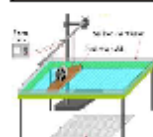


Wave speed	Wave speed = frequency X wavelength	$V = f \times \lambda$
Wave period	Wave period = $1 \div$ frequency	$T = 1 \div f$
Speed	Speed = distance $\div$ time	$v = d \div t$

Wavelength	Distance from one point on a wave to the same point of the next wave
Amplitude	The maximum disturbance from its rest position
Frequency	Number of waves per second
Period	Time taken to produce 1 complete wave

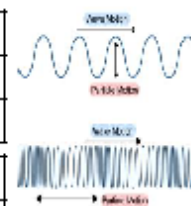


In water, use a ripple tank.

In air, use echoes.

Measuring speed

Properties



Transverse wave	Vibration causing the wave is at right angles to the direction of energy transfer	Energy is carried outwards by the wave.	Water and light waves, S waves.
Longitudinal wave	Vibration causing the wave is parallel to the direction of energy transfer	Energy is carried along the wave.	Sound waves, P waves.

Transverse and Longitudinal waves

Waves in air, fluids and solids

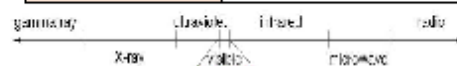
AQA Waves

e.g. Gamma

Electromagnetic waves

Short wavelengths have high frequency and high energy.

Electromagnetic wave	Continuous spectrum of transverse waves
----------------------	---



Absorbed light changes into thermal energy store.

HIGHER: Properties

	Units
Distance	Metres (m)
Wave speed	Metres per second (m/s)
Wavelength	Metres (m)
Frequency	Hertz (Hz)
Period	Seconds (s)

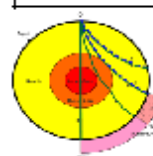
Seismic waves

P wave	S wave	Seismograph
Longitudinal	Transverse	Shows P and S waves arriving at different times.
Fast	Slow	
Travel through solids and liquids	Travels through solids	By using the times the waves arrive at the monitoring centres, the epicentre of earthquake can be found. ($v = x \div t$).
Produced by earthquakes.		

Black surfaces	Good emitters, good absorbers
White surfaces	Poor emitters, poor absorbers
Shiny surfaces	Good reflectors



EM waves refract



Ultra sound	Partially reflected off boundary	Used for medical and foetal scans.
Sonar	Reflected off objects	Used to determine depth of objects under the sea.

EM wave	Danger	Use
Radio	Safe.	Communications, TV, radio.
Microwave	Burning if concentrated.	Mobile phones, cooking, satellites.
Infrared		Heating, remote controls, cooking.
Visible	Damage to eyes.	Illumination, photography, fibre optics.
Ultra violet	Sunburn, cancer.	Security marking, disinfecting water.
X-ray	Cell destruction, mutation, cancer.	Broken bones, airport security.
Gamma		Sterilising, detecting and killing cancer.