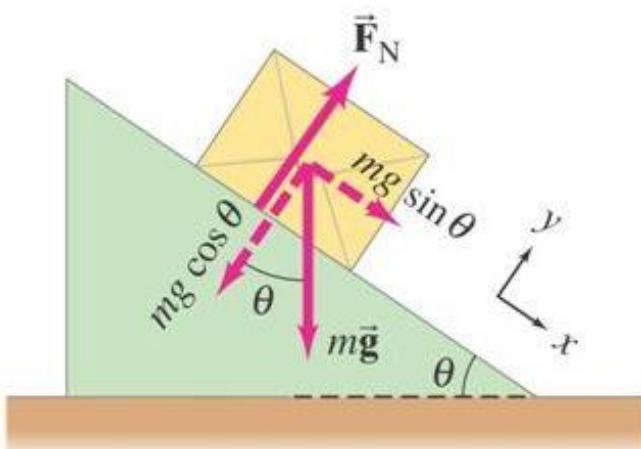


### Answer on Question #70711 Physics / Other

A  $m = 100$  lb box slides down a frictionless skid inclined at an angle of  $\theta = 60$  degree with the horizontal. Find (a) the accelerating force  $F$ , (b) the time  $t_1$  required to travel the first  $v = 20$  ft/sec, and (c) the time  $t_2$  required to travel the next 20 ft/sec.

**Solution:**



The acceleration force

$$F = mg \sin \theta$$

$$= 100 \times 32.174 \times \sin 60^\circ$$

$$= 2786 \text{ lbf.}$$

The acceleration

$$a = \frac{F}{m} = \frac{2786}{100} = 27.86 \text{ ft/sec}^2$$

The time required to travel

$$t_1 = \frac{v - 0}{a} = \frac{20}{27.86} = 0.036 \text{ sec.}$$

$$t_2 = \frac{2v - v}{a} = \frac{2 \times 20 - 20}{27.86} = 0.036 \text{ sec.}$$

**Answers:**

- (a)  $F = 2786$  lbf
- (b)  $t_1 = 0.036$  sec
- (c)  $t_2 = 0.036$  sec

Answer provided by <https://www.AssignmentExpert.com>