

Name _____

The Surprising World of Newton's Third Law

Open-Ended Response Answer Key

1. Sir Isaac Newton formulated his laws of motion in the late 17th century, revolutionizing the understanding of motion and gravitation. His laws provided a foundation for classical physics and were instrumental in scientific progress.
2. Momentum is the product of an object's mass and velocity. It relates to Newton's third law as the equal and opposite reaction forces between two objects result in changes in their velocities, which is a measure of momentum.
3. In a world where Newton's third law did not hold true, vehicles like rockets and airplanes would not work as we know them. Safety features in cars would need a different design, and everyday activities like walking and swimming would be significantly altered.
4. An example of an innovative technology utilizing Newton's third law is the development of jet propulsion systems in aircraft. These systems expel high-speed gases backward to create action forces that propel the aircraft forward, allowing for controlled flight and long-distance travel.

