Problems

3.1 Acceleration 12.

The driver of a sports car traveling at 10.0 m/s steps down hard on the accelerator for 5.0 s and the velocity increases to 30.0 m/s. What was the average acceleration of the car during the 5.0 s time interval?

a. -1.0×10^2 m/s^2
b. -4.0 m/s^2
c. 4.0 m/s^2
d. 1.0×10^2 m/s^2

13.

A girl rolls a basketball across a basketball court. The ball slowly decelerates at a rate of -0.20 m/s^2. If the initial velocity was 2.0 m/s and the ball rolled to a stop at 5.0 sec after 12:00 p.m., at what time did she start the ball rolling?

a. 0.1 seconds before noon
b. 0.1 seconds after noon
c. 5 seconds before noon
d. 5 seconds after noon

3.2 Representing Acceleration with Equations and Graphs 14.

A swan on a lake gets airborne by flapping its wings and running on top of the water. If the swan must reach a velocity of 6.00 m/s to take off and it accelerates from rest at a constant rate of 0.350 m/s^2, how far will it travel before becoming airborne?

a. -8.60 m
b. 8.60 m
c. -51.4 m
d. 51.4 m

15.

A swimmer bounces straight up from a diving board and falls feet first into a pool. She starts with a velocity of 4.00\,\text{m/s} and her takeoff point is 8\,\text{m} above the pool. How long are her feet in the air?

a. 0.408\,\text{s}
b. 0.816\,\text{s}
c. 1.34\,\text{s}
d. 1.75\,\text{s}
e. 1.28 s