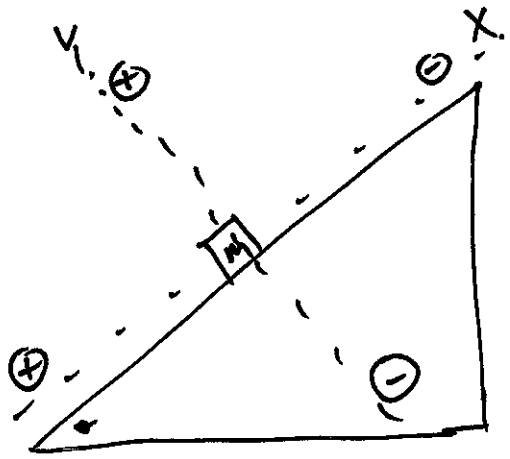
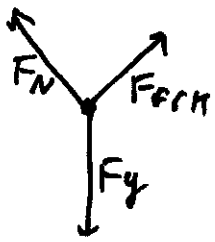
(F) Block on a ramp with kinetic friction.



~~Those~~ There are three forces acting on the block:

- gravity
- ~~&~~ normal force
- kinetic friction



Gravity and normal force were discussed extensively in part E. Now we will focus on ~~the friction~~ kinetic friction.

- The magnitude of kinetic friction is given by

$$F_{frk} = \mu_k \cdot F_N$$

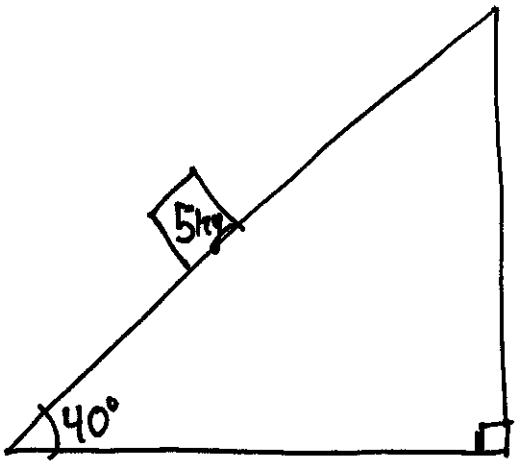
μ_k - the coefficient of kinetic friction

F_N - the magnitude of the normal force.

- The direction of friction ~~always is~~ is always such that friction resists motion.

In this case, the direction of kinetic friction is along the $-X$ axis.

①



A mass of 5 kg is on a ramp with an angle of incline of 40°. The surface of the ramp has a coefficient of kinetic friction of 0.18.

-Set up a coordinate axis, draw a free-body diagram. Break necessary forces into components and fill out the following tables:

X- forces

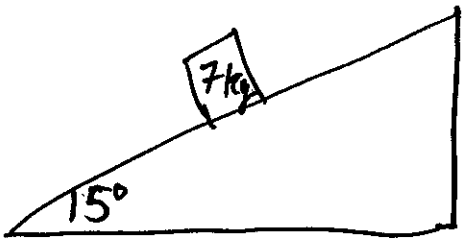
Force	Value

Y- forces

Force	Value

-Determine ΣF_x and the acceleration of the block.

(2)



A mass of 7 kg is on a ramp with an angle of incline of 15°. The surface of the ramp and the block have a coefficient of kinetic friction of 0.22.

- Set up a coordinate axis, draw a free-body diagram. Break necessary forces into components and fill out the following tables:

X- forces

Force	Value

Y-forces

Force	Value

- Determine ΣF_x and the acceleration of the block.