

Worksheet 7:
Velocity and Acceleration

Additional Practice Questions

Directions: Select the best answer for each of the following questions. Answers are found at the end of this document.

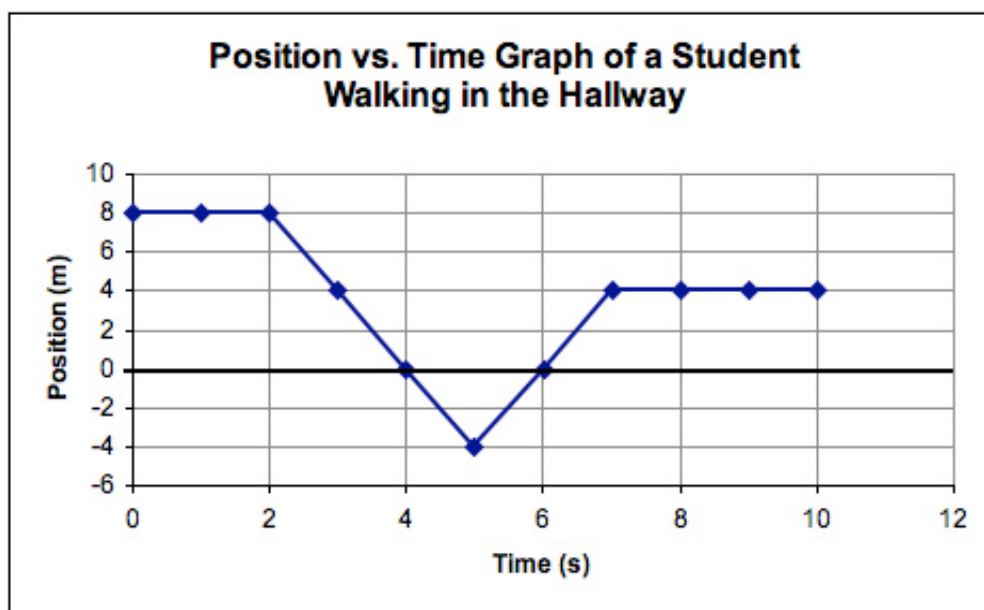
Physical Science: Motion:

The Relationships between displacement, time, velocity and acceleration:
Displacement, Time and Velocity

PLO C6

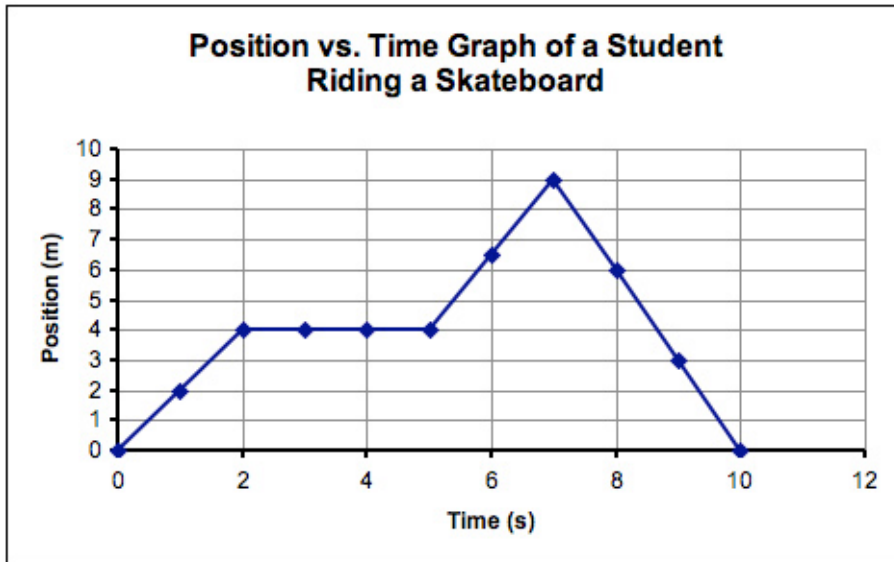
1. Which of the following is an example of an object experiencing uniform motion?
 - A. a baseball being hit by a bat
 - B. a car accelerating at a green light
 - C. a space shuttle launching into orbit
 - D. a toy car crossing the floor at a constant speed
2. Which of the following quantities represents the rate of change of an object's position?
 - A. velocity
 - B. displacement
 - C. acceleration
 - D. time interval
3. Dexter uses a compass to walk 140 m due east. Which of the following correctly measures his distance and displacement?
 - A. Distance and displacement are both 140 m.
 - B. Distance and displacement are both 140 m [East].
 - C. Distance is 140 m and displacement is 140 m [East].
 - D. Distance is 140 m [East] and displacement is 140 m.

