Ravens Wood School

KS3 Curriculum Plan

Subject: Year 7 Waves

Overarching Topic: Waves			
Why is this topic being studied at this time? How does it fit into the wider subject curriculum?	• Waves are everywhere. Whether we recognize it or not, we encounter waves on a daily basis. Sound waves, visible light waves, radio waves, microwaves, water waves, sine waves, cosine waves, stadium waves, earthquake waves, waves on a string, and slinky waves and are just a few of the examples of our daily encounters with waves. In addition to waves, there are a variety of phenomena in our physical world that resemble waves so closely that we can describe such phenomenon as being wavelike. Waves (and wavelike phenomena) are everywhere! We study the physics of waves because it provides a rich glimpse into the physical world that we seek to understand and describe as students of physics. • This unit presents a starter unit for the topics of light and sound. The idea of a wave and being able to name parts of a wave are essential in accessing sound and light.		
	Critical	**Core**	**Pinnacle**
The Big Questions (What questions will students be able to answer upon mastery of the topic?)	What is speed? What is reflection? What is a wavelength? What is a longitudinal wave? What is a transverse wave? What is the wave speed equation? What happens to the particles of a substance when a wave travels through it?	What are the properties of different longitudinal and transverse waves? How do you work out the amplitude and frequency of a wave from a diagram or oscilloscope picture? Using the wave model, can I explain observations of the reflection, absorption and transmission of a wave? Can I calculate the speed of a wave using the wave speed equation in calculations of transverse waves?	L1 What will happen when two wave crests combine? L2 Does a light wave ever change its speed? L3 How do microwave ovens work? L4 What colours are mixed to make colour TV pictures? L5 Why can you see a person when you look at them? L6 Why are the colours of a reflection darker than the original colours? L7 Why is the arrow changing direction in the glass? L8 Why are fake puddles of water seen on a road on a hot day? L9 How do cataracts stop people seeing? L10 Could you make an optical lens from sugar? L11 How do astronauts communicate during space-walks? L12 How can sound break a glass? L13 How is the speed of sound used by animals to hunt, or by treasure hunters?
The Key Skills/ Techniques	**The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge.**		
	Skill/Technique	**How will this skill be developed?**	
	1. Graphing & Drawing	Draw graphs with suitable scales, axes and units. Correct line of best fit. Appreciation of anomalies and processed data. Scientific drawing of cells, concepts and scientific equipment.	
	2. Variables	Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.	
	3. Data Analysis	Describe, explain and predict trends. Graph and table data interpretation. Identify links and patters within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.	

	4. Application	Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.
	5. Working Scientifically	Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking in to account data analysis.