

# How we hear things

Outstanding Science Year 4 - Sound - OS4D001

National Curriculum Statutory Requirements

4D1 - identify how sounds are made, associating some of them with something vibrating; 4D2 - recognise that vibrations from sounds travel through a medium to the ear

## Learning Objective



I can explain how sounds are made and how we hear things.

Me:   

Teacher:   

## Scientific play

Pick up a string instrument, such as a guitar or violin. Pluck one of the strings. What do you see? What do you hear? Touch the string while it is still moving. What do you feel? What do you hear?

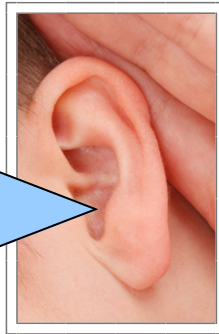


## How sound is made

Sound is caused by **vibration**. Vibration means **wobbling** very quickly back and forth. When you pluck a guitar string, or hit a drumskin, you can see the material vibrate. This causes the **air** touching the string to vibrate, which causes air further away to vibrate, which causes the air near your **ear** to vibrate, which your brain experiences as **sound**. The moving vibration is called a **sound wave**.

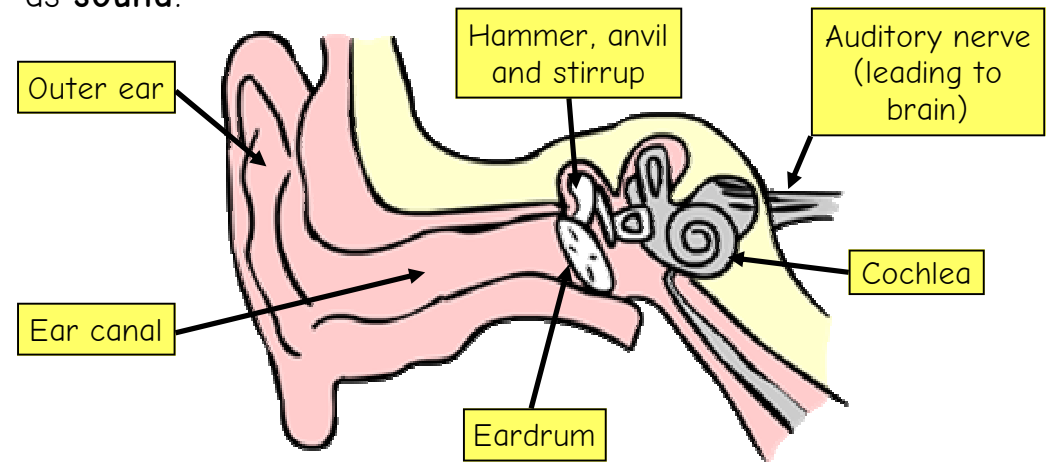


The vibrating **guitar** causes the **air** to vibrate. This vibrating air is called a **sound wave**. When the air near your **ears** vibrates, your brain experiences a **sound**.



## How our ears work

When a sound wave reaches our ear, our **outer ear** (the part that we can see on the side of our heads) funnels the sound into our heads down the **ear canal**. At the end of the ear canal is the **eardrum**, which is waterproof and airtight. Past the ear canal is the **middle ear**. Inside the middle ear are the **hammer, anvil and stirrup** (the three smallest bones in the body) which vibrate and pass the sound waves to the **inner ear**, which contains the **cochlea**, which turns the vibrations into **electrical signals**. These signals travel down the **auditory nerve** to the **brain**, which experiences the signal as **sound**.



## Activity

Carefully cut out the diagrams and descriptions to create an **explanation text** showing how we hear things. For an extra challenge, try drawing some of your own diagrams and writing some of your own descriptions.

How we hear things

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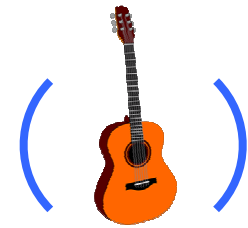
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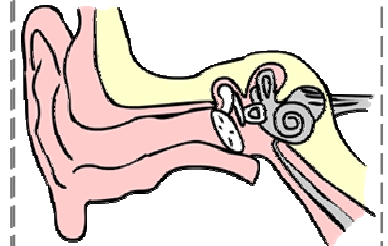
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The sound wave reaches the **ear**. The wave travels deep inside the ear, where it is turned into an **electrical signal** that the brain understands as **sound**.



The vibrating object causes the **particles** in the **air** around it to vibrate too, because it is touching them.



The vibrating air particles bump into other air particles further away, causing them to vibrate too. This is called a **sound wave**. It gradually moves away from the **source**.



An object starts to **vibrate**, or move very quickly back and forth. This is called a **sound source**. An example of a sound source is a plucked guitar string.

