

Projectile Project

Most objects fly through the air in the shape of a parabola. This is called “projectile motion.”

Your Task: With a partner or by yourself, film a short video of projectile motion and use mathematics to **ANALYZE** your video in a graph and write-up.

Your project will include equations, a graph, and a write-up, in addition to your video, all completed and turned in through a Google Doc template provided on Google Classroom.

Project Description:

- Record a video showing the object ascending and descending.**
 - Don't just drop the object
 - Don't throw it straight down
 - Don't use something that has significant air resistance or is lighter than air. For example, don't use balloons, feathers, frisbees, mist, etc.

- Equations:**
 - Write an equation that approximately describes the parabola. I WILL check your work.
 - Write your equation in 3 different forms:
 - 1. Vertex form
 - 2. Factored form
 - 3. Standard form
 - Show your work** on how you figure out all the equations (you can either type up each step or write it out neatly and take a picture and insert into document).
 - Round any decimals to the nearest **tenth** (0.1), if necessary.

- Graph:**
 - Graph your equation:
 - The graph should match with the equations AND should match the video. All 3 versions (graph, video, equations) should be approximately equivalent.
 - Label the x-intercepts, vertex, and y-intercept of the graph
 - Title your graph
 - Label the scale on both axes.

- Write-up (in paragraph form):**
 - Briefly explain what your projectile was and how you filmed it.
 - Define your variables (what the values of x and y are that make sense for your video).
 - Suggestion...x is either TIME (seconds) or is HORIZONTAL DISTANCE (feet or meters)
 - In the context of the problem, explain what each of the following points on your graph represents:
 - Vertex
 - x-intercepts
 - y-intercepts

Rubric

4 (HP)	<ul style="list-style-type: none">• All requirements are complete and accurate.• Thorough and thoughtful write-up• Appropriate mathematical language is used throughout the project• Turned in on-time
3 (P)	
2.5 (CP)	<ul style="list-style-type: none">• One correct equation• Might have minor errors• Graph might have minor errors and/or not all labeled.• Mathematical language is inaccurate• Write-up is partially complete
2 (DP)	
1 (NE)	Little or no evidence of understanding

Due Date: _____