

The following table gives the position of a boat at various times.

Position (m)	Time (s)
25	1
22.5	3
20	5
17.5	7
15	9
12.5	11

8. What is the average velocity of the boat over the time interval shown?
- $\Delta 12.5$ m/s
 - $\Delta 1.25$ m/s
 - 1.25 m/s
 - 12.5 m/s
9. What can be concluded about the motion of the boat from the given data?
- The boat is driving towards the 0m location.
 - The boat is driving backwards towards the finish line.
 - The boat is accelerating towards the 0m location.
 - The boat is driving in circles around the 0m location
10. Becky rode her bicycle 300.00 meters due east in 30.0 seconds. She then peddled directly south for 20.0 seconds at the same speed. She then peddled 50.0 meters directly north in 5.00 seconds.
- What was the total distance that she peddled her bicycle?
 - What was her average speed?
 - What was her displacement?
 - How would you determine her average velocity?

A packet is dropped out of a plane moving with a constant velocity.

11. What type of path do people in the plane observe that the packet follows?
- The packet falls straight down vertically from the plane.
 - The packet takes a straight diagonally downward path.
 - The packet flies horizontally with the plane for a time and then falls diagonally downward.
 - The packet falls downward in a parabola-shaped path.
12. What type of path do the hikers observe that the packet follows?
- The packet falls straight down vertically from the plane.
 - The packet takes a straight diagonally downward path.
 - The packet flies horizontally with the plane for a time and then falls diagonally downward.
 - The packet falls downward in a parabola-shaped path.
13. A vector is a quantity that has
- magnitude and time
 - magnitude and direction
 - time and direction
14. What is the minimum resultant possible when adding a 3 unit vector to an 8 unit vector?
- 24
 - 11
 - 8
 - 5

15. An airplane flying into a head wind loses ground speed, and an airplane flying with the wind gains ground speed. If an airplane flies at right angles to the wind, then the ground speed is
e. Less b. Unchanged c. More

16. Which has a greater linear speed, a horse near the outside rail of a merry-go-round or a horse near the inside rail?

- a. The outside horse b. the inside horse c. neither – they have the same speed

17. Which has a greater angular speed, a horse near the outside rail of a merry-go-round or a horse near the inside rail?

- a. The outside horse b. the inside horse c. neither – they have the same speed

18. Speed is

- a. A measure of how fast something is moving.
b. The distance covered per unit time
c. Always measured in terms of a unit of distance divided by a unit of time.
d. All of the above

19. One possible unit of speed is

- a. Miles per hour c. Kilometers per hour
b. Light years per century d. All of the above

20. When you look at the speedometer in a moving car, you can see the car's

- c. Instantaneous speed
d. Average speed
e. Instantaneous acceleration
f. Average acceleration
g. Average distance traveled

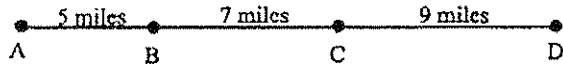
21. Suppose you take a trip that covers 240 km and takes 4 hours. Your average speed is

- h. 480 km/hr b. 240 km/hr c. 120 km/hr d. 60 km/hr

22. A vector is a quantity that has

- i. Magnitude and time
j. Magnitude and direction
k. Time and direction

Four cities all lie along a straight line as shown in the diagram. A delivery driver departs from City B, drives to City D, and then Drives to City A. The total time for the trip is 0.70 hours.



- 23) What is the driver's average velocity during the described trip?
 a. 60 miles/hr b. 52.9 miles/hr c. 30 miles/hr d. 7.1 miles/hr
- 24) What distance does the driver cover during the trip?
 a. 21 miles b. 11 miles c. 37 miles d. 42 miles
- 25) What is the driver's displacement at the end of the trip?
 a. 21 miles b. 11 miles c. 37 miles d. 42 miles
- 26) What is the driver's average speed during the trip?
 a. 60 miles/hr b. 52.9 miles/hr c. 30 miles/hr d. 7.1 miles/hr

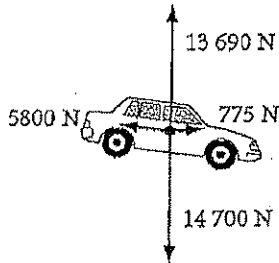
The following data were obtained from a car.

