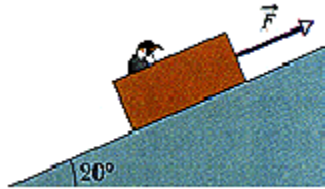


Penguin in a box

A loaded penguin sled weighing 60 N rests on a plane inclined at 20° to the horizontal. The coefficient of static friction between the sled and the plane is 0.26, and the coefficient of kinetic friction is 0.15.



1. What is the minimum magnitude of the force F , parallel to the plane, that will prevent the sled from slipping down the plane?
2. What is the minimum magnitude F that will start the sled moving up the plane?
3. What value of F is required to move the block up the plane at constant velocity?

Hint: Draw a system schema and then draw a separate force diagram for each part of the problem