Answer on Question #44436, Physics, Mechanics — Kinematics — Dynamics

a 250N force is directed horizontally as shown to push a 29kg box up an inclined plane(27degrees) at a constant speed. determine the magnitude of the normal force and the coefficient of kinetic friction.

Solution

The normal force in opposite to the projection to the gravity force, and is equal to

$$N = mg \cos \alpha = 28 \cdot 9.8 \cdot \cos 27° \approx 253.2 \, N$$

Coefficient of friction can be found from equality of forces along the inclined plane

$$F_{friction} = F_{applied}$$

$$\mu N = F_{applied}$$

$$\mu = \frac{F_{applied}}{N} = \frac{253.2}{250} \approx 1.01$$