



### Subject: Year 7 Light

Prior Key stage 2 Knowledge			
<p><b>Light</b> - Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change</p>			
Overarching Topic: Light			
<p>Why is this topic being studied at this time?</p> <p>How does it fit into the wider subject curriculum?</p>	<ul style="list-style-type: none"> <li>Light and its many applications have revolutionized society through medicine, communications, entertainment and culture. Light and photonics are poised to become key enabling technologies of the future. Light underpins the technologies of daily life; from smartphones, laptops and the Internet to medical instruments and LED lighting, all are possible because of photonics. The 21st century will depend as much on photonics as the 20th century depended on electronics to solve the challenges of a modern world.</li> <li>In this unit pupils will build on their knowledge of light and its effects. They will investigate how we see objects, learn how we represent light as a ray and use this concept to explain reflection and refraction. They will find out about the origin of coloured light and the appearance of coloured objects. This unit uses ideas developed in the key stage 2 programme of study. It builds on ideas introduced in unit 3F 'Light and shadows' and unit 6F 'How we see things' in the key stage 2 scheme of work. It is further developed in the KS4 SOW.</li> </ul>		
	Essential	Core	Ambitious
<p><b>The Big Questions</b> (What questions will students be able to answer upon mastery of the topic?)</p>	<p>What does reflection mean? What is a ray diagram? What are the primary colours of light?</p>	<p>Can you draw and label a reflection diagram? Can I explain observations where coloured lights are mixed or objects are viewed in different lights? Will light reflect, refract or scatter when it hits the surface of a given material? How does a device with multiple mirrors work, using diagrams?</p>	<p>Can I use a ray diagram to predict how an image will change in different situations? How does light pass through lenses and transparent materials, using diagrams? How may lenses be used to correct vision? What is a rainbow? How does the 21<sup>st</sup> century depend on photonics?</p>
<p><b>The Key Skills/ Techniques</b></p>	<p><b>The sophistication and application of skills will become more advanced as students' progress through the essential, core and ambitious knowledge.</b></p>		
	<p><b>Skill/Technique</b></p>	<p><b>How will this skill be developed?</b></p>	
	<p>1. Graphing &amp; Drawing</p>	<p>Draw graphs with suitable scales, axes and units. Correct line of best fit. Appreciation of anomalies and processed data. Scientific drawing of cells, concepts and scientific equipment.</p>	
	<p>2. Variables</p>	<p>Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.</p>	
	<p>3. Data Analysis</p>	<p>Describe, explain and predict trends. Graph and table data interpretation. Identify links and patterns within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.</p>	
	<p>4. Application</p>	<p>Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.</p>	
<p>5. Working Scientifically</p>	<p>Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking into account data analysis.</p>		