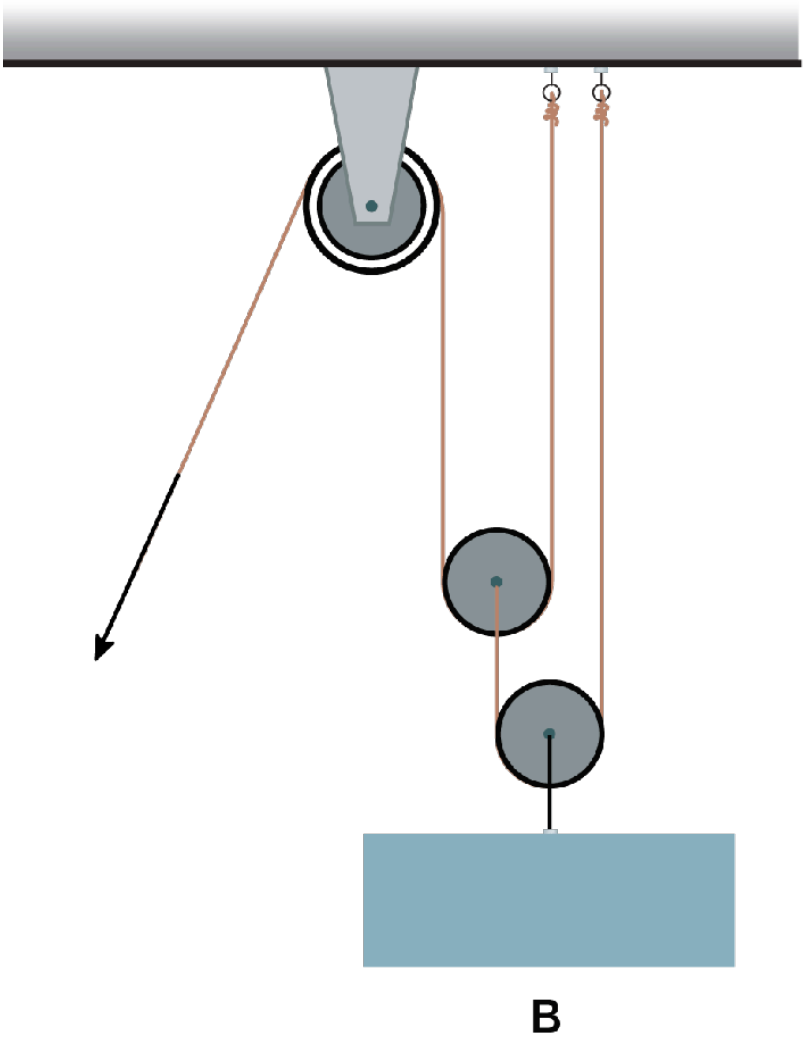
21-S-6.6-RP-03



A block with uniform weight W lbs is supported by a pulley system in equilibrium. Find the tension in both ropes. Let the tension in the rope pulled by the force arrow be T_1 and the tension in the other rope be T_2. Ignore the mass of the pulleys.

$+\uparrow \Sigma F_y = 0 \rightarrow 2T_2 - W = 0$

$\Rightarrow T_2 = \frac{W}{2}$

$+\uparrow \Sigma F_y = 0 \rightarrow 2T_1 - T_2 = 0$

$\Rightarrow T_1 = \frac{T_2}{2} = \frac{W}{4}$