



# PROGRESSION OF KNOWLEDGE



## Physics Unit: Light

What does progression of knowledge look like?

| Year              | Progression of Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| 3                 | <ul style="list-style-type: none"><li>• Recognise that they need light to see things and that dark is the absence of light.</li><li>• Notice that light is reflected from surfaces.</li><li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li><li>• Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</li><li>• Find patterns in the way that the size of shadows change.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 6                 | <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></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Key Stage 3 (7-9) | <ul style="list-style-type: none"><li>• Describe what a vacuum is and state how light waves travel.</li><li>• Calculate the speed of light and compare it to the speed of sound.</li><li>• Describe the similarities and differences between light waves and waves in matter.</li><li>• Explain what happens to light when it hits different surfaces.</li><li>• Describe how to construct and label a ray diagram in reflection.</li><li>• Compare specular reflection and diffuse scattering.</li><li>• Describe how an image is formed in a mirror.</li><li>• Use a ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative).</li><li>• Name the parts of a camera and describe their function.</li><li>• Name the parts of the eye and describe their function.</li><li>• Compare the pinhole camera and the eye in terms of image formation</li><li>• Explain what happens to the energy transferred by light to a camera or the eye.</li><li>• State what the different frequencies of light within white light represent.</li><li>• Describe how a prism can be used to disperse white light.</li><li>• Explain how a coloured filter works.</li><li>• Explain the appearance of coloured objects with different coloured incident light.</li></ul> |