Subject Knowledge Organiser

Science – Sound

Year 3

What I have already learnt

Year 2: How materials can change when we heat or cool them.
Year 1: That we can use our senses, including hearing, to explore the world around us.
Foundation Stage: How to identify and explore sounds in everyday life.

What I will have learnt by the end of this unit

- How sounds are made and how they travel to the ear.
- How to change the volume and pitch of sounds.
- How different materials affect the way sound travels.
- How sounds can be reduced or made louder using specific materials.

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

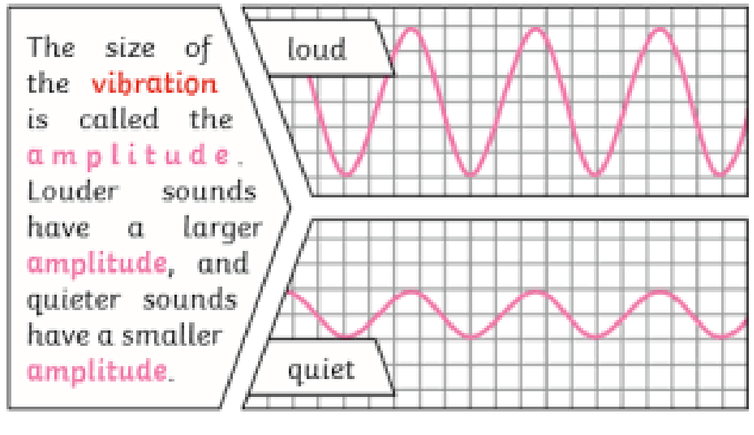
- How sound travels through different materials.
- How vibrations cause sound and how we hear them.
- The role of the ear in detecting sound.
- How humans and animals use sound for communication.

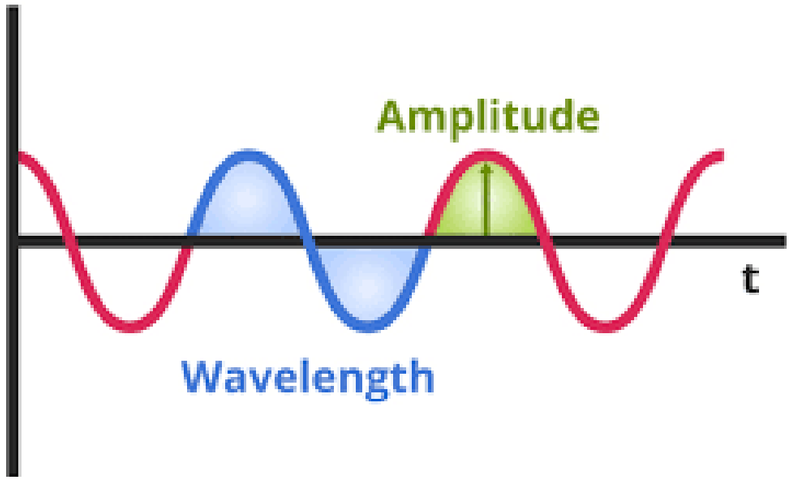
Key Knowledge

How sound is made: Sound is made when objects vibrate.
How sound travels: Sound travels through air, water, and solids as sound waves.
How we hear: Vibrations are carried to the ear, where they are turned into signals for the brain.
Volume: How loud or quiet a sound is, depending on the strength of vibrations (amplitude).
Pitch: How high or low a sound is, depending on how fast an object vibrates (frequency).
Echoes: Sounds that bounce back when they hit a surface.
Dampening: How materials can absorb sound and reduce its volume.

Wider opportunities
Diversity and Cultural Capital

- Explore how sound is used in different cultures (e.g., drums in African music, bells in Asian temples).
- Learn about careers involving sound, such as sound engineers, musicians, and audiologists.
- Visit a local music studio, theatre, or science museum to explore sound technology.
- Explore the role of sound in nature, like bird calls and echolocation in bats and dolphins.





My Skills and Knowledge that I may use from other subjects

Music: Understanding pitch and volume by playing musical instruments.

Maths: Measuring distances for sound experiments and recording results in tables.

Design & Technology: Building simple devices to explore how sound travels (e.g., string telephones).

Geography: Considering how sound behaves in different environments, such as open fields or forests.

Key Skills I will learn/use

Planning and carrying out experiments to investigate how sound travels.

Using scientific equipment to measure sound volume (e.g., decibel apps or sound meters).

Recording observations and results in tables and diagrams.

Making predictions about sound and testing these in investigations.

Explaining results and conclusions using scientific vocabulary.

