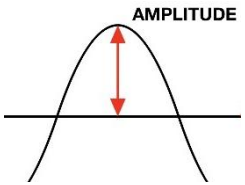
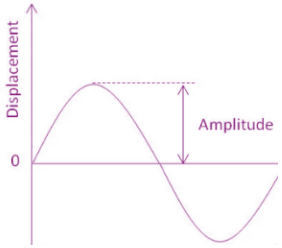
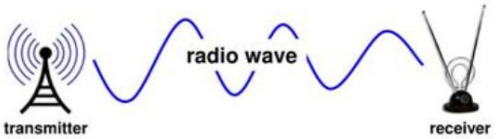
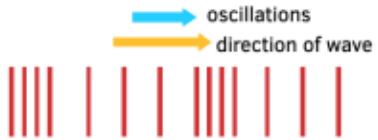
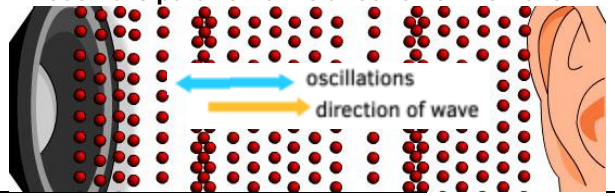
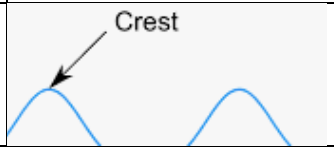
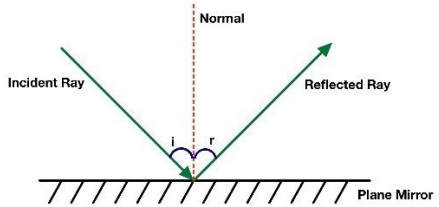
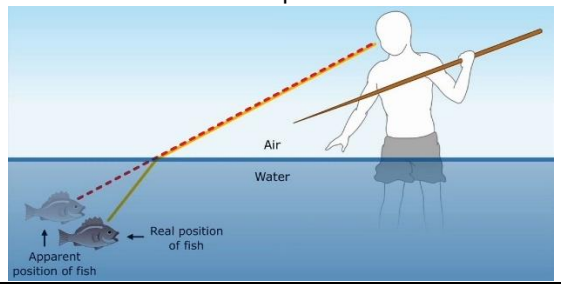
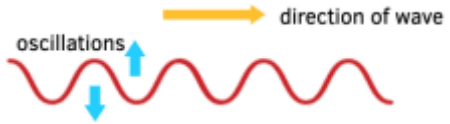
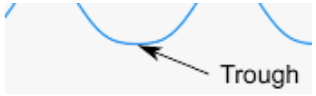
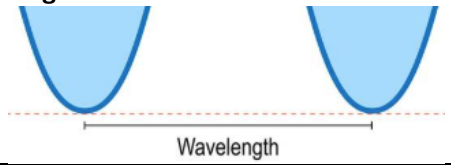
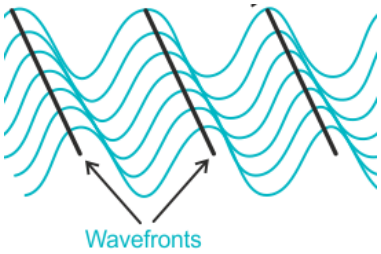
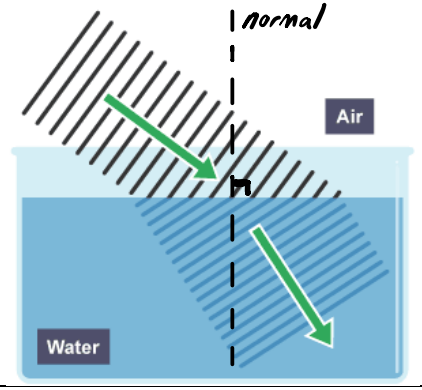
3b **Waves** Year 9 – Key Words – technical terms met in The Leys Physics Course

