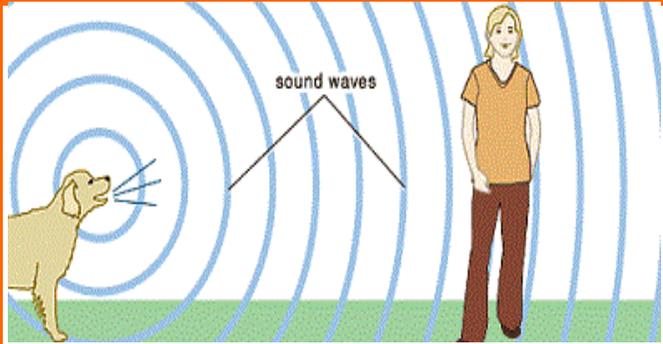
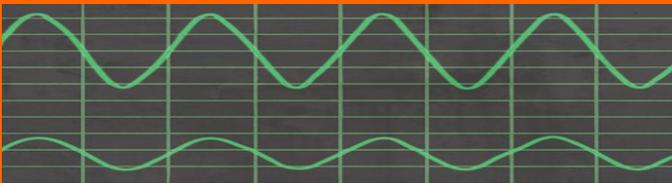


Sound Waves



Sound waves are created when something vibrates.

Sound waves; loud and quiet

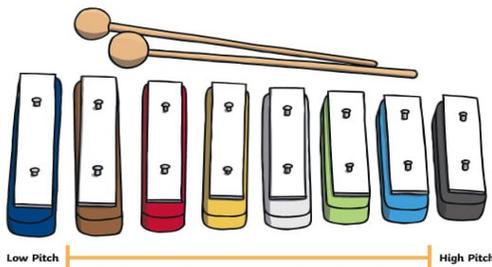


The stronger the vibration the louder the sound. The louder the sound, the greater amplitude will be. If you think about playing a guitar, a guitar string plucked strongly makes a loud sound whilst a guitar plucked gently makes a soft sound.

Pitch

High and low are words to describe the pitch of a sound. Pitch is the measure of how high or low a sound is. High sounds can be quiet or loud and low sounds can be quiet or loud too! Different materials produce different pitches; if an object vibrates quickly we hear a high-pitched sound, and if an object vibrates slowly we hear a low-pitched sound.

Also, the shorter, tighter or thinner the object is, the higher the pitch. This is because the vibrations will be faster. The longer, looser and thicker the object is, the lower the pitch of sound will be. This is because the vibrations will be slower.



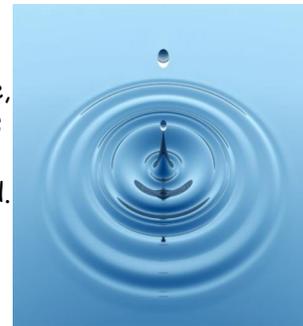
Subject Specific Vocabulary

sound	Sound is a type of energy made by vibrations.	amplitude	This measures the sound waves.
outer ear	This part of the ear is visible. It is on the side of the head.	decibel	This is the unit of measure that we use to measure sound.
inner ear	This part of the ear isn't visible. It is inside the head.	particles	These are tiny bits of matter that make up everything in the universe.
middle ear	This is an air-filled space that turns sound waves into vibrations and delivers them to the inner ear. The middle ear is separated from the outer ear by the eardrum.	vibrations	Something that moves quickly, up and down and may even be seen to shake.
ear canal	This is a path from the outer ear to the inner ear.	sound wave	Sound waves are vibrating energy that look like waves
eardrum	This is a part of the middle ear. It is the part of the ear which vibrates.	pitch	How high or low a sound is.
cochlea	This is a part of the middle ear. It looks like a snail. It helps to send the messages to the brain.	volume	This describes how loud or quite a sound is.
		distance	Is how far one thing is from another thing. It is also a measure of the space between two things.

How waves travel

If you throw a stone in a pond, it will produce ripple. As the ripples spread out across the pond, they become smaller.

When sound vibrations spread out over a distance, the sound becomes quieter just like the ripple in a pond.



How sound travels

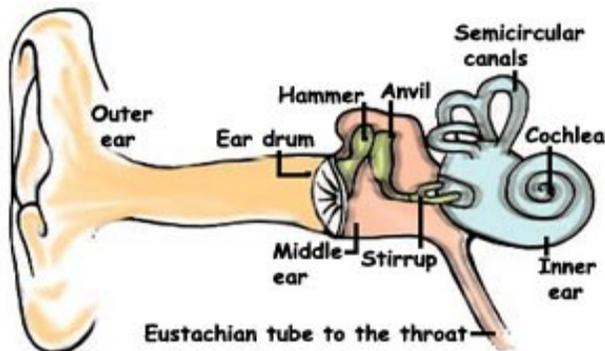
Sound waves can travel through solids like metal, liquids like water and gases like air. But they can't travel through empty space which has nothing, not even air, in it. That's why in space, there is no sound at all, whatever you might have seen in movies! Sound waves can reflect off surfaces. We hear sound reflections as echoes. Hard smooth surfaces are really good at reflecting sounds - this is why empty rooms produce lots of echoes.



What will I know by the end of this unit?

- Our **ear** hears **sound**. Hearing is one of our **5 senses**.
- Sound travels into the ear via the **outer ear** and the **ear canal**. Sound is then **vibrated** onto the **ear drum**. Messages are sent from our **inner ear** to the brain.
- **Sounds** are made with something vibrating.
- **Vibrations** from sounds travel from a object through the air to the ear.
- Vibrations pass from **air particle** to air particle and so on until it reaches the ear.
- Hear **patterns** between the **pitch** of a sound and the part of the object that produced it.
- Hear patterns between the **volume** of a sound and the strength of the vibrations that produced it.
- Sounds get fainter as the distance from the **sound source** increases.
- The faster the vibrations the higher the sound and slower vibrations the lower the sound.
- The loudness of sound is measured in **decibels**.
- The size of the vibration is called the **amplitude**.

The inner ear



Hearing is one of the 5 senses. Ears detect vibrations in the air. There are 3 parts to the ear:
Outer ear: We can see this part. It is called the pinna. It also included the ear canal and ear drum.
Middle ear: There are 3 small bones—hammer, anvil and stirrup. The smallest bones in the body!
Inner ear: Sound reaches a small tube like a snail shell called the cochlea. It is filled with fluid which moves tiny hairs that send signals to the brain.



Science

Year 4

Topic: Sound

Strand: Physics

What should I already know?

- Hearing is one of the 5 senses.
- We hear with our ears.
- Sounds can be loud and quiet.

Scientific Skills

- Ask questions about sounds
- Set up simple comparative and fair tests.
- Make careful observations.
- Take accurate measurements using standard units.
- To record what I found out using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- To explain how sound travels.
- To explain the different patterns of sound.

Deafening noise!

Very loud sounds can cause pain and damage our ears. Therefore, people who do noisy jobs wear ear defenders to protect their ears.



I hear thunder... I hear thunder...



During a thunder storm you see lightning flash before you hear the thunder. This is because light travels faster than sound.