Force and Acceleration
Note-taking Guide

Newton's' First Law of Motion

change, unbalanced force, motion, inertia, direction, same, velocity, distance, time, continue, seatbelt, speed, Newton's First Law, fast, slow, dividing, at rest, friction, force, specify

_____of Motion states that an object at rest stays _____, and an object in motion stays in _____ at the _____ speed and _____, unless acted upon by an _____.

This law is also known as the 'law of _____' which means that there is a natural tendency for objects to keep on doing what they are doing.

A cue ball will stay at rest unless a cue stick hits the ball. The _____will cause the ball to move.

Once a ball starts moving, it will _____ to move at the same _____ and direction until it is slowed down and stopped by _____.

A ball could also hit a side of the table, at which point the force pushing against the ball will _____ its direction.

How does your body move when the car you're riding in, comes to a sudden stop?

_____

_____

If you were not wearing a _____ and you were traveling very fast, your body could continue to move forward through the windshield!

The speed of a moving object tells us how _____ or how _____ an object is moving.

Speed can be calculated by _____ the total _____ traveled by the _____ it took to cover that distance.

In order to describe the motion of an object, we need to _____its speed as well as direction.

Speed in a specific direction is called _____.

Newton's Second Law of Motion

velocity, more, acceleration, lighter, zero, accelerates, divided, force, engine, time, mass, greater, increased, less

When the sled was at rest, its velocity was _____ but when force was applied, its velocity _____.

When the velocity of an object changes, the object _____.

Acceleration equals the change in _____ divided by _____.

A pull changes the velocity of a sled from 0 m/s to 5 m/s in 5 seconds, what is the sled's acceleration?

_____

_____

_____

Newton's Second Law of Motion states that the _____ of an object depends on the _____applied and the _____ of the object. The greater the mass, the _____ the acceleration produced. The greater the force applied, the _____ the acceleration.

Acceleration is equal to force _____ by mass.

The design of a sports car is based on Newton's second law. The powerful _____ of a sports car helps it to accelerate quickly. The cars are designed to be _____ so that they can accelerate _____ when force is applied.

Newton's Third Law of Motion

Equal and opposite, boat, third law, reaction force, burned, equal force, force, action, opposite, gases, action force, direction, reaction

Newton's _____ of Motion states that when one object exerts a force on a second object, the second object exerts an _____ in the _____ direction.

While rowing a boat, a rower exerts force to push the water. This force is known as the _____.

The water pushes the _____ with an equal force in the opposite direction. This opposite force is known as the _____.

_____ and _____ forces are _____ in direction.

Launching a rocket also uses the principles of Newton's Third Law of Motion.
Fuels in the combustion chamber of a rocket are _____ to produce gases. The rocket exerts _____to emit the gases from a nozzle at the bottom. The reaction force exerted by the _____pushes the rocket in the opposite _____, propelling it into the air.