Nova’s Force and Motion Investigation

Learning objective: To identify and describe the effects of forces on objects, including friction and magnetism, and to understand how surfaces affect movement.

Nova the Owl is testing how different surfaces affect the movement of a toy car. Look at the list of surfaces and objects below. Sort them into two columns: 'Objects that use Friction to Slow Down' and 'Objects that use Magnets to Attract'. Then, answer the questions about Nova's experiment.

Word bank: Rough carpet · Polished floor · Fridge door · Magnet · Brake pads · Ice

1. Nova pushes a toy car on a wooden floor and then on a piece of rough carpet. Which surface will make the car stop faster? Explain why using the word 'friction'. (2 marks)

2. If Nova wants the toy car to travel the furthest distance possible, should she choose a surface with high friction or low friction? Why? (2 marks)

3. Give one example of a 'contact force' that you see in your classroom every day. (1 mark)

4. True or False: Magnets need to be touching an object to pull it towards them. Explain your answer. (2 marks)

5. Max the Monkey is playing with two magnets. If he pushes the North pole of one magnet towards the North pole of another, will they pull together or push apart? (1 mark)

Draw: Draw a diagram of Nova the Owl pushing a toy car across a surface. Use arrows to show the direction of the push and the direction of the friction force acting against the car.

Extension challenge: Design a 'fair test' experiment to see which surface (sandpaper, bubble wrap, or card) creates the most friction. Write down one thing you would keep the same to make it a fair test.