

Investigating Forces: The Science of Motion

Learning objective: To explain the effects of air resistance, water resistance, and friction as mechanisms that act between moving surfaces.

Use this writing scaffold to report on your recent scientific investigation. Ensure you use technical vocabulary, such as 'surface area', 'acceleration', and 'opposing force', to justify your findings.

Nova the owl has been observing how different objects fall through the air, noticing that the shape and size of an object significantly alter its path.

Word bank: consequently · furthermore · in contrast · friction · air resistance · acceleration · deceleration · surface area · magnitude · counteract

1. Introduction: State the aim of your investigation. What specific question were you trying to answer about forces? Start with: The primary objective of this experiment was to investigate... (2 marks)

2. Methodology: Describe the variables you kept the same to ensure a fair test. Start with: To guarantee the validity of the results, I ensured that... (3 marks)

3. Observations: Explain what happened during your test. Use scientific terms to describe the forces at play. Start with: Upon releasing the object, I observed that the force of... (3 marks)

4. Analysis: Compare and contrast your results with your initial prediction. Start with: My findings deviate from my hypothesis because... (3 marks)

5. Justification: Explain why air resistance or friction acted upon the object in the way it did. Start with: The magnitude of the opposing force was affected by the object's... (4 marks)

6. Conclusion: Summarise the relationship between surface area and speed. Start with: In conclusion, there is a clear correlation between... (3 marks)

Extension challenge: Imagine Nova is designing a parachute for a delicate cargo drop. Write a paragraph explaining what might happen if the surface area of the parachute is reduced by half. Justify your reasoning using your knowledge of air resistance.