Year 9: Physical World- Energy on the Move

	Check	Date
Revise assumed knowledge: **SC4-10PW** describes the action of unbalanced forces in everyday situations **SC4-11PW** discusses how scientific understanding and technological developments have contributed to finding solutions to problems involving energy transfers and transformations	☐	
PW1 Energy transfer through different mediums can be explained using wave and particle <u>models</u>. (ACSSU182)		
TRANSFERRING ENERGY		
5PW1a. explain, in terms of the particle model, the processes underlying convection and conduction of heat energy	☐	
Define the terms energy, conduction, convection and radiation	☐	
Recall the particle theory of matter	☐	
Identify heat as being thermal energy	☐	
Describe the transfer of heat energy by **<u>conduction</u>**, in terms of the particle model	☐	
CODE: 9PW20 First-hand investigation: Conduction. Metal rods, lamb's wool wax, thumb tacs	☐	
Describe the transfer of heat energy by **<u>convection</u>**, in terms of the particle model	☐	
CODE: 9PW21 First-hand investigation: Convection. Measure temperature of top and bottom layers of a beaker of water	☐	
Define the terms conductor and insulator	☐	
Distinguish, using examples, between a conductor and insulator	☐	
Describe the transfer of energy by **<u>radiation</u>**	☐	
5PW1b. identify situations where waves transfer energy	☐	
Identify situations where waves transfer energy e.g. UV radiation from the sun, Heat energy from a heater, Ocean waves- surfing and Sound waves- music concert	☐	
5PW1c. describe <u>qualitatively</u>, using the wave model, the features of waves including wavelength, frequency and speed	☐	
Define the terms transverse wave, wavelength, amplitude, crest and trough	☐	
Identify features of a transverse wave including crest, wavelength, amplitude and trough	☐	
Define the terms longitudinal wave, compression and rarefaction	☐	
Identify features of a longitudinal wave including compression and rarefaction	☐	
Define the term speed	☐	
Skills: Use the wave equation ($v = f \times \lambda$) to solve a range of problems	☐	
5PW1d. explain, using the particle model, the transmission of sound in different mediums	☐	
Identify sound as a longitudinal wave	☐	
CODE:9PW22 First-hand investigation: Slinky Spring 1 Use a slinky spring to model the **<u>compressions and rarefactions</u>** of a sound wave (Oxford pg224)	☐	

Explain how sound energy is transferred	☐	
Explain why the speed of sound varies depending on the density of the medium	☐	
CODE: 9PW25 Teacher demonstration: Bell jar and alarm clock (Oxford pg225)	☐	
CODE: 9PW26 First-hand investigation: speed of sound waves Oval. 100m or more distance. Starters pistol or Hit metal object. Record time. (s=d/t).	☐	
Relate the pitch of a sound to its frequency	☐	
CODE: 9PW23 First-hand investigation: Slinky Spring 2 Use a slinky spring to demonstrate the **frequency** of longitudinal waves (Oxford pg226)	☐	
LITERACY SET 1: COSMOS ARTICLE	☐	
Assessment: Oxford online test- Transferring energy Students to achieve 100% in Support and Consolidate **OR** Consolidate and Extend	☐	
ENERGY AND WAVES		
5PW1e. relate the properties of different types of radiation in the electromagnetic spectrum to their uses in everyday life, including communications technology	☐	
Identify different waves of the electromagnetic (EM) spectrum	☐	
CODE: 9PW24 First-hand investigation: Slinky Spring 3 Use a slinky spring to model a light wave as a transverse wave (Oxford pg232)	☐	
Identify the common properties of the different types of radiation in EM spectrum	☐	
Relate the properties of different types of radiation in the EM spectrum to their uses e.g. radiowaves, microwaves**,** IR**,** UV **and** X-ray	☐	
LITERACY SET 2: MIXED ACTIVITIES	☐	
5PW1f. describe the occurrence and some applications of absorption, reflection and refraction in everyday situations	☐	
Define the terms absorption, reflection, refraction, convex and concave	☐	
CODE: 9PW30 First-hand investigation: Light absorption. Compare the temperature change/absorption of white and black paper exposed to sunlight	☐	
Describe every day applications where absorption is used e.g. Solar panels	☐	
CODE: 9PW28 First-hand investigation: Reflection • Use light boxes to demonstrate and investigate reflection of light off straight, concave and convex mirrors • Measure the angle of incidence and reflection in a range of situations	☐	
Describe every day applications where reflection is used e.g. Endoscopes, Wi-Fi and satellites	☐	
CODE: 9PW29 First-hand investigation: Refraction • Use light boxes to demonstrate and investigate refraction of light through a range of concave and convex lenses • Investigate the disappearing coin in a bowl of water and the apparent bending of an object protruding from water	☐	
Describe every day applications where refraction is used e.g. telescopes, microscopes, camera lenses and the human eye	☐	
NUMERACY AND SKILLS SET	☐	
Assessment: Oxford online test- Energy and Waves Students to achieve 100% in Support and Consolidate **OR** Consolidate and Extend	☐	
Assessment: Energy Chapter Test	☐	