

A-day: Due Thurs, Sept 10  
B-day: Due Fri., Sept 11

## 2009 PreAP Linear Motion 5

1. A. Convert 2.4 m/s to feet per second.  
  
B. Now convert to feet/minute.

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

*From your "Kinematic Equation" notes*

2. A person swims 4 complete laps in a 30 m long pool. (30 m is one way. 1 complete lap is there and back.)  
A. What distance did they travel?  
  
B. What is their total displacement?

*For each of the following situations give detailed descriptions including horizontal/vertical (x or y) and +/-.*

3. A ball is thrown into the air. As it is going up  
A. Displacement is:  
B. Velocity is:  
C. Acceleration is:
4. A ball is rolling to the right and slowing down.  
A. Displacement is:  
B. Velocity is:  
C. Acceleration is:
5. A ball is rolling to the left and speeding up.  
A. Displacement is:  
B. Velocity is:  
C. Acceleration is:
6. An object stops after moving 12 m/s to the right.  
A. What is its initial velocity?  
B. What is its final velocity?  
C. Is its acceleration positive or negative?  
D. Is its displacement positive or negative?

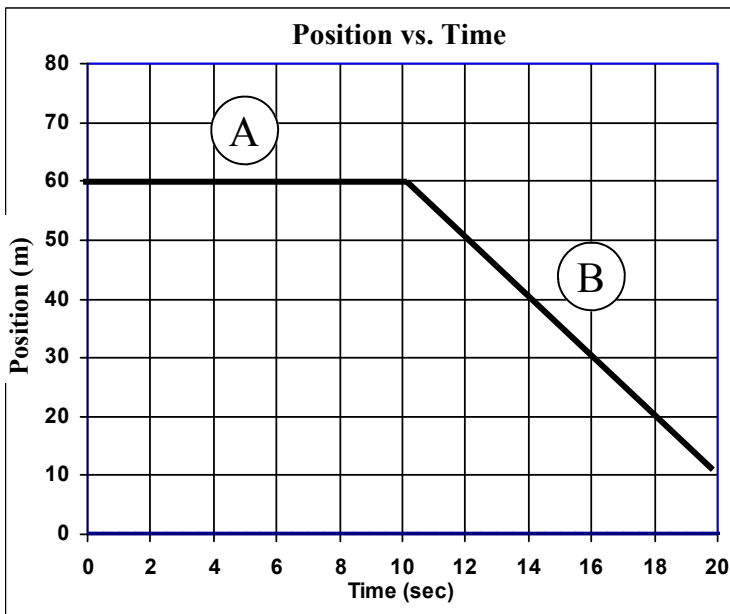
7. An object moves 50 m to the left after starting at rest. If it ends up going 12 m/s to the left, how long did it take to accelerate?  
Variables:                      What's Variable is not used?                      Solve:

What equation will you use?

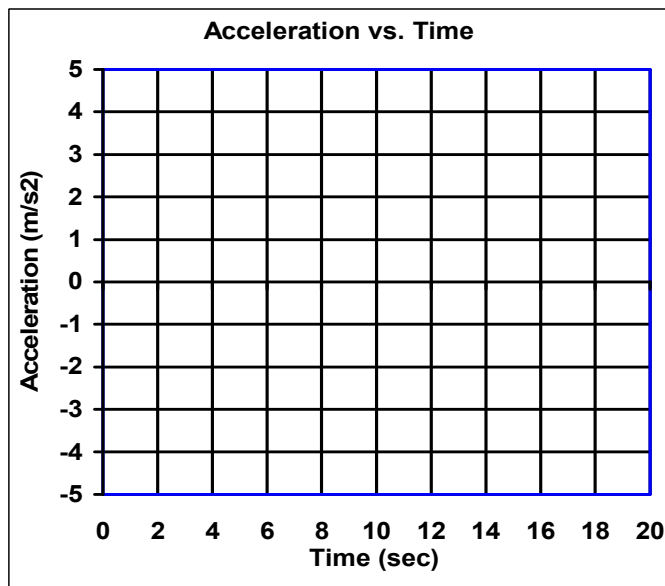
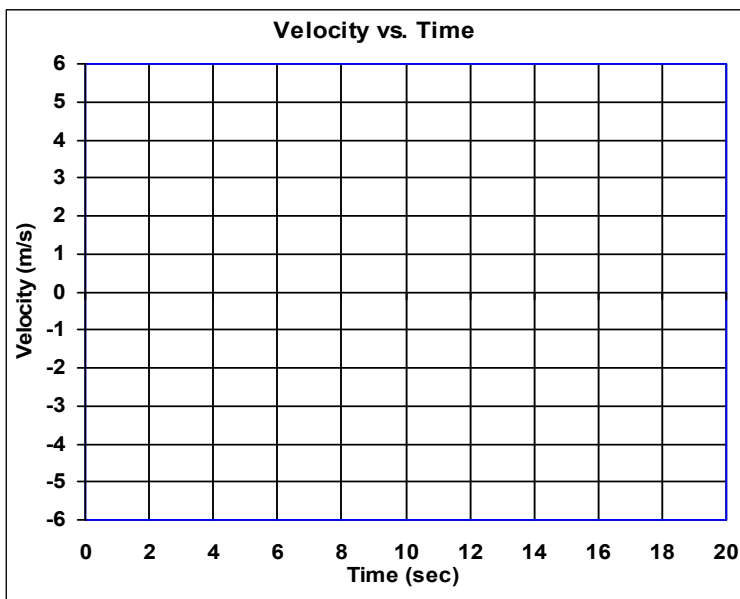
8. A ball is dropped from 30 m. If its acceleration is  $-10 \text{ m/s}^2$ , how fast is it going just before it hits the ground?  
A. Is its displacement positive or negative?  
B. What is its initial velocity?  
C. Is its final velocity positive or negative (just before it hits the ground)?  
D. Assign variables, choose an equation and solve.

Variables:                      What's Variable is not used?                      Solve:

What equation will you use?



9. A. Find the slope of line segment A.
- B. Find the slope of line segment B.
- C. Graph both of these line segments on the velocity graph below.
- D. Determine the acceleration of each line and graph on the acceleration graph below.



10. Write the kinematic equations on your equation sheet. BE SURE TO WRITE THEM EXACTLY, including parenthesis. Please note that I changed “a” is not used (etc) to no “a” due to space. No “t” means that “t” is not in your variable list. Also, write “kinematic equations” on the left like I did. And start memorizing them.

Kinematic Equations	$\Delta x = \frac{1}{2}(v_i + v_f)t$ no “a”
	$v_f = v_i + (at)$ no $\Delta x$
	$\Delta x = (v_i t) + \left(\frac{1}{2} a(t)^2\right)$ no $v_f$
	$\Delta x = (v_f t) - \left(\frac{1}{2} a(t)^2\right)$ no $v_i$
	$v_f^2 = v_i^2 + (2a\Delta x)$ no t