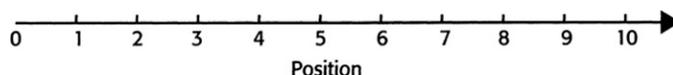


PHYSICS EXAM 2

PART 1: Displacement & Velocity

- _____ 1. Which of the following situations represents a positive displacement of a carton? Assume positive position is measured vertically upward along a y -axis.
- A delivery person waiting for an elevator lowers a carton onto a dolly.
 - When the elevator doors open, the delivery person lifts the dolly over the threshold of the elevator.
 - The delivery person pushes the dolly to the back of the elevator while pressing a floor button.
 - The door closes and the elevator moves from the 10th to the 4th floors.

Refer to the figure below to answer questions 2–4.



- _____ 2. What is the correct description of any change of position farther to the right of zero?
- positive displacement
 - positive distance
 - positive position
 - positive change of displacement
- _____ 3. A dog walks from +4 m to +2 m. Which of the following statements is true about the dog's motion?
- | | |
|-----------------|----------------------|
| a. $x_i = +2$ m | c. $\Delta x = +2$ m |
| b. $x_f = +2$ m | d. $v_{avg} = 2$ m/s |
- _____ 4. What is the maximum negative displacement a dog could have if it started its motion at +3 m?
- | | |
|---------|---------|
| a. +7 m | c. -3 m |
| b. +3 m | d. -7 m |
- _____ 5. Rank in decreasing order the displacements of objects having the following pairs of average velocity and time of motion.
- | | |
|---|---------------|
| I. $v_{avg} = +2.0$ m/s, $\Delta t = 2.0$ s | |
| II. $v_{avg} = +3.0$ m/s, $\Delta t = 2.0$ s | |
| III. $v_{avg} = -3.0$ m/s, $\Delta t = 3.0$ s | |
| a. I, II, III | c. II, I, III |
| b. II, III, I | d. III, II, I |

Motion in One Dimension *continued*

_____ 6. Rank in decreasing order the distances traveled by objects having the following pairs of average velocity and time of motion.

I. $v_{avg} = +2.0 \text{ m/s}$, $\Delta t = 2.0 \text{ s}$

II. $v_{avg} = +3.0 \text{ m/s}$, $\Delta t = 2.0 \text{ s}$

III. $v_{avg} = -3.0 \text{ m/s}$, $\Delta t = 3.0 \text{ s}$

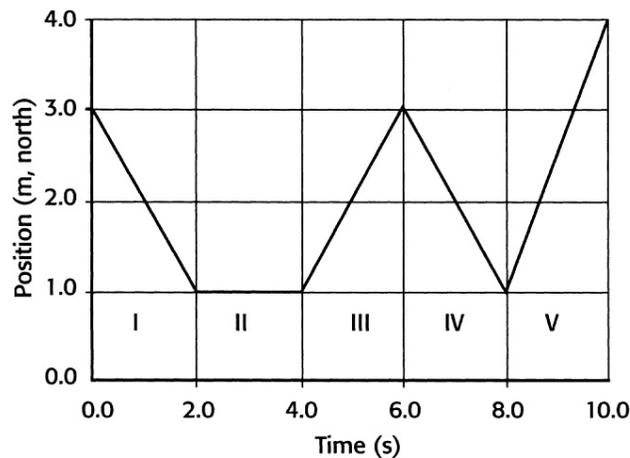
a. I, II, III

c. II, I, III

b. II, III, I

d. III, II, I

The graph below shows the motion of a dog pacing along a fence. Refer to the graph to answer questions 7-10.



_____ 7. For the five time intervals shown, during how many intervals does the dog have the same average velocity?

a. 0

c. 2

b. 1

d. 3

_____ 8. For the five time intervals shown, during how many intervals does the dog pace at the same average speed?

a. 0

c. 2

b. 1

d. 3

9. Describe the dog's motion when it is at 1.0 m.

10. What is the dog's average velocity for total displacement?

PART 2: Acceleration

11. The average acceleration is the ratio of which of the following quantities?

- a. $\Delta d:\Delta v$
- b. $d:\Delta t$
- c. $v:\Delta v$
- d. $\Delta v:\Delta t$

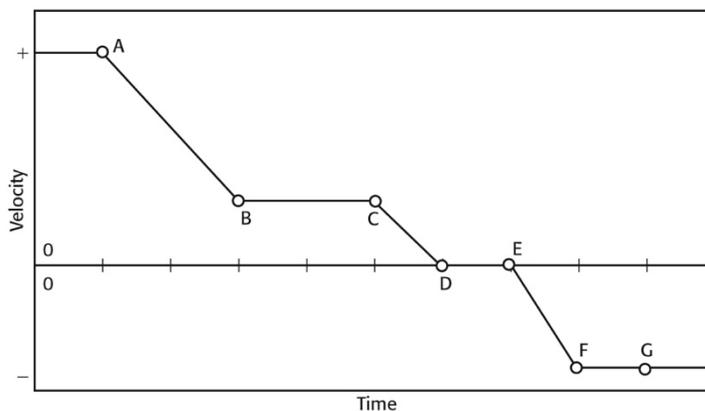
_____ 12. The speed of a car will increase if the car's

- a. initial velocity is positive and its acceleration is zero.
- b. initial velocity is positive and its acceleration is positive.
- c. initial velocity is positive and its acceleration is negative.
- d. initial velocity is negative and its acceleration is positive.

_____ 13. For a scooter with a negative acceleration, which of the following statements is always true?

- a. The scooter is losing speed.
- b. The final velocity of the scooter will be negative.
- c. The initial velocity of the scooter will be greater than its final velocity.
- d. The scooter will have a negative displacement.

Questions 14–19 refer to the following velocity-time graph of a jogger. The positive direction is away from the jogger's home.



_____ 14. The jogger is at rest during which interval?

- a. AB
- b. BC
- c. DE
- d. EF

Motion in One Dimension *continued*

- _____ 15. During which of the following intervals does the jogger have a constant positive velocity?
- a. BC
 - b. CD
 - c. DE
 - d. FG
- _____ 16. During which interval is the magnitude of the jogger's acceleration the greatest?
- a. AB
 - b. BC
 - c. DE
 - d. EF
- _____ 17. During which of the following intervals is the speed of the jogger decreasing?
- a. AB only
 - b. AB and CD
 - c. AB, CD, and EF
 - d. EF only
- _____ 18. During which of the following intervals is the jogger's motion toward home?
- a. CD and EF
 - b. DE only
 - c. EF only
 - d. EF and FG

19. Rank the four displacements for the time intervals CD, DE, EF, and FG in decreasing order. Explain your answer.

20. A cat walking at 0.25 m/s sees a mouse and accelerates uniformly at 0.40 m/s^2 for 3.0 s. What is the cat's displacement during this time?