

0.1 DNHK
 $m = 60 \text{ kg}$ $\alpha = 30^\circ$
 $F = 294 \text{ N}$
 $\sum F_x = 0$ $\sum F_y = 0$
 $F - mg \sin \alpha = ma$ $N = mg \cos \alpha$
 $294 - 60 \cdot 9.8 \cdot \sin 30^\circ = 60 \cdot a$
 $294 - 294 = 60 \cdot a \rightarrow a = 0 \text{ m/s}^2$

$m = 20 \text{ kg}$ $\alpha = 37^\circ$
 $\sum F_x = 0$ $\sum F_y = 0$
 $mg \sin \alpha = m \cdot a$ $N - mg \cos \alpha = 0$
 $a = g \sin \alpha = 9.8 \cdot \sin 37^\circ = 5.898 \text{ m/s}^2$

$x_F = 1 \text{ m} \rightarrow \text{MUA}$ $x_F = x_0 + v_0 t + \frac{1}{2} a t^2$
 $1 = \frac{1}{2} 5.898 \cdot t^2$ $t = 0.582 \text{ s}$

$v_F = 0 + a \cdot t = 5.898 \cdot 0.582 = 3.435 \text{ m/s}$

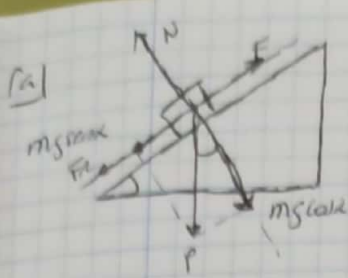
$m = 40 \text{ kg}$ $\alpha = 30^\circ$
 $F = 294 \text{ N}$
 $\sum F_x = 0$ $\sum F_y = 0$
 $F - mg \sin \alpha = m \cdot a$ $N - mg \cos \alpha = 0$
 $294 - 40 \cdot 9.8 \cdot \sin 30^\circ = 40 \cdot a$
 $294 - 196 = 40 \cdot a \rightarrow a = 2.45 \text{ m/s}^2$
SUBE

DATOS PROBLEMA ANTERIOR
 $x_F = x_0 + v_0 t + \frac{1}{2} a t^2$ $t = 5 \text{ s}$
 $x_F = 0 + 0.5 + \frac{1}{2} 2.45 \cdot 5^2$
 $x_F = 30.625 \text{ m}$
 $\sin 30^\circ = \frac{h}{30.625} \rightarrow h = 15.313 \text{ m}$

$m = 2 \text{ kg}$ $\alpha = 30^\circ$ $\mu = 0.3$ $F = 2 \text{ N}$ $a = 1 \text{ m/s}^2$
 $\sum F_x = 0$ $\sum F_y = 0$
 $F - mg \sin \alpha - F_r = m \cdot a$ $N - mg \cos \alpha = 0$
 $F - mg \sin \alpha - \mu N = m \cdot a$ $N = mg \cos \alpha$
 $F - m(g \sin \alpha - \mu g \cos \alpha) = m \cdot a$
 $F - 2(4.9 - 2.546) = 2 \cdot 1$
 $F = 6.708 \text{ N}$

$\alpha = 30^\circ$ $m = 2 \text{ kg}$ $\mu = 0.3$
 $\sum F_x = 0$ $\sum F_y = 0$
 $mg \sin \alpha - F_r = m \cdot a$ $N - mg \cos \alpha = 0$
 $mg \sin \alpha - \mu N = m \cdot a$ $N = mg \cos \alpha$
 $a = g \sin \alpha - \mu g \cos \alpha$ $a = 4.9 - 2.546$
 $a = 2.354 \text{ m/s}^2$

$m = 10 \text{ kg}$ $\alpha = 30^\circ$ $\mu = 0.48$ $v_0 = 10 \text{ m/s}$
 $\sum F_x = 0$ $\sum F_y = 0$
 $0 - mg \sin \alpha - F_r = m \cdot a$ $N - mg \cos \alpha = 0$
 $0 - mg \sin \alpha - \mu mg \cos \alpha = m \cdot a$
 $a = -g \sin 30^\circ - \mu g \cos 30^\circ = -8.974 \text{ m/s}^2$
 $v_F = v_0 + a \cdot t$
 $0 = 10 - 8.974 t$ $t = 1.115 \text{ s}$



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LA FRICTION
SUBO CAN Vite
 $a = 0,1 \text{ m/s}^2$

$$m = 30 \text{ kg} \quad \alpha = 37^\circ$$

$$\mu = 0,2$$

EJE X

$$F - mg \sin \alpha - F_r = m a$$

$$F - mg \sin \alpha - \mu mg \cos \alpha = 0$$

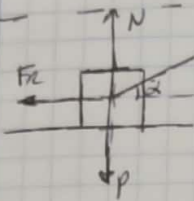
$$F = m(g \sin \alpha + \mu g \cos \alpha) = 30 \cdot 9,8 (\sin 37^\circ + 0,2 \cos 37^\circ)$$

$$\underline{\underline{F = 223,948 \text{ N}}}$$

EJE Y

$$N - mg \cos \alpha = 0$$

1b)



$$m = 20 \text{ kg}$$

$$\alpha = 37^\circ \quad \mu = 0,2$$

EJE X

$$100 \cos 37^\circ - F_r = m a$$

$$100 \cos 37^\circ - \mu mg = m a$$

$$100 \cos 37^\circ - 0,2 \cdot 20 \cdot 9,8 = 20 a$$

$$79,864 - 39,2 = 20 a$$

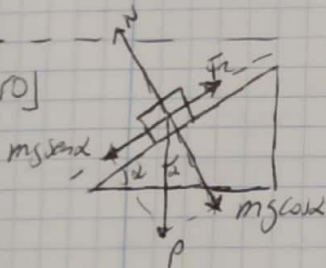
$$\underline{\underline{a = 2,033 \text{ m/s}^2}}$$

EJE Y

$$N - mg = 0$$

$$N = mg$$

1c)



$$m = \quad \alpha = 23,4^\circ$$

EJE X

$$mg \sin \alpha - F_r = 0$$

$$\mu mg \cos \alpha - \mu mg \cos \alpha = 0$$

$$\mu = \frac{\sin \alpha}{\cos \alpha} = \tan \alpha = \tan 23,4^\circ$$

$$\underline{\underline{\mu = 0,43}}$$

EJE Y

$$N - mg \cos \alpha = 0$$

$$N = mg \cos \alpha$$