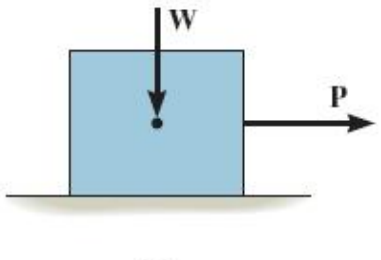
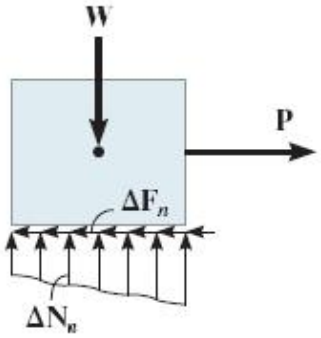
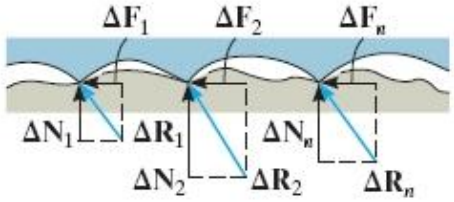


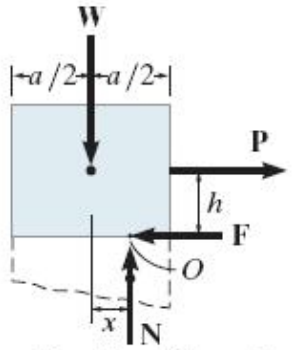
(a)



(b)



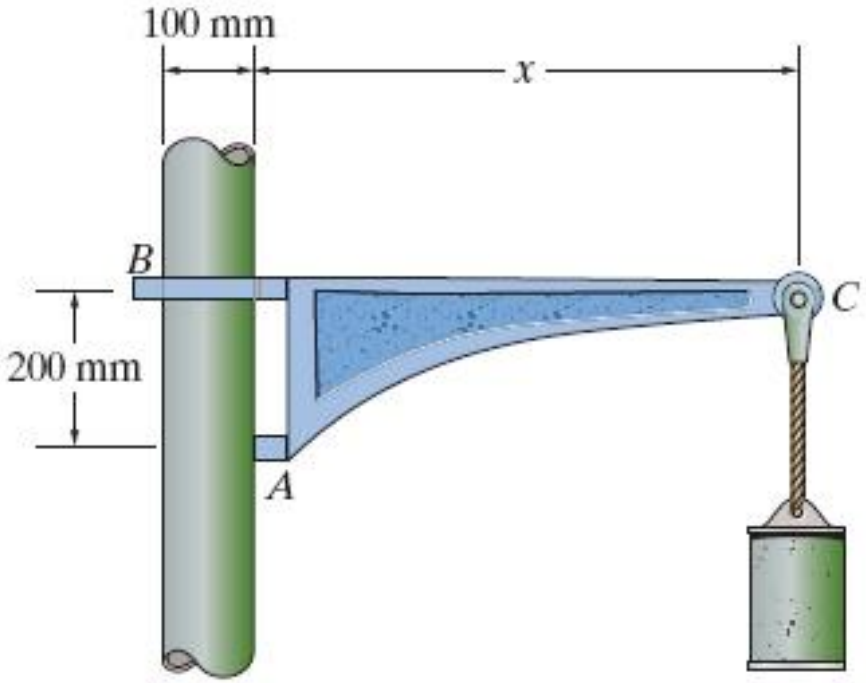
(c)



