Nova’s Magnetic Mystery Lab

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

Nova the barn owl is setting up a science experiment to test different items found around the forest. Look at the list of objects below. Decide if each object is magnetic or non-magnetic. Then, use your knowledge of magnetic poles to answer the questions about how magnets behave.

Word bank: attract · repel · iron · poles · magnetic · non-magnetic · steel · force

1. Nova has a pile of items: a steel paperclip, a wooden twig, an iron nail, a plastic leaf, a copper coin, and a gold ring. List which of these are magnetic and which are non-magnetic. (2 marks)

2. If Nova holds the North pole of one magnet close to the North pole of another magnet, what will happen? Explain why using the correct scientific vocabulary. (2 marks)

3. What happens to the strength of a magnetic field as you move an object further away from the magnet? (1 mark)

4. Max the monkey wants to pick up a box of iron tacks using a magnet. If he uses a very weak magnet, will he be able to pick up all the tacks from 5cm away? Explain your reasoning. (2 marks)

5. Describe one way you could test if an unknown metal bar is a magnet or just a piece of unmagnetised iron. (2 marks)

Draw: Draw a diagram showing two bar magnets placed end-to-end. Label the North and South poles and draw arrows to show whether they are attracting or repelling each other.

Extension challenge: Research how Maglev trains use magnetic repulsion to move. Write a short paragraph explaining why this technology is faster than traditional trains that use wheels.