Part 1. *(1.0 point each)*

Please circle ◯ the correct answer, to the nearest number for quantitative questions, for each of the following:

1. Constant speed in a constant direction is

A) constant velocity. B) constant acceleration.
C) Both of the above. D) Neither of the above.

2. A ball rolls along equal-length tracks **A** and **B**. Due to increased speed in the dip, the ball will have an overall greater average speed on track?

A) A. B) B. C) Both the same. D) Neither of the above .
E) Not enough information.

3. As a flying cat falls faster and faster through the air

A) air resistance increases. B) net force decreases.
C) acceleration decreases. D) All of the above
E) A and B only.

4. The force that directly moves a motor cycle along a highway is that provided by the

A) engine. B) fuel. C) tires. D) person. E) road.

5. You drive **6.00 km** at **50.0 km/h** and then another **6.00 km** at **90.0 km/h**. Your average speed over the **12.0 km** drive will be

A) greater than 70.0 km/h. B) equal to 70.0 km/h.
C) less than 70.0 km/h. D) exactly 38.0 km/h.
E) there is not enough information.

6. A fireman is sliding down a fire pole. As he speeds up, he tightens his grip on the pole, thus increasing the vertical frictional force that the pole exerts on the fireman. When this force equals the weight of the fireman, what happens?

A) The fireman comes to a stop.
B) The fireman descends with slower and slower speed.
C) The fireman descends with a smaller acceleration.
D) The fireman continues to descend, but with constant speed.
E) Cannot be determined without additional information.

7. What average net force is required to accelerate a car with a mass of **1200 kg** from **0** to **27.0 m/s** in **10.0 s**?

A) 444 N. (B) 1620 N. (C) 3240 N. (D) 4360 N. (E) 11800 N.

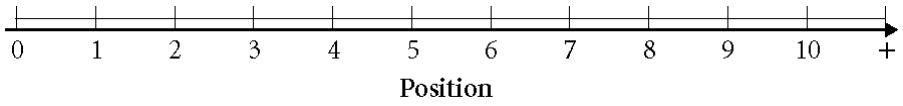
8. Which of the following is the equation for average velocity?

A) $v_{avg} = \frac{\Delta x}{\Delta t}$. B) $v_{avg} = \frac{\Delta x}{\Delta t^2}$. C) $v_{avg} = \Delta x \times \Delta t$.
D) $v_{avg} = \frac{\Delta t}{\Delta x}$. E) $v_{avg} = \frac{v_o - v_f}{2}$.

9. A car traveling with velocity ***v*** is decelerated by a constant acceleration of magnitude ***a***. It takes a time ***t*** to come to rest. If both its initial velocity and magnitude of acceleration were doubled, the time required to stop would

A) greater than $v_0/2$.
B) decrease by a factor of two.
C) stay the same.
D) quadruple.
E) decrease by a factor of four.

10. In the graph below, a toy car rolls from **+3 m** to **+5 m**. Which of the following statements is true?



A) x_f = +3 m. B) x_o = +3 m. C) Δx = +3 m. D) v_{avg} = 3 m/s.
E) a_{avg} = 3 m/s^2.

11. In question 10, if it takes the toy car **2 s** to travel from **+3 m** to **+5 m**. What is the average acceleration of the toy car?

A) 1.5 m/s^2. B) 0.5 m/s^2. C) 1.0 m/s^2. D) 2 m/s^2. E) 0.15 m/s^2.

Part 2:

Please read each of the following questions carefully and show your work in the space provided. Include the appropriate units with your answer. ***(3 points each)***

P1. A 777 aircraft has a mass of **300,000 kg**. At a certain instant during its landing, its speed is **27.0 m/s**. If the braking force is **435,000 N**, how much further does it travel along the runway before it comes to a stop?

Answer (with Units)_____

P2. A soccer ball is moving horizontally at a speed of **3.0 m/s**. It then undergoes a constant negative acceleration. After **4.0 s**, the ball is moving at **1.5 m/s**. What is the ball's displacement?

Answer (with Units)_____

Good Luck

Some useful constants:

$g=10\ m/s^2$ $g_{Moon}=(1/6)\ g_{Earth}$