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Why Do Things Move?

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What happens when you leave a soccer ball in a field? It probably stays where it is, unless someone picks it up or the wind moves it. The soccer ball can't move on its own. That's because, like everything on Earth, it is subject to the law of inertia.

Inertia is the first law of motion. It states that an object at rest will stay at rest until an outside force causes it to move. If you kick the soccer ball, you become the outside force that causes the ball to move. You overcome the force of inertia. The word *inertia* is from a Latin word that means "lazy."

The law of inertia was the first of three laws of motion proposed by Sir Isaac Newton in 1687. In addition to an object staying at rest, the law states that an object in motion will remain in motion until something stops it.

Now imagine kicking the soccer ball. Newton's law says that it will continue to move in a straight line unless something stops it. Many forces can slow or stop objects in motion. The soccer ball could run into a tree. A person could catch it. The rough grass on the field could also slow it down until it stops on its own.

Some objects in motion are easier to start or stop than others. It's easier to move a soccer ball than a car. It's also easier to start moving, or push a soccer ball than a car. That's because a soccer ball has less mass than a car. Because it has less mass, it's easier for a soccer ball to overcome inertia.

You can be a scientist and test the law of inertia. Take a tennis ball and a bowling ball, and push each of them. How hard is it to overcome inertia with the tennis ball? How hard is it with the bowling ball? The difference between the two is their mass.

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