Subject Knowledge Organiser

Science – Sound

Year 4

What I have already learnt

Year 3:

- Sound is made when objects vibrate.
- Sound travels through air, water, and solids as sound waves.
- How to change volume and pitch, and how materials affect sound.
- Vibrations are carried to the ear, where they are turned into signals for the brain.

Year 2:

- Investigated how different materials can change sound and how to explore using our senses.

What I will have learnt by the end of this unit

- How to describe sound using scientific vocabulary.
- How the structure of the ear allows us to hear sound.
- How sound changes over distance and through different materials.
- How to investigate and measure the pitch and volume of sounds.
- How to reduce unwanted noise using soundproofing.

What I will have learnt by the end of my Key Stage

That sound is a form of energy that travels in waves.

How vibrations create sound and how we hear them.

How sound can be changed, such as its pitch and volume.

How to use scientific methods to test and explain how sound works.

My Skills and Knowledge that I may use from other subjects

Music: Creating and comparing sounds using instruments to explore pitch and volume.
Maths: Measuring and recording sound levels using numbers and charts.
Art and Design: Designing soundproof spaces using materials that absorb sound.
Geography: Exploring soundscapes in natural and urban environments.

Key Knowledge

How sound is produced: All sounds are caused by vibrations.

How sound travels: Sound travels through different materials in waves, and it moves faster through solids than air.

Hearing sound: The ear detects vibrations and turns them into messages for the brain.

Pitch: A high pitch means fast vibrations; a low pitch means slow vibrations.

Volume: Loud sounds have larger vibrations; quiet sounds have smaller vibrations.

Distance and sound: Sounds become quieter the further away you are from the source.

Materials and sound: Some materials absorb sound, while others reflect it to make echoes.

Wider opportunities - Diversity and Cultural Capital

Explore how sound is used in cultural traditions (e.g., music from different countries, storytelling with instruments).

Learn about careers like sound engineers, musicians, or audiologists.

Visit a science museum to explore exhibits about sound and hearing.

Understand how sound is used in technology, like sonar in submarines or hearing aids.

Discuss sound pollution and how it affects the environment and health.

How is sound created?

- Sounds are made when objects vibrate.
- The vibration makes the air around vibrate, and the air vibrations enter your ear.
- You hear them as sounds. You cannot always see the vibrations, but if something is making a sound, some part of it is always vibrating.

Key Skills I will learn/use

Conducting experiments to explore how sound behaves.

Measuring sound using scientific tools (e.g., decibel meters or apps).

Observing and recording how sound changes over distance.

Investigating which materials are best for soundproofing.

Explaining scientific ideas clearly using diagrams, labels, and models.

