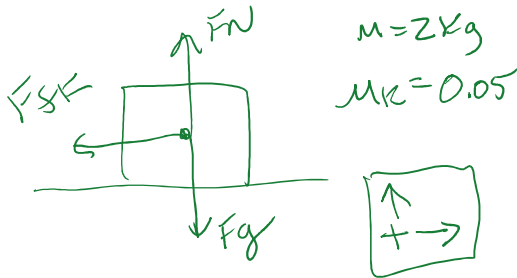


4. A 2.00 kg waxed ski slides down a small snowy hill. Once the ski hits the bottom of the hill, it starts to slow down on a horizontal surface until it comes to a complete stop. What is the acceleration of the sled as it comes to a stop?

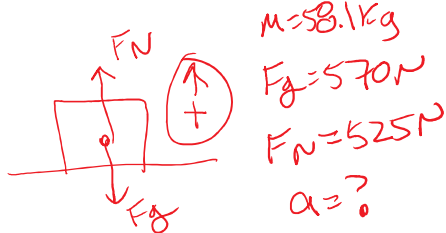


$$a = \frac{F_{\text{NET}}}{m} = \frac{-0.981 \text{ N}}{2 \text{ kg}} = \boxed{-0.491 \text{ m/s}^2}$$

$F_{\text{NET}} = -F_{\text{sk}} = -\mu F_N$   
 $= -(0.05)(2 \text{ kg})(9.81 \text{ m/s}^2)$   
 $= \boxed{-0.981 \text{ N}}$

$F_g = mg$

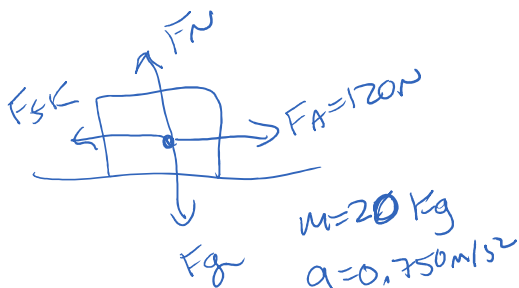
5. A 58.1 kg person has a weight of 570. N after getting off a bathroom scale in their apartment. The person then takes the scale and places it in the elevator where they live and gets on the scale. They then push the button for the elevator to go down and once the elevator begins to go downward, the scale suddenly reads 525 N. What is the acceleration of the elevator going downward?



$$a = \frac{F_{\text{NET}}}{m} = \frac{-45 \text{ N}}{58.1 \text{ kg}} = \boxed{-0.774 \text{ m/s}^2}$$

$F_{\text{NET}} = F_N + (-F_g)$   
 $= 525 \text{ N} - 570 \text{ N} = -45 \text{ N}$

6. A 20.0 kg block is being pulled to the right across a level rough surface by a force of 120. N causing it to accelerate at  $0.750 \text{ m/s}^2$ . Calculate the force of friction and coefficient of friction.



A)  $F_{\text{sk}} = ?$

$$F_{\text{NET}} = ma = (20 \text{ kg})(0.750 \text{ m/s}^2)$$

$$F_{\text{NET}} = 15 \text{ N}$$

$$F_{\text{NET}} = F_A + (-F_f)$$

$$F_f = F_A - F_{\text{NET}} = 120 \text{ N} - 15 \text{ N}$$

$$\boxed{F_f = 105 \text{ N}}$$

$$B) \mu = \frac{F_f}{F_N} = \frac{105 \text{ N}}{196 \text{ N}} = \boxed{0.536}$$

$$F_N = F_g = mg = (20 \text{ kg})(9.81 \text{ m/s}^2) = 196 \text{ N}$$

Unit 4: Newton's Laws Work Packet pg. 14