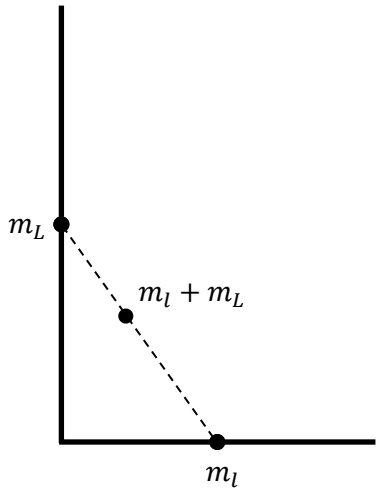
Answer on Question#56191 - Physics - Classical Mechanics

What is the centre of mass of a L shaped body?

Answer:



Let the length of the vertical section be L and mass m_L. Its center of mass lies at the center of it. The same is true for the horizontal section which's length is l and mass m_l. Distance between these two centers is

$$S = \sqrt{\left(\frac{L}{2}\right)^2 + \left(\frac{l}{2}\right)^2}$$

Therefore the center of mass of the whole body is situated on the line connecting these two centers of mass at distance

$$S_c = S\frac{m_l}{m_L + m_l} = \frac{m_l}{m_L + m_l}\sqrt{\left(\frac{L}{2}\right)^2 + \left(\frac{l}{2}\right)^2}$$

form the center of mass of the vertical segment.