

## Chapter 2.2 1-D Horizontal Motion Pair/Share Activity

Answer the following questions and show all work. Here's how you receive full credit:

- Write knowns and unknowns
- Write down the equation you need and then solve it for unknown
- Substitute in numbers w/ units - *No Naked Numbers*
- Write and circle your final answer with proper units

- 1) 0.30 s after seeing a puff of smoke rise from the starter's pistol, the sound of the firing of the pistol is heard by the track timer 100m away. What is the velocity of sound?



- 2) A bullet is fired with a average speed of 720.0 m/s.  
a. What time is required for the bullet to strike a target 324 m away?



- b. What is the velocity of the bullet in km/hr?

- 3) You drive your car from home at an average velocity of 80 km/hr for 3 hours. Halfway to your destination, you develop engine problems, and for 5 hours you nurse the car the rest of the way. What is your average velocity for the entire trip?



½ way



- 4) From the moment a 40 m/s fastball touches the catcher's mitt until it is completely stopped takes 0.012 s. Calculate the average acceleration of the ball as it is being caught.



- 5) A race car accelerates from rest at  $+7.5 \text{ m/s}^2$  for 4.5 s. How fast will it be going at the end of that time?



- 6) A race car starts from rest and is accelerated uniformly to  $+41 \text{ m/s}$  in 8.0 s. What is the car's displacement?



- 7) A hockey player skating at  $18 \text{ m/s}$  comes to a complete stop in 2.0 m. What is the acceleration of the hockey player?



- 8) Police find skid marks 60m long on a highway showing where a car made an emergency stop. Assuming that the acceleration was  $-10 \text{ m/s}^2$  (about the max for dry pavement);

a) how fast was the car going?



b) was the car breaking the 50 mile/hr speed limit?

- 10) A bullet accelerates at  $6.8 \times 10^4 \text{ m/s}^2$  from rest as it travels the 0.80 m of the barrel.
- a. How long was the bullet in the barrel?
- b. What velocity does the bullet have as it leaves the barrel?

