Definitions and Concepts for WJEC (Eduqas) Physics A-level

Component 3 - Option C: The Physics of Sport

Angular Acceleration: The rate of change of an object's angular velocity. Angular acceleration is a vector quantity.

Angular Displacement: The angle in radians, that a rotating object has travelled through.

Angular Momentum: The product of an object's moment of inertia and angular velocity.

Angular Velocity: The rate of change of an object's angular displacement. Angular velocity is a vector quantity.

Bernoulli's Equation: An application of the conservation of energy to fluids. It demonstrates that if the pressure or potential energy of a fluid lowers, the speed of the flow increases.

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

Coefficient of Restitution: The ratio of the speed of separation of two objects after a collision, to their speed of approach. A perfectly elastic collision has a coefficient of restitution of 1.

Conservation of Angular Momentum: The angular momentum before an event is equal to the angular momentum after an event, as long as no external torque acts.

Conservation of Energy: The law that energy can be transferred, stored or dissipated but never created or destroyed.

Drag Coefficient: A dimensionless constant used to compare the drag forces that different shaped objects will experience in a fluid flow.

Drag Force: The resistive force experienced by an object moving through a fluid. It is directly proportional to the cross-sectional area of the object, the density of the fluid and the square of the relative velocity of the flow.

Moment of Inertia: The product of the mass and the square of the radius (from the axis of rotation) for a rotating body. For extended objects, the moments of inertia for each element can be summed.

Moment: The turning effect of a force, equal to the product of the magnitude of the force and the perpendicular distance from the pivot to the line of action of the force.

Principle of Moments: For an object in equilibrium, the sum of the clockwise moments about any point on the object must equal the anticlockwise moments about that same point.

Projectile Motion: Motion under the acceleration of gravity. The vertical and horizontal components of the object's motion should be analysed separately since they are independent of each other.

Rotational Kinetic Energy: The store of energy of a rotating object. It is directly proportional to the object's moment of inertia and the square of its angular velocity.

Stability: A measure of the likelihood of an object toppling. Object's are stable if the line of action of their weight lies within the object's base.

Toppling: An object will topple if the line of action of the object's weight lies outside of the object's base. This is due to the weight causing a moment that causes the object to rotate and topple.

Torque: A force that produces rotation. It is equal to the product of force and rotational radius.