Use the following graph to answer the next two questions.



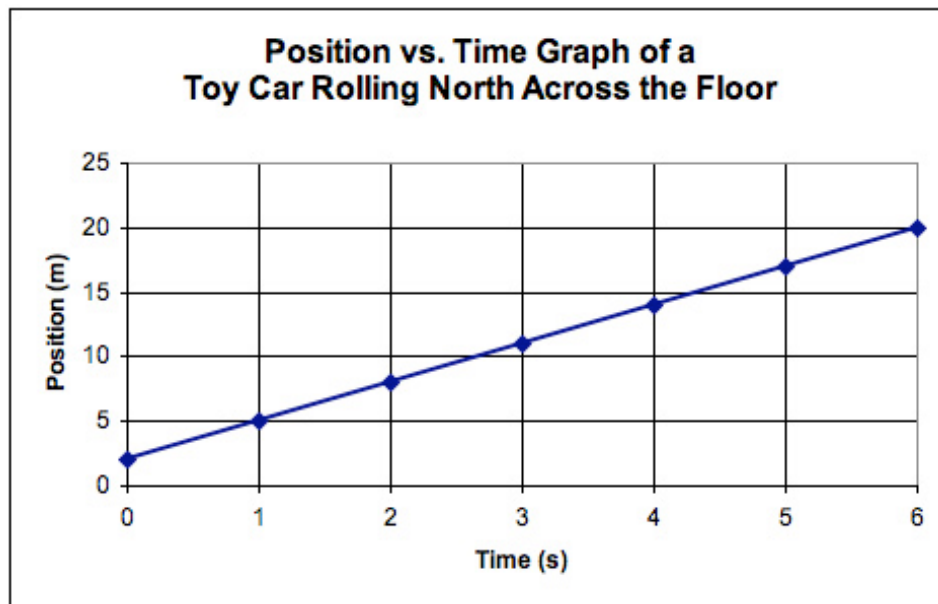
4. What is the total distance travelled by the student?
- A. 4 m
 - B. 8 m
 - C. 12 m
 - D. 20 m
5. What is the magnitude of the displacement of the student?
- A. 4 m
 - B. 8 m
 - C. 12 m
 - D. 20 m

Use the following graph to answer this question.



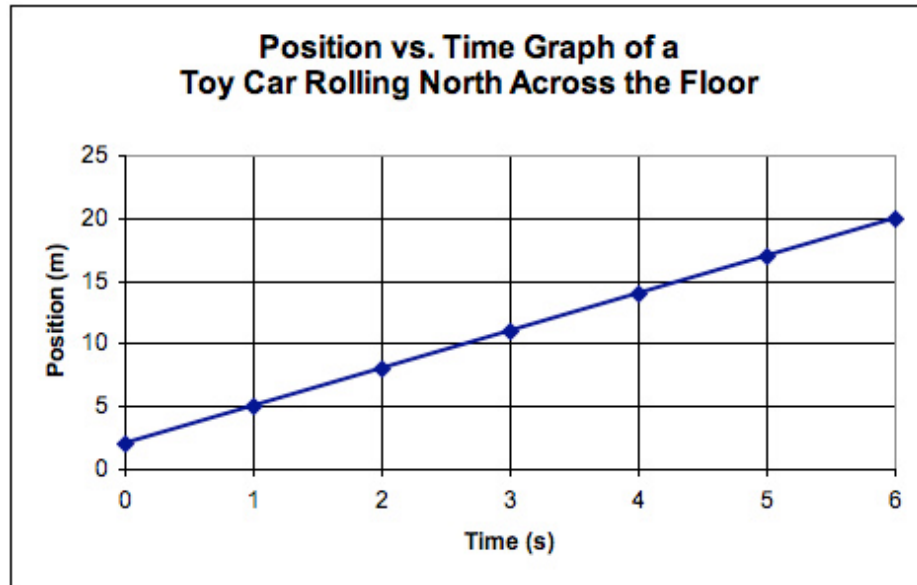
6. Which of the following statements correctly describes the motion represented on the graph?
- A. constant speed forward, stopped, constant speed forward, decreasing speed forward
 - B. increasing speed forward, stopped, increasing speed forward, decreasing speed backward
 - C. increasing speed forward, constant speed forward, increasing speed forward, slowing down forward
 - D. constant speed forward, stopped, constant speed forward, constant speed backward
-
7. Which of the following is not a possible unit for velocity?
- A. centimetres/month
 - B. millimetres/kilowatt
 - C. decimetres/kilosecond
 - D. kilometres/millisecond

