Name:

8S – U4 – Describing and Analyzing Motion Study Gui

NOTE: This is a guide to studying and does not include all content that may appear on the test. Please be sure to review other classwork, notes, and old quizzes to help your studying.

DEFINE THE FOLLOWING TERMS

- Motion (in other words, how do you tell an object is moving?):
- Reference Point:
- Distance:
- Displacement:
- Speed:
- Velocity:
- Acceleration:
- Slope of a graph:

IMPORTANT FORMULAS AND UNITS

A. Formula for Average Velocity:

B. Units for Velocity (give 2 examples):

C. Formula for Average Acceleration:

D. Units for Acceleration (give 2 examples):

PRACTICE PROBLEMS

1. Two people are watching a car drive down the road. One describes the car moving from right to left, the other says that the car moved from left to right. How is this possible?

2. Why might it be useful for a reference point to be stationary?

3. A student leaves her science classroom and walks 20 meters east to a drinking fountain. Then she turns and walks 45 meters west to her art classroom. Use a diagram with labels to show this motion. What is the girl's total displacement from the science classroom to the art classroom? What total distance did she walk?

Distance:

Displacement:

4. A horse travels 10m east to eat a carrot. Then 10m more east to eat another carrot. Then it back tracks 5m west to eat an apple. The total travel time is 60 seconds. **PAY ATTENTION TO UNITS**

Create a number line for this scenario:

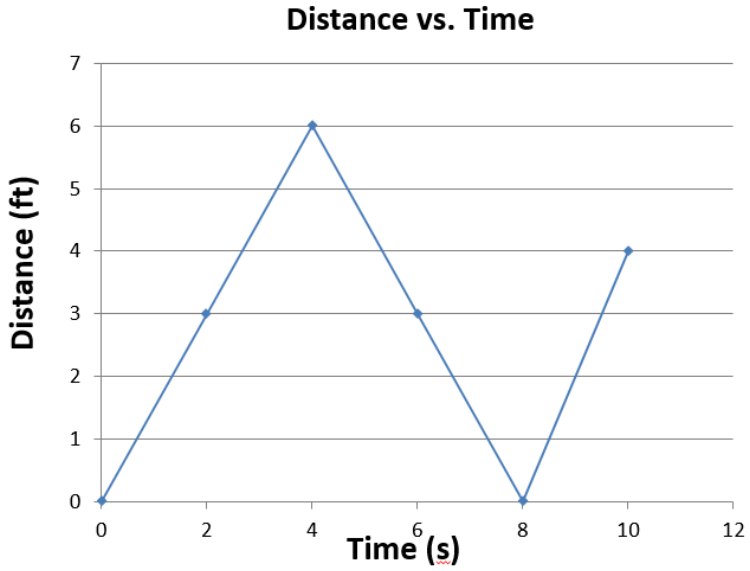
Find the horse's average speed:

Find the horse's average velocity:

5. _____ A train traveled 60 miles in 15 minutes. What is the speed of the train? SHOW WORK!
   a. 60 miles
   b. 4 minutes
   c. 4 miles per minute
   d. 4 miles per hour
   e. 60 miles per hour
   f. None of the above

6. A biker biked 5 miles in 150 minutes. What was the biker's speed? SHOW ALL WORK in setting up this calculation!

#7 USE THE GRAPH TO ANSWER THE FOLLOWING QUESTIONS



A. When is the object moving forward? (ie. from 0 to ? seconds)

B. What is the object's average velocity from 0 to 4 seconds? SHOW WORK / INCLUDE CORRECT UNITS

C. What is the object's average velocity from 4 to 8 seconds? SHOW WORK / INCLUDE CORRECT UNITS

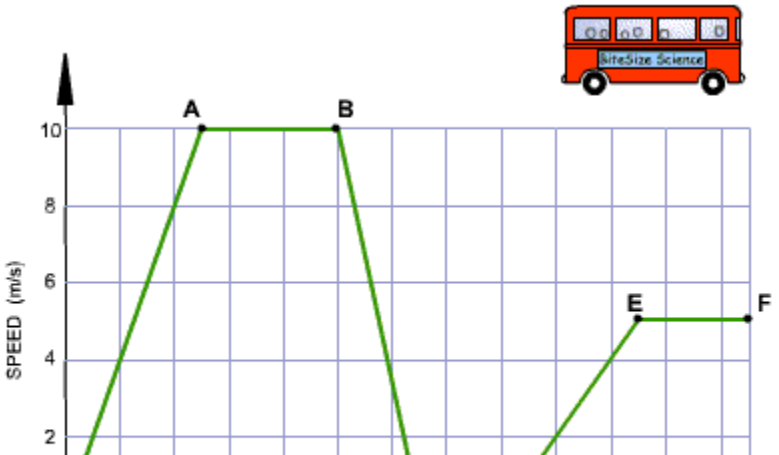
8. A downhill skier reaches the steepest part of a trail. Her speed increases from 9 m/s to 18 m/s in 3 seconds. What is her average acceleration? **Show work and use correct units!**

9. Using the speed-time graph to the right,

a. When is the bus speeding up?

b. When is the bus slowing down?

c. When is the bus not moving?

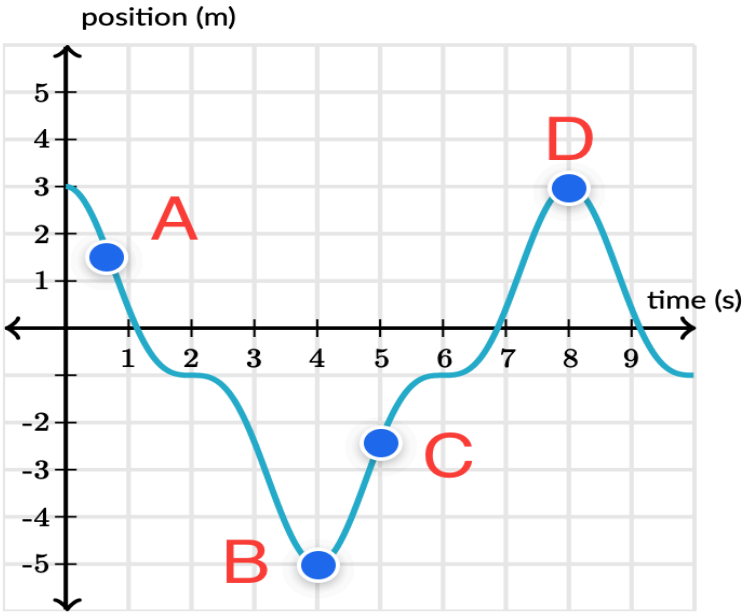


d. When is the bus moving at a constant speed?

10. Calculate the object's average acceleration between points O to A:

11. Calculate the object's average acceleration between points E-F:

12.



Is the object moving forward or backwards at A:

Is the object moving forward or backwards at B:

Is the object moving forward or backwards at C:

Is the object moving forward or backwards at D: