect data</li> <li>Plan variables</li> </ul>	<ul style="list-style-type: none"> <li>waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition.</li> <li>frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound</li> <li>sound needs a medium to travel, the speed of sound in air, in water, in solids</li> <li>sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal</li> <li>auditory range of humans and animals.</li> <li>pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound; waves transferring information for conversion to electrical signals by microphone.</li> </ul>	<ul style="list-style-type: none"> <li>Y9 Autumn: Waves Electromagnetic waves</li> </ul>	<p>Further links to KS4 topic 4:</p> <ul style="list-style-type: none"> <li>o <b>waves</b></li> </ul> <p>Year 10:</p> <ul style="list-style-type: none"> <li>▪ <i>Heating and Infrared</i></li> </ul> <p>Year 11:</p> <ul style="list-style-type: none"> <li>▪ <i>Colour and lenses</i></li> </ul>



			<ul style="list-style-type: none"><li>• the similarities and differences between light waves and waves in matter</li><li>• light waves travelling through a vacuum; speed of light</li><li>• the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface</li><li>• use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye</li><li>• light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras</li><li>• colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.</li></ul>		
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**West Kirby**  
Grammar School

## Curriculum Map – Year 7 - Physics