Name: _____ Period: _____ Date: _____

Linear Motion Review Part 2

Vocabulary

1. _____ An object's total displacement divided by the time interval during which the displacement occurred.

2. _____ The rate at which an object changes its velocity.

3. _____ The rate at which an object changes its position plus the direction of the change in position.

4. _____ The speed of an object at any given point in time.

5. _____ The science of describing the motion of objects using words, diagrams, numbers, graphs and equations.

6. _____ Any change that takes place over time.

7. _____ Mathematical quantities that are fully described by a magnitude only.

8. _____ Refers to an object's overall change in position.

9. _____ When a moving object covers the same distance every regular interval of time.

10. _____ A scalar quantity that refers to how far an object has moved or changed position.

11. _____ Mathematical Quantities that are fully described by a magnitude and a direction.

12. _____ A number assigned to a quantity so that it may be compared to other quantities.

13. _____ The rate at which an object changes position per unit of time.

Word Bank

Kinematics
Distance
Displacement
Magnitude
Average Velocity
Vector
Speed
Velocity
Scalar
Instantaneous Speed
Average Speed
Rate
Constant Speed

Average Velocity

$$V_{avg} = \frac{\Delta d}{\Delta t}$$

23. _____ are the units for average velocity.

24. A car moved 20 km East and 60 km West in 2 hours. What is its average velocity?

25. Find the average velocity (in m/s) of a bicycler that starts 150 meters north of town and is 1200 meters north of town after 30.0 minutes.

26. Explain what is wrong with the following statement. A man walked at an average velocity of 5.2 m.

27. A school bus takes 0.53 hours to reach the school from your house. If the average speed of the bus is 19km/h, what is the displacement of the bus during the trip?

Displacement

$$\text{displacement} = X_f - X_i$$

28. _____ are the units for displacement

29. A girl participating in cross-country spends the afternoon practicing, and ends the practice completely tired from her hard work, despite the fact that her average velocity during the practice was 0.0m/s. Explain how this situation is possible.

30. Calculate the total displacement of a mouse walking along a ruler, if it begins at the location x = 5cm, and then does the following:

    - It walks to x = 12cm –
    - It then walks a displacement of -8cm –
    - Lastly, it walks to the location x = 7cm

.

Speed

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

31. _____ are the units for speed.

32. How far will a car travel in 15 min at 20 m/s?

33. The speed of light is 3×10^8 m/sec. How long does it take light to travel the 149×10^9 m distance from the sun to the Earth?

34. A bullet leaves a rifle with a speed of 2,360 ft/s. How much time elapses before it strikes a target 1 mile? 5,280 ft) away? (speed in m/s) (d = m) (t = s)

35. A sprinter runs the 200.0 m dash in 21.4 s. (a) What is the sprinter's speed in m/s? (b) If the sprinter were able to maintain this pace, how much time would be needed to run the 420.0 km from St. Louis to Chicago?

36. A pitcher throws a ball at 40.0 m/s, and the ball is electronically timed to arrive at home plate 0.4625 s later. What is the distance from the pitcher to the home plate?