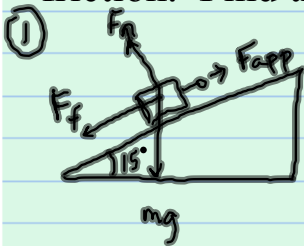


A 550-gram block is pulled up an inclined plane, 15 degrees above the horizontal, with a force parallel to the plane and a constant velocity. The force is applied by attaching a force probe to the block. The block has sandpaper on its bottom and the plane is wood. The force probe records a force of 7.45N to overcome static friction and 3.26 N to overcome kinetic friction. Find the coefficient of static and kinetic friction.



10pts

$$\sum F_x = F_{app} - F_f - mg \cos \theta = ma_x = 0 \quad (19) \quad \text{constant } v$$

$$F_{app} - \mu F_n - .55(9.8) \cos 75 = 0$$

$$F_{app} - .55(9.8) \cos 75 = \mu F_n$$

$$\sum F_y = F_n - mg \sin \theta = ma_y = 0 \quad (16)$$

$$F_n = mg \sin \theta$$

$$F_n = .55(9.8) \sin 75 = 5.2 \text{ N}$$

static

$$\mu = \frac{7.45 - .55(9.8) \cos 75}{5.2} = 1.16 \text{ N}$$

kinetic

$$\mu = \frac{3.26 - .55(9.8) \cos 75}{5.2} = .36 \text{ N}$$

