

Definitions and Concepts for Edexcel Physics A Level

Topic 2: Mechanics

Centre of Mass: The average point of all parts of an object weighted according to their mass. It is the point through which the total mass of the object is said to act.

Conservation of Energy: In a closed system with no external forces the energy of the system before an event is equal to the energy of the system after the event. The energy does not need to be in the same form after the event as it was before the event.

Conservation of Momentum: In a closed system with no external forces the momentum of the system before an event is equal to the momentum of the system after the event.

Drag: The resistance against the motion of an object through a fluid. It is usually proportional to the speed of the object.

Efficiency: The useful output (e.g. power, energy) of a system divided by the total output.

Elastic Collision: When the kinetic energy of a system before an event is equal to the kinetic energy of the system after the event.

Equilibrium: An object is at equilibrium when the moments on it about a point are balanced and the resultant force on the object is zero.

Force: The rate of change of momentum of an object. The product of the object's mass with its acceleration.

Friction: The resistance against the motion of an object. This could be caused by the air passing over the object or by the contact of the object with the surface it is moving on.

Gravitational Potential Energy: The energy gained by an object when it is raised by a height in a gravitational field.

Impulse: The change of momentum of an object when a force acts on it. Equal to the area underneath a force-time graph.

Inelastic Collision: When the kinetic energy of a system before an event is not equal to the kinetic energy of the system after the event. The kinetic energy has been transferred to other forms.

Kinetic Energy: The energy an object has due to its motion. It is the amount of energy that would be transferred from the object when it decelerates to rest.



Lift: A force acting perpendicular to the flow of air or liquid around an object, typically upwards and against the force of gravity.

Moment: The product of a force and the perpendicular distance from the line of action to the pivot about which the force is acting.

Momentum: The product of an object's mass and its velocity.

Newton's First Law: An object at a constant velocity will remain at a constant velocity unless acted on by a resultant force. (If this constant velocity is zero the object is at rest).

Newton's Second Law: If an object is acted upon by a resultant force it will accelerate. The acceleration is inversely proportional to the mass of the object and directly proportional to the force acting upon it.

Newton's Third Law: Every action has an equal and opposite reaction. If an object A exerts a force on object B, object B will exert a force of equal magnitude but of opposite direction on object A.

Power: The work done by a system divided by the time taken for that work to be done.

Resultant Force: The sum of all forces on an object.

Scalar: A quantity with only magnitude and no direction (e.g. mass, energy, length).

Terminal Velocity: The maximum velocity an object can achieve. It is the point at which frictional forces and driving forces are balanced and so no acceleration occurs and the resultant force on the object is 0 N.

Vector: A quantity with magnitude and direction (e.g. velocity, acceleration, force).

Weight: The force of gravity on an object, the product of the object's mass and the acceleration due to gravity.

Work Done: A force applied over a distance, it is the energy transferred in that distance.