Key Scientific Concepts

Biology

Chemistry

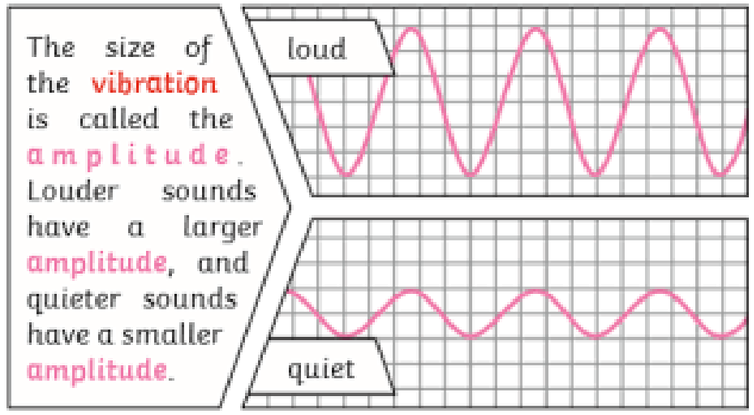
Physics

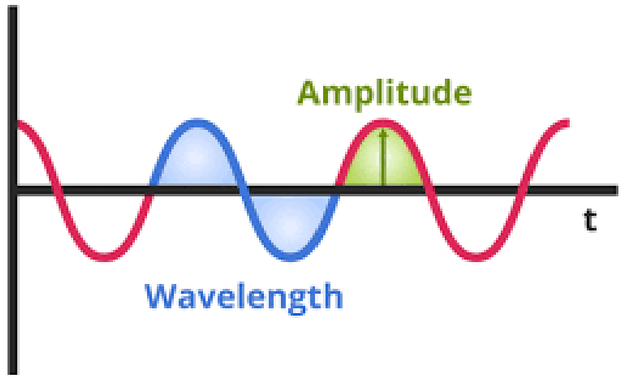
Scientific enquiry

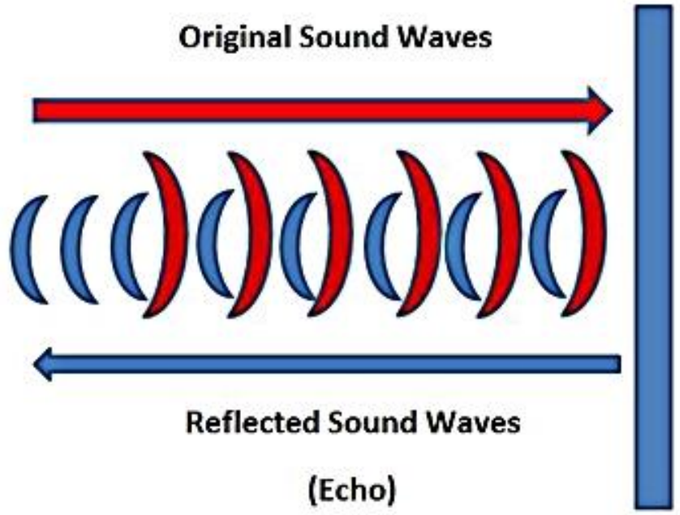
Science for the future

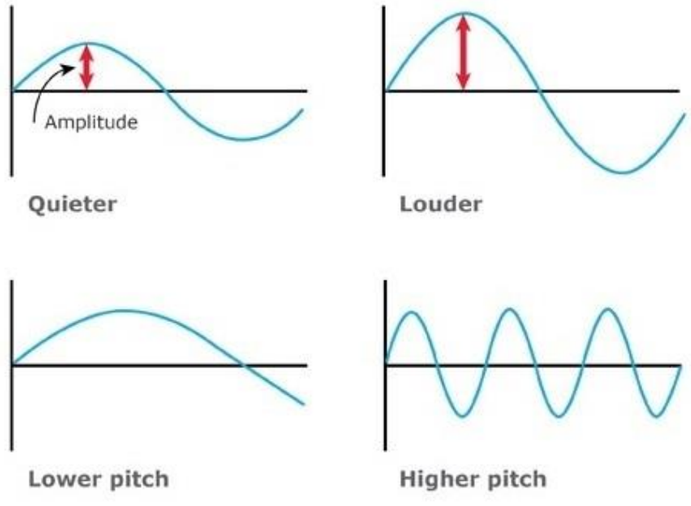
Recall and Remember

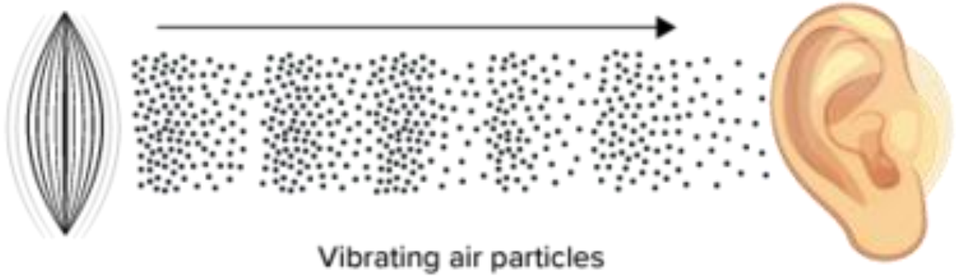
1. What causes sound to be made?
2. How does sound travel from its source to your ears?
3. What happens when sound waves hit a hard surface?
4. How can you make a sound louder or quieter?
5. What materials are good at absorbing sound?
6. What is the difference between pitch and volume?







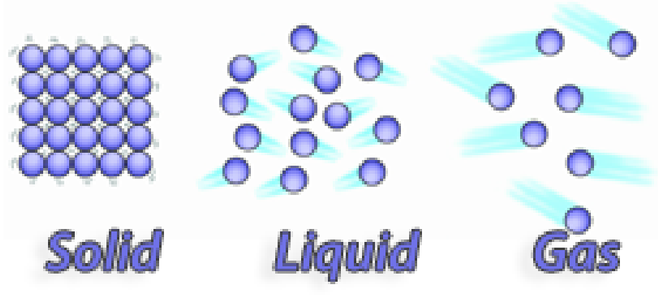




A guitar string vibrates back and forth.

Vibrating air particles pass the energy of the vibrations away from the string in waves.

The sound is heard when the sound waves enter a person's ears.



Sound travels fastest through solids where molecules are packed tightly together.

Sound can't travel through empty space where there are no molecules to vibrate.

Key Vocabulary

Sound: Vibrations that travel through the air or another medium and can be heard.

Vibration: A rapid back-and-forth movement that produces sound.

Volume: How loud or quiet a sound is.

Pitch: How high or low a sound is.

Amplitude: The size of a vibration; larger amplitudes make louder sounds.

Frequency: The number of vibrations per second; higher frequency means higher pitch.

Sound Wave: Invisible waves that carry sound through air, water, or solids.

Echo: A sound that bounces back when it hits a hard surface.

Absorption: When materials take in sound energy instead of reflecting it.

Decibel (dB): A unit used to measure the volume of a sound.

Soundproofing: Using materials to block or reduce unwanted noise.

Ear Drum: A part of the ear that vibrates when sound waves hit it, helping us hear.