Student's Name

Professor's Name

Course

Date

Newton's Laws of Motion

Newton's laws of motion are classified under classical mechanics because they deal with the relationship between motion and forces. They were all discovered by Isaac Newton in the early 20th century (Sulistri 35). There are three laws of motion, and the first law deals with the relationship between a moving object and the effect of applying force to it.

Mathematically:

Sum of net forces = zero

$F_{net} = 0$

$dV/dt = 0$

The second law deals with the relationship between the mass and velocity of a substance. Momentum is the product of mass and velocity. The law also deals with the relationship between the first and the final velocity of objects after impact. The net force before the impact has to be equal to the net force after the impact (Atasoy 47). For example, through knowledge of Newton's second law, a scientist is able to calculate the speed at which two vehicles moved after a collision.

Mathematically:

$F= ma$

$a=(v-u)/t$

$Ft = m(V-U)$

$F=(mv-mu)/t$

Where: f is the force applied to the body, v is the final velocity of the object, and I is the initial velocity of the body. T is the time taken from the initial to the final velocity.

In the third law, there is a relationship between two opposing forces and the direction of motion. In this law, the knowledge of why a person moves forwards is known. For example, while walking, we exert some force on the ground; the group exerts the same force back and pushes us forwards (Susskind 40). This is the same relationship that scientists use in the launching of rockets. A rocket contains a mass of burning gases that explode when reacting to air; the explosion occurs and exerts a considerable force downwards. As a result, the ground applies the same force to the rocket but in an upward direction to propel it into space. Newton's laws of motion are very instrumental when it comes to classical mechanics in physics.

Mathematically:

$Fa = -Fb$

Where Fa is the action force and Fb is the reaction force.

But since $F= ma$,

$(Ma)a = -(Mb)a$

Ma is the mass of object a and mb is the mass of object b. The sign for Fb is negative because it is acting in the opposite direction.

Works Cited

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