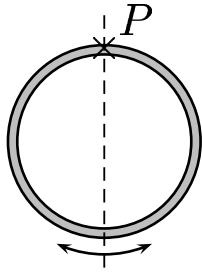


The period of a physical pendulum is $T = 2\pi \sqrt{\frac{I}{mgb}}$, where m is the mass, I the moment of inertia about the pivot point and b the distance between the pivot point and the center of gravity. Consider the setup where the pivot point P is at the top (see sketch).



Determine the I and b for a loop with a radius r and mass m .

- A) $b = r$ and $I = m r^2$.
- B) $b = r$ and $I = 2 m r^2$.
- C) $b = 2 r$ and $I = m r^2$.
- D) $b = 2 r$ and $I = 2 m r^2$.

b is the distance between P and the center, so $b = r$.

$$I = I_{cm} + M D^2 = m r^2 + m r^2 = 2 m r^2.$$

Answer **B**.