

<b>Year 3 – Light, dark and shadows</b>	<b>Main Outcomes:</b> <ul style="list-style-type: none"> <li>Recognise that they need light in order 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>	<b>Focus:</b> Science – physics
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<b>What should I already know?</b>	<b>Vocabulary</b>	<b>Meaning</b>
<p>Not studied until year 3.</p>	<p>colour</p>	<p>a way that we describe an object based on the way that it <b>reflects</b> or emits <b>light</b></p>
<b>What I will do</b>	<p>concave</p>	<p>a shape that curves inwards, e.g. the front side of a spoon or inside a bowl</p>
<p>I will have weekly or blocked science lessons. In lessons, I will be taught a skill and I will gain knowledge and understanding through the process of scientific enquiry (observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources).</p> <p><u>Possible lines of enquiry</u></p> <ul style="list-style-type: none"> <li>Explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves.</li> <li>Think about why it is important to protect their eyes from bright lights.</li> <li>Look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</li> <li>Look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</li> </ul> <p>Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.</p>	<p>convex</p>	<p>a shape that curves outwards</p>
<b>Resources</b>	<p>energy</p>	<p>the ability to do work; energy makes things move, it makes machines go, it makes living things grow</p>
<p>Hamilton Science planning: light, dark and shadows <a href="https://www.hamilton-trust.org.uk/science/year-3-science/light-light-and-shadows/">https://www.hamilton-trust.org.uk/science/year-3-science/light-light-and-shadows/</a> (all planning also saved on SharePoint).</p>	<p>image</p>	<p>a group of <b>coloured</b> points on a flat surface that looks the same as something else</p>
	<p>light</p>	<p>a form of <b>energy</b></p>
	<p>light source</p>	<p>something that gives out its own <b>light</b></p>
	<p>opaque</p>	<p>a material that doesn't let <b>light</b> through it</p>
	<p>reflect/ reflection</p>	<p>when <b>light</b> bounces off something</p>
	<p>reflector</p>	<p>an object that <b>reflects light</b></p>
	<p>refraction</p>	<p>the bending of <b>light</b> rays</p>
	<p>shadow</p>	<p>the dark area behind an object where <b>light</b> is blocked out</p>
	<p>spectrum</p>	<p>a band of several <b>colours</b>: violet, indigo, blue, green, yellow, orange and red</p>
	<p>(the) Sun</p>	<p>the star at the centre of the solar system</p>
	<p>transparent</p>	<p>a material that <b>light</b> travels through</p>
	<p>translucent</p>	<p>a material that some <b>light</b> passes through, but the <b>light</b> is scattered, so you can't see clearly through it</p>
	<p>visible light</p>	<p>the segment of the electromagnetic <b>spectrum</b> that the human eye can view</p>
	<p>white light</p>	<p>the complete mixture of all of the wavelengths of the visible <b>spectrum</b></p>

## Knowledge and Skills Map – Science at Estcots School

Knowledge to understand		Skills to learn
When there is no <b>light</b> , it is dark.	We need <b>light</b> in order to see things; dark is the absence of <b>light</b> .	<ul style="list-style-type: none"> <li>➤ asking relevant questions and using different types of scientific enquiries to answer them</li> <li>➤ setting up simple practical enquiries, comparative and fair tests</li> <li>➤ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>➤ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>➤ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>➤ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>➤ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>➤ identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>➤ using straightforward scientific evidence to answer questions or to support their findings</li> </ul>
We see things when <b>light</b> enters our eyes.	<b>Light</b> is given out by <b>light sources</b> . It is then <b>reflected</b> off objects and enters our eyes. Shiny surfaces (such as a puddle, polished metal or a mirror) <b>reflect light</b> better than dull surfaces (such as woolly jumpers and wooden spoons).	
Things that give out <b>light</b> are called <b>light sources</b> .	Examples of <b>light sources</b> include torches, candles, fire, <b>the Sun</b> , stars, <b>light</b> bulbs. Objects that <b>reflect light</b> , like the Moon, are <b>not light sources</b> .	
When an <b>opaque</b> or non- <b>transparent</b> object blocks <b>light</b> , a <b>shadow</b> is formed.	The more directly overhead a <b>light source</b> is, the shorter the <b>shadow</b> . The closer a <b>light source</b> is to an object, the larger the <b>shadow</b> .	
Never look directly at the Sun.	<b>The Sun</b> is a very strong <b>light source</b> – the <b>light</b> from it can damage your eyes. Wear sunglasses for protection when it's bright.	
		Equipment to become familiar with
		Magnifying lenses Torches

Evidence of Learning	How will I know what I've learnt?
Science books Photos Videos Pupil conferencing Teaching and learning observations Learning walks Data analysis	See KS2 teacher assessment exemplification for science <a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/763065/2018_key_stage_2_teacher_assessment_exemplification_science.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/763065/2018_key_stage_2_teacher_assessment_exemplification_science.pdf</a>  See also Hamilton Science_Assessment_Y3 (saved in planning folder on Sharepoint).  KS2 quizzes: <a href="https://gcequiz.com/quiz/ks2-science-quizzes">https://gcequiz.com/quiz/ks2-science-quizzes</a> <a href="https://churchfieldsjunior.com/test-your-skills-science/">https://churchfieldsjunior.com/test-your-skills-science/</a>