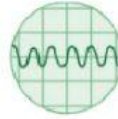




Sound Waves

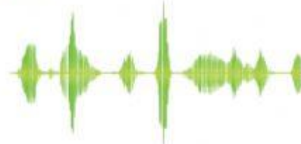


What Sounds Can You Hear?

Sounds are all around us from the tweeting of a bird in a tree to your mum shouting upstairs, "Hurry up – we're late!" to the latest song from your favourite band. The sounds we hear can be very different but they all have one thing that is the same. They all travel to your ear as sound waves.

What Is a Sound Wave?

Sound waves are vibrations that move the air around us. The waves travel towards your ear by vibrating the air near to where the sound was made which then vibrates the next bit of air and so on until the wave arrives at your ear. Sound waves travel in lots of different directions from where the sound first started. Your ear 'catches' the bit that comes in your direction. Once your ear has 'caught' the sound, it carries on vibrating inside your ear all the way to your ear drum. These vibrations are then turned into an electric message that your brain reads and tells you what sound you have heard.



What Is Pitch?

Pitch can be high or low. A high pitch sound is like chalk screeching on a blackboard and a low pitch sound is like the rumble of thunder. The pitch of a sound tells us how fast the sound vibrated when it was first made. A low note will have a slow vibration and a lower frequency. A high note will have a fast vibration and a higher frequency. You can make a string on an instrument have a higher pitch by shortening the string or making it tighter.





Sound Waves

What Is Volume?

Volume is how loud a sound is, no matter the pitch of the note. It is measured in decibels (dB). Volume is the strength of the vibration the sound makes. A quiet sound has a gentle vibration and moves the air gently. A loud sound has lots of strength, moves the air with greater force and travels further. If we wanted to make the sound from a guitar string louder, but the same pitch, we would simply pluck it harder.



Did You Know?

- The volume of a jet engine is 150 dB.
- The loudest job in which to work is being a driver of a Formula One car which is 140 dB.
- The highest pitch a human can hear is 20 000 Hz.
- The highest pitch a bat can hear is 90 000 Hz.
- The smallest bone in your body is called the stapes/stirrup bone. It is found in your ear and measures 2.6-3.4mm.
- The speed of sound is 340 metres per second in air but 1484 metres per second in water.





Questions

1. What vibrates inside your ear to send signals into your body? Tick one.

- ☐ skin
- ☐ ear drum
- ☐ brain
- ☐ wax

2. What part of the body tells you what sound you have heard? Tick one.

- ☐ the brain
- ☐ the ear drum
- ☐ the ear canal
- ☐ the ear lobe

3. Which one of these is a high-pitched sound? Tick one.

- ☐ thunder
- ☐ a lion's roar
- ☐ chalk on a blackboard
- ☐ a jet engine

4. Number the events in order to show how a sound travels to the ear.

	The vibrations are then turned into an electric message.
	The sound is made.
	The ear 'catches' the sound.
	Sound waves move the air.
	You hear the sound.

5. What is the speed of sound in air?



6. Fill in the missing words.

A high note will have a _____ vibration and a _____ frequency.

7. Sum up what you have learnt about volume in two sentences or less.