Use the following graph to answer this question.



8. What is the average velocity of the toy car?
- A. 0.3 m/s [N]
 - B. 2 m/s [N]
 - C. 3 m/s [N]
 - D. 3.3 m/s [N]
-
9. What is the average velocity of a bird that flies 6 m [South] in 2 s?
- A. 0.33 m/s [South]
 - B. 3 m/s [South]
 - C. 6 m/s [South]
 - D. 12 m/s [South]

Use the following graph to answer this question.



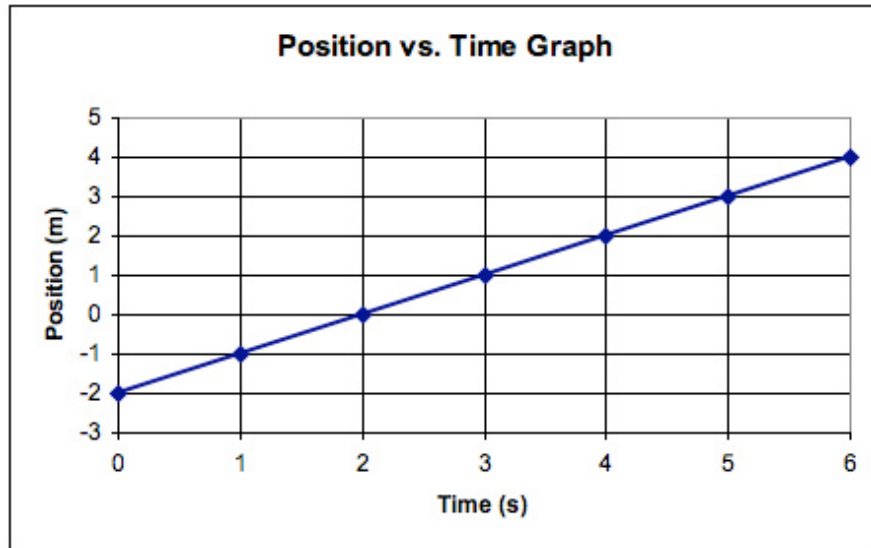
10. What is the average velocity of the toy car?

- A. 0.3 m/s [N]
- B. 2 m/s [N]
- C. 3 m/s [N]
- D. 3.3 m/s [N]

11. Which of the following symbols represents displacement?

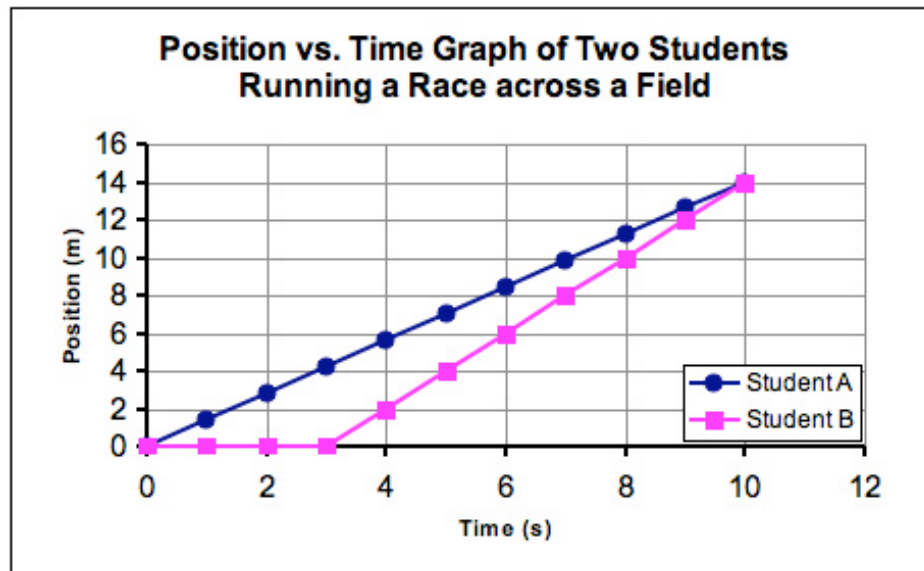
- A. \vec{d}
- B. d
- C. D
- D. Δ

Use the following graph to answer this question.



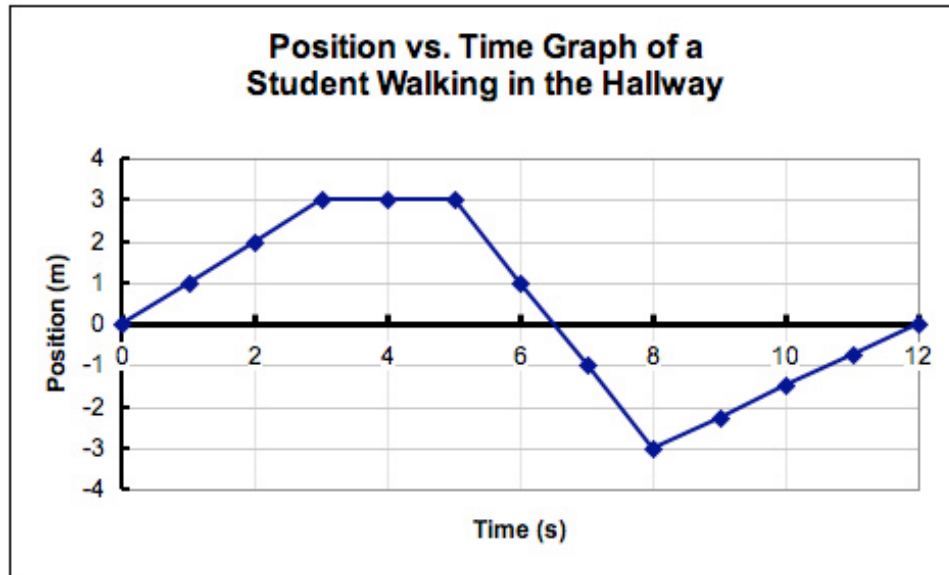
12. Which of the following situations could the graph represent?
- A. a ball being dropped off a table
 - B. a car accelerating north at a green light
 - C. an insect walking due east at a constant velocity
 - D. a student walking toward his locker, then turning around and walking away
-
13. Stephen walks 1.0 km directly east to the store and then walks 0.5 km west to his friend's house. What is Stephen's displacement?
- A. 0.5 km [W]
 - B. 0.5 km [E]
 - C. 1.5 km [W]
 - D. 1.5 km [E]

Use the following graph to answer this question.



14. According to this graph, which of the following statements is true about the students running across the field?
- A. Student B wins the race.
 - B. Student B is slower than student A.
 - C. Student A and student B have an equal displacement.
 - D. Student A and student B started running at the same time.
-
15. Newborn hatchling turtles can swim approximately 40 km in 30 hours. How long would it take them to swim 15 m?
- A. 5.5 s
 - B. 11.3 s
 - C. 20.0 s
 - D. 40.5 s

Use the following graph to answer this question.

