Force

**Force** is a push or a pull . 

Issac Newton started work on his laws of motion in 1665. More than three hundred years later his three laws still summarize the relationship between acceleration and its cause, force.

 **Newton’s First Law**: an object with no force acting on it moves with constant velocity. (Also called the Law of Inertia.)

 **Newton’s Second Law**: the acceleration of an object is directly proportional to the force applied to it and inversely proportional to the mass.

This is expressed as F =ma

**Newton’s Third Law**: when one object exerts a force on a second object, the second object exerts on the first object that is equal in magnitude but opposite in direction. These are called **action-reaction forces**.

The metric unit for force is the **Newton** (**N**). It is defined as the amount of force necessary to accelerate 1 kilogram 1 meter per second per second.

**Mass is not weight**. *Mass* is the quantity of matter in an object, or more specifically, mass is a measure of inertia, or resistance to change in velocity of the object.

**Weight** is the force of gravity on an object. Acceleration due to gravity is 9.8 m/s/s times the mass. In other words, weight = gm.