PS Physics   Name_____
Chapter 2: Motion Review   Test Date _____

Formulas will be provided on the test. Know your units though!

Fill in the blank:

1. The SI unit of distance is the _____.

2. The standard unit of time is the _____.

3. To coverts seconds to hours, multiply by _____.

4. _____ is the distance an object travels per unit of time.

5. The direction and speed of an object is described by its _____.

6. _____ is the change in velocity divided by the time needed for the change to occur.

7. Acceleration can occur when a car is moving at a constant speed. What must cause this acceleration?_____

8. Deceleration is also called _____ acceleration.

9. Falling objects accelerate at a rate of _____ m/s2.

10. A _____ line on an speed (position/time) graph indicates the object is not moving.

Multiple Choice: Circle the correct answer.

11. The distance between the final position and the starting position is the ____.
     velocity   differential   acceleration   displacement

12. To calculate the distance traveled continuously in a straight line ____.
     divide the change in velocity by the time over which the change occurs
     subtract the time needed to travel the distance by the total distance traveled
     subtract final position from starting position
     divide the distance traveled by the time needed to travel the distance

13. ____is the speed of an object at any instant of time.
     Average speed   Velocity   Instantaneous speed   Acceleration

14. Motion occurs when an object changes its ____.
     volume   mass   position   force

15. The distance between an object and a reference point is the object's ___.
     position   velocity   displacement   neutral point

16. Which of the following devices is used to indicate instantaneous speed?
   Compass   Odometer   Stopwatch   Speedometer

17. Average speed is found by ___.
    multiplying total distance traveled by the total time
    dividing the displacement by the total time spent
    dividing total distance traveled by the total time
    multiplying the displacement by the total time spent

18. Which of the following is not an acceleration?
    slowing your bike ride so you make it up a hill
    riding your bike faster when you ride down a hill
    stopping your bike at an intersection
    riding your bike straight down the street at a constant speed

19. Which of the following is a proper unit of acceleration?
    s/km2   km/h   cm/s2   cm/s

20. Which of the following is not use in calculating acceleration?
    Initial velocity   Average speed   Time interval   Final velocity

21. In which of the following condition does the car NOT acceleration?
    A car moves 80 km/h on a flat, straight highway.
    The car slows from 80 km/h to 35 km/h.
    The car turns a corner.
    The car speeds up from 35 km/h to 80 km/h.

22. On the right is a **distance vs. time** graph showing the action of a
    person over time. Which of the following statements is the **best**
    description of the person's action? The person is walking...
        up a large hill.
        faster as time increases.
        at a slowing speed up a hill.
        at a constant speed.

23. On the right is a **velocity vs. time** graph showing the movement of a train over time. Which of
    the following statements is the **best** description of the train's motion? The train is...
        not moving in any direction.
        continuously accelerating.
        moving with a constant velocity.
        accelerating slowly

24. A body accelerates if it ____.
    speeds up   slows down   changes direction   all of these

25. A constant velocity means acceleration is ____.
    Positive   Negative   Increasing   zero

Problems: Show all work, label and round answers to the hundredths.

26. If a runner maintains a constant speed of 12 km/h, how long will it take to complete a 26.2 km race?

27. If a student leaves home at 7:30 AM to walk to his school 2 km away, stops at a neighbor's house for 15 min, then arrives at school at 8:00 AM. What is the student's average speed for the trip to school?

28. At 8:00 AM you leave home and walk 0.5 km to a friend's house. At 11:30 AM you return home, then travel by car to the mall, which is 10 km away, and arrive at 11:45 AM. What is the total distance traveled?

29. If you travel 1.7 km north from your house at noon, and at 6:00 pm you travel 5.4 km south, what is your displacement?

30. A cyclist must travel 800 km. How many days will the trip take if the cyclist travel 8 h/day at an average speed of 16 km/h?

31. A cyclist leaves home and rides due east for a distance of 45 km. She returns home on the same bike path. If the entire trip takes 4 h, what is her average speed? What is her displacement?

32. The return trip of the cyclist in the previous question took 30 min longer than her trip east, although her total time was still 4 h. What was her velocity in each direction?

33. How long does it take a car to accelerate to 45 m/s from a velocity of 15 m/s under an acceleration of 1.5m/s2?.

34. Initially an object is moving at 14 m/s. The object undergoes an acceleration of 8.5 m/s2 for 10 seconds. Calculate the objects final velocity.

Analyzing Data:

Refer to the Position - Time graph.
35. What was the velocity during the first 2 seconds?

36. How many seconds was the object not moving?

37. How fast was the object traveling at the 6.5 second mark?

38. How fast was the object traveling at the 17.85 second mark?

39. What was the total distance traveled by the object?

40. Calculate the object's average speed.
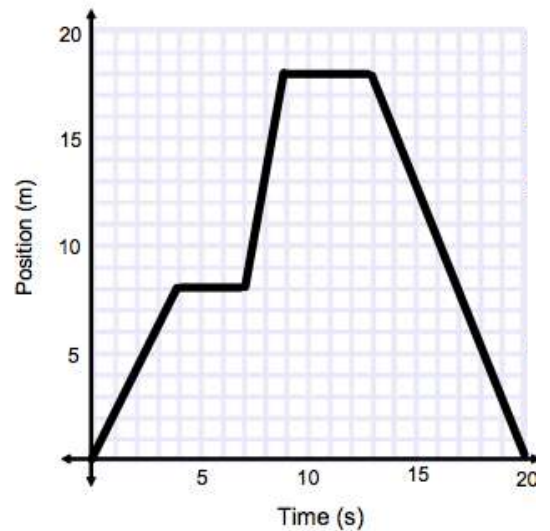
Answer the following questions based on the Velocity - Time graph.

41. Calculate the acceleration of the object for the first 3 seconds.

42. What is the acceleration of the object during the last four seconds?

43. What was happening to the object during the last five seconds?

44. What was happening to the object at the five second mark?

45. What was the distance covered for the entire 20 seconds?