Date ____________ Period ____________ Name ____________________

CHAPTER 2

Study Guide

Representing Motion

Vocabulary Review

Write the term that correctly completes the statement. Use each term once.

average speed	**instantaneous position**	**origin**	**resultant**
average velocity	**instantaneous velocity**	**particle model**	**scalar**
coordinate system	**magnitude**	**position**	**time interval**
displacement	**motion diagram**	**position-time graph**	**vector**
distance			

1. ____________________ The speed and direction of an object at a particular instant is the _____.

2. ____________________ Another term given for the size of a quantity is the _____.

3. ____________________ The _____ is the location of an object relative to an origin.

4. ____________________ The formula $t_f - t_i$ represents _____.

5. ____________________ A _____ is a quantity with both magnitude and direction.

6. ____________________ Ratio of the change in position to the time interval during which the change occurred is the _____.

7. ____________________ A system that defines the zero point of the variable you are studying is the _____.

8. ____________________ The zero point is also called the _____.

9. ____________________ A graph with time data on the horizontal axis and position data on the vertical axis is a _____.

10. ____________________ A _____ shows a series of images showing the position of a moving object over equal time intervals.

11. ____________________ A vector that represents the sum of two or more vectors is a _____.

12. ____________________ A simplified motion diagram that shows the object in motion as a series of points is a _____.

13. ____________________ A scalar quantity that is the length, or size, of the displacement vector is _____.

14. ____________________ A quantity that has only magnitude is _____.

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15. ______________________ The location of an object at a particular instant is _____.

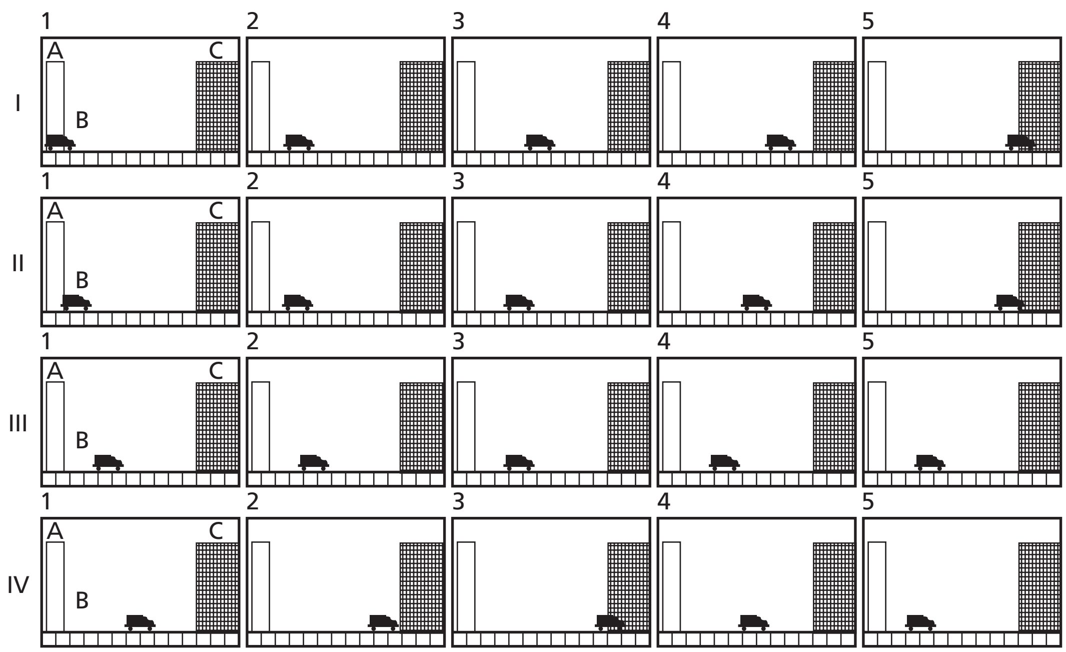
16. ______________________ The vector quantity that defines the distance and direction between two positions is _____.

17. ______________________ The absolute value of the slope on a position-time graph is _____.

Section 2.1 Picturing Motion

In your textbook, read about motion diagrams on pages 31–33.

Refer to the diagrams below to answer questions 1–5. Circle the letter of the choice that best completes the statement.



1. In set I, the object that is moving is _____.

a. A **c.** C

b. B **d.** none of the above

2. Set II shows that object B is _____.

a. at rest **c.** slowing down

b. increasing its speed **d.** traveling at a constant speed

3. Set _____ shows object B is slowing down.

a. I **c.** III

b. II **d.** IV

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4. Set ______ shows object B at rest.

