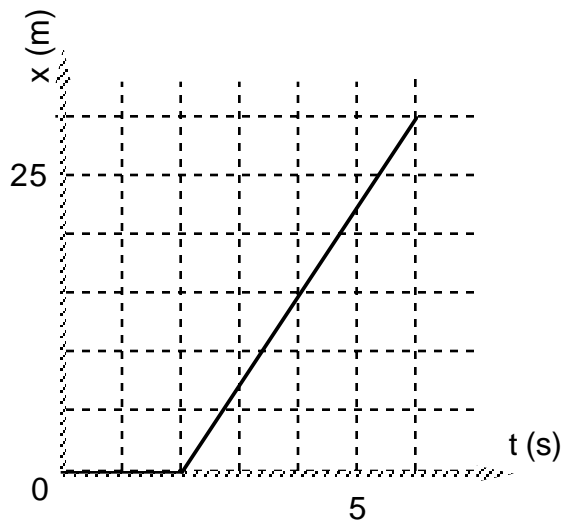


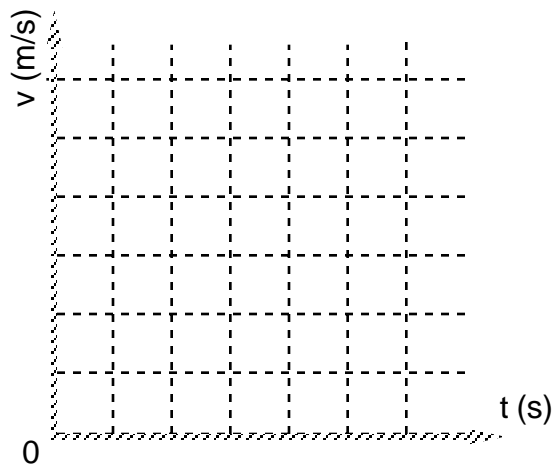
UNIT III: Worksheet 3

1.



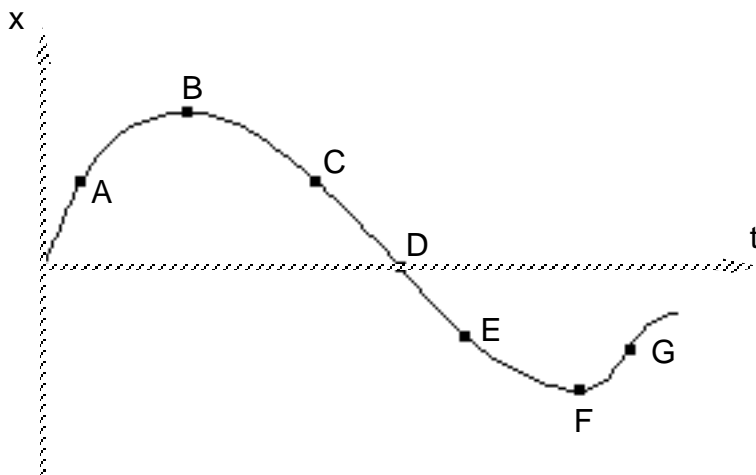
- Describe in words the motion of the object from 0 - 6.0 s.
- Construct a qualitative motion map to describe the motion of the object depicted in the graph above.
- What is the instantaneous velocity of the object at the following times?
 - $t = 1.0$ s
 - $t = 3.0$ s
- What is the simple average of these two velocities?
What is the average velocity for the entire interval?
Why are these two values different? Which is best to describe the motion of the object?

e. Graphically represent the relationship between velocity and time for the object described above.



f. From your velocity vs. time graph determine the total displacement of the object.

2. The graph below represents the motion of an object.



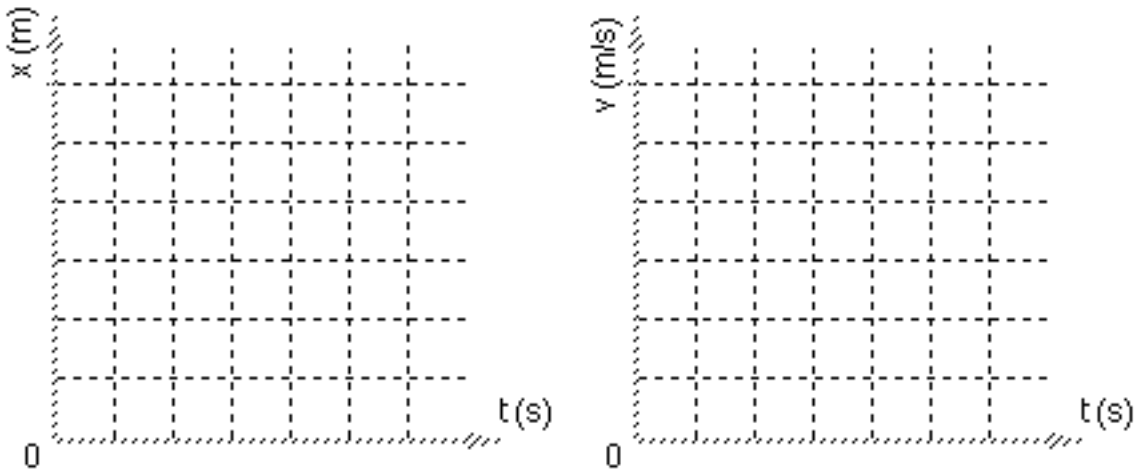
a. At what point(s) on the graph above is the object moving most slowly? (How do you know?)

b. Over what intervals on the graph above is the object speeding up? (How do you know?)

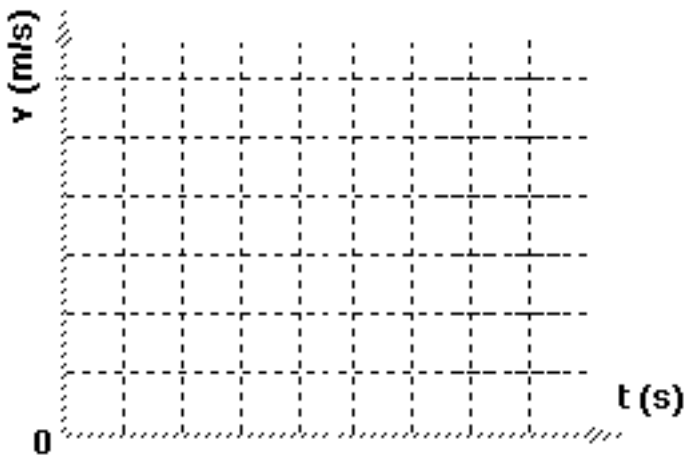
c. Over what intervals on the graph above is the object slowing down? (How do you know?)

d. At what point(s) on the graph above is the object changing direction? (How do you know?)

3. A stunt car driver testing the use of air bags drives a car at a constant speed of 25 m/s for a total of 100. m. He applies his brakes and accelerates uniformly to a stop just as he reaches a wall 50. m away.
- a. Sketch qualitative position vs. time and velocity vs time graphs.



- b. How long does it take for the car to travel the first 100.m?
- c. Remember that the area under a velocity vs time graph equals the displacement of the car. How long must the brakes be applied for the car to come to a stop in 50 m?
- d. Now that you know the total time of travel, sketch a **quantitative** velocity vs time graph.



- e. What acceleration is provided by the brakes? How do you know?