Year 4: How do sounds change?

Key Vocabulary	
Absorb (sound)	To take in sound energy.
Amplitude	The size of a vibration. A larger amplitude = a louder sound.
Distance	A measurement of length between two points.
Ear Eardrum	An organ used for hearing. A part of the ear that vibrates as sounds are heard.
Particles	Parts of matter that make up solids, liquids and gases.
Pitch	How high or low a sound is.
Sound Wave	Sound is form of energy. Vibrations travelling from a sound source.
Soundproof	To prevent sound from passing through.
Vacuum	A space where there is no matter/ particles.
Vibration	A backwards and forwards movement.
Volume	The loudness of a sound.

Key Knowledge:

Sound is a form of energy that travels in waves.

Sound is made when an object vibrates.

This vibration can be started when an object is hit or two objects rub together (by a force).

The vibration can also be started when air moves past or through something.

Sound travels fastest through solids and slowest through a gas.

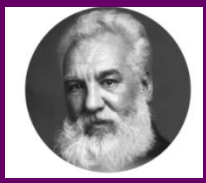
Sound cannot travel through a vacuum.

Both the volume and pitch (how high or low) of a sound can be changed.

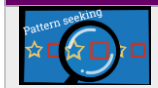
The greater the vibration, the louder the sound.

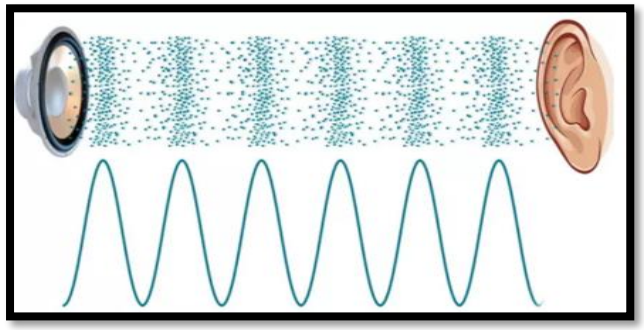
Sounds get fainter as the distance from the sound source increases.

Scientist:
Alexander Graham Bell.
(1847-1922)
Inventor of the telephone.

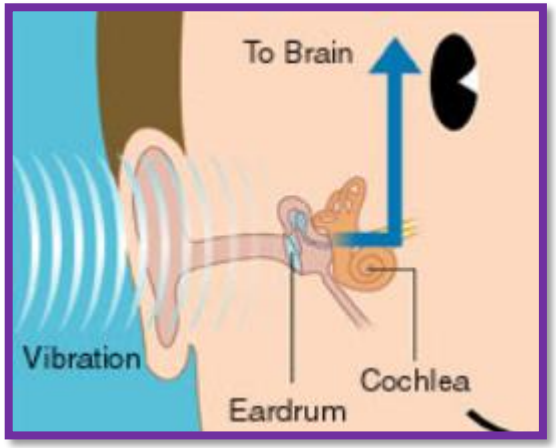


Working Scientifically

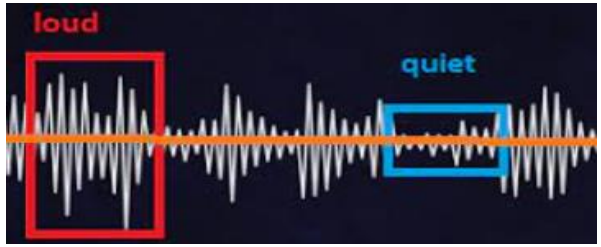
	I can explore the factors that affect the pitch of a sound.
	I can explore the best materials to insulate against sound.
	I can explore the link between the volume of a sound and the distance it can be heard it.
	I can describe, using secondary sources, how we need our ears and brains to help us hear. I can describe how sound can be dangerous.



Sounds are created when something <u>vibrates</u> (shakes back and forth).
This creates <u>soundwaves</u> which travel to the ears of the listener.
When they reach our ears, they make our <u>eardrums</u> vibrate.
These sound waves are changed into electrical signals that go to the brain.



