No Brain Too Small ● PHYSICS

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	Total displacement divided by the total time taken
Accelerate	**Acceleration**	**Acceleration due to gravity**	**Average velocity**
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	Force required to keep an object moving in a circle	Momentum after minus momentum before
Axis	**Balanced Forces**	**Centripetal force**	**Change in momentum**
Velocity after minus velocity before	The motion of a body along a circular path	An orbit that is circular	Objects hitting each other
Change in velocity	**Circular Motion**	**Circular orbit**	**Collision**

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	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
Combined mass	**Conservation of Energy**	**Conservation of mass**	**Conservation of momentum**
Speed that stays the same	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
Constant speed	**Deceleration**	**Displacement**	**Distance**
Set of formulas used to describe motion mathematically	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
Equations of motion	**Force**	**Force of gravitation**	**Free fall**

The force that resists the motion of one surface relative to another with which it is in contact	The Universal Gravitational constant G which appears in the equation for Newton's law of gravitation	Force of attraction between two objects due to their mass	A circle that involves no gain or loss in gravitational potential energy
Friction	**Gravitational constant G**	**Gravity**	**Horizontal circle**
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	Energy possessed by a body by the virtue of its motion
Impulse	**Inelastic collision**	**Inertia**	**Kinetic Energy**
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	Manner of how a body moves
Mass	**Matter**	**Momentum**	**Motion**

The resulting force after all forces have been added using vector	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	Force between two particles is proportional to their masses & inversely proportional to the square of the distance between them
Net force	**Newton**	**Newton's first law of motion**	**Newton's law of gravitation**
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	When a body travels unequal distances in equal intervals of time
Newton's second law of motion	**Newton's third law of motion**	**Non Uniform Acceleration**	**Non Uniform Speed**
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	A mass (called "Bob") tied to a piece of string
Non Uniform Velocity	**Origin**	**Oscillatory motion**	**Pendulum**

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	An object thrown into space either horizontally and under the action of gravity
Period	**Pivot**	**Potential Energy**	**Projectile**
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.	Negative acceleration is called retardation. In retardation the velocity of a body decreases with time.
Radius	**Range**	**Rectilinear Motion**	**Retardation**
One full circle (2π)	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	When a body changes its position with respect to a fixed point
Revolution	**Speed**	**Spring constant**	**State of Motion**

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	The time taken by a projectile from the moment it is thrown until it touches the ground
State of Rest	**Tangential velocity**	**Tension force**	**Time of flight**
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	The motion of an object in a circular path with uniform speed
Torque	**Unbalanced forces**	**Uniform Acceleration**	**Uniform Circular Motion**
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	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
Uniform Speed	**Uniform Velocity**	**Vector addition**	**Vector components**

Scale diagram to show magnitude and direction of vectors	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 diagram	**Vector Quantity**	**Velocity**	**Vertical circle**
Vector quantities can be separated into two components at 90° to each other – horizontal and vertical	The force with which a body is attracted towards the center of the earth	Apparent loss of weight of a body in free-fall	Work is done when force acting on a body moves it
Vertical component	**Weight**	**Weightless**	**Work**