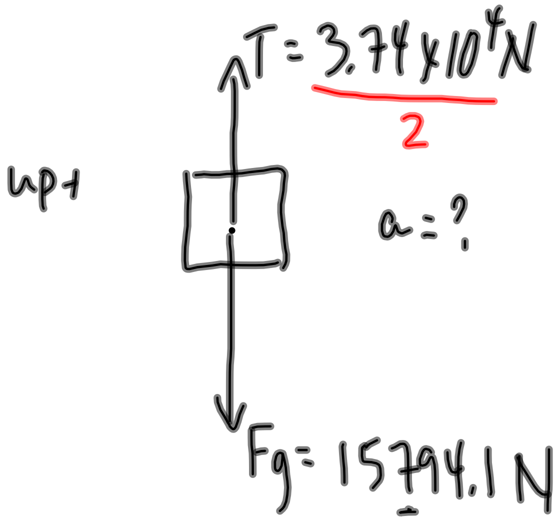
PP) 478

18.

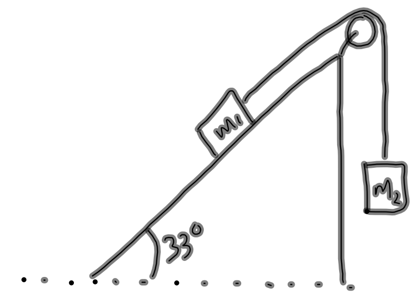


$m = 485kg + 15(75kg)$
$m = 1610kg$

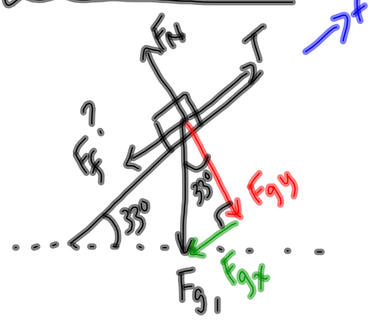
$T = 3.74 \times 10^4 N \div 2$
$a = ??$

$$\vec{F}_{net} = m\vec{a}$$
$$T - F_g = ma$$
$$\frac{3.74 \times 10^4}{2} N - 15794.1N = (1610kg)a$$
$$2905.9N = (1610kg)a$$
$$a = 1.8\ m/s^2$$

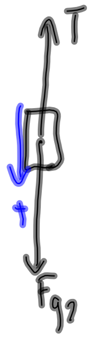
MP|486



Consider m_1 alone:



m_2



$m_1 = 615\,g$ $m_2 = 525\,g$

$\mu_k = 0.19$ $a = ?$

$T = ?$

If m_1 goes uphill, then the maximum value for T is F_{g_2}. Check to see if

$F_{g_2} \geq F_f + F_{g_x}$

$F_{g_2} = (0.525\,kg)(9.81\,m/s^2) = 5.15\,N$

$F_{g_1x} = F_{g_1}\sin\theta = (0.615\,kg)(9.81\,m/s^2)\sin 33° = 3.29\,N$

$F_f = \mu F_N = \mu F_{gy} = \mu F_{g_1}\cos\theta = (0.19)(0.615\,kg)(9.81\,m/s^2)\cos 33°$

$= 0.961\,N$

$F_{g_1x} + F_f = 3.29\,N + 0.961\,N$
$= 4.25\,N$

Since $F_{g_2} > F_{g_1x} + F_f$, ∴ mass 1 will go uphil

m_1: $\vec{F}_{net} = m\vec{a}$

$T - (F_f + F_{g_1x}) = m_1 a$

$T - (0.961\,N + 3.29\,N) = (0.615\,kg)a$

$\boxed{T - 4.25\,N = (0.615\,kg)a}$

m_2: $\vec{F}_{net} = m\vec{a}$

$F_{g_2} - T = m_2 a$

$\boxed{5.15\,N - T = (0.525\,kg}$

SOLVE!

TO DO: PP|485

PP|488-489| not 26