

9PS: Motion

Name _____

Worksheet B: Interpreting Motion Graphs

Answer questions 1 and 2 in complete sentences.

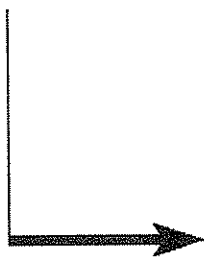
1. What does the slope of a position vs. time graph indicate about an object's motion?

VELOCITY

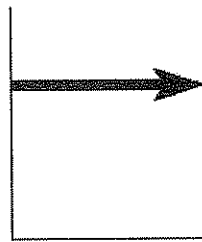
2. What does the slope of a velocity vs. time graph indicate about an object's motion?

ACCELERATION

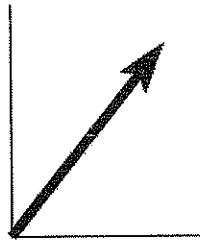
Questions 3-8 refer to the following generic graph shapes. Write the letter corresponding to the appropriate graph in the blank at the left of each question.



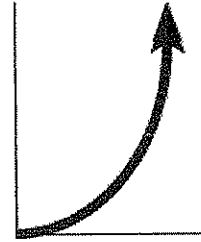
A



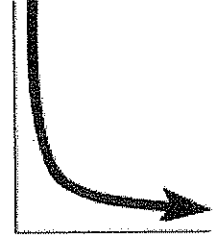
B



C



D



E

C

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

B

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

A, B

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

A

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

C

7. Which shape fits a **position** vs. time graph of an object that is moving at a steady rate?

C

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

C

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

a) m b) m/s c) m/s^2 d) m/s^3

C

10. Which of the following units correspond to the slope of a position vs. time graph?

a) m b) s c) m/s d) m/s^2

D

11. Which of the following units correspond to the slope of a velocity vs. time graph?

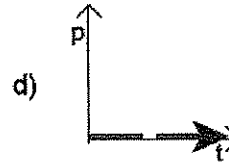
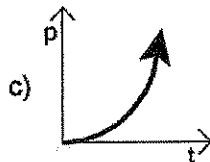
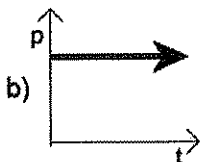
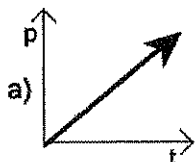
a) m b) s c) m/s d) m/s^2

The table below gives position and time data for a moving object. Pay attention to how the **time intervals** are changing as the position rises in 20 meter increments.

Position (m)	Time (s)
0	0
20	4.5
40	6.3
60	7.7
80	8.9
100	10

C

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



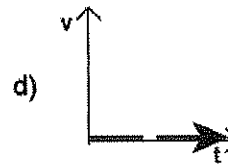
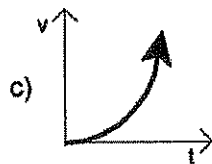
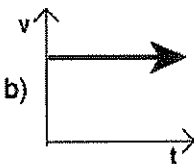
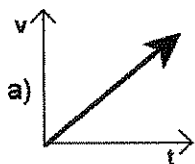
C

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

- a) A motionless object.
- b) An object moving at a constant velocity.
- c) An object undergoing positive acceleration.
- d) An object undergoing negative acceleration.

A

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



C

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

- a) A motionless object.
- b) An object moving at a constant velocity.
- c) An object undergoing positive acceleration.
- d) An object undergoing negative acceleration.

Beware: If your answers to questions 13 and 15 are different from each other, you are claiming 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 the right.

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

SHE IS INCREASING HER VELOCITY.

b) Fill out the table below.

Time Interval	Woman's Velocity (m/s)
2 to 4 seconds	<u>3 m/s</u>
4 to 6 seconds	<u>0 m/s</u>
6 to 8 seconds	<u>1 m/s</u>

