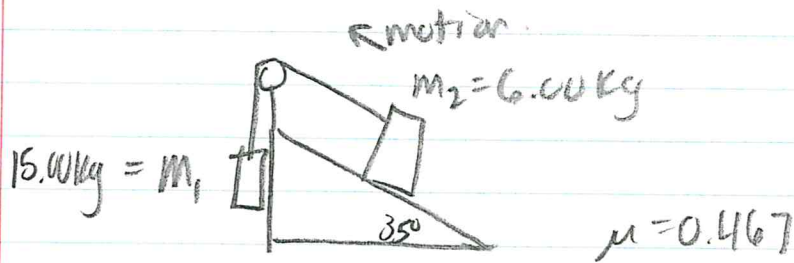
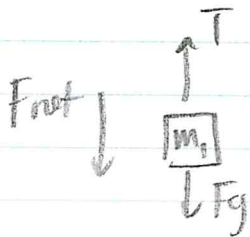


STRINGS, PULLEYS, INCLINED PLANES EXTRA QUESTION

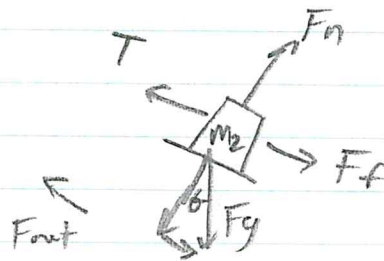


Find a , T

1. FBD



$$\begin{aligned}
 F_{net1} &= F_{g1} - T \\
 m_1 a &= m_1 g - T \\
 T &= m_1 g - m_1 a \quad (1)
 \end{aligned}$$



$$\begin{aligned}
 \sum F_{net1} &= 0 \Rightarrow T = F_{n2} - F_{g2y} \\
 F_{n2} &= F_{g2} \cos \theta \\
 F_{n2} &= m_2 g \cos \theta
 \end{aligned}$$

$$\begin{aligned}
 F_{net2} &= T - F_{f2} - F_{g2y} \\
 m_2 a &= T - \mu F_{n2} - m_2 g \sin \theta \\
 m_2 a &= T - \mu m_2 g \cos \theta - m_2 g \sin \theta
 \end{aligned}$$

Sub (1) into (2)

$$\begin{aligned}
 m_2 a &= m_1 g - m_1 a - \mu m_2 g \cos \theta - m_2 g \sin \theta \\
 m_2 a + m_1 a &= m_1 g - \mu m_2 g \cos \theta - m_2 g \sin \theta \\
 a &= \frac{m_1 g - \mu m_2 g \cos \theta - m_2 g \sin \theta}{m_2 + m_1}
 \end{aligned}$$

$$a = \frac{(15.00 \text{ kg})(9.8 \text{ m/s}^2) - (0.467)(6.00 \text{ kg})(9.8 \text{ m/s}^2) \cos 35^\circ - (6.00 \text{ kg})(9.8 \text{ m/s}^2) \sin 35^\circ}{15.00 \text{ kg} + 6.00 \text{ kg}}$$

$$a = 4.322862165 \text{ m/s}^2 \rightarrow 4.3 \text{ m/s}^2$$