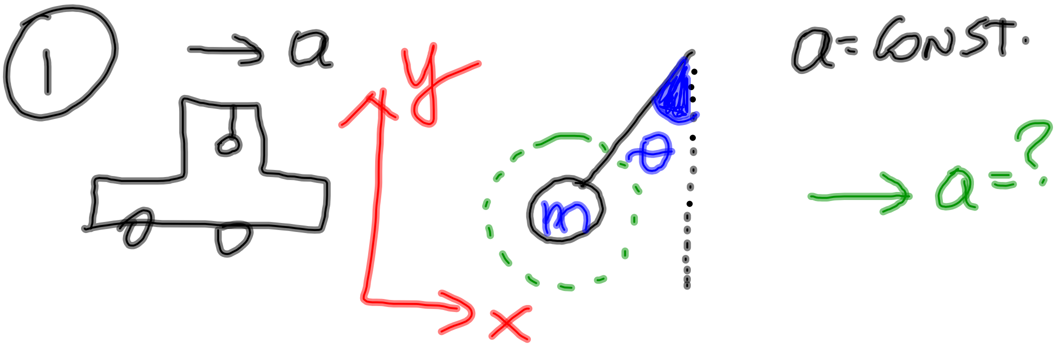
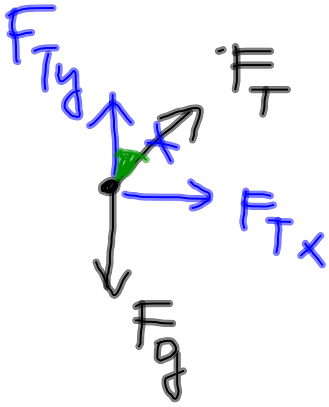




$$F_{Tx} = F_T \cdot \sin\theta$$
$$F_{Ty} = F_T \cdot \cos\theta$$
$$F_g = m \cdot g$$

Dec 11-8:08 AM

N2L (x): $\Sigma F_x = m \cdot a_x$

$$F_{Tx} = m \cdot a_x$$
$$F_T \cdot \sin\theta = m\,a_x$$

N2L (y): $\Sigma F_y = m \cdot a_y \qquad a_y = 0$

$$F_{Ty} - F_g = 0$$
$$F_{Ty} = mg$$

Dec 11-8:22 AM

$$\cos\theta = \frac{F_{Ty}}{F_T} \Rightarrow F_{Ty} = F_T \cdot \cos\theta$$

$$F_T \cdot \cos\theta = mg$$

$$F_T = \frac{mg}{\cos\theta}$$

$$(x) \quad \frac{\cancel{m}g}{\cos\theta}\sin\theta = \cancel{m} \cdot a_x$$

$$\boxed{a_x = g \cdot \tan\theta}$$

Dec 11-8:25 AM

Does the angle of deflection at given acceleration depend on the mass of the object?

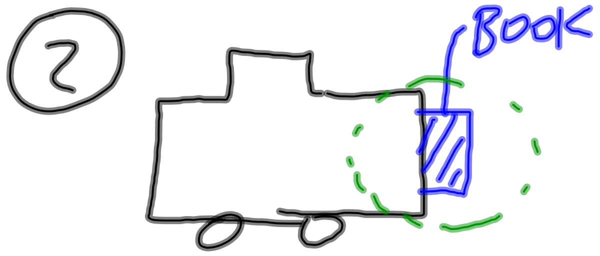
No!

At what angle $a_x = g$?

$45°$

Dec 11-8:26 AM

(2)



μ_s

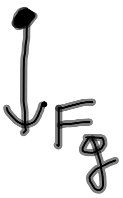
m_B

$a_{MIN} = ?$

SO THE BOOK DOESN'T SLIDE DOWN?

FBD (BOX)

$v = $ CONST.

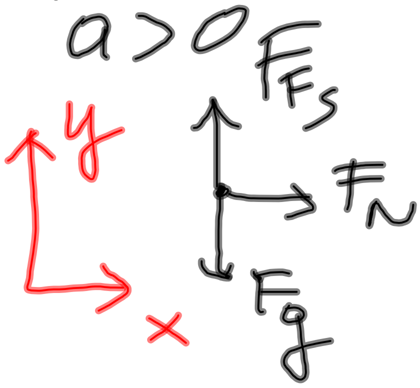


$$F_F = \mu \cdot F_N$$

Dec 11-8:37 AM

FBD (Book)

$a > 0$



$$\Sigma F_x = m \cdot a_x$$

$$F_N = m \cdot a_x$$

$$\Sigma F_y = m \cdot a_y \quad (a_y = 0!)$$

$$F_{F_S} - F_g = 0$$

$$F_{F_S} = m \cdot g$$

$$\mu_s \cdot F_N = m \cdot g$$

Dec 11-8:43 AM

$$F_N = \frac{mg}{\mu_s}$$

x $\quad \dfrac{\cancel{m}g}{\mu_s} = \cancel{m}a_x$

$$\boxed{a_{x(\text{min.})} = \frac{g}{\mu_s}}$$

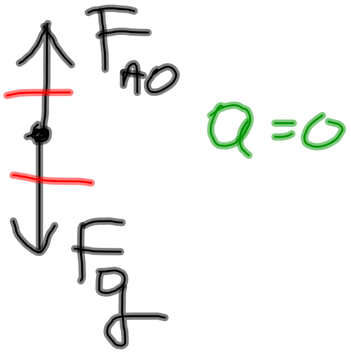
Dec 11-8:49 AM

Terminal velocity.

Velocity of an object falling with air resistance.

- TV depends on mass.
- TV depends on shape (the area exposed to the air resistance)

FBD AT TERMINAL VELOCITY.



Dec 11-8:51 AM