

Grade 4 Science Assessment: The Science of Sound

Learning objective: To demonstrate understanding of how sounds are made, how they travel, and how pitch and volume can be changed.

Read each question carefully. Answer in full sentences where required. Ensure you use scientific vocabulary correctly. You have 30 minutes to complete this paper.

Nova the barn owl is perched in an old oak tree, listening to the sounds of the night. She uses her excellent hearing to track the rustle of leaves and the hoot of other owls. Nearby, Max the monkey is experimenting with different musical instruments to see how he can change the sounds they produce.

Word bank: vibration · pitch · volume · medium · amplitude · frequency · ear canal · eardrum · decibels

1. Explain what a sound is and how it is created. Use the word 'vibration' in your answer. (2 marks)

2. Max strikes a drum. If he hits the drum harder, what happens to the volume of the sound? Explain why. (2 marks)

3. Sound needs a medium to travel. Can sound travel through a vacuum (like space)? Explain your reasoning. (2 marks)

4. Describe the difference between a high-pitched sound and a low-pitched sound using the concept of frequency. (3 marks)

5. Nova hears a distant sound that gets quieter as it moves further away. Why does the sound become quieter? (3 marks)

6. Max has two guitars. One has thick, loose strings, and the other has thin, tight strings. Which one will produce a higher pitch and why? (3 marks)

7. Explain the journey of a sound wave from the moment it enters the ear canal until it reaches the brain. You may use a bulleted list to show the sequence of parts involved. (5 marks)

8. If Max buys a sound-measuring device for £12.50 and some ear defenders for £8.75 to protect his hearing, how much does he spend in total? (2 marks)

Draw: Draw a diagram showing how a sound wave moves from a source (like a bell) to a person's ear. Label the 'vibrations' and the 'sound wave'.



Extension challenge: Total: /25