Name:

Physics 11
M. Lam

Friction

Block:

1. A 80.0 kg table is pushed across the floor with a force of 500 N. If the coefficient of kinetic friction is 0.40, what is the acceleration of the table?

2. A 0.50 kg book is pushed across a table from rest. If the book does not move until more than 3.25 N of force is applied, what is the coefficient of static friction?

3. A 150 kg refrigerator is pushed at a constant velocity across a floor. If the coefficient of kinetic friction is 0.55, determine the applied force.

4. The coefficient of static friction between a 5.0 kg cardboard box and a tiled floor is 0.30. The coefficient of kinetic friction between the same two surfaces is 0.23.
   a. How much force is required to move the box from rest?
   b. How much force is required to move the box at a constant velocity?

5. Sophia is sliding a cone on the ice with a force of 15 N. If the coefficient of friction is 0.18 and the acceleration of the cone is 1.2 m/s^2, what is the mass of the cone?

6. Matthew wants to push a 12.0 kg chair to his desk. The coefficient of kinetic friction is 0.45.
   a. If Matthew pushes the chair with a force of 120 N, determine the acceleration of the chair?
   b. As Matthew continues to push the chair with a 120 N force, his classmate Luke applies a 45 N force in the opposite direction. What is the acceleration of the chair now?
   c. Instead, Luke decides to apply a 45 N force downwards. Determine the acceleration of the chair. (Hint: be sure to determine F_N first)

7. A car is moving at speed of 80 km/h. If the coefficient of kinetic friction between the tires and the road is 0.80, determine how long the car takes to stop when it slams on the brakes.

8. An NHL hockey puck weighs about 0.16 kg. It is shot from one side of the rink to the other side 60 m away. it begins travelling at a speed of 15 m/s across the ice and hits the other side 4.5 seconds later, determine the coefficient of kinetic friction between the ice and the puck.