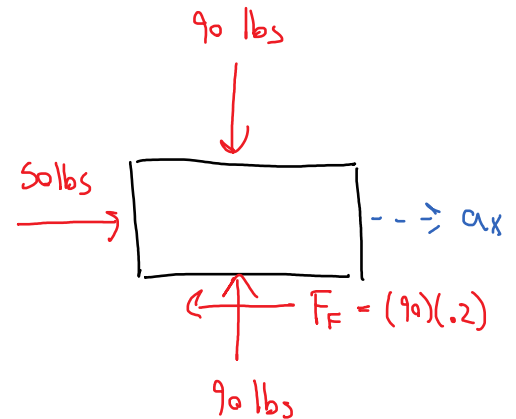
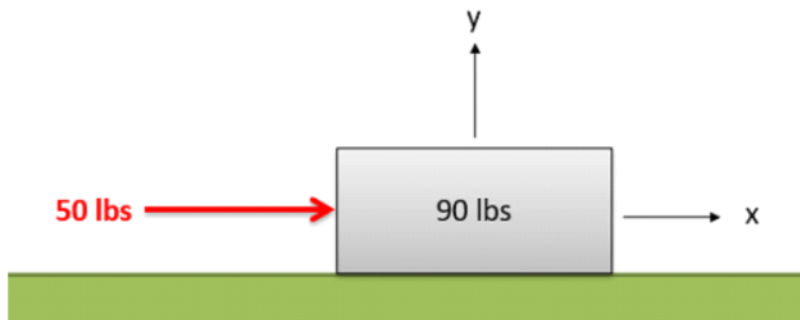


## Problem 2

A block with a weight of 90 pounds sits on a surface with a kinetic coefficient of friction of .2 as shown below. A 50 pound force is then applied in the x direction as shown below.

- What is the rate of acceleration of the block?
- What is the velocity and displacement three seconds after the force is applied?



a)

$$\begin{aligned}\sum F_x &= 50 - 18 = m a_x \\ 32 \text{ lbs} &= \frac{90}{32.2} a_x \\ \boxed{a_x = 11.45 \text{ ft/s}^2}\end{aligned}$$

b)

$$V(t) = at + v_0 = (11.45)(3)$$

$$\boxed{V(3) = 34.35 \text{ ft/s}}$$

$$S(t) = \frac{1}{2} at^2 + v_0 t + s_0 = \frac{1}{2} (11.45)(3)^2$$

$$\boxed{S(3) = 51.52 \text{ ft}}$$