

MARSHMALLOW CATAPULT PROJECT

Due Date _____

Objective: Students will demonstrate their understanding of the laws of motion, projectile motion, and simple machines by designing and constructing a marshmallow catapult at home. The primary goal for this project is to create a structure that can shoot a marshmallow as far as possible. Their score for this project will be directly affected by their ability to launch the projectile as close to or past the minimum distances. There will also be a secondary goal of accurately hitting a bull's eye target, (a trash can), five (5) meters away, and a tertiary goal of hitting a smaller target (a recycling container) at the same distance. The top three designs will compete with winners from the other eighth grade class for additional credit.

Requirements: To receive credit, the models must be on time, and can be designed in virtually any way they desire, as long as the entire catapult is not bought as an assembly/toy. It can be as big as you want, and be made of any material you wish. Also, catapult designs can only use one rubber band for projectile propulsion. No other rubber bands, springs, etc... may be used. Ammunition will be 1 standard-sized "campfire" marshmallow, no minis!

Grading: Participants will have three (3) chances to achieve a maximum firing distance and three (3) chances to hit the bull's eye target. Credit or extra chances will not be given for catapults that fall apart during the testing phase. For the accuracy challenge, students should calibrate their catapult at home, before the contest.

The scoring criteria will be as follows:

✓ 50 points, full credit:	8 meters
✓ 47 points, partial credit:	6 meters
✓ 42 points, partial credit:	4 meters
✓ 37 points, partial credit:	2 meters
✓ 32 points, partial credit:	< 2 meters
✓ 0 points:	no catapult
✓ 10 points extra credit	bulls-eye trash can @ 5 meters
✓ 10 points extra-extra credit	bulls-eye recycling container @ 5 meters
✓ 10 points extra-extra-extra credit	top three performances from class
✓ 7, 5, 3 points extra-extra-extra-extra credit	competing against winners from other class

Restrictions:

- Only one rubber band may be used to store potential energy for the marshmallow launch; I will provide.
- You may work with a partner in your class, but you must inform the teacher 2 weeks before the launch.