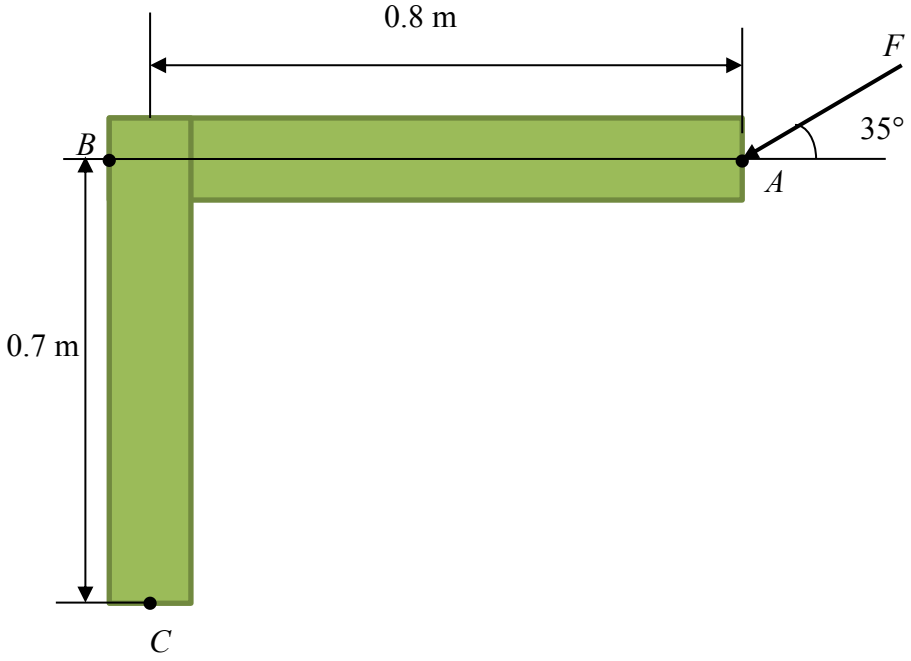
18. Given the force $F \sim N(100, 2^2)$ N, determine the moment at point *C*.



Solution

$$\curvearrowleft \qquad M_C = F\cos 35^\circ(0.7) - F\sin 35^\circ(0.8)$$

We have $F \sim N(100, 2^2)$ N, thus

$$\mu_{M_C} = \mu_F \cos 35^\circ(0.7) - \mu_F \sin 35^\circ(0.8) = 11.45 \text{ N}\cdot\text{m}$$

$$\sigma_{M_C} = \sqrt{\left(\sigma_F \cos 35^\circ(0.7)\right)^2 + \left(\sigma_F \sin 35^\circ(0.8)\right)^2} = 1.47$$

So, we have $M_C \sim N(11.45, 1.47^2)$ N·m. $\circlearrowright$