

AQA Physics Paper 2		Covered in Lesson	Diagnosis			Revised		
P4.6. Waves			R	A	G	1	2	3
4.6.1 Waves in air, fluids and solids	Describe waves as either transverse or longitudinal, defining these waves in terms of the direction of their oscillation and energy transfer and giving examples of each							
	Define waves as transfers of energy from one place to another, carrying information							
	Define amplitude, wavelength, frequency, period and wave speed and Identify them where appropriate on diagrams							
	State examples of methods of measuring wave speeds in different media and Identify the suitability of apparatus of measuring frequency and wavelength							
	Calculate wave speed, frequency or wavelength by applying, but not recalling, the equation: [$v = f \lambda$] and calculate wave period by recalling and applying the equation: [$T = 1/f$]							
	Identify amplitude and wavelength from given diagrams							
	Describe a method to measure the speed of sound waves in air							
	Describe a method to measure the speed of ripples on a water surface							
	PHY ONLY: Demonstrate how changes in velocity, frequency and wavelength are inter-related in the transmission of sound waves from one medium to another							
	Required practical 8: make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid							
	PHY ONLY: Discuss the importance of understanding both mechanical and electromagnetic waves by giving examples, such as designing comfortable and safe structures and technologies							
	PHY ONLY: Describe a wave's ability to be reflected, absorbed or transmitted at the boundary between two different materials							
	PHY ONLY: Draw the reflection of a wave at a surface by constructing ray diagrams							
	Required practical 9 (physics only): investigate the reflection of light by different types of surface and the refraction of light by different substances.							
	PHY & HT ONLY: Describe, with examples, processes which convert wave disturbances between sound waves and vibrations in solids							
	PHY & HT ONLY: Explain why such processes only work over a limited frequency range and the relevance of this to the range of human hearing, which is from 20 Hz to 20 kHz							
	PHY & HT ONLY: Define ultrasound waves and explain how these are used to form images of internal structures in both medical and industrial imaging							
	PHY & HT ONLY: Compare the two types of seismic wave produced by earthquakes with reference to the media they can travel in and the evidence they provide of the structure of the Earth							
	PHY & HT ONLY: Describe how echo sounding using high frequency sound waves is used to detect objects in deep water and measure water depth							

4.6.2 Electromagnetic waves

Describe what electromagnetic waves are and explain how they are grouped									
List the groups of electromagnetic waves in order of wavelength									
Explain that because our eyes only detect a limited range of electromagnetic waves, they can only detect visible light									
HT ONLY: Explain how different wavelengths of electromagnetic radiation are reflected, refracted, absorbed or transmitted differently by different substances and types of surface									
Illustrate the refraction of a wave at the boundary between two different media by constructing ray diagrams									
HT ONLY: Describe what refraction is due to and illustrate this using wave front diagrams									
Required practical activity 10: investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.									
HT ONLY: Explain how radio waves can be produced by oscillations in electrical circuits, or absorbed by electrical circuits									
Explain that changes in atoms and the nuclei of atoms can result in electromagnetic waves being generated or absorbed over a wide frequency range									
State examples of the dangers of each group of electromagnetic radiation and discuss the effects of radiation as depending on the type of radiation and the size of the dose									
State examples of the uses of each group of electromagnetic radiation, explaining why each type of electromagnetic wave is suitable for its applications									
PHY ONLY: State that a lens forms an image by refracting light and that the distance from the lens to the principal focus is called the focal length									
PHY ONLY: Explain that images produced by a convex lens can be either real or virtual, but those produced by a concave lens are always virtual									
PHY ONLY: Construct ray diagrams for both convex and concave lenses									
PHY ONLY: Calculate magnification as a ratio with no units by applying, but not recalling, the formula: [magnification = image height / object height]									
PHY ONLY: Explain how the colour of an object is related to the differential absorption, transmission and reflection of different wavelengths of light by the object									
PHY ONLY: Describe the effect of viewing objects through filters or the effect on light of passing through filters and the difference between transparency and translucency									
PHY ONLY: Explain why an opaque object has a particular colour, with reference to the wavelengths emitted									
PHY ONLY: State that all bodies, no matter what temperature, emit and absorb infrared radiation and that the hotter the body, the more infrared radiation it radiates in a given time									
PHY ONLY: Describe a perfect black body as an object that absorbs all the radiation incident on it and explain why it is the best possible emitter									
PHY ONLY: Explain why when the temperature is increased, the intensity of every wavelength of radiation emitted increases, but the intensity of the shorter wavelengths increases more rapidly									
PHY & HT ONLY: Explain and apply the idea that the temperature of a body is related to the balance between incoming radiation absorbed and radiation emitted									
PHY & HT ONLY: Describe how the temperature of the Earth is dependent on the rates of absorption and emission of radiation and draw and interpret diagrams that show this									