

Name: _____

Date: _____

Friction



What force makes a moving object slow down and eventually stop?

Imagine giving a toy car a good push across the floor. It rolls across the floor for a while. But even though no one touches it, the car eventually slows down and stops. Why does it stop? It stops because of **friction**.

Friction is another kind of **force** you can't see. It occurs when two surfaces—like a car's wheels and the road or your shoes and the floor—push against each other.

When you let go of the toy car, it starts to slow down. The car's wheels and the floor are pushing against each other. How does this slow the car down?



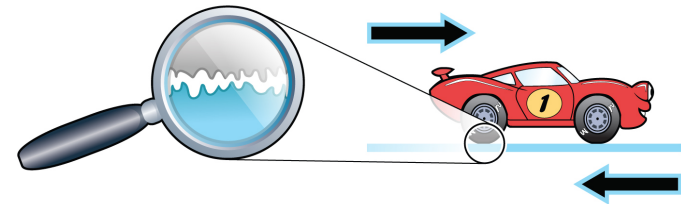
The car's wheels and the floor aren't perfectly smooth. If you look carefully with a magnifying glass, you'll see tiny bumps on the car's wheels and tiny bumps on the floor. Each time the bumps on the wheels and the bumps on the floor touch, they

push against one another. That pushing force is the friction that makes a moving object slow down and eventually stop.

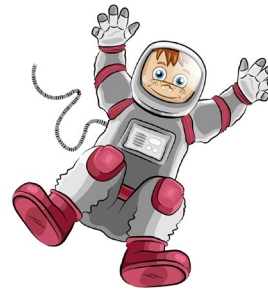
What if you tried to push the car across the grass on the playground? Is friction different on the grass compared to the floor? Yes! The grass is much bumpier than a smooth floor, so the grass would push against the wheels of the car more than the floor would. More friction would make the car slow down and stop much sooner than on the floor.



STOP AND THINK: What force words could you use to label the two arrows in this diagram?



Friction is everywhere on Earth. But would friction cause you to slow down and stop if you were in outer space?



In space, objects float with no surface to rub against—not even air! Astronauts are tied to a rope anytime they leave their spaceship. If they weren't, the slightest push would send them moving in a straight line forever. There would be no friction pushing against their motion to make them slow down and stop. Imagine moving forever through outer space!

Summary: When bumps on the surfaces of two objects push against one another, it creates a force called **friction** that acts in the opposite direction of motion. Friction is the reason moving objects on Earth eventually slow down and stop.