Definitions and Concepts for CAIE Physics A-level

Topic 4: Forces, Density and Pressure

Centre of Gravity: The single point through which the object's weight can be said to act.

Centre of Mass: The single point through which all the mass of an object can be said to act.

Couple: Two equal and opposite parallel forces that act on an object through different lines of action. It has the effect of causing a rotation without translation.

Density: The mass per unit volume of a material.

Equilibrium: For an object to be equilibrium, both the resultant force and resultant moment acting on the object must be equal to zero.

Hydrostatic Pressure: $\Delta p = \rho g \Delta h$

Moment of Force: The product of a force and the perpendicular distance from the line of action of the force to the pivot.

Principle of Moments: For an object to be in equilibrium, the sum of the clockwise moments acting about a point must be equal to the sum of the anticlockwise moments acting about the point.

Pressure: The force that a surface experiences per unit area. It is measured in Pascals (Pa).

Triangle of Forces: A method of determining the resultant force of two forces. The two forces are joined tip to tail and the resultant force is given by the force that would complete the triangle.

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