A-Day: Due Fri., Jan 4 (Assigned: 12/20)
B-Day: Due Mon., Jan 7 (Assigned: 1/3)

2007 Final Review 2

1. A guy bikes 15 miles in 45 minutes, then rests for an 30 minutes. Then he bikes 25 miles in 2 hours.
   A) What was his average speed for the first part of the trip in mph?

   B) What was his average speed for the whole trip?

2. An pillow and a brick are dropped from the top of a building.
   A) What is the acceleration of the objects?

   B) What is the initial speed of both objects?

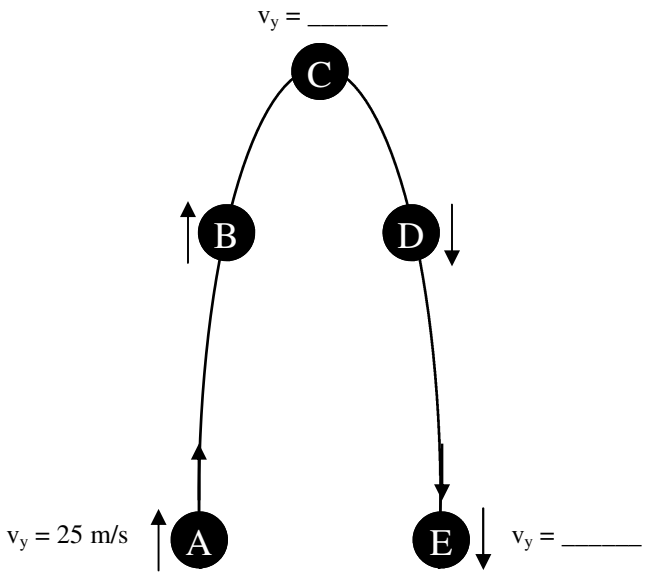
   C) 2.4 seconds after it is dropped, what is the instantaneous speed of the brick (Vf)?

   D) If it takes the brick 4.5 seconds to hit the ground, how high was the building?

   E) If there is no air friction, how long does it take for the pillow to hit the ground?

   F) If there IS air friction, will the pillow take more or less time to hit the ground?
   G) Which object has the greatest terminal velocity?

3. A 6 kg object falls.
   A) What is its weight?
   B) When it reaches terminal velocity, how big (how much force) is air friction?



4. On the diagram at the left, fill in the y-direction velocities at point C and point E.

5. What is the x acceleration at D?
6. What is the y acceleration at B?
7. What is the y acceleration at C?
8. If it takes 1.6 seconds for the object to fall from C to E, how high is C?

9. What is the difference between a scalar and a vector?

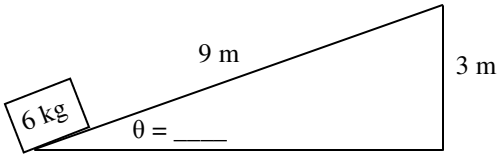
10. Give Newton's Three Laws:

11. If a person pushes on a 30 N object with 105 N of force, with how much force does the object push on the person?

12. A 6 kg object is pushed up the ramp shown.
    A) How high is the object lifted against gravity?
    B) How far do you move the object with the ramp?
    C) You used _____ times the distance with the ramp, so you'll need _____ the force to push the object up the ramp.

    D) What is the weight of the object?

    E) How much force is necessary to push the object up the ramp?



    F) What kind of energy do you use to push the object up the ramp?

    G) What kind of energy will it have after is it at the top of the ramp?

    H) Calculate the final energy of the object (at the top)?

    I) How much work was used to get it up the ramp?

    J) If it took 5 seconds to push the box up the ramp, how much power was used?