ME 2120 Recitation 8

Questions Taken from 9th Edition

Useful Equations

$$\sum \vec{F} = 0 \qquad \sum \overrightarrow{F_x} = 0 \qquad \sum \overrightarrow{F_y} = 0 \qquad \sum \overrightarrow{F_z} = 0$$

$$\sum \vec{M} = 0$$

$$\Sigma \vec{F}_{friction} = \mu \vec{N}$$

8.34 A 10-ft beam, weighing 1200 lb, is to be moved to the left onto the platform. A horizontal force **P** is applied to the dolly, which is mounted on frictionless wheels. The coefficients of friction between all surfaces are $\mu_s = 0.30$ and $\mu_k = 0.25$, and initially $x = 2$ ft. Knowing that the top surface of the dolly is slightly higher than the platform, determine the force **P** required to start moving the beam. (*Hint:* The beam is supported at *A* and *D*.)

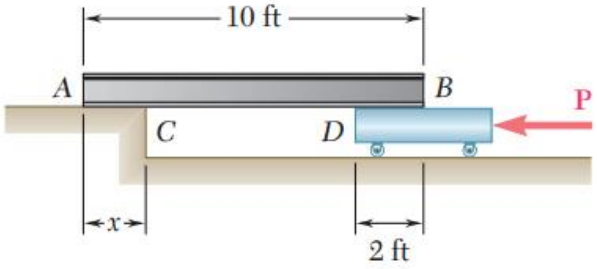

Fig. P8.34

8.17 The cylinder shown is of weight W and radius r, and the coefficient of static friction μ_s is the same at A and B. Determine the magnitude of the largest couple **M** that can be applied to the cylinder if it is not to rotate.

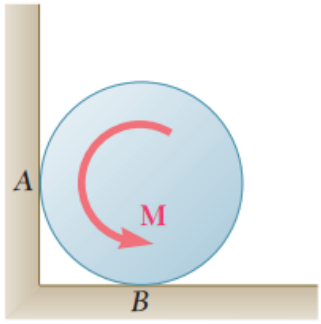

Fig. P8.17 and P8.18

8.139 The machine part ABC is supported by a frictionless hinge at B and a 10° wedge at C. Knowing that the coefficient of static friction at both surfaces of the wedge is 0.20, determine (*a*) the force **P** required to move the wedge, (*b*) the components of the corresponding reaction at B.

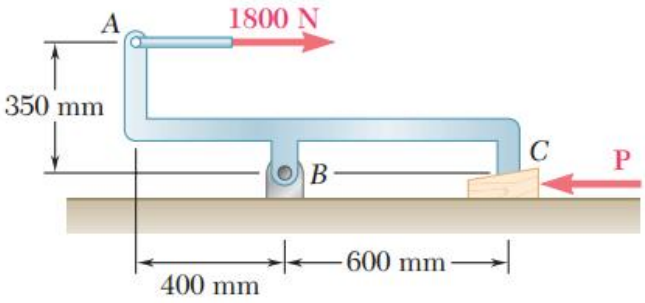

Fig. P8.139