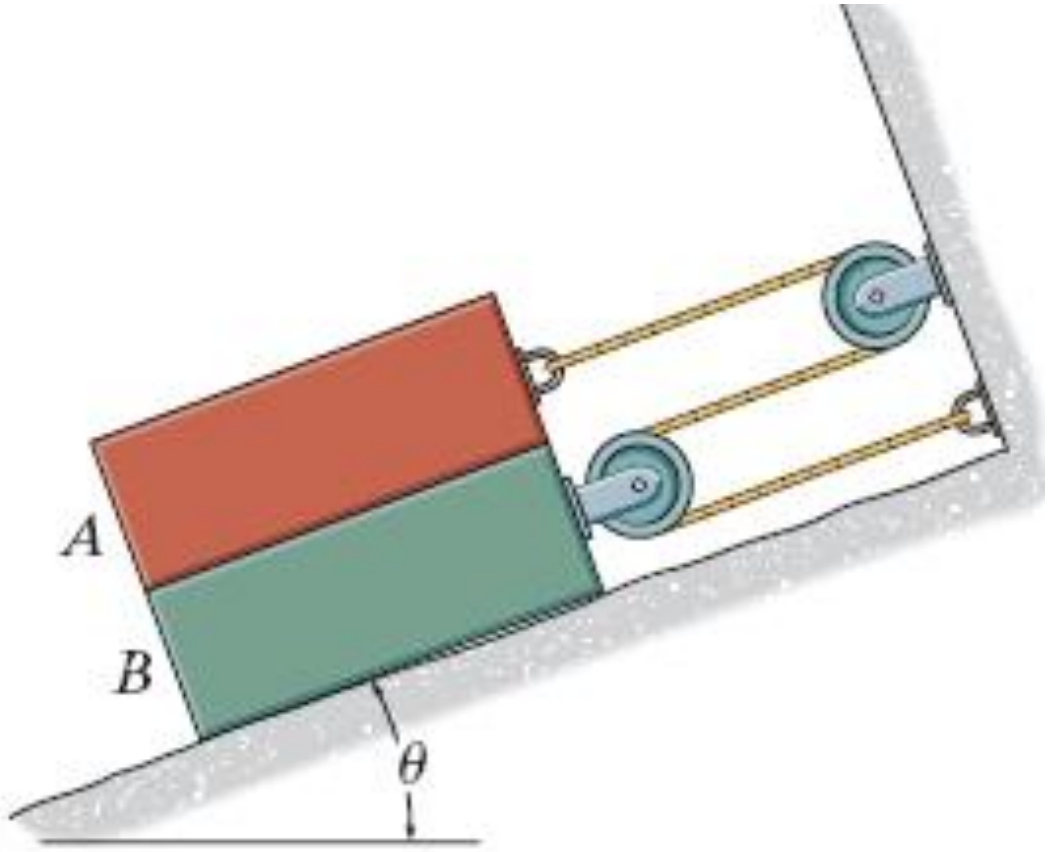
Resultant Normal and Frictional Forces

(d)

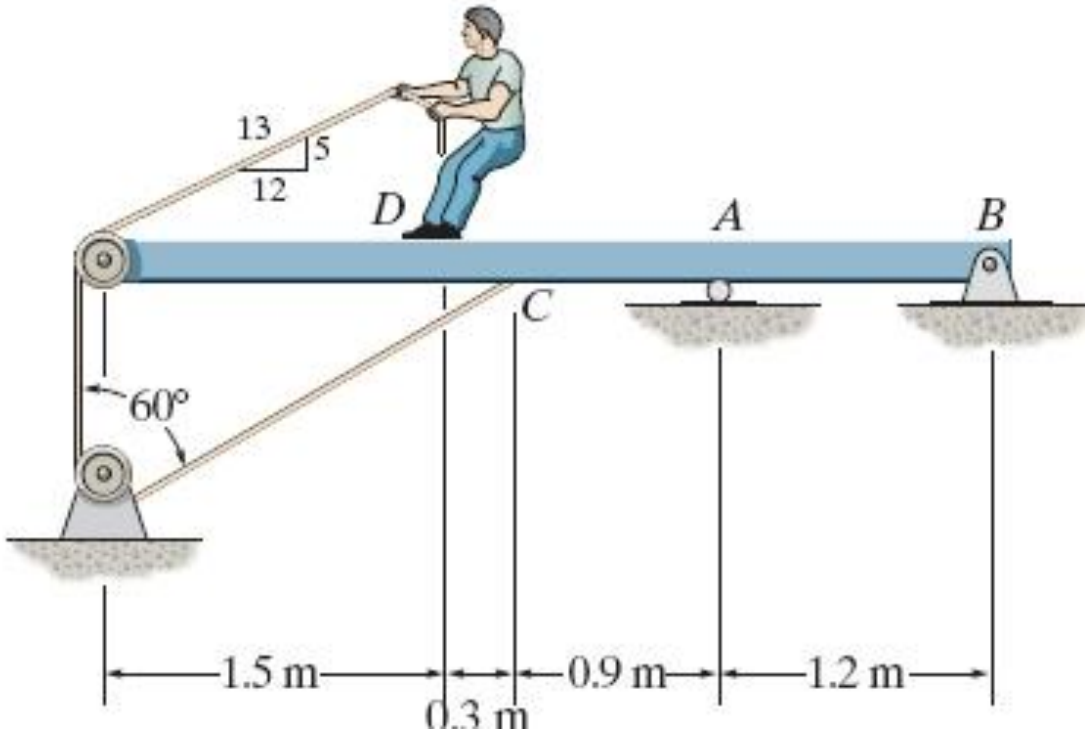
8-4. If the coefficient of static friction at a is $\mu_s = 0.4$ and the collar at B is smooth so it only exerts a horizontal force on the pipe, determine the minimum distance, x, so that the bracket can support the cylinder of any mass without slipping. Neglect the mass of the bracket.



