- 1) A blinking light of constant period is situated on a lab cart. Which diagram *best* represents a photograph of the light as the cart moves with constant velocity?
- 2) The graph below represents the motion of a body that is moving with



3) Which graph represents an object moving at a constant speed for the entire time interval?



## **Question 4 refers to the following:**

The diagram below represents a flat racetrack as viewed from above, with the radii of its two curves indicated. A car with a mass of 1,000 kilograms moves counterclockwise around the track at a constant speed of 20 meters per second.



- 4) If the car moved from *C* to *B* in 20 seconds, the distance *CB* is
  - A) 200 m B) 100 m C) 300 m D) 400 m
- 5) What is the distance traveled by an object that moves with an average speed of 6.0 meters per second for 8.0 seconds?
  - A) 48 m B) 1.3 m C) 14 m D) 0.75 m



- 6) A baseball pitcher throws a fastball at 42 meters per second. If the batter is 18 meters from the pitcher, approximately how much time does it take for the ball to reach the batter?
  - A) 2.3 s B) 0.86 s C) 0.43 s D) 1.9 s
- 7) The average speed of a plane was 600 kilometers per hour. How long did it take the plane to travel 120 kilometers?
  - A) 0.7 hour B) 0.2 hour C) 5 hours D) 0.5 hour
- 8) The average speed of a runner in a 400.-meter race is 8.0 meters per second. How long did it take the runner to complete the race
  - A) 80. sec B) 40. sec C) 50. sec D) 32. sec
- 9) A runner completed the 100.-meter dash in 10.0 seconds. Her average speed was
  - A) 10.0 m/s B) 1,000. m/s C) 0.100 m/s D) 100. m/s
- 10) What is the average speed of an object that travels 6.00 meters north in 2.00 seconds and then travels 3.00 meters east in 1.00 second?
  - A) 9.00 m/s B) 3.00 m/s C) 4.24 m/s D) 0.333 m/s
- 11) A car travels between the 100.-meter and 250.-meter highway markers in 10. seconds. The average speed of the car during this interval is
  - A) 15 m/s B) 25 m/s C) 35 m/s D) 10. m/s
- 12) A cart starting from rest travels a distance of 3.6 meters in 1.8 seconds. The average speed of the cart is
  - A) 5.0 m/s B) 0.20 m/s C) 0.50 m/s D) 2.0 m/s
- 13) A group of bike riders took a 4.0-hour trip. During the first 3.0 hours, they traveled a total of 50. kilometers, but during the last hour they traveled only 10. kilometers. What was the group's average speed for the entire trip?

A) $00. \text{ km/m}$ B) 15 km/m C) $30. \text{ km/m}$ D) $40$	. Km/ni
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- 14) A car travels a distance of 98 meters in 10. seconds. What is the average speed of the car during this 10.second interval?
  - A) 9.8 m/s B) 4.9 m/s C) 49 m/s D) 98 m/s

15) The distance-time graph below represents the position of an object moving in a straight line.



What is the speed of the object during the time interval t = 2.0 seconds to t = 4.0 seconds?

- A) 7.5 m/s B) 0.0 m/s C) 5.0 m/s D) 10. m/s
- 16) The graph below represents the motion of an object traveling in a straight line as a function of time.



What is the average speed of the object during the *first* four seconds?

A) 2 m/s B) 1 m/s C) 0.5 m/s D) 0 m/s

17) The graph below represents the relationship between distance and time for an object.



What is the instantaneous speed of the object at t = 5.0 seconds?

A) 5.0 m/s B) 0 m/s C) 2.0 m/s D) 4.0 m/s