

Name _____

Newton's Second Law Unveiled

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. Inertia is the tendency of an object to resist changes in its state of motion. It relates to Newton's second law as the resistance an object exhibits due to its mass when force is applied. An example is a heavy object being harder to push than a lighter one.
3. To optimize the car's acceleration and performance, an engineer would consider factors like the vehicle's mass, engine power, and aerodynamics. Balancing these elements to maximize force and minimize resistance is key to achieving top performance.
4. A recent advancement is the development of electric cars with regenerative braking, which harnesses energy during braking to recharge the battery. This innovation is made possible by a deep understanding of Newton's second law and energy conservation principles.

