



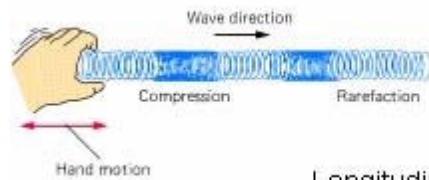
Sound

Topic outcome:

Knowledge Organiser - Sound waves Science Department

When an object or substance vibrates, it produces sound. These sound waves can only travel through a solid, liquid or gas. They cannot travel through empty space. Sound waves are **longitudinal waves** - the vibrations are in the same direction as the direction of travel.

The diagram below shows this.



Longitudinal Waves

Substance	Speed of sound
Air	343 m/s
Water	1493 m/s
Steel	5130 m/s

Sound waves can reflect off surfaces. We hear sound reflections as echoes. Hard, smooth surfaces are particularly good at reflecting sound. This is why empty rooms produce lots of echoes.

Soft, rough surfaces are good at absorbing sound. This is why rooms with carpets and curtains do not usually produce lots of echoes.

Waves transfer energy from one place to another.

Waves are made by forcing something to vibrate or oscillate.

There are two types of waves; transverse and longitudinal.

Sound waves are longitudinal waves.

Light and waves on water are transverse

The frequency of sound waves is measured in hertz, which has the symbol Hz. The bigger the number, the greater the frequency and the higher the pitch of the sound. Human beings can generally hear sounds as low as 20 Hz and as high as 20,000 Hz (20 kHz).

