

Science Knowledge Organiser - Year 4

Unit: What is sound and how does it behave?

Key Vocabulary:

absorb sound	To absorb sound is to take in sound energy.
amplitude	The amplitude is the size of a vibration.
distance	Distance is a measurement of length between two points.
ear	Your ears are the organs you use for hearing.
eardrum	The eardrum is a part of the ear which is a thin, tough layer of tissue that is stretched out like a drum skin.
particles	Solids, liquids and gases are made of particles that are so small we are unable to see them.
pitch	The pitch of a sound is how low or high it is.
soundproof	To soundproof something is to prevent sound from passing through it.
sound wave	Sound waves are vibrations travelling from a sound source.
vacuum	A vacuum is a space where there is nothing. There are no particles in a vacuum.
vibration	A vibration is a movement backwards and forwards.
volume	The volume of a sound is how loud it is.

Science Skills:

- 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.
- Set up practical enquiries, comparative and fair tests.
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

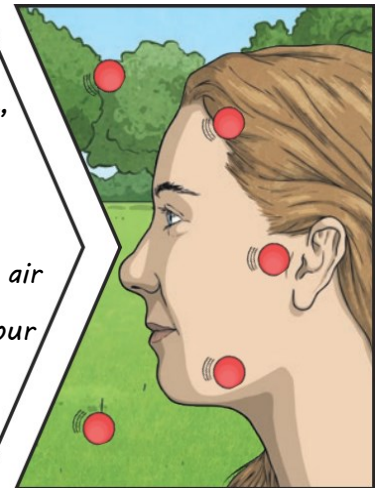
Key Facts:

- Sound is a type of energy.
- Sounds are created by **vibrations**. The louder the **volume**, the bigger the **vibration**.
- A larger **amplitude** gives a louder sound.
- Sound travels as a **wave**, **vibrating** the **particles** in the medium it is travelling in.
- Sound can travel through solids, liquids and gases; however, it can travel from **particle** to **particle** far easier in a solid because the **vibrating particles** are closer together than in other states of matter.
- Sound cannot travel through a **vacuum**.
- Your **eardrum** separates the outer **ear** from the middle and inner **ear**. **Sound waves** make the **eardrum vibrate**.
- **Absorbent** materials have the effect of muffling sound.

When you hit the drum, the drum skin **vibrates**. This makes the air **particles** that are closest to the drum start to **vibrate** too.

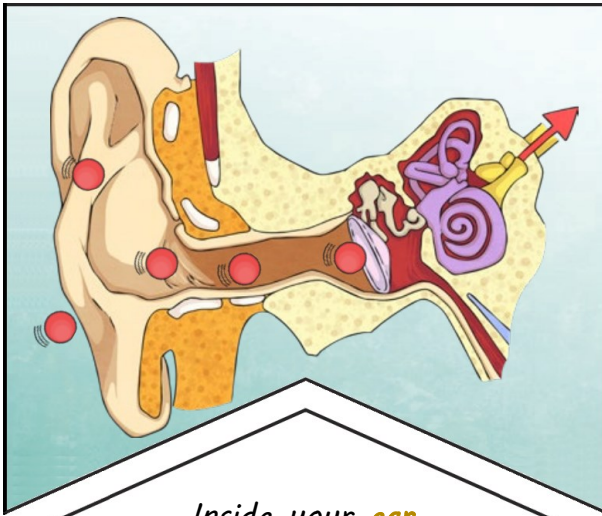


The **vibrations** then pass to the next air **particle**, then the next, then the next. This continues until the air **particles** closest to your **ear vibrate**, passing the **vibrations** into your **ear**.

