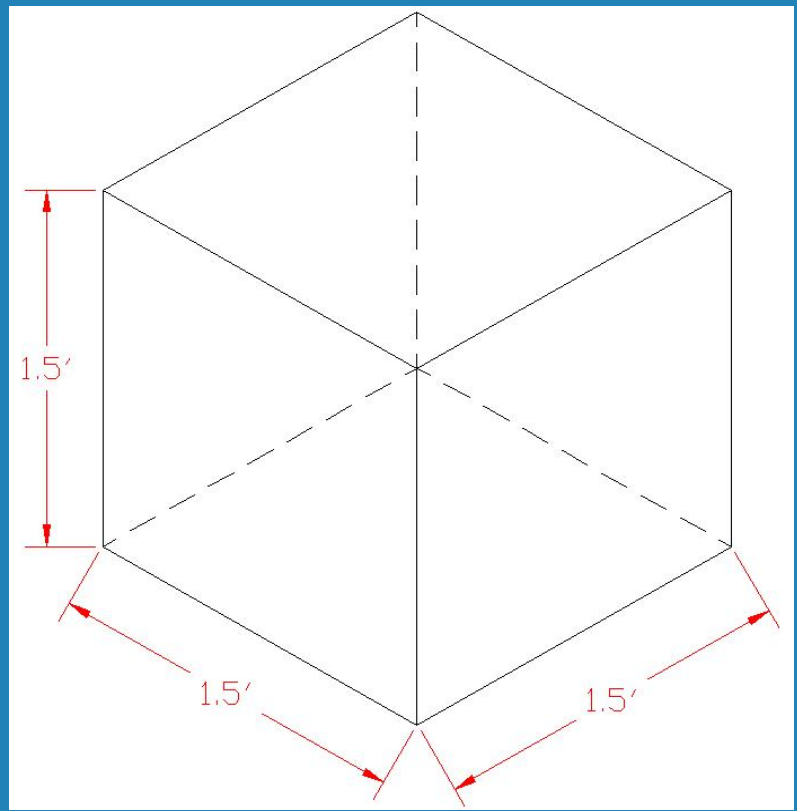
Vandalay Industries

Catapult Design Project

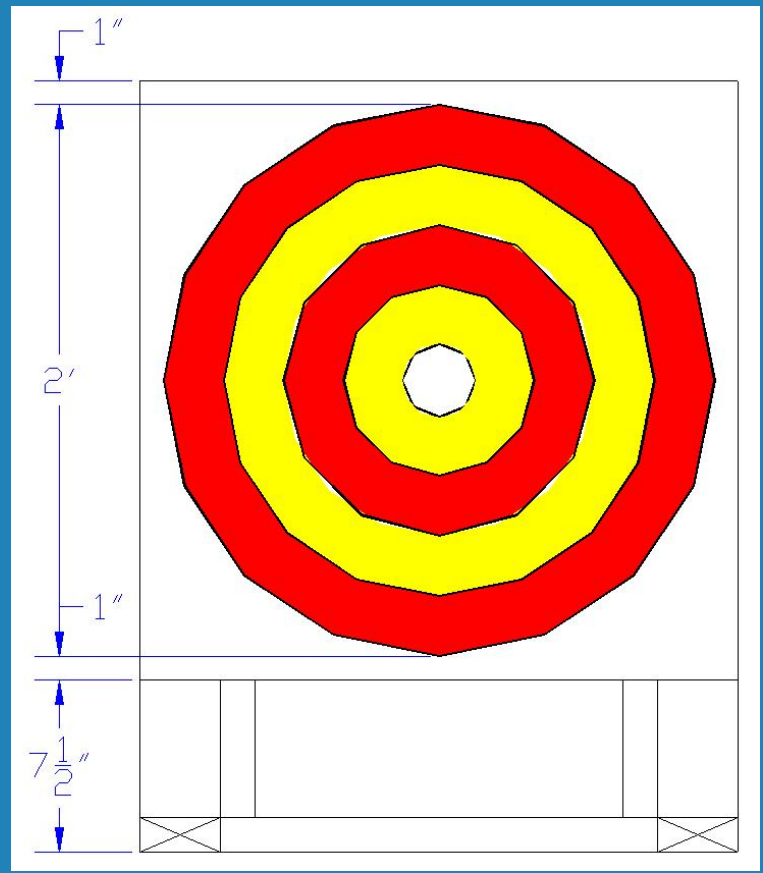
Objective

- Design a catapult
- Must meet specifications
- Adjustable
- No weight limit
- Must have a triggering mechanism
- Projectile is a golf ball
- Hit the target



