A-Day: Due Tues., Sept 11 (Assigned: 9/7)
B-Day: Due Wed., Sept 12 (Assigned: 9/10)

Linear Motion 5

1) An object going –5 m/s, end up going –10 m/s. This happens in 3 seconds.
   A. Both velocities are negative. Is the object moving to the right or to the left?
   B. Thinking of a number line ("I ♥ # lines!"), is the change between the velocities positive or negative?
   C. So, is the acceleration positive or negative?
   D. Solve for the acceleration. *(use steps)* (This will prove whether it is positive or negative.)

2) An object is thrown up into the air.
   A. Is "up" positive or negative position?
   B. Is "up" positive or negative velocity?
   C. Is up and down x or y?
   D. When I throw an object into the air at first it is at rest in my hand to begin with (velocity = _____), then it is moving up into the air. The acceleration when I throw it into the air is positive or negative?
   E. After I let go of the object, will it speed up or slow down as it goes up into the air?
   F. Is this acceleration, as it is going up into the air, positive or negative?
   G. At the very top, its velocity = _____.
   H. As it comes back down, its velocity is positive or negative?
   I. As it is coming back down, is its acceleration positive or negative?
   J. SOOO, the acceleration of an object going up and down in the air is positive or negative?

3) Imagine a DROPPED object.
   A. In order to be dropped, I must be holding it to begin with. So, its initial velocity = _____.
   B. AFTER I drop it, the object's acceleration will be positive or negative?
   C. As it is falling, is its velocity positive or negative?

4) An object feels 3 m/s^2 of acceleration for 2 seconds. If it starts at 4 m/s, find its final velocity.

5) An object that is moving at 5 m/s:
   A. How far will it go each second?
   B. How far will it have traveled in 3 seconds?

6) An object is accelerating at 10 m/s^2 (OR 10 m/s per second):
   A. How much speed is it gaining EACH SECOND?
   B. If it starts at rest, how fast will it be going after 1 second?
   C. How fast will it be going after 3 seconds?

7) What letter do we use for horizontal position?

8) An object's initial position is 2 meters away. Its final position is 18 m away.
   A. What is its displacement?

   B. What this displacement positive or negative?
   C. Was the object moving left or right?
   D. Was the object's velocity positive or negative?
   E. So, if an object has a negative displacement, its velocity will be positive or negative?

9) An object goes around the outside of a circle of radius 3.2 meters. If it ends up back where it started:
   A. What is its displacement?

   B. What is the distance it traveled (you should already know the formula for the circumference of a circle)?

10) Use Graph 1 to answer the following questions:

A. The graph shows an object changing what?

B. So the slope of this graph means what?

C. Find the slope of the graph (easier if done on the graph).

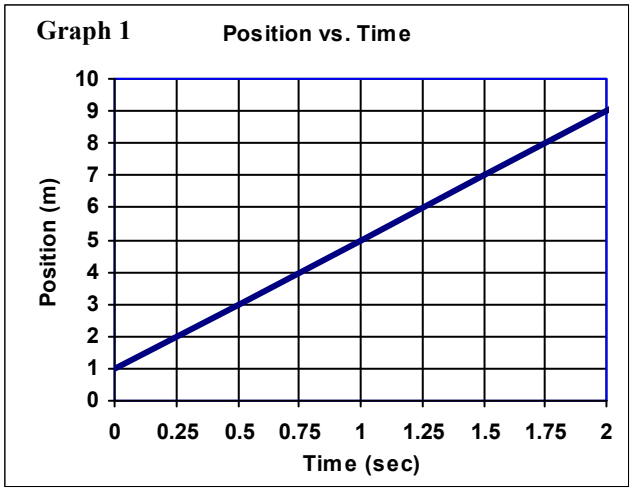
D. What is the initial velocity of the object?

E. Give the linear equation for this graph.

y =
x =
m =
b =

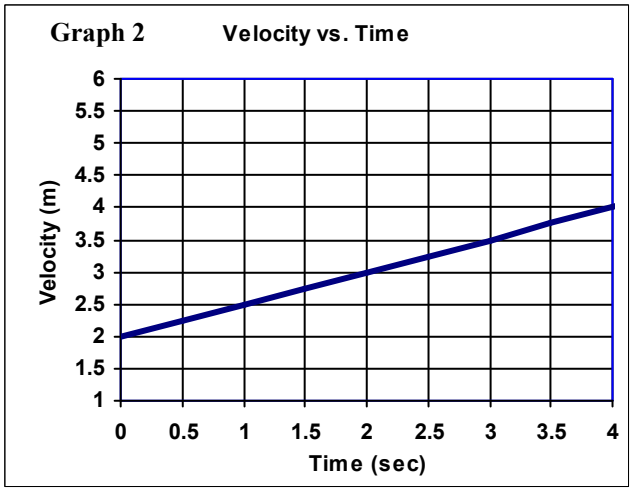
Linear Graph for this line:

F. Where will the object be after 16 seconds?



Now, do ALL of the above with out me walking you thru it.

11) Using Graph 2, at what time will the object be going 6.2 m/s?



12) Use graphs 1 and 2 to answer the following questions:

A. ____ Which graph shows changing velocity?

B. ____ Which graph shows changing position?

C. ____ Which graph's slope tells you the object's speed?

D. ____ Which graph's slope tells you the object's acceleration?

E. What does the y-intercept tell you about graph 1?

F. What does the y-intercept tell you about graph 2?

13) Use graph A and B below to answer the following questions. (*And think back to the final graph of the last homework.*)

A. The beginning of graph A is almost flat, so the object has what velocity?

B. The end of graph A is more vertical, so is the object's velocity fast or slow?

C. So, graph A shows an object: _____.

D. Using the same logic, what is object B doing?

(*Hint: this shape is true ONLY if it is a position vs. time graph.)*