P h y s i c s

name _____ hour _____

Inv-1 Expan VI One Dim. Motion

sheet #_____

Show your work on the problems   *Write small* | box in answers | n^3

1a.) An object with an initial velocity of **20.0 cm/s** is accelerated at **8.0 cm/s^2** for **5.0 s**. What is the total displacement?

1b.) What is the displacement during the **first** second?

1c.) What is the displacement between the **4th** second and the **5th** second? (Hint:Find position at t=4s and t=5s / take the difference.)

2.) What velocity is attained by an object that is accelerated at **0.30m/s^2** for a distance of **54m** if its initial velocity is **0.50m/s** ?

3a.) If the brakes of an automobile can accelerate it at **-7.00 m/s^2**, what time is required to reduce the velocity of the automobile from **157.0 km/hr** to **75.0 km/hr**?

3b.) How many meters does the car travel during the negative acceleration?

4.) A bullet fired with an initial horizontal speed of **600.0 m/s** reaches its target **2.000 km** away in **4.2 s**.
Determine the acceleration of the bullet due to air resistance. (Should the acceleration you find be positive or negative?)

5.) An asteroid traveling at **2.3 x 10^4 mi/hr** passes Mars where it begins to accelerate towards the Sun at **5.0 x 10^{-3} m/s^2**.
Its path towards the sun will run it directly into the Earth. The Earth is **5.6 x 10^7 km** away from Mars. How fast will the asteroid be going in **mi / hr** when it slams into Earth and destroys us all? (5280 ft = 1 mi ; .305 m = 1 ft) (get ready to convert . . . YES!)

6a.) Crazy Joe Clayton finally gets his souped up 1968 Camaro out of "Impound". The Highway Patrol clocks him at **80 miles per hour**. How many **seconds** will it take Crazy Joe to get to the state border **500 ft** away if he maintains a constant acceleration of **8 ft/s/s**? (5280 ft = 1 mile)

6b.) What will be Joe's speed in miles per hour when he gets to the border?

ANSWERS:1a) 200cm 1b) 24cm 1c) 56cm 2) 5.7m/s 3a) 3.26sec 3b) 104.9m 4) -59.0m/s/s 5) 57,600mph 6) 3.8s 6b) 100.5 mph