

Coefficient of Friction problems

1. A hockey puck has a coefficient of kinetic friction of $\mu_k = .10$. If the puck feels a normal force (F_N) of 5 N, what is the frictional force that acts on the puck?
2. What is the coefficient of static friction if it takes 34N of force to move a box that weighs 67N?
3. What is the force of friction between a block of ice (weighs 930N) and the ground if $\mu_s = .12$?
4. Suppose a 10 N force is applied to the side of a 4.0 kg block that is sitting on a table. The block experiences a frictional force against the force that is applied.
 - a. Draw a force (free-body) diagram for the block.
 - b. What is the weight of the block (F_G)?
 - c. What is the normal force on the block (F_N)?
 - d. If the coefficient of kinetic friction is $\mu_k = .20$, what is the frictional force on the block (F_f)?
 - e. What is the net force on the block?

5. For the block in Problem 5, what would be the minimum value of the coefficient of static friction in order for the block to remain motionless?
6. The coefficient of static friction between a car's tires and the ground is $\mu_s = .85$. What is the mass of the car if it takes 9620N of force to make the tire begin to roll?
7. A block weighing 300 N is moved at a constant speed over a horizontal surface by a force of 50 N applied parallel to the surface. What does the "constant speed" tell you about the forces acting on the block?
- a. Draw a force (free-body) diagram for the block.
- b. What is the coefficient of kinetic friction (μ_k)?
- c. What is the mass of the block?
- d. What would be the acceleration of the block if $\mu_k = 0$?