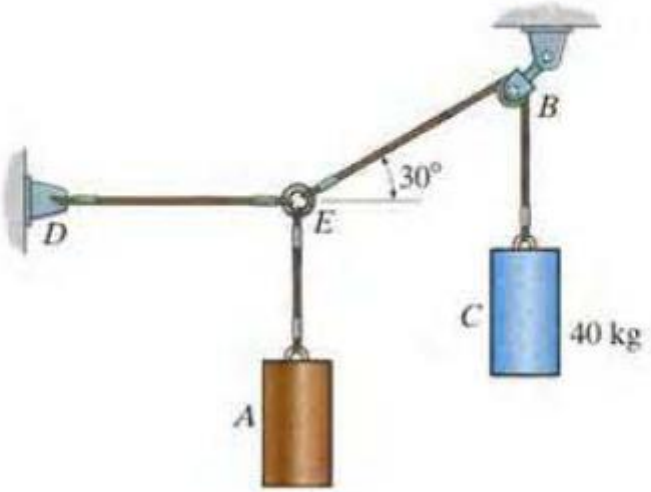
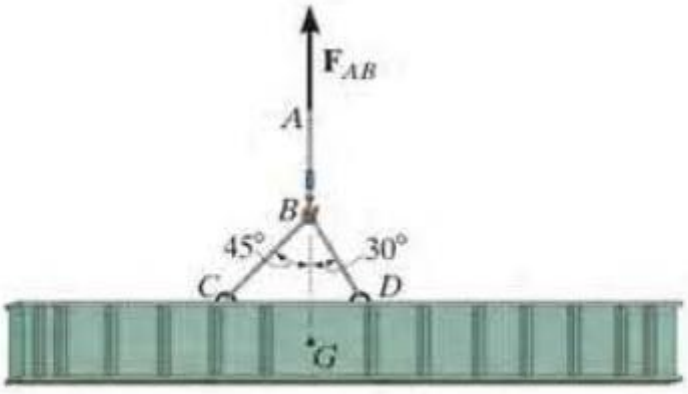
CHAPTER III EQUILIBRIUM OF A PARTICLE

F3–5. If the mass of cylinder C is 40 kg, determine the mass of cylinder A in order to hold the assembly in the position shown.

