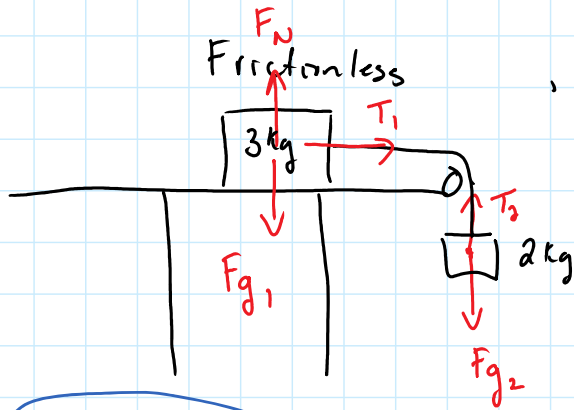


3rd Law con't

Tuesday, November 7, 2017 9:36 AM

Ex



Frictionless, calculate $a = ?$, $T = ?$

1) F.B.D.

2) $F_{net} = F_{g2} - T_2 + T_1$

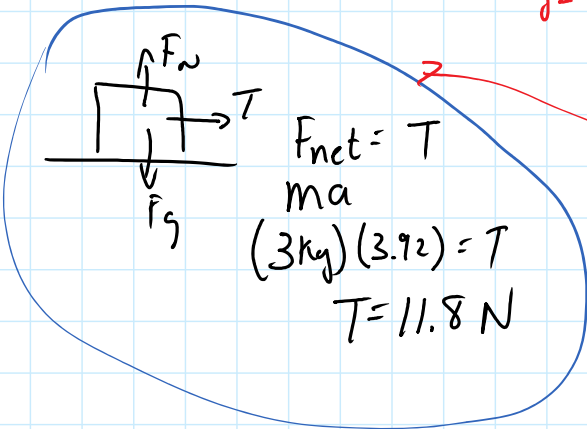
$ma = m_2 g$

$(3kg)a = 2(9.8)$

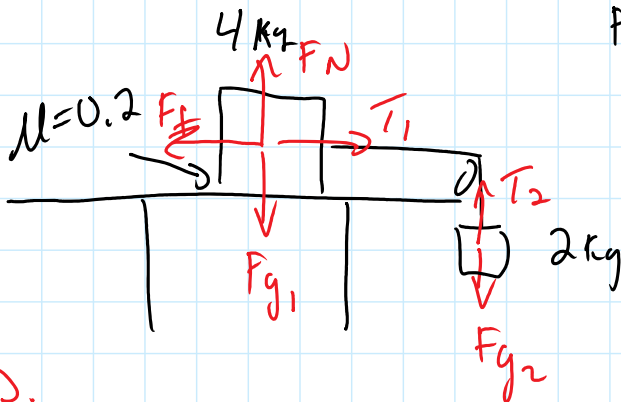
$3a = 19.6$

$a = \frac{19.6}{3}$
 $= 3.92 \text{ m/s}^2$

3) Tension \rightarrow isolate



Ex



Find a , T

$F_f = \mu F_N$ / $F_g = 4 \cdot 9.8 = 39.2 \text{ N}$

$= (0.2)(39.2)$

$F_f = 7.84 \text{ N}$

1) F.B.D.

2) $F_{net} = F_{g2} - T_2 + T_1 - F_f$

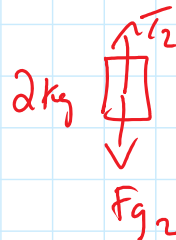
$ma = 2(9.8) - 7.84$

$(6kg)a = 19.6 \text{ N} - 7.84$

$6a = 11.76 \text{ N}$

$a = 1.96 \text{ m/s}^2$

3) Tension - isolate



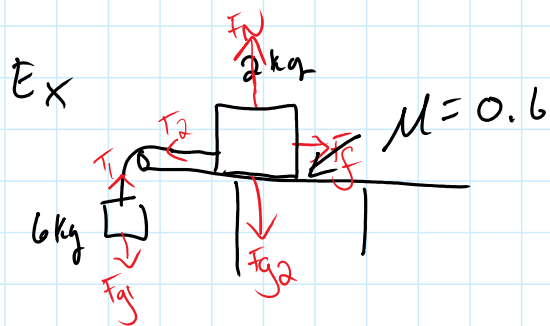
$F_{net} = F_{g2} - T_2$

$2(1.96) = 2(9.8) - T_2$

$3.92 = 19.6 - T_2$

$T_2 = 15.7 \text{ N}$

FN



$$F_f = \mu F_N$$

$$= 0.6 (2 \cdot 9.8)$$

$$= 11.76 \text{ N}$$

Find a , T . 1) FBD. 2) $F_{\text{net}} = ?$

$$F_{\text{net}} = F_{g1} - T_1 + T_2 - F_f$$

$$ma = 58.8 - 11.76$$

$$8a = 47.04$$

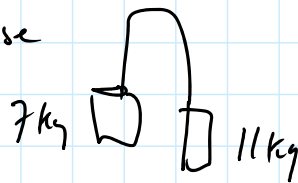
$$a = 5.88 \text{ m/s}^2$$

$$f_{\text{net}} = ma \quad \left[\begin{array}{c} T \\ \leftarrow \text{---} \square \text{---} \rightarrow T \\ \leftarrow F_f \end{array} \right]$$

$$2(5.88) = 11.6 = 11.7 - T_2$$

$$T = 23.5 \text{ N} \quad + 11.7$$

H.W. #1, 3, 4, 5 — use



#1 6.1 m/s^2 , 18 N

#3 5.39 m/s^2 , 22.1 N

#4 2.6 m/s^2 , 14.4 N

#5 2.18 m/s^2 , 83.8 N