

Max's Musical Pitch Investigation

Learning objective: To identify, describe, and compare how pitch changes in different musical instruments and sound sources.

Max the monkey is fascinated by the patterns of sound. Use this experiment record to explore how changing the physical properties of an object affects its pitch. Choose three different instruments or household items (like a ruler, a glass of water, or a rubber band) to test. Follow the prompts to record your findings and analyse the science of sound.

Word bank: pitch · vibration · frequency · high · low · tension · wavelength · sonorous · oscillate

1. Identify your three test items and describe the sound each one makes when played. Use descriptive adjectives to explain the pitch. (3 marks)

2. Explain why increasing the tension on a stringed instrument creates a higher pitch. Refer to the speed of the vibration in your answer. (3 marks)

3. Compare and contrast the pitch of a large drum versus a small whistle. Why does the size of the instrument affect the sound produced? (4 marks)

4. Justify your answer: If you were to fill a glass bottle with more water, would the pitch of the sound change when you tap it? Explain your reasoning. (4 marks)

5. What might happen if you played an instrument in a room filled with soft cushions compared to a room with hard, tiled walls? How would the sound's quality differ? (3 marks)

6. Design a simple experiment to prove that faster vibrations result in a higher pitch. List your steps clearly. (5 marks)

Extension challenge: Imagine you are a sound engineer. Write a short explanation for Max describing how you would compose a piece of music that tells a story using only high-pitched sounds for the 'sun' and low-pitched sounds for the 'sea'. How would you use these pitches to create a specific atmosphere?