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