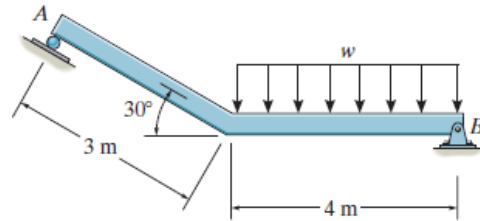


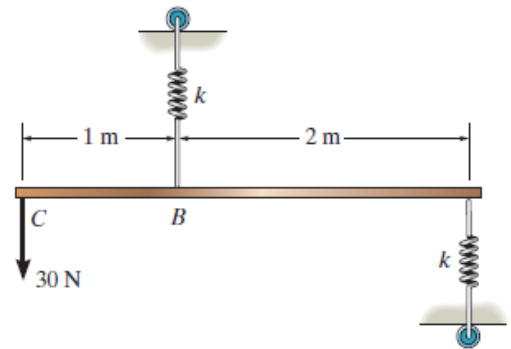
SPRING 2017

MAK104 - WORKING PROBLEMS 5

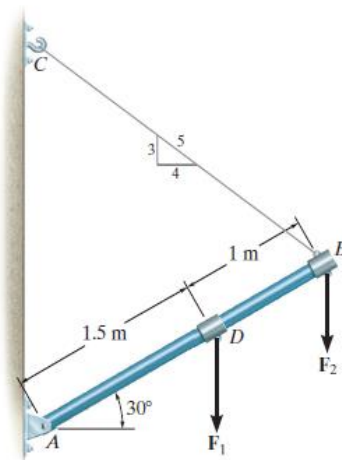
1. If the intensity of the distributed load acting on the beam is $w = 3 \text{ kN/m}$, determine the reactions at the roller A and pin B .



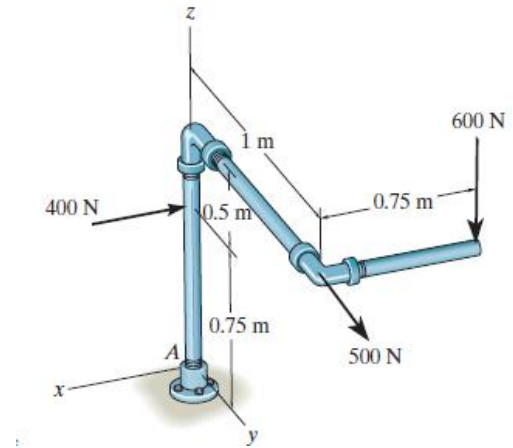
2. The bar of negligible weight is supported by two springs, each having a stiffness $k = 100 \text{ N/m}$. If the springs are originally unstretched, and the force is vertical as shown, determine the angle θ the bar makes with the horizontal, when the 30-N force is applied to the bar.



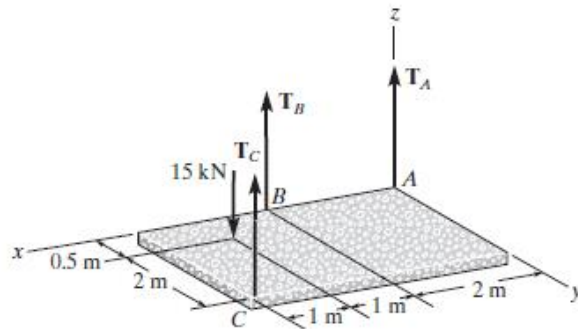
3. The boom supports the two vertical loads. Neglect the size of the collars at D and B and the thickness of the boom, and compute the horizontal and vertical components of force at the pin A and the force in cable CB . Set $F_1 = 800 \text{ N}$ and $F_2 = 350 \text{ N}$.



4. Determine the components of reaction at the fixed support A . The 400 N , 500 N , and 600 N forces are parallel to the x , y , and z axes, respectively.



5. The uniform concrete slab has a mass of 2400 kg . Determine the tension in each of the three parallel supporting cables when the slab is held in the horizontal plane as shown.



6. Determine the components of reaction at the ball-and-socket joint A and the tension in each cable necessary for equilibrium of the rod.

