



$$\sum F_y = n_1 + n_2 - Mg - mg = 0 \quad (1)$$

$$\sum \tau_0 = n_2 d - Mg \frac{L}{2} - mg x = 0 \quad (2)$$

From (1):

$$n_1 + n_2 = (M+m)g$$

Just when the beam lifts, $n_1 \rightarrow 0$.

So

$$n_2 = (M+m)g$$

and subst. into (2):

$$(M+m)gd - Mg \frac{L}{2} - mgx = 0$$

$$\therefore x = \frac{1}{m} \left\{ (M+m)d - M \frac{L}{2} \right\}$$

$$\underline{x = 4m}$$

So, the distance from the

$$\text{right end} = L - 4m = \underline{1m}$$