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| **ADVENT TERM   1****SCIENCE – Year 6 - Medium Term Planning – PHYSICS: LIGHT** |
| **LESSON  1**  | **LESSON  2**  | **LESSON  3**  |
| **LEARNING INTENTION:** To know that light is a form of energy that travels as waves. (Recap Y3)To know that light waves travel in straight lines.Skills: Report on and validate their findings, answer questions and justify their methods, opinions and conclusions. Aim:Develop scientific knowledge and conceptual understanding through the specific disciplines of physics | **LEARNING INTENTION:**   To know that objects are seen because they give out or reflect light into the eye.Skills: Choose an appropriate approach to recording accurate results, including scientific diagrams and labels.Aim: Develop scientific knowledge and conceptual understanding through the specific disciplines of physics  | **LEARNING INTENTION:** To know that a shadow appears when an object blocks the passage of light. (Recap Y3)To know that shadows have the same shape of the objects that cast them. Skills: Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding. 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 |
| **Key Vocabulary:** Light, ray, light wave straight, angle. reflected | **Key Vocabulary:**  Light source, natural, artificial, reflect, absorb, scatter, light ray, pupil, cornea, retina, signal | **Key Vocabulary:**  Shadow, distort, distortion, diffuses, cast, sharpness, direction,  |
| **Recap & retrieval:*** Light travels in waves in straight lines.
 | **Recall & retrieval:*** Light travels in waves in straight lines.
* Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel.
 | **Recall & retrieval:*** 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.
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| **Key Knowledge:** **Child:** * Light travels in waves in straight lines.
* Light waves in diagrams are drawn as straight lines with arrowheads that show the direction of travel.

**Teacher:*** The angle at which light hits a reflective surface is the same angle at which it is reflected.
 | **Key Knowledge:** **Child:** * 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.

**Teacher:*** 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.
 | **Key Knowledge:** **Child:*** 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.

**Teacher:*** The distortion or fuzziness depends on the position or type of light source.
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| **ADVENT TERM   1****SCIENCE – Year 6 - Medium Term Planning – PHYSICS: LIGHT** |
| **LESSON  4**  | **LESSON  5**  | **LESSON  6**  |
| **LEARNING INTENTION:** To know that different shaped mirrors effect the light waves and image.Skills: Describe, using diagrams, how light behaves when reflected off a mirror Aim: Develop scientific knowledge and conceptual understanding through the specific disciplines of physics   | **LEARNING INTENTION:** To know that refraction is the bending of light as it passes from one transparent material to another. Skills:  Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.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. | **LEARNING INTENTION:** To know that Ibn al-Haytham was Iraqi scientist who made breakthroughs in light and vision theory.Skills: Research and understand about the life and discoveries made by a scientist, and its influence on science today.Aim:Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. |
| **Key Vocabulary:**  Opaque, reflect, reflection, absorb, scatter, angle, equal, impact, plane, convex, concave, curve, flat   | **Key Vocabulary:**  Refraction, transparent, material, bent, disjointed, denser, prism, spectrum,  | **Key Vocabulary:**  Pinhole camera, camera obscura, methodology, investigations, theory, evidence, proof |
| **Recall & retrieval:*** 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.
 | **Recall & retrieval** * 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.
* Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards
 | **Recall & retrieval:*** 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.
* 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.
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| **Key Knowledge:** **Child:*** Plane mirrors are flat, concave mirrors curve inwards and convex mirrors curve outwards.

**Teacher:*** 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.
 | **Key Knowledge:** **Child:*** Refraction is the bending of light as it passes from one transparent material to another.
* The human eye depends on refraction to see.

**Teacher:*** Refracted light creates a visible spectrum when white light shines through a prism or raindrops.
 | **Key Knowledge:** **Child:*** 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.

**Teacher:*** 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.
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| **Assessment**  Cumulative quiz. Retrieval practice. |