

Nova's Guide to Forces and Motion

Learning objective: To explain the effects of different forces on moving objects using scientific vocabulary.

Use this writing frame to write a scientific report about how forces affect the movement of objects. Use the prompts below to structure your paragraphs and remember to include Nova's favourite scientific terms.

Forces are invisible pushes or pulls that act upon every object in our world, causing them to speed up, slow down, or change direction.

Word bank: air resistance · friction · gravity · surface area · opposing force · acceleration · consequently · furthermore · balanced · unbalanced

1. Introduction: Define what a force is and explain why objects do not move unless a force is applied. Start with: 'A force is defined as a push or a pull that...' (2 marks)

2. Gravity and Weight: Explain the role of gravity as a non-contact force. Start with: 'Gravity is a constant force pulling everything towards the centre of the Earth; therefore...' (3 marks)

3. Friction and Air Resistance: Describe how these contact forces slow objects down. Start with: 'When an object moves through the air or across a surface, it encounters friction or air resistance, which...' (3 marks)

4. Balanced vs Unbalanced Forces: Explain what happens when forces are equal or unequal. Start with: 'When forces acting on an object are balanced, the object remains still or at a constant speed, but if they are unbalanced...' (3 marks)

5. Conclusion: Summarise why understanding forces is important for real-world engineering. Start with: 'In conclusion, by understanding how forces interact, we can...' (2 marks)

Extension challenge: Research how streamlining an object (like a car or a bird's wing) reduces air resistance. Write a short paragraph explaining the relationship between surface area and speed.