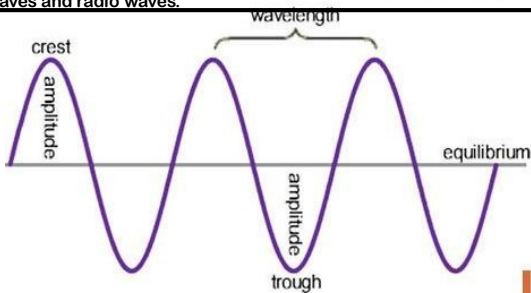


# Light & Sound

Keyword	Definition
<b>Angle of Incidence</b>	Angle between the normal and incident ray.
<b>Refraction</b>	This is when light appears to bend as it enters a new substance.
<b>Dispersion</b>	Spreading out of the different wavelengths of light, caused by refraction of light as it passes through a prism.
<b>Frequency</b>	The number of waves produced each second. The unit of frequency is hertz (Hz).
<b>Amplitude</b>	The maximum height of a wave from the middle of the wave to its peak or trough.
<b>Wavelength</b>	The length of a single wave, measured from one wave peak to the next.
<b>Pitch</b>	The frequency of a sound. Sounds with a high pitch have a high frequency.
<b>Incident Ray</b>	Light ray moving towards a surface or boundary.
<b>Reflected Ray</b>	Light ray leaving a surface or boundary.
<b>Law of reflection</b>	In reflection at a surface, the angle of incidence equals the angle of reflection.
<b>Echo</b>	A sound caused by the reflection of a sound wave from a smooth surface back to the listener.

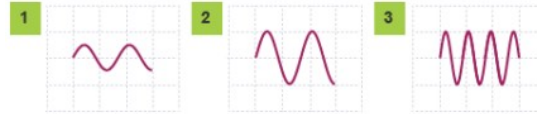
## Transverse Waves

In transverse waves, the vibrations are at right angles to the direction of wave travel. Examples include: Ripples on water, vibrations on a guitar string and a Mexican Wave. Electromagnetic waves such as light waves, micro waves and radio waves.



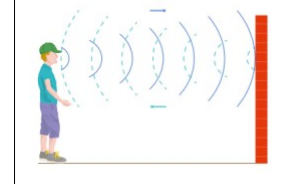
## Sound waves

When an object or substance **vibrates**, it produces sound. These sound waves can only travel through a medium (solid, liquid or gas). They cannot travel through empty space (**vacuum**) because there are no particles to carry the vibrations.



1. Low amplitude (quiet), low pitch sound
2. High amplitude (loud), low pitch sound
3. High amplitude (loud), high pitch sound

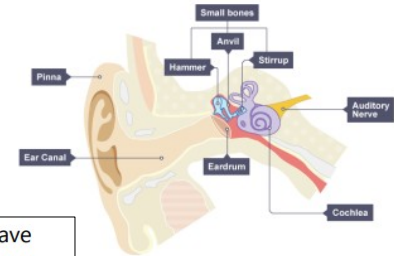
An **echo** is a sound wave reflected back to our ears.



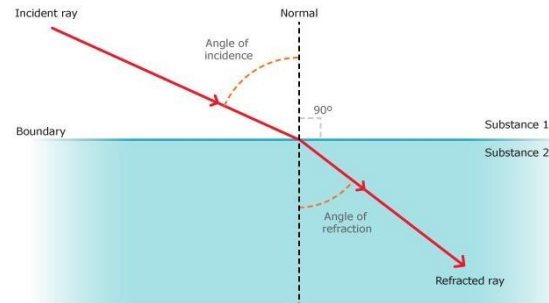
## Hearing sound

The human ear detects sound.

Sound waves enter the ear canal and cause the **eardrum to vibrate**. Three small bones (**ossicles**) transmit these vibrations to the **cochlea**. The cochlea produces electrical signals which pass through the **auditory nerve** to the **brain**, where they are interpreted as sound.



## Refraction



## Reflection

