

17-1 Directed Reading  
Pages 458 - 469

1. Name something in motion that you cannot see moving.
2. An object in motion is moving in relation to an object that appears to \_\_\_\_\_.
3. When an object changes position over time in relative to a reference point, the object is \_\_\_\_\_.
4. For determining motion, the surface of the Earth is a common \_\_\_\_\_.
5. Why are buildings, trees, and mountains all useful reference points?
6. Can a moving object be used as a reference point? Explain.
7. The speed of an object depends on the distance traveled and the \_\_\_\_\_ taken to travel the distance.
8. What is the SI unit for speed?
9. Why is it useful to calculate average speed?
10. Explain how to calculate average speed.
11. When a person drives for several hours, how does the distance traveled in one hour usually compare with the distance traveled in other hours? Explain.
12. Suppose that, on a graph showing speed, there are two lines. One line represents speed per hour, and the other line represents average speed. Will both lines be exactly alike and in the same place on the graph?
13. Which of the following does NOT experience a change in velocity?

- A. A motorcyclist driving down a straight street applies the brake.
- B. While maintaining the same speed and direction, an experimental car switches from gasoline to electric power.
- C. A baseball player running from first base to second base at 10 m/s comes to a stop in 1.5 seconds.
- D. A bus traveling at a constant speed turns a corner.

14. Why don't birds end up at the same destination if they are flying exactly the same speed at all times?

15. What is the difference between velocity and speed?

16a. To find the resultant velocity, add velocities that are in the \_\_\_\_\_ direction.

16b. To find the resultant velocity, subtract velocities that are in the \_\_\_\_\_ direction.

17. If your speed is not changing but your direction is changing, are you accelerating? Explain.

18. What is another name for acceleration in which velocity increases?

19. What is another name for negative acceleration?

20. Write the mathematical formula for calculation average acceleration.

21. A speedometer shows that a cyclist is going 1 m/s the 1st second, 2 m/s the 2nd second, and 3 m/s the 3rd second, as the cyclist continues straight south. How do you know the cyclist is accelerating?

22. How can you recognize acceleration on a graph?

23. A graph shows a roller coaster increasing in velocity for the first eight seconds as it goes down the hill. Will the graph have an upward slope representing a roller coaster traveling down the hill? Explain.

24. As long as something travels in a circle, is it always accelerating? Explain.