

## Physics strand

KS 1	Emerging (KS1 children ...)	Expected (KS1 children can...)	Exceeded (KS1 Children can...)		
LKS 2		Emerging (LKS2 children can...)	Expected (LKS2 children can...)	Exceeding (LKS2 children can...)	
UKS 2			Emerging (UKS2 children can...)	Expected (UKS2 children can...)	Exceeding (UKS2 children know...)
Electricity	<ul style="list-style-type: none"> <li>Know about similarities and differences in relation to objects</li> <li>talk about the features of their own</li> <li>explain why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li><i>(explore battery powered toys and carry out a variety of enquires related to these).</i></li> </ul>	<ul style="list-style-type: none"> <li>-identify common appliances that run on electricity</li> <li>-construct a simple series electrical circuit identifying and naming the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers</li> <li>-identify whether or not a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery</li> <li>-recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>-recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>	<ul style="list-style-type: none"> <li>-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>-compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</li> <li>use recognised symbols when representing a simple circuit in a diagram</li> </ul>	<ul style="list-style-type: none"> <li>-electric current...</li> <li>-potential difference, measured in volts, battery and bulb rating...</li> <li>-differences in resistance between conducting and insulating components</li> </ul>
Forces and Movement	<ul style="list-style-type: none"> <li>-Know about similarities and differences in relation to objects</li> <li>-They explain why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li><i>(explore things that move including toys that need a push or a pull. Compare how different things move.)</i>---describe the simple physical properties of a variety of everyday materials <i>(attracted to a magnet or not)</i>-compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<ul style="list-style-type: none"> <li>-compare how things move on different surfaces</li> <li>-notice that some forces need contact between two objects but magnetic forces act at a distance</li> <li>-observe how magnets attract or repel each other and attract some materials and not others</li> <li>-compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials <ul style="list-style-type: none"> <li>describe magnets as having two poles</li> </ul> </li> <li>-predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>	<ul style="list-style-type: none"> <li>-explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>-identify the effect of air resistance, water resistance and friction, that act between moving surfaces</li> <li>-recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>	<ul style="list-style-type: none"> <li>-forces as pushes or pulls, arising from the interaction between two objects</li> <li>-non-contact forces: gravity forces acting at a distance on earth and in space, forces between magnets ...</li> <li>-using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces</li> <li>-forces: associated with deforming objects; stretching and squashing-springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water</li> <li>-forces being needed to cause an object to stop or start moving, or to change their speed or direction of motion</li> <li>-forces measured in newtons</li> </ul>

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light	<ul style="list-style-type: none"> <li>• Know about similarities and differences in relation to places, objects &amp; materials</li> <li>• They talk about the features of their own immediate environment and how environments might vary from one another.</li> </ul>	<ul style="list-style-type: none"> <li>• -describe the simple physical properties of a variety of everyday materials (<i>opaque, translucent, transparent materials</i>)</li> <li>• -compare and group together a variety of everyday materials on the basis of their simple physical properties (<i>opaque, translucent, transparent material</i>)</li> <li>• -observe and describe weather associated with the seasons and how day length varies.</li> <li>• (<i>explore making shadows</i>)</li> <li>• (<i>observe and name a variety of sources of light, including electric lights, flames and <b>the Sun</b></i>)</li> </ul>	<ul style="list-style-type: none"> <li>• -recognise that they need light in order to see things and that dark is the absence of light</li> <li>• -notice that light is reflected from surfaces</li> <li>• -recognise that shadows are formed when a light source is blocked by a solid object</li> <li>• -find patterns in the way that the size of shadows change</li> <li>• -recognise that light from the Sun can be dangerous and that there are ways to protect our eyes</li> </ul>	<ul style="list-style-type: none"> <li>• -recognise that light appears to travel in straight lines</li> <li>• -use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</li> <li>• -explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</li> <li>• -use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> <li>• -describe the movement of the Earth, and other planets relative to the Sun in the solar system</li> <li>• -describe the movement of the Moon relative to the Earth</li> <li>• -describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>• -use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	<ul style="list-style-type: none"> <li>• -use of ray model to explain imaging in mirrors...</li> <li>• -colours and the different frequencies of light, white light and prisms (qualitative only)</li> <li>• -the Sun as a star, other stars in our galaxy, other galaxies</li> <li>• -the seasons and the Earth's tilt, day length at different times of the year, in different hemispheres</li> </ul>
	<ul style="list-style-type: none"> <li>• -Know about similarities and differences in relation to places, objects, materials and living things.</li> <li>• -talk about the features of their own immediate environment and how environments might vary from one another.</li> <li>• explain why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li>• (<i>explore different ways of making and altering sounds ... experiment making sounds of differing volume and pitch</i>)</li> <li>• (<i>observe and name a variety of sources of sound, noticing that we hear with our ears</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• -identify how sounds are made, associating some of them with something vibrating</li> <li>• -recognise that vibrations from sound travel through a medium to the ear</li> <li>• -recognise that sounds get fainter as the distance from the sound source increases</li> <li>• -find patterns between the pitch of a sound and features of the object that produced it</li> <li>• -find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> </ul>	<ul style="list-style-type: none"> <li>• (<i>Enquiry based unit linked to design technology with either children designing sound proofing for a house or ear protectors and designing and making a musical instrument</i>)</li> </ul>	<ul style="list-style-type: none"> <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</li> <li>• -Sound waves are longitudinal</li> </ul>