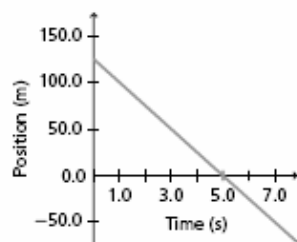


For problems 9–11, refer to Figure 2-13.

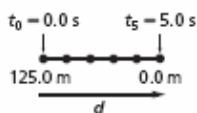


■ Figure 2-13

9. Describe the motion of the car shown by the graph.

The car begins at a position of 125.0 m and moves toward the origin, arriving at the origin 5.0 s after it begins moving. The car continues beyond the origin.

10. Draw a motion diagram that corresponds to the graph.



11. Answer the following questions about the car's motion. Assume that the positive d -direction is east and the negative d -direction is west.

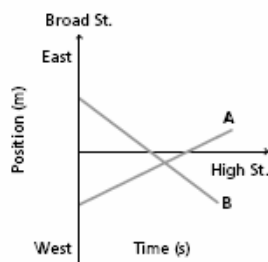
a. When was the car 25.0 m east of the origin?

at 4.0 s

b. Where was the car at 1.0 s?

100.0 m

12. Describe, in words, the motion of the two pedestrians shown by the lines in Figure 2-14. Assume that the positive direction is east on Broad Street and the origin is the intersection of Broad and High Streets.



■ Figure 2-14

Pedestrian A starts west of High Street and walks east (the positive direction). Pedestrian B begins east of High Street and walks west (the negative direction). Sometime after B crosses High Street, A and B pass each other. Sometime after they pass, Pedestrian A crosses High Street.

13. Odina walked down the hall at school from the cafeteria to the band room, a distance of 100.0 m. A class of physics students recorded and graphed her position every 2.0 s, noting that she moved 2.6 m every 2.0 s. When was Odina in the following positions?

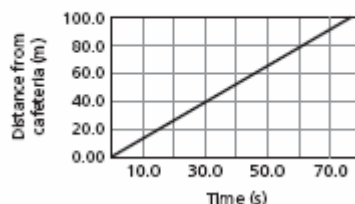
a. 25.0 m from the cafeteria

19 s

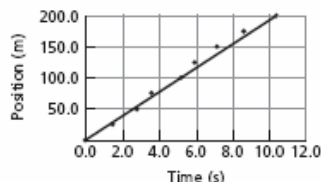
b. 25.0 m from the band room

58 s

c. Create a graph showing Odina's motion.



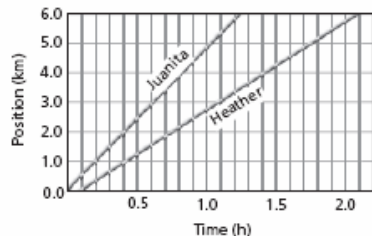
For problems 14–17, refer to the figure in Example Problem 2.



■ Example Problem 2 Figure

14. What event occurred at $t = 0.0$ s?
Runner A passed the origin.
15. Which runner was ahead at $t = 48.0$ s?
runner B
16. When runner A was at 0.0 m, where was runner B?
at -50.0 m
17. How far apart were runners A and B at $t = 20.0$ s?
approximately 30 m

18. Juanita goes for a walk. Sometime later, her friend Heather starts to walk after her. Their motions are represented by the position-time graphs in Figure 2-16.



■ Figure 2-16

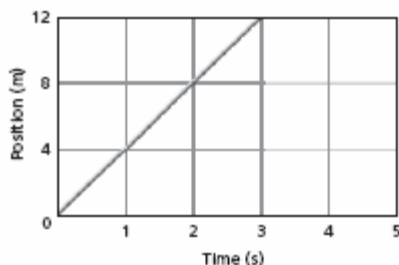
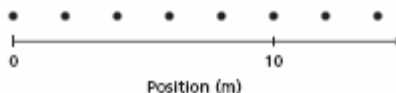
- a. How long had Juanita been walking when Heather started her walk?
6.0 min

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5.
 - a. .75 km
 - b. 2.0 min
 - c. .75 km

22. **Distance** Use the position-time graph of the hockey puck to determine how far it moved between 0.0 s and 5.0 s.
100 m
23. **Time Interval** Use the position-time graph for the hockey puck to determine how much time it took for the puck to go from 40 m beyond the origin to 80 m beyond the origin.
2.0 s

24. **Critical Thinking** Look at the particle model and position-time graph shown in Figure 2-19. Do they describe the same motion? How do you know? Do not confuse the position coordinate system in the particle model with the horizontal axis in the position-time graph. The time intervals in the particle model are 2 s.



■ Figure 2-19

No, they don't describe the same motion. Although both objects are traveling in the positive direction, one is moving more quickly than the other. Students can cite a number of different specific examples from the graph and particle model to back this up.

6.
 - a. 1.50 km
 - b. 20.0 min
 - c. .50 km
 - d. 40.0 min
 - e. 0.00 km
 - f. 1.00 km