

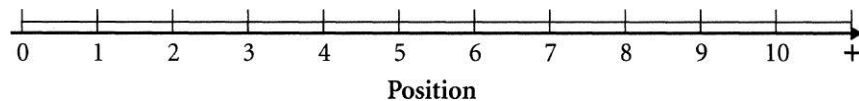
Motion in One Dimension

Chapter Review

1. What is the speed of an object at rest?

2. Which of the following situations represents a negative displacement? (Assume positive position is measured vertically upward along a y-axis.)
 - a. A cat stands on a tree limb.
 - b. A cat jumps from the ground onto a tree limb.
 - c. A cat jumps from a lower tree limb to a higher one.
 - d. A cat jumps from a tree limb to the ground.

3. Velocity is defined as



4. In the graph above, a toy car rolls from +3 m to +5 m. Which of the following statements is true?

a. $x_f = +3$ m	c. $\Delta x = +3$ m
b. $x_i = +3$ m	d. $v_{\text{avg}} = 3$ m/s

5. List the three examples of acceleration

6. Acceleration is defined as

7. What is the SI unit of acceleration?

Chapter Review

8. Is speed the same as velocity?

Justify your answer in complete sentences.

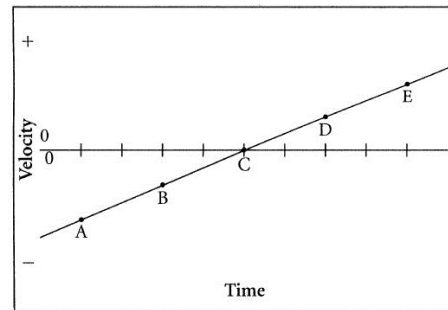
9. How can you determine motion? Explain.

10. When a car's velocity is positive and its acceleration is negative, what is happening to the car's motion?

- a. The car slows down.
- b. The car speeds up.
- c. The car travels at constant speed.
- d. The car remains at rest.

11. The graph at right describes the motion of a ball. At what point does the ball have an instantaneous velocity of zero?

- a. A
- b. B
- c. C
- d. D



12. Can displacement be zero and have a nonzero value for distance? Explain a scenario where this is possible?

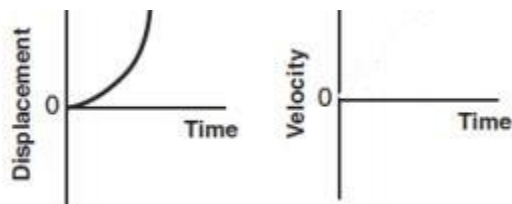
13. List the formulas for speed, velocity and acceleration.

14. Does the speedometer of a car read average speed or instantaneous speed?

How do you know?

Chapter Review

15. Predict what the velocity-time graph will look like. What does this tell us about the acceleration?

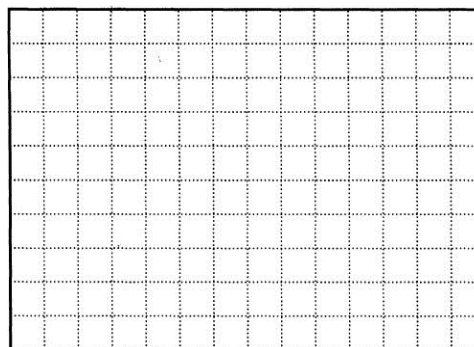
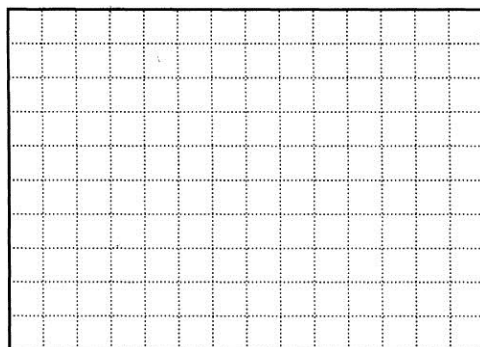


16. If a car is traveling in a straight line with a constant velocity of 8 m/s for 10 seconds, what is its acceleration?
17. What is the difference between distance and displacement?

18. Construct a graph of displacement-time for the motion of a dog, using the data in the table at right. Explain how the graph indicates that the dog is moving at a constant speed.

Time (s)	Displacement (m)
0.0	0.0
2.0	1.0
4.0	2.0
6.0	3.0
8.0	4.0
10.0	5.0

Then, construct a velocity-time graph using your data from the displacement-time graph.



PROBLEM

19. A horse trots towards a fencepost located 12 m to the left of it. It then turns around (180°) and trots toward another fencepost located 24 m to the right of the initial fencepost 11 s later.
- a) Calculate distance
 - b) Calculate displacement
 - c) Calculate Speed
 - d) Calculate Velocity
20. Sketch the velocity-time graphs for the following motions
- a) A city bus that is moving with a constant velocity
 - b) A wheelbarrow that is speeding up at a constant rate of acceleration while moving in the positive direction
 - c) An iguana that is slowing down at a constant rate of acceleration while moving in the positive direction
 - d) A camel that is slowing down at a constant rate of acceleration while moving in the negative direction
21. A car traveling in a straight line has a velocity of 5 m/s. After an acceleration of 0.75 m/s^2 , the car's velocity is 8 m/s. In what time interval did the acceleration occur?
22. If a Corvette, with an initial velocity of 9.3 m/s, accelerates at a rate of 45.6 m/s^2 for 5 seconds, what will its final velocity be?
24. As a school bus comes to a sudden stop to avoid hitting a student, it accelerates at a constant rate of -6.3 m/s^2 as it slows from 8 m/s to rest. Find the time interval of the acceleration for the bus.
25. A bowling ball strikes the pins with a velocity of 8.5 m/s with an acceleration of 2.1 m/s^2 . It took 1.8 seconds to reach the pins. Solve for initial velocity.
26. A hiker walks 10 km north, 15 km west, 2 km north, and 5 km east. Draw a diagram solve for the hikers distance and displacement.