

## Key Vocabulary

**Amplitude** – The distance from the resting point to the top or bottom of a sound wave.

**Audible range** – The range at which we can hear sound.

**Auditory nerve** – A bundle of nerve fibres that carries information between the cochlea in the ear and the brain.

**Cochlea** – Part of the inner ear; hairs in the cochlea vibrate, sending messages to the brain.

**Crest** – The top of a wave (such as a sound wave).

**Decibel** – Noise loudness is measured in decibels (dB).

**Frequency** – The number of sound waves per second.

**Hertz** – Frequency is measured in hertz (Hz).

**Longitudinal wave** – A sound wave where the vibrations move in the same direction as the wave.

**Medium** – The different materials that sound and light waves travel through - for example, glass, air or water.

**Oscilloscope** – A piece of scientific equipment that converts sound into waves that can be viewed on a screen.

**Ossicles** – Three bones that are found in the inner ear.

**Peak** – The top of the sound wave.

**Pinna** – Commonly known as the ear flap, it directs sound into the ear.

**Pitch** – The pitch of a sound is affected by the frequency; a high frequency produces a high-pitched sound.

**Transverse** – The vibrations are at 90° to the direction of the wave.

**Trough** – The bottom of a sound wave.

**Vacuum** – No sound can be heard in a vacuum because all the air particles have been removed.

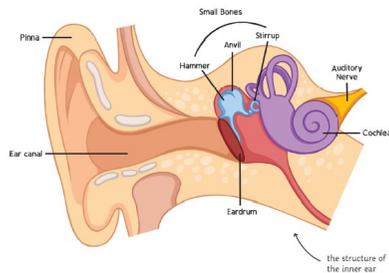
**Vibration** – The shaking of particles.

**Waves** – These transfer energy from one place to another.

**Wave length** - This is the distance between any one point on a sound wave to the same point on the next wave.

## Sound Travels to the Ear

Sounds are made when objects **vibrate**. The vibration makes the air around vibrate, and the air vibrations enter your ear. Our brain hears the vibrations and turns this into a sound.



## How Sound is Made

Sound travels through the air in waves. It is made by air molecules vibrating. When you clap your hands, the air around your hands shakes. This is the air molecules vibrating.

When air molecules inside the ear vibrate, they shake tiny hairs on the insides of the ears. The hairs are connected to nerves under the skin. These nerves send messages to your brain to tell you that you heard a noise.

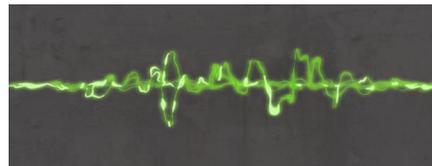
## Vibrations

Sounds are made when something vibrates. By placing rice on a drum, you can see the vibrations when you hit the drum, as well as hearing the sound.



## How Does Sound Travel?

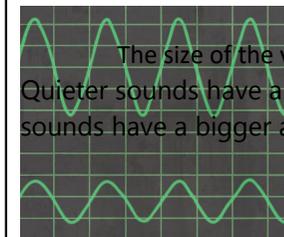
Sound can travel through solids, liquids and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in.



When you hit the drum, the drum skin vibrates. This made the air particles closest to the drum start to vibrate as well. The vibrations then passed to the next air particle, then the next, then the next. This carried on until the air particles closest to your ear vibrated, passing the vibrations into your ear.

## Loud and Quiet

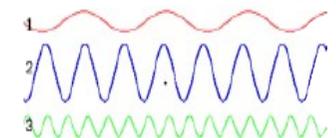
The louder the sound, the bigger the vibration. The rice grains vibrate more when you hit the drum harder, creating a louder sound.



## Pitch

High pitch sounds are created by short sound waves. Low pitched sounds are created by long sound waves.

Long sound waves create a low pitch.  
Short sound waves create a high pitch.



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