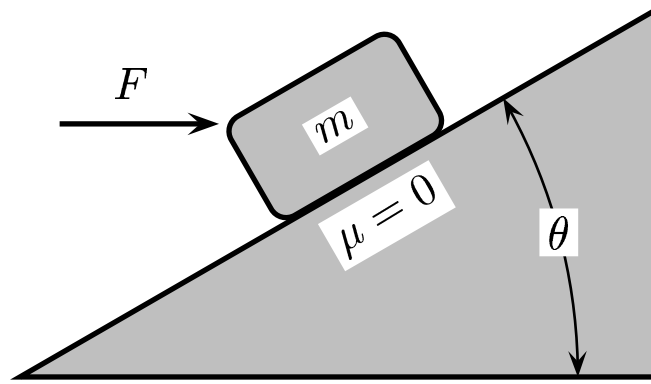


A block is pushed upward along a frictionless inclined plane.



Determine the force F on the block which causes it to be moving upward with a constant velocity.

- A) $F = m g \sin \theta$
- B) $F = m g \cos \theta$
- C) $F = m g \tan \theta$
- D) $F = m g \cot \theta$

If the velocity is constant, there is no acceleration, thus no net force.

$$\sum F_x : F - N \sin \theta = 0 \quad \Rightarrow \quad F = N \sin \theta$$

$$\sum F_y : N \cos \theta - M g = 0 \quad \Rightarrow \quad N = \frac{M g}{\cos \theta},$$

so $F = m g \tan \theta$.

Answer **C**.

05.07-12 Pushing Up the Incline 2004-3-24