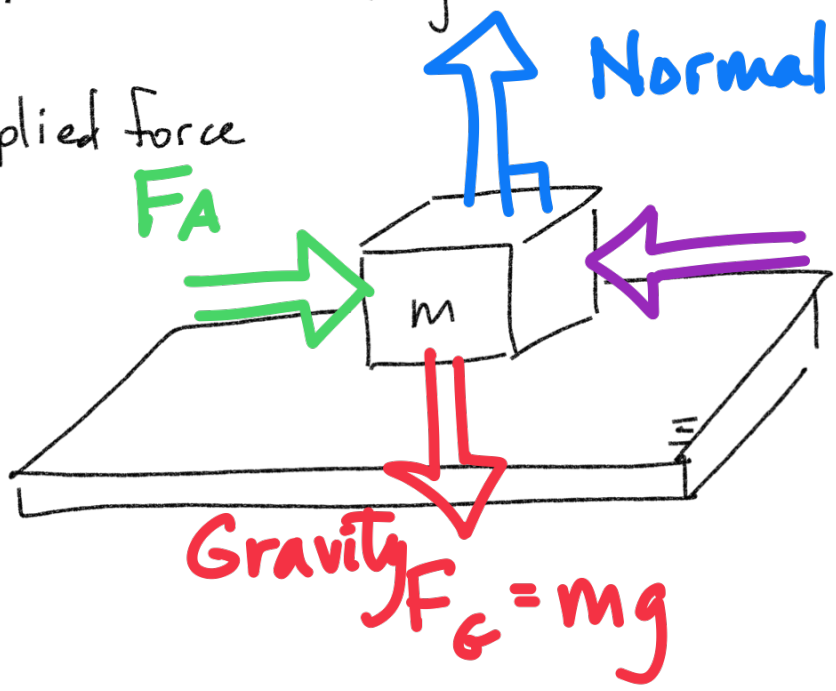


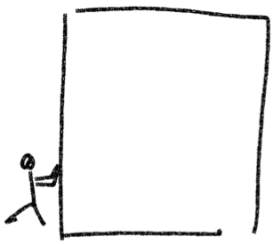
$F_n = -mg$

$F_f = -\mu mg$

μF_n

$F_A > F_f$ moves

$F_A < F_f$ no movement



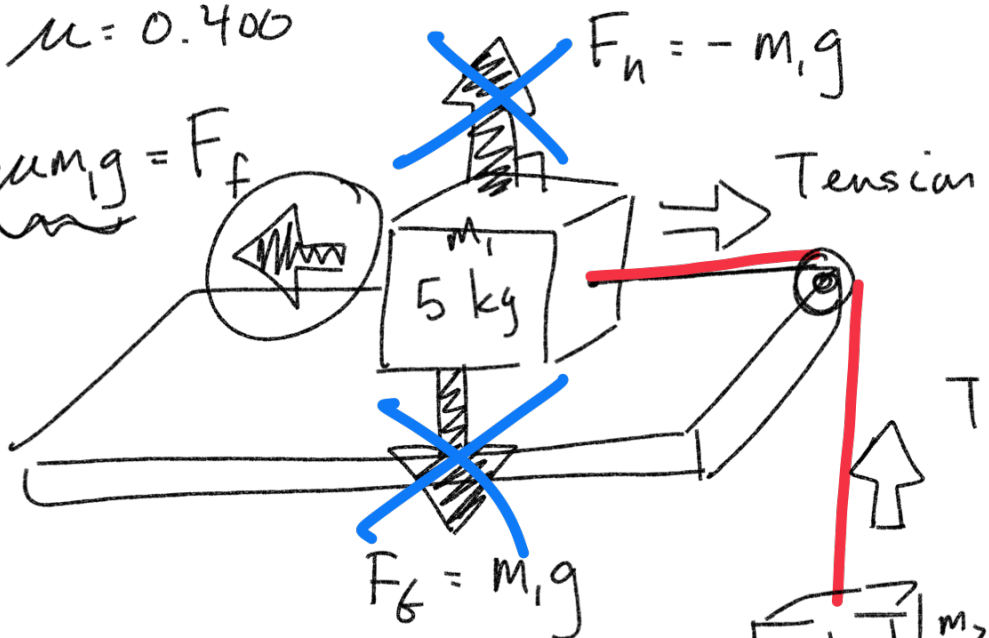
Static friction

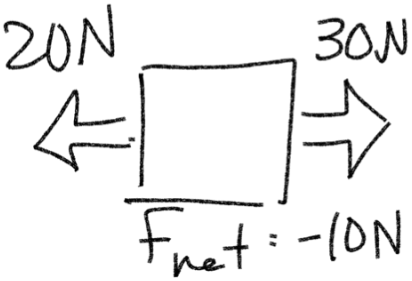
Force to overcome an object at rest

Dynamic/kinetic friction

Force to overcome the friction from a moving object.

