In a first class lever problem, a 15 kg board which is $l = 2.9$ m long is pivoted at the center. A $m_1 = 3.9$ kg object is placed at the left end of the board. The distance (?) from the pivot point on the right a $m_2 = 6.9$ kg object must be placed in order to maintain the system in static equilibrium is ___ meters.

Solution

The equilibrium condition

$$m_1 g \frac{l}{2} = m_2 g d.$$

So

$$d = \frac{m_1}{m_2} \times \frac{l}{2} = \frac{3.9}{6.9} \times 1.45 = 0.8 \text{ m}$$

Answer: $d = 0.8$ m.