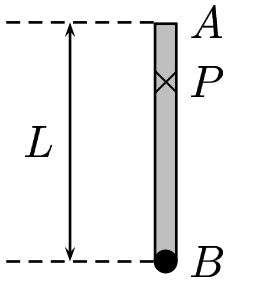
Given: A metal bar with mass m_1 and length L. The pivot point is at P, a distance $\overline{AP} = \dfrac{L}{4}$, from the end. Mass m_2 is attached to the other end, at B. The period of oscillation may be determined by the general expression, $T = 2\,\pi\sqrt{\dfrac{I}{m\,g\,b}}$, where m is mass of the system, I, moment of inertia about the pivot point, and b the distance between the pivot point and the center gravity.



Consider the case $m_1 = m_2$. Choose one

A) $m = m_1 + m_2$ and $b = \dfrac{L}{2}$.

B) $m = m_1 + m_2$ and $b = \dfrac{3\,L}{4}$.

C) $m = m_2$ and $b = \dfrac{L}{2}$.

D) $m = m_2$ and $b = \dfrac{3\,L}{4}$.

Mass of the the compound system, $m = m_1 + m_2$. By inspection, the center of mass this system is at a distance $\dfrac{L}{4}$ from m_2, so $b = \dfrac{L}{2}$.

Answer **A** .

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