2009 Physics Basics 3

1. *EVERYONE must have a calculator. Get one or borrow one from the school.*

2. *If you bombed the quiz—come in for tutoring and retest. Do it quickly or I'll have to call home.*

From the "How to Do Word Problems" Notes:
3. Using the Variable Sheet on the notes, what do these units refer to?

   A. Ex: 15 N is *force*   B. 12 kg is   C. 6 J is
   D. 21 m/s is   E. 87 m is   F. 3 m/s^2 is

4. What are the units for the following?

   A. Time: B. Force: C. Work (or energy):
   D. Momentum: E. Velocity (or speed):   F. Mass:

   (*Start memorizing these now and life will be much easier…*)

5. A 6 kg object is moving 3 m/s. It has 27 J and 18 kgm/s. 12 N acts for 4.5 seconds and 33.75m, which makes for 2 m/s^2.

   Assign variables for the all of the above quantities.

   6 kg =   3 m/s =   27 J =   12 N =

   4.5 sec =   33.75 =   2 m/s^2 =

6. From the given variables find the appropriate equation.

   A. F = 6 N; a = 3 m/s^2; m = ?   Equation:

   B. m = 8 kg; v = 4 m/s; p = ?   Equation:

Now put all of these skills together: Follow the notes and this will be easy.
7. A sliding block has 35 kgm/s of momentum, how much mass does it have if it is moving 10 m/s?
   <u>Variables:</u>   <u>Equation:</u>   <u>Solve:</u>

8. A person pushes for 8 meters on an object, doing 40 J of work. How hard was the person pushing on the object?
   <u>Variables:</u>   <u>Equation:</u>   <u>Solve:</u>

9. An object moves 15 m in 3 seconds. How fast was it moving?
   <u>Variables:</u>   <u>Equation:</u>   <u>Solve:</u>

From the "Speed" notes:
10. What does the symbol: "Δ" mean?
11. Can a slow object travel as far as a fast object?   Explain.

12. A. Is the car at the right moving left or right?
    B. Is this the + or − x direction?
    C. What is the ΔD for the object?
   D. What is the ΔT?
    E. What is the speed of the object?

Constant Speed
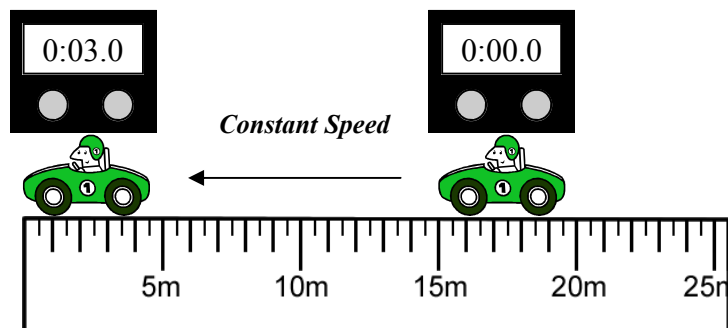
13. A. Calculate the slope between points A and B:
       Write it on the graph between the two points.
       (*Please include units*)

