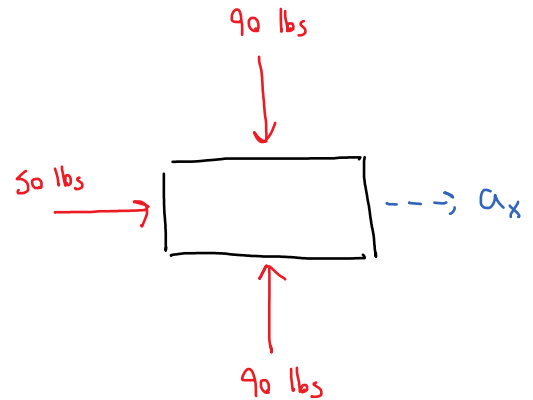
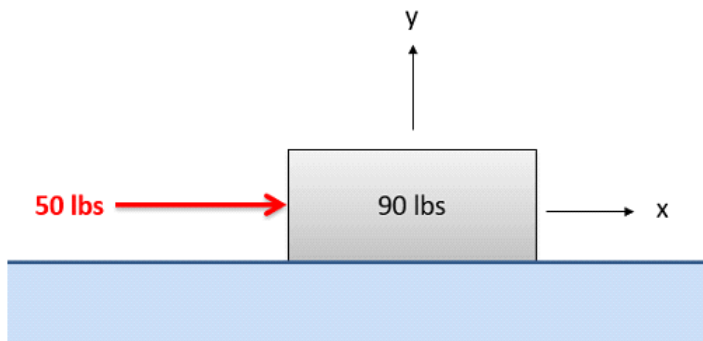


Problem 1

A block with a weight of 90 pounds sits on a frictionless surface 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?



$$a) \quad \sum F_x = 50 \text{ lbs} = m a_x$$

$$50 = \frac{90}{32.2} a_x$$

$$\boxed{a_x = 17.89 \text{ ft/s}^2}$$

$$b) \quad v(t) = a t + \dot{v}_0 = (17.89)(3)$$

$$\boxed{v(3) = 53.67 \text{ ft/s}}$$

$$s(t) = \frac{1}{2} a t^2 + \cancel{\dot{v}_0 t} + \cancel{s_0} = \frac{1}{2} (17.89)(3)^2$$

$$\boxed{s(3) = 80.5 \text{ ft}}$$