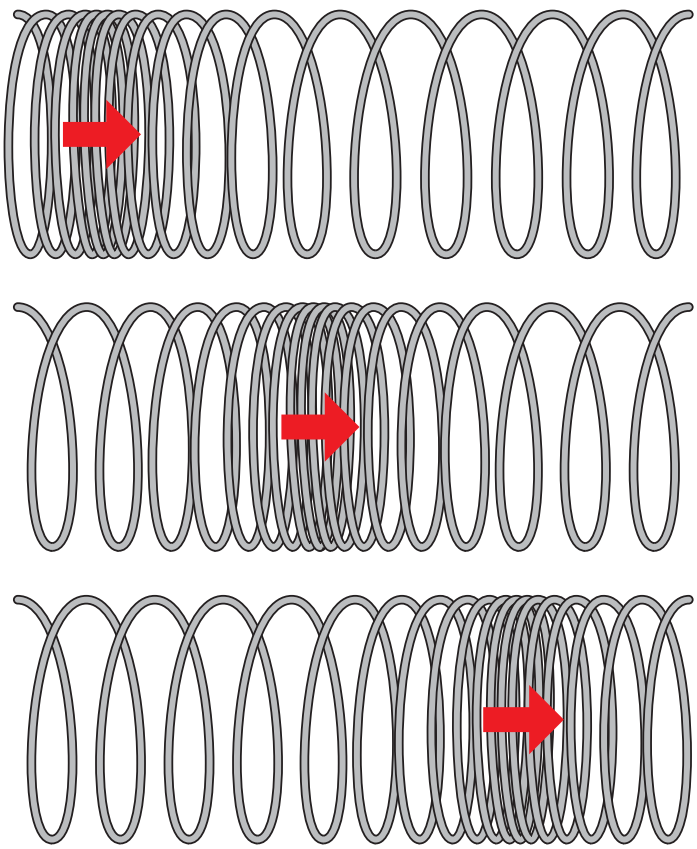
2 How sounds travel

Sounds travel out from their source and pass through materials. Many sounds can be heard through our ears.

Whenever something pushes against the air it squashes, or compresses, the air a little. The bunched-up air pushes against the air next to it, causing it to bunch up in turn.

▼ (Picture 1) To help see how sound waves move through a material, you can use a coil of wire like a slinky. When you quickly tap one end, a wave of tightly packed coils moves along the slinky.

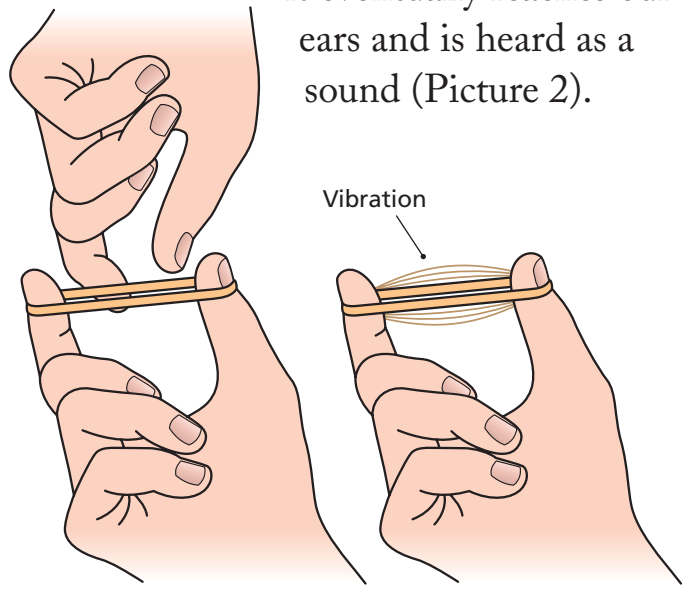


Imagining how sound moves

Moving sound is like a row of people standing side by side. A person at one end of the row gently leans against their neighbour before standing upright again. The neighbour then does the same, and so on. Although each person has only moved a little when leaning against their neighbour, the leaning moves right along the line. A 'slinky' shows this, too (Picture 1).

Notice that the coils in the slinky just rock to and fro. That is what happens in air. The air doesn't move, it just rocks to and fro as the region of squashing, or compression, passes through it.

