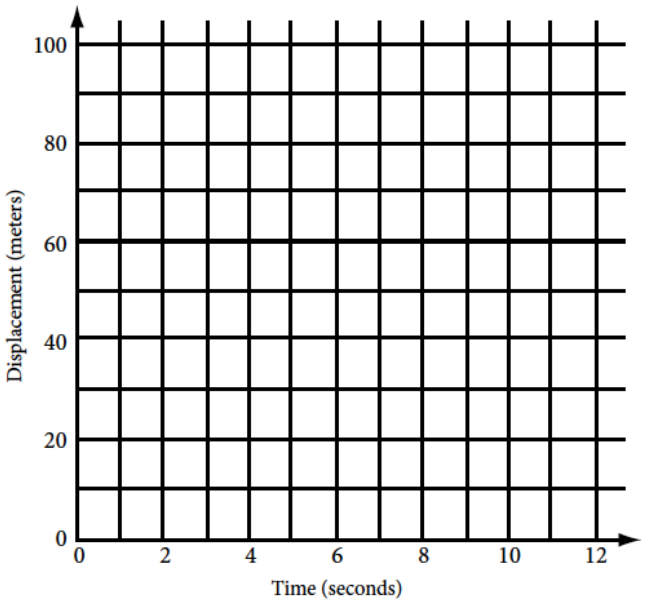
Name: _____

AP Physics 1: Kinematics
Graphical Analysis HW Part II

1982 Physics B, Question #1

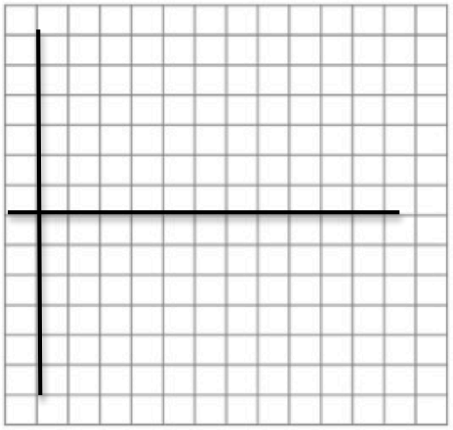
1. The first meters of a 100 m dash are covered in 2 seconds by a sprinter who starts from rest and accelerates with a constant acceleration. The remaining 90 meters are run with the same velocity the sprinter had after 2 seconds.
   A. Determine the sprinter's constant acceleration during the first 2 seconds.
   B. Determine the sprinter's velocity after the 2 seconds have elapsed.
   C. Determine the total time needed to run the full 100 meters.
   D. On the axes provided below, draw the displacement vs. time curve for the sprinter.



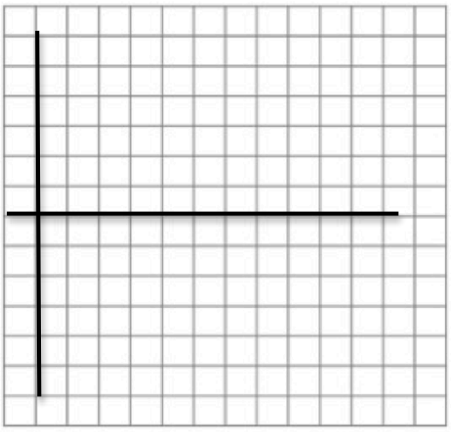
*See back for more practice

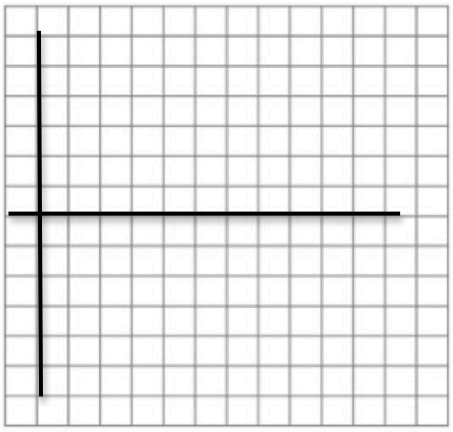
AP Physics: More Graphical Analysis

2. Sketch the position vs. time graph for an object that does the following.
   A. The object begins at a position x = 1.0 m and remains stationary for the first 2 seconds.
   B. The object then accelerates forward to a position x = 5.0 m in 2 more seconds.
   C. The object then continues forward with a constant velocity to a position of x = 9.0 m in 1 more seconds.



Based on the position graph sketched above, please sketch the corresponding velocity and acceleration vs. time graphs.





3. Based on the velocity vs. time graph provided, sketch the position vs. time and the acceleration vs. time graph. You may assume that the object began from a position of x = 0 m for your position graph.