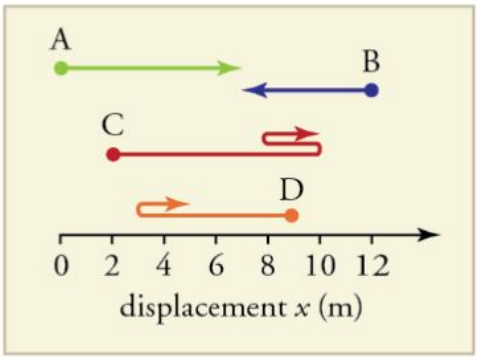
NAME _____ **PERIOD** ____

UNIT 2 PRACTICE PROBLEMS **PHYSICS 1**

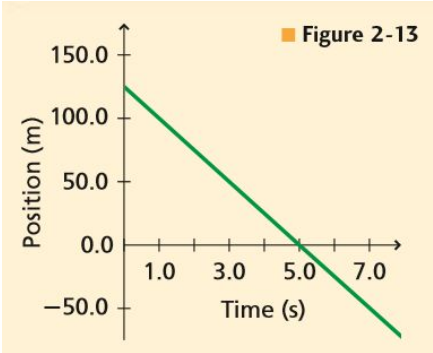
2.1 POSITION, DISTANCE, AND DISPLACEMENT



1. Find the following for path A in Figure: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish.
2. Find the following for path B in Figure: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish.
3. Find the following for path C in Figure: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish.
4. Find the following for path D in Figure: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish.

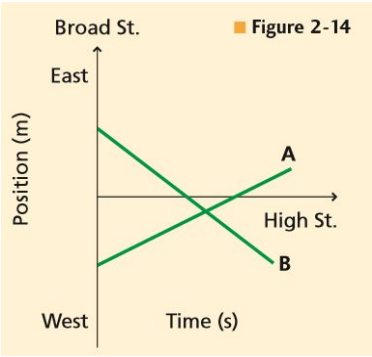
2.2 POSITION VS TIME GRAPHS

For problems 5-7, refer to Figure 2-13.



5. Describe the motion of the car shown by the graph.
6. Draw a motion diagram that corresponds to the graph.
7. Answer the following questions about the car's motion. Assume that the positive x-direction is east and the negative x-direction is west.
    a. When was the car 25.0 m east of the origin?
    b. b. Where was the car at 1.0 s?

8. 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.



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9. 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
    b. 25.0 m from the band room
    c. Create a graph showing Odina's motion.

2.3 SPEED AND VELOCITY

10. A bike travels at a constant speed of 4.0 m/s for 5.0 s. How far does it go?
11. Light from the Sun reaches Earth in 8.3 min. The speed of light is 3.00×10^8 m/s. How far is Earth from the Sun?
12. A car is moving down a street at 55 km/h. A child suddenly runs into the street. If it takes the driver 0.75 s to react and apply the brakes, how many meters will the car have moved before it begins to slow down?
13. Nora jogs several times a week and always keeps track of how much time she runs each time she goes out. One day she forgets to take her stopwatch with her and wonders if there's a way she can still have some idea of her time. As she passes a particular bank, she remembers that it is 4.3 km from her house. She knows from her previous training that she has a consistent pace of 4.0 m/s. How long has Nora been jogging when she reaches the bank?
14. You and a friend each drive 50.0 km. You travel at 90.0 km/h; your friend travels at 95.0 km/h. How long will your friend have to wait for you at the end of the trip?

15. The graph in Figure 2-22 describes the motion of a cruise ship during its voyage through calm waters. The positive X-direction is defined to be south.
    a. Describe, in words, the motion of the cruise ship.
    b. What is the ship's average speed?
    c. What is its average velocity?
    d. Draw a velocity vs. time graph to represent the motion of the cruise ship.

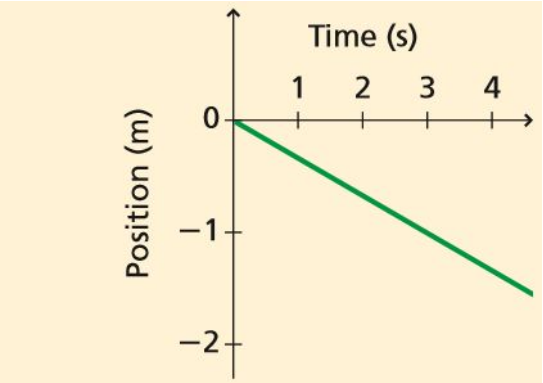

Figure 2-22

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UNIT 2 PRACTICE PROBLEMS **PHYSICS 1**

16. The graph in Figure 2-23 represents the motion of a bicycle.
    a. Describe, in words, the motion of the bicycle.
    b. What is the bicycle's average speed?
    c. What is its average velocity?
    d. Draw a velocity vs. time graph to represent the motion of the bicycle.

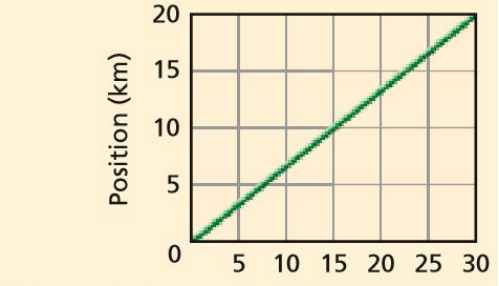

Figure 2-23

17. When Marilyn takes her pet dog for a walk, the dog walks at a very consistent pace of 0.55 m/s.
    a. Draw a position-time graph to represent Marilyn's dog walking the 19.8-m distance from the front of her house to the nearest fire hydrant.
    b. Draw a velocity-time graph to represent Marilyn's dog walking the 19.8-m distance from the front of her house to the nearest fire hydrant.