PHY 201 Quiz #1 **Name _____**

Score _____

Instructions:
1. Do all of your work on this sheet.
2. **Show all of your steps** in problems for full credit.
3. **Be clear and neat** in your work. Any illegible work, or scribbling in the margins, will not be graded.
4. Place your **answers in a box**. Do not forget **units**!
5. If you need more space, you may use the back of the page and write **On back** in the problem space.

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1. **Multiple Guess (2 pts)** Find the answer which best fits the question and write it in the space provided.

a) Which one of the following is possible for a moving object?
   a. The velocity is constant, and the acceleration is not zero.
   b. The velocity is directed eastward and is increasing, while the acceleration is directed westward.
   c. The velocity is directed eastward and is decreasing, while the acceleration is also eastward.
   d. The velocity is zero at one instant, and the acceleration is not zero at that instant.

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b) A plot of velocity versus time for free fall would look like a
   a. parabola; b. horizontal line; c. a line with positive slope;
   d. a line with negative slope. e. None of these.

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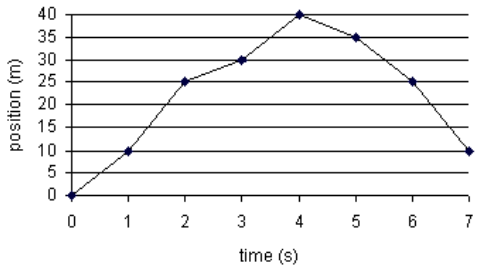
2. **Definition/Graphical Analysis (6 pts)**

a. Define displacement.

b. A child moves in one dimension as shown by the graph below.



i. What is the distance traveled from t = 2 to t = 7?

ii. What is the total displacement from t = 2 to t = 7?

iii. What is the average velocity between t = 0 and t = 4?

3. **Problems (12 pts)** .

a. A motorist travels 10.0 miles in 20.0 minutes but makes the return trip in 30.0 minutes. What is the average speed over the total trip in kilometers per hour? [1 mi=1.609 km.]

b. A hockey puck initially moving at +6.0 m/s travels 12.0 m before coming to a stop. What is the magnitude and direction of the acceleration of the hockey puck?

c. You toss a ball upwards at 5.0 m/s, 30.0 cm above the ground.
   i. How long does it take the ball to reach the highest point?

   ii. What is its velocity right before hitting the ground?

d. The position of a mouse is given by $x(t) = 3.0t - 2.0t^2$ m. Find
   i. The average velocity from t = 0.0 s to 3.0 s.

   ii. The instantaneous velocity at t = 0.5 s.

Bonus 1000 Liters occupies exactly 1 m^3. How many cubic centimeters are in one Liter?