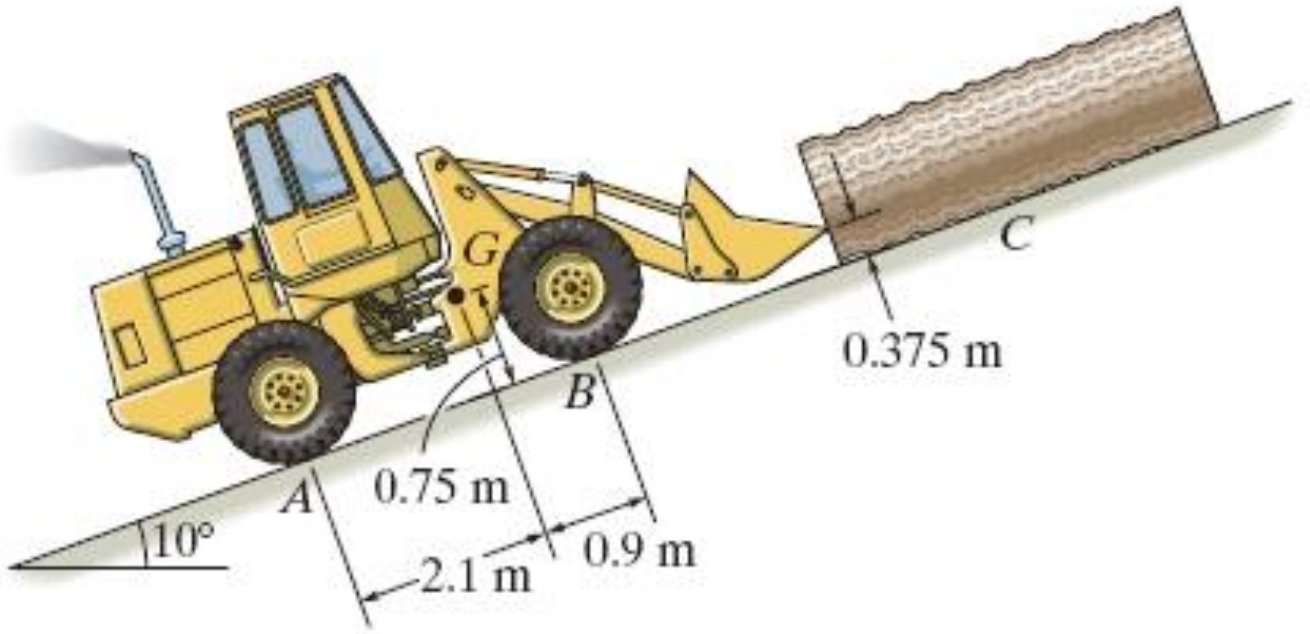
8-9. If the coefficient of friction at all contacting surfaces is μ_s determine the inclination, θ, at which the identical blocks, each of weight W, begin to slide.



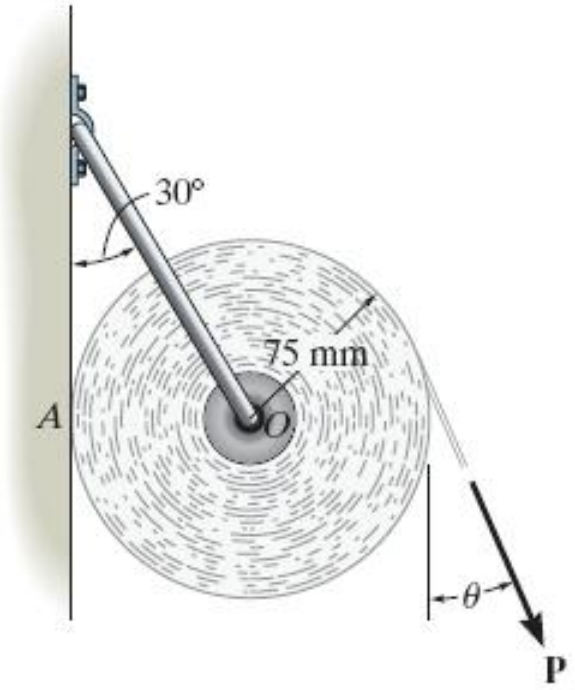
8-16. The 40 kg boy stands on the beam and pulls on the cord with a force large enough to just cause him to slip. If the coefficient of static friction between his shoes and beam is $\mu_s = 0.4$, determine the reactions at A and B. The beam is uniform and has a weight of 500 N. Neglect the size of the pulley and the thickness of the beam.



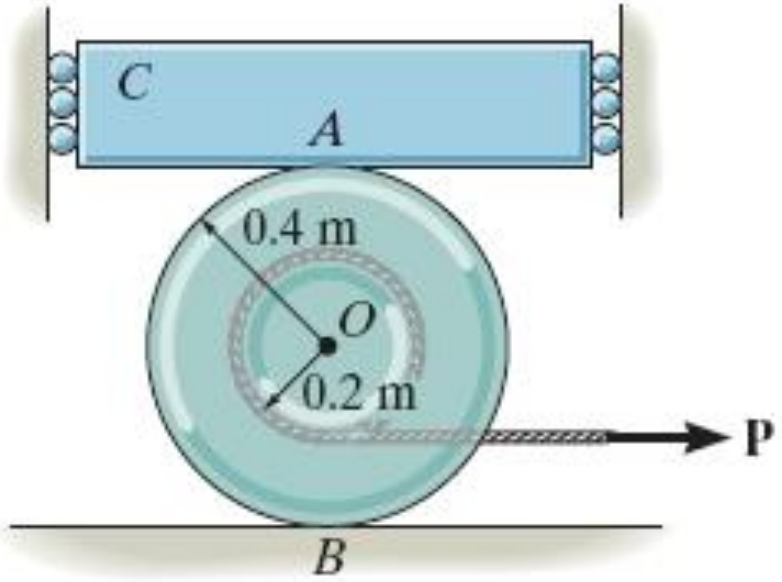
8-31. The tractor has a weight of 40 kN with the center of gravity at G. Determine the greatest weight of the log that can be pushed up the incline. The coefficient of friction between the log and the ground is $\mu_s = 0.5$ and between the rear wheels of the tractor and ground is $\mu_s' = 0.7$. The front wheels are free to roll. Assume the engine can develop enough torque to cause the rear wheels to slip.



8-36. A roll of paper has a uniform weight of 3.57 N and is suspended from wire hanger so that it rests against the wall. If the hanger has a negligible weight and the bearing at O can be considered frictionless, determine the minimum force P and the associated angle q needed to start turning the roll. The coefficient of static friction between the wall and the paper is μ_s = 0.25.

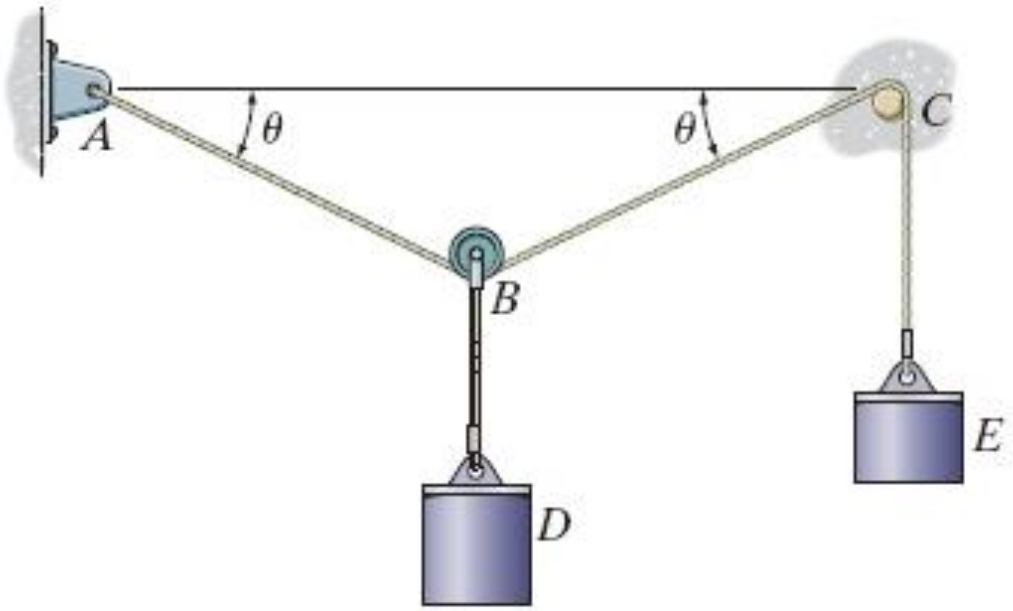


8-48. The block C has a mass of 50 kg and is confined between two walls by smooth rollers. If the block rests on top of the 40 kg spool, determine the required coefficient of static friction at A and B so that the spool slips at A and B when the magnitude of the applied force is increased to P = 300 N.



8-90. A cylinder having a mass of 250 kg is to be supported by the cord which wraps over the pipe. Determine the smallest vertical force, F, needed to support the load if the cord passes once over the pipe (β = 180°) and two times over the pipe (β = 540°).

8-95/96. A 10 kg cylinder D, which is attached to a small pulley B is placed on the cord as shown. Determine the smallest and largest angles, θ, so that the cord does not slip over the peg at C. The cylinder at E has a mass of 10 kg and the coefficient of static friction between the cord and the peg is 0.1.



8-101. If the tension in the spring is 2.5 kN, determine the largest couple moment that can be applied to the wheel without causing it to rotate. The coefficient of static friction between the belt and the wheel is 02, and between the belt and the peg is 0.4. The pulley B is free to rotate.