Nova’s Night-Time Sound Lab

Learning objective: To understand how sound is produced through vibrations and how these vibrations travel to our ears.

Nova the barn owl is investigating how sounds move through the air at night. Complete the sentences below using the correct scientific terms from the word bank to explain how sound travels. Once you have finished, look at the diagram prompt to draw what happens when a drum is struck.

Word bank: vibrations · medium · ear drum · waves · travel · volume · pitch

1. When an object makes a sound, it moves back and forth very quickly. What is this movement called? (1 mark)

2. Sound needs a _____ (like air, water, or a solid) to move through. Can sound travel through a vacuum where there are no particles? (2 marks)

3. Explain what happens to the _____ inside your ear when sound waves reach it. (2 marks)

4. If you hit a drum harder, does the sound get louder or quieter? Use the word 'vibration' in your answer. (3 marks)

5. Imagine you are plucking a guitar string. How would you change the string to make a higher pitch sound? (2 marks)

Draw: Draw a side-view diagram of a drum being hit with a stick. Use arrows to show the sound waves moving away from the drum skin and label the 'vibrations'.

Extension challenge: Research how different animals, like bats or dolphins, use echoes to 'see' in the dark. Write three sentences explaining how this process, called echolocation, uses sound waves.