P11 Wave Properties Knowledge Organiser (F)

Mechanical wave	•A wave made up of vibrations travelling through a medium •E.g. Water, sound waves, waves on springs •Must have a medium to travel through	Wave speed , v	•The speed at which a wave moves through a medium •This can be calculated if we know the frequency and wavelength of a wave • $v = f \times \lambda$ •Measured in m/s •All EM waves travel at the speed of light, 3×10^8 m/s
Electromagnetic wave	•An electrical and magnetic disturbance that transfers energy from a source to an absorber •All EM waves travel at 3×10^8 m/s (the speed of light!) •E.g. Visible light, X-rays, Infrared	Incident wave	•The wave that comes from a source and interacts with a boundary/medium
Transverse wave	•A wave that oscillates perpendicular (90°) to the direction of energy transfer •All EM waves are transverse.	Investigating waves	•To measure the speed of sound in air, time how long a sound wave takes to reach a wall and echo back. Use the formula $s = 2d \div t$ to calculate the speed •A ripple tank can be used to measure wave speed of water waves.
Longitudinal wave	•A wave that oscillates parallel to the direction of energy transfer. •Sound waves are longitudinal		
Peak/crest	•The maximum height above the zero line for a wave (maximum positive displacement)		
Trough	•The maximum depth below the zero line for a wave (maximum negative displacement)		
Amplitude	•The maximum positive or negative displacement of a point on a wave from the rest position •To measure, measure from the zero line to the highest part of a peak or lowest part of a trough		
Wavelength, λ	•The distance from a point on one wave to the same point on the next wave, i.e. Peak to peak •Measured in m		
Frequency, f	•The number of waves passing a particular point per second •Measured in Hertz, Hz •1 Hz = 1 wave per second		
Period , T	•The time taken for one complete oscillation •Period $T = 1 \div f$ •Measured in s		

Key Equations To Learn	
Wave Speed, v	Wave speed = frequency x wavelength $v = f \times \lambda$