Name _____

Topic 3 - Lesson 2: "Speed, Velocity, and Acceleration"

Guiding Questions: Use pgs. 128-137

- How do you determine speed from calculations and distance – versus-time graphs?
- How is velocity related to speed and acceleration?
- How can you interpret graphs to determine acceleration?

1. The _____ of an object is the distance that object moves per unit of time.
2. How do you calculate speed?

   _____
3. Give an example of a unit for speed? _____
4. What is the SI unit for speed? _____
5. The _____the number of meters per second, the _____ the speed at which the object is traveling.
6. How does instantaneous speed differ from average speed?

   _____

   _____
7. On a distance vs. time graph, time is found on the _____ axis. Distance is found on the _____ axis.
8. A _____ would be shown on a distance vs. time graph to show how far the object has traveled over a unit of time.
9. The angle of a line on a graph is called _____.
10. How do you calculate the slope of a line?

    _____
11. The slope of a distance vs. time graph represents _____.
12. The steeper the slope of the line on a distance vs. time graph means the _____ the speed.
13. A constant slope represents motion at a constant _____.
14. The speed at which an object traveled in a given direction is called _____.
15. A woman is taking a walk, moving at a rate of 80 meters/minute. What additional information would you need to determine her velocity?

    _____
16. How can understanding velocity help to prevent a mid-air collision of 2 planes?

    _____

    _____
17. A cross-country runner runs 4 km in 15 minutes going south towards EHS. What can you calculate using this information?
    a. Acceleration
    b. Force
    c. Speed
    d. Velocity
18. Define acceleration.

    _____
19. What are 3 ways to accelerate?
    a. _____
    b. _____
    c. _____
20. Even a car traveling at a constant speed is accelerating when it changes _____.

21. What is the formula for acceleration?

_____

22. What is the SI unit for acceleration? _____

23. Which statement about acceleration is always true?
    a. The unit m/s is the SI unit of acceleration.
    b. For objects to accelerate, they must speed up.
    c. Either a change in speed or a change in direction causes acceleration.
    d. Both speed and direction must change for acceleration to occur.

24. Using the plane in figure 6 on page 134-135, answer the following questions.
    a. What is the acceleration of the plane after 2 seconds?

       _____

       _____

    b. On landing, the plane touches the runway with a speed of 65 m/s. The figure shows the speed of the plane after 1 second. Calculate the acceleration of the plane during its landing.

       _____

       _____

    c. What does a negative value for acceleration mean in the above question?

       _____

25. When graphing acceleration on a speed vs. time graph, what would the x – axis be labeled? _____. What would the y-axis be labeled? _____

26. How are speed, velocity, and acceleration of a moving object related?

_____

_____

27. If the line on a distance vs. time graph and the line on a speed vs. time graph are both straight lines going through the origin, can the two graphs be displaying the motion of the same object? Explain.

_____

_____

_____