Given: A metal bar with mass \( m_1 \) and length \( L \). The pivot point is at \( P \), a distance \( \overline{AP} = \frac{L}{4} \), 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, \( T = 2\pi \sqrt{\frac{I}{mgb}} \), 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 \( b = \frac{L}{2} \).

B) \( m = m_1 + m_2 \) and \( b = \frac{3L}{4} \).

C) \( m = m_2 \) and \( b = \frac{L}{2} \).

D) \( m = m_2 \) and \( b = \frac{3L}{4} \).

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

Answer A.