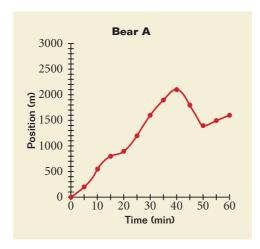1. What is the shortest possible time in which a bacterium could travel a distance of 8.4 cm across a Petri dish at a constant speed of 3.5 mm/s?

2. A child is pushing a shopping cart at a speed of 1.5 m/s. How long will it take this child to push the cart down an aisle with a length of 9.3 m?

3. An athlete swims from the north end to the south end of a 50.0 m pool in 20.0 s and makes the return trip to the starting position in 22.0 s.
   a. What is the average velocity for the first half of the swim?
   b. What is the average velocity for the second half of the swim?
   c. What is the average velocity for the roundtrip?

4. Two students walk in the same direction along a straight path, at a constant speed—one at 0.90 m/s and the other at 1.90 m/s.
   a. Assuming that they start at the same point and the same time, how much sooner does the faster student arrive at a destination 780 m away?
   b. How far would the students have to walk so that the faster student arrives 5.50 min before the slower student?

5. **Critical Thinking**   Does knowing the distance between two objects give you enough information to locate the objects? Explain.

6. **Interpreting Graphics**   **Figure 8** shows position-time graphs of the straight-line movement of two brown bears in a wildlife preserve. Which bear has the greater average velocity over the entire period? Which bear has the greater velocity at $t = 8.0$ min? Is the velocity of bear A always positive? Is the velocity of bear B ever negative?
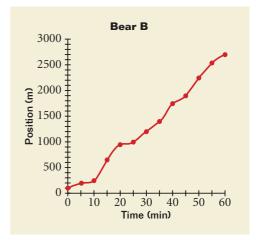

Figure 8