

Newton's Laws of Motion (cont'd)

Newton's first law states an object will remain at rest or continue traveling at a constant velocity unless an unbalanced force acts on it.

But what if an unbalanced force acts on the object?

An unbalanced force on an object causes its velocity to change, which is acceleration. What factors will affect the rate of acceleration?

The greater the net force on the object, the greater its acceleration.

The greater the mass of the object, the less the acceleration.

Newton's 2nd Law:

The acceleration of an object is directly proportional to the net force on it and inversely proportional to the mass of the object.

$$a = \frac{F_{NET}}{m}$$

ex.

What is the acceleration of a 10 kg object which has a net force of 25 Newtons to the left acting on it?

Units of Force:

$$F_{\text{NET}} = ma$$