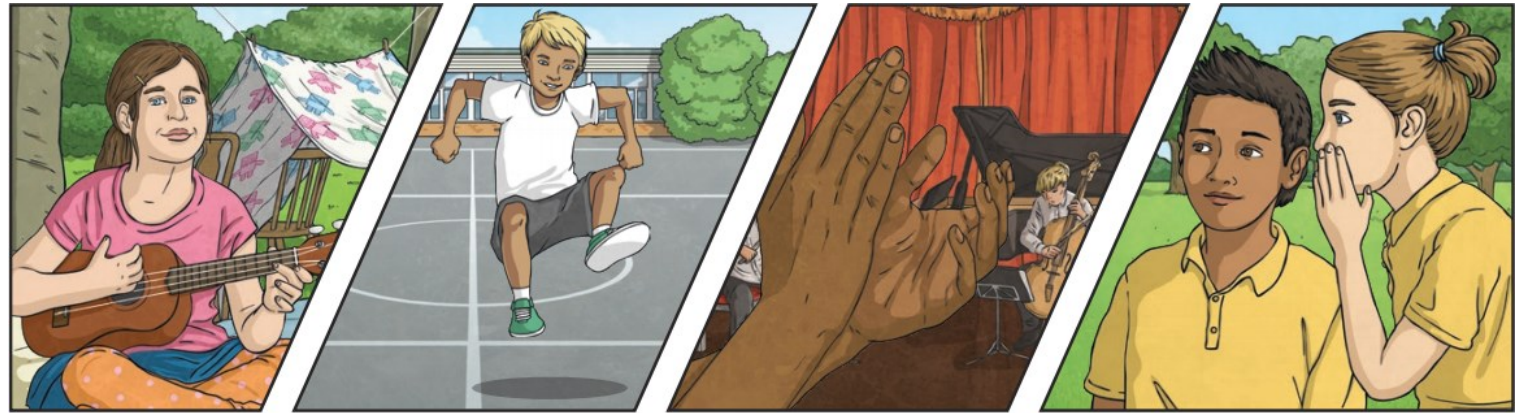


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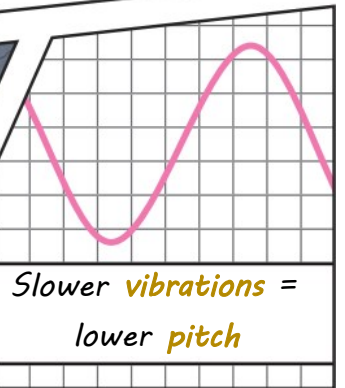
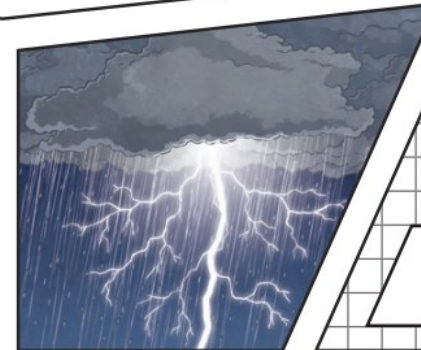
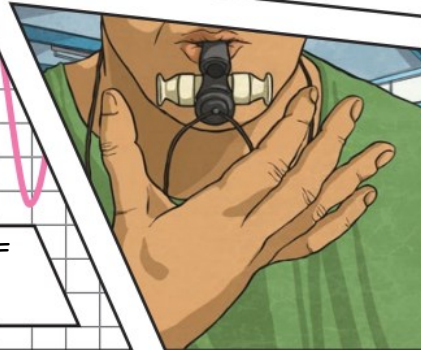
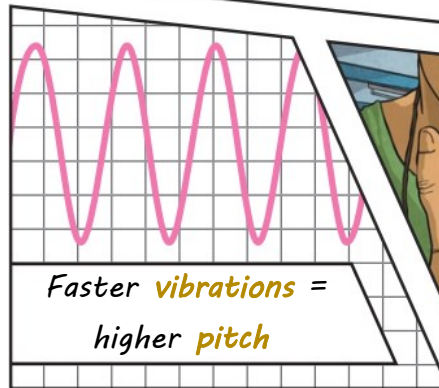
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Inside your **ear**, the **vibrations** hit the **eardrum** and are then passed to the middle and then the inner **ear**. They are then changed into electrical signals and sent to your brain. Your brain tells you that you are hearing a sound.



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.



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 **pitched** note.

