

# Knowledge and Understanding – Energy and Forces

Strand	Level C	Level D	Level E	Level F
<b>Properties and uses of energy</b> Developing an understanding of energy through the study of the properties and uses of heat, light, sound and electricity.	<ul style="list-style-type: none"> <li>link light to shadow formation</li> <li>give examples of light being reflected from surfaces</li> </ul>	<ul style="list-style-type: none"> <li>distinguish between heat and temperature</li> </ul>	<ul style="list-style-type: none"> <li>describe the differences between the flow of heat by conduction and convection</li> <li>give examples of everyday uses of good and poor conductors of heat</li> </ul>	<ul style="list-style-type: none"> <li>describe how energy is transferred by radiation</li> </ul>
		<ul style="list-style-type: none"> <li>link sound to sources of vibration</li> <li>construct simple battery operated circuits, identifying the main components</li> <li>classify materials as electrical conductors or insulators and describe how these are related to the safe use of electricity</li> </ul>	<ul style="list-style-type: none"> <li>describe in simple terms how lenses work</li> <li>give examples of simple applications of lenses</li> </ul>	<ul style="list-style-type: none"> <li>describe working of lenses in terms of focal length (Addition)</li> <li>explain the effect of a prism on white light</li> <li>describe what happens when light passes through different materials</li> </ul>
<b>Conversion and transfer of energy</b> Developing an understanding of energy conversion in practical everyday contexts.	<ul style="list-style-type: none"> <li>give examples of energy being converted from one form to another</li> <li>describe the energy conversions in the components of an electrical circuit</li> </ul>	<ul style="list-style-type: none"> <li>use the terms 'pitch' and 'volume' to describe sound</li> <li>construct a series circuit</li> <li>construct a series circuit following diagrams using conventional symbols</li> <li>describe the effect of changing the number of components in a series circuit</li> </ul>	<ul style="list-style-type: none"> <li>explain what happens when sound passes through different materials</li> <li>construct a series circuit following diagrams (Addition)</li> <li>construct a parallel circuit following diagrams</li> <li>use the terms 'voltage', 'current' and 'resistance' in the context of simple circuits</li> <li>static electricity and history of electricity (Addition)</li> </ul>	<ul style="list-style-type: none"> <li>describe the relationship between pitch and frequency and loudness and amplitude</li> <li>describe the structure and function of an electromagnet</li> <li>analyse the functions of everyday electronic systems in terms of input and output conditions</li> <li>using prefabricated subsystems, construct simple electronic systems to solve given problems</li> </ul>
		<ul style="list-style-type: none"> <li>give some examples of energy conversions involved in the generation of electricity</li> <li>describe how electrical energy is distributed to our homes</li> <li>name some energy resources</li> </ul>	<ul style="list-style-type: none"> <li>describe some examples of the interconversion of potential and kinetic energy</li> <li>give some examples of chemical energy changes</li> <li>explain the difference between renewable and non-renewable energy resources</li> </ul>	<ul style="list-style-type: none"> <li>distinguish between gravitational potential and chemical potential energy</li> </ul>

	P6/7
	S1/S2
	S1/S2 – to be developed

## Knowledge and Understanding – Energy and Forces (Continued)

Strand	Level C	Level D	Level E	Level F
<p><b>Forces and their effects</b> Developing an understanding of forces and how they can explain familiar phenomena and practices.</p>	<ul style="list-style-type: none"> <li>• give some examples of friction</li> <li>• explain friction in simple terms</li> <li>• describe air resistance in terms of friction</li> </ul>	<ul style="list-style-type: none"> <li>• give examples of streamlining and explain how this lowers resistance</li> </ul>	<ul style="list-style-type: none"> <li>• describe the effects of balanced and unbalanced forces</li> </ul>	<ul style="list-style-type: none"> <li>• distinguish between mass and weight</li> <li>• name the newton as the unit of force and explain its relationship to mass</li> <li>• describe the relationship between force, area and pressure</li> </ul>
		<ul style="list-style-type: none"> <li>• describe the relationship between the Earth's gravity and the weight of an object</li> </ul>	<ul style="list-style-type: none"> <li>• explain how gravity on other planets and the Moon affects the weight of an object</li> </ul>	
		<p>The above will need some clarification as to the level of treatment appropriate at primary and secondary levels.</p>		

	P6/7
	S1/S2
	S1/S2 – to be developed