Fecha

4.4

① Datos

$m = 5.20\ kg$

$g = 9.8\ m/s^2$

$a_x = 1.00\ m/s^2$

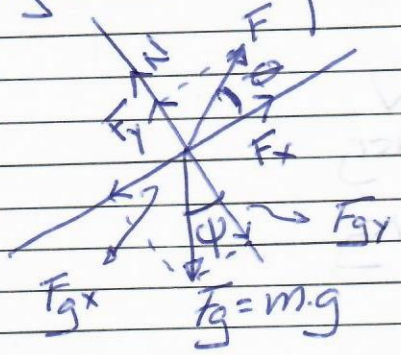
$F = ?$

$N = ?$

$\theta = 30°$

$\psi = 20°$

② Diagrama de fuerzas



③ Segunda ley de Newton para el eje x

$$\sum \vec{F}_x = m \cdot \vec{a}$$

$$F_x - F_{gx} = m \cdot a$$

$$\cos\theta = \frac{F_x}{F}$$

$$F_x = F\cos\theta \quad ; \quad \operatorname{sen}\psi = \frac{F_{gx}}{F_g} \Rightarrow F_{gx} = F_g \operatorname{sen}\psi$$

$$F\cos\theta - mg\operatorname{sen}\psi = m \cdot a$$

$$F(0.86) - (5.20)(9.8)(0.34) = (5.20)(1)$$

$$\boxed{F = 26.2\ N}$$

④ Segunda ley de Newton para el eje y

$$\sum F_y = 0$$

$$N - F_{gy} + F_y = 0$$

$$N = F_{gy} - F_y \qquad \cos\psi = \frac{F_{gy}}{F_g} \; ; \; F_{gy} = mg\cos\psi$$

$$\boxed{N = mg\cos\psi - F\operatorname{sen}\theta} \qquad \operatorname{sen}\theta = \frac{F_y}{F} \qquad F_y = F\operatorname{sen}\theta$$