SCIENCE

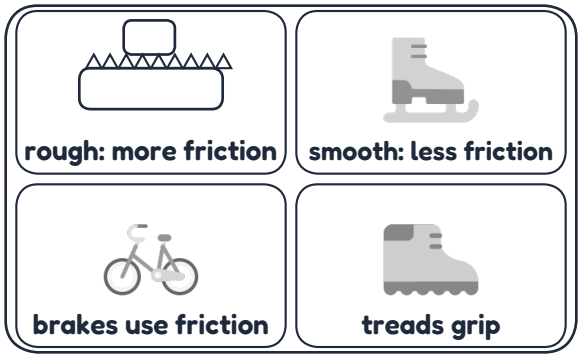
Friction

Name _____ Date _____

I can explain how friction slows things down.

1 How it works

Friction is a force that happens when two surfaces rub together. It slows moving things down and helps them stop. Rough surfaces, like carpet, grass and sandpaper, make lots of friction. Smooth surfaces, like ice and glass, make little friction. Friction helps us too: it stops our shoes from slipping and lets brakes stop a bike.



2 More friction or less? Circle one.



boot treads

more less



a slide

more less



a brick

more less



a rough rock

more less



ice

more less



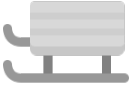
a scrub brush

more less



wet soap

more less



a sled on snow

more less

How did I do? ☆ ☆ ☆

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Helpful friction

Name _____ Date _____

I can tell how friction helps us.

1 How does friction help? Draw a line.

 **bike brakes**	rub the wheel to stop the bike
 **boot treads**	friction makes them feel warm
 **oil on a door hinge**	grip the ground so you do not slip
 **sand on an icy path**	cuts friction so the door opens easily
 **rubbing your hands**	adds friction so people do not fall

2 Which slides farther? Circle it.

1.	**a block on carpet**	**a block on ice**
2.	**a sock on a wood floor**	**a shoe on a wood floor**
3.	**a sled on grass**	**a sled on snow**
4.	**a coin on a smooth table**	**a coin on a rug**

How did I do? ☆ ☆ ☆

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Think like a scientist

Name _____ Date _____

I can explain when friction helps and when it gets in the way.

1 Think about it

1. Why is it easy to slip on ice? _____
2. Why do shoes have bumpy soles? _____
3. Why do hands warm up when you rub them? _____
4. How could you make a slide faster? _____

2 True or false? Circle it.

1. Rubbing your hands makes heat.	true	false
2. Friction helps bike brakes work.	true	false
3. Ice has more friction than carpet.	true	false
4. Smooth surfaces make the most friction.	true	false
5. Friction slows things down.	true	false

3 Design a shoe that will not slip on ice. Label it.

How did I do? ☆ ☆ ☆

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SCIENCE · FRICTION

Try it: the slide test

Name _____ Date _____

I can test how surfaces change friction.

1 You need

- a board for a ramp
- a small block or an eraser
- a towel
- wax paper
- sandpaper or a rug

2 What to do

1. Make a ramp with the board and a few books.
2. Let the block slide down the bare board. Mark where it stops.
3. Cover the ramp with wax paper and try again. Then try the towel and the sandpaper.
4. Compare how far the block slid each time.

3 I predict

Which surface will let the block slide farthest?

_____

_____

4 What I see

Surface	How far it slid	More or less friction?
wax paper		
bare board		
towel		
sandpaper		

How did I do? ☆ ☆ ☆

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FOR TEACHERS AND PARENTS

Answer key: friction

1 Page 1

Answers: 1) boot treads: more; 2) a slide: less; 3) a brick: more; 4) a rough rock: more; 5) ice: less; 6) a scrub brush: more; 7) wet soap: less; 8) a sled on snow: less.

2 Page 2

Friction: 1) bike brakes: rub the wheel to stop the bike; 2) boot treads: grip the ground so you do not slip; 3) oil on a door hinge: cuts friction so the door opens easily; 4) sand on an icy path: adds friction so people do not fall; 5) rubbing your hands: friction makes them feel warm.

Slides farther: 1) a block on ice; 2) a sock on a wood floor; 3) a sled on snow; 4) a coin on a smooth table.

3 Page 3

Think: 1) Ice is smooth, so there is little friction; 2) To add friction so we do not slip; 3) Friction makes heat; 4) Make it smoother, for example with wax paper.

True or false: 1) true; 2) true; 3) false; 4) false; 5) true.

Drawing: answers will vary. Look for bumpy or spiky soles that add friction.

4 Page 4: Try it!

The block slides farthest on the wax paper, because it is the smoothest surface and makes the least friction. It slides less on the bare board, and least of all on the towel and the sandpaper, which are rough and make the most friction. More friction means the block slows down and stops sooner.

5 Teaching tip

Let children rub their hands together fast for ten seconds and feel the warmth. Friction makes heat, which is a fun way to start the topic.

Safety: keep the ramp low and steady. Handle sandpaper gently.