

		Light		Sound
		Year 3 Light and shadows	Year 6 <u>Light and reflection</u>	Year 4 Sound and vibrations
Scientific knowledge and understanding	Sources	<p>To know that light travels from a source (e.g. the Sun, light bulbs and torches).</p> <p>To know that light is needed to see things and that dark is the absence of light.</p> <p>To know that light from the Sun can be dangerous and how to protect their eyes.</p>	<p>To know that light travels in a straight line from a light source.</p> <p>To understand that luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye.</p>	<p>To understand that sound is a result of vibrations.</p>
	Transfer	<p>To know that all materials reflect light.</p> <p>To know that shadows are formed when the light from a light source is blocked by an opaque object.</p>	<p>To know that shiny surfaces reflect light uniformly.</p> <p>To know that when light is reflected off a surface, its direction changes.</p> <p>To know that mirrors and periscopes work using reflection of light on smooth surfaces.</p> <p>To understand why shadows have the same shape as the objects that cast them as a result of light travelling in straight lines.</p> <p>To understand relationships between light sources, objects and shadows.</p>	<p>To know that vibrations from sounds travel through mediums to the ear.</p> <p>To know that an insulating material reduces the amount of vibrations that pass through it and this can be used to protect the ears from damaging sounds.</p> <p>To know that different materials provide different amounts of insulation against sound.</p>
	Factors affecting energy	<p>To know that shadows change as a result of different factors:</p> <ul style="list-style-type: none"> <li>- Changing the position of the light source.</li> <li>- Changing the distances between the light source, object and surface.</li> </ul> <p>To know that shadows change position and length throughout the day as the Sun changes position in the sky.</p>	<p>To understand how and why the distance between the object and the screen affects the size of the shadow.</p> <p>To understand how the angle of a reflected ray is affected by the angle of the incoming ray on a smooth surface.</p>	<p>To know a variety of ways to change the pitch or volume of a sound.</p> <p>To know that quicker vibrations cause higher-pitched sounds and slower vibrations cause lower-pitched sounds.</p> <p>To know that stronger vibrations cause louder sounds and weaker vibrations cause quieter sounds.</p> <p>To know that sounds get fainter as the distance from the sound source increases.</p>

		Electricity	
		Year 4 <u>Electricity and circuits</u>	Year 6 Circuits, batteries and switches
Scientific knowledge and understanding	Sources	<p>To know that all electrical appliances need a power source, including batteries or mains electricity.</p> <p>To know that an electrical circuit needs a complete path for the electrical charge to flow through.</p> <p>To know the main components in a simple series circuit.</p> <p>To know the precautions for working safely with electricity.</p>	<p>To know a wider variety of components in a series circuit (including buzzer and motor).</p> <p>To know the conventions used to draw circuit diagrams, including the recognised symbols for common components and using straight lines.</p>
	Transfer	<p>To know that some materials allow electrical charge to pass through them quickly and these are known as electrical conductors (e.g. metals).</p> <p>To know that some materials do not allow electrical charge to pass through them easily and these are known as electrical insulators (e.g wood and plastic).</p> <p>To know that metals are used for cables and wires because they are good conductors of electricity.</p> <p>To know that plastic is used to cover cables and wires because it is a good insulator.</p>	
	Factors affecting energy	<p>To understand that an open switch breaks a series circuit so the components will be off.</p> <p>To understand that a closed switch completes a series circuit so the components will be on.</p> <p>To understand the relationship between bulb brightness and the number of bulbs in a circuit.</p>	<p>To know that the voltage of a circuit can be changed and how this affects bulb brightness (or buzzer volume).</p>