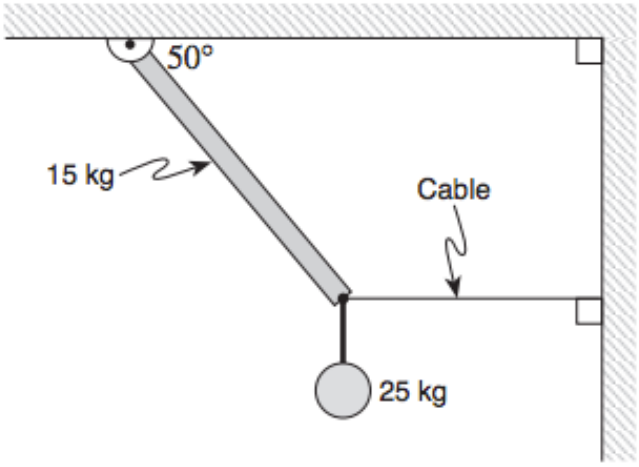
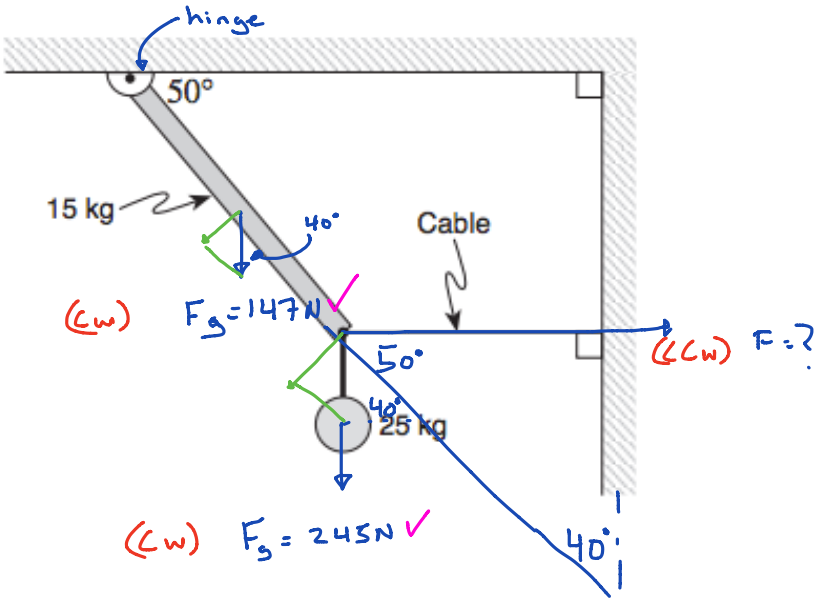
Quiz 5b

A 4.0 m long uniform pole with a mass of 15 kg is pivoted at one end and held in position by a horizontal cable at the other end. If a 25 kg mass is suspended from the end of the pole, what is the tension in the horizontal cable?



ANSWER:

A 4.0 m long uniform pole with a mass of 15 kg is pivoted at one end and held in position by a horizontal cable at the other end. If a 25 kg mass is suspended from the end of the pole, what is the tension in the horizontal cable?



$\tau_{cw} = \tau_{ccw}$ ✓

$F_{g_1} \cdot d_1 \cdot \cos(50^\circ) + F_{g_2} \cdot d_2 \cdot \cos(50^\circ) = F \cdot d_2 \cdot \cos(40^\circ)$ ✓

$147(2)\cos(50) + 245(4)\cos(50) = F \cdot (4)\cos(40^\circ)$

$\boxed{F = 267\,N}$ ✓