

## Newton's Laws Key Terms

### On-level Physics

The following are the terms you should be familiar with in order to properly complete this unit. You are expected to be able to define each as well as apply these terms in any situation during this and subsequent units of study.

**inertia** - Property of matter describing an object's resistance to change in its current state of motion; quantified as mass.

**mass** - the amount of matter in an object or the measurement of its inertia; a scalar quantity; measured in kilograms.

**force** - described as a push or a pull; a vector quantity; measured in the units of  $\text{kg m/s}^2$  (Newton)

**weight**- the force that results due the effect of gravity on an object's mass.

**net force** - Sum of all the forces acting on an object; a zero net force represents balanced forces.

**balanced forces** - Forces that are equal in magnitude, opposite in direction, and act upon the same object.

**equilibrium** - A state of balance; net force on the object equals zero.

**static equilibrium** - Describes the state of motion of an object when the net force on the object is zero and it is not moving.

**dynamic equilibrium** - The state of motion of an object when the net force on the object is zero, it is not accelerating, but is moving at a constant velocity.

**Newton's First law** - an object at rest will remain at rest, and/or an object that is in motion will travel at a constant velocity in a straight path unless a net force acts upon it.

**Newton's Second Law** - the acceleration of an object is directly proportional to the magnitude of the net force, is in the same direction as the net force, and is inversely proportional to the mass of the object.

**Newton's Third Law** - if two objects interact, the force on object 1 by object 2 is equal to and opposite the force exerted on object 2 by object 1. Forces act in pairs and each pair is split between the two interacting objects.