Key word	Simple meaning	GCSE definition	Words in a sentence	Translation
Amplitude	Wave height 	 The **maximum displacement** from the **equilibrium**.	The sound was loud because it had a big **amplitude**. A guitarist uses an amplifier to increase the **amplitude** of the wave. Find the **amplitude** by measuring from **peak** to **trough** and then halving that number.	
Doppler Effect	Waves appear to change when a person is moving.	The **observed frequency** and **wavelength** of a wave changes when its **source** is **moving relative** to an observer.	When the ambulance was driving towards the person, the **wavefronts** were closer together. The **observed wavelength** was smaller, so the **observed frequency** was larger. This is an example of the **Doppler Effect**.	
Electromagnetic wave	A type of wave e.g. light	A **transverse** wave where the **electric** and **magnetic** fields **oscillate perpendicular** to the direction of energy transfer. **Electromagnetic** waves are **radio waves**, **microwaves, infra red, visible, ultra violet, x-ray, gamma**.	**Radio waves** are **electromagnetic waves**. Radios detect radio waves in the metal aerial. 	
Frequency	How often e.g. 10 per second.	The number of waves passing a point in a second. $f = \frac{1}{T}$	50 complete waves passed a point in 5 seconds, so the **frequency** was 10Hz. The **time period** of the wave is 0.1 seconds, so the **frequency** of the wave is 1/0.1 = 10 Hz.	
Longitudinal wave	A type of wave e.g. sound	A wave where the **oscillations** are **parallel** to the **direction** of **energy** transfer. 	Sound is a **longitudinal** wave: air **particles oscillate parallel** to the direction of the wave. 	
Peak or crest	Top of the wave.	 Point of maximum displacement.	**Wavelength** can be measured between two **peaks**. 	

(Time) Period	Time for one wave to pass.	The **time** it takes for one complete wave to pass a point. $T = \frac{1}{f}$	The pupil started the **stopwatch** when the **peak** of the wave passed her and stopped the stopwatch when the next **peak** passed her. She measured the **time period**.	
Reflected	Bounce back. E.g. light reflects off a mirror.	Reflection is when waves bounce off a surface with the **reflected angle** same as the **incident angle to the normal**. 	The **sound** wave **reflected** off the side of the building, so everyone heard their **echo**. A tennis ball bounces at the same angle of **incidence** and **reflection**. The **reflected** ray was measured at 30° from the **normal**. The angle of **incidence** was also 30°.	
Refracted	Waves change speed and direction.	Refraction is when a **wave changes speed** and **direction** when it enters a **different medium**.	The light from the fish in the water **refracted** when it went from **water to air** so the fish appears in a different position. 	
Transverse wave	A type of wave e.g. water	A wave where the **oscillations** are **perpendicular** to the **direction** of **energy** transfer.	**Light** is a **transverse** wave because the **electric field oscillates perpendicular** to the direction the light travels. 	
Trough	Bottom of the wave.	 Point of minimum displacement.	**Wavelength** can be measured between 2 **troughs**. 	

Wave speed	How fast the wave is moving. E.g. 300 meters per second.	The speed at which the wave energy moves. Wave speed = frequency x wavelength $v = f\lambda$	The **wave speed** changed when the light travelled from **water to air**. The wave speed was **slower** in the water than in the air. The **wave speed of light** in a vacuum is constant, v = $3x10^8$ m/s.	
Wavefront	A line marking the top of the wave.  	Lines that mark the peak of a wave. These are used in diagrams to show wavelength and direction.	This **wave front diagram** shows how the **wavelength** gets smaller and the **direction** changes towards the **normal**. The **wave fronts** are always **perpendicular** to the **wave direction**. They are marked in black lines on this diagram.  	
Wavelength	The distance between two waves next to each other.	The distance between two adjacent, identical points on a wave. E.g. from peak to peak.	The total distance between 4 wave peaks is 24m, so the **wavelength** was 8m.  Or, the total distance across 4 waves was 32 m, so the wavelength is 8 m.	