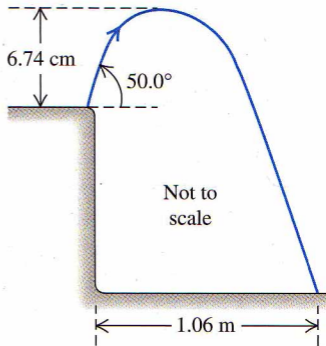


7. ● A baseball pitcher throws a fastball horizontally at a speed of  $42.0 \text{ m/s}$ . Ignoring air resistance, how far does the ball drop between the pitcher's mound and home plate,  $60 \text{ ft } 6 \text{ in}$  away?
8. ● A physics book slides off a horizontal tabletop with a speed of  $1.10 \text{ m/s}$ . It strikes the floor in  $0.350 \text{ s}$ . Ignore air resistance. Find (a) the height of the tabletop above the floor, (b) the horizontal distance from the edge of the table to the point where the book strikes the floor, and (c) the horizontal and vertical components of the book's velocity, and the magnitude and direction of its velocity, just before the book reaches the floor.
19. ●● A batted baseball leaves the bat at an angle of  $30.0^\circ$  above the horizontal and is caught by an outfielder  $375 \text{ ft}$  from home plate at the same height from which it left the bat. (a) What was the initial speed of the ball?

22. ●● A grasshopper leaps into the air from the edge of a vertical cliff, as shown in Figure 3.38. Use information from the figure to find (a) the initial speed of the grasshopper and (b) the height of the cliff.



▲ **FIGURE 3.38** Problem 22.