In the same way, the push of a guitar string or elastic band against the air causes a band of squashed air to move from the string or band and through the air until it eventually reaches our ears and is heard as a sound (Picture 2).



▶ (Picture 2) When you pluck a guitar string, it moves up and down very rapidly. An elastic band does the same thing. This pushes and pulls against the air around it and sends out a sound.

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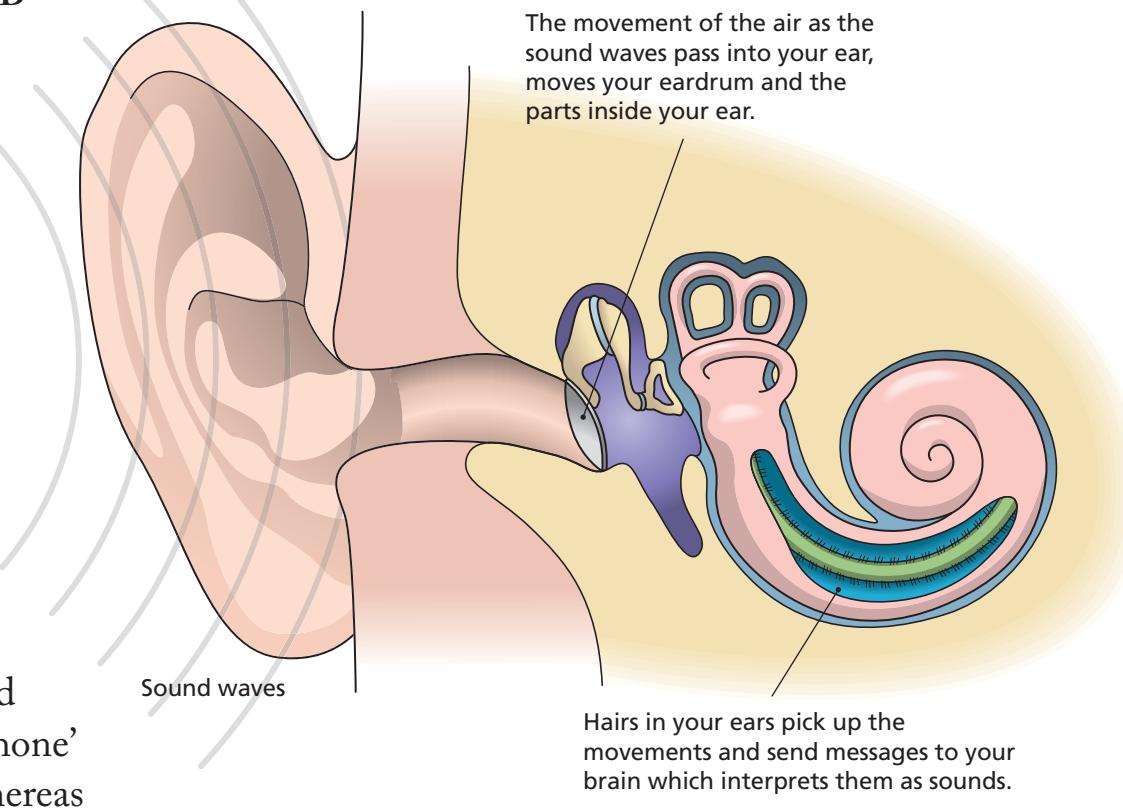
Sounds that reach our ears

We call the movement of air that we can hear a **SOUND WAVE** and we show it on diagrams using curved lines (Picture 3) and a wavy line (Picture 4).

Sound is different from light

Sound needs a material to travel through. Sound can travel through air, water or a solid object whether you can see through it or not. This is why you can hear a sound sent along a 'string telephone' (Picture 4). However, whereas light can travel through space, sound cannot. In space, there is no air to squash up and move.

▼ (Picture 3) Sound waves travel into your ears where the movements are interpreted by your brain.



Summary

- **Sounds travel through a material.**
- **Sounds move by sending out bands of squashed air.**

▼ (Picture 4) Sound travels through a string (a solid material). This allows you to make a string telephone out of two cups and a piece of string pushed through a hole in each cup. Hold the cups so the string is tight. When you speak into one cup the sound travels through the air, through the cup, along the string, into the second cup and back into the air, where it can be heard.