1D Motion Test
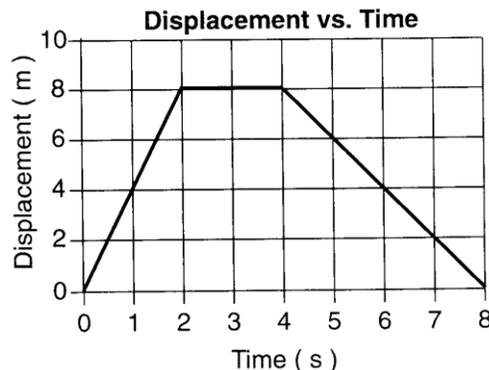
Name _____

1 2 3 4 5 6 7 8

1.   (1.1) Displacement is always greater than distance traveled.
     a. True   b. False

2.   (1.1) Which of the following would be considered a Velocity?
     a- 12.3 m/s² up   b- 3.8 mi north   c- 22 km/min forward   d- all of these

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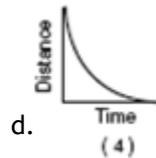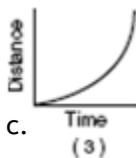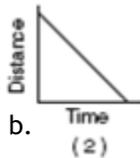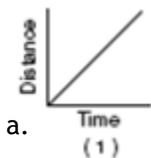
For questions 3-5, use the graph at right.

3.   (1.7) What is the instantaneous velocity at 5 seconds?
     a. 1 m/s   b. -1 m/s   c. -0.5 m/s   d. -2 m/s

4.   (1.7) What is the total displacement after 8.0 seconds?
     a. 0 m   b. 8 m   c. 16 m   d. 40 m

5.   (1.7) What is the average speed of the object during the first 4.0 seconds?
     a. 0 m/s   b. 8 m/s   c. 2 m/s   d. 4 m/s

Displacement vs. Time

(Graph: Displacement (m) vs. Time (s), rising from 0 to 8 m between t=0 and t=2, constant at 8 m from t=2 to t=4, decreasing from 8 m at t=4 to 0 at t=8.)

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6.   (1.3) A shopping cart given an initial velocity of 2.0 m/s undergoes a constant acceleration of 3.0 m/s². After 4 seconds of acceleration, what is the magnitude of the cart's displacement?
     a. 10.0 m   b. 32 m   b. 55 m   d. 80.0 m

7.   (1.1) Acceleration is
     a. speed   b. velocity.   c. the rate of change of displacement   d. the rate of change of velocity.

8.   (1.5) A ball thrown vertically upward reaches a maximum height of 30. meters above the surface of Earth. At its maximum height, the speed of the ball is
     a. 0.0 m/s   b. 3.1 m/s   c. 9.8 m/s   d. 24 m/s

9.   (1.10) Which graph below best represents the motion of an object whose speed is increasing?

a. (Distance vs Time, straight line increasing) (1)
b. (Distance vs Time, straight line decreasing) (2)
c. (Distance vs Time, curve increasing) (3)
d. (Distance vs Time, curve decreasing) (4)

10. (1.4) A coin released at rest from the top of a tower hits the ground after falling 1.5 s. What is the speed of the coin as it hits the ground?
     a. 15 m/s   b. 31 m/s   c. 21 m/s   d. 39 m/s

11. (1.6) A juggler throws a bowling pin straight up in the air.   After the pin leaves his hand and while it is in the air, which statement is true?
     a. The velocity of the pin is always in the same direction as its acceleration.
     b. The velocity of the pin is never in the same direction as its acceleration.
     c. The direction of the velocity of the pin is in the opposite direction of its acceleration on the way up.
     d. The direction of the velocity of the pin is in the same direction of its acceleration on the way up.

12. (1.5) An arrow is shot straight up in the air at an initial speed of 15.0 m/s.   After how much time is the arrow heading downward at a speed of 8.00 m/s?
     a. 0.714 s   b. 2.35 s   c. 1.24 s   d. 3.22 s   e. 1.87 s

13. (1.2)A dolphin swims 1.85 km/h. How far has the dolphin traveled after 0.60 h?
   a. 1.1 km   c. 0.63 km   b. 2.5 km   d. 3.7 km

14. (1.3) When velocity is positive and acceleration is negative, what happens to the object's motion?
    a. The object slows down.   c.   Nothing happens to the object.
    b. The object speeds up.   d.   The object remains at rest.

15. (1.6) If you drop an object in the absence of air resistance, it accelerates downward at 9.8 m/s^2.   If instead you throw it downward, its downward acceleration after release is:
    a. less than 9.8 m/s^2 b. more than 9.8 m/s^2 c. 9.8 m/s^2 d. 0 m/s^2

16. (1.8)How would an object move to create the velocity vs. time graph shown at right?
    a. stand still   c. speed up
    b. move at a constant speed   d. slow down
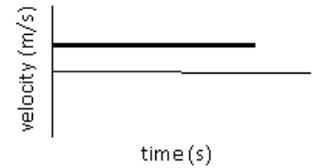
17. (1.8) What does the slope of a velocity vs. time graph represent?
    a. speed   b. velocity   c. displacement   d. acceleration

18. (1.8)What does the velocity vs time graph at right illustrate about acceleration?
    a.   The acceleration is constant.
    b.   The acceleration is zero.
    c.   The acceleration decreases.
    d.   There is not enough information to answer.
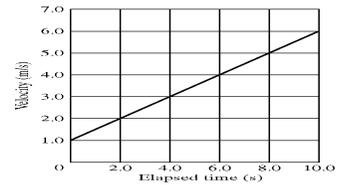
19. (1.2)   Mr. Bruce can run 57 meters in 17 sec.   Mr. Kulak can run 37 meters in 12 sec.
                  Mr. Torpe can run 10 meters in 3 sec.   Mr. Shane can run 22 meters in 6.8 seconds.
                  Assume they all running at constant speed.   Which physics teacher is the fastest runner?
    a. Mr. Bruce   b. Mr. Kulak   c. Mr. Torpe   d. Mr. Shane

20. (1.4) A baseball is released at rest from the top of the Washington Monument. It hits the ground after falling for 6.00 s. What was the height from which the ball was dropped?
    a. 150.0 m   b. 115 m   c. 177 m   d. 210.0 m

21. (1.3) A toy car is given an initial velocity of 5.0 m/s and experiences a constant acceleration of 2.0 m/s^2. What is the final velocity after 6.0 s?
    a. 10.0 m/s   c. 16 m/s   b. 12 m/s   d. 17 m/s

22. (1.2) A group of bike riders took a 4.0-hour trip. During the first 3.0 hours, they traveled a total of 50 kilometers, but during the last hour they traveled only 10 kilometers. What was the group's average speed for the entire trip?
    a. 15 km/hr   b. 30 km/hr   c. 40 km/hr   d. 60 km/hr

23. (1.6) The baseball catcher throws a ball vertically upward and catches it in the same spot as it returns to the mitt. At what point in the ball's path does it experience zero velocity and nonzero acceleration at the same time?
    a. midway on the way up
    b. at the top of its trajectory
    c. the instant it leaves the catcher's hand
    d. the instant before it arrives in the catcher's mitt

24. (1.5) A rock is thrown straight upward with an initial velocity of 24.5 m/s where the downward acceleration due to gravity is 9.81 m/s^2. What is the rock's displacement after 1.00 s?
    a. 9.81 m   b. 24.5 m   c. 19.6 m   d. 29.4 m

25. (1.10) Which pair of graphs represents the same motion?