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| Year | **8** |
| Topic | **Waves** |
| **Lesson** | **Key aim/title/objective of the lesson?**  **These may stretch over a number of lessons as appropriate** |
| 1 | Waves  Skill 5, Skill 9 |
| 2 | Sound  Skill 4, Skill 5, Skill 6, Skill 9 |
| 3 | Pitch & Frequency  Skill 1, Skill 9 |
| 4 | Ears & Hearing  Skill 3, Skill 6, Skill 9, Skill 10 |
| 5 | Sound & Light  Skill 1, Skill 5a, Skill 7b, Skill 10 |
| 6 | Camera & The Eye  Skill 9, Skill 13, Skill 14 |
| 7 | Reflection  Skill 2, Skill 6 |
| 8 | Refraction  Skill 9 |
| 9 | Rainbows & Colours  Skill 8, Skill 9, Skill 10 |
| 10 | Colours Investigation  Skill 3, Skill 6, Skill 7a, Skill 8, Skill 9 |
| 11 | Review & Metacognition Lesson |
| 12 | Summative Assessment |
| 13 | Feedback & Next Steps |
| **Key vocabulary and/or key reading**  Misconceptions - Pupils often think sound is caused by vibration of the instrument. Ultrasounds are extremely loud. Objects are seen when light shines on it, with no recognition that light moves between the object & the eye. Light comes out of the eye and lines drawn outward from a light bulb in a sketch represent the ‘glow' surrounding the bulb; how far it extends depends on bulb brightness. Light transfers energy from place to place instantaneously & blocking part of the lens surface would block the corresponding part of the image. Light is reflected by shiny surfaces, but not from other surfaces. light passes straight through transparent materials (without changing direction) Rules for mixing coloured lights are the same as for mixing coloured paints.  **Numeracy**  Angles, using a protractor | |

**How does this topic build on *prior* learning?** Students have simple concepts of light and sound from KS2 and general knowledge. Year 3 students can recognise that they need light in order to see things and that dark is the absence of light. Light is reflected from surfaces and recognise that light from the sun can be dangerous and to protect their eyes. Students recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows change. They identify how sounds are made, associating some of them with something vibrating and recognise that vibrations from sounds travel through a medium to the ear. They observe patterns between the pitch of a sound and features of the object that produced it & find patterns between the volume of a sound and the strength of the vibrations that produced it

**How does the work during this topic prepare for future learning?**Year 11 Physics investigate speed of sound, ultra sound, dispersion of light and lenses. The effects of refractions are investigated. Year 11 Biology investigate the eye in depth with refraction

**How will learning be assessed and feedback provided in this scheme?**Short term - using exit tickets and Educake tasks to generate individual targets to address mis conceptions quickly. Medium term - mid & end of topic & HSW tests using diagnostic questions to direct students to individual next step tasks addressing areas of weakness and give summative progress data compared with FFT targets that feed into the tracking and intervention plans.

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| **Personal Development** | |
| How is this topic developed beyond the classroom? | * 4 shadows on a football pitch, reflections |
| How are **Careers/ IAG** links built into this lesson sequence? | * TO ADD CAREERS * The Eye and The Ear (Eye dissection) * Periscope, Camera, Rainbows |
| **Relationship Sex and Health Education.** | * The importance of eyecare and hearing. Regular check-ups the age effect on hearing and eyesight |
| **Fundamental British Values** (democracy, the rule of law, | * Add cameras personal privacy laws * Driving age limit and testing |