Recall and Remember

1. How is sound made?
2. What are vibrations?
3. How does sound travel to your ear?
4. What is the difference between pitch and volume?
5. What materials can reduce sound?
6. Can you give an example of an echo?

Key Scientific Concepts

Biology

Chemistry

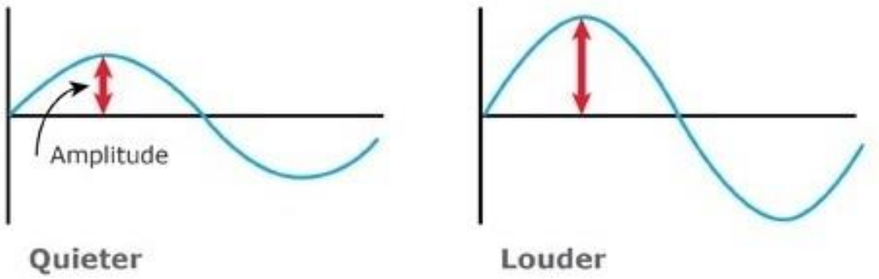
Physics

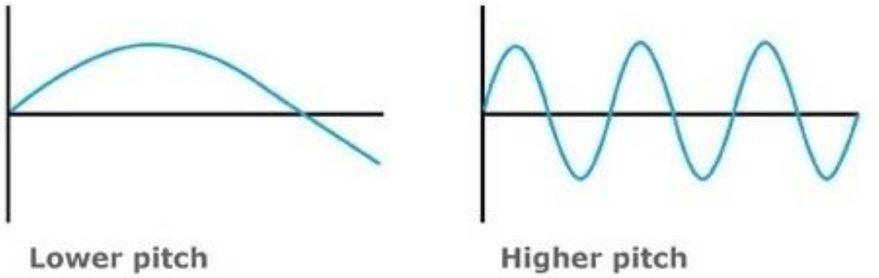
Scientific enquiry

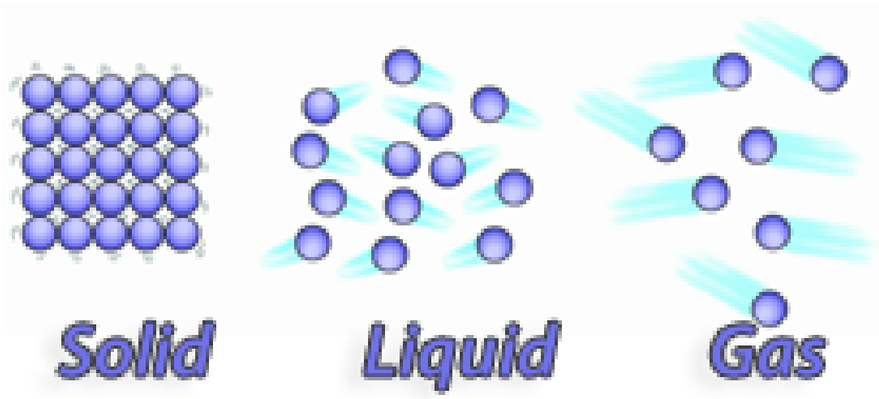
Science for the

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.

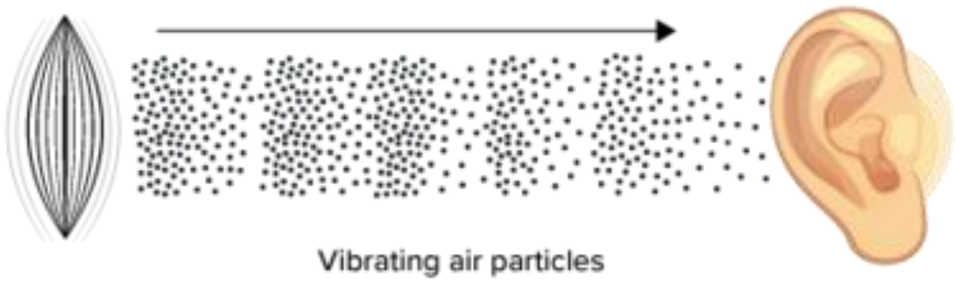






Sound travels fastest through solids where molecules are packed tightly together.

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



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.

Key Vocabulary

Sound: Vibrations that travel through the air and can be heard by our ears.

Vibration: A quick back-and-forth movement that creates sound.

Volume: How loud or quiet a sound is.

Pitch: How high or low a sound is.

Amplitude: The size of the vibration; larger amplitude means a louder sound.

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

Sound Waves: Invisible waves that carry sound through air, water, or solid materials.

Echo

Dampening

Decibel