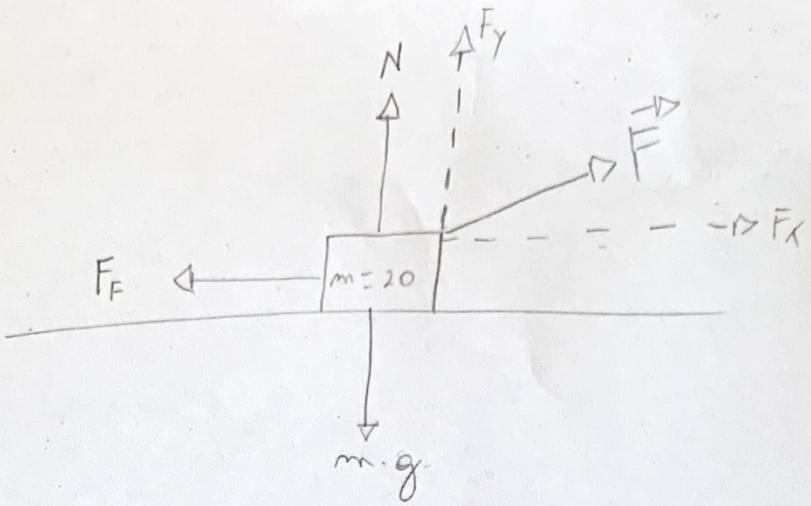

Data

$F = 50\ N$

$\theta = 30^\circ$

$F_F = 15\ N$

$m = 20\ kg$

$g = 10\ m/s^2$

Since moving horizontaly, the system is in vertical equilibrium

$\sum f_y = 0$ and $\sum f_y = N + f_y - m \cdot g \Rightarrow N + f_y - m \cdot g = 0$

a) Normal reaction = N

$N = m \cdot g - f_y$ and $f_y = f \cdot \sin\theta \Rightarrow N = 20 \cdot 10 - 50 \cdot \sin(30^\circ) \Rightarrow$ ($\sin(30^\circ) = 1/2$)

$\Rightarrow N = 200 - 25 = 175\ N$

B) Resulting horizontal force $\sum f_x$

$\sum f_x = f_x - F_F = F \cdot \cos(30^\circ) - 15\ N = 50 \cdot \frac{\sqrt{3}}{2} - 15\ N = 25 \cdot \sqrt{3} - 15 N$

$\Rightarrow \sum f_x = 28,30\ N$

c) $a = ? \Rightarrow \sum f_x = m \cdot \vec{a} = 28,30\ N = 20\ kg \cdot \vec{a} \Rightarrow \vec{a} = 1,415 \approx 1,42\ m/s^2$

d) the speed:

$V = V_0^{\,0} + at \Rightarrow V = 1,42 \cdot 10 = 14,2\ m/s$