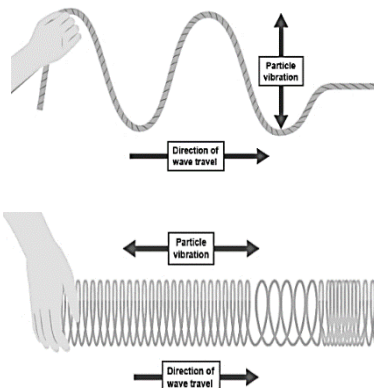


Physics – P12 Waves

Transverse waves Waves in which particles oscillate at right angles to the direction of energy movement. E.g. water waves and light waves.

Longitudinal waves Waves in which particles oscillate parallel to the direction of energy movement. E.g. sound waves.



2. Wave speed

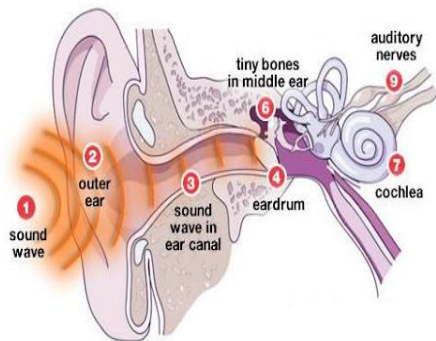
*Speed, distance and time

$$\text{wave speed (m/s)} = \frac{\text{distance (m)}}{\text{time (s)}}$$

*Speed, frequency and wavelength

$$\text{wave speed (m/s)} = \text{frequency (Hz)} \times \text{wavelength (m)}$$

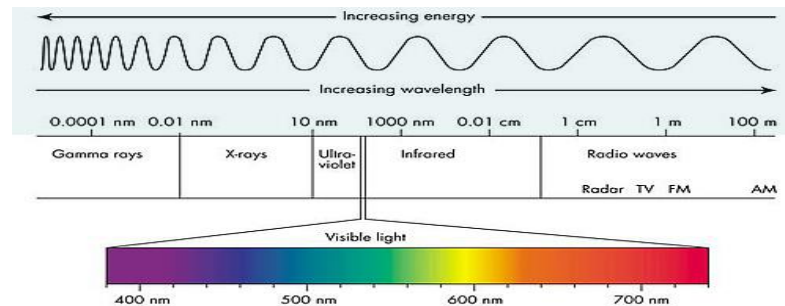
- Sound waves are longitudinal waves caused by vibrations in matter. Sound waves can travel through solid, liquids and gases.
- Ultrasound waves can be used for detection, for example medical diagnosis.



Physics – P13 The Electromagnetic Spectrum

Waves may be transverse or longitudinal.

Electromagnetic waves are transverse waves with a wide range of properties and uses. Sound waves are longitudinal waves.



Type	Use
Radio	Carry Radio, TV, Bluetooth and Mobile phone signals
Micro	Communicating with satellites and heating food
Infrared	Heating, Remote controls and Optical Fibres
Visible	Lighting up space so we can see, taking photographs
Ultraviolet	Security marking and Sunbeds
X-Ray	Creating internal images of people or metal bars
Gamma	Sterilisation of food and medical equipment, treating cancer

Keywords:

Compression: An area of increased pressure. In longitudinal waves, the particles in areas of compression are closer together than on average.

Electromagnetic wave: A transverse wave caused by oscillations in an electromagnetic field.

Frequency: The number of waves produced each second. The unit of frequency is hertz (Hz).

Ionising radiation: Radiation that is able to remove electrons from atoms or molecules to produce positively charged particles called ions.

Longitudinal wave: A wave that moves in the same direction as the direction in which the particles are vibrating.

Medium: A material through which a wave can be transmitted (propagate).

Radiation: Energy transferred as a wave spreading out from a source - eg light, infrared, sound.

Rarefaction: An area of reduced pressure. In longitudinal waves, the particles in areas of rarefaction are further apart than on average.

Spectrum: A series of similar waves arranged in order of wavelength or frequency.

Transverse wave: A wave that moves in a direction at right angles to the way in which the particles are vibrating.

Vacuum: A volume that contains no matter.

Wavelength: The length of a single wave, measured from one wave peak to the next.

Videos



Quizzes

