

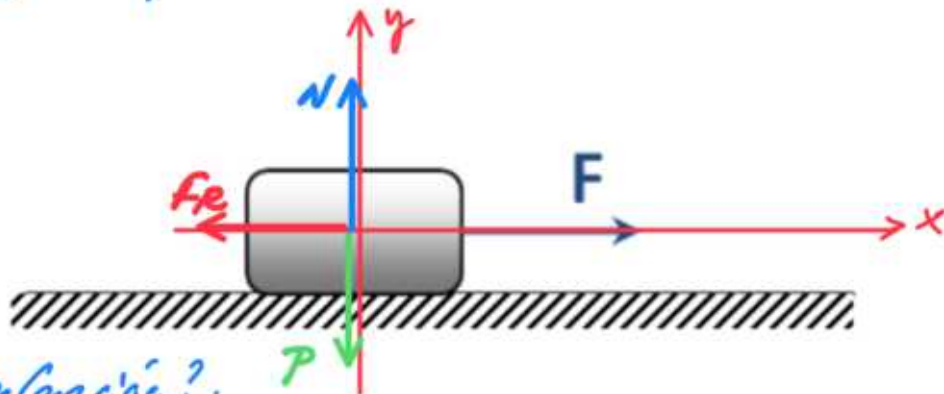
EJERCICIO FQ1BE3463:

"achimages.com"

$$F = 30 \text{ N}; \mu = 0,2; m = 14 \text{ kg}$$

a) aceleración?

b) V después de 10 metros?



a) Aceleración?

Eje ox:

$$\Sigma F_x = m \cdot a \Rightarrow F - f_r = m \cdot a$$
$$30 - \mu \cdot N = m \cdot a$$

Eje oy:

$$\Sigma F_y = 0 \Rightarrow N - P = 0 \quad N = P = m \cdot g$$

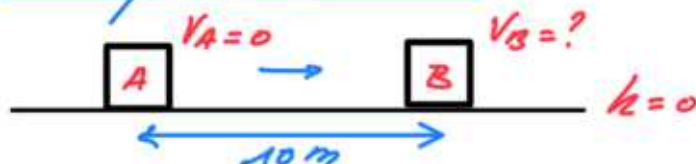
$$30 - \mu \cdot m \cdot g = m \cdot a$$

$$30 - 0,2 \cdot 14 \cdot 9,8 = 14a$$

$$30 - 27,44 = 14a$$

$$\frac{2,56}{14} = a = 0,18 \text{ m/s}^2$$

b) V después de 10 m:



$$W_{nc} = \Delta E \Rightarrow W_F + W_{fr} + \cancel{W_N} = E_B - E_A$$

$$F \cdot d \cdot \cos 0^\circ + f_r \cdot d \cdot \cos 180^\circ + N \cdot d \cdot \cancel{\cos 90^\circ} = E_B - E_A$$

$$30 \cdot 10 \cdot 1 + \mu \cdot N \cdot 10 \cdot (-1) = (\cancel{E_c} + \cancel{E_p})_B - (\cancel{E_c} + \cancel{E_p})_A$$

$$300 + 0,2 \cdot m \cdot g \cdot 10 \cdot (-1) = \frac{1}{2} m v_B^2$$

$$300 - 0,2 \cdot 14 \cdot 9,8 \cdot 10 = \frac{1}{2} 14 \cdot V_B^2$$

$$300 - 274,4 = 7 V_B^2$$

$$25,6 = 7 V_B^2$$

$$\frac{25,6}{7} = V_B^2 \Rightarrow V_B^2 = 3,66 \Rightarrow V_B = 1,91 \text{ m/s}$$

Confirmação por Dinâmica + Cinemática:

$$V = V_0 + at$$

$$S = \cancel{S_0} + \cancel{V_0}t + \frac{1}{2}at^2$$

$$10 = \frac{1}{2} \cdot 0,18 \cdot t^2 \Rightarrow t^2 = \frac{2 \cdot 10}{0,18} = 111,11 \Rightarrow t = 10,54 \text{ s}$$

$$V = \cancel{V_0} + at$$

$$V = 0,18 \cdot 10,54 = 1,90 \text{ m/s} \quad \checkmark$$