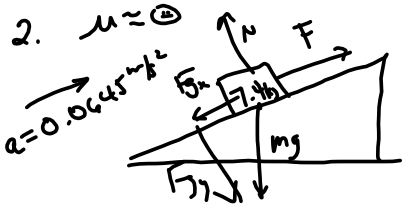
2. $\mu \approx 0$



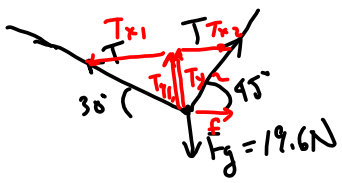
$\Sigma F = F - F_{gx} = ma$ (1)

$F - mg\sin\theta = ma$ (1)

$F - 7.4 \cdot g \cdot \sin 15^\circ = (7.4\text{kg})(0.0645\ m/s^2)$

$F = 19.3N$ (1)

3.



$\Sigma F = \ddot\smile$

$T_{y_1} + T_{y_2} = F_g$

$T_{x_1} = T_{x_2} + f$

$T\cos 30^\circ = T\cos 45^\circ + f$

$16.2N\left(\frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2}\right) = f$

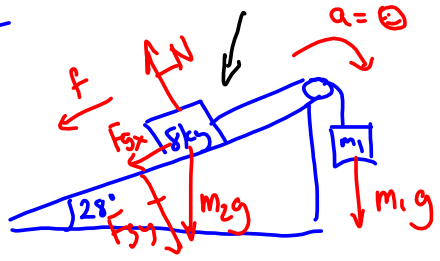
$f = 2.6N$

$T\sin 30^\circ + T\sin 45^\circ = 19.6N$

$T\left(\frac{1}{2} + \frac{\sqrt{2}}{2}\right) = 19.6$

$T = 16.2N$

$\mu = 0.22$

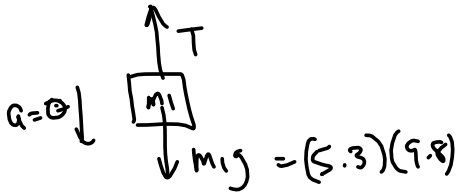


$\Sigma F = m_1g - (F_{gx} + f) = ☺$

$m_1g = m_2g\sin 28° + \mu m_2g\cos 28°$

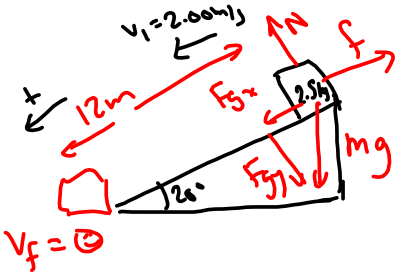
$m_1 = 8\sin 28° + 0.22(8)\cos 28°$

$= 5.3$ kg



$\Sigma F = m_1g - T = ☹$

$T = 52$ N



$v_f^2 = v_i^2 + 2ad$

$= (2)^2 + 2a(12)$

$a = \frac{-4}{24} = -0.167 m/s^2$

$\Sigma F = f - F_{gx} = ma$ ← $+0.167 m/s^2$

$\Sigma F = F_{gx} - f = ma$

$2.5 \cdot 9.8 \cdot \sin 20° - f = 2.5(-0.167 m/s^2)$

$8.8N = f$

$\mu = \frac{f}{N} = \frac{f}{F_{gy}}$

$= \frac{8.8N}{24.5 \cos 20° N}$

$= 0.382$

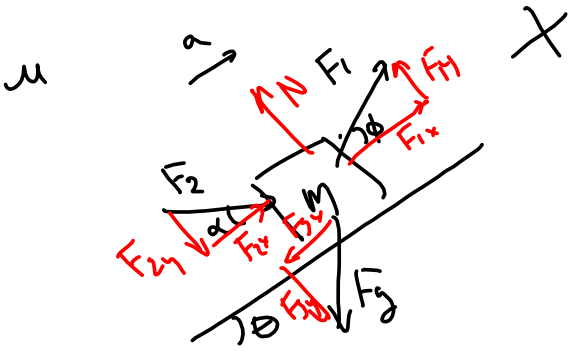
By cons of E

$E_i = E_f + W_f$

$\frac{1}{2} m v_i^2 + mgh = fd$

