Subject Knowledge Organiser

Science – Sound

Year 6

What I have already learnt

Year 5:

- Sound is created by vibrations and travels through air, water, and solids as waves.
- The speed of sound is fastest in solids, slower in liquids, and slowest in gases.
- How pitch and volume are affected by vibration speed and amplitude.
- How materials can absorb or reflect sound, and how echoes are formed.
- Investigated soundproofing and how sound changes over distance.

Year 4:

- Explored how the ear works and how humans hear sound.

What I will have learnt by the end of this unit

- How sound is made, travels, and behaves in different materials and environments.
- How humans and animals detect and use sound.
- The science of sound applications like sonar, ultrasound, and soundproofing.
- How to measure, compare, and interpret sound scientifically.
- How to apply knowledge of sound to solve real-world problems, such as noise reduction.

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

How sound is a type of energy that travels in waves through a medium.

How the structure of the ear allows humans to hear sound.

How pitch and volume are related to the properties of vibrations.

How sound has practical uses, like in medicine (ultrasound), navigation (sonar), and communication.

How to apply scientific knowledge of sound to solve problems and answer questions.

Key Knowledge

How sound behaves: Sound travels in waves and requires a medium (air, liquid, or solid) to move.

Speed of sound: Sound travels faster through denser materials because the particles are closer together.

Hearing range: Humans can hear sounds between 20 Hz and 20,000 Hz, but some animals (like bats and dogs) can hear higher frequencies.

Echolocation: Animals like bats and dolphins use echoes to navigate and find prey.

Uses of sound: Sound has many applications, including sonar (for underwater exploration), ultrasound (in medical imaging), and communication.

Reducing noise: Noise pollution can harm health and well-being, and solutions include soundproofing, using quieter machines, and reducing urban noise.

Wider opportunities
Diversity and Cultural Capital

Explore how sound is used in different cultures, including traditional instruments and storytelling.

Learn about careers in sound-related fields, like sound engineering, audiology, and acoustic design.

Visit a science museum or sound studio to see how sound is measured, controlled, and used.

Investigate how indigenous peoples use sound for communication or navigation.

Understand the impact of noise pollution and global efforts to create quieter, healthier environments.

My Skills and Knowledge that I may use from other subjects

Music: Exploring how instruments produce different pitches and volumes, and how sound resonates.

Maths: Measuring sound levels, frequencies, and using graphs to display data.

Design & Technology: Designing soundproof solutions and experimenting with materials to reduce noise.

Geography: Exploring the effects of soundscapes on urban and natural environments.

PSHE: Understanding the impact of noise pollution on mental health and well-being.

Key Skills I will learn/use

Conducting experiments to explore how sound travels and behaves.

Using scientific tools (e.g., decibel meters) to measure and compare sound levels.

Investigating how sound interacts with different materials (reflection, absorption, transmission).

Designing and testing solutions for soundproofing and noise reduction.
Explaining and presenting findings clearly using scientific vocabulary and diagrams.

