Friction

1) 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?

2) 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?

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) 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?

5) 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.

6) 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?

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) Sophia is sliding a plastic traffic cone across the ice. She pulls horizontally with a force of 15 N. If the cone experiences a coefficient of kinetic friction of 0.18 and accelerates at 1.2 m/s^2, determine the **mass of the cone**.

9) Matthew pushes his 12.0 kg chair with a horizontal force of 120 N. The coefficient of kinetic friction between the chair and the floor is 0.45. At the same time, his classmate Luke pushes **straight downward** on the chair with a force of 45 N. Determine the **acceleration of the chair**.

10) An NHL hockey puck with a mass of 0.16 kg is shot along the ice from one side of the rink to the other, a distance of 60 m. It begins at a speed of 15 m/s and reaches the far side 4.5 s later. Assuming the only horizontal force is friction, determine the **coefficient of kinetic friction** between the puck and the ice.