Answer on Question #44606, Physics, Mechanics | Kinematics | Dynamics
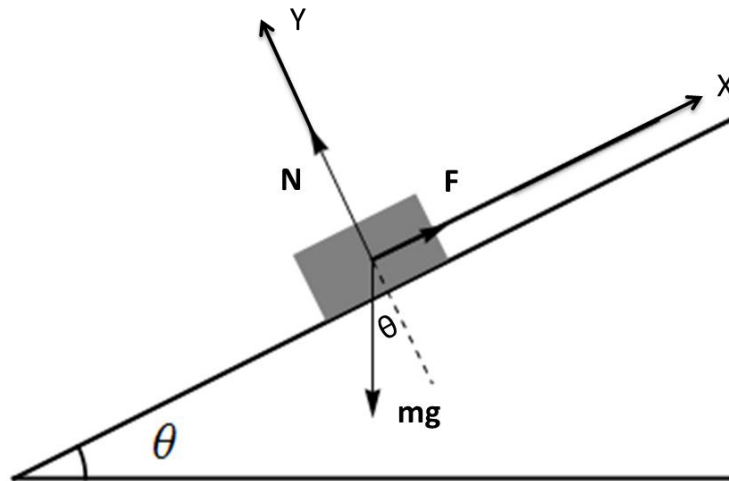
a block(8.5kg) is fixed in aa frictionless incline plane by a rope. the angle θ= 30. what is the normal force acting on the block.

Solution.

From 1st Newton's law:

$$\overrightarrow{mg} + \vec{N} + \vec{F} = 0$$

Where N is the normal force acting on the block.

In projections:

OX: $mg \cdot \sin(\theta) = F$

OY: $mg \cdot \cos(\theta) = N$

So: $N = mg \cdot \cos(\theta)$

Numerically:

$$N = 8.5kg \cdot 9.8\frac{m}{s^2} \cdot \cos(30°) \approx 72.14\,N$$

Answer: $N \approx 72.14\,N$