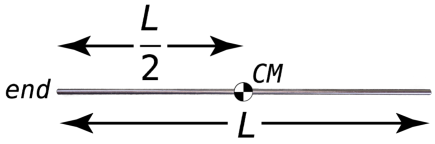
Flipping Physics Lecture Notes:

Parallel-Axis Theorem Example
http://www.flippingphysics.com/parallel-axis-example.html

We have already derived the Parallel-Axis Theorem:[1]

$$I = I_{CM} + MD^2$$

We have already derived the equations for the rotational inertia of a uniform, long, thin rod about an axis which is perpendicular to the rod and goes through both its center of mass and its end:



$$I_{CM} = \frac{1}{12}ML^2 \;\&\; I_{end} = \frac{1}{3}ML^2$$

And we can use the parallel-axis theorem:

$$I_{end} = I_{CM} + MD^2 = \frac{1}{12}ML^2 + M\left(\frac{L}{2}\right)^2 = \frac{1}{12}ML^2 + M\left(\frac{L^2}{4}\right) = \left(\frac{1}{12} + \frac{1}{4}\right)ML^2$$

$$\Rightarrow I_{end} = \left(\frac{1}{12} + \frac{3}{12}\right)ML^2 = \left(\frac{4}{12}\right)ML^2 \Rightarrow I_{end} = \frac{1}{3}ML^2$$

The Physics Works!!

[1] http://www.flippingphysics.com/parallel-axis-theorem.html