$\mu = 0.400$





$T = -m_2 g$

$F_G = m_2 g$

$(3kg)(-10 m/s^2)$

$-30 N$

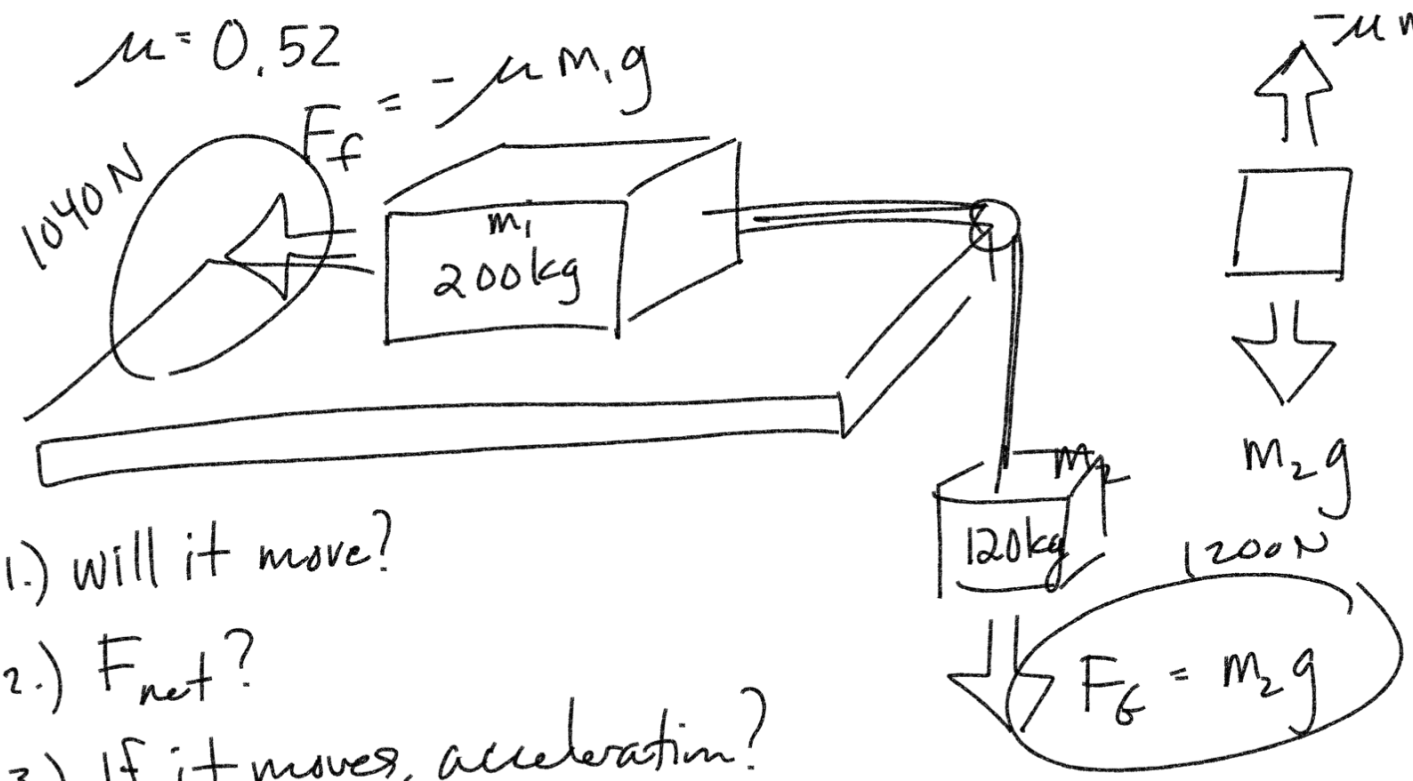
$F_f = -\mu m_1 g$

$-(0.400)(5kg)(-10 m/s^2)$

$+20 N$

$F_G = m_2 g$

$\frac{F}{m} = \frac{ma}{m}$ $\quad a = \frac{F}{m} = \frac{-10N}{5kg+3kg} = \boxed{-1.25 m/s^2}$



1.) will it move?

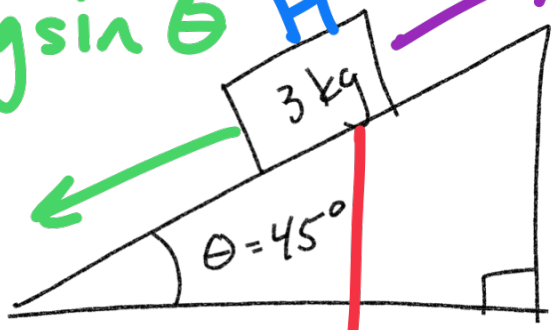
2.) F_{net}?

3.) If it moves, acceleration?

