



Topic 2 - Mechanics

#	Physical Quantity	Definition
1	Closed System	" Is one that does not exchange any energy or matter with any object in the environment, and is not affected by any force in the environment."
2	Position	" Is the location that an object has at a given time relative to a reference position, called the origin."
3	Distance	" Is a scalar that is the total length of the path taken from an initial position to a final position."
4	Displacement	" Is a vector that is the shortest distance from an initial position to a final position."
5	Speed	" Is the rate of change of distance."
6	Velocity	" Is the rate of change of displacement."
7	Acceleration	" Is the rate of change of velocity."
8	Uniform Linear Acceleration	" Is a straight line motion with constant acceleration that produces a constant change in velocity in equal time intervals."
9	A Force	" Is an external influence that can cause an object to change its state of rest or motion. It is a vector quantity."
10	The Weight, W	" of an object is the product of its gravitational mass m and the gravitational field strength g at the location of the object."
11	The Normal Force, F_N	" Is the component of the contact force acting perpendicular to the surface that counteracts the body."
12	Newton's First Law of Motion (Law of Inertia)	" A body will remain at rest or moving with constant velocity along a straight line, unless acted upon by an unbalanced force."
13	Inertia	" of an object is the resistance to a change in its state of motion."
14	Newton's Second Law of Motion (Version 1)	" The net force on a body of constant mass is proportional to that body's acceleration and is in the same direction as the acceleration."
15	Newton's Second Law of Motion (Version 2)	" The rate of change of momentum of a body is directly proportional to the unbalanced force acting on that body and takes place in the same direction."
16	Newton's Third Law of Motion	" For every action force, there is a simultaneous reaction force that is equal in magnitude and opposite in direction."
17	Work	" Is the scalar product of force and displacement when the applied force lies in the direction of the displacement."
18	Energy	" Is the ability to do work."
19	Kinetic Energy	" of a rigid object is its energy of motion."
20	Gravitational Potential Energy	" Is the energy an object has because of its position in a gravitational field."
21	Friction	" Is a dissipative force that does negative work on an object in motion and transforms mechanical kinetic energy into random thermal energy."
22	Power - Def.1	" Is the rate of doing work."
23	Power - Def.2	" Is the rate at which work is done by a force, F applied to an object moving at a constant velocity, v ."
24	Momentum	" of an object is the product of its mass and velocity."
25	Collision	" Is an interaction between objects that involves a change in their velocities and therefore in their momenta."
26	Law of Conservation of Momentum	" For a system of isolated bodies, the total momentum is always the same if no external force acts on the system."
27	Impulse	" Is the change of momentum of an object when the object is acted upon by a force for an interval of time."