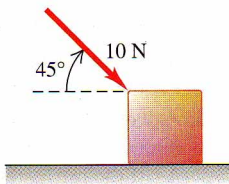


1. • A warehouse worker pushes a crate along the floor, as shown in Figure 4.33, by a force of 10 N that points downward at an angle of  $45^\circ$  below the horizontal. Find the horizontal and vertical components of the push.



6. • A box rests on a frozen pond, which serves as a frictionless horizontal surface. If a fisherman applies a horizontal force with magnitude 48.0 N to the box and produces an acceleration of magnitude  $3.00 \text{ m/s}^2$ , what is the mass of the box?
11. •• A dock worker applies a constant horizontal force of 80.0 N to a block of ice on a smooth horizontal floor. The frictional force is negligible. The block starts from rest and moves 11.0 m in the first 5.00 s. What is the mass of the block of ice?
20. •• At the surface of Jupiter's moon Io, the acceleration due to gravity is  $1.81 \text{ m/s}^2$ . If a piece of ice weighs 44.0 N at the surface of the earth, (a) what is its mass on the earth's surface? (b) What are its mass and weight on the surface of Io?