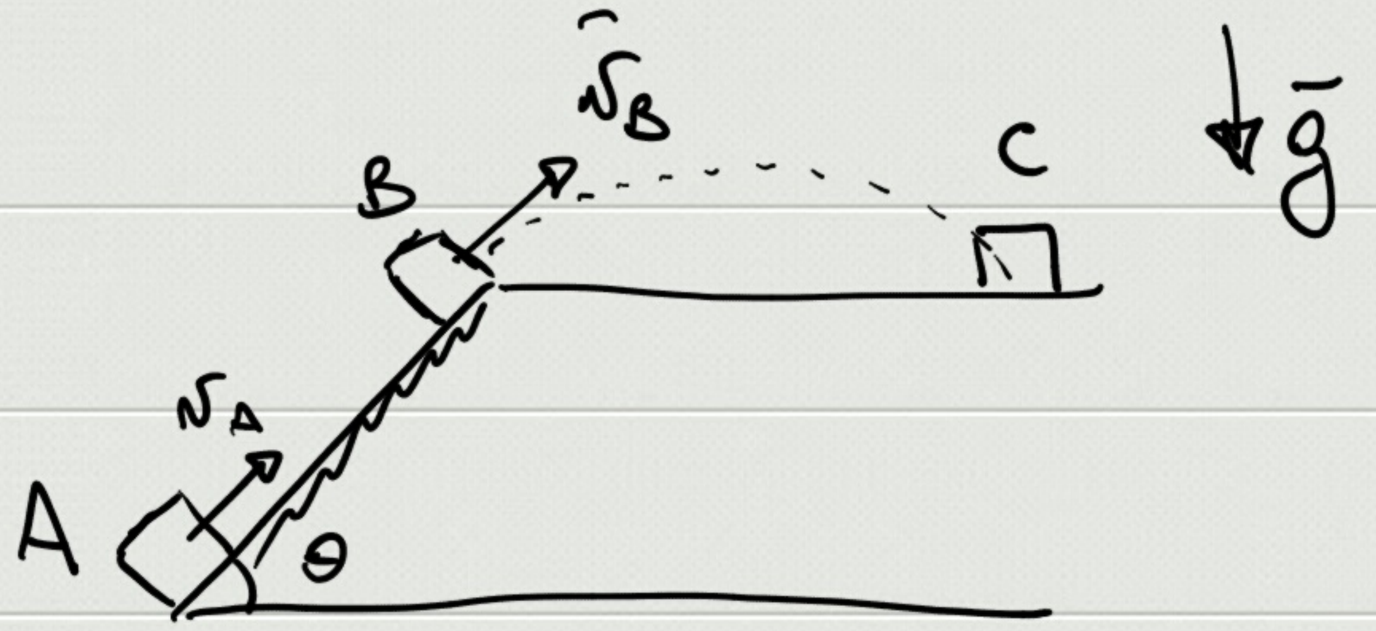


$\theta = 40^\circ$

$\mu_d = 0.4$

$AB = BC = d = 1.43\,m$

$v_A = ?$

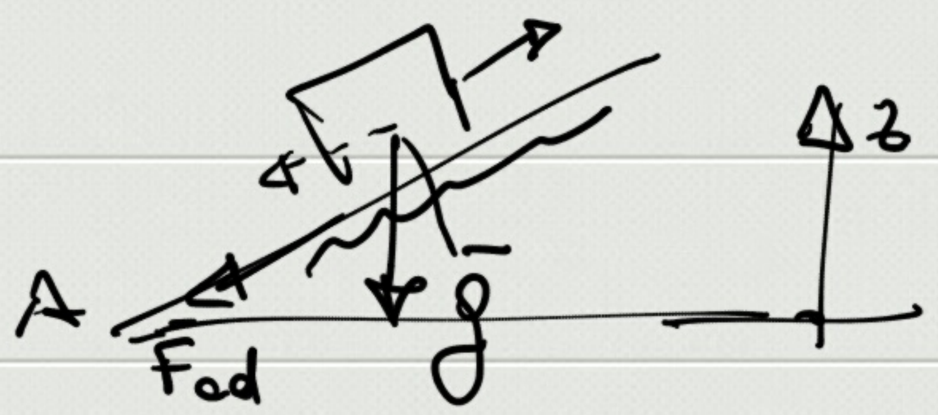
$$v_B^2 = v_A^2 - 2\mu_d g\cos\theta \cdot d$$

$$v_B^2 = v_A^2 - 2(\mu_d g\cos\theta + g\sin\theta)\,d \quad *$$

$$* \quad -\mu_d m g\cos\theta \cdot d = \left(\frac{1}{2}m v_B^2 + m g d\sin\theta\right) - \frac{1}{2}m v_A^2 \quad *$$

$$\frac{1}{2}m v_B^2 = \frac{1}{2}m v_A^2 - m g d\sin\theta$$

$v_f^2 = v_i^2 + 2\alpha l$



$W_{mc} = \Delta E_m = \Delta(E_k + E_p)$

$$\int_A^B \bar{F}_{od}\,d\bar{s} = -\mu_d N\int_A^B ds = -\mu_d mg\cos\theta \cdot d$$

$$\boxed{v_B^2 = v_A^2 - gd(\mu_d\cos\theta + \sin\theta)}$$

$$\Rightarrow \quad v_A^2 = v_B^2 + gd(\mu_d\cos\theta + \sin\theta)$$

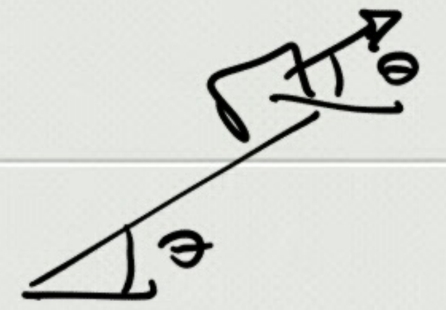
$$x(t) = \cancel{x_0} + \underline{v_x} t$$

$$v(t) = v_0 + a t$$

$$* - \begin{cases} \underline{v_B \cos\vartheta} \cdot t = d \\ -v_B \sin\vartheta = v_B \sin\vartheta - g t \end{cases}$$

$$* - \begin{cases} v_B \cos\vartheta \cdot t = d \\ 0 = v_B \sin\vartheta \cdot t - \frac{1}{2} g t^2 \end{cases}$$

$$y(t) = y_0 + v_{0y} t + \frac{1}{2} a_y t^2$$



$$- \quad 0 = v_B^2 - 2 g d$$

$$- \quad 0 = \frac{1}{2} m v_B^2 - m g h$$

$$d = \frac{2 v_B^2}{g} \sin\vartheta \cos\vartheta \quad \Rightarrow v_B = \ldots$$

$$t = \frac{d}{v_B \cos\vartheta}$$

$$g t = 2 v_B \sin\vartheta$$

$$\boxed{v_B^2 = \frac{g}{2 \sin\vartheta} \frac{d}{\cos\vartheta}}$$

$$v_A = \sqrt{dg \left[\frac{1}{2 \sin\vartheta \cos\vartheta} + 2(\sin\vartheta + \mu \cos\vartheta) \right]} =$$

$$= 6.4 \ \text{m/s}$$