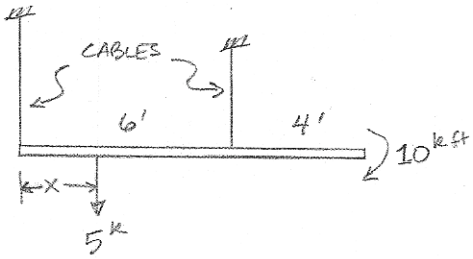
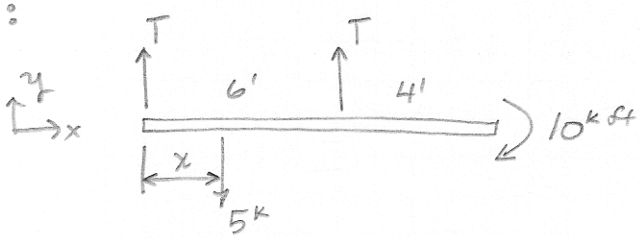
Find the distance x at which the 5k load should be applied so that the tension in each cable is equal.



SOLUTION:

FBD:



$+\uparrow \Sigma F_y = 0$

$2 \cdot T - 5^k = 0$

$T = 2.5^k$ or $2.5^k \uparrow$

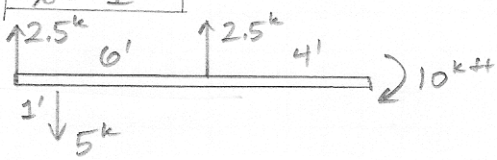
$\circlearrowleft + \Sigma M_{\text{AT LEFT END}} = 0$

$5^k \cdot x - 2.5^k \cdot 6' + 10^{k\,ft} = 0$

$5^k x = 5^{k'}$

$\boxed{x = 1\,ft}$

FBD



INDEPENDENT STATICS CHECK:

$\circlearrowleft + \Sigma M_{\text{AT END}} = 0$

$2.5^k (10') - 5^k (10' - 1') + 2.5^k (4')$

$+ 10^{k\,ft} = 0$

$25 - 45 + 10 + 10 = 0$

$45 - 45 = 0$ ✓✓