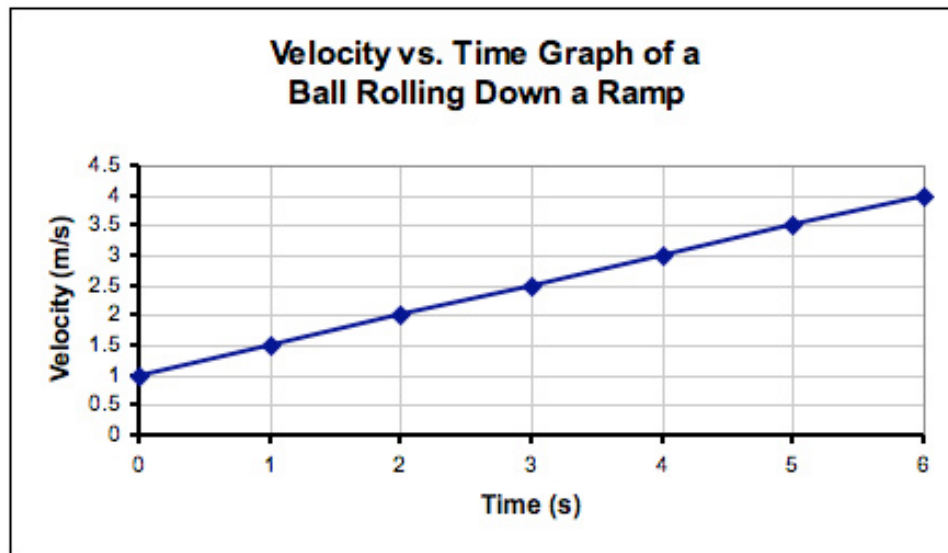


16. During which time interval was the student travelling at the fastest speed?

- A. 8 - 12 s
- B. 5 - 8 s
- C. 3 - 5 s
- D. 0 - 3 s

Physical Science: Motion:
The Relationships between displacement, time, velocity and acceleration:
Acceleration
PLO C7

Use the following graph to answer this question.



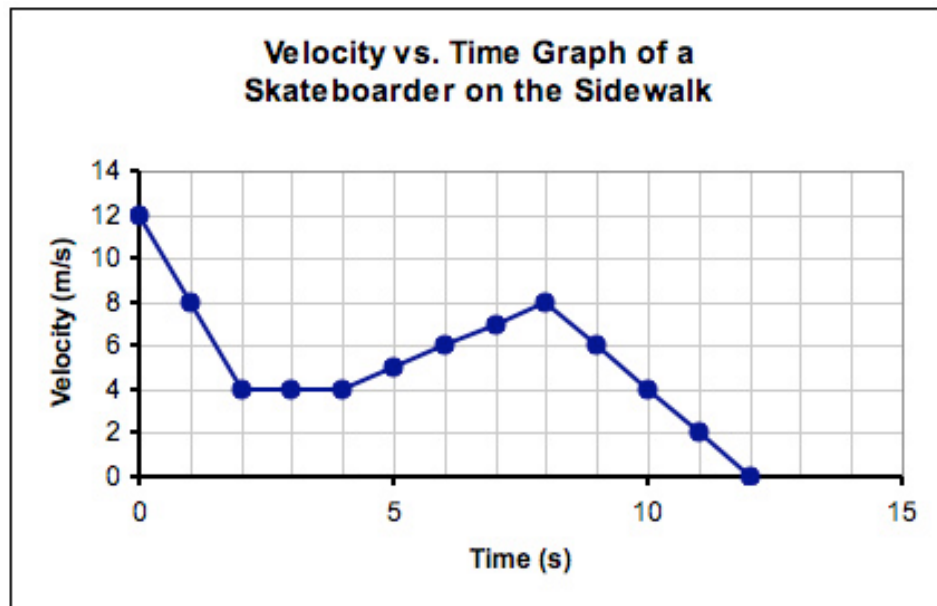
17. What is the change in average acceleration of the ball?
- A. 0.5 m/s^2
 - B. 0.7 m/s^2
 - C. 1.5 m/s^2
 - D. 2.0 m/s^2
-
18. A ball is thrown straight up in the air. What happens as the ball travels upward?
- A. Acceleration is negative and velocity is negative.
 - B. Acceleration is negative and velocity is positive.
 - C. Acceleration is zero and velocity is positive.
 - D. Acceleration is zero and velocity is negative.

19. Which of the following examples describe a ball experiencing positive acceleration?

- I. a ball rolling down a ramp
- II. a ball being dropped straight down
- III. a ball rolling up a steep ramp

- A. I and II
- B. I and III
- C. I, II, and III
- D. III

Use the following graph to answer this question.



20. During which time interval is the skateboarder experiencing uniform motion?

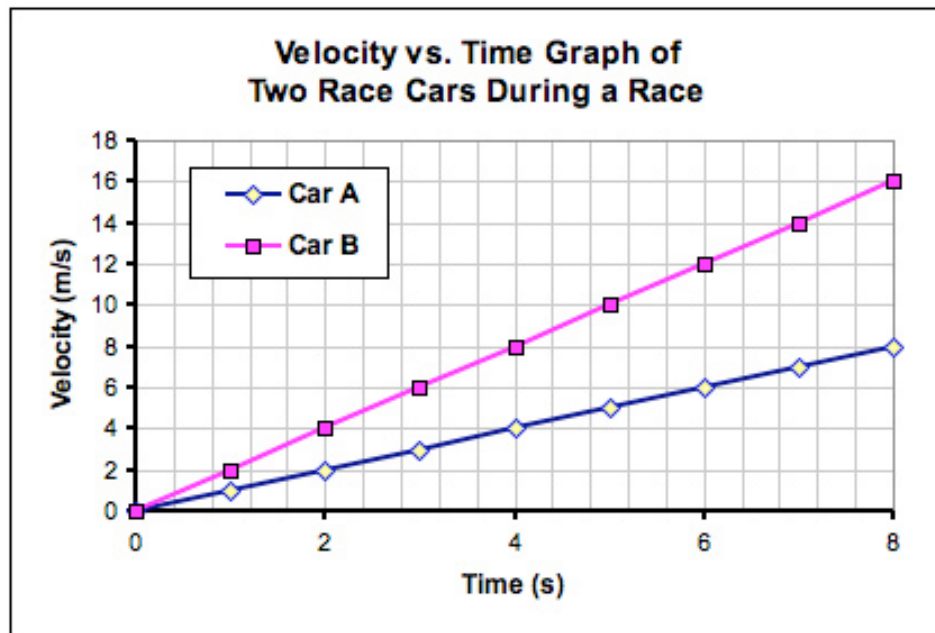
- A. 0 - 2 s
- B. 2 - 4 s
- C. 4 - 8 s
- D. 8 - 12 s

21. When a penny is dropped toward the floor, which of the following quantities will change for each successive time interval?

- I. acceleration
- II. displacement
- III. velocity

- A. I and III
- B. I, II, and III
- C. II and III
- D. III

Use the following graph to answer this question.

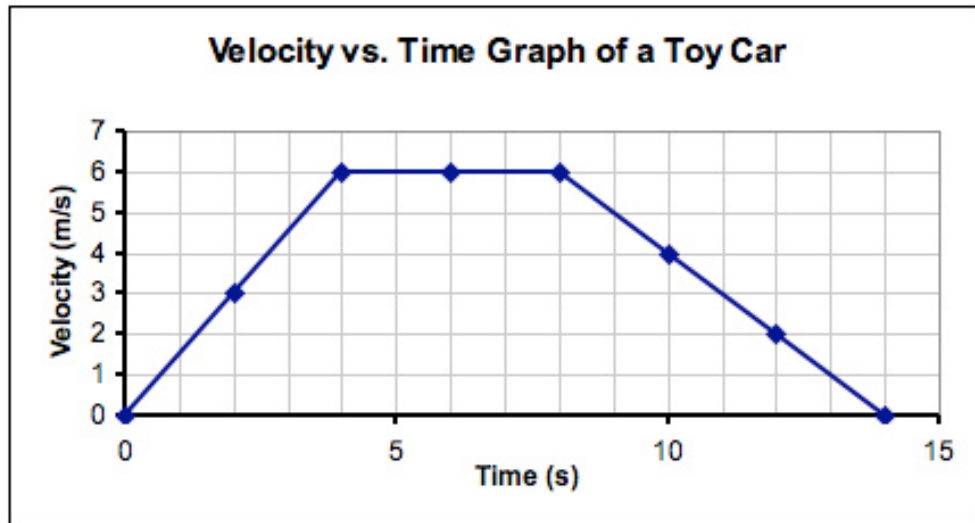


22. According to the graph, which statement is true?

- A. Car A and car B have equal accelerations.
- B. Car A has a greater acceleration than car B.
- C. Car B has a greater acceleration than car A.
- D. Car B accelerates for a longer time than car A.

