

Bellerive FCJ Catholic College
KS3 Scheme of Learning 2014 (Reviewed JY) Reviewed and re-written Feb 2020 JY
Waves

KS3 Unit Overview – Big Picture

Subject/Year group/Unit Title	Big picture questions	Pupils will focus particularly on the following statements from the programme of study:
<p style="text-align: center;">Physics Year 8 Waves</p> <ol style="list-style-type: none"> 1. Types of waves 2. Superposition 3. Properties of light 4. Types of materials 5. Reflection 6. Refraction 7. The spectrum 8. Coloured light 9. The eye 10. Light effects 11. Sound waves 12. Features of sound waves 13. The ear and hearing ranges 14. Ultrasound 	<p>What are waves and how do they interact? What happens to light when its hits a surface and what can we use light for? What are sound waves? How do we measure and use them?</p>	<p><i>PWO1: waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition</i> <i>PWS1: frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound</i> <i>PWS2: sound needs a medium to travel, the speed of sound in air in water, in solids</i> <i>PWS3: sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal</i> <i>PWS4: auditory range of humans and animals.</i> <i>PWE1: pressure waves transferring energy: use for cleaning and physiotherapy by ultra-sound; waves carrying transferring information for conversion to electrical signals by microphone</i> <i>PWL1: the similarities and differences between light and sound waves in matter</i> <i>PWL2: light waves travelling through a vacuum; speed of light</i> <i>PWL3: the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface</i> <i>PWL4: use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of</i></p>

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		<p><i>light, action of convex lens in focusing (qualitative) and the human eye</i></p> <p><i>PWL5: light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras</i></p> <p><i>PWL6: colour and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.</i></p>
Assessment tasks	As FCJ educators, we will focus on the FCJ values by:	We will ensure students skills in reading, writing, communication and mathematics are enhanced by:
<p>Essential homeworks</p> <p>Light Effects Badger assessment</p> <p>End of unit test</p>	<p>Excellence – set highest possible standards for all learners</p> <p>Companionship – teamwork when completing practical investigations, respect during class discussions</p> <p>Dignity – class discussions and Q&A, ensuring everyone is listened to and their views heard</p> <p>Justice - discussions during sound topic, fair treatment the deaf</p> <p>Hope – highlight progress in science and innovation to inspire learners</p> <p>Gentleness – classroom management in a firm but fair and gentle manner</p>	<p>Mathematics – graph skills, calculating mean, using equation for wave speed, use of numbers to analyse frequencies</p> <p>Reading – within lessons themselves and literacy news reports</p> <p>Writing – extended Badger assessment on light effects, 9 mark plan in reflection ISA</p> <p>Communication – discussions within lessons – e.g. mosquito to disperse youths.</p>
We are supporting progression from KS2 in this unit by:	We are supporting progression to KS4 in this unit by:	Misconceptions and how they will be addressed
Learners know from KS2 that light is reflected from surfaces and that it cannot pass through some substances.	Links to AQA GCSE Physics topics of types of waves (will now introduce other waves such as mechanical, electromagnetic and longitudinal),	<p>Energy is transferred by waves not matter.</p> <p>Ray diagrams – light travels into the eye</p>

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<p>Learners know from KS2 that sounds are made by vibrations, sound needing a medium and how to change sounds on instruments.</p>	<p>reflection, refraction (will now link refraction through the prism as dispersion) & sound waves.</p>	<p>Coloured light – the reflected light gives objects their colour Dark surfaces ABSORB light (not attract)</p>
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