

Nova's Night-time Sound Investigation

Learning objective: To understand how sound is created through vibrations and how it travels to the ear.

Read the passage carefully and answer the questions below in full sentences.

Nova the barn owl sits quietly in the old oak tree, her large eyes scanning the forest. She knows that sound is all around, even in the stillness of the night. Sound is created when an object vibrates. When a twig snaps or a leaf rustles, it sends invisible vibrations through the air. These vibrations move as soundwaves, travelling like ripples on a pond.

For Nova to hear a mouse scurrying in the grass, these soundwaves must travel through the air, which acts as a medium. When the waves reach her ears, they cause her eardrum to vibrate. Her brain then interprets these vibrations as specific sounds. If the vibrations are fast, the pitch is high, like the chirp of a cricket. If they are slow, the pitch is low, like the rumble of distant thunder. Nova understands that sound cannot travel in a vacuum because there are no particles to bump into each other and pass the energy along. Whether it is a soft hoot or a loud rustle, every sound tells a story of energy moving through the world.

Word bank: vibration · medium · particles · frequency · eardrum · soundwaves

1. What is the physical cause of a sound being created? (2 marks)

2. Why is sound unable to travel through a vacuum? (2 marks)

3. Based on the text, what happens to Nova's eardrum when soundwaves reach it? (2 marks)

4. How does the speed of a vibration affect the sound that is heard? (2 marks)

5. Nova says every sound tells a story. Why might this be an important concept for a barn owl hunting at night? Justify your answer. (3 marks)

Draw: Draw a diagram showing a soundwave travelling from a vibrating guitar string to an ear, using arrows to show the movement of air particles.



Extension challenge: Research how sound travels through different materials (solids, liquids, and gases). Create a table comparing which medium allows sound to travel the fastest and explain why.