Kinematics Homework Problems #4

p. 29 #38, 39, 44, 45, 52

Problems taken from the school's old textbook:
Giancoli, D. (1980). *Physics*, 2nd Ed. Englewood Cliffs, NJ: Prentice Hall.

Answers are provided at the bottom of the page.

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38. A kangaroo jumps to a vertical height of 2.8 m. How long was it in the air before returning to earth?

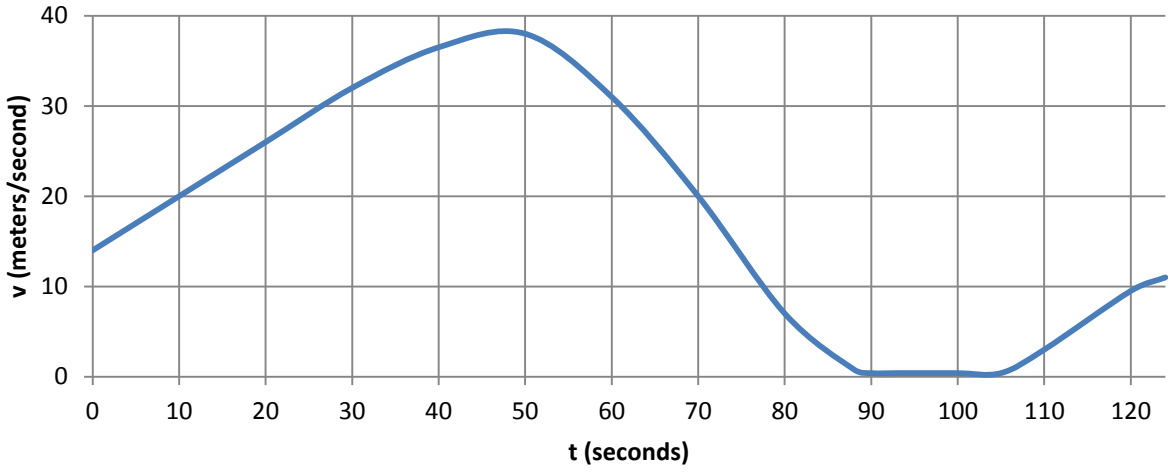
39. A helicopter is ascending vertically with a speed of 8.00 m/s; at a height of 120 m above the earth, a package is dropped from a window. How much time does it take for the package to reach the ground?

44. A falling stone takes 0.30 s to pass a window 2.4 m high. In other words, as the stone is falling, 0.30 seconds pass AS the stone falls past the window. From what height above the top of the window did the stone fall?

45. A stone is thrown vertically upward with a speed of 18.0 m/s.
    a) How fast is it moving when it reaches a height of 16.0 m?
    b) How long is required to reach this height?
    c) Why are there two answers to (b)?

52. In Figure 1-17, estimate the distance the train traveled during
    a) the first minute.
    b) the second minute.

Figure 1-17



Answers:

38. 1.51 s
39. 5.83 s
44. 2.18 m.
45a. 3.22 m/s
45b. 1.51 s
45c. The second time corresponds to the point in time when the stone is at the specified height but COMING BACK DOWN to the ground; that time is 2.16 s.
52a. approximately 1700 m
52b. approximately 500 m