Nova’s Nocturnal Sound Lab: A Year 5 Quiz

Learning objective: To consolidate understanding of how sounds are made, how they travel, and how we hear them.

Join Nova the owl for a night-time expedition! Read each question carefully and circle the best answer. Nova is looking for scientific precision, so make sure your explanations are clear.

Answer Key: 1. A (vibration); 2. True; 3. B (travel through a medium); 4. False (liquids and solids also transmit sound); 5. Pitch; 6. A (the sound becomes quieter); 7. False (the eardrum vibrates); 8. Decibels; 9. Solids (particles are closer together); 10. True. Greater Depth: Sound waves need particles to vibrate; in a vacuum, there are no particles, therefore no sound can travel.

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

1. 1. What is the primary cause of all sound? A) Vibration* B) Light C) Gravity D) Heat (1 mark)

2. 2. True or False: Sound travels faster through solids than it does through air. (1 mark)

3. 3. Which of the following is true? A) Sound can travel through space. B) Sound requires a medium to travel.* C) Sound is a form of liquid energy. D) Sound does not move. (1 mark)

4. 4. True or False: Sound cannot travel through water. (1 mark)

5. 5. What term describes how high or low a sound is? (1 mark)

6. 6. As you move further away from a sound source, what happens to the sound? A) The volume decreases.* B) The pitch increases. C) The vibration stops. D) The sound becomes a light wave. (1 mark)

7. 7. True or False: The eardrum is a solid bone that does not move. (1 mark)

8. 8. What unit is used to measure the intensity or loudness of sound? (1 mark)

9. 9. Through which state of matter does sound travel most efficiently? (Gas, Liquid, or Solid) (1 mark)

10. 10. True or False: A guitar string produces a higher pitch when it is shorter and tighter. (1 mark)

Draw: Draw a diagram showing a sound wave travelling from a ringing bell to a person's ear. Label the 'vibration' and the 'medium' (air).

Extension challenge: 1. Explain why astronauts in outer space must use radio signals to communicate rather than speaking to one another directly. 2. Compare and contrast how a drum and a flute produce sound. 3. If you were designing a soundproof room, which materials would you choose and why? 4. Justify why high-frequency sounds might be more harmful to our hearing than low-frequency sounds. 5. What might happen to the sound of a school bell if the air pressure in the room were significantly lowered? 6. Design an experiment to prove that sound requires a medium to travel, ensuring you identify your variables.