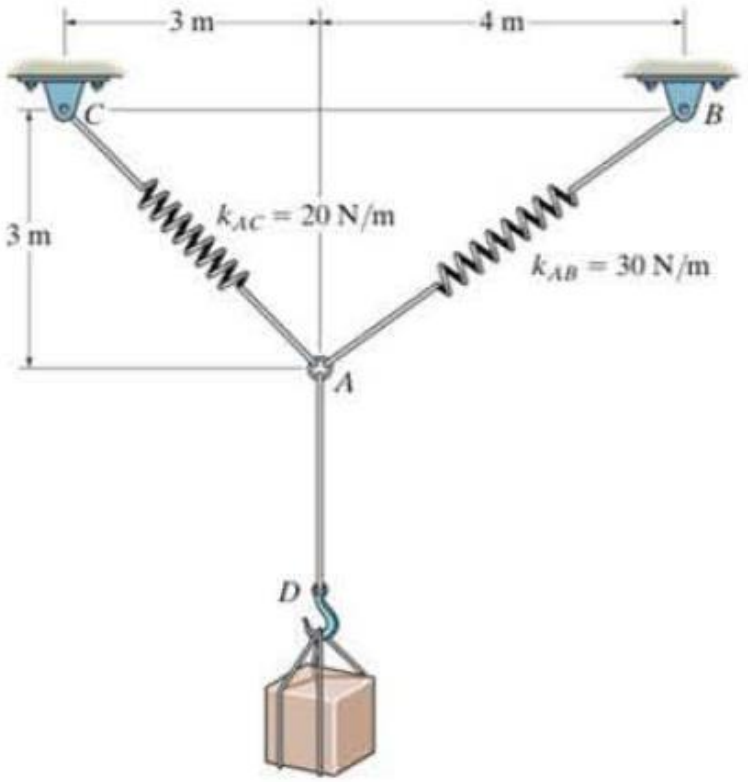


F3–5

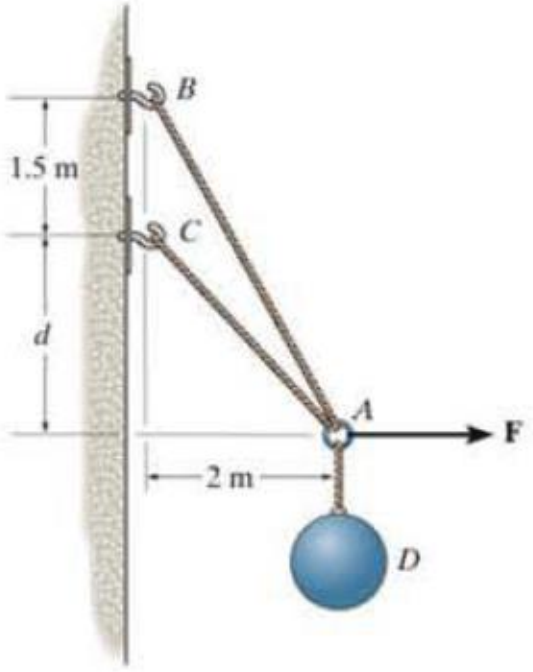
***3–4.** If cables BD and BC can withstand a maximum tensile force of 20 kN, determine the maximum mass of the girder that can be suspended from cable AB so that neither cable will fail. The center of mass of the girder is located at point G.



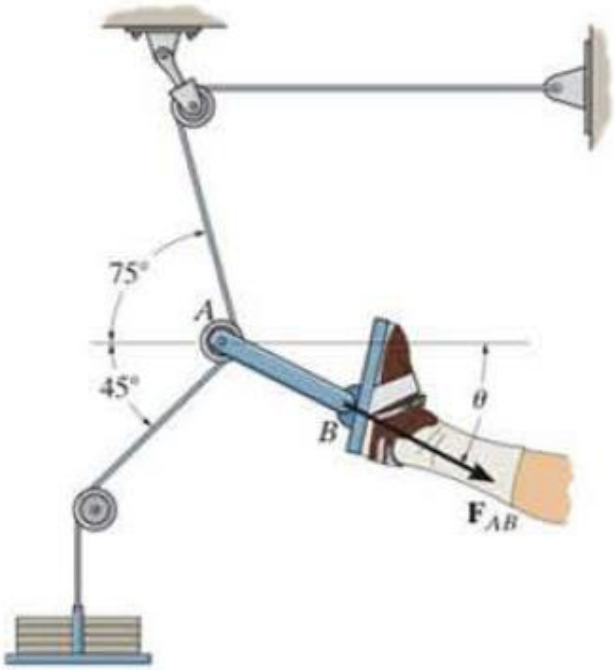
3–15. The unstretched length of spring AB is 3 m. If the block is held in the equilibrium position shown, determine the mass of the block at D.



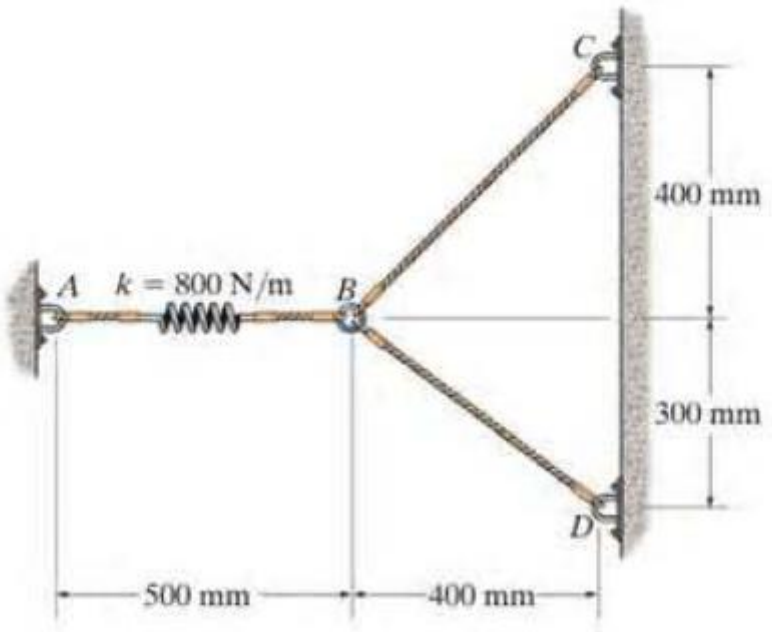
3–19. The ball D has a mass of 20 kg. If a force of $F = 100$ N is applied horizontally to the ring at A, determine the dimension d so that the force in cable AC is zero.



*3–32. Determine the magnitude and direction θ of the equilibrium force F_{AB} exerted along link AB by the tractive apparatus shown. The suspended mass is 10 kg. Neglect the size of the pulley at A.



•*3–40. The spring has a stiffness of $k = 800$ N/m and an unstretched length of 200 mm. Determine the force in cables BC and BD when the spring is held in the position shown.



•*3–44. A scale is constructed using the 10-kg mass, the 2-kg pan P, and the pulley and cord arrangement. Cord BCA is 2 m long. If $s = 0.75$ m, determine the mass D in the pan. Neglect the size of the pulley.