    B. Calculate the slope between points B and C:
       Write the slope on the graph between the points.

    C. Calculate the slope between points C and D:
       Write the slope on the graph between the points.

    D. Calculate the slope between points D and E.
       Write the slope on the graph between the points.

Position vs. Time

Position (m) — **Time (sec)**
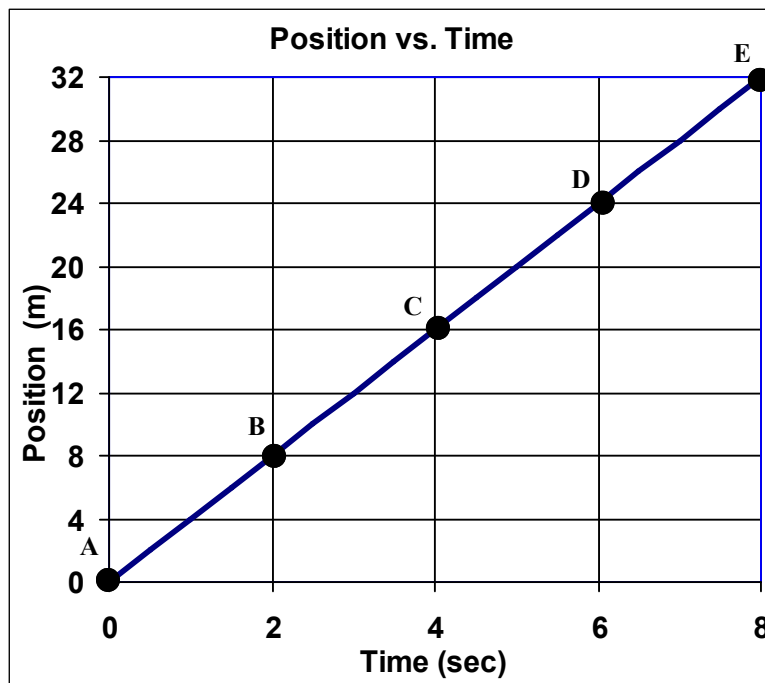
    E. So, what do you know about the slope of the
       line on the graph?

    *So, you should see that the object is moving and
    that the slope you just found is the speed or velocity of the object.*

    F. For each of the velocities (slopes) you found on the above
       graph put dots on the velocity graph at the right.
       (*Put dots at each 2 sec, 4 sec, 6 sec, etc*).

    G. Connect the dots to make a line on the velocity graph.

    H. Notice that a constant sloped line on a position vs. time graph
       becomes what kind of line on a velocity vs. time graph?

Velocity vs. Time

Velocity (m/s) — **Time (sec)**
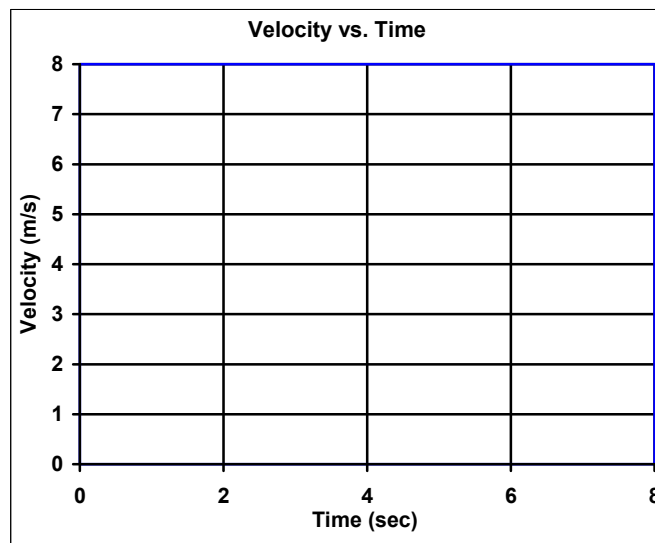
TAKS NOTES: (Didn't have time to give in class)

Symbiosis: Two organisms living together.

Types of Symbiosis:
Mutualism: Both are benefited. Ex: bees and flowers.

Commensalism: One doesn't care. Ex: a bird living
in a tree. Good for bird; tree doesn't care.

Predation: Once kills and eats the other. Ex: Lion
and a gazelle.

Parasitism: One eats the other but the other doesn't
die; Ex: Mosquitoes eating on humans.

14. What kind of symbiosis?
    A. A barnacle (a kind of shellfish) lives on whale. Since the barnacle is
    a filter feeder (eats from the water that passes through it), living on the
    whale gives it greater food access since the whale moves, allowing more
    water to pass through it. The whale is neither helped nor harmed by the
    barnacles. What kind of symbiosis is this?

    B. Dogs living with humans.

    C. Vampire bats suck the blood of cows.

    D. Humans eating cows (like steak).

15. Carnivore, herbivore, omnivore?
    A. When we eat salads.
    B. When we eat meat.
    C. Human eat both so we are: