Name _____ Period _____ Date _____

Assignment #6B: *Ramp Lab Debrief*

On Monday, we gathered data detailing the position vs time of a ball rolling down a ramp. Today we saw how that position vs time data gave us information about the velocity of the ball at various points. In turn, from the velocity, we could find information to describe the acceleration of the ball.

1. During his 30-minute trip to work, Mr. Golden travels with a velocity of $v(t) = 35 + 30t$, where t is measured in hours and $v(t)$ in miles per hour.
   a. Sketch a graph of this scenario showing velocity as a function of time. Needless to say, label your graph, clearly showing scale and units.
   b. What are his maximum and minimum rates?
   c. According to the data in this problem, how far from work does Mr. Golden live[2]?

[2] Disclaimer: Information used in this problem is for illustrative purposes only and does not necessarily reflect Mr. Golden's actual commute data.

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2. The displacement over time for a certain particle moving along the x axis is shown in Fig.3.12. Find the average velocity in the time intervals: (a) 0 to 1 sec, (b) 0 to 4 sec, (c) 1 to 5 sec, (d) 0 to 5 sec.

3. Find the instantaneous velocity of the particle described by Fig.3.12 at the following times: (a) $t = 0.5$ sec, (b) $t = 2$ sec, (c) $t = 3$ sec, (d) $t = 4.5$ sec.

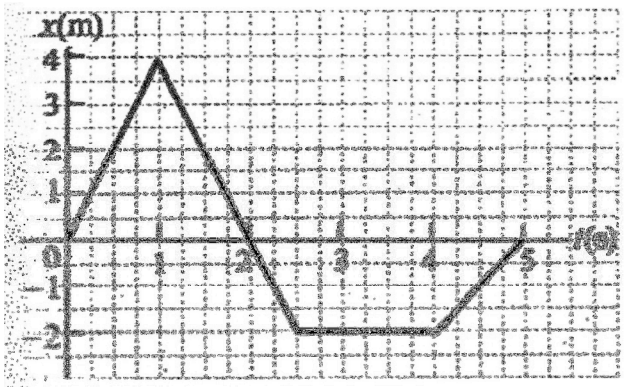

Figure 3.12 (Exercises 2 and 5).

4. A jogger runs in a straight line with an average velocity of 5 m/s for 4 min, and then with an average velocity of 4 m/s for 3 min. (a) What is her total displacement? (b) What is her average velocity during this time? *Why is her average velocity **not** 4.5 m/s? Why might someone say 4.5 m/s? Do you expect her average velocity to be greater than 4.5 or less than 4.5? Why?*