AP Physics 1 – Projectile Motion Inquiry Activity – Fall 2014 (Grant)

Name: _____ Date: _____ Period: _____

https://phet.colorado.edu/en/simulation/projectile-motion

Learning Goal: You will be able to

- Predict how varying initial conditions effect a projectile path
- Use reasoning to explain the predictions.
- Explain projectile motion terms in your own words.
- Describe why using the simulation is a good method for studying projectiles.

1. One day after school, you are enjoying a soda in the back yard. When the can is empty, you decide to throw it in the trashcan. What effects whether or not it gets in the can? (5 points)

2. Use *Projectile Motion* to test your ideas about the things that affect the landing location of a projectile. (50 points)

- Make a complete list of things that affect the landing site of a projectile including your ideas from question #1 and any discoveries you made using the simulation.
- Next to each item, briefly explain why you think the landing location changes.
- Compare your list with another student, discuss your explanations and make modifications

3. What is meant by the expression "flight path of a projectile"? Draw the flight path of your soda can and describe the shape. Use the simulation to investigate how the items you listed in #2 affect the shape of the flight path. Summarize your discoveries including explanations for the different flight paths. (25 points)

4. Suppose your friend asks you to tell them about projectiles. You start to explain, but she interrupts. "Wait," she says, "You're using a lot of words I don't understand. Can you explain in English?" Knowing that a picture is worth a thousand words, you draw a picture of a projectile path and label all the terms that are on the simulation page. Draw a picture like you would for your friend and write what you would tell her about the terms. (15 points)

5. Describe why using the simulation is a good method for studying projectiles. Clearly identify the error sources the simulation eliminates or minimizes. Also, run tests to determine how well the simulation represents projectile motion and identify limitations. (5 points)