

## IGCSE Physics (9-1) Specification 3(b)

### (b) Properties of waves

#### Students should:

**3.2** explain the difference between longitudinal and transverse waves

**3.3** know the definitions of amplitude, wavefront, frequency, wavelength and period of a wave

**3.4** know that waves transfer energy and information without transferring matter

**3.5** know and use the relationship between the speed, frequency and wavelength of a wave:

wave speed = frequency  $\times$  wavelength

$$v = f \times \lambda$$

**3.6** use the relationship between frequency and time period:

$$\text{frequency} = \frac{1}{\text{time period}}$$

$$f = \frac{1}{T}$$

**3.7** use the above relationships in different contexts including sound waves and electromagnetic waves

**3.8** explain why there is a change in the observed frequency and wavelength of a wave when its source is moving relative to an observer, and that this is known as the Doppler effect

**3.9** explain that all waves can be reflected and refracted