

Alex Vech

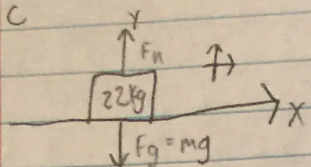
SG 4

1. b

2. c

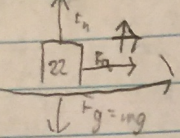
3.

a)



b) $F_{net} = ma$ $F_{net,y} = ma_y = N - F_g = 0$, $a_y = 0$, $N = mg = 22 \cdot 9.8 = 215.6 \text{ N}$

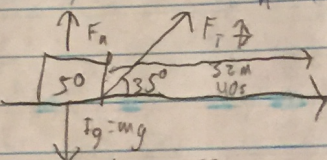
4a)



b) $F_{net} = ma$ $F_{net,y} = ma_y = N - F_g = 0$, $a_y = 0$, $N = F_g = mg = 22 \cdot 9.8 = 215.6 \text{ N}$

c) $F_{net} = ma$ $F_{net,x} = ma_x = F_A = 0.9 \cdot 215.6 = 194 \text{ N}$ $a_x = 194/22 = 8.82 \text{ m/s}^2$

5a)



b) $T_x = T \cos(35) = ma_x = 50a_x$ F_N & F_g have no x component

c) $d = d_0 + v_0 t + \frac{1}{2} a t^2$

$32 = 0 + 0 + \frac{1}{2} (a_x) 40^2$

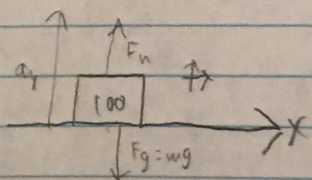
$a_x = 0.04 \text{ m/s}^2$

d) $\frac{\sin(35)}{\cos(35)} = \bar{T} = 2111 \text{ N}$

e) $F_{net} = ma$ $F_{net,y} = ma_y = N - F_g + T \sin(35) = 0$, $N - F_g - T \sin(35) = 50 \cdot 9.8 - 244$ $\sin(35) = 488.6 \text{ N}$

it is lower because F_T has a y component going in the direction of F_N

6a)



b) $F_{net} = ma$ $F_{net,y} = ma_y = N - F_g = 1030 - 100 \cdot 9.8 = 50 = 100a_y$, $a_y = 0.5 \text{ m/s}^2$

c) $F_g = 9.8 \cdot 100 = 980 \text{ N}$

scale 1030 N

scale had a different value b/c the professor is accelerating