Key Scientific Concepts

Biology

Chemistry

Physics

Scientific enquiry

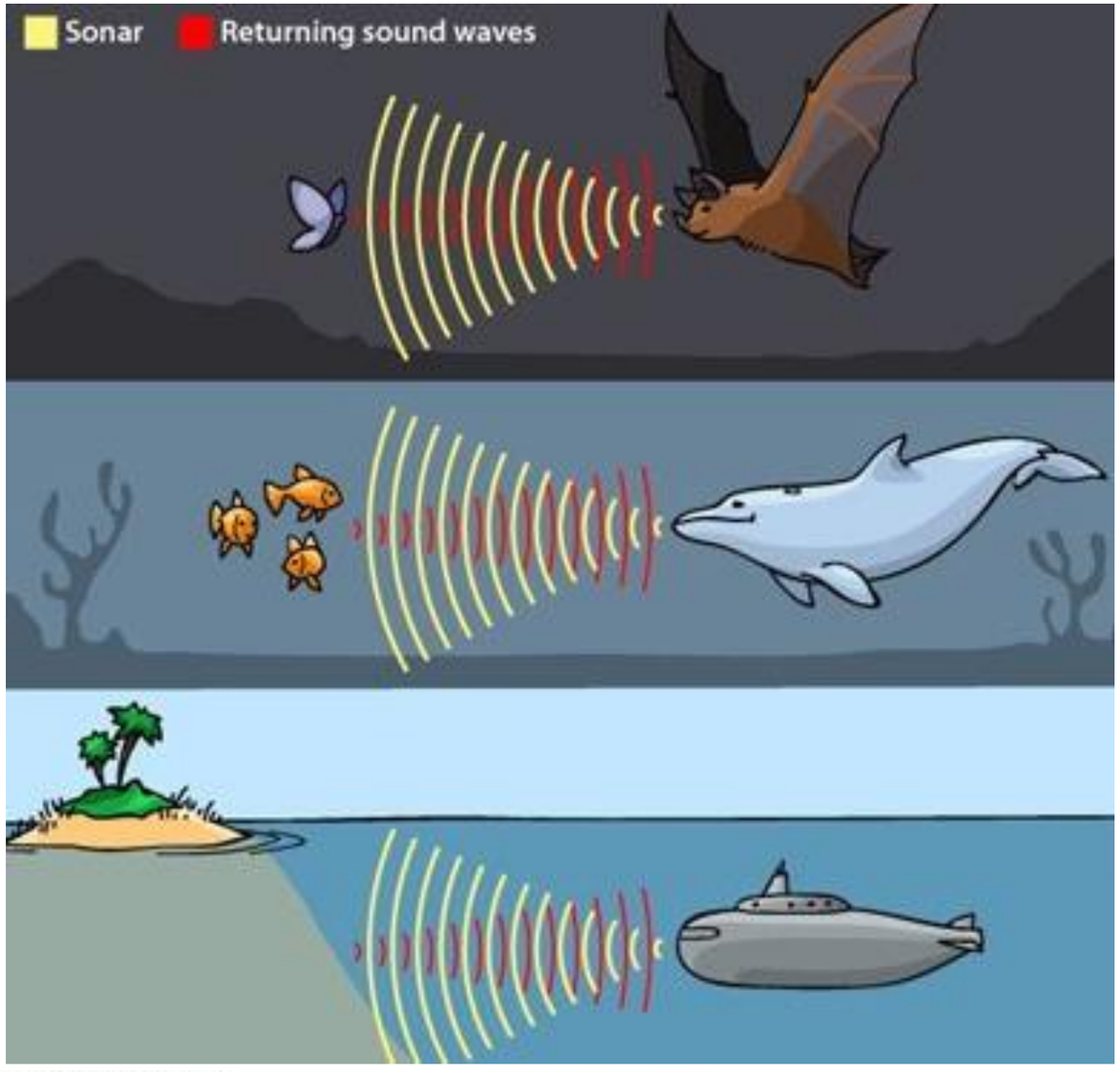
Science for the future

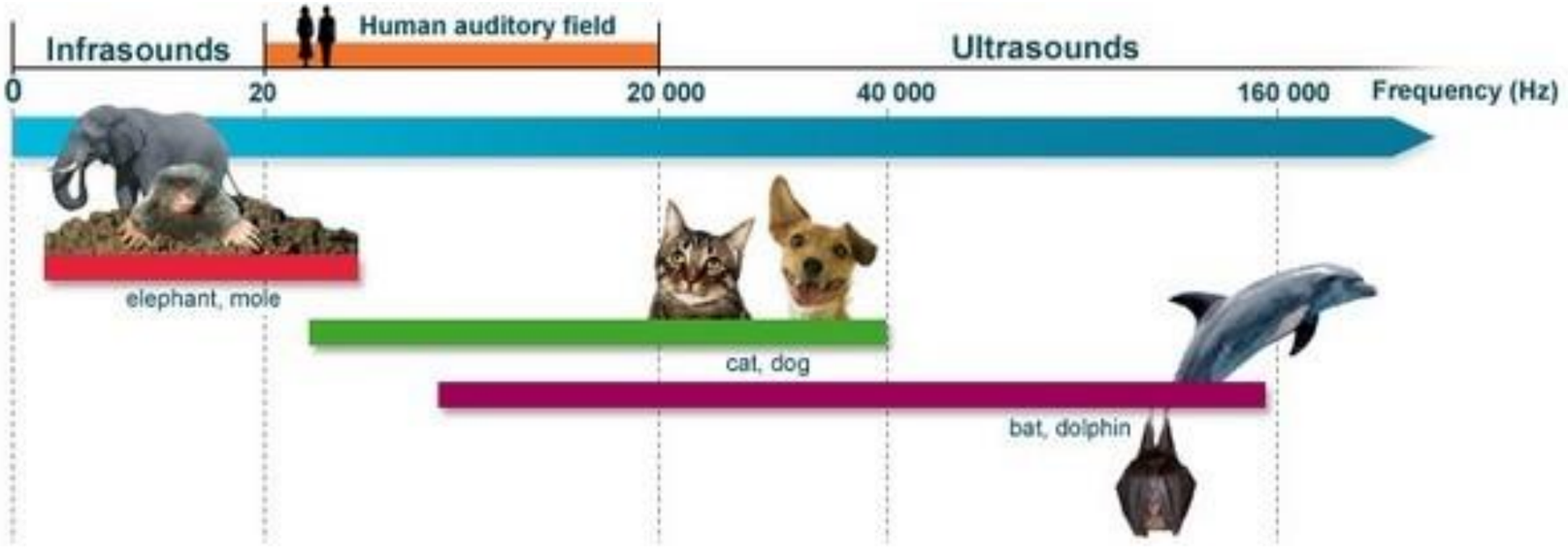
Sound travels fastest through solids where molecules are packed tightly together.

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

Recall and Remember

1. What creates sound, and how does it travel?
2. Why does sound travel faster in solids than in air?
3. What is the hearing range of humans?
4. How do animals like bats use sound to navigate?
5. What is sonar, and how is it used?
6. How can sound pollution be reduced?





Key Vocabulary

Sound: Vibrations that travel through a medium (air, water, or solid) and can be heard.

Vibration: A back-and-forth motion that creates sound.

Sound Wave: The movement of sound energy through a medium in the form of waves.

Pitch: How high or low a sound is, determined by the speed of vibrations (frequency).

Volume: How loud or quiet a sound is, determined by the size of vibrations (amplitude).

Amplitude: The height of a sound wave; larger amplitude means louder sound.

Frequency: The number of vibrations per second, measured in Hertz (Hz); higher frequency means higher pitch.

Echo: A sound that is reflected back when it hits a surface.

Absorption: The process of sound being taken in by a material, reducing its volume.

Decibel (dB): A unit used to measure how loud a sound is.

Eardrum: A part of the ear that vibrates when sound waves reach it.

Sonar: A system that uses sound waves to detect objects underwater.

Ultrasound: High-frequency sound waves used in medical imaging.

Echolocation: The use of echoes by animals to find objects or navigate.

Noise Pollution: Unwanted or harmful sounds that disturb people or animals.

Soundproofing: Using materials to block or reduce noise.