# Answer on Question #51295, Physics, Mechanics | Kinematics | Dynamics

The moment of inertia of a thin uniform rod of mass M and length L about an axis passing through it's midpoint and perpendicular to its length is I its moment of inertia about an axis passing through one of its ends perpendicular to it's length is..?

## Solution:

The moment of inertia of a rod of mass M and length L about an axis, perpendicular to its length, which passes through its midpoint is

$$I = \frac{1}{12}ML^2$$

This is a standard result. Using the parallel axis theorem, the moment of inertia about a parallel axis passing through one of the ends of the rod is

$$I' = I + M\left(\frac{L}{2}\right)^2 = \frac{1}{3}ML^2 = 4I$$

**Answer:** $I' = 4I$

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