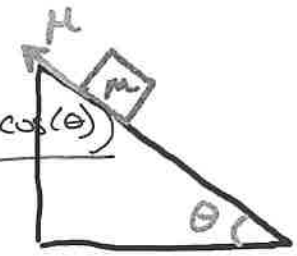
Review this line and make sure you have what you're supposed to. Very

AP Physics: Section 1 Quiz Review

1. On the right is a ramp with an angle θ, the box and the ramp have a friction coefficient of μ. If the box has a mass of m,



   a. Calculate the acceleration the box has as it slides down the ramp. (make sure to simplify)

$$a = \frac{\Sigma F}{m} = \frac{mg\sin(\theta) - \mu mg\cos(\theta)}{m} = \frac{mg(\sin(\theta) - \mu\cos(\theta))}{m}$$

$$\boxed{a = g(\sin(\theta) - \mu\cos(\theta))}$$

   b. From the answer above, what are the only variables that affect the acceleration down the ramp?

g, θ, μ

mass doesn't matter

   c. If the block began from rest and the block is sliding down the ramp with a net force of F. Using this information, calculate the distance the block traveled in time t. (answer in terms of F, m and t)

$F = ma$

$a = \frac{F}{m}$

$a = \frac{F}{m}$

$v_0 = 0$

$t = t$

$x_0 = 0$

$x = x_0 + v_0 t + \frac{1}{2}at^2$

$x = \frac{1}{2}\left(\frac{F}{m}\right)t^2 = \boxed{\frac{Ft^2}{2m}}$

   d. If the net force down the ramp is F and unchanging. Which graph would look similar to the Force-time graph?

___Position-time ____velocity-time ____speed-time __X__acc-time

   e. If the net force down the ramp is F and unchanging. Which graph have a linear increasing slope?

___Position-time ____velocity-time __X__speed-time ____acc-time

   f. If the block has a velocity down the ramp but it is slowing down, what do we know about its friction force?

      A. The weight down the ramp is larger than the friction force.
      B. The friction force and the weight down the ramp is equal.
      (C.) The friction force is larger than the weight down the ramp.

1. Which of these situations will definitely have vectors on their FBDs that are the same length? (two answers)

__X__ flat surface ____on a ramp __X__ pulley systems

Explain why there are same length vectors on each of those systems.

weight = Normal

Tensions on the rope is the same.