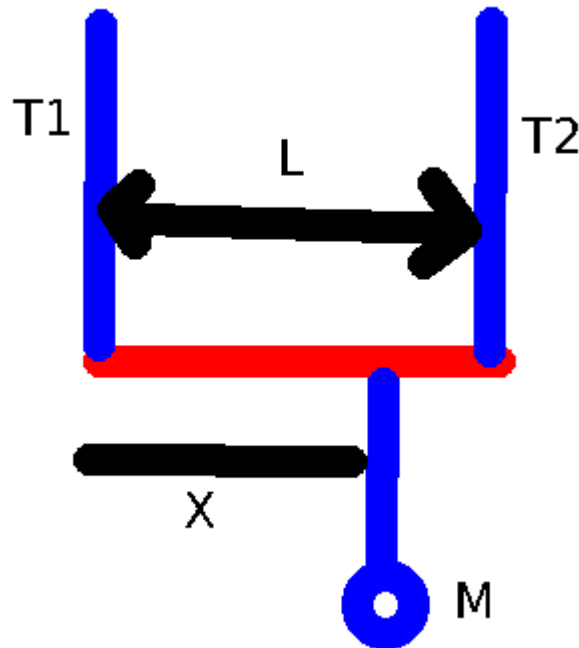


A board of length L and mass m has a mass M attached at a distance X from the left end. Find the tension in the two strings attached to the ends that are holding the board up.



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$$\begin{aligned}\sum \vec{F} &= 0 \Rightarrow T_1 + T_2 - mg - Mg = 0 \\ \sum \vec{\tau} &= 0 \Rightarrow 0 - mgL/2 - MgX + T_2 L = 0 \\ \Rightarrow T_2 &= g \left(\frac{m}{2} + \frac{MX}{L} \right) \Rightarrow T_1 = g(m + M) - g \left(\frac{m}{2} + \frac{MX}{L} \right) = g \left(\frac{m}{2} + M \frac{L-X}{L} \right)\end{aligned}$$