Multiple Choice

2.1 Relative Motion, Distance, and Displacement 25.

Why should you specify a reference frame when describing motion?

a. a description of motion depends on the reference frame
b. motion appears the same in all reference frames
c. reference frames affect the motion of an object
d. you can see motion better from certain reference frames

26.

Which of the following is true for the displacement of an object?

a. It is always equal to the distance the object moved between its initial and final positions.
b. It is both the straight line distance the object moved as well as the direction of its motion.
c. It is the direction the object moved between its initial and final positions.
d. It is the straight line distance the object moved between its initial and final positions.

27.

If a biker rides west for 50 miles from his starting position, then turns and bikes back east 80 miles. What is his net displacement?

a. 130 miles
b. 30 miles east
c. 30 miles west
d. Cannot be determined from the information given

28.

Suppose a train is moving along a track. Is there a single, correct reference frame from which to describe the train's motion?

a. Yes, there is a single, correct frame of reference because motion is a relative term.
b. Yes, there is a single, correct frame of reference which is in terms of Earth's position.
c. No, there is not a single, correct frame of reference because motion is a relative term.
d. No, there is not a single, correct frame of reference because motion is independent of frame of reference.

29.

If a space shuttle orbits Earth once, what is the shuttle's distance traveled and displacement?

a. Distance and displacement both are zero.

b. Distance is circumference of the circular orbit while displacement is zero.
c. Distance is zero while the displacement is circumference of the circular orbit.
d. Distance and displacement both are equal to circumference of the circular orbit.

2.2 Speed and Velocity 30.

Four bicyclists travel different distances and times along a straight path. Which cyclist traveled with the greatest average speed?

a. Cyclist 1 travels 95\,\text{m} in 27\,\text{s}.
b. Cyclist 2 travels 87\,\text{m} in 22\,\text{s}.
c. Cyclist 3 travels 106\,\text{m} in 26\,\text{s}.
d. Cyclist 4 travels 108\,\text{m} in 24\,\text{s}.

31.

A car travels with an average speed of 23 m/s for 82 s. Which of the following could NOT have been the car's displacement?

a. 1,700 m east
b. 2,000 m west
c. 1,600 m north
d. 1,500 m south

32.

A bicycle camper rides from her starting point to her first campsite one day, then continues to a second campsite the next day. If her average speed for the two days equals the average of her speeds each day, what must be true about her journey?

a. She rode the same amount of time each day.
b. She rode for different amounts of time each day.
c. She rode the same distance each day.
d. She rode a different distance each day.

33.

A car is moving on a straight road at a constant speed in a single direction. Which of the following statements is true?

a. Average velocity is zero.
b. The magnitude of average velocity is equal to the average speed.
c. The magnitude of average velocity is greater than the average speed.
d. The magnitude of average velocity is less than the average speed.

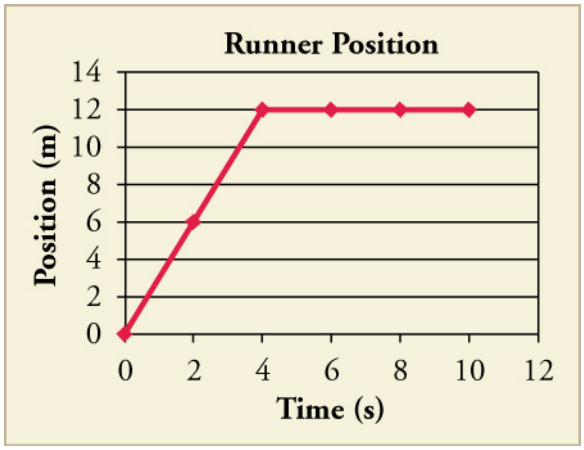
2.3 Position vs. Time Graphs 34.

What is the slope of a straight line graph of position vs. time?

a. Velocity
b. Displacement
c. Distance
d. Acceleration

35.

Using the graph, what is the runner's velocity from 4 to 10 s?



a. –3 m/s
b. 0 m/s
c. 1.2 m/s
d. 3 m/s

2.4 Velocity vs. Time Graphs 36.

A car traveling at 10 m/s is traveling at twice the velocity 10 s later. If you made a graph of this motion, what information would be obtained from the area under the graph?

a. The rate of acceleration of the car.
b. The area enclosed by the car's trip.
c. The car's displacement during the 10 s.
d. The velocity of the car at t = 10 s.

37.

An object is moving along a straight path with constant acceleration. A velocity vs. time graph starts at 0 and ends at 10\,\text{m/s}, stretching over a time-span of 15\,\text{s}. What is the object's net displacement?

a. 75\,\text{m}
b. 130\,\text{m}
c. 150\,\text{m}
d. cannot be determined from the information given