

Science | WPC | 2020-21 | Light

1. Recognise that light appears to travel in straight lines
2. 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
3. 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
4. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

	Assessment guidance	Key learning	Key vocabulary
Light	Shows understanding of a concept using scientific vocabulary correctly	<p>Light appears to travel in straight lines and we see objects when light from them goes into our eyes. The light may come directly from light sources but for other objects some light must be reflected from the object into our eyes for the object to be seen.</p> <p>Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.</p>	<p>Light Light source Dark Absence of light Transparent Translucent Opaque Shiny Matt Surface Shadow Reflect / reflection Mirror Sunlight Straight lines Light rays Refraction</p>
	Applying knowledge in familiar related contexts, including a range of enquiries	<p>Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card</p> <p>Explore the uses of the behaviour of light, reflection and shadows such as in periscope design, rear view mirrors and shadow puppets.</p>	

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Lesson Progression	
1	Conduct practical experiments to explore the creation of shadows. Use observations to support understanding that light cannot travel through opaque objects and that light also travels in straight lines. Explain how a shadow is formed using scientific language.
2	Conduct practical experiments to explore the shape and size of shadows. Use observations to support and explain understanding that light travels in straight lines (it does not bend) and that shadow size and clarity changes as the object and light source move closer together/further apart. Understand that a shadow is an outline and does not have internal details.
3	Design and build a maze using mirrors and a light source to explore the concept of reflection. Know that the angle of reflection is the same as the angle of incidence. Use observations to explain how light is reflected
4	Explore current ideas about how objects are seen. Understand that we 'see' because a light source reflects off an object and into our eye where the lens focuses the light onto the retina at the back of our eye. This in turn sends an image to our brain. Name key parts of the human eye.
5	Conduct a variety of practical experiments to explore refraction. Use observations to explain that light can be 'bent' (a change in direction) when it travels through one medium to another (e.g. air into water). Know this is called 'refraction'.
6	Conduct a practical experiment to explore the components of light. Use this to explain that white light comprises a variety of colours and this means a rainbow is formed when light is refracted through a raindrop.