

## The Catapult Project!

Assign jobs to make your trial protocol easier. There needs to be a launcher, a spotter to determine where the object hit the ground and measure to that point, and a data recorder to write down all the information.



- Launcher: \_\_\_\_\_
- Spotter/Measurer: \_\_\_\_\_
- Data Recorder: \_\_\_\_\_
  
- You should practice launching your catapult to get used to how it works. Once you are launching consistently take 8 readings to determine the approximate distance your object flies.
- Calculate the equation of your catapult launch parabola.

### Task:

- Each group will get 15 minutes to determine the placement of their catapult in the vicinity of the target
- Each group will mark their catapult location with tape prior to beginning the contest. You will be allowed one or two trial shots when placing your tape. Use your calculations to help determine the placement of the catapult. Once your tape is placed you may NOT move your catapult.
- Each group gets 4 attempts to hit the target. Points will be awarded according to distance from target. The best reading will be the one that is counted.

Projectile lands in target zone

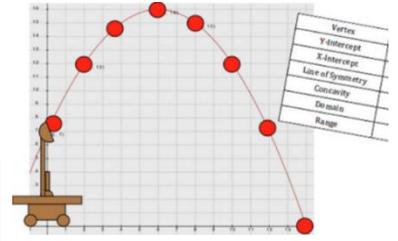
- 20 points in target zone
- 15 points within 6 in. of target zone
- 10 points within 6 – 12 in. from target zone

5 points more than 12 in. from target zone



## Collecting data

**Distance:** Fire your catapult 8 times, measure the distance where the marshmallow hits the ground.



Reading 1	Reading 2	Reading 3	Reading 4	
Reading 5	Reading 6	Reading 7	Reading 8	<i>Distance</i> value average

- The zeros are where your catapult started and where your projectile landed

(\_\_\_\_\_, \_\_\_\_\_) and (\_\_\_\_\_, \_\_\_\_\_)

**Factors:**

Use your zeros to create your factors. For example if you have a zero of (2,0) then your factor would be  $(x - 2)$

(\_\_\_\_\_)(\_\_\_\_\_)

**Equation:** Use the distributive property to find the standard form of your equation of your catapult. Remember you will need to **add a negative in front** since this is a reflected parabola!

**Graph:** Graph your equation on the separate graph. You will need to create your **own scale**, and **t-chart**. You will also need to answer the characteristic questions below

<b>x</b>	<b>y</b>

Vertex: \_\_\_\_\_

Axis of Symmetry \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

\_\_\_\_\_’s Catapult Graph!

