

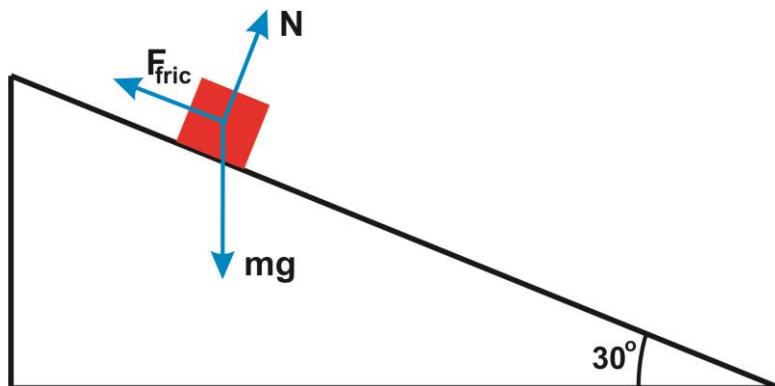
### Answer on Question #65906-Mechanics - Relativity

A box of mass 50 kg is placed on an inclined plane. When the angle of the plane is increased to  $30^\circ$ , the box begins to slide downwards. Calculate the coefficient of static friction between the plane and the box. Draw the free body diagram.

#### Solution

$$F_{\text{fric}} = mg \sin \alpha, \quad N = mg \cos \alpha, \quad F_{\text{fric}} = \mu N.$$

$$\mu = \frac{F_{\text{fric}}}{N} = \frac{mg \sin \alpha}{mg \cos \alpha} = \tan \alpha = \tan 30^\circ = 0.58$$



**Answer**  $\mu = 0.58$

Answer provided by <https://www.AssignmentExpert.com>