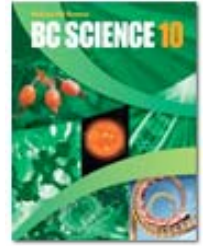


Section 8.1

The Language of Motion

Check Your Understanding



Checking Concepts

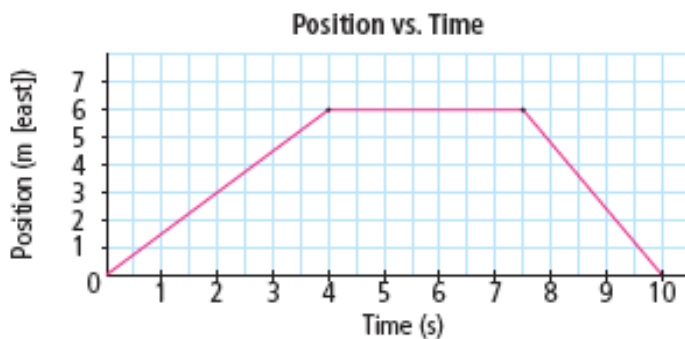
1. Define "scalar quantity."
2. Define "vector quantity."
3. What does "magnitude" mean?
4. Explain the difference between position and distance.
5. Classify each of the following as either vectors or scalars.
 - (a) distance
 - (b) time interval
 - (c) position
 - (d) displacement
6. Give the symbol used to represent each of the following.
 - (a) distance
 - (b) time interval
 - (c) position

(d) displacement

7. What is the mathematical difference between final and initial time called?
8. What Greek letter is used to represent the change in a quantity?
9. Define "displacement."
10. In terms of the final and initial position of an object, how would you calculate displacement?
11. An object has a displacement of 2 m forward during a 5 s time interval. If the object's motion were uniform, what would be its displacement during the next 5 s time interval?
12. When drawing a position-time graph, which data would you plot on
 - (a) the horizontal (x) axis?
 - (b) the vertical (y) axis?
13. What kind of a line represents uniform motion on a position-time graph?

Understanding Key Ideas

Use the graph below to answer questions 14 to 16.



14. For each of the time intervals below, describe the motion of the object. Be sure to include direction when necessary.

(a) 0 s–4 s

(b) 4 s–8 s

(c) 8 s–10 s

15. Calculate the displacement for each of the following time intervals.

(a) 0 s–4 s

(b) 4 s–8 s

(c) 8 s–10 s

(d) 0 s–10 s

16. What total distance did the object travel in the time interval 0 s to 10 s?

17. Under what conditions will the magnitude of the displacement be equal to the distance?

Pause and Reflect

A horizontal line (zero slope) on a position-time graph indicates that the object is remaining stationary for that time interval. What type of graph line would represent impossible motion? Explain your answer.