Plymouth Science

Knowledge Organiser

Year 4
Sound

VOCABULARY

Vibration- A movement backwards and forwards

Sound waves- Vibrations travelling from a sound source.

Source- The beginning: where something comes from.

Volume- The loudness of a sound.

Amplitude- The size of a vibration. A larger amplitude= a louder sound.

Pitch- How high or low a sound is.

Ear- An organ used for hearing.

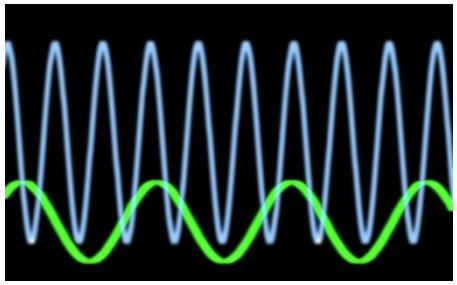
Soundproof- To prevent sound from passing.

Absorb sound- To take in sound energy. Absorbent materials have the effect of muffling sound.

Eardrum- Part of the ear, which is thick, tough layer of tissue that is stretched like a drum skin. Sound waves make the eardrum vibrate.

Sound- a type of energy. Sounds are made when objects vibrate.

Sound Waves

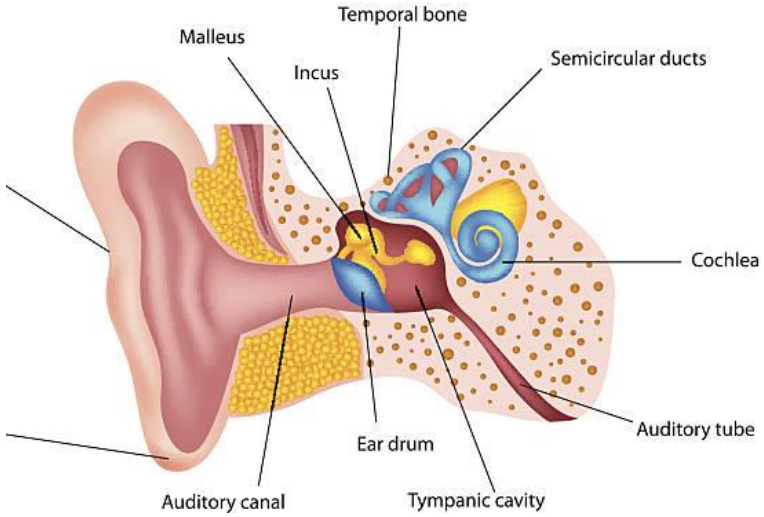


Sound waves travel through solids, liquids and gasses.

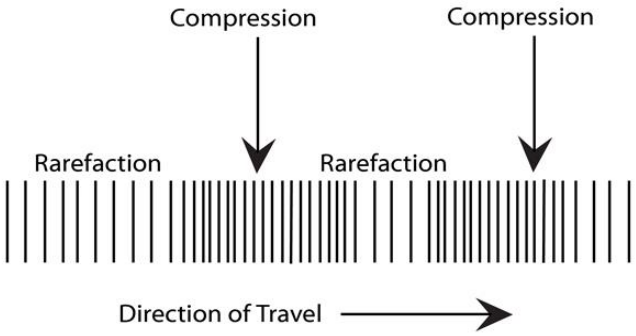
Sounds are made when objects vibrate.

When an object vibrates, the air around it vibrates too. This vibrating air can also be known as sound waves. The sound waves travel to the ear and make the ear drums vibrate. Messages are sent to the brain which recognises the vibrations as sounds.

The Ear



Sound waves and vibrations.



Sound waves carry energy from one place to another by moving the medium they travel through in a regular way. The waves move the medium as a series of **compressions** where the molecules move together and **rarefactions** where they are spread further apart. The energy travels in the same direction as the movement of the wave.

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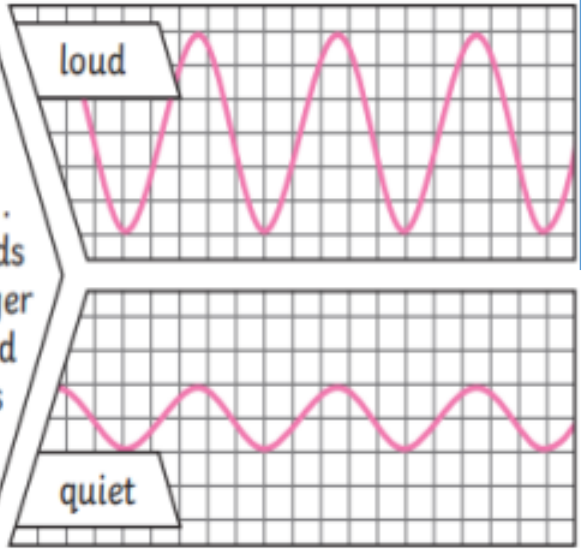
The size of the vibration is called the amplitude. Louder sounds have a larger amplitude, and quieter sounds have a smaller amplitude.



Faster vibrations =higher pitch

Slower vibrations =lower pitch

Volume

The volume of a sound is how loud or quiet it is. When a sound is created by a little amount of energy, a weak sound wave is created which doesn't travel far. This makes a quiet sound.

The closer you are to the source of the sound, the louder the sound will be. The further away you are from the sound, the quieter the sound will be.

How musical instruments make different sounds.

Instruments with strings

A cello has different thicknesses of strings. When the strings vibrate the thick strings vibrate more slowly than thin ones.
Thick strings give a low pitch, thin strings give a high pitch. The tightness or tension of a string is also important.
The tighter the string, the higher the pitch.
The less tight a string, the lower the pitch.

Xylophone

A xylophone has different lengths of wooden bars. Striking the bars of the xylophone with a stick produces a vibration. This vibration's sound is determined by the length of the bar.
The longer the bar the lower the pitch. The shorter the bar the higher the pitch.

Frequency

The frequency of a sound is measured in hertz (Hz).

This means the number of vibrations per second the particles are making as they transmit the sound.