Year 6 Science Assessment: Forces and Magnets

Learning objective: To demonstrate an understanding of how magnets attract and repel, the properties of magnetic materials, and the practical application of magnetic forces.

Read each question carefully. Use full sentences where required. Ensure your scientific vocabulary is accurate.

Nova the owl has been experimenting in her laboratory. She has a collection of objects: a wooden block, an iron nail, a plastic ruler, a steel paperclip, a copper coin, and a neodymium magnet. She is testing which items are attracted to her magnet and observing the invisible forces at play.

Word bank: attract · repel · pole · magnetic field · iron · steel · force · contact · non-contact

1. Nova identifies two objects from her collection that are magnetic. Name these two objects and explain why they are attracted to the magnet. (2 marks)

2. Define the term 'non-contact force' and explain why magnetism is classified as one. (2 marks)

3. If Max the monkey brings two south poles of two magnets together, what will happen? Explain your answer using the correct scientific terminology. (3 marks)

4. Describe how Nova could use a compass to identify the magnetic field around a bar magnet. (3 marks)

5. Explain why a magnet will attract a paperclip through a piece of paper, but not through a thick wooden desk. (3 marks)

6. Kit the fox wants to design a device to sort recycled materials. He has a mixture of aluminium cans and steel cans. Explain how he can use his knowledge of magnets to separate them, detailing the process step-by-step. (7 marks)

7. Imagine you are an engineer designing a high-speed train that uses magnetic levitation (maglev) to travel without touching the tracks. Write a short explanation of how magnetic repulsion helps the train move efficiently. (5 marks)

Draw: Draw a diagram of a bar magnet. Clearly label the North Pole (N), the South Pole (S), and use arrows to show the direction of the magnetic field lines.

Extension challenge: Total: /25