Question 1:
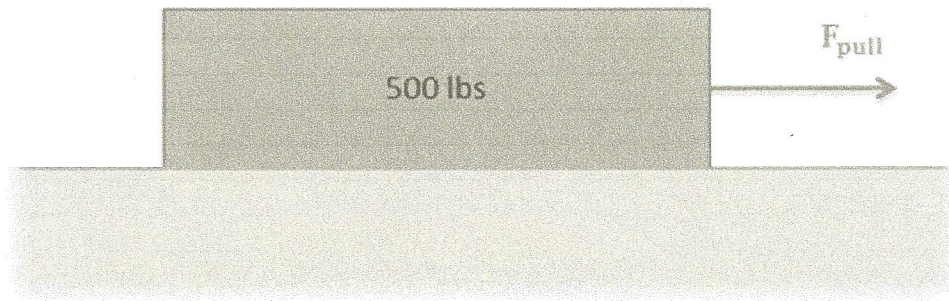
A 500 lb box is sitting on concrete floor. If the static coefficient of friction is .7 and the kinetic coefficient of friction is .6:

a) • What is the friction force if the pulling force is 150 lbs?

b) • What pulling force would be required to get the box moving?

c) • What is the minimum force required to keep the box moving once it has started moving?

500 lbs F_{pull}

Calculations:

a)
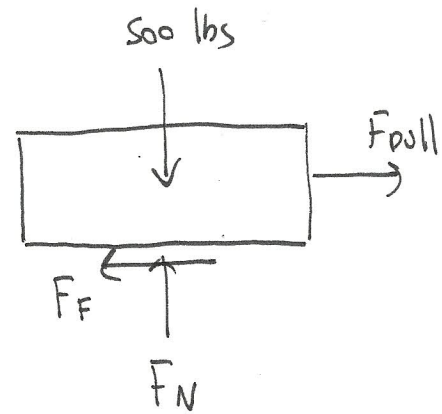
$$F_{Fmax} = (M_s)(F_N)$$

$$\sum F_y = F_N - 500 = 0$$
$$F_N = 500 \text{ lbs}$$

$$F_{Fmax} = (.7)(500)$$
$$F_{Fmax} = 350 \text{ lbs}$$

500 lbs
F_{pull}
F_F
F_N

If $F_{pull} = 150$ lbs then $F_F = 150$ lbs

b) to get it started

$$F_{pull} = (M_s)(F_N) = (.7)(500)$$

$$\boxed{F_{pull} = 350 \text{ lbs}}$$

c) to keep it going

$$F_{pull} = (M_u)(F_N) = (.6)(500)$$

$$\boxed{F_{pull} = 300 \text{ lbs}}$$