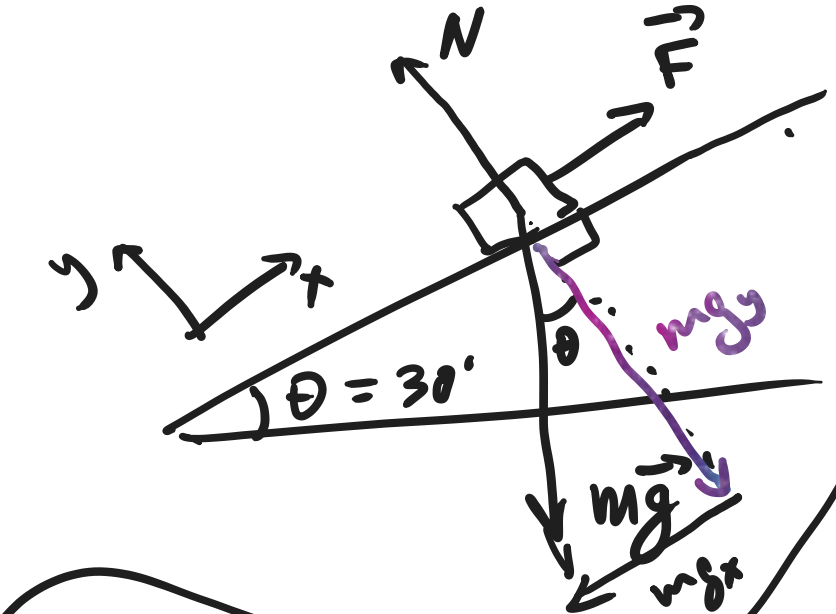
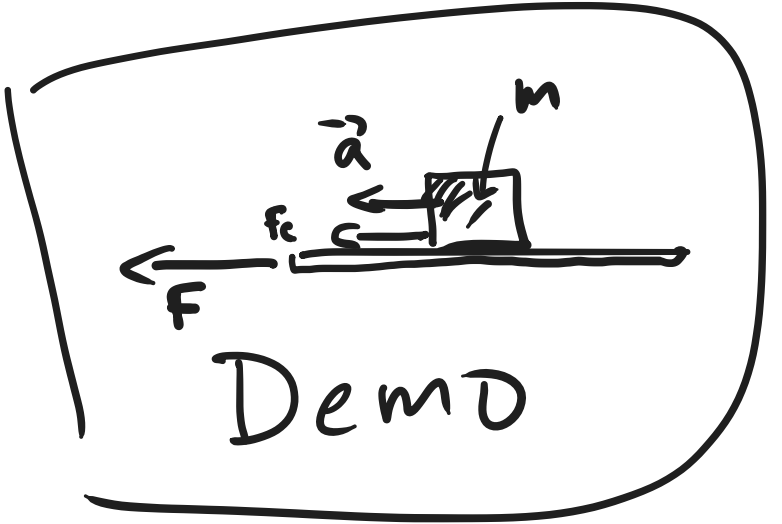


$$m\vec{a} = 0 = \sum \vec{F}_i =$$
$$= \vec{N} + \vec{F} + m\vec{g}$$

X: $ma_x = 0 = N_x + F_x + mg_x$
$= 0 + F - mg\sin\theta$

y: $ma_y = 0 = N_y + F_y + mg_y$
(always with my 'xy')
$= N + 0 - mg\cos\theta$

$F = mg\sin\theta$



$$F_c = F_{fr} \sim mg$$

$$a_x = \frac{F_{fr}}{m}$$

$$S_x = a_x \cdot t_{act}$$

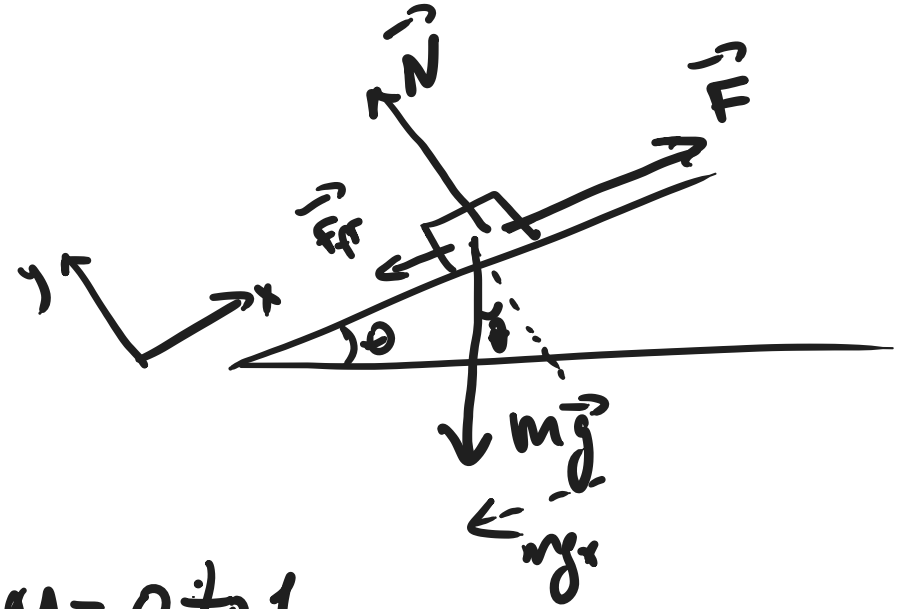
$$\vec{F}_c = \vec{N} + \vec{F}_{fr}$$

Friction is always against <u>intended</u> direction of motion

$$F_{fr} = \mu N$$

μ_{static}
$\mu_{kinetic}$

$\mu_s \geq \mu_k$



$$m\vec{a} = 0 = \vec{F}_{fr} + \vec{N} + \vec{F} + m\vec{g}$$

$$y: \quad ma_y = 0 = 0 + N + -mg\cos\theta$$

$$N = mg\cos\theta$$

$$x: \quad ma_x = 0 = \underbrace{-\mu N}_{F_{fr}} + 0 + F - mg\sin\theta$$

$$F = \mu N + mg\sin\theta = \mu mg\cos\theta + mg\sin\theta$$

friction less

$\mu = 0$ to 1