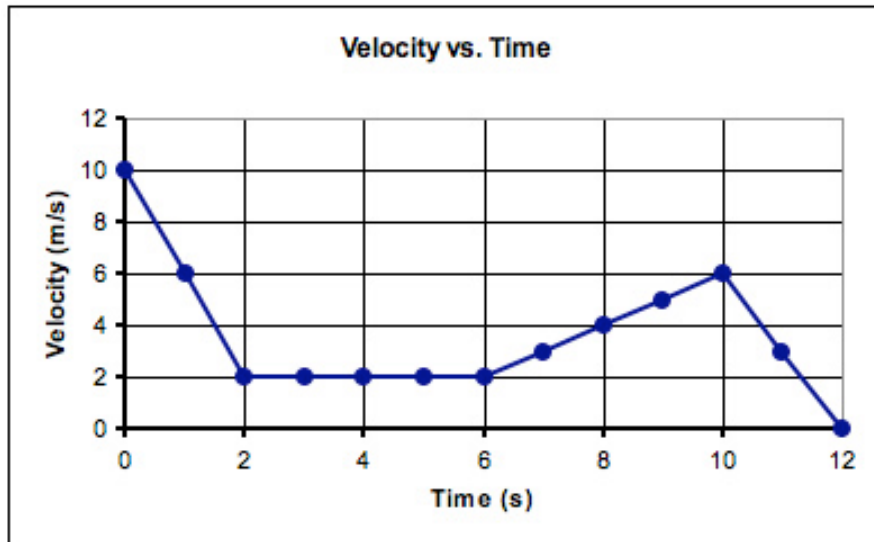
23. Stephen wants to calculate the downward acceleration of his favourite rollercoaster. He recorded the initial velocity of the car at the top of the hill, and the time it took to reach the bottom. Which piece of data does he still need?
- A. mass of the car and riders
 - B. final velocity of the car
 - C. track length of the hill
 - D. height of the hill
24. Juliette is driving her car when she sees a cat run across the road. If she is able to stop the car over a distance of 0.025 km in 2.5 s, what is her average acceleration?
- A. $+10 \text{ m/s}^2$
 - B. $+0.01 \text{ m/s}^2$
 - C. -0.004 m/s^2
 - D. -4 m/s^2
25. Dexter is travelling on his bike 4 m/s [S] . If he accelerates at a rate of 1.5 m/s^2 for 2 s, what is his final velocity?
- A. 7.0 m/s [S]
 - B. 5.5 m/s [S]
 - C. 3.0 m/s [N]
 - D. 1.5 m/s [N]
26. A ball is thrown straight down out of a window. It travels for 0.5 s and has a final velocity of -16 m/s . What was the initial velocity of the ball?
- A. 0 m/s
 - B. -1.8 m/s
 - C. -11.1 m/s
 - D. -20.9 m/s

Use the following graph to answer the next two questions.



27. Which of the following statements describes the motion shown on the graph?
- A. moving forward, constant speed, slowing down
 - B. speeding up, constant speed, slowing down
 - C. moving forward, stopped, moving backward
 - D. speeding up, stopped, moving backward
28. What is the net change in velocity for the toy car from the start of its motion to the end?
- A. -6 m/s
 - B. 0 m/s
 - C. 6 m/s
 - D. 12 m/s
-

Use the following graph to answer this question.



29. What is the magnitude of the largest acceleration represented on this graph?
- A. 0.8 m/s^2
 - B. 1.0 m/s^2
 - C. 3.0 m/s^2
 - D. 4.0 m/s^2
-
30. A baseball is travelling at $+65 \text{ km/h}$ and is caught by a player. The ball is brought to rest in 0.5 s . What is the acceleration of the ball?
- A. -130 m/s^2
 - B. -36 m/s^2
 - C. $+36 \text{ m/s}^2$
 - D. $+130 \text{ m/s}^2$

Answers

1. D
2. A
3. C
4. D
5. A
6. D
7. B
8. C
9. B
10. C
11. A
12. C
13. D
14. C
15. D
16. B
17. A
18. B
19. A
20. B
21. C
22. C
23. B
24. D
25. A
26. C
27. B
28. A
29. D
30. B