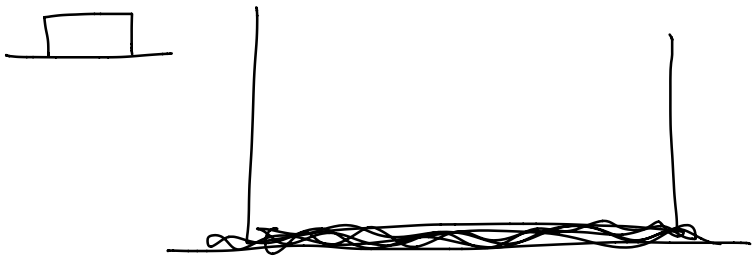
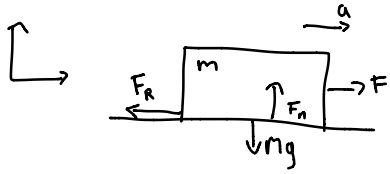
Friction



Bulk Property

F_{RR}



$F_R = \mu_k \cdot F_N$

Kinetic

$F_R = \mu_k \cdot F_N$

Static

$F_R \leq \mu_s \cdot F_N$

$\sum F_x = ma \mid \sum F_y = ma_y^{a_y=0}$

$F - F_R = ma \mid F_N - mg = 0$

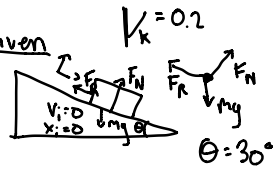
$F_N = mg$

$F - \mu_k mg = ma$

$a = \frac{F}{m} - \mu_k g$

$F_R = \mu_s F_N$

Given $\mu_k = 0.2$



$\theta = 30°$ $m = 2.00\,kg$ $F_R = \mu_k F_N$

Find a) a b) v_f at 1.2s

Solve a) $\sum F_x = ma$ $\sum F_y = ma_y^{a_y=0}$

$mg\sin\theta - F_R = ma$ $F_N - mg\cos\theta = 0$

b) $x_i = 0$ $x_f =$ ☐ $v_i = 0$ $v_f =$ ☐

$v_f = v_i + at$

$= 0 + 3.2(1.2)$

$v_f = 3.8\ m/s$

$mg\sin\theta - \mu_k mg\cos\theta = ma$

$F_N = mg\cos\theta$

$a = 3.20$

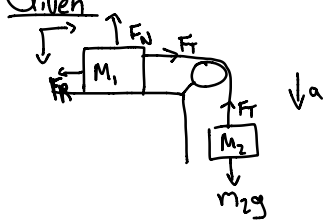
$t = 1.2$

$a = g\sin\theta - \mu_k g\cos\theta$

$= 9.8\sin 30 - 0.2 \cdot 9.8\cos 30$

$a = 3.20\ m/s^2$

Given



Find a) a

$F_R = \mu_k m_1 g$

$F_R = \mu_k F_N$

Solve a) $\sum F_{x_1} = m_1 a$

$F_T - F_R = m_1 a$

$\sum F_{y_1} = m a_y$ ($a_y = 0$)

$m_1 g - F_N = 0$

$F_N = m_1 g$

$\sum F_{y_2} = m_2 a$

$m_1 g - F_T = m_2 a$

$F_T = m_2(g - a)$

$F_T - \mu_k m_1 g = m_1 a$

$m_2(g-a) - \mu_k m_1 g = m_1 a$

$m_2 g - m_2 a - \mu_k m_1 g = m_1 a$

$m_2 g - \mu_k m_1 g = a(m_1 + m_2)$

$$a = \frac{m_1 g}{(m_1 + m_2)} - \frac{\mu_k m_1 g}{(m_1 + m_2)}$$