

## Sounds Knowledge Organiser

This term we will learn to:

- Use the idea that sounds are associated with vibrations, and that they require a medium, i.e. a solid, liquid or gas, to travel through, to explain how sounds are made and heard.
- Describe the relationship between the pitch of a sound and the features of the object that produced it, and between the volume of a sound, the strength of the vibrations and the distance from a sound source.
- **Enquiry: How does the tautness of elastic bands affect the pitch of sound produced when plucked?**
- What a pattern in data looks like and how we can use patterns in data to make predictions. Setting up a comparative test, focusing on the identifying the independent variable, dependent variable and control variables with support.
- Planning appropriate methods to measure the dependent variable.
- **Specific vertical concept(s):**
- Sound is a type of energy. Objects, such as sources of sound, can affect other objects at a distance (vertical concept).
- Everything is made up of very small particles.

### Key Facts

Sound is a form of energy that is created by vibrations from a source.

Sound travels as **waves** through **mediums** (liquids, solids and gases) and cannot travel through a **vacuum**.

When a material vibrates, such as when you hit the surface of a drum, this causes the air particles next to it to vibrate and move. These air particles bump into the air particles near them, causing those particles to vibrate and move. This continues in a “Mexican wave” fashion until the energy runs out. If sound waves enter our ears, they cause our middle ear (including the ear drum) and inner ear to vibrate. Signals are sent to the brain, allowing us to hear the sound.

Sound travels better through some materials than others.

There are 2 parts to sound waves: **amplitude** and **frequency**.

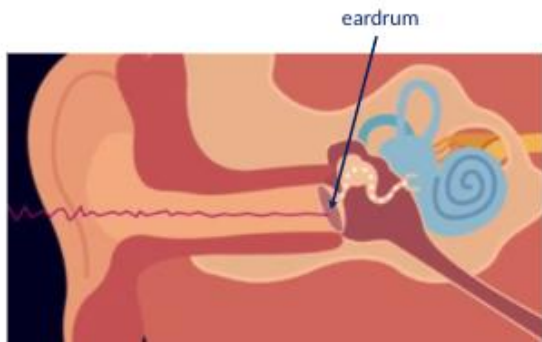
The frequency of a sound describes how fast the vibrations are.

**Low pitch** sounds have long sound waves with low frequency. The vibrations are slow.

**High pitch** sounds have short sound waves with high frequency. The vibrations are fast.

Key vocabulary	Meaning
Source	Where something starts from.
Source of sound	Where the sound started from.
Reflects	When a sound wave bounces off an object or material, the object or material has reflected the sound.
Absorbs	When a material or object takes in the sound wave, it has absorbed the sound.
Sound waves	When an object vibrates, the particles next to it move and bump into the particles next to them. This energy is called a sound wave.
Vibrations	To move back and forth very quickly.
Energy	Sound is a form of energy that is created by vibrations.
Pitch	How high or low a sound is.
Volume	How loud or quiet a sound is.
Insulation	The process of stopping sounds from spreading.
Medium	Solids, liquids and gases are mediums.
Vacuum	Empty space. There are no particles in a vacuum, therefore sound cannot travel through it.
Independent variable	What we are changing in our investigation.
Dependent variable	This is what we need to observe or measure when the independent variable is changed.

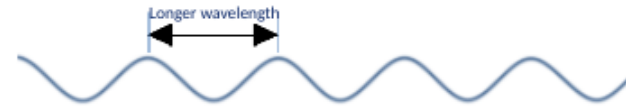
Prior Learning:	Following on:
<ul style="list-style-type: none"> <li>• Pupils know that our ears are for hearing. They appreciate that sounds can be different (high/low pitch - such as the sound of thunder and an ambulance siren, or loud/quiet). They know that to create a louder noise, you must strike harder at the object/instrument.</li> <li>• In a fair/comparative test, the independent variable is changed, and the dependent variable is measured.</li> <li>• All material in the universe is made of very small particles (Y4 SPR 1, States of Matter)</li> </ul>	<ul style="list-style-type: none"> <li>• Learning about sound waves in terms of amplitude and frequency (KS3)</li> <li>• Setting up a comparative test, focusing on the identifying the independent variable, dependent variable and control variables with less support.</li> <li>• Conservation of energy – The energy that created the sound waves were transferred from another type of energy.</li> </ul>



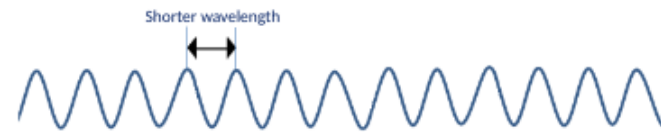
## Background knowledge for teachers

### Sound waves

**Low pitch** sounds have long sound waves with low frequency. The vibrations are slow. The sound of thunder has a low frequency.



**High pitch** sounds have short sound waves with high frequency. The vibrations are fast. The sound of a mouse squeak has a high frequency.



For more information, [click here](#)