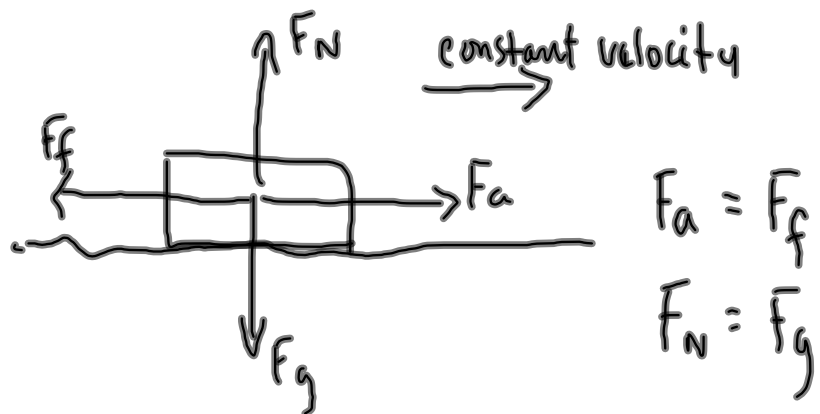


Quiz

Weight $\rightarrow F_g = mg$

Friction $\rightarrow F_f = \mu F_N$

FBD

Combining Dynamics + Kinematics

study of forces

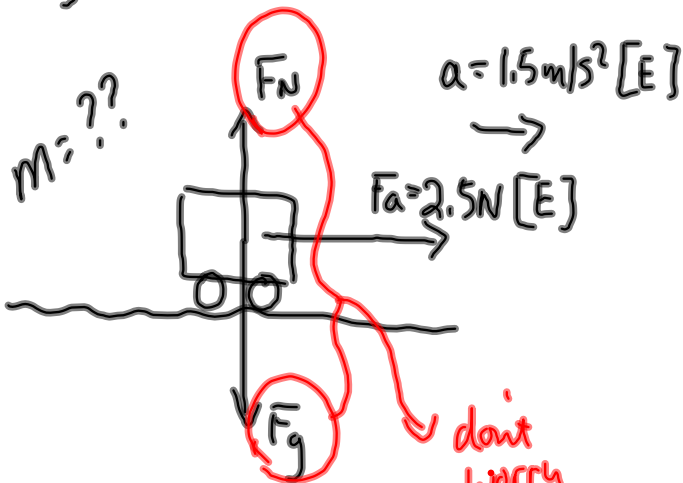
study of motion

RECALL:

$$\vec{F}_{net} = m\vec{a}$$

PP/163.

3.



don't worry about.

$$\frac{N}{m/s^2} = \frac{kg \cdot m/s^2}{m/s^2}$$

$$\vec{F}_{net} = m\vec{a}$$

$$\vec{F}_a = m\vec{a}$$

$$m = \frac{\vec{F}_a}{\vec{a}}$$

$$m = \frac{2.5 N [E]}{1.5 m/s^2 [E]}$$

$$m = 1.7 kg$$

MP/165

$$m = 9.1 \times 10^{-31} \text{ kg}$$

$$\Delta d = 3.5 \text{ mm} = 0.0035 \text{ m}$$

$$F_a = 5.8 \times 10^{-15} \text{ N}$$

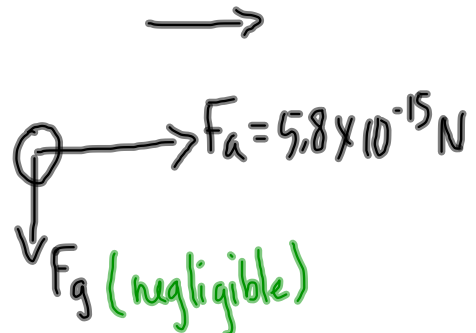
$$v_1 = 0$$

$$v_2 = ??$$

$$v_2^2 = v_1^2 + 2as$$

$$v_2^2 = 0 + 2(6.3736 \times 10^{15} \text{ m/s}^2)(0.0035 \text{ m})$$

$$v_2 = 6.7 \times 10^6 \text{ m/s}$$



$$F_{\text{net}} = ma$$

$$F_a = ma$$

$$(5.8 \times 10^{-15} \text{ N}) = (9.1 \times 10^{-31} \text{ kg})a$$

$$a = 6.3736 \times 10^{15} \text{ m/s}^2$$

MP/166

$$\vec{F}_a = 9.50 \text{ N [S]}$$

$$m = 20.0 \text{ kg}$$

$$v_1 = 0$$

$$\Delta t = 1.86 \text{ s}$$

$$a) \vec{a} = ?$$

$$b) \vec{v}_2 = ?$$

$$b) \vec{a} = \frac{\Delta \vec{v}}{\Delta t}$$

$$\vec{a} = \frac{\vec{v}_2 - \vec{v}_1}{\Delta t}$$

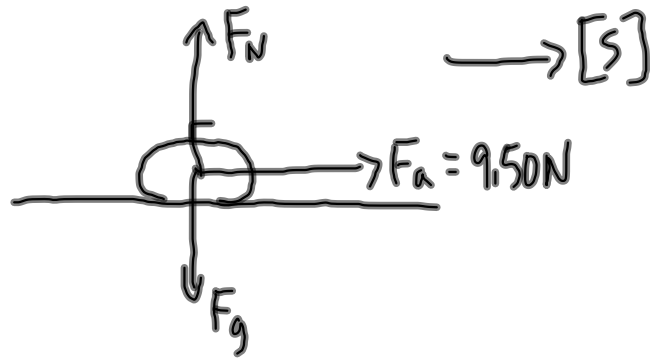
$$\vec{a} \Delta t = \vec{v}_2 - \vec{v}_1$$

$$\vec{v}_2 = \vec{v}_1 + \vec{a} \Delta t$$

$$\vec{v}_2 = (0.475 \text{ m/s}^2 \text{ [S]}) (1.86 \text{ s})$$

$$\vec{v}_2 = 0.884 \text{ m/s [S]}$$

PP/168



$$\vec{F}_{\text{net}} = m \vec{a}$$

$$\vec{F}_a = m \vec{a}$$

$$\vec{a} = \frac{\vec{F}_a}{m}$$

$$\vec{a} = \frac{9.50 \text{ N [S]}}{20.0 \text{ kg}}$$

a)

$$\vec{a} = 0.475 \text{ m/s}^2 \text{ [S]}$$