

# Unit 2: Motion

Name: \_\_\_\_\_

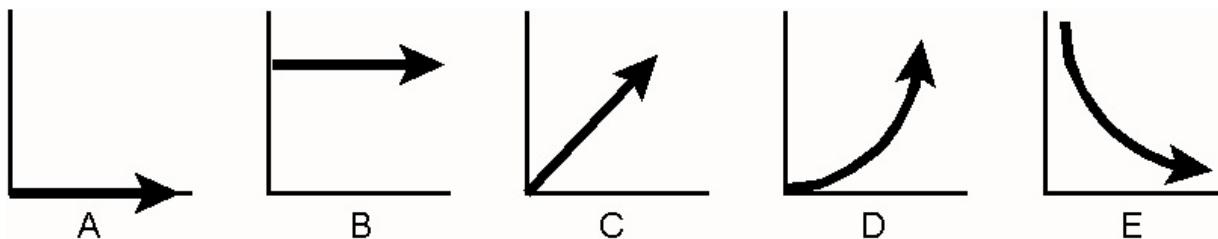
## Interpreting Motion Graphs

Answer questions 1 and 2 in complete sentences

1. What does the slope of a position vs. time graph indicate about an object's motion?

2. What does the slope of a velocity vs. time graph indicate about an object's motion?

Questions 3 - 8 refer to the following generic graph shapes. Write the letter corresponding to the appropriate graph in the blank at the left of each question.



\_\_\_\_\_ 3. Which shape fits a position vs. time graph of an object moving at constant (non-zero) velocity?

\_\_\_\_\_ 4. Which shape fits a velocity vs. time graph of an object moving at constant (non-zero) velocity?

\_\_\_\_\_ 5. Which two shapes fit a position vs. time graph of a motionless object?

\_\_\_\_\_ 6. Which shape fits a velocity vs. time graph of a motionless object?

\_\_\_\_\_ 7. Which shape fits a position vs. time graph of an object that is speeding up at a steady rate?

\_\_\_\_\_ 8. Which shape fits a velocity vs. time graph of an object that is speeding up at a steady rate?

\_\_\_\_\_ 9. Which of the following units is equivalent to (meters per second) per second?

a) m

b) m/s

c) m/s<sup>2</sup>

d) m/s<sup>3</sup>

\_\_\_\_\_ 10. Which of the following units corresponds to the slope of a position vs. time graph?

a) m

b) s

c) m/s

d) m/s<sup>2</sup>

\_\_\_\_\_ 11. Which of the following units corresponds to the slope of a velocity vs. time graph?

a) m/s

b) m•s

c) m/s<sup>2</sup>

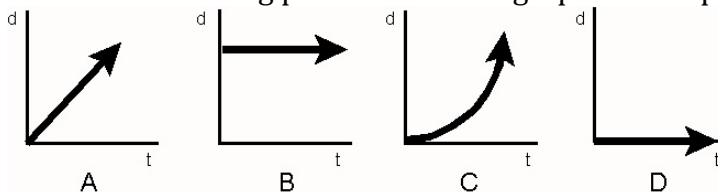
d) m<sup>2</sup>/s<sup>2</sup>

The table below gives position and time data for a moving object. Notice the varying size of the time intervals as the position rises in 20 m increments.

Position (m)	Time (s)
0	0
20	4.5
40	6.3

Position (m)	Time (s)
60	7.7
80	8.9
100	10

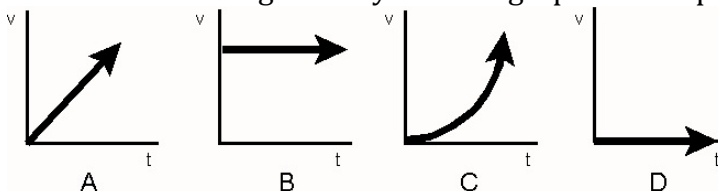
\_\_\_\_\_ 12. Which of the following position vs. time graphs corresponds to the table data?



\_\_\_\_\_ 13. Which of the following descriptions matches the graph you selected in question 12?

- A motionless object.
- An object moving at a constant velocity.
- An object undergoing constant, positive acceleration.
- An object undergoing constant, negative acceleration.

\_\_\_\_\_ 14. Which of the following velocity vs. time graphs corresponds to the table data?



\_\_\_\_\_ 15. Which of the following descriptions matches the graph you selected in question 14?

- A motionless object.
- An object moving at a constant velocity.
- An object undergoing constant, positive acceleration.
- An object undergoing constant, negative acceleration.

CAUTION: If your answers to questions 13 and 15 are different from each other, you are claiming that the same object can have two distinct motions simultaneously. Ask yourself, "Is that reasonable?"

16. A woman walks away from a starting point in a straight line. A position vs. time graph for her motion is shown at right.

a. Describe the woman's motion between 0 and 2 seconds.

b. Fill out the table below. Show your work.

Time Interval	Woman's Velocity (m/s)
2-4 seconds	
4-6 seconds	
6-8 seconds	

