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| Physics 11 |                 |
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| M. Lam     | <u>Friction</u> |

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<sup>2</sup>, 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.