



# June & July 2025

## 11+ Physics

Date	Topic	National Curriculum Link	Session objectives	Ideas for home
5 <sup>th</sup> June	Water waves	<ul style="list-style-type: none"> <li>waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition.</li> </ul>	<ul style="list-style-type: none"> <li>Describe how water waves are formed</li> <li>Explain how water waves move through water</li> <li>Investigate the different ways two or more water waves interact with each other</li> </ul>	<ul style="list-style-type: none"> <li>Make water waves (e.g. in a tray) and record them in slow motion to analyse what is happening</li> <li>Draw wave diagrams to explain how different water waves interact</li> </ul>
12 <sup>th</sup> June	Describing sound	<ul style="list-style-type: none"> <li>frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound</li> <li>sound needs a medium to travel, the speed of sound in air, in water, in solids</li> </ul>	<ul style="list-style-type: none"> <li>Describe how sound is caused by vibrations</li> <li>Compare the speed of sound through different materials</li> <li>Identify different methods to change a sound's properties</li> </ul>	<ul style="list-style-type: none"> <li>Make a homemade instrument (e.g. an elastic band guitar) and investigate how changing the tension and the thickness of the elastic bands affects pitch</li> </ul>
19 <sup>th</sup> June	Sound and echoes	<ul style="list-style-type: none"> <li>sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal</li> </ul>	<ul style="list-style-type: none"> <li>Describe how echoes are formed</li> <li>Find out how different materials affect the absorption of sound</li> </ul>	<ul style="list-style-type: none"> <li>Make a mini echo chamber using a cardboard box lined with different materials to observe the differences in sound heard (e.g. a phone playing music inside the box)</li> </ul>
26 <sup>th</sup> June	Human hearing and beyond	<ul style="list-style-type: none"> <li>auditory range of humans and animals</li> <li>pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound; waves transferring information for conversion to electrical signals by microphone</li> </ul>	<ul style="list-style-type: none"> <li>Explain how we hear sounds</li> <li>Compare the hearing ranges of humans and other animals</li> <li>Describe the different uses of ultrasound and how they work</li> </ul>	<ul style="list-style-type: none"> <li>Research uses of ultrasound in medical imaging and compare to other medical imaging techniques</li> </ul>
3 <sup>rd</sup> July	Light and shadows	<ul style="list-style-type: none"> <li>the similarities and differences between light waves and waves in matter</li> <li>light waves travelling through a vacuum; speed of light</li> <li>the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface</li> </ul>	<ul style="list-style-type: none"> <li>Describe how light travels</li> <li>Investigate how shadows are formed</li> </ul>	<ul style="list-style-type: none"> <li>Create a sun dial comparing the size of shadows created by the sun at different times of day</li> <li>Find out how sundials were used in the past</li> </ul>
10 <sup>th</sup> July	Light and colour	<ul style="list-style-type: none"> <li>colours and the different frequencies of light</li> </ul>	<ul style="list-style-type: none"> <li>Describe the key features of the visible spectrum of light</li> <li>Explain how different colours can be combined</li> </ul>	<ul style="list-style-type: none"> <li>Research how LED screens make different colours and how colour printing works</li> </ul>
17 <sup>th</sup> July	How we see	<ul style="list-style-type: none"> <li>use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye</li> </ul>	<ul style="list-style-type: none"> <li>Represent light using ray diagrams</li> <li>Explain how the human eye can see</li> </ul>	<ul style="list-style-type: none"> <li>Find out how different animals see colour and colour-blindness in humans</li> <li>Make a model eye showing how light enters</li> </ul>