TIME FOR KIDS

DRAG! Friction and Resistance



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Publishing Credits

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Teacher Created Materials
5301 Oceanus Drive
Huntington Beach, CA 92649-1030
http://www.tcmpub.com

ISBN 978-1-4333-4930-9

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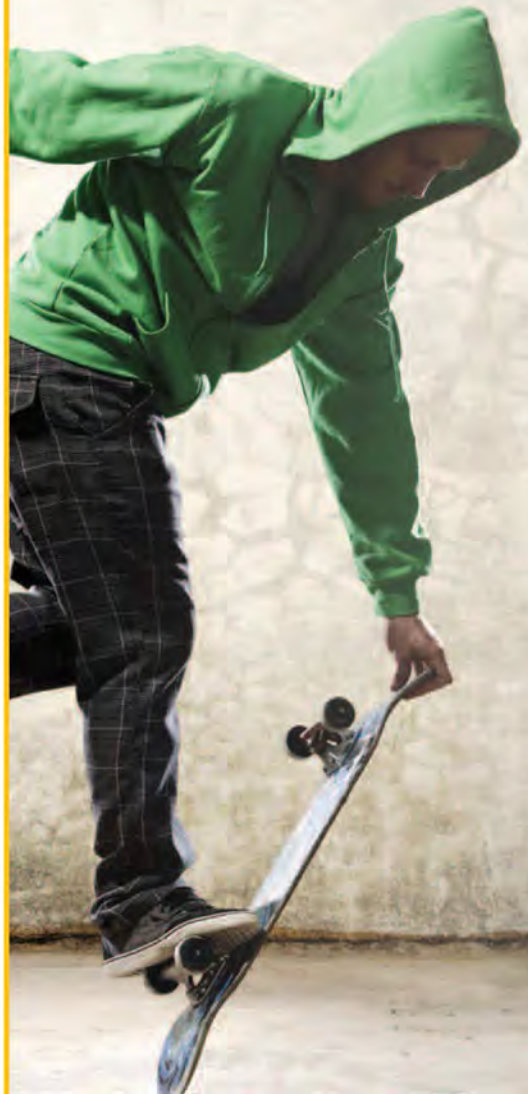


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A World Without Friction!

Imagine sitting on a couch at home. You decide to stand up, but when you try to push off the ground, your feet slip out from under you. Everything is as slippery as ice. Luckily, the couch is wedged against a wall, so you push hard and manage to bounce onto the floor. But now you have another problem because you are sliding toward the door and you can't stop! You slip out the door, down the stairs, and down the street.

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THINK LINK

- What is friction?
- Where do you encounter friction?
- How can we increase or decrease friction?

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Could Life Survive?

A world without friction would be very different from the one we know. Many people wonder if life would even be possible. Could animals breathe without friction? Could cells interact? Would blood pump? How would living things get the food and nutrients they need? As you read about friction, think about how it affects life on Earth.

In a world without friction, every living thing around you is having the same problem. Plants lie limply on the ground, their roots unable to hold them in the dirt. Cars, trucks, and trains are unable to move. Crawling critters can't crawl, and nothing can run or walk. A few creatures may have figured out how to bounce off things, but the only way to stop would be to crash into something else or grab heavy objects that are stationary. Winds rip through the world at amazing speeds, tossing plants and animals like dust. Boulders careen down hills and simply keep on rolling. **Chaos** is everywhere! This is a world without friction.



"A gem cannot be polished without friction, nor a man perfected without trials."
—Lucius Annaeus Seneca, philosopher

Types of Friction

No matter where you are or what you are doing, there are **forces** at work all around you, all the time. *Force* means "active power." In physics, friction is often thought of as a negative force. Friction is the result of two objects rubbing up against each other. It happens because two surfaces in close contact grip each other. This gripping occurs all the way down at the **molecular** level, but it happens at larger levels, too. Because of this gripping, friction can slow things down and make them stop moving.



If tires don't properly grip the road, a car can slide and a driver can lose control.

Push and Pull

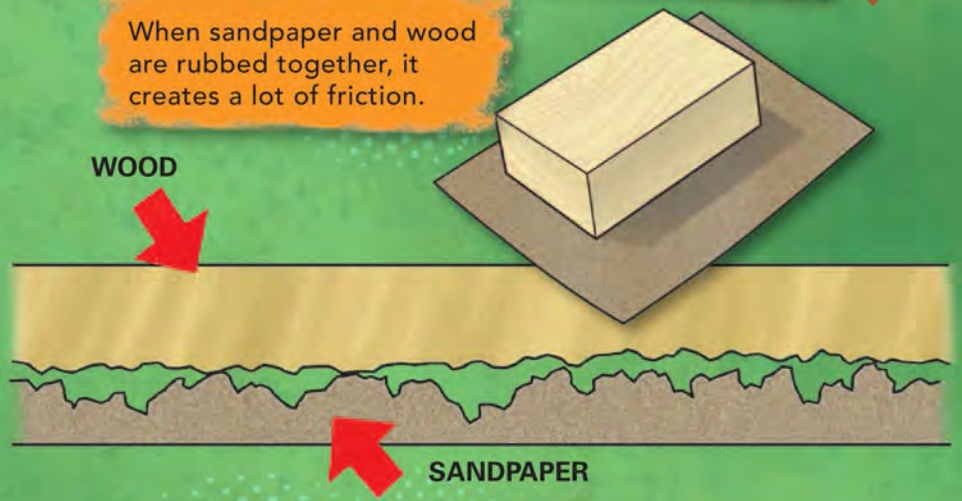
Most forces can be thought of as either a push or a pull. The force of gravity pulls an object toward Earth. You push off the ground to get yourself moving.

Friction Gets a Bad Rap!

Has something ever "rubbed you the wrong way"? Have you ever entered a room and known there was "friction between two people" there? People sometimes use the idea of friction to describe negative feelings.

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When sandpaper and wood are rubbed together, it creates a lot of friction.



When wood is rubbed against a smoother substance such as glass, there is less friction.

