Friction in Action

Read how friction pushes against motion.

5.3.e "friction is a force that opposes motion."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each sentence that tells how friction affects motion, and circle the words that name a surface or object creating friction.

Maya's Scooter Test

1. On a school field day, Maya pushed a scooter across the gym floor. After she stopped pushing, the scooter slowed and stopped. A force called friction acted where the wheels touched the floor and where parts of the scooter rubbed together. Friction acts in the direction opposite an object's motion, so it opposed the rolling scooter.

2. Later, Maya rolled the scooter over a rough entrance mat and then over smooth hallway tile. The wheels traveled a shorter distance on the mat after the same push. The mat's bumps pressed against the wheels more than the smooth tile did. This created more friction, which opposed the scooter's motion more strongly and made it slow sooner.

3. Friction can be useful. Shoe soles grip the ground because friction opposes a person's foot from sliding. Bicycle brakes press on a wheel or disk, creating friction that opposes the wheel's motion and helps the bicycle stop. In some machines, oil is added between moving parts to reduce friction, so the parts can move more easily.

2 ANSWER WITH EVIDENCE

Use the passage

1. What happened to Maya's scooter after she stopped pushing it? What force caused this change?

2. In what direction does friction act compared with an object's motion?

3. Why did the scooter travel a shorter distance on the entrance mat than on the hallway tile?

4. How do bicycle brakes use friction to help a bicycle stop?

3 YOUR TURN

Your own words

Describe a toy car rolling across a surface you choose. Write 3 sentences that name the surface, tell which direction friction acts, and explain whether the car slows quickly or slowly and why.

ANSWER KEY

Friction in Action

GRADE 5 · 5.3.e

PART 1 · READ AND MARK

Underline each sentence that tells how friction affects motion, and circle the words that name a surface or object creating friction. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What happened to Maya's scooter after she stopped pushing it? What force caused this change?	**The scooter slowed and stopped because friction opposed its motion.**
2	In what direction does friction act compared with an object's motion?	**Friction acts in the direction opposite the object's motion.**
3	Why did the scooter travel a shorter distance on the entrance mat than on the hallway tile?	**The mat's bumps pressed against the wheels more, creating more friction. The greater friction opposed the scooter's motion more strongly, so it slowed sooner.**
4	How do bicycle brakes use friction to help a bicycle stop?	**The brakes press on a wheel or disk and create friction. That friction opposes the wheel's motion and helps the bicycle stop.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A toy car rolls across a rough rug. Its motion is forward, so friction acts backward, opposite the motion. The car slows quickly because the rough rug creates more friction.

Accept any realistic surface and explanation that friction acts opposite the toy car's motion. The student should connect a rougher surface with more friction and quicker slowing, or a smoother surface with less friction and slower slowing.