Name

Date

Period

Using PhET Interactive Simulations

Logging onto our computers:

1. If computer doesn’t turn on- plug it into the wall
2. User name- 02-Sub-0351 or you can try 01-Sub-0351 or try 03-Sub-0351
3. Password- Rancho
4. Make sure the capital letters are where they need to be!!!
5. Next make sure you can connect to the internet (some computers need “repair”). Please don’t put them broken back into the cart…let me know!
6. Then off to the actual assignment…

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1. Type “pHET” in the search engine. Select University of Colorado web page.
2. Type “projectile” into the search engine on the web site. Select “projectile motion”.
3. Select “Run Now”.
4. Copy the default settings for angle, initial speed and mass.
5. Look at the top of the screen. Which variables are calculated by the program?
6. What variables can be changed by the user?
7. List the different objects that can be fired from the cannon.
8. Launch the cannon ball at a speed of 10 m/s at an angle of 35o. Launch the cannon ball after changing the mass from the default setting of 2 kg to 6 kg and then 8 kg. Record the range each time. What effect does the change in mass have on the range of the projectile?
9. Find the angle of launch that gives the greatest range. Record that angle here.
10. Launch an object at 15 m/s with a 65o angle. Record the height upon landing. If the height is negative, give an explanation for this.
11. Use the tape measure to measure the height of the projectile in #10 at its highest (maximum) point. Record the maximum height here.
12. Look at your Physics notebook. What equation can be used to calculate the horizontal displacement of a projectile?
13. On the pHET program, what is the horizontal displacement called?
14. Look at your Physics notebook. What equation can be used to calculate the vertical displacement of a projectile?
15. On the PHET program, what is the horizontal displacement called?
16. Drag the cannon up to a height of around 10m. Use the tape measure to set the height. Set the angle to 0o. Choose a launch speed and an object. Sketch your set up and include the speed in your sketch. Launch the object and record the range in your sketch.
17. Since you cannot use the parallelogram method to determine the components of the initial velocity vector, what 2 equations do you use to determine the x and y velocity components of a projectile?
18. Drag the cannon back down to the ground level and select an angle for a launch. Choose an angle between 15 and 75o.
    1. Sketch your setup in the space below. Label your launch angle.
    2. Launch the projectile you choose at an initial speed of 22 m/s.
    3. Determine the vertical and horizontal components of the projectile.
    4. Record the range of the projectile for the program.
    5. Write down the equation used to solve for the range. Fill in the variables with numbers from the program.
19. Drag the cannon up to a height of around 13m. (Use the tape measure to set the cannon height!) Choose an initial speed between 10 and 40 m/s. Make sure the angle is 0o.
    1. Determine the horizontal and vertical components. Show your equations.
    2. Calculate the range, height (distance) and time in the air. You must show your work
    3. Check your work with the program.
20. What new information have you learned from the pHET site?
21. Think of a lab that we could do. Think of all of the variables needed. Now list the equipment and steps needed to perform the lab.