

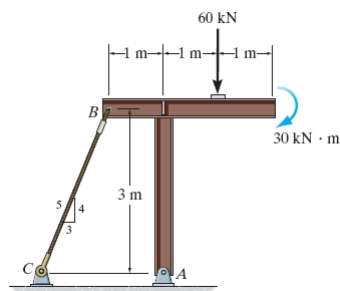
Exercise

•5-21. Determine the horizontal and vertical components of reaction at the pin A and the tension developed in cable BC used to support the steel frame.

$$T = 34.62 \text{ kN}$$

$$A_x = 20.77 \text{ kN} \quad \rightarrow$$

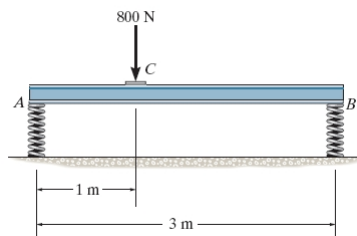
$$A_y = 87.69 \text{ kN} \quad \uparrow$$



Exercise

5-55. The horizontal beam is supported by springs at its ends. Each spring has a stiffness of $k = 5 \text{ kN/m}$ and is originally unstretched so that the beam is in the horizontal position. Determine the angle of tilt of the beam if a load of 800 N is applied at point C as shown.

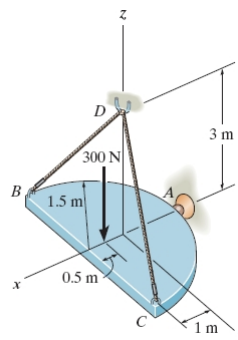
$$\alpha = \tan^{-1}\left(\frac{0.05333}{3}\right) = 1.02^\circ \quad \text{Ans}$$



Exercise

5-70. Determine the tension in cables BD and CD and the x, y, z components of reaction at the ball-and-socket joint at A .

$$\begin{aligned} T_{BD} &= T_{CD} = 117 \text{ N} \\ A_x &= 66.7 \text{ N} \\ A_y &= 0 \\ A_z &= 100 \text{ N} \end{aligned}$$



Exercise

5-91. Determine the normal reaction at the roller A and horizontal and vertical components at pin B for equilibrium of the member.

$$N_A = 8.00 \text{ kN} \quad B_x = 5.20 \text{ kN} \quad B_y = 5.00 \text{ kN}$$

