

what is centripetal force

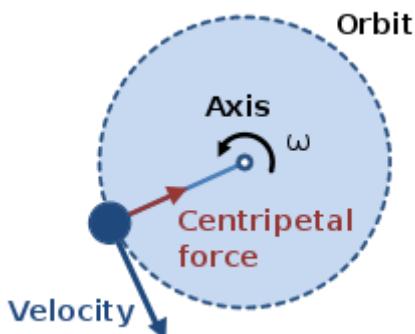
Centripetal force is a force that makes a body follow a curved path: its direction is always orthogonal to the velocity of the body, and is toward the fixed point of the instantaneous center of curvature of the path. Centripetal force is generally the cause of circular motion.

The magnitude of the centripetal force on an object of mass m moving at tangential speed v along a path with radius of curvature r is:

$$F = ma_c = \frac{mv^2}{r}$$

This force is also sometimes written in terms of the angular velocity ω of the object about the center of the circle:

$$F = mr\omega^2.$$



Examples:

