## Unit 1 Worksheet 6: Multiple Representations of Motion

Given one motion representation, supply the missing motion representations.





5. This motion map shows the position of an object once every second. From the motion map, answer the following:



d. Write a mathematical expression that represents the relationship between position and time.

- e. From the position-time graph find the displacement from t = 1 s to t = 3 s.
- f. Find the area under the velocity-time graph from t = 1 s to t = 3 s. What are the units of this area? Describe what this area represents.

position (m)

6. From the position vs. time data below, answer the following questions.



b. Construct a graph of velocity vs.



5

time (s)



c. Draw a motion map for the object.

0

0

6

7

8

9

10

10

5

0



- d. Determine the displacement from t = 3.0 s to 5.0 s using the velocity vs. time graph.
- e. Determine the displacement from t = 7.0 s to 9.0 s using the velocity vs. time graph.
- f. Determine the average **velocity** from t = 4 s to 8 s.
- g. Determine the average **speed** from t = 4 s to 8 s.

7. Rank the following:



a. Rank the graphs according to which show the greatest **average velocity** from the beginning to the end of the motion. (Zero is greater than negative, and ties are possible.)

Most pos. v 1\_\_\_\_\_ 2\_\_\_\_ 3\_\_\_\_ 4\_\_\_\_ 5\_\_\_\_ 6\_\_\_ Most neg. v

Explain your reasoning for your ranking:

b. Rank the graphs according to which show the greatest **average speed** from the beginning to the end of the motion.

Greatest 1\_\_\_\_\_ 2\_\_\_\_ 3\_\_\_\_ 4\_\_\_\_ 5\_\_\_\_ 6\_\_\_\_ Least

Explain your reasoning for your ranking: