

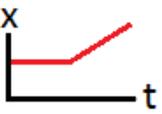
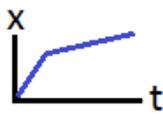
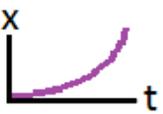
**MULTIPLE CHOICE SECTION**

Use the following situation for questions #1 and #2:

*Steven ran 2 km East and then 4 km West. He did all of this in 45 minutes.*

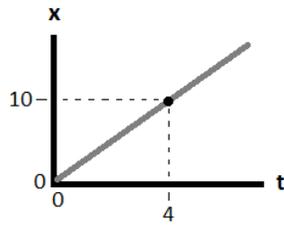
1. Steven's average speed during his trip was:
  - a. 0.04 m/s
  - b. 0.13 m/s
  - c. 0.74 m/s
  - d. 2.22 m/s
  - e. 44.44 m/s
  - f. 133.33 m/s
  
2. Steven's average velocity during his trip was:
  - a. 0.04 m/s West
  - b. 0.13 m/s East
  - c. 0.74 m/s West
  - d. 2.22 m/s East
  - e. 0.74 m/s East
  - f. 2.22 m/s West

3. Which of the following Position vs. Time graphs shows an object changing direction?

A	B	C	D	E
				<p>There is more than 1 correct answer</p>

4. The area under the data on a Velocity vs. Time graph represents:
  - a. The slope.
  - b. The distance traveled
  - c. The average velocity
  - d. The displacement
  - e. The starting position
  - f. The final position

The motion of a lab cart is recorded in the Position (meters) vs. Time (seconds) graph below. Use the graph to answer questions #5 and #6.



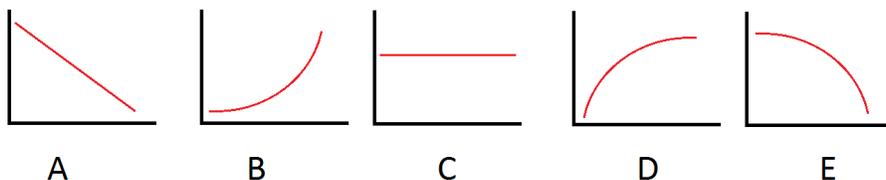
5. Which of the following mathematical models correctly describes the motion of the lab cart?
- $x = (2.5 \text{ m/s})t + 10 \text{ m}$
  - $x = (0.4 \text{ m/s})t + 10 \text{ m}$
  - $x = (2.5 \text{ m/s})t$
  - $t = (2.5 \text{ m/s})x$
  - $x = (0.4 \text{ m/s})t$
  - $t = (0.4 \text{ m/s})x$
6. According to the graph, where would the lab cart be at a time of 1 minute?
- 10 m
  - 20 m
  - 150 m
  - 240 m
  - 600 m
7. The slope of the line on a velocity vs. time graph represents
- Position
  - Displacement
  - Starting Position
  - Initial Velocity
  - Acceleration
  - Average Velocity
8. A sphere is released from rest and rolls down an angled ramp. After 3 seconds, the sphere is observed to have moved 3 m down the ramp. What is the acceleration of the sphere?
- (a)  $0 \text{ m/s}^2$    (b)  $0.67 \text{ m/s}^2$    (c)  $1.0 \text{ m/s}^2$    (d)  $2.0 \text{ m/s}^2$    (e)  $9.8 \text{ m/s}^2$
9. A rock is dropped from a height of 10.0 meters. How long will it take to reach the ground below?
- 1.02 seconds
  - 2.44 seconds
  - 0.98 seconds
  - 1.42 seconds
  - 98.0 seconds

Use the following situation for problems #10 and #11:

Two constant-velocity cars are initially separated by 2 meters and aimed at each other. When they are started at the same time, Car A moves East at 3 m/s, and Car B moves West at 2 m/s.

10. How long will it take the two cars to collide?
- a. 1.67 seconds
  - b. 0.40 seconds
  - c. 0.53 seconds
  - d. 0.80 seconds
  - e. 2.0 seconds
11. At what position will the two cars collide? (measured from starting position of Car A)
- a. 0.50 meters
  - b. 0.80 meters
  - c. 1.00 meters
  - d. 1.20 meters
  - e. 1.50 meters

Use the graphs below for questions #12 - 16. All graphs A-E are Position (X) vs. Time (t) graphs.



12. Which graph shows an object moving in the positive direction and slowing down?
13. Which graph shows an object moving in the positive direction and speeding up?
14. Which graph shows an object that is not moving at all?
15. How many graphs show an object accelerating?
- a. 1
  - b. 2
  - c. 3
  - d. 4
  - e. 5

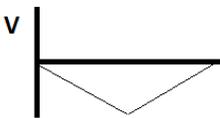
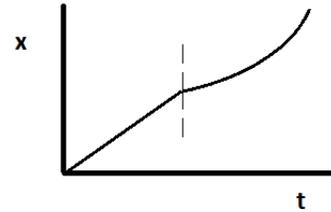
16. The velocity vs. time graph to the right would match which position vs. time graph?



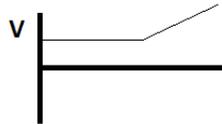
17. If an object has a negative acceleration, then the object must be slowing down.

- a. True
- b. False

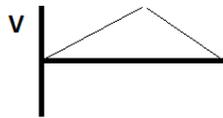
18. For the Position vs. Time graph shown to the right, which of the following Velocity vs. Time graphs shows the same motion?



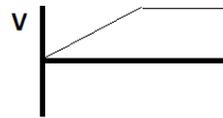
A



B



C



D



E