The volume of a sound is how loud or quiet it is. Quieter sounds have a smaller amplitude and less energy (smaller vibrations) and louder sounds have a bigger amplitude and more energy.



The closer we are to a sound source the louder it will be.
A train arriving at a station sounds loud.

The further away from a sound the fainter it will be.
A train in the distance sounds quieter.

Sound can help to keep us safe, e.g when crossing the road.
Very loud sounds can damager our hearing though.
Sounds less than 68 decibels are safe no matter how long we hear them for.

Pitch: how high or low a sound is.

A high pitch is made because it has a high frequency – it vibrates more times in a minute.
A low pitch is made because it has a low frequency – it vibrates fewer times in a minute.

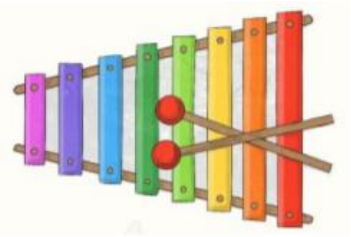
Faster vibrations make higher sounds and slower vibrations make lower sounds.

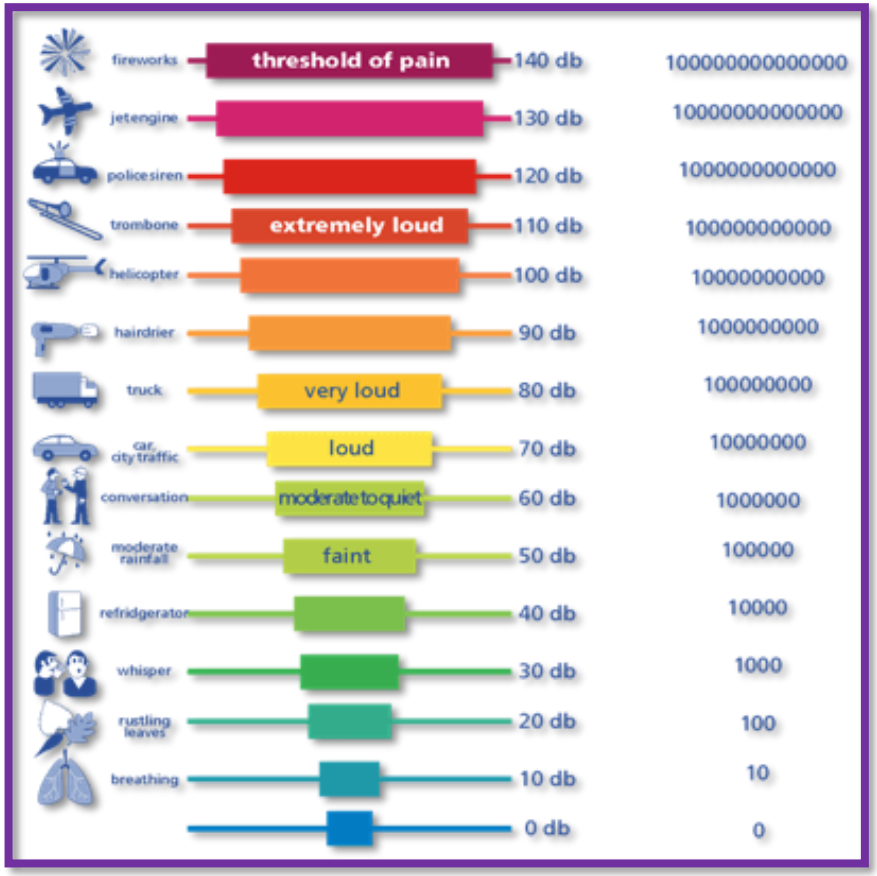
On a string instrument, there are several ways to change the pitch of the sound made.

Higher pitched sounds are made by:

- Tighter strings
- Shorter strings
- Thinner strings

The shorter the bar that is vibrating (when hit), the higher the pitch will be.
The longer the bar that is vibrating (when hit), the lower the pitch will be.





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