Target

- Outside diameter 24”
- Center bull’s eye diameter 3”
- Distance to target: 3m
- Bull’s eye: 100 points
- Next ring: 90 points
- Next ring: 80 points
- Next ring: 60 points
- Next ring: 50 points
- 0 points if ball doesn’t hit target



Design Process

- Brainstorming
- Came up with basic ideas
- Made hand sketches
- Built a prototype
- Made adjustments to sketches and prototype
- Made changes and built a final design

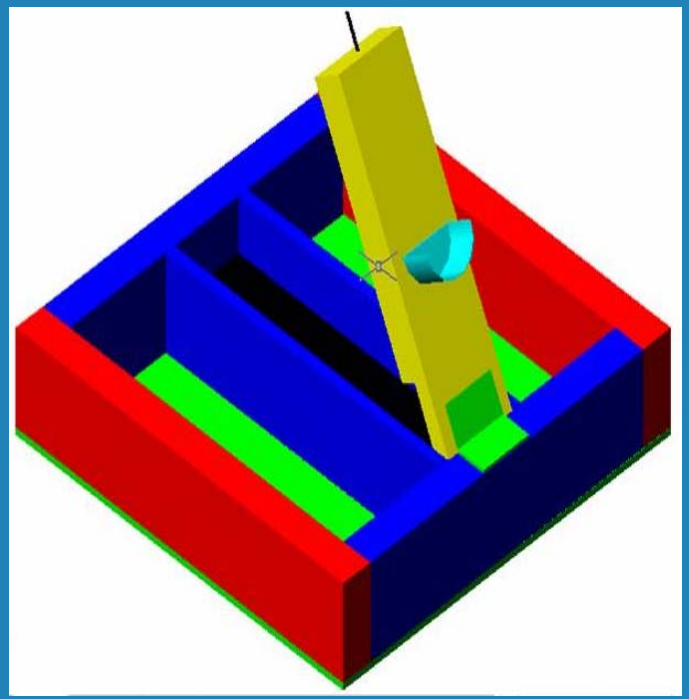
Materials used

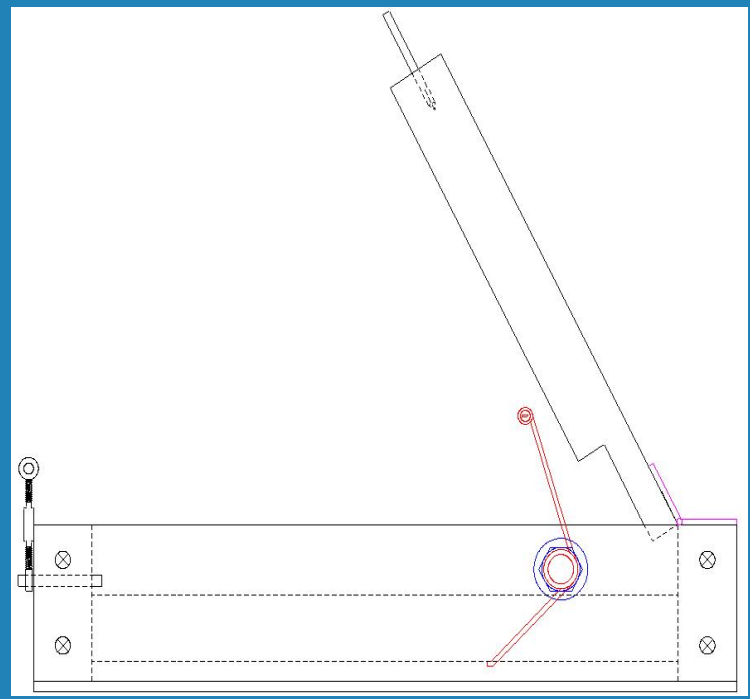
- 2 x 4's
- Screws
- Plywood
- Jet ski handpole spring
- Door hinge
- Nails
- Turnbuckle
- String
- Bricks

ESTIMATED COST:
$20

Prototype Drawings

