Nova’s Guide to Forces

Learning objective: To understand how forces, such as friction and air resistance, act on moving objects.

Read the passage carefully. Use the word bank to help you understand the tricky words. Answer the questions in the spaces provided.

Nova the owl loves to fly through the night sky. When Nova spreads her wings, she feels air resistance pushing against her. This force acts like an invisible hand, slowing her down as she glides. To fly faster, Nova tucks her wings in tight. On the ground, Max the monkey likes to push his heavy wooden toy box across the floor. He notices that it is hard to move on the rough carpet. This is because of friction. Friction happens when two surfaces rub together. If Max puts the box on a smooth, shiny floor, it slides much easier because there is less friction. Forces are everywhere! Every time we push a door, pull a drawer, or kick a ball, we are using a force. Whether it is air resistance slowing a bird or friction stopping a toy, forces change how things move. Next time you run or jump, think about the forces helping you move or keeping you steady. Physics is truly amazing!

Word bank: Force: A push or a pull. · Friction: A force that slows things down when surfaces rub together. · Air resistance: A force that pushes against objects moving through the air. · Surface: The outside layer of an object.

1. What does Nova the owl feel when she spreads her wings? (1 mark) (1 mark)

2. Why is it harder for Max to push his toy box on the carpet than on a smooth floor? (1 mark) (1 mark)

3. Why do you think Nova tucks her wings in tight when she wants to fly faster? (2 marks) (2 marks)

4. What might happen if there was no friction at all when you tried to walk? (2 marks) (2 marks)

5. Which force do you think is more useful in daily life: friction or air resistance? Give one reason for your answer. (2 marks) (2 marks)

Draw: Draw a picture of Max the monkey pushing his toy box. Use arrows to show the direction of the push and the direction of the friction.

Extension challenge: Find three objects in your classroom. Predict which surface will have the most friction and test your idea by sliding them!