# Year 4 Science Assessment: The Power of Magnets

*Learning objective: To demonstrate understanding of magnetic forces, magnetic materials, and the behaviour of magnetic poles.*

Read each question carefully. Use your scientific knowledge to provide clear and accurate answers. Write your responses in the spaces provided.

Nova the owl has been conducting experiments in the forest. She has discovered that magnets behave in mysterious ways. She knows that some objects are attracted to magnets, while others remain completely still. She is now investigating how magnets interact with each other and how their strength changes over distance.

*Word bank: attract · repel · magnetic field · pole · iron · steel · force · permanent*

**1. Nova places a magnet near a wooden block, a steel paperclip, and a plastic button. Which object will be attracted to the magnet? Explain your reasoning. (2 marks)**

**2. Describe what happens when two north poles of a magnet are brought close together. Use the correct scientific terminology. (2 marks)**

**3. Max the monkey has a bar magnet. He wants to know where the magnetic force is at its strongest. Where should he look on the magnet? (2 marks)**

**4. Compare and contrast a contact force (like pushing a door) with a non-contact force (like magnetism). (3 marks)**

**5. If Nova moves a magnet further away from a piece of iron, the force of attraction becomes weaker. Justify why this happens using the concept of a magnetic field. (3 marks)**

**6. Design an experiment to test which household materials are magnetic. List three items you would test, your prediction, and how you would ensure the test is fair. (4 marks)**

**7. Imagine a world where magnets suddenly stopped working. Explain the consequences for everyday life, such as transport or electricity. Why would this be a problem for our modern technology? (Extended Writing Task) (5 marks)**

**8. If you cut a bar magnet in half, what happens to the poles? Explain your hypothesis. (4 marks)**

**Draw: Draw a diagram showing two bar magnets repelling each other. Use arrows to show the direction of the magnetic force.**

*Extension challenge: Total: /25. Extension: Nova wants to create a magnetic lock for her owl-house. Design a simple mechanism that uses magnets to keep a door closed. Label the poles in your design and explain why it would be effective.*