

Name \_\_\_\_\_

## Keep On Moving

### Example Answer. Acceptable Answers May Differ

The phenomenon of a cyclist continuing to move forward on a bicycle even after they stop pedaling can be explained using Newton's First Law of Motion, also known as the law of inertia.

Newton's First Law states that an object at rest tends to stay at rest, and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by an unbalanced external force.

In the case of a cyclist who has stopped pedaling, several factors come into play:

**Inertia** - When the cyclist was pedaling, they imparted a forward force on the bicycle's wheels, which set it in motion. When they stop pedaling, the bicycle's wheels and the entire system still possess the forward momentum they had gained. According to Newton's First Law, this momentum will keep the bicycle moving forward unless acted upon by an external force.

**Rolling Resistance** - While the bicycle is moving, it encounters some resistance from various sources like friction between the tires and the road, air resistance, and internal mechanical resistance in the bike's components. These forces act as external forces that slow the bicycle down. However, unless these forces are strong enough to bring the bicycle to a complete stop, it will continue to move forward at a gradually decreasing speed.

**Conservation of Energy** - The kinetic energy of the moving bicycle is also a factor. Energy cannot be created or destroyed but only transferred or transformed. As long as the cyclist doesn't apply the brakes or any other significant external force, the kinetic energy of the bicycle will keep it moving forward, even if the energy input from the cyclist (pedaling) has ceased.