

35. If the coefficient of kinetic friction between a 20-kg crate and the floor is 0.30:
- (a) What horizontal force is required to move the crate at a steady speed across the floor?
  - (b) What horizontal force is required if  $\mu_k$  is zero?
36. A force of 400 N is required to start a 50-kg box moving across a horizontal concrete floor.
- (a) What is the coefficient of static friction between the box and the floor?
  - (b) If the 400-N force continues, the box accelerates at  $0.70 \text{ m/s}^2$ . What is the coefficient of kinetic friction?
43. A box is given a push so that it slides across the floor. How far will it go given that the coefficient of kinetic friction is 0.20 and the push imparts an initial speed of 3.0 m/s?
45. (a) Show that the minimum stopping distance for an automobile (car) traveling at speed  $v$  is equal to  $v^2/2\mu_s g$ . Remember,  $\mu_s$  is the coefficient of static friction between the tires and the road and  $g$  is the acceleration due to gravity.
- (b) What is the distance for a 1200-kg car traveling 90 km/hr if  $\mu_s = 0.85$ ?
  - (c) What would it be if the car were on the moon but all else stayed the same?