

**Vasquez High School -- Physics -- Test #1 -- 100 points**

Write TRUE if the statement is true OR write the word that substitutes for the underlined word that would make it true. Writing false only earns partial credit. Three points each.

- \_\_\_\_\_ 1) The metric system is based on the number ten because our number system is too.
- \_\_\_\_\_ 2) The measure of how repeatable a measurement is is called its precision.
- \_\_\_\_\_ 3) The metric prefix "nano" means one-millionth.
- \_\_\_\_\_ 4) The very first real scientist, the one given credit for the Scientific Method, was a man named Albert Einstein.
- \_\_\_\_\_ 5) On a velocity vs. time motion graph, a horizontal line means the person is not moving.

Short Answer/Fill-in Section. Write complete answers here. Three points each.

- 6) The first three steps in the scientific method are: \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- 7) For six points total, list the three types of experimental errors AND give an example of each:
  - a) \_\_\_\_\_
  - b) \_\_\_\_\_
  - c) \_\_\_\_\_
- 8) As to the origins of the SI system...SI stands for \_\_\_\_\_. It was brought into existence by \_\_\_\_\_, because he realized that all scientists needed to \_\_\_\_\_.
- 9) Describe what scientific notation is, why we use it and how we use it: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

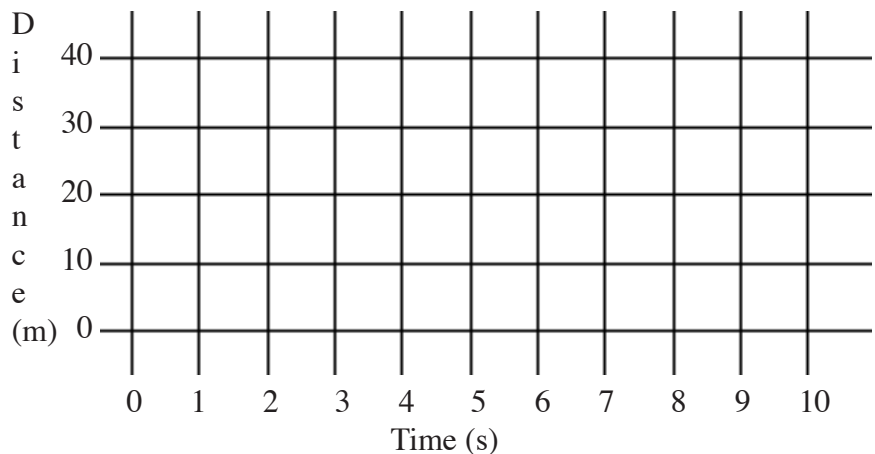
Problem Section. Write all appropriate formulas. Show all work for credit. Seven points apiece. All problems may neglect air resistance and friction.

- 10) Write the four equations of one-dimensional linear motion. Subscript all variables properly, if necessary.

- 11) Starting from the equations for position and final velocity, show how the time-free equation of motion is derived.
- 12) A rocket sled covers 1500 m in 11.6 seconds. If it starts from rest and accelerates uniformly, what will be its final velocity?
- 13) Two rollerskaters skate in the same direction along a straight path, at a constant speed -- one at 3.20 m/s and the other at 2.65 m/s. Assuming that they start at the same point and at the same time, how much sooner does the faster skater arrive at a destination 1800 m away?
- 14) On the graph below, plot the position of this person's trip as described below, from one to ten seconds.

The story goes like this:

A boy leaves home and runs 20 m in two seconds, waits for a second, then walks 10 m in three seconds, then waits for 2 seconds, then jogs the last 10 m in 2 seconds.



- 15) An object in free fall ( $g = 9.81 \text{ m/s/s}$ ) goes from a downward speed of  $6.23 \text{ m/s}$  to a speed of  $25.20 \text{ m/s}$ . How long does it take to do so?
- 16) A cheetah runs at  $25 \text{ m/s}$  for 20 seconds, trots at  $10 \text{ m/s}$  for 40 seconds, and walks at  $3 \text{ m/s}$  for 60 seconds. How much distance does he cover and what is his average speed?
- 17) Chuy is driving his lowered '69 Chevy Impala, you know, the powder blue one with the dark blue pinstripe paint job, dingle balls, tuck and roll leather interior and the grey lights in the wheel wells (so charp!)... you know, the one that says "Crystal Blue Persuasion" on the back glass...mmm, sweet...anyway he is moving at a cool  $14 \text{ m/s}$ . In his rearview mirror, he sees a policeman gaining on him, and since he has an open bottle of Spanada in the car, he carefully accelerates away at  $0.8 \text{ m/s/s}$ . For ten points, a) what will be his new speed if he travels 200 m, and b) how long will it take him to cover that 200 m?
- 18) Given the graph of a fictitious velocity vs. time graph, sketch any appropriate position vs. time graph and any appropriate acceleration versus time graph.