$\mu m_1 g$	$m_2 g$
$(0.52)(200\,kg)(-10\,m/s^2)$	$(120\,kg)(-10)$
$+1040\,N$	$-1200\,N$

F_{net} $1040N - 1200N = -160N$

$$a = \frac{F_{net}}{m} = \frac{-160\,N}{200 + 120} = \frac{-160\,N}{320\,kg} = \boxed{-0.5\,m/s^2}$$



$\cancel{F_n} = -mg\cos\theta$

$F_m = mg\sin\theta$

$F_f = \mu F_n$

$= -\mu mg\cos\theta$

$F_g = mg$

what vectors affect movement

F_m F_f

$\mu = 0.200$

Does the block move?

$F_m > F_f$ moves

$$F_m + F_f = F_{net}$$

$$mg\sin\theta + -\mu mg\cos\theta$$

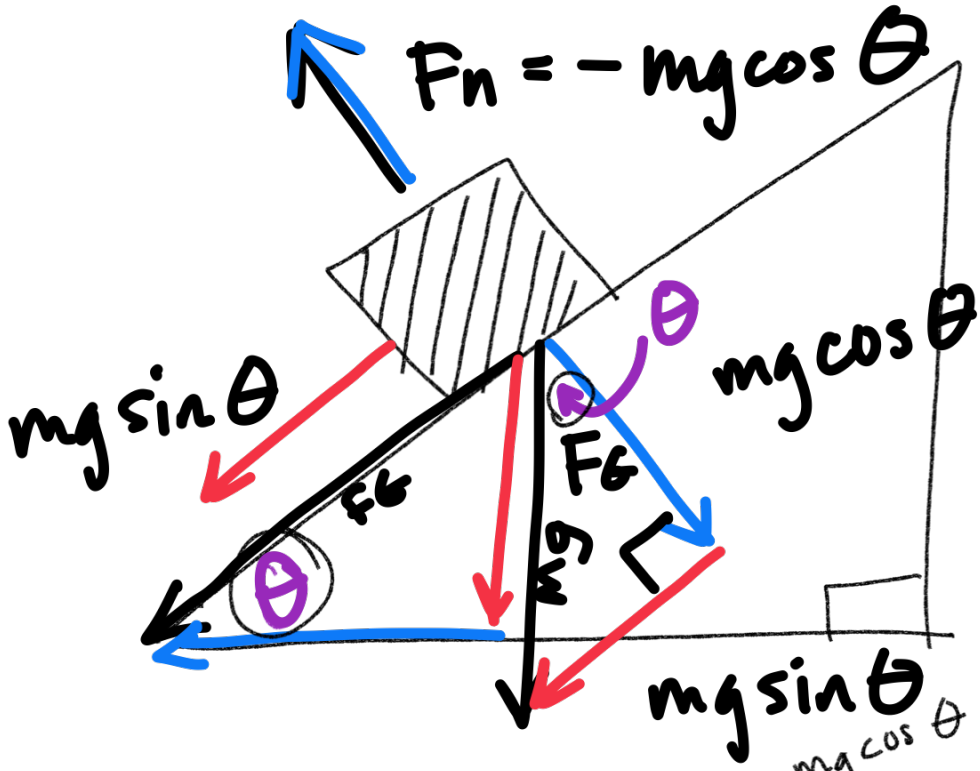
$$(3\,kg)(-10\,m/s^2)(\sin 45) + (-)(0.2)(3\,kg)(-10\,m/s^2)(\cos 45)$$

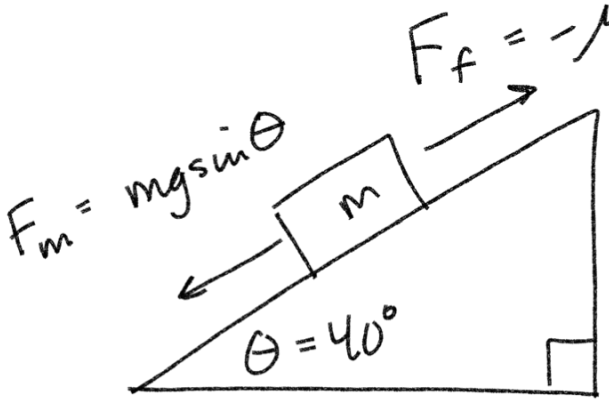
$$-21.21\,N + 4.24\,N = -16.97\,N$$

$$\approx -17\,N$$

What is the acceleration

$$a = \frac{F}{m} = \frac{-17\,N}{3\,kg} = \boxed{-5.67\,m/s^2}$$





$m = 18.0\,kg$

$\mu = 0.300$

a) Does it move?

b) F_{net}?

c) acceleration?

F_m F_f

$F_{net} = mg\sin\theta + -\mu mg\cos\theta$

$(18.0\,kg)(-10\,m/s^2)(\sin 40) + (-)(0.300)(18.0\,kg)(-10\,m/s^2)(\cos 40)$

$-115.7\,N + 41.37\,N = -74.3\,N$

$a = \frac{F_{net}}{m} = \frac{-74.3\,N}{18.0\,kg} = \boxed{-4.1\,m/s^2}$