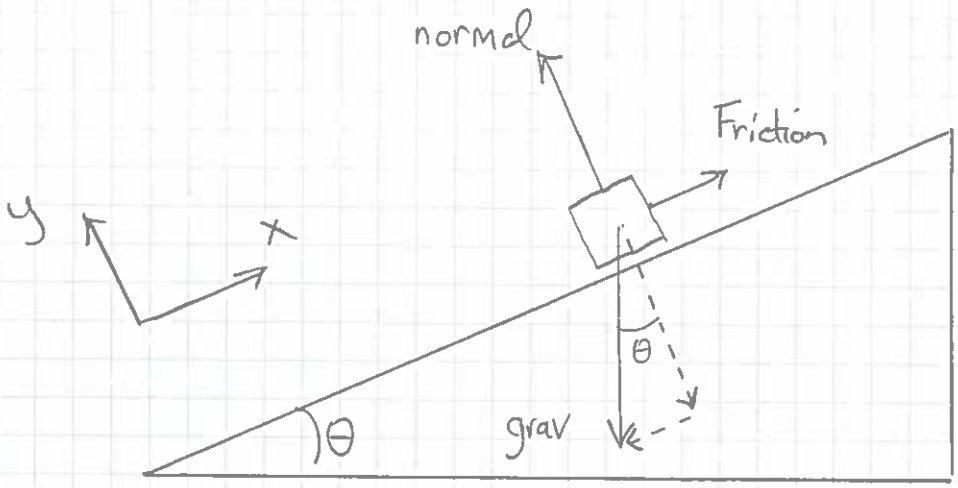

Block of mass m is placed on ramp tilted at angle θ. The block slides down the ramp.

force	x	y
grav	$-mg\sin\theta$	$-mg\cos\theta$
normal	0	$+F_N$
friction	$+F_f$	0
total	ma_x (must be neg)	$ma_y = 0$

Y forces: $F_N = mg\cos\theta$

X forces $F_f - mg\sin\theta = -ma_x$ we know accel is <u>not</u> zero here "a_x" is magnitude of accel; we know sign is neg.

But $F_f = \mu_K F_N = \mu_K mg\cos\theta$

$\rightarrow \mu_K mg\cos\theta - mg\sin\theta = -ma_x$

$\rightarrow \boxed{a_x = g(\sin\theta - \mu_K\cos\theta)}$ This is the magnitude of a_x; sign is negative.