

[Home](#) > Define linear velocity, angular velocity, absolute velocity and state the relation between linear velocity and angular velocity.

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Question:

Define linear velocity, angular velocity, absolute velocity and state the relation between linear velocity and angular velocity.

Answer:

Linear Velocity: It may be defined as the rate of change of linear displacement of a body with respect to the time. Since velocity is always expressed in a particular direction, therefore it is a vector quantity. Mathematically, linear velocity, $v = ds/dt$

Angular Velocity: It may be defined as the rate of change of angular displacement with respect to time. It is usually expressed by a Greek letter ω (omega). Mathematically, angular velocity, $\omega = d\theta /dt$

Absolute Velocity: It is defined as the velocity of any point on a kinematic link with respect to fixed point. Relation between v and ω : $V = r \cdot \omega$ Where V = Linear velocity. ω = angular velocity. r = radius of rotation.

