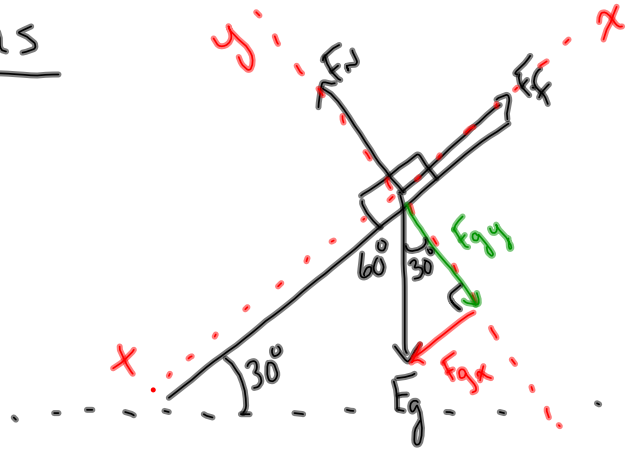


Incline Problems

- $m = 50 \text{ kg}$
 a) no friction
 b) $\mu_k = 0.15$



a) $\vec{F}_{net} = m\vec{a}$ b) $\vec{F}_{net} = m\vec{a}$

$\sin\theta = \frac{F_{gx}}{F_g}$ →

$F_{gx} = ma$
 $F_g \sin\theta = ma$
 $mg \sin\theta = ma$
 $a = g \sin\theta$
 $a = (9.8 \text{ m/s}^2) \sin 30^\circ$
 $a = 4.9 \text{ m/s}^2$
 no friction

$F_{gx} - F_f = ma$
 $F_g \sin\theta - \mu F_N = ma$
 $mg \sin\theta - \mu F_{gy} = ma$
 $mg \sin\theta - \mu F_g \cos\theta = ma$
 $mg \sin\theta - \mu mg \cos\theta = ma$
 $a = g \sin\theta - \mu g \cos\theta$
 $a = 4.9 \text{ m/s}^2 - 0.15(9.8 \text{ m/s}^2) \cos 30^\circ$
 $a = 4.9 - 1.3 \text{ m/s}^2$
 $a = 3.6 \text{ m/s}^2$
 with friction

* the mass did not matter in either case.