

ADVENT TERM 1

SCIENCE – Year 6 - Medium Term Planning – PHYSICS: LIGHT

<u>LESSON 1</u>	<u>LESSON 2</u>	<u>LESSON 3</u>
<p>Asking Enquiry Questions</p> <p>LEARNING INTENTION: To know that light is a form of energy that travels as waves. (Recap Y3)</p> <p>To know that light waves travel in straight lines.</p> <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. <p>Aim: Develop scientific knowledge and conceptual understanding through the specific disciplines of physics</p>	<p>Communicating Results</p> <p>LEARNING INTENTION: To know that objects are seen because they give out or reflect light into the eye.</p> <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. <p>Aim: Develop scientific knowledge and conceptual understanding through the specific disciplines of physics</p>	<p>Asking Enquiry Questions</p> <p>LEARNING INTENTION: To know that a shadow appears when an object blocks the passage of light. (Recap Y3)</p> <p>To know that shadows have the same shape of the objects that cast them.</p> <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. <p>Aim: Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them</p>
<p>Key Vocabulary: light, ray, light wave, straight, angle, reflected</p>	<p>Key Vocabulary: light source, natural, artificial, reflect, absorb, scatter, light ray, pupil, cornea, retina, signal</p>	<p>Key Vocabulary: shadow, distort, distortion, diffuses, cast, sharpness, direction</p>
<p>Recap & retrieval:</p> <ul style="list-style-type: none"> Light travels in waves in straight lines. 	<p>Recall & retrieval:</p> <ul style="list-style-type: none"> Light travels in waves in straight lines. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. 	<p>Recall & retrieval:</p> <ul style="list-style-type: none"> Light travels in waves in straight lines. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel.

		<ul style="list-style-type: none"> • When light hits an object, it is absorbed, scattered, reflected or a combination of all three. • Light from a source or reflected light enter the eye.
<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • Light travels in waves in straight lines. • Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. <p>Teacher:</p> <ul style="list-style-type: none"> • The angle at which light hits a reflective surface is the same angle at which it is reflected. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • Light sources give out light. • They can be natural or artificial. • When light hits an object, it is absorbed, scattered, reflected or a combination of all three. • Light from a source or reflected light enter the eye. <p>Teacher:</p> <ul style="list-style-type: none"> • Vertebrates have a cornea and lens that refracts light that enters the eye and focuses it on the nerve tissue at the back of the eye, which is called the retina. • Once light reaches the retina, it is transmitted to the brain via the optic nerve. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • A shadow appears when an object blocks the passage of light. • Apart from some distortion or fuzziness at the edges, shadows are the same shape as the object. <p>Teacher:</p> <ul style="list-style-type: none"> • The distortion or fuzziness depends on the position or type of light source.

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<u>LESSON 4</u>	<u>LESSON 5</u>	<u>LESSON 6</u>
<p>Observing and Measuring</p> <p>LEARNING INTENTION: To know that different shaped mirrors effect the light waves and image.</p> <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. <p>Aim: Develop scientific knowledge and conceptual understanding through the specific disciplines of physics</p>	<p>Observing and Measuring</p> <p>LEARNING INTENTION: To know that refraction is the bending of light as it passes from one transparent material to another.</p> <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. <p>Aim: Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.</p>	<p>Using Scientific Evidence</p> <p>LEARNING INTENTION: To know that Ibn al-Haytham was Iraqi scientist who made breakthroughs in light and vision theory.</p> <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Identify scientific evidence that has been used to support or refute ideas or arguments. <p>Aim: Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</p>
<p>Key Vocabulary: reflect, reflection, absorb, scatter, angle, equal, plane, convex, concave, curve, flat</p>	<p>Key Vocabulary: refraction, transparent, material, bent, disjointed, denser, prism, spectrum</p>	<p>Key Vocabulary: pinhole camera, camera obscura, methodology, investigations, theory, evidence, proof</p>
<p>Recall & retrieval:</p> <ul style="list-style-type: none"> Light travels in waves in straight lines. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Apart from some distortion or fuzziness at the edges, shadows are the same shape as the object. 	<p>Recall & retrieval</p> <ul style="list-style-type: none"> Light travels in waves in straight lines. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Apart from some distortion or fuzziness at the edges, shadows are the same shape as the object. 	<p>Recall & retrieval:</p> <ul style="list-style-type: none"> Light travels in waves in straight lines. Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Apart from some distortion or fuzziness at the edges, shadows are the same shape as the object.

	<ul style="list-style-type: none"> • Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards 	<ul style="list-style-type: none"> • Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards. • Refraction is the bending of light as it passes from one transparent material to another.
<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards. <p>Teacher:</p> <ul style="list-style-type: none"> • Plane mirror reflections are the same size, and the right way up but they are reversed. • Concave mirrors enlarge the image and concentrate the rays of light into a focal point. • Convex mirrors make images smaller and disperse light which reflects a wider view. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • Refraction is the bending of light as it passes from one transparent material to another. • The human eye depends on refraction to see. <p>Teacher:</p> <ul style="list-style-type: none"> • Refracted light creates a visible spectrum when white light shines through a prism or raindrops. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • Ibn al-Haytham studied how light moved and did tests using lenses and mirrors. • He named important parts of the eye. • He invented the first pinhole camera. <p>Teacher:</p> <ul style="list-style-type: none"> • Born in Basra, Iraq, around the year 965, Ibn al-Haytham, was a pioneering scientific thinker who, from his observation of light entering a dark room, made major breakthroughs in understanding light and vision. • His methodology using experiments to verify theory later became known as the modern scientific method. • He studied reflection and refraction concluding that light refracts when it moved through different materials. • He studied how light moved and did tests using lenses and mirrors. • He named important parts of the eye. • He invented the first pinhole camera.
<p>Assessment Cumulative quiz. Retrieval practice.</p>		