Sholing Junior School - Science

Topic: Sound	Year: 4	Strand: Physics

What should I already know?

- Hearing is one of my five senses.
- Sounds can be combined using musical instruments.
- What the word **vibration** means.

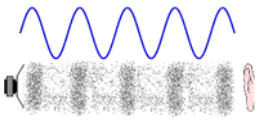
What I will learn

I will:

- **Identify how sounds are made, associating some of them with something vibrating**
- **Recognise that vibrations from sounds travel through a medium to the ear**
- **Find patterns between the pitch of a sound and features of the object that produced it**
- **Find patterns between the volume of a sound and the strength of the vibrations that produced it**
- **Recognise that sounds get fainter as the distance from the sound source increases.**

How is a sound made?

- When objects **vibrate**, a sound is made.
- The **vibration** makes the air around the object **vibrate** and the air **vibrations** enter your ear. These are called **sound waves.**
- If an object is making a sound, a part of it is **vibrating**, even if you cannot see the **vibrations.**

How do sounds **travel?**	• **Sound waves** travel through a **medium** (such as air, water, glass, stone, and brick). • For example, if somebody is playing music in the room next door, the sound can travel through the bricks in the wall.
How do we hear sounds?	• When an object **vibrates**, the air around it **vibrates** too. This **vibrating** air can also be known as **sound waves.** • The **sound waves** travel to the ear and make the **eardrums vibrate.** • Messages are sent to the brain which recognises the **vibrations** as sounds. 

Pitch: The pitch of a sound is how high or low it is.
A squeak of mouse has a high pitch. A roar of a lion has a low pitch.

Volume: The volume of a sound is how loud or quiet it is.
When a sound is created by a little amount of energy, a weak sound wave is created which doesn't travel far. This makes a quiet sound. A small tap of a hammer is used with small amounts of energy and so creates a quiet noise.
A vibration with lots of energy makes a powerful sound wave and therefore a loud sound. A powerful, smashing tap of a hammer is used with lots of energy and so creates a loud noise.

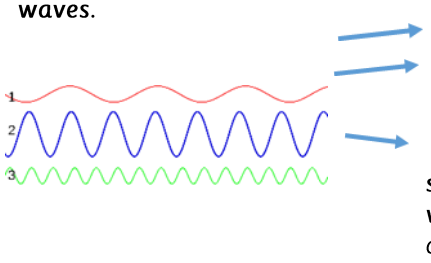
INVESTIGATE!

We will explore and identify the way sound is made through vibration in a range of different musical instruments and find out how the pitch and volume of sounds can be changed in a variety of ways.

Diagrams

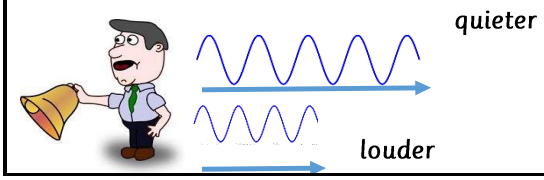
Pitch:

- **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.



Vocabulary

amplitude	A measure of the strength of a **sound wave**
decibel	A measure of how loud a sound is
electricity	A form of **energy** that can be carried by wires and in used for heating and lighting, and to provide power for devices
energy	The **power** from **sources** such as **electricity** that makes machines work or provides heat
frequency	A measure of how many times per second the **sound wave** cycles
medium	Something that makes possible the transfer of **energy** from one location to another
pitch	How **high** or **low** a sound is
power	**Power** is energy, especially electricity, that is obtained in large quantities from a fuel **source** and used to operate lights, heating, and machinery
sound waves	Invisible waves that travel through air, water, and solid objects as **vibrations**
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 **loud** or **quiet** a sound is

Investigate!

We will work scientifically by: finding patterns in the sounds that are made by different objects such as bottles of different sizes or elastic bands of different thicknesses. We will find the best material which provides the best insulation against sound. Also, we will make and play our own instruments by using what we have found out about pitch and volume.