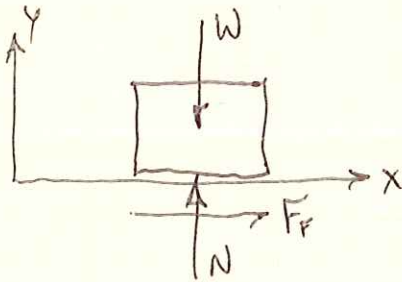


PROB. 12-7

$$a_{\text{LEVEL}} = 3 \frac{\text{ft}}{\text{s}^2}, \quad v_0 = \left(60 \frac{\text{mi}}{\text{hr}}\right) \left(\frac{\text{hr}}{3600 \text{s}}\right) \left(\frac{5280 \text{ft}}{\text{mi}}\right) = 88 \frac{\text{ft}}{\text{s}}$$

$$v_f = 50 \frac{\text{mi}}{\text{hr}} = 73.33 \frac{\text{ft}}{\text{s}}, \quad \text{FIND DISTANCE TRAVELED}$$

ON LEVEL GROUND:

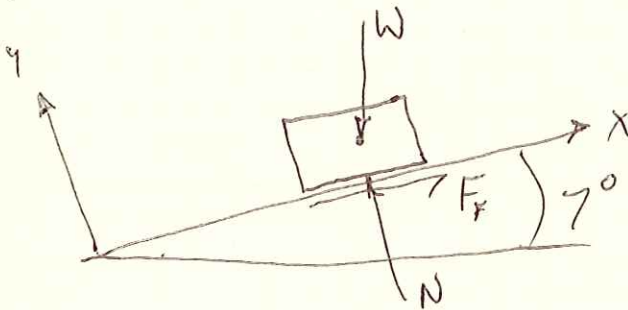


$$\Sigma F_x = m a_{x, \text{LEVEL}}$$

$$F_f = m a_{x, L}$$

$$F_f = \frac{W}{g} \cdot a_{x, L}$$

INCLINE:



$$\Sigma F_x = m a_{x, \text{INCLINE}}$$

$$F_f - W \sin 7^\circ = m a_{x, IN}$$

$$\left(\frac{W}{g} \cdot a_{x, L}\right) - W \sin 7^\circ = \frac{W}{g} \cdot a_{x, IN}$$

$$a_{x, \text{INCLINE}} = a_{x, \text{LEVEL}} - g \sin 7^\circ = \left(3 \frac{\text{ft}}{\text{s}^2}\right) - \left(32.2 \frac{\text{ft}}{\text{s}^2}\right) \sin 7^\circ$$

$$a_{x, IN} = -0.9242 \frac{\text{ft}}{\text{s}^2}$$

$$v^2 = v_0^2 + 2a(x - x_0)$$

$$(x - x_0) = \frac{(v^2 - v_0^2)}{2a} = \frac{\left(73.33 \frac{\text{ft}}{\text{s}}\right)^2 - \left(88 \frac{\text{ft}}{\text{s}}\right)^2}{2(-0.9242 \frac{\text{ft}}{\text{s}^2})} = 1280 \text{ ft}$$