The Mystery of Magnetic Forces

Learning objective: To understand how magnets work, identify magnetic materials, and explain the properties of magnetic poles.

Read the passage carefully and answer the questions below. Use full sentences where appropriate.

Nova the barn owl loves to observe the world from her perch. One evening, she noticed a curious experiment happening below. A young scientist was using a bar magnet to move metal paperclips without touching them. Nova learned that magnets create an invisible area called a magnetic field. This field allows magnets to exert a force on certain materials, especially those containing iron, nickel, or cobalt. These are known as magnetic materials. Every magnet has two poles: a North pole and a South pole. Nova observed that when the scientist placed two North poles together, they pushed away from each other; this is called repulsion. However, when a North pole met a South pole, they pulled together, or attracted. This magnetic force works even through thin materials like paper or plastic. Nova was fascinated to discover that the Earth itself acts like a giant magnet, which is why compasses always point towards the magnetic North. Whether it is sorting scrap metal at a recycling centre or helping a ship navigate the vast ocean, magnetism is a powerful and essential force in our daily lives.

Word bank: attract · repel · poles · magnetic field · ferrous · force

1. Identify three materials that are magnetic according to the passage. (2 marks)

2. What happens when two North poles are placed next to each other? (1 mark)

3. Why can a magnet move a paperclip through a sheet of paper? (2 marks)

4. Based on the text, why is it important for sailors to understand magnetism? (2 marks)

5. Do you think all metals are magnetic? Use evidence from the text to justify your opinion. (3 marks)

Draw: Draw a diagram showing two bar magnets repelling each other, and label the North and South poles clearly.

Extension challenge: Research how an electromagnet differs from a permanent magnet like the one used in the story. Write a short paragraph explaining one way electromagnets are used in modern machinery.