Name_____

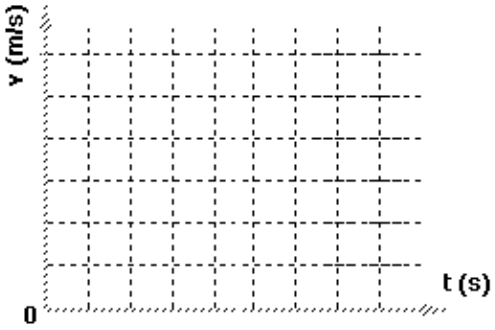
Date_____ **Pd**____

UNIT III: Review

1. A student drops his worthless physics book off a 120 m high bridge.
   a. How long does it take the book to hit the ground below?

   b. How fast will it be going at the moment of impact?

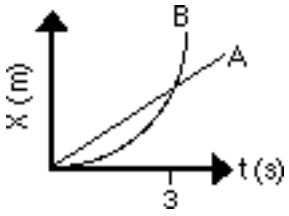
2. A police officer catches a speeder in a speed-trap. The officer takes off on his motorcycle with constant acceleration and reaches the speeders same speed (30 m/s) after 10 seconds. He follows him at this speed for 6 seconds before he puts on his lights and sirens.



   a. Sketch a **quantitative** velocity vs time graph.
   b. Use two different shading styles to graphically represent the displacement of the officer during the two different types of motion.
   c. How far did the officer travel during each segment?

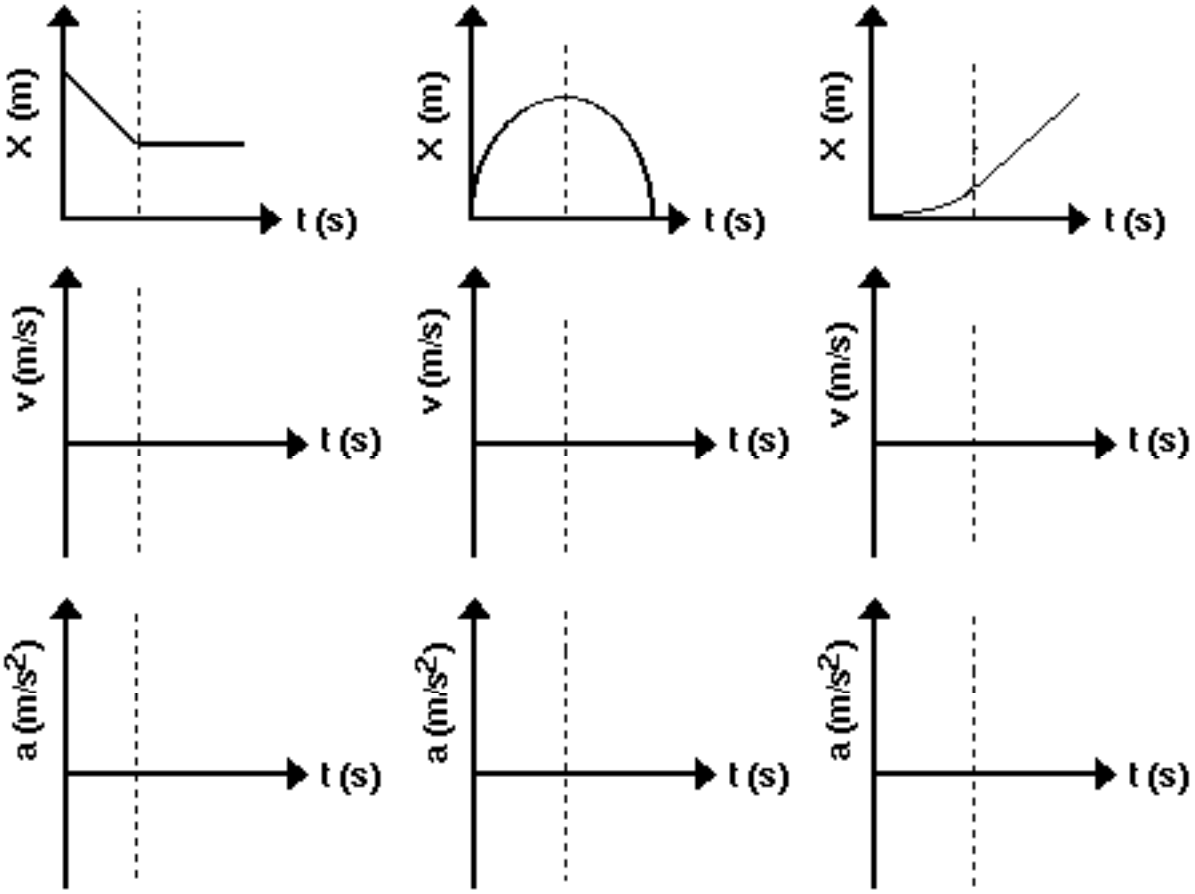
   d. How much did the officer accelerate to catch the speeder?

3. Using the graph at the right, compare the motion of the two objects. For full credit you **must** explain how you know.

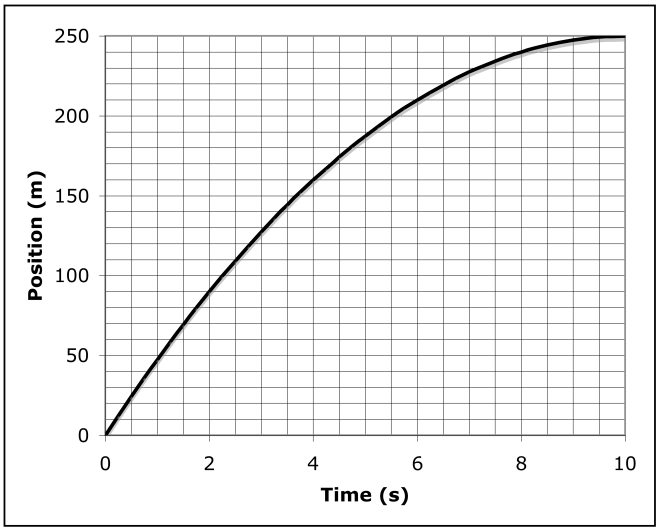


	Comparison: is A > B, A < B, or A = B,	**How do you know?**
a. **Displacement** at 3 s		
b. **Average** velocity from 0 - 3 s		
c. **Instantaneous** velocity at 3 s		
d. **Acceleration** at 3s		

4. For each of the position vs time graphs shown below, draw the corresponding **v** vs **t** and **a** vs **t** graphs.



Use the graph below to answer questions #5-7 that follow:



5. Give a written description for the motion of this object.

6. Determine the instantaneous velocity of the object at **t** = 2 s.

7. Assume the initial velocity was 50 m/s; determine the acceleration of the object.