AP Physics | Kinematics – Acceleration | Mr. McMullen

Name _____ Date _____ Period _____

Acceleration Practice Problem Set 1

Answer the following questions on a separate sheet of paper. Remember the steps in solving physics problems.

1. What is the acceleration of a racing car moving south if its velocity is increased uniformly from 44.0 m/s to 66.0 m/s over 11.0 seconds?

2. What is the acceleration of a racing car moving south if its velocity is increased uniformly from 66.0 m/s to 44.0 m/s over 11.0 seconds?

3. A train moving west at a velocity of 15.0 m/s is accelerated uniformly to 17.0 m/s in 12.0 seconds. What is the train's acceleration?

4. In a vacuum tube, an electrons velocity is increased by 2.60×10^5 m/s during a time period of 6.5×10^{-7} seconds. Calculate the acceleration of the electron.

5. A car is uniformly accelerated at a rate of 1.20 m/s^2 for 12.0 seconds. If the original velocity of the car was 8.00 m/s, what is its final velocity?

6. A racecar traveling at 45.0 m/s is slowed uniformly at the rate of -1.50 m/s^2 for 10.0 seconds. What is its final velocity?

① $a = \frac{v_2 - v_1}{t} = \frac{66.0 - 44.0 m/s}{11.0 s} = 2.00 m/s^2$ SOUTH

② $a = \frac{v_2 - v_1}{t} = \frac{44.0 - 66.0 m/s}{11.0 s} = -2.00 m/s^2$ SOUTH

③ $a = \frac{v_2 - v_1}{t} = \frac{17.0 - 15.0 m/s}{12.0 sec} = 0.167 m/s^2$ WEST

④ $a = \frac{v_2 - v_1}{t} = \frac{2.60 \times 10^5 m/s - 0 m/s}{6.5 \times 10^{-7} sec} = 4.08 \times 10^{11} m/s^2$

⑤ $v_2 = v + at = 8.00 m/s + (1.20 m/s^2)(12 s) = 22.4 m/s$

⑥ $v_2 = v + at = 45.0 m/s + (-1.50 m/s^2)(10 s) = 30 m/s$