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**LANGDON PARK SIXTH FORM**

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| **Subject: Physics** | **Year: Y12** | **Topic: 3.3.1 Progressive and Stationary Waves** |

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| ***What and Why*** “What is a wave? Why are the elements of a TV aerial aligned horizontally? Why does white light split up into the rainbow colours? Optic fibres have revolutionised communication and medicine but how do they work? Who was Thomas Young and his role in explaining the nature of waves |

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| **Key terms**  Amplitude  Antinode  Coherent  Constructive  Destructive  Diffraction | Displacement  Electromagnetic wave  Frequency  Harmonic  Longitudinal wave  Monochromatic  Node | Oscilloscope  Path difference  Period  Phase difference  Polarisation  Radian  Reflection | Refraction  Standing wave  Superposition  Transverse wave  Wave speed  Wavefront  Wavelength |

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| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Home learning** | **Extension – Cultural Capital and Reading** |
| **3.3.1.1:** I can apply the wave equation and convert degrees to radians  **3.3.1.2:** I can define a longitudinal and transverse wave. Explain the phenomenon of polarization including examples of use in industry.  **3.3.1.3:** I can explain the  principle of the superposition of waves. | Use the Oxford AQA AS textbook p.52 to 65. Look at other textbooks in the library for alternative ideas, explanations and diagrams.  **YouTube Videos:**  (1) Phase difference in A-level  (2) Polarisation of light  (3) Standing waves demo, slinky    **Websites:**  <https://www.physicsclassroom.com/class/waves>  <http://hyperphysics.phy-astr.gsu.edu/hbase/phyopt/polclas.html> | **Practicals:**  (1) Required Practical 1:  Investigation into the variation of the frequency of stationary waves on a string with length, tension and mass per unit length of the string.  (2) Use a slinky spring to demonstrate transverse, longitudinal and standing waves  (3) Demonstrate polarization, reflection and standing waves using a microwave emitter/receiver  (4) Investigate polarization using polaroid filters  **Assessment**:  Minitest Waves (I) (3rd week Oct) | (1) Research 4 uses of polarization in industry.  (2) From data collected in experiment; determine the mass per unit length of the string  (3) Describe how to measure the speed of sound using an oscilloscope  Make notes on each topic and complete the exam style practice questions | (1) What is the role of a carrier  wave in AM and FM radio.  (2) How the microwave oven  works  **Reading:**  Waves: A Very Short Introduction.  By Mike Goldsmith. |

**Pre-assessment content review**

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| I feel secure in | I need to focus on | My action plan |

**Pre-assessment skills review**

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| I feel secure in | I need to focus on | My action plan |

**Post-assessment review**

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| Weaknesses in content knowledge | Skills I need to focus on | My action plan |
| Retest / review – teacher and student comment | | |

**Revision planning**

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| Spec point | Notes complete | Revision materials | Past paper Qs | Timed conditions |
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