Dr. Duick

221 Cannon Simulations (use the link to get to the simulation)

To receive credit for homework:
-Write all answers in your bound journal
-2pt if you do not title the entry
-2pt if you do not date the entry

YOU ALSO MUST

1) **Diagram each problem**
2) **Write down all known variables**
3) **a = 9.81m/s^2**
4) **all answers should have 3 significant figures**
5) **Write down the formula you wish to use**
   a. **(Formulas: $D_y=1/2at^2$ $V_y=at$ $V_x=D_x/t$)**
6) **Then completely write all of your math problems for each problem**
7) **BOX your answers**

PART I: go to link and **CLICK INTRO** to begin simulations

1) Using the equation $D=1/2at^2$, if an object was 3m high, how long would it take for an object to fall to the ground?
2) If a cannon is fired from 3m high at 0 degrees with a horizontal velocity of 15m/s, how far from the base of the cannon would the object land.
3) Conduct the experiment (pick your projectile: cannonball, car, human etc.) and compare your result with your answer from problem 2?
4) If you raise the stage to 10m, how long would it take for an object to fall to the ground?
5) If a cannon is fired from 10m high at 0 degrees with a horizontal velocity of 15m/s, how far from the base of the cannon would the object land.
6) Conduct the experiment (pick your projectile: cannonball, car, human etc.) and compare your result with your answer from problem 5?
7) If you raise the stage to 15m, how long would it take for an object to fall to the ground?
8) If a cannon is fired from 15m high at 0 degrees with a horizontal velocity of 15m/s, how far from the base of the cannon would the object land.
9) Conduct the experiment (pick your projectile: cannonball, car, human etc.) and compare your result with your answer from problem 8?

PART II:

- Pull the stage down to 0m high. Fire the cannon at the different angels and record the distance traveled for each.
- Using the special tape measure, measure the height at the top of each curve, and record it in the table.

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Cannon Degrees	Distance object traveled	Height at top of curve
30 degrees		
45 degrees		
60 degrees		
80 degrees		
90 degrees		

1) Which 2 angles have the same distance?
2) Which cannon angle had the highest height?
3) Which degree shot the object the furthest?
4) Diagram the cannon shots for this exercise: