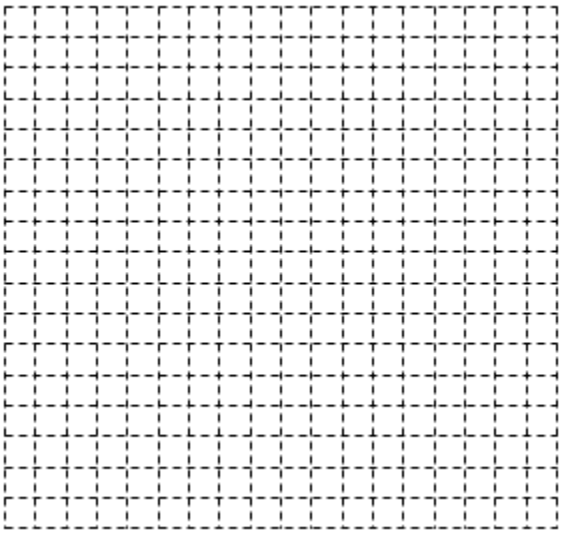
Algebra 1 – Projectile Motion Lab Homework **Name:_____**

You used an equation of the form $h(t) = -16t^2 + 16Xt$ to find the maximum height of a projectile. In this equation, *X* was the time the object took to hit the ground after being launched. Your homework tonight is to find a way to find *H*, the maximum height, directly from the value of *X*.

Data:

Landing Time (*X*)									
Max Height (*H*)									

1. Make a scatterplot of these data below. Use the Landing Time as your independent (*x*-axis) variable and the Max Height as your dependent (*y*-axis) variable



2. Use your calculator to find the **linear model** for these data. Write the equation below, rounding parameters to the nearest tenth, and with the correlation coefficient (*r*) rounded to the nearest thousandth.

3. What does the correlation coefficient tell you about the accuracy of the predicted values of your model?

4. Now create a **quadratic model** (`5:QuadReg`). Again, round values to the nearest tenth and give the correlation coefficient to the nearest thousandth.

5. Is the quadratic model a more accurate fit than the linear model? Explain why.

6. Use the more appropriate model (the linear one or the quadratic one) to find the maximum height reached by an object that landed after 8 seconds.