

Definitions and Concepts for CAIE Physics A-level

Topic 7: Waves

Amplitude: A wave's maximum displacement from its equilibrium position.

Displacement: The distance and direction that a vibrating particle or wave has travelled from its equilibrium position.

Electromagnetic Spectrum: The spectrum of electromagnetic waves, consisting of Gamma Rays, X-Rays, Ultraviolet, Visible Light, Infrared, Microwaves and Radiowaves.

Frequency: The number of complete oscillations of a wave (wave cycles) per second. It is the inverse of the time period.

Intensity: The power transferred per unit area. It is proportional to the square of a wave's amplitude.

Longitudinal Wave: A wave with oscillations that are parallel to the direction of energy propagation. Sound waves are an example of a longitudinal wave.

Period: The time it takes for one complete wave to pass a given point. It is the inverse of frequency.

Phase Difference: The difference in phase between two points on a wave. It is usually expressed in radians.

Polarisation: The restriction of a wave so that it can only oscillate in a single plane. This can only occur for transverse waves.

Progressive Waves: A wave that transfers energy from one point to another, without the transfer of matter.

Transverse Waves: A wave with oscillations that are perpendicular to the direction of energy propagation. Electromagnetic waves are examples of transverse waves.

Wavelength: The distance between two identical positions on two adjacent waves. It is commonly measured from peak to peak or trough to trough.

Wave Speed: The product of a wave's frequency and wavelength.

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