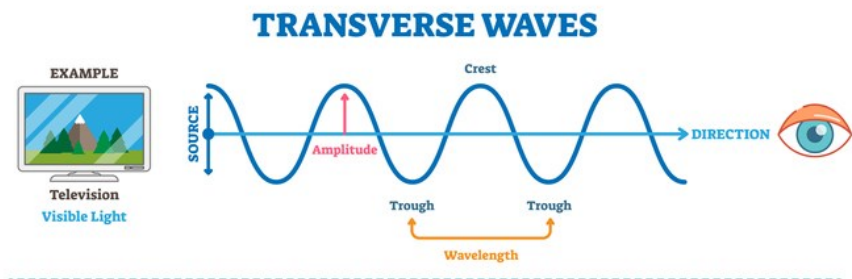
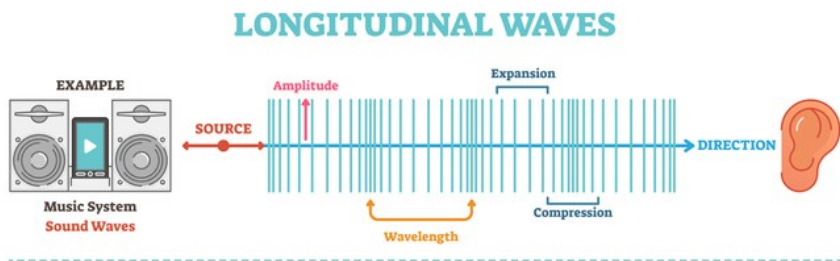


# Year 4: Sound

## SOUND WAVES:



Sound is a form of energy that transfers in a longitudinal wave - like that seen in a slinky - not a transverse wave - like that seen in water ripples.

## SOUND GENERATION:

A sound is generated when an object vibrates; some of the energy from the vibrating object is transferred to the air, making the air particles move.

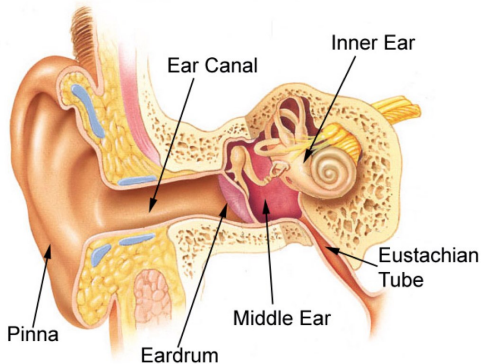
Sound travels through a medium (e.g. an object or particles in the air) and as a result, sound does not travel through a vacuum which has no particles in it at all.

Pitch is how high or low a sound it and this is determined by how many vibrations per second are being made by the vibrating object.  
The number of vibrations per second is called frequency.

The volume is how loud or quiet a sound is and that is determined by the amount of energy in the wave.  
e.g. how hard or soft a percussion instrument like a drum is hit.

The volume of a sound is quieter if the listener is further away from the object but the sound waves have lost some of their energy.

## HOW WE HEAR:



Once in your ear, the vibrations travel down the ear canal until they reach the eardrum. The eardrum sends the vibrations through the middle ear bones (the hammer, the anvil and the stirrup) into the inner ear. The inner ear is known as the cochlea and is shaped a bit like a snail.

There are thousands of tiny hair cells inside the cochlea. These hair cells change the vibrations into electrical signals that are sent to the brain through the hearing nerve. The brain tells you that you are hearing a sound and what that sound is.

## KEY VOCABULARY:

**AMPLITUDE:** a measure of the strength of a sound wave

**DECIBEL** a measure of how loud a sound is

**FREQUENCY:** a measure of how many times per second the sound wave cycles

**LONGITUDINAL WAVE:** a wave vibrating through a medium

**MEDIUM:** something that makes possible the transfer of energy from one location to another

**PARTICLE:** a minute portion of matter

**PERCUSSION INSTRUMENT:** instruments played by striking with the hand or stick or a beater.

**PITCH:** how high or low a sound is

**STRING INSTRUMENT:** instruments that produce sound from vibrating strings

**SOUND WAVES:** invisible waves that travel through air, water and solid objects as vibrations.

**SOURCE:** where something comes from

**TRANSMIT:** to pass from one place or person to another

**VACUUM:** a space entirely empty of matter

**VIBRATION:** invisible waves that move quickly

**VOLUME:** how loud or quiet a sound is

**WIND INSTRUMENT:** an instrument that contains some type of resonator in which a column of air is set in.

Sound travels at different speeds through different objects. It travels much faster through a solid, because the particles are close together.

Sound travels much slower than light, therefore we often hear thunder after we see lightning, as the light reaches our eyes before the sound reaches our ears.

Material	Speed of Sound (m/s)
Air	343
Wood	3960
Water	1493