A-Day: Due Fri., Sept 5 (Assigned: 9/3)
B-Day: Due Mon., Sept 8 (Assigned: 9/4)

2008 Linear Motion 4

1. A. Convert 1500 m/sec to m/min.

   B. Now convert to m/hour.

3.3 ft = 1 m
5280 ft = 1 mi
12 in = 1 ft
I assume you know about seconds, mins, etc

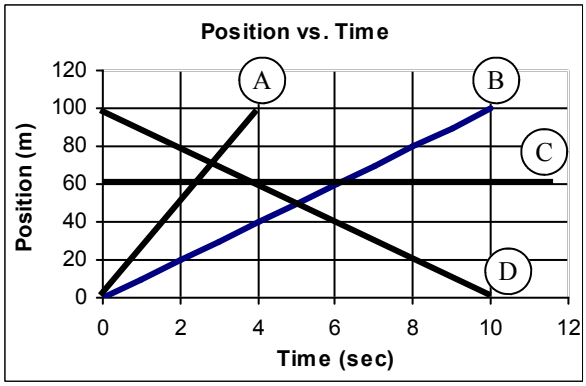
From your "Graphing Linear Motion Notes".

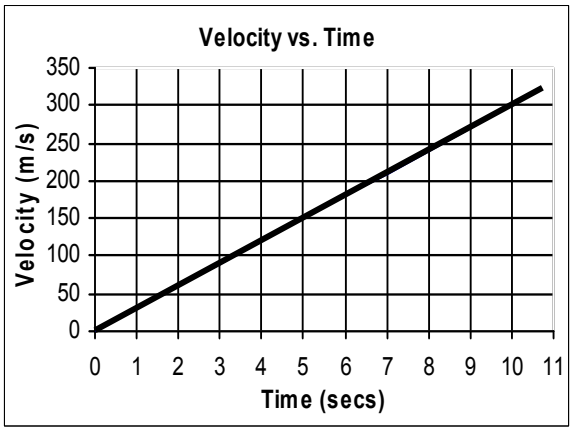
2. X or Y axis?

A. ____ Vertical axis	D. ____ Dependent variable
B. ____ Independent variable	E. ____ Acceleration
C. ____ Manipulated variable	F. ____ Time

3. Use the graph at the right to answer the following.

   A. Over time the object is changing what?
   B. So, the slope tells us what about the object?
   C. How long does it take A to go 100 m?
   D. How long does it take B to go 100m?
   E. Which object is moving faster: A or B?
   F. Which line shows negative speed?
   G. What is object C doing?

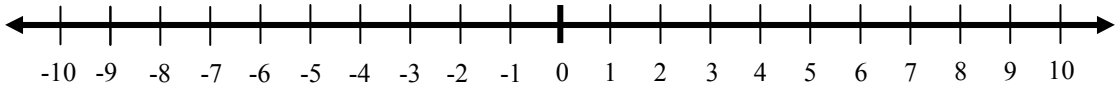




4. Use the graph at the left.

   A. Over time the object is changing what?
   B. So, the slope tells us what about the object?
   C. After finding m and b, write the linear equation for this graph.

   D. What is the acceleration of this object?
   E. What is the initial speed of the object?
   F. When will this object be going 410 m/s?



Use the number line to help you answer the following.

5. A. A person starts at –8 m and ends up at –2 m, is that a + or – change?
   B. Is their velocity + or – ?
6. A. A person moving 10 m/s ends up moving 5 m/s. Is that a + or – change?
   B. Is that a + or – acceleration?
7. Vi = -5 m/s, Vf = -2 m/s. + or – acceleration?
8. Speeding up in the positive direction: + or – acceleration?
9. Slowing down in the negative direction: + or – acceleration?

10. Speed or velocity: A) A car is driving 80 mph. B) A person walking north.

11. What is the difference between a scalar quantity and a vector quantity?

12. What are the two ways you know an object is accelerating?

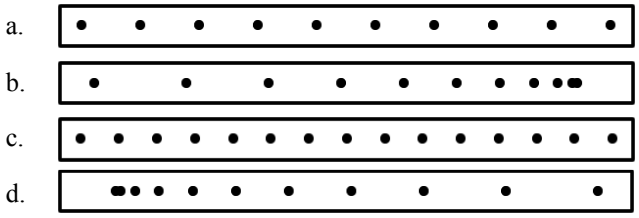
13. How can an object not change speed, but be accelerating?

Looking on the equation sheet below: remember that "Δ (delta)" ALWAYS means "final – initial", so $\Delta v = v_f - v_i$.
For these problems you MUST show ALL of the steps.

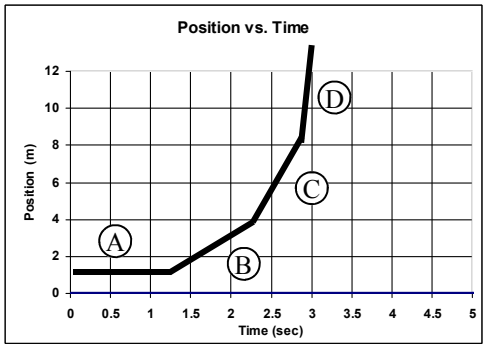
14. An object is moving 30 m/s ***to the left***. After 5 seconds it is moving 10 m/s to the left. Find the acceleration of the object.
Variables: Equation: Solve:

15. An object is moving 45 m/s ***to the right***. After 7 seconds it is moving right at 10 m/s. Find acceleration.
Variables: Equation: Solve:

16. Use the tape timers at the right to answer the following.
    A. Which represents constant speed?
    B. Which is faster: a or c?
    C. Which has a positive acceleration?
    D. Which has a negative acceleration?



17. Give an example of an object that changes velocity, but not speed.



18. 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)?

19. Write the information below on your variable and equations sheets.

Variable Sheet

	Δ	(no units)	Delta	Change of (always final – initial)
	x	m	position	Where you are from a certain place
	Δx	m	Displacement	Dist. from original position (can be 0)
	D (or d)	m	Distance	How far you travel (total)
	t	Sec	Time	Elapsed time
	v	m/s	velocity	How fast you are moving with dir.
	a	m/s^2	acceleration	How fast you change velocity
	Δy	m	Vertical Displ.	Change of verti. distance

Equation Sheet

$\Delta = final - initial$
$\Delta x = x_f - x_i$
$v = \frac{\Delta x}{t} \qquad S = \frac{D}{T}$
$a = \frac{\Delta v}{t} = \frac{v_f - v_i}{t}$
$y = mx + b \qquad m = \frac{\Delta y}{\Delta x}$