

Nova's Scientific Investigation: The Science of Sound

Learning objective: To explain how sounds are made, associated with vibrations, and how they travel to the ear.

Use this writing frame to document your findings from our sound investigation. Use the word bank to help develop your scientific explanations and ensure you use precise vocabulary when describing how vibrations travel through different mediums.

As the tuning fork struck the side of the wooden table, Nova watched intently as the invisible vibrations sent ripples through the air.

Word bank: vibrations · sound waves · medium · particles · oscillate · amplitude · pitch · frequency · ear canal · eardrum · consequently · furthermore · in contrast · subsequently

1. Introduction: Describe the source of the sound you investigated. How did the object begin to create vibrations? Begin by stating... (2 marks)

2. The Journey of Sound: Explain how sound waves travel from the source to the ear. Use the word 'medium' to describe what the sound passes through. Start with... (3 marks)

3. Pitch and Frequency: Compare a high-pitched sound to a low-pitched sound. Explain why the frequency of the vibration changes the pitch. You could argue that... (3 marks)

4. The Human Ear: Justify why the eardrum is essential for hearing. What might happen if the vibrations could not reach the inner ear? Begin by... (3 marks)

5. Scientific Conclusion: Summarise your findings. Explain why sound is quieter the further away you move from the source. Conclude by saying... (2 marks)

6. Critical Thinking: Compare and contrast how sound travels through a solid object (like a desk) versus through the air. Why might sound travel more efficiently through a solid? (4 marks)

Extension challenge: Imagine you are an engineer designing a concert hall. Using your knowledge of sound absorption and reflection, write a short paragraph explaining the materials you would choose for the walls and why. Justify your choices by referring to how sound waves behave when they hit different surfaces.