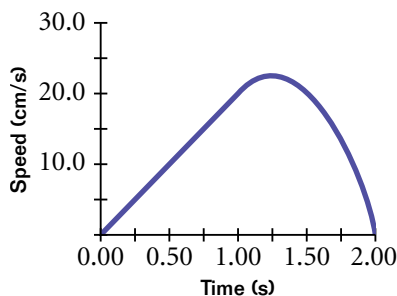
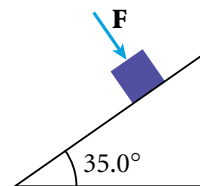


- 43.** A 5.0 kg bucket of water is raised from a well by a rope. If the upward acceleration of the bucket is 3.0 m/s^2 , find the force exerted by the rope on the bucket of water.
- 44.** A 3.46 kg briefcase is sitting at rest on a level floor.
- What is the briefcase's acceleration?
 - What is its weight in newtons?
- 45.** A boat moves through the water with two forces acting on it. One is a $2.10 \times 10^3 \text{ N}$ forward push by the motor, and the other is a $1.80 \times 10^3 \text{ N}$ resistive force due to the water.
- What is the acceleration of the 1200 kg boat?
 - If it starts from rest, how far will it move in 12 s?
 - What will its speed be at the end of this time interval?
- 46.** A girl on a sled coasts down a hill. Her speed is 7.0 m/s when she reaches level ground at the bottom. The coefficient of kinetic friction between the sled's runners and the hard, icy snow is 0.050, and the girl and sled together weigh 645 N. How far does the sled travel on the level ground before coming to rest?
- 47.** A box of books weighing 319 N is shoved across the floor by a force of 485 N exerted downward at an angle of 35° below the horizontal.
- If μ_k between the box and the floor is 0.57, how long does it take to move the box 4.00 m, starting from rest?
 - If μ_k between the box and the floor is 0.75, how long does it take to move the box 4.00 m, starting from rest?
- 48.** A 3.00 kg block starts from rest at the top of a 30.0° incline and accelerates uniformly down the incline, moving 2.00 m in 1.50 s.
- Find the magnitude of the acceleration of the block.
 - Find the coefficient of kinetic friction between the block and the incline.
 - Find the magnitude of the frictional force acting on the block.
 - Find the speed of the block after it has slid a distance of 2.00 m.
- 49.** A hockey puck is hit on a frozen lake and starts moving with a speed of 12.0 m/s . Exactly 5.0 s later, its speed is 6.0 m/s . What is the puck's average acceleration? What is the coefficient of kinetic friction between the puck and the ice?
- 50.** The parachute on a race car that weighs 8820 N opens at the end of a quarter-mile run when the car is traveling 35 m/s . What net retarding force must be supplied by the parachute to stop the car in a distance of 1100 m?
- 51.** A 1250 kg car is pulling a 325 kg trailer. Together, the car and trailer have an acceleration of 2.15 m/s^2 directly forward.
- Determine the net force on the car.
 - Determine the net force on the trailer.
- 52.** The coefficient of static friction between the 3.00 kg crate and the 35.0° incline shown here is 0.300. What is the magnitude of the minimum force, F , that must be applied to the crate perpendicularly to the incline to prevent the crate from sliding down the incline?



- 53.** The graph below shows a plot of the speed of a person's body during a chin-up. All motion is vertical and the mass of the person (excluding the arms) is 64.0 kg. Find the magnitude of the net force exerted on the body at 0.50 s intervals.
- 54.** A machine in an ice factory is capable of exerting $3.00 \times 10^2 \text{ N}$ of force to pull a large block of ice up a slope. The block weighs $1.22 \times 10^4 \text{ N}$. Assuming there is no friction, what is the maximum angle that the slope can make with the horizontal if the machine is to be able to complete the task?