

# Sound

## Science Knowledge Organiser Year 4 Term 2

### Key questions

What is a sound?

How is a sound made?

How do sounds travel?

How do we hear sounds?

How do sounds change?

How do we measure sound?

### Key people

**Aristotle** - studied sound waves

**Galileo Galilei** - studied frequency and pitch of sound waves

**Alexander Graham Bell** – invented the telephone


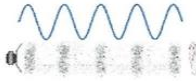
### Key Knowledge - what I should know already...

Hearing is one of my senses.


Sounds can be combined using musical instruments.

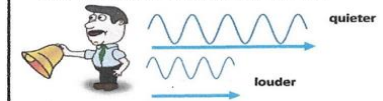
Sounds can be loud or quiet and sometimes volume can be adjusted (like when you turn up or down the volume of your TV).

### Key Knowledge – what will I know at the end of this unit?

What is a sound?	A thing that can be heard. The object that makes the sound is called the <b>source</b> .	How do sounds change?	<b>Pitch:</b> <ul style="list-style-type: none"> <li>The <b>pitch</b> of a sound is how <b>high</b> or <b>low</b> it is. <ul style="list-style-type: none"> <li>A squeak of mouse has a <b>high pitch</b>.</li> <li>A roar of a lion has a <b>low pitch</b>.</li> </ul> </li> </ul> <b>Volume:</b> <ul style="list-style-type: none"> <li>The <b>volume</b> of a sound is how <b>loud</b> or <b>quiet</b> it is.</li> <li>When a sound is created by a little amount of <b>energy</b>, a weak <b>sound wave</b> is created which doesn't travel far. This makes a <b>quiet</b> sound. <ul style="list-style-type: none"> <li>A small tap of a hammer is used with small amounts of <b>energy</b> and so creates a <b>quiet</b> noise.</li> </ul> </li> <li>A vibration with lots of <b>energy</b> makes a powerful <b>sound wave</b> and therefore a <b>loud</b> sound. <ul style="list-style-type: none"> <li>A powerful, smashing tap of a hammer is used with lots of <b>energy</b> and so creates a <b>loud</b> noise.</li> </ul> </li> </ul>
How is a sound made?	<ul style="list-style-type: none"> <li>When objects <b>vibrate</b>, a sound is made.</li> <li>The <b>vibration</b> makes the air around the object <b>vibrate</b> and the air <b>vibrations</b> enter your ear. These are called <b>sound waves</b>.</li> <li>If an object is making a sound, a part of it is <b>vibrating</b>, even if you cannot see the <b>vibrations</b>.</li> </ul> 	How do we measure sound?	<ul style="list-style-type: none"> <li><b>Amplitude</b> measures how strong a <b>sound wave</b> is.</li> <li><b>Decibels</b> measure how <b>loud</b> a sound is.</li> <li><b>Frequency</b> measures the number of times per second that the <b>sound wave</b> cycles.</li> </ul>
How do sounds travel?	<ul style="list-style-type: none"> <li><b>Sound waves</b> travel through a <b>medium</b> (such as air, water, glass, stone, and brick).</li> <li>For example, if somebody is playing music in the room next door, the sound can travel through the bricks in the wall.</li> </ul>	<b>Investigate</b>	
How do we hear sounds?	<ul style="list-style-type: none"> <li>When an object <b>vibrates</b>, the air around it <b>vibrates</b> too. This <b>vibrating</b> air can also be known as <b>sound waves</b>.</li> <li>The <b>sound waves</b> travel to the ear and make the <b>eardrums vibrate</b>.</li> <li>Messages are sent to the brain which recognises the <b>vibrations</b> as sounds.</li> </ul> 	<ul style="list-style-type: none"> <li>Fill identical jars with different volumes of water. Which one creates the highest pitch?</li> <li>Which material would make the best sound defender? How can you investigate this?</li> <li>Make musical instruments using different length strings. How do their pitches differ?</li> </ul>	

### Diagrams

- High pitch** sounds are created by short **sound waves**.
  - Low pitched** sounds are created by long **sound waves**.
- 
- Volume:**
- The closer you are to the **source** of the sound, the **louder** the sound will be.
  - The further away you are from the **source** of the sound, the **quieter** the sound will be.



### Key vocabulary

amplitude	a measure of the strength of a <b>sound wave</b>
decibel	a measure of how <b>loud</b> a sound is
electricity	a form of <b>energy</b> that can be carried by wires and is used for heating and lighting, and to provide power for devices
energy	the <b>power</b> from <b>sources</b> such as <b>electricity</b> that makes machines work or provides heat
frequency	a measure of how many times per second the <b>sound wave</b> cycles
medium	something that makes possible the transfer of <b>energy</b> from one location to another
pitch	how <b>high</b> or <b>low</b> a sound is
power	<b>Power</b> is energy, especially electricity, that is obtained in large quantities from a fuel <b>source</b> and used to operate lights, heating, and machinery
sound waves	invisible <b>waves</b> that travel through air, water, and solid objects as <b>vibrations</b>
source	where something comes from
transmit	to pass from one place or person to another
travel	how something moves around
vibrations	invisible waves that move quickly
volume	how <b>loud</b> or <b>quiet</b> a sound is

### Useful web links

The Science of Sound for Kids National Geographic playlist [https://www.youtube.com/playlist?list=PLQlnTIdJs0ZQRzLgW42JXOV\\_KjtG7TXck](https://www.youtube.com/playlist?list=PLQlnTIdJs0ZQRzLgW42JXOV_KjtG7TXck)