

Definitions and Concepts for CAIE Physics A-level

Topic 3: Dynamics

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.

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

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

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.

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 exerts a force on another object, then the other object must exert a force back, that is opposite in direction and equal in magnitude.

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.

Upthrust: The upwards force that a fluid applies on an object.

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

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