Year 4
Unit: Sound

Intent:
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 patters 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.

Prior learning
EYFS – Explore how things work
EYFS – Describe what you see, hear, and feel whilst outside
Year 1 – Identify, name, draw, and label the basic parts of the human body and say which part of the body is associated with each sense.

Later learning (not in Year 4)
KS3 – Frequencies of sound waves, measured in Hertz; echoes, reflection and absorption of sound.
KS3 – Sound needs a medium to travel, the speed of sound in air, in water, in solids.
KS3 – Auditory range of humans and animals.

Key Questions:
What is a sound wave?

What is the measure of how high or low a sound is?

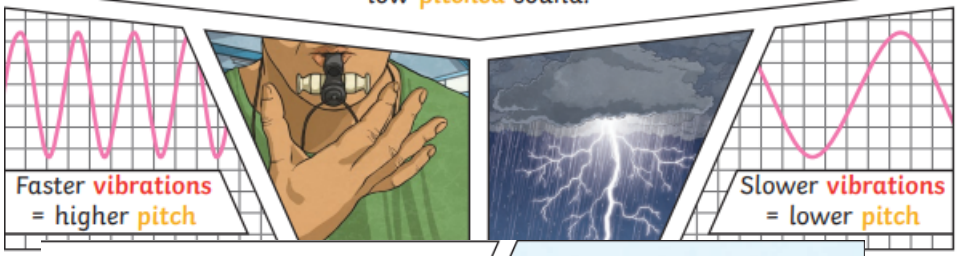
When a sound gets quieter, what happens to the sound wave?

What is the size of a vibration called?

What is the definition of 'soundproof'?

Sound energy travels more easily though which type of particles?

Pitch is a measure of how high or low a sound is. A whistle being blown creates a high-pitched sound. A rumble of thunder is an example of a low-pitched sound.

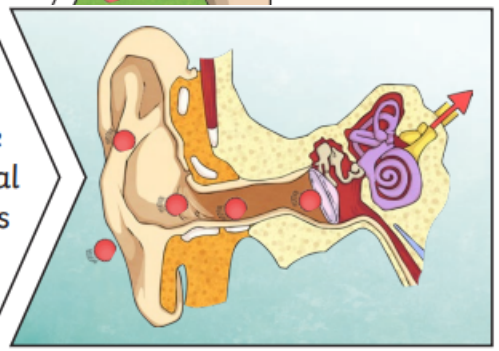


If you throw a stone in a pond, it will produce ripples. As the ripples spread out across the pond, they become smaller. When sound vibrations spread out over a distance, the sound becomes quieter, just like ripples in a pond.

When you hit the drum, the drum skin vibrates. This makes the air particles closest to the drum start to vibrate as well.

The vibrations then pass to the next air particle, then the next, then the next. This carries on until the air particles closest to your ear vibrate, passing the vibrations into your ear.

Inside your ear, the vibrations hit the eardrum and are then passed to the middle and then the inner ear. They are then changed into electrical signals and sent to your brain. Your brain tells you that you are hearing a sound.



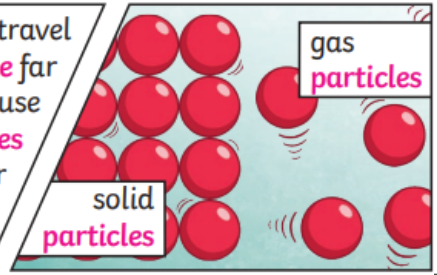
You can change the pitch of a sound in different ways depending on the type of instrument you are playing.

For example, if you are playing a xylophone, striking the smaller bars with the beater causes faster vibrations and so a higher pitched note. Striking the larger bars causes slower vibrations and produces a lower note.

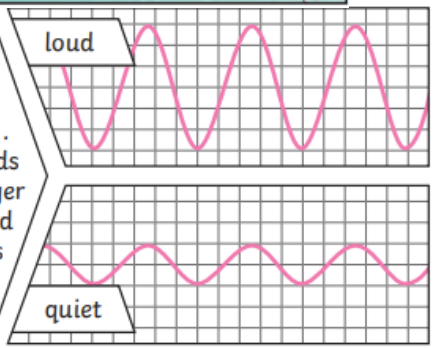
Sound is a type of energy. Sounds are created by vibrations. The louder the sound, the bigger the vibration.

Sound can travel through solids, liquids, and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in. Sound cannot travel through a vacuum.

Sound energy can travel from particle to particle far easier in a solid because the vibrating particles are closer together than in other states of matter.



The size of the vibration is called the amplitude. Louder sounds have a larger amplitude, and quieter sounds have a smaller amplitude.



Vocabulary	
Absorb sound	To take in sound energy. Absorbent materials have the effect of muffling sound.
Amplitude	The size of a vibration. A larger amplitude = a louder sound.
Distance	A measurement of length between two points.
Ear	An organ used for hearing.
Eardrum	A part of the ear, which is a thin, tough layer of tissue that is stretched out like a drum skin. It separates the outer ear from the middle and inner ear. Sound waves make the eardrum vibrate.
Particles	Solids, liquids, and gases are made of particles. They are so small we are unable to see them.
Pitch	How low or high a sound is.
Soundproof	To prevent sound from passing
Sound wave	Vibrations travelling from a sound source.
Vacuum	A space where there is nothing. There are no particles in a vacuum.
Vibration	A movement backwards and forwards.
Volume	The loudness of a sound.