

# Additional Material for Linear Motion

## Linear Motion

The motion of an object along a straight line is linear motion or rectilinear motion. If an object moving along the straight line covers equal distances in equal intervals of time, it is **uniform motion** along a straight line. For rectilinear motion with uniform acceleration, equations of motion are given as

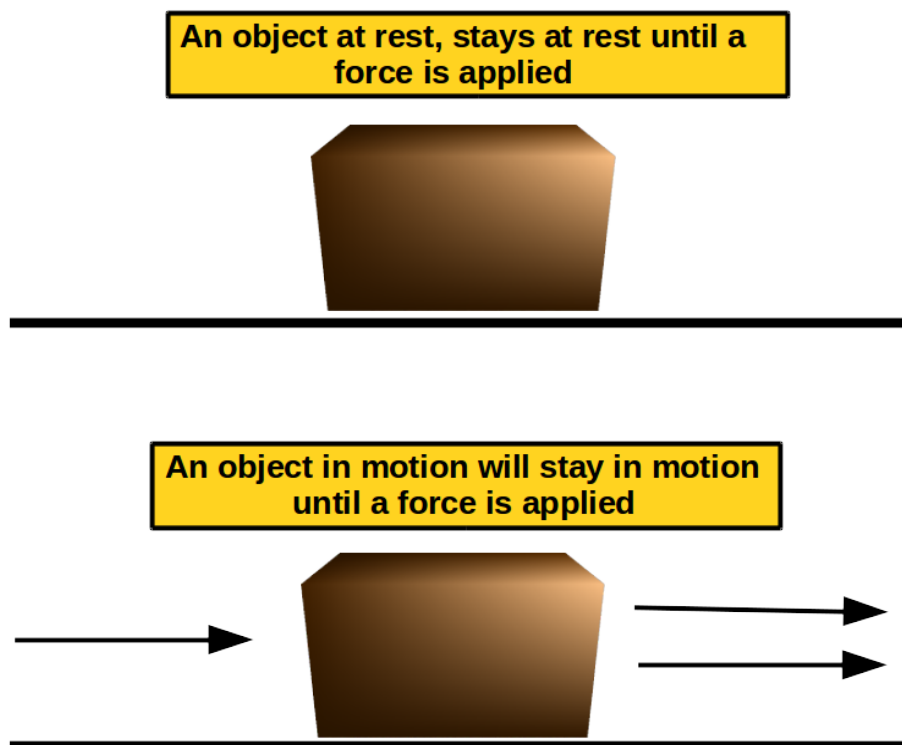
$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

$$v^2 - u^2 = 2as$$

## Newton's First Law of Motion

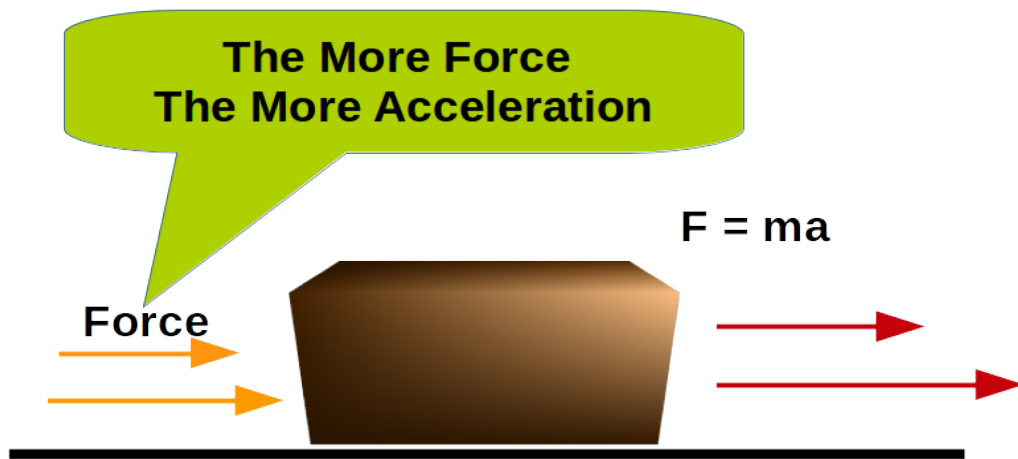
The law states that, the object continues to be in a state of rest or uniform motion until and unless an external force acts on it. This law is also known as **Law of inertia**.



## Newton's Second Law of Motion

The law states that, when a force acts on an object, it accelerates and this acceleration depends on the mass of an object.

This law is given by the formula  $F = ma$



### Newton's Third Law of Motion

According to Newton's third law, for every action there is an equal and opposite reaction.

For example: when we through a ball to the wall, it exerts a force on the wall and it bounces back as the wall exerts equal and opposite force on the ball.

