

Review P1.5 Waves

<i>Can you...?</i>	😊	😐	☹️
P1.5.1 General properties of waves			
State that waves transfer energy			
Identify waves as transverse (oscillations perpendicular to the direction of energy transfer) or longitudinal (oscillations parallel to the direction of energy transfer)			
State that electromagnetic waves are transverse, sound waves are longitudinal, and mechanical waves may be either transverse or longitudinal			
State that all types of electromagnetic waves travel at the same speed in a vacuum			
Identify the order of electromagnetic waves in the electromagnetic spectrum in terms of energy, frequency and wavelength			
Identify areas of compression and rarefaction in longitudinal waves			
Describe diffraction of a wave passing through a gap of similar size to the wavelength of the wave			
State that waves can be reflected and refracted			
Describe how waves are refracted at an interface, except when they are travelling along the normal			
Calculate the speed of a wave (v , in m/s) from its frequency (f , in Hz) and wavelength (λ , in m) using the wave equation: $v = f \times \lambda$			
Outline how radio waves, microwaves, infra red and visible light may be used for communication, and identify any associated hazards			
Compare the use of different types of waves for communication			
Evaluate the possible risks involving the use of mobile phones			
P1.5.2 Reflection			
Draw and recognise diagrams showing rays of light reflecting, including the normal line (an imaginary line perpendicular to the point of incidence)			
State the law of reflection: "angle of incidence equals angle of reflection"			
Describe images produced in a mirrors as virtual, upright and laterally inverted			
Draw ray diagrams to show how virtual images are formed in mirrors			
P1.5.3 Sound			
Describe sound waves as longitudinal waves that cause vibrations in a medium that can be detected as sound by the ear			
Relate the pitch of a sound to its frequency, and the loudness of a sound to its amplitude			
Describe echoes as reflections of sounds			
P1.5.4 Red-shift			
Describe the Doppler effect as it applies to light, sound or microwaves			
Relate the observed wavelength and frequency to the speed at which a source is moving away from or towards an observer			
Describe the link between the distance of galaxies and their observed red-shift			
Explain how the observed red-shift provides evidence that the universe is expanding and supports the 'Big Bang' theory (that the universe began from a very small initial point)			
Describe cosmic microwave background radiation (CMBR) as a form of electromagnetic radiation filling the universe that comes from radiation that was present shortly after the beginning of the universe, and that the Big Bang theory explains the existence of CMBR			
Consider the limitations of the model that scientists use to explain how the universe began and why the universe continues to expand			