



The moment of inertia of a rod about its center of mass (point O , the mid-point in the sketch) is given by $I_{cm} = \frac{m L^2}{12}$. Here L is length of the rod.

Based on the law of parallel axis $I' = I_{cm} + M D^2$, determine the moment of inertia defined by a rotating axis parallel to $O'O''$, and this axis passes through A , one of the end points of the rod.

- A) $I' = \frac{m L^2}{3}$.
- B) $I' = \frac{m L^2}{6}$.
- C) $I' = \frac{m L^2}{12}$.

$$I' = m \left(\frac{L}{2} \right)^2 + I_{cm} = \frac{m L^2}{4} + \frac{m L^2}{12} = \frac{m L^2}{3}.$$

Answer **A**.