

Glossary

angular acceleration the rate of change of angular velocity with time

angular momentum the product of moment of inertia and angular velocity

change in angular velocity the difference between final and initial values of angular velocity

kinematics of rotational motion describes the relationships among rotation angle, angular velocity, angular acceleration, and time

law of conservation of angular momentum angular momentum is conserved, i.e., the initial angular momentum is equal to the final angular momentum when no external torque is applied to the system

moment of inertia mass times the square of perpendicular distance from the rotation axis; for a point mass, it is $I = mr^2$ and, because any object can be built up from a collection of point masses, this relationship is the basis for all other moments of inertia

right-hand rule direction of angular velocity and angular momentum L in which the thumb of your right hand points when you curl your fingers in the direction of the disk's rotation

rotational inertia resistance to change of rotation. The more rotational inertia an object has, the harder it is to rotate

rotational kinetic energy the kinetic energy due to the rotation of an object. This is part of its total kinetic energy

tangential acceleration the acceleration in a direction tangent to the circle at the point of interest in circular motion

torque the turning effectiveness of a force

work-energy theorem if one or more external forces act upon a rigid object, causing its kinetic energy to change from KE_1 to KE_2 , then the work W done by the net force is equal to the change in kinetic energy