Time, t (s)	Position, x (m)
0	50
5	200
10	350
15	500
20	650

- 27) What is the average velocity of the car?
 a. 30m/s b. 35m/s c. 40m/s d. 50m/s
- 28) What is the acceleration of the car
 a. 30m/s b. 40 m/s c. zero d. 50 m/s

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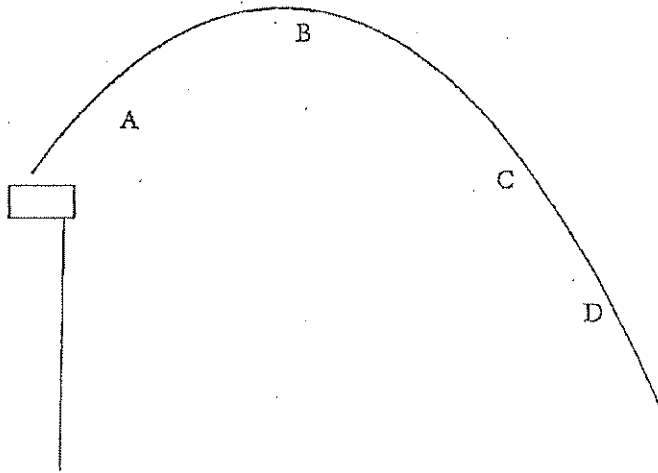
- 1) When a car's velocity is positive and its acceleration is negative, what is happening to the car's motion?
 - a. The car slows down
 - b. The car speeds up
 - c. the car travels with a constant speed
 - d. the car remains at rest
- 2) Which of the following is the cause of an acceleration?
 - a. Speed
 - b. inertia
 - c. force
 - d. velocity
- 3) Which of the following statements does **not** describe a force?
 - a. Force causes objects at rest to remain at stationary.
 - b. Force causes objects to start moving.
 - c. Force causes objects to stop moving.
 - d. Force causes objects to change direction.



- 4) The free body diagram shown above represents a car being pulled by a towing cable. In the diagram, which of the following is the gravitational force acting on the car?
 - a. 5800 N
 - b. 775 N
 - c. 14,700 N
 - d. 13,900 N
- 5) Using the same free body diagram the 5800 N force is
 - a. The gravitational force acting on the car
 - b. The backward force the road exerts on the car
 - c. The upward force the road exerts on the car
 - d. The force exerted by the towing cable on the car.
- 6) Which of the following is not an example of projectile motion?
 - a. A volleyball served over a net
 - b. A baseball hit by a bat
 - c. a hot air balloon drifting towards earth
 - d. a long jumper in action
- 7) An object is observed to have zero acceleration. Which of the following statements must be true?
 - a. The object is motionless.
 - b. The object is moving in a circular path.
 - c. There is no friction acting on the object.
 - d. The object has a constant velocity.

8) A car driving down the freeway has a constant velocity. Which of the following statements must be true?

- a. The car has zero acceleration.
- b. The car is moving in a circular path.
- c. There is no friction acting on the car.
- d. The car is speeding up.



9) At what point of the ball's path is the vertical component of the ball's velocity zero?

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

10) The magnitude of the ball's velocity is the greatest at

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

11) The horizontal component of the ball's velocity at A is

- a. Zero
- b. Equal to the vertical component of the ball's velocity at C
- c. Equal in magnitude but opposite in direction to the horizontal component of the ball's velocity at D.
- d. Equal to the horizontal component of its initial velocity.

12) At which point is the ball's speed about equal to the speed at which it was tossed?

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

13) A parachutist in free fall first reaches terminal velocity

- a. at the time of collision with the earth
- b. when the force of gravity is greater than the air resistance
- c. when the force of gravity is just balanced by the air resistance
- d. after the parachute is opened.