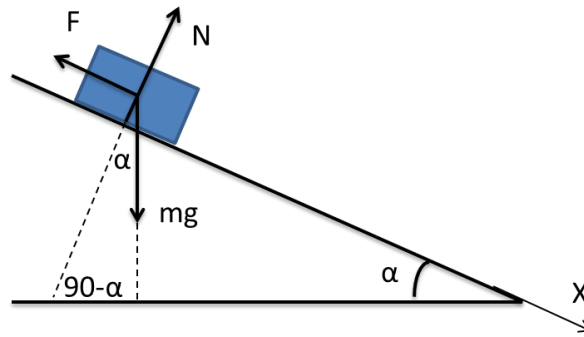# Answer on Question #45041, Physics, Mechanics | Kinematics | Dynamics

An object with a mass of 4 kg is kept motionless on an inclined plane by a force parallel to the plane. The angle of the incline is 30°; the object is at a vertical height of 10 m above the bottom; friction is negligible. What is the value of the force in Newtons?

A) 4.0

B) 4.9

C) 9.8

D) 19.6

E) 39.2

**Solution**.



As the object is motionless, from the Newton's first law:

$$\vec{F} + m\vec{g} + \vec{N} = 0$$

In projection on X axis:

$$-F + mg \cdot \sin(\alpha) = 0$$

$$= mg \cdot \sin(\alpha)$$

Numerically:

$$= 4\,k \cdot 9.8\frac{m}{s^2} \cdot \sin(30°) = 19.6\,N$$

**Answer:** D) $\quad = 19.6\,N$