When something changes its velocity	The rate of change of velocity of a moving object. Can result from a change in speed and/or a change in direction	On surface of earth, value is 9.8 ms^{-2}; increases nearer the poles, decreases with altitude and depth inside the earth	The maximum displacement of a body from the equilibrium position during an oscillatory motion
Accelerate	**Acceleration**	**Acceleration due to gravity**	**Amplitude (of an oscillation)**
The rate of change of angular velocity of a rotating body.	The angle described at the center of the circle by a moving body along a circular path	Frequency expressed in radians per second	Mass x angular velocity for an object undergoing circular motion
Angular Acceleration	**Angular Displacement**	**Angular frequency**	**Angular momentum**
The rate of change of angular displacement of a rotating body.	Total displacement divided by the total time taken	The imaginary line about which a planet or other object rotates	When a number of forces act on a body, and the resultant force is zero
Angular Velocity	**Average velocity**	**Axis**	**Balanced Forces**

Force required to keep an object moving in a circle	Momentum after minus momentum before	Velocity after minus velocity before	The motion of a body along a circular path
Centripetal force	**Change in momentum**	**Change in velocity**	**Circular Motion**
An orbit that is circular	Objects hitting each other	Sum of masses involved	When energy is transformed from one type of energy into another , the total energy before and after are always the same
Circular orbit	**Collision**	**Combined mass**	**Conservation of Energy**
Mass, including single atoms, is neither created nor destroyed in a chemical reaction (not measurably anyway!)	The total momentum of a group of a closed system remains constant in the absence of external forces	Speed that stays the same	Any effect causing loss of energy during SHM e.g. Air resistance
Conservation of mass	**Conservation of momentum**	**Constant speed**	**Dampen**

Negative acceleration	The change in the position of an object in a particular direction	The actual length of the path traveled by a body irrespective of the direction is called the distance traveled	Collision where kinetic energy is conserved
Deceleration	**Displacement**	**Distance**	**Elastic collision**
Set of formulas used to describe motion mathematically	Where the mass wants to be in simple harmonic motion	The minimum velocity with which an object must be thrown upwards so as to escape into space	How much a spring is extended (stretched or compressed) compared to its natural length
Equations of motion	**Equilibrium Position**	**Escape Velocity**	**Extension of a spring**
Forces change the state of rest or of uniform motion, the direction of motion, or the shape and size of a body	The force with which two objects attract each other because of their masses	The motion of a body towards the earth when no other force except weight acts on it	The force that resists the motion of one surface relative to another with which it is in contact
Force	**Force of gravitation**	**Free fall**	**Friction**

The Universal Gravitational constant G which appears in the equation for Newton's law of gravitation	Strength of the gravitational field strength at a particular point - known locally as g	Energy stored in a gravitational field when an object is moved vertically upwards	Force of attraction between two objects due to their mass
Gravitational constant G	**Gravitational Field Strength**	**Gravitational Potential Energy**	**Gravity**
A circle that involves no gain or loss in gravitational potential energy	Change in momentum caused by an external force	Collision where kinetic energy is not conserved (some energy is converted to sound or heat etc.)	The property of matter that causes it to resist any change in its state of rest or of uniform motion
Horizontal circle	**Impulse**	**Inelastic collision**	**Inertia**
Energy possessed by a body by the virtue of its motion	The quantity of matter contained in a body It remains the same everywhere	Anything that occupies space and has mass	The product of a body's mass and velocity
Kinetic Energy	**Mass**	**Matter**	**Momentum**

Manner of how a body moves	The resulting force after all forces have been added using vectors	A unit of force defined as 1 Newton force is needed to accelerate a 1 kg mass 1 ms^{-2}	A body continues in a state of rest or of uniform motion in a straight line unless it is acted upon by an external force
Motion	**Net force**	**Newton**	**Newton's first law of motion**
Force between two particles is proportional to their masses & inversely proportional to the square of the distance between them	The rate of change of momentum is equal to force OR force acting on a body is equal to the product of its mass and acceleration	To every action there is an equal and opposite reaction. The action and reaction act on two different bodies simultaneously	When the velocity of a body increases by unequal amounts in equal intervals of time
Newton's law of gravitation	**Newton's second law of motion**	**Newton's third law of motion**	**Non Uniform Acceleration**
When a body travels unequal distances in equal intervals of time	Covers unequal distances in equal intervals of time in one direction/ Covers equal distances in equal intervals but changes direction	Initial position of an object	The to and fro motion of a body about its mean position
Non Uniform Speed	**Non Uniform Velocity**	**Origin**	**Oscillatory motion**

A mass (called “Bob”) tied to a piece of string	For a particular vibration, the time for one complete oscillation	Point upon which an object turns or rotates	The energy of a body due to its height or the energy of a body due to its shape
Pendulum	**Period**	**Pivot**	**Potential Energy**
An object thrown into space either horizontally and under the action of gravity	Distance from centre of circle to edge	The horizontal distance traveled by a projectile	The motion of a body in a straight line is called rectilinear motion.
Projectile	**Radius**	**Range**	**Rectilinear Motion**
The frequency of vibration of an elastic object that depends on the size, composition, and shape of the object	The force which moves an oscillating body back towards its mean position whenever it is displaced	Negative acceleration	One full circle (2π)
Resonant frequency	**Restoring force**	**Retardation**	**Revolution**

Measure of the reluctance of an object to change its rotation	The vibratory motion that occurs when there is a restoring force opposite to and proportional to a displacement	The distance traveled by a body in one unit of time is called its speed	Force required to extend or compress a spring by one metre
Rotational Inertia	**Simple harmonic motion**	**Speed**	**Spring constant**
When a body changes its position with respect to a fixed point	When a body does not change its position with respect to a fixed point	Velocity in a perpendicular direction to the centripetal force at a given instant	Force in object that opposes them being stretched
State of Motion	**State of Rest**	**Tangential velocity**	**Tension force**
The time taken by a projectile from the moment it is thrown until it touches the ground	Turning force (not applied through the centre of mass)	When a number of forces act on a body and the resultant force is not zero	When the velocity of a body increases by equal amounts in equal intervals of time
Time of flight	**Torque**	**Unbalanced forces**	**Uniform Acceleration**

The motion of an object in a circular path with uniform speed	When a body travels equal distances in equal intervals of time then it is said to have uniform speed.	When a body travels along a straight line in particular direction and covers equal distances in equal intervals of time	6.67×10^{-11} Used in the formula for Newton's Law on universal gravitation
Uniform Circular Motion	**Uniform Speed**	**Uniform Velocity**	**Universal Gravitational**
Every object in the universe is attracted to every other object	Numerically add vectors by use of Pythagoras's theorem to calculate magnitude and direction	A vector (e.g. Force) separated into vertical and horizontal components	Scale diagram to show magnitude and direction of vectors
Universal law of gravitation	**Vector addition**	**Vector components**	**Vector diagram**
A quantity, which needs both magnitude and direction to describe it	Distance traveled by a body in a particular direction per unit time	Circular motion where the speed, as well as the direction of the object, is constantly changing	Vector quantities can be separated into two components at 90^{O} to each other – horizontal and vertical
Vector Quantity	**Velocity**	**Vertical circle**	**Vertical component**

The force with which a body is attracted towards the center of the earth	Apparent loss of weight of a body in free-fall	When the apparent weight of a body becomes zero. All objects while falling freely experience this	Work is done when force acting on a body moves it
Weight	**Weightless**	**Weightlessness**	**Work**