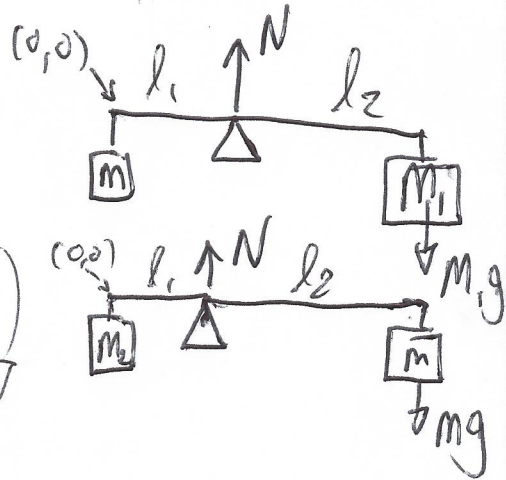


$$\begin{cases}
 1) & l_1 N_1 - (l_1 + l_2) M_1 g = 0 \\
 2) & l_1 N_2 - (l_1 + l_2) mg = 0 \\
 3) & -mg - M_1 g + N_1 = 0 \\
 4) & -M_2 g - mg + N_2 = 0
 \end{cases}$$

← Take 0 to be far left
 ← "



1) & 3):

$$l_1 (mg + M_1 g) - (l_1 + l_2) M_1 g = 0$$

$$*1) l_1 m - l_2 M_1 = 0$$

2) & 4):

$$l_1 (M_2 g + mg) - (l_1 + l_2) mg = 0$$

$$*2) -l_2 m + l_1 M_2 = 0$$

$$\frac{l_2}{l_1} = \frac{m}{M_1} \rightarrow m = M_1 \frac{l_2}{l_1} \rightarrow m = \frac{l_1}{l_2} M_2$$

Final step.
Use ratio l_2/l_1

$$m = \left(\frac{M_1}{m}\right) M_2 \Rightarrow m^2 = M_1 M_2 \quad \left(m = \sqrt{M_1 M_2}\right)$$