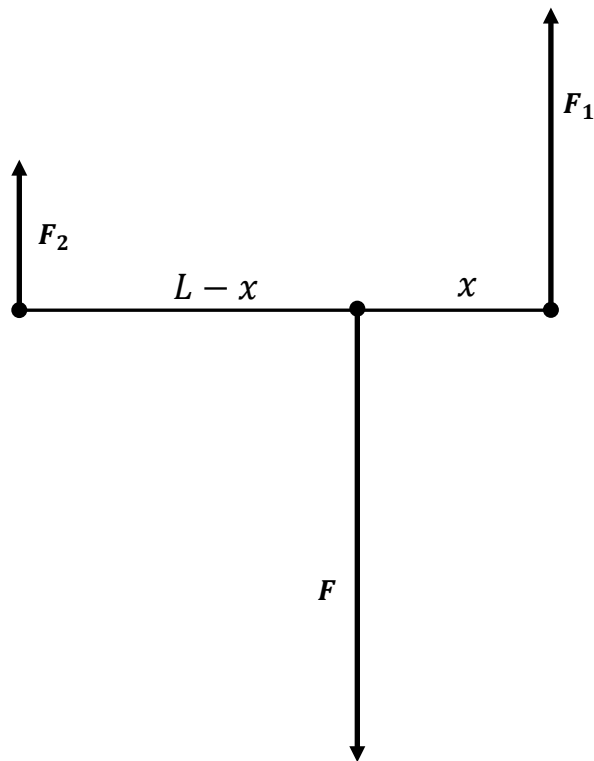


Answer on Question#56965 - Physics - Mechanics - Relativity

A weightless rod is acted upon by parallel force of $F_1 = 4 \text{ N}$ and $F_2 = 2 \text{ N}$ at the ends. Length of rod is $L = 3 \text{ m}$. To keep rod in equilibrium $F = 6 \text{ N}$ should be applied where?

Solution:



According to the principle of moments

$$F_2(L - x) = F_1x$$

Thus

$$x = \frac{F_2}{F_1 + F_2} L = \frac{2 \text{ N}}{4 \text{ N} + 2 \text{ N}} 3 \text{ m} = 1 \text{ m}$$

Answer: 1 m from the end where the force F_1 is applied.