

## Overcoming friction. Horizontal Force

1. A student pulls on a rope attached to a box of books and moves the box down the hall. The student pulls with a horizontal force of 185 N. The box has a mass of 35.0 kg, and the coefficient of friction between the box and the floor is 0.27.
  - A. Make the FBD.
  - B. What Newton's law is true in the horizontal and vertical directions?
  - C. Write the expression for the net Forces in the horizontal and vertical directions.
  - D. Find the acceleration of the box.
  
2. A box of books weighing 325 N moves at a constant velocity across the floor when it is pushed with a force of 600 N exerted horizontally.
  - A. Make the FBD.
  - B. What Newton's law is true in the horizontal and vertical directions?
  - C. Write the expression for the net Forces in the horizontal and vertical directions.
  - D. Find  $\mu_k$  between the box and the floor.