

Year 4 Science Assessment: Forces and Magnets

Learning objective: To demonstrate an understanding of how objects move on different surfaces, how forces act at a distance, and how magnets attract and repel.

Read each question carefully. Max the monkey is helping you check your maths, and Nova the owl is looking for clear scientific explanations. Write your answers clearly in the spaces provided.

Max the monkey is experimenting with different surfaces. He rolls a toy car down a ramp onto a wooden floor, a carpet, and a piece of sandpaper. Nova the owl is testing which materials are magnetic by using a bar magnet to pick up various items from her desk.

Word bank: friction · surface · attract · repel · magnetic · pole · resistance

1. Explain why the toy car stops more quickly on the sandpaper than on the wooden floor. Use the word 'friction' in your answer. (2 marks)

2. Nova has two bar magnets. She tries to push the two north poles together. What will happen? Explain your answer. (2 marks)

3. List three materials that are magnetic. (3 marks)

4. If Max wants his toy car to travel the furthest distance, which surface should he choose and why? (3 marks)

5. Describe the difference between a contact force and a non-contact force. Give one example for each. (4 marks)

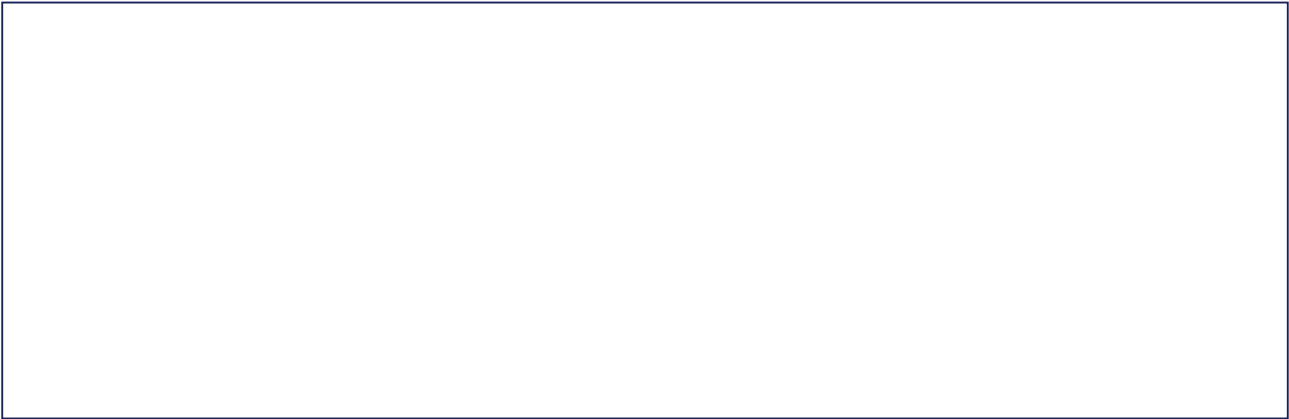
6. Imagine you are designing a new playground toy. Write a paragraph explaining how you could use magnets or friction to make the toy fun and safe for children to use. Include how you would test if your design works. (5 marks)

7. Max spends £4.50 on a new set of magnets and £2.75 on a wooden ramp. How much does he spend in total? (2 marks)

8. What are the names of the two ends of a magnet? (2 marks)

9. Why is it easier to slide a heavy box on ice than on grass? (2 marks)

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



Extension challenge: Total: /25