

Year 4 Science Assessment: The Science of Sound

Learning objective: To identify how sounds are made, associate some sounds with something vibrating, and recognise that vibrations from sounds travel through a medium to the ear.

Read each question carefully. Use your scientific knowledge to provide clear explanations. Ensure you use technical vocabulary where appropriate.

Nova the barn owl is out observing the night forest. She notices that when a twig snaps, the sound travels through the air to her ears. She also watches Bea the honeybee hovering near a flower, noticing how the sound of her wings changes as she prepares to land. Max the monkey is nearby, tapping on a hollow log to experiment with the different sounds he can create.

Word bank: vibration · medium · pitch · volume · amplitude · particle · ear canal · eardrum · sound wave · frequency

1. Explain the role of vibrations in creating the sound Max hears when he taps the hollow log. (2 marks) (2 marks)

2. Nova notices that the sound of the snapping twig gets quieter the further away she flies. Justify why the sound becomes quieter as the distance increases. (3 marks) (3 marks)

3. Compare and contrast the sounds made by a low-pitched drum and a high-pitched whistle. How do the vibrations differ in these two examples? (4 marks) (4 marks)

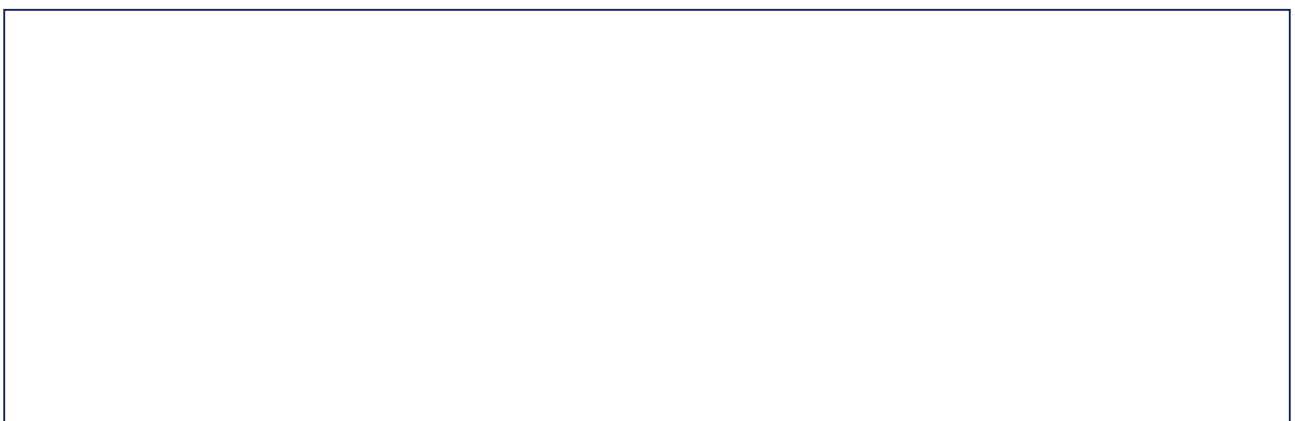
4. Describe the journey of a sound wave from the moment it leaves the source until it is processed by the ear. (4 marks) (4 marks)

5. What might happen if the air between the vibrating object and the listener was removed? Explain your reasoning. (3 marks) (3 marks)

6. Max wants to build an instrument that produces a high pitch. Design a simple experiment Max could conduct using rubber bands of different thicknesses. Explain your variables and how you would measure the pitch. (4 marks) (4 marks)

7. Extended Writing: Imagine you are a sound wave travelling through the air. Write a diary entry describing your journey from a guitar string to a listener's ear. Include details about how your shape changes and what happens when you meet an obstacle. (5 marks) (5 marks)

Draw: Draw a diagram showing a sound wave travelling from a vibrating tuning fork to an ear. Label the source, the medium, and the ear.



Extension challenge: Research and explain why sound travels at different speeds through solids, liquids, and gases. Create a poster demonstrating how sound insulation works in a classroom. Total: /25