

Extended Response

3.1 Acceleration 29.

A test car carrying a crash test dummy accelerates from 0 to 30 m/s and then crashes into a brick wall. Describe the direction of the initial acceleration vector and compare the initial acceleration vector's magnitude with respect to the acceleration magnitude at the moment of the crash.

- a. The direction of the initial acceleration vector will point towards the wall, and its magnitude will be less than the acceleration vector of the crash.
- b. The direction of the initial acceleration vector will point away from the wall, and its magnitude will be less than the vector of the crash.
- c. The direction of the initial acceleration vector will point towards the wall, and its magnitude will be more than the acceleration vector of the crash.
- d. The direction of the initial acceleration vector will point away from the wall, and its magnitude will be more than the acceleration vector of the crash.

30.

A car accelerates from rest at a stop sign at a rate of 3.0 m/s^2 to a speed of 21.0 m/s , and then immediately begins to decelerate to a stop at the next stop sign at a rate of 4.0 m/s^2 . How long did it take the car to travel from the first stop sign to the second stop sign? Show your work.

- a. 1.7 seconds
- b. 5.3 seconds
- c. 7.0 seconds
- d. 12 seconds

3.2 Representing Acceleration with Equations and Graphs 31.

True or False: Consider an object that starts from rest and moves with constant acceleration. The plot of displacement versus time for such motion is a curved line while the plot of displacement versus time squared is a straight line.

- a. True
- b. False

32.

You throw a ball straight up with an initial velocity of 15.0 m/s . It passes a tree branch on the way up at a height of 7.00 m . How much additional time will pass before the ball passes the tree branch on the way back down?

- a. 0.574 s
- b. 0.956 s
- c. 1.53 s
- d. 1.91 s