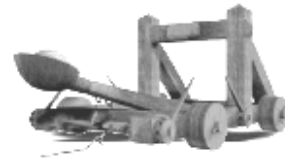


AP Physics 1

Mousetrap Catapult



Background:

This project is based on the medieval catapult, a device that was used to launch projectiles into the opposing force's castle. These devices needed to be adjustable to account for varying distance between the castle and the catapult as well as the height of the castle walls.

Goal:

Build a catapult powered by a single mousetrap that will launch a projectile (ping pong ball) using inexpensive, readily available materials. Reliability in performance is the key to success. Be sure to test your design for consistency before the due date.

Rules:

- The catapult must be powered by a single mousetrap (not a rat trap)
- The spring of the trap is the only force allowed to launch the projectile.
- The spring of the mousetrap cannot be more than 3 inches off the ground.

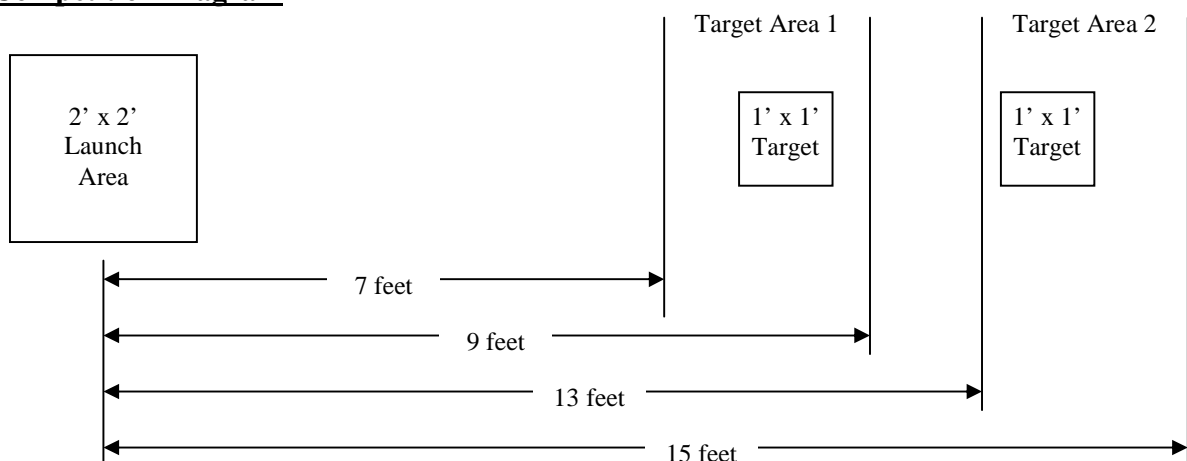
Safety:

- The spring arm of the mousetrap can be dangerous. For your safety, you may want to disengage the spring from the arm during the construction process.

Competition:

- Each team should have their catapult assembled, tested, and ready to go by October 31st, 2016.
- Teams will consist of 4 members or less in size.
- The catapult must be able to launch a ping ball from a 2' x 2' launch area into a 1' x 1' target. The walls of the target are 2 inches high.
- The team will place the target within each of two ranges: 7 to 9 feet and 13 to 15 feet. The team, based on experimental data taken, will determine the exact location of the target.
- No part of the catapult can extend outside of the 2' x 2' launch area.
- Each team will have 2 minutes to practice for each target area. After the practice time, they will shoot 5 consecutive shots.

Competition Diagram



Scoring

- 28 points will be awarded for a completed catapult that will launch a ping-pong ball.
- Additional points will be awarded based on the location the ball lands within the target in each target area. (See below)
- Your grade will be determined by taking the average of your best 2 shots out of the 5 attempted shots in each target area.

