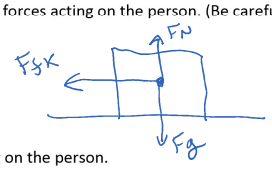
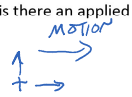
3. A 70.0 kg person on *waxed skis* is moving along a flat *snow* covered ground at 5.00 m/s until coming to a stop. (FIND ON REF. TABS)

A. Draw a free-body diagram of all the forces acting on the person. (Be careful, is there an applied force in this case???)

$\mu_K = 0.05$ $v_f = 0$ m/s
$m = 70.0$ kg
$v_i = 5.00$ m/s





B. Calculate the force of friction acting on the person.

$F_{fK} = \mu_K F_N = (0.05)(6866.7\text{N}) = \boxed{34.3\text{N}}$

$F_N = F_g = mg = (70.0\text{kg})(9.81\text{m/s}^2) = 6866.7\text{N}$

C. What is the net horizontal force of the person?

$F_{NET,x} = -F_{fK} = \boxed{-34.3\text{N} \text{ LEFT}}$

D. Calculate the acceleration of the skier. (give magnitude and direction)

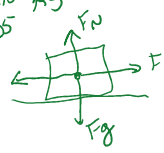
$a_x = \frac{F_{NET,x}}{m} = \frac{-34.3\text{N}}{70.0\text{kg}} = \boxed{-0.490\text{m/s}^2 \text{ LEFT}}$

E. Calculate the distance the skier covers until coming to a stop.

$v_f^2 = v_i^2 + 2ad \rightarrow d = \frac{v_f^2 - v_i^2}{2a} = \frac{-(5\text{m/s})^2}{-0.490\text{m/s}^2} = \boxed{25.5\text{m}}$

4. What is the minimum force needed to start the motion of a 3.00 x 10^3 kg car with *rubber* wheels that is at rest on dry asphalt?

$m = 3\times10^3$ kg
$\mu_S = 0.85$
F_{fS}

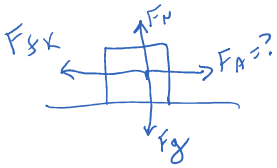


$F_A = F_{fS} = \mu_S F_N = (0.85)(29{,}430\text{N}) = 25{,}016\text{N} \rightarrow \boxed{2.50\times10^4\text{N}}$

IF FINDING MINIMUM FORCE NEEDED TO START MOTION

$F_N = F_g = mg = (3000\times10^3\text{kg})(9.81\text{m/s}^2)$
$F_N = 29{,}430$ N

5. What would be the minimum force needed to keep the 3.00 x 10^3 kg car with *rubber* wheels moving at a *constant speed* on *dry* asphalt?



$m = 3.00\times10^3$ kg
$\mu_K = 0.67$

$F_N = F_g = mg = (3.00\times10^3\text{kg})(9.81\text{m/s}^2) = 29{,}430\text{N}$

$F_A = F_{fK} = \mu_K F_N = (0.67)(29{,}430\text{N}) = 19{,}718\text{N} \rightarrow \boxed{1.97\times10^4\text{N}}$

IF THE OBJECT IS MOVING AT A CONSTANT VELOCITY ON A LEVEL SURFACE WHERE ONLY F_A & F_g ARE ACTING ON IT