

Motion in One Dimension

- Can one-dimensional motion have zero distance but a nonzero displacement? What about zero displacement but a nonzero distance?
 - One-dimensional motion can have zero distance with a nonzero displacement. Displacement has both magnitude and direction, and it can also have zero displacement with nonzero distance because distance has only magnitude.
 - One-dimensional motion can have zero distance with a nonzero displacement. Displacement has both magnitude and direction, but it cannot have zero displacement with nonzero distance because distance has only magnitude.
 - One-dimensional motion cannot have zero distance with a nonzero displacement. Displacement has both magnitude and direction, but it can have zero displacement with nonzero distance because distance has only magnitude and any motion will be the distance it moves.
 - One-dimensional motion cannot have zero distance with a nonzero displacement. Displacement has both magnitude and direction, and it cannot have zero displacement with nonzero distance because distance has only magnitude.
- What does your car's odometer record?
 - displacement
 - distance
 - both distance and displacement
 - the sum of distance and displacement
- In the definition of velocity, what physical quantity is changing over time?
 - speed
 - distance
 - displacement
- Terri, Aaron, and Jamal all walked along straight paths. Terri walked 3.95 km north in 48 min. Aaron walked 2.65 km west in 31 min. Jamal walked 6.50 km south in 81 min. Which of the following correctly ranks the three boys in order from lowest to highest average speed?
 - Jamal, Terri, Aaron
 - Jamal, Aaron, Terri
 - Terri, Jamal, Aaron
 - Aaron, Terri, Jamal

5. In a coordinate system in which the direction to the right is positive, what are the distance and displacement of a person who walks 35 meters to the left, 18 meters to the right, and then 26 meters to the left?
- (A) Distance is 79m and displacement is -43m .
(B) Distance is -79m and displacement is 43m.
(C) Distance is 43m and displacement is -79m .
(D) Distance is -43m and displacement is 79m.
6. You sit in a car that is moving at an average speed of 86.4 km/h. During the 3.3 s that you glance out the window, how far has the car traveled?
- (A) 7.27 m
(B) 79 m
(C) 285 km
(D) 1026 m
7. Swimming one lap in a pool is defined as going across a pool and back again. If a swimmer swims 3 laps in 9 minutes, how can his average velocity be zero?
- (A) His average velocity is zero because his total distance is zero.
(B) His average velocity is zero because his total displacement is zero.
(C) His average velocity is zero because the number of laps completed is an odd number.
(D) His average velocity is zero because the velocity of each successive lap is equal and opposite.
8. What are the SI units of acceleration?
- (A) m^2/s
(B) km^2/s
(C) m/s^2
(D) km/h
9. A motorcycle moving at a constant velocity suddenly accelerates at a rate of $4.0\text{m}/\text{s}^2$ to a speed of 35m/s in 5.0s. What was the initial speed of the motorcycle?
- (A) $-34\text{m}/\text{s}$
(B) $-15\text{m}/\text{s}$
(C) 15m/s
(D) 34m/s

10. The driver of a sports car traveling at 10.0 m/s steps down hard on the accelerator for 5.0 s and the velocity increases to 30.0 m/s. What was the average acceleration of the car during the 5.0 s time interval?
- (A) -100 m/s^2
(B) -4.0 m/s^2
(C) 4.0 m/s^2
(D) 100 m/s^2
11. A girl rolls a basketball across a basketball court. The ball slowly decelerates at a rate of -0.20 m/s^2 . If the initial velocity was 2.0 m/s how long does it take for the ball to stop?
- (A) 5.1 s
(B) 4.9 s
(C) 10 s
(D) 0 s

Answers:

1. D
2. B
3. C
4. A
5. A
6. B
7. B
8. C
9. C
10. C
11. C