$\frac{1}{2}(2.5)(2)^2 + 2(9.8)(12 \sin 20°) = f(12)$

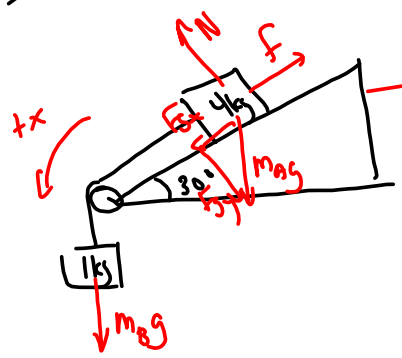
$f = 8.8N$



$\Sigma F = (F_{1x} + F_{2x}) - (F_{gx} + f) = ma$

$\Sigma F_y = 0$

$N + F_{1y} = F_{gy} + F_{2y}$



a = ?

$F_{gB} = 1 \times 9.807 = 9.8\,N$

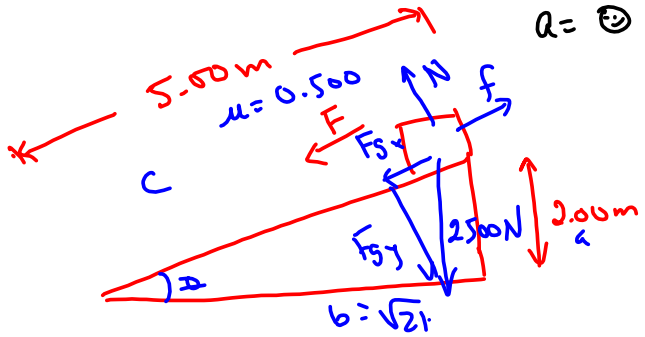
$F_{gx} = F_{gB} \sin 30^\circ$ . .

$\sum F = m_B g + F_{gx} - f = (m_A + m_B)\,a$

$1 \cdot 9.8 + 4 \cdot 9.8 \sin 30^\circ - 4 \cdot 9.8 \cos 30^\circ \times 0.30$

$29.4 - 10.2\,N = 5a$

$a = \frac{19.2}{5} = 3.8\,m/s^2$



a = ☺ $\Sigma F = ☺$

$\sin\theta = \frac{2.00}{5.00}$

$\theta =$ ◯

$F_{gx} = F_g \sin\theta$

$= 2500\left(\frac{2.00}{5.00}\right)$

$= 1000N$

$f = \mu N$

$= \mu F_g \cos\theta$

$= (0.500)(2500N)\left(\frac{\sqrt{21}}{5}\right)$

$= 1146N$

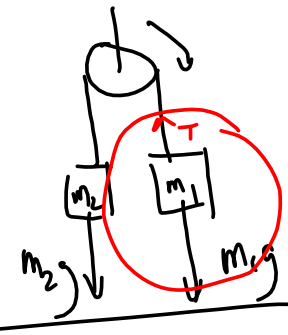
$c^2 = a^2 + b^2$

$25 = 4 + b^2$ $b = \sqrt{21}$

$F + F_{gx} = f$

$F = 1146 - 1000 = \underline{\underline{146N}}$

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



$$\Sigma F = m_1 g - m_2 g = (m_1 + m_2) a$$

$v_f = v_i + at$

$v_f^2 = v_i^2 + 2ad$

$d = v_i t + \frac{1}{2} a t^2$

$v_{ave} = \frac{d}{t}$

$\Sigma F = ma$ $f = \mu N$

sin, cos, tan

$c^2 = a^2 + b^2$

$d = v_f t - \frac{1}{2} a t^2$

$d = \left(\frac{v_i + v_f}{2}\right) t$

$c^2 = a^2 + b^2 - 2ab\cos C$

$\frac{\sin A}{a} = \frac{\sin B}{b}$