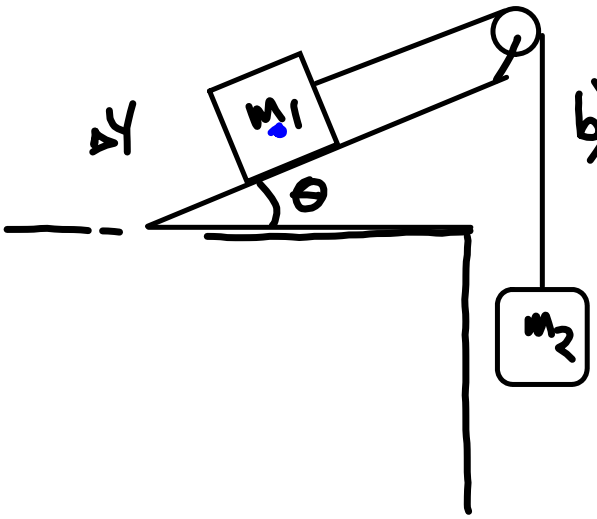
$m_1 = 10kg$

$\theta = 30°$

a) What happens when $m_2 = 4kg$?

$a_1 = ?$ (From Rest) (No Friction)

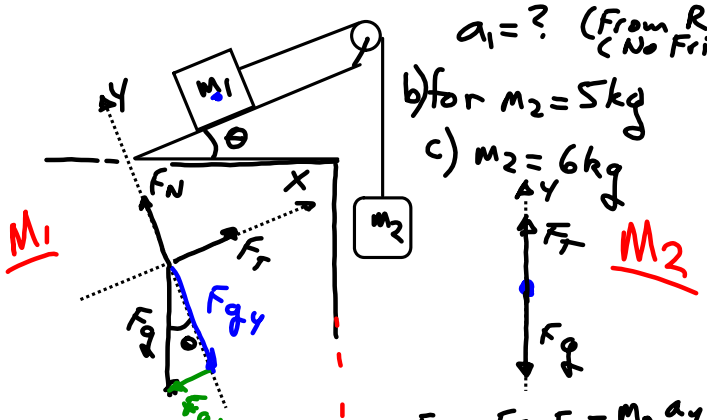


b) for $m_2 = 5kg$

c) $m_2 = 6kg$

$m_1 = 10kg$
$\theta = 30°$

a) What happens when $m_2 = 4kg$?
$a_1 = ?$ (From Rest) (No Friction)
b) for $m_2 = 5kg$
c) $m_2 = 6kg$



$F_{RX} = F_T - F_{gx} = m a_{1x}$

$F_{gx} = F_g \sin 30°$

$F_{gx} = m_1 g \sin 30°$

$F_T - m_1 g \sin 30° = m_1 a_{1x}$

$F_T - m_1 g \sin 30° = m_1(-a_y)$

$m_2 a_y + m_2 g - m_1 g \sin 30° = -m_1 a_y$

$m_2 a_y + m_1 a_y = m_1 g \sin 30° - m_2 g$

$(m_1 + m_2) a_y = \frac{1}{2} m_1 g - m_2 g$

$F_{Ry} = F_T - F_g = m_2 a_y$

$F_T - m_2 g = m_2 a_y$

$a_{1x} = -a_y$

$F_T = m_2 a_y + m_2 g$

$$a_y = \frac{(\frac{1}{2} m_1 - m_2)}{(m_1 + m_2)} g$$

$$= \frac{(5kg - m_2)}{10kg + m_2} g \qquad g = 9.8 m/s^2$$

$m_2 = 4kg \quad a_y = \frac{1}{14} 9.8 m/s^2$

$m_2 = 5kg \quad a_y = 0$

$m_2 = 6kg \quad a_y = \frac{-1}{16} 9.8 m/s^2$