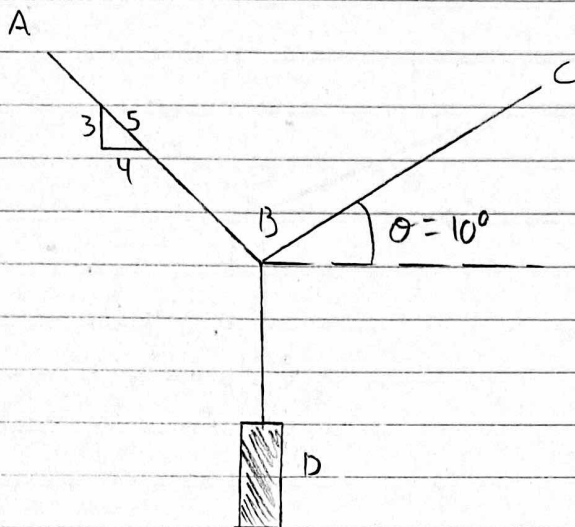Solution: 21-5-3.3-MK-001

Given: $T_{AB} = 300 N$
$\theta = 10°$

$T_{ABx} = \left(\frac{4}{5}\right)(300\,N) = 240\,N$

$T_{ABy} = \left(\frac{3}{5}\right)(300\,N) = 180\,N$

$T_{BC_x} = T_{BB_x} = 240\,N$

$\tan(\theta) = \dfrac{opp}{Adj}$ → $opp = T_{BC_y} = (240N)(\tan 10°) = 42.3\,N$

$D = T_{ABy} + T_{BC_y} = 180N + 42.3N = 222.32\,N$

$D = \dfrac{222.318N}{9.81\,m/s^2} = 22.66\,kg$

$\boxed{D = 22.7\,kg}$