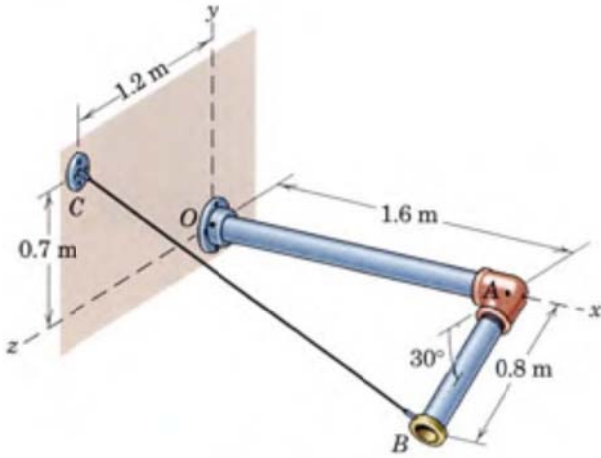


1

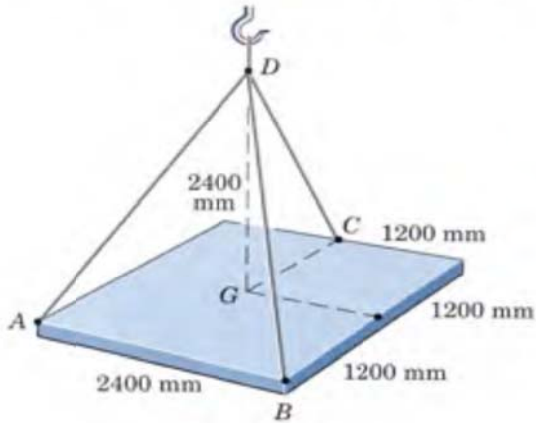
19 The cable BC carries a tension of 750 N. Write this tension as a force \mathbf{T} acting on point B in terms of the unit vectors \mathbf{i} , \mathbf{j} , and \mathbf{k} . The elbow at A forms a right angle.
 Ans. $\mathbf{T} = -598\mathbf{i} + 411\mathbf{j} + 189.5\mathbf{k}$ N



1

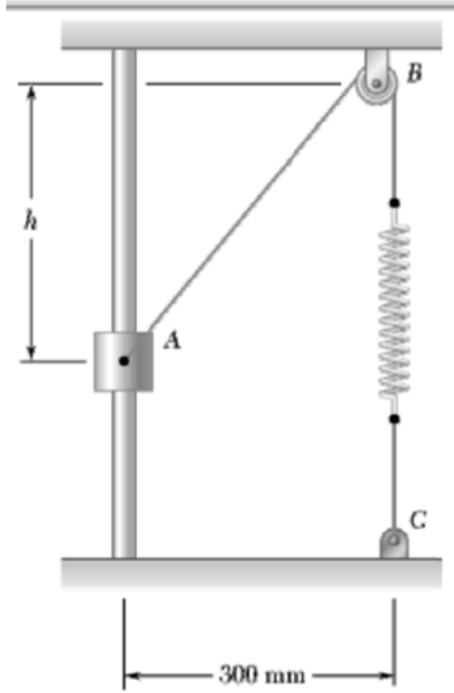
2

The square steel plate has a mass of 1800 kg with mass center at its center G . Calculate the tension in each of the three cables with which the plate is lifted while remaining horizontal.
 Ans. $T_A = T_B = 5.41$ kN, $T_C = 9.87$ kN



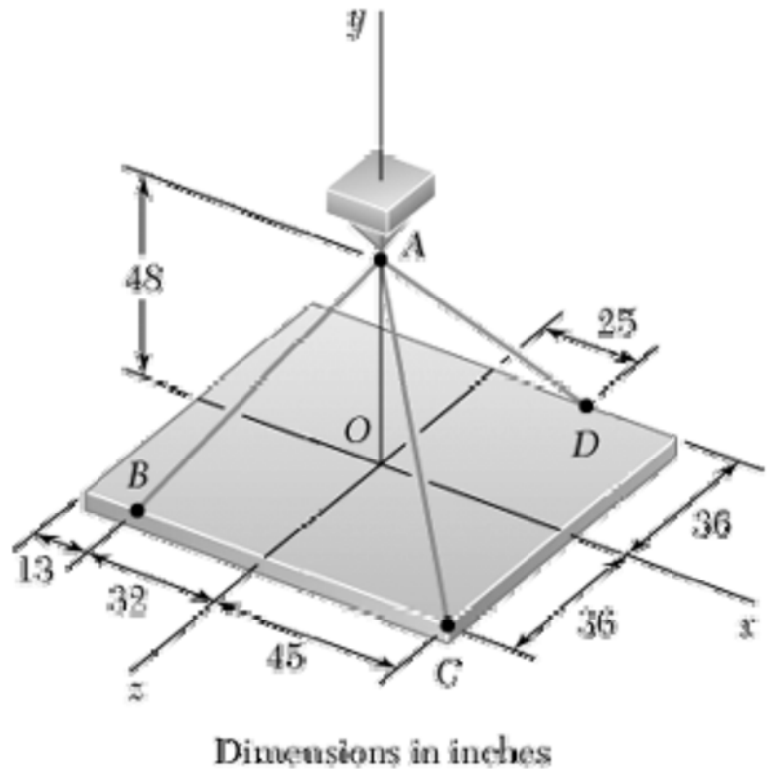
3

The 40-N collar A can slide on a frictionless vertical rod and is attached as shown to a spring. The spring is unstretched when $h = 300$ mm. Knowing that the constant of the spring is 560 N/m, determine the value of h for which the system is in equilibrium.

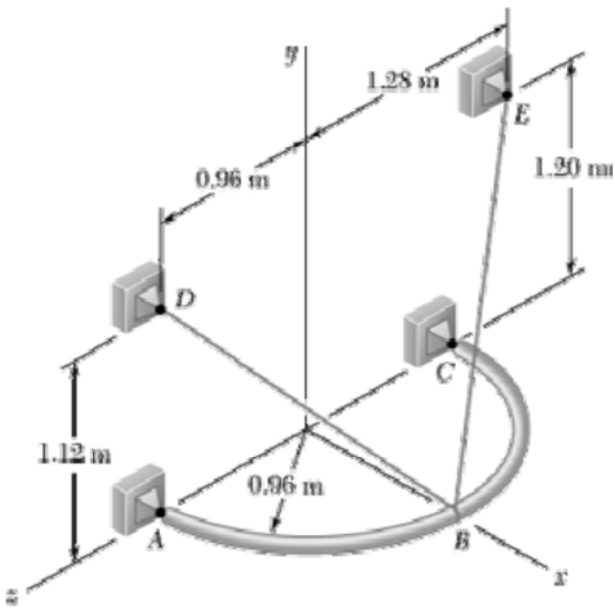


3

A rectangular plate is supported by three cables as shown. Knowing that the tension in cable AC is 15 lb, determine the weight of the plate.



4
 A steel rod is bent into a semicircular ring of radius 0.96 m and is supported in part by cables BD and BE which are attached to the ring at B . Knowing that the tension in cable BD is 220 N, determine the components of this force exerted by the cable on the support at D .



5
 A container of weight W is suspended from ring A . Cable BAC passes through the ring and is attached to fixed supports at B and C . Two forces $\mathbf{P} = P\mathbf{i}$ and $\mathbf{Q} = Q\mathbf{k}$ are applied to the ring to maintain the container in the position shown. Knowing that $W = 1200$ N, determine P and Q .
 (Hint: The tension is the same in both portions of cable BAC .)

