2008 PreAP Linear Motion 4

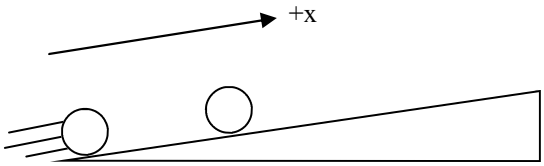
A-Day: Due Wed., Sept 3 (Assigned: 8/29)
B-Day: Due Thurs., Sept 4 (Assigned: 9/2)

1. Someone gives you a measurement of 125.3 mL. From this number tell me how precise the graduated cylinder is and which of the digits is certain or estimated.

2. Convert 12 Gliters to cL. Give your answer in scientific notation.

3. How is it possible for an object to have a positive acceleration and a negative velocity? Explain.

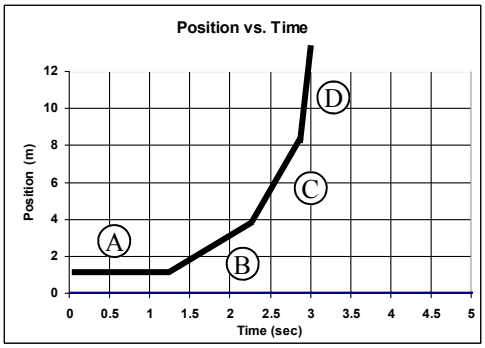
4. An object has a negative acceleration and a velocity of zero. How is this possible?



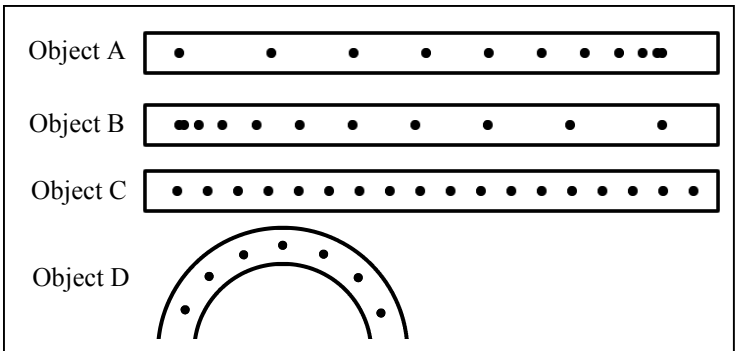
5. A ball is rolled up a ramp. If up the ramp is considered the +x direction,
   A. draw the approximate next position of the ball.
   B. Is the object's acceleration negative or positive?
   C. Is the object's TOTAL displacement increasing or decreasing?
   D. Is the object's distance traveled each second increasing or decreasing?
   E. What will be the object's velocity and acceleration at the top?

6. Use the position vs time graph at the right to answer the following.
   A. Which segment has the fastest velocity?
   B. Which segment shows the object at rest?
   C. Give the letters from slowest to fastest:

   D. What is the object doing (use the information from the above answers)?



7. Positive (+) or Negative (–)?
   A) ___ Acceleration for an object speeding up in the negative direction?
   B) ___ Position for an object to the left of the origin?
   C) ___ Velocity for an object moving left?
   D) ___ Position for an object to the right of the origin?
   E) ___ Acceleration for an object slowing down in the negative direction?
   F) ___ Velocity for an object moving to the right?



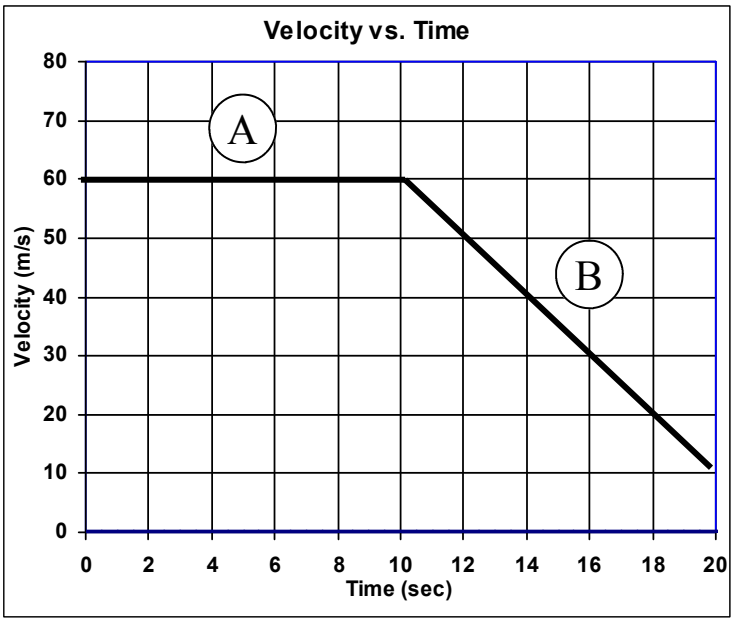
Choose which of the above applies to the following

8. The tape timers at the right show the positions of moving objects at regular intervals. Which object or objects fulfill the following situations?

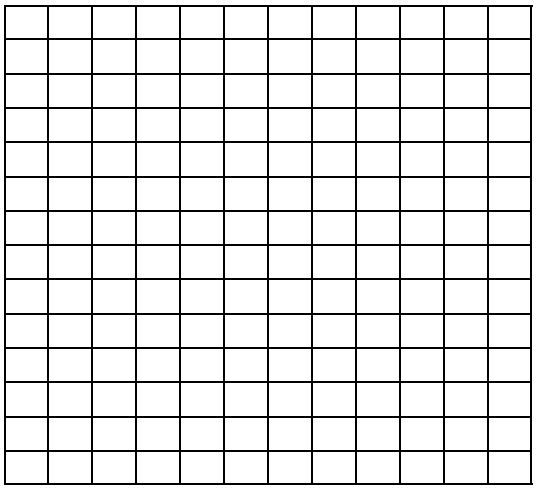
   A. _____ Constant speed.
   B. _____ Positive acceleration.
   C. _____ At constant velocity.
   D. _____ Accelerating.
   E. _____ Acceleration = 0.
   F. _____ Distance traveled increases.
   G. _____ Starts at rest.
   H. _____ Is stopping.
   I. _____ Constant direction.
   J. _____ Negative acceleration.
   K. _____ $V_i = V_f$

9. Use the graph at the left to answer the following.
   A. What does the slope of this graph tell us about the object?

   B. Find the total displacement of the object during the first 20 seconds of its motion.



   C. Graph this motion as an acceleration vs. time graph below. Be sure to label axis.



10. An object is moving 12 m/s to the right when it passes a point 10 m to the right of the origin. It has an acceleration of -3 m/s^2.
    A. What is its displacement after 5 seconds?

    B. What is its final position?