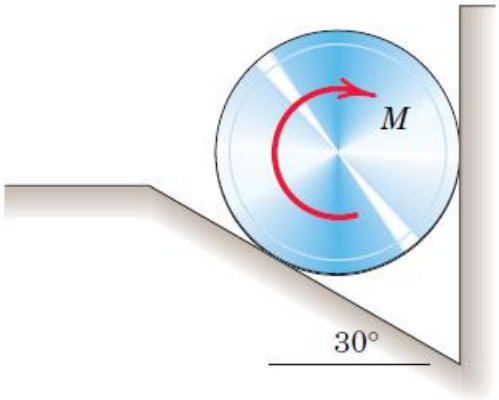
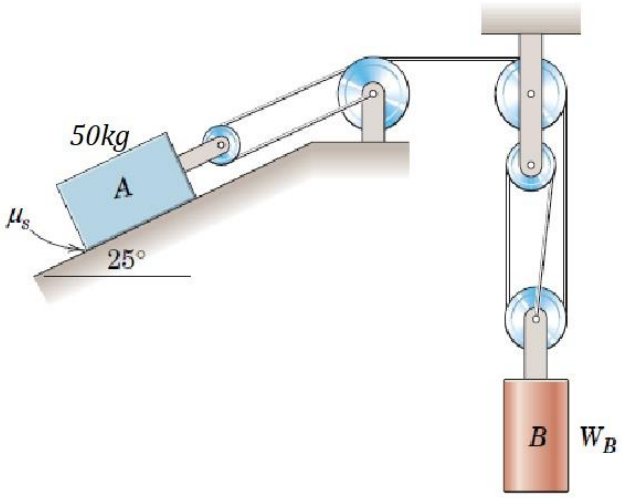
Session: 4

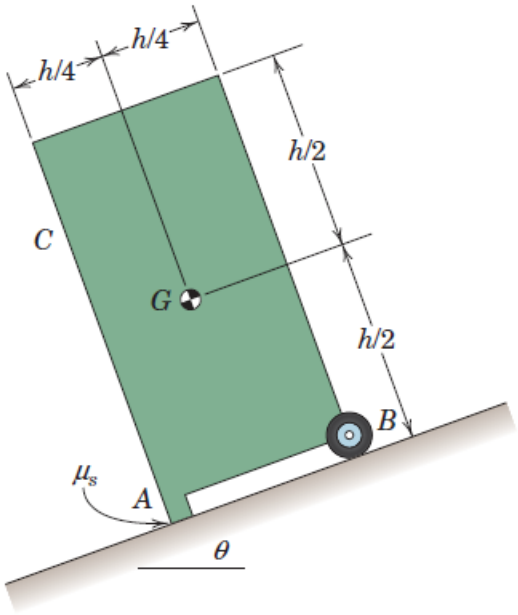
1. The 30-kg homogeneous cylinder of 400-mm diameter rests against the vertical and inclined surfaces as shown. If the coefficient of static friction between the cylinder and the surfaces is 0.30, calculate the applied clockwise couple *M* which would cause the cylinder to slip.



2. If the coefficient of static friction between block *A* and the incline is $\mu_S = 0.30$, determine the range of cylinder weights W_B for which the system will remain in equilibrium. Neglect all pulley friction.



3. The homogeneous body with two small feet and two ideal wheels is at rest on the rough incline. (*a*) Assume no slippage and determine the maximum value of the angle θ for which the body does not overturn about feet *A*. (*b*) If $\mu_S = 0.40$, determine the maximum value of the angle θ for which the body does not slip. (*c*) If and side *C* of the body now faces up the incline, determine the maximum value of the angle θ for which the body does not slip.



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