a. I

b. II

c. III

d. IV

5. Set ______ shows object B traveling at a constant speed.

a. I

b. II

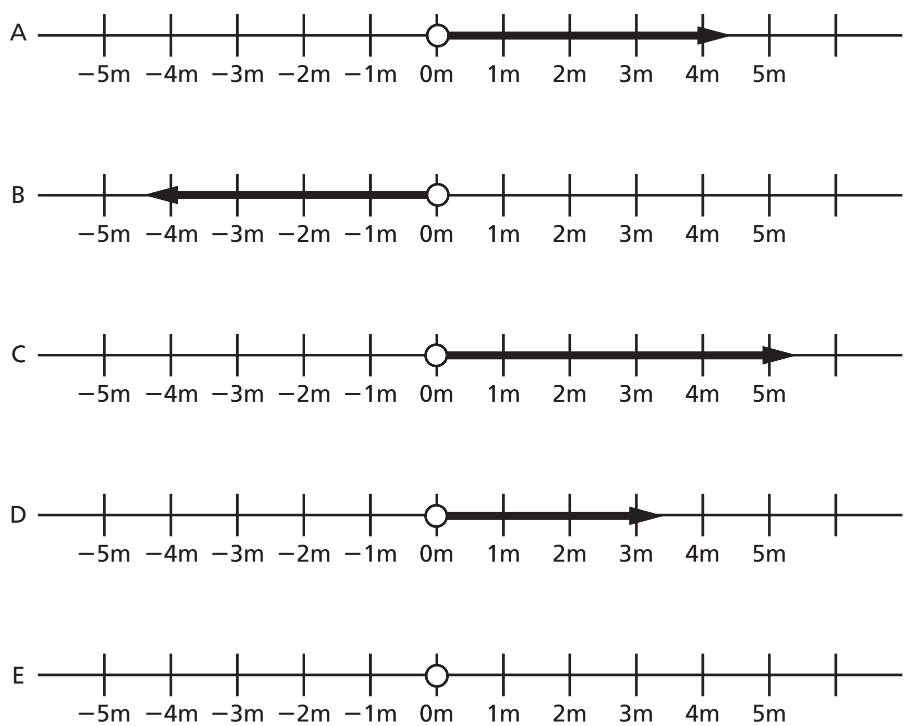
c. III

d. IV

Section 2.2 Where and When?

In your textbook, read about coordinate systems on pages 34–35.

Refer to the diagrams below to answer questions 1–5.



1. What are the position vectors for A, B, C, D, and E?

___

2. If the object is moving from left to right in D, and each division represents the passage of 1 s, what is the velocity of the object?

___

3. If the object is moving from right to left in D, what is the velocity of the object?

___

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4. In which sets are there objects with positive position vectors?

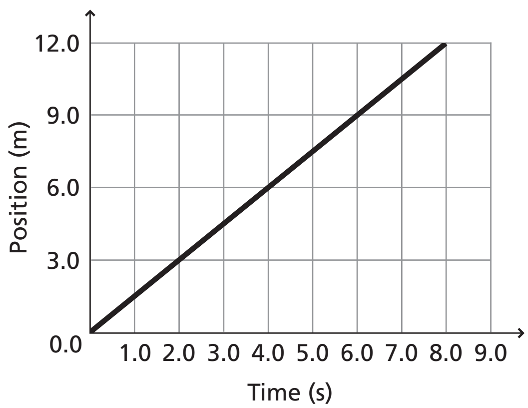
____

5. In which sets are there objects with negative position vectors?

____

Section 2.3 Position-Time Graphs

In your textbook, read about position-time graphs on pages 38–42. Refer to the diagram below to answer questions 1–7.



1. What quantity is represented on the x-axis?

____

2. What quantity is represented on the y-axis?

____

3. What is the position of the object at 6.0 s?

____

4. How much time has passed when the object is at 6.0 m?

____

5. How far does the object travel for every second it is in motion?

____

6. If the object continues at this speed, when will the object reach 18.0 m?

____

7. Where will the object be after 300 s?

____

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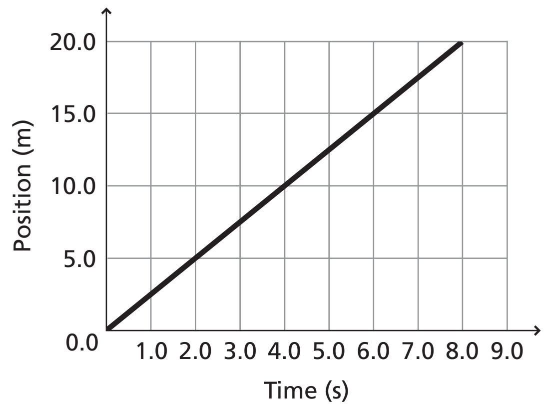
Section 2.4 How Fast?

In your textbook, read about speed and velocity on pages 43–47.

Refer to the diagram below to answer questions 1–12.



1. What is the formula for finding Δt?

2. Find Δt for the change in position from $d = 5$ m to $d = 15$ m.

3. What is the formula for finding Δd?

4. Find Δd for the time interval from $t = 2.0$ s to $t = 8.0$ s.

5. What is the formula for finding the slope on a position-time graph?

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6. What is the slope of this line?

7. What does the absolute value of the slope of this line represent?

8. What is the velocity of this object in m/s?

9. If this object continues at the same velocity, how long would it take this object to reach a position of $d = 150$ m?

10. If this object continues at the same velocity, how far will it have traveled when $t = 200$ s?

11. What formula would you use to determine the position of this object if it had an initial position vector and then traveled at a fixed velocity for a certain amount of time?

12. How far will this object have traveled if it had an initial position of 220 m and traveled at a velocity of 2.5 m/s for 48 s?

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