

A 150 Kg object is placed on a 30 degree incline and left to slide down on its own. If the coefficient of friction is 0.200 what the acceleration rate of the object?

$\sin 30 = \frac{F_{gx}}{F_g}$   
 $F_{gx} = F_g \sin 30 = 150 \times 9.81 \times 0.5 = 735.8$   
 $\cos 30 = \frac{F_{gy}}{F_g}$   
 $F_{gy} = F_g \cos 30 = 150 \times 9.81 \times 0.866 = 1274.4$   
 $F_g = (150 \text{ kg})(9.81) = 1471.5 \text{ N}$   
 $f = (\mu)(F_{gy}) = (0.2)(1274.4) = 254.9$   
 $F_n = F_{gx} - f = 735.8 - 254.9 = 480.9 \text{ N}$   
 $a = \frac{F_n}{m} = \frac{480.9}{150} = 3.2 \text{ m/s}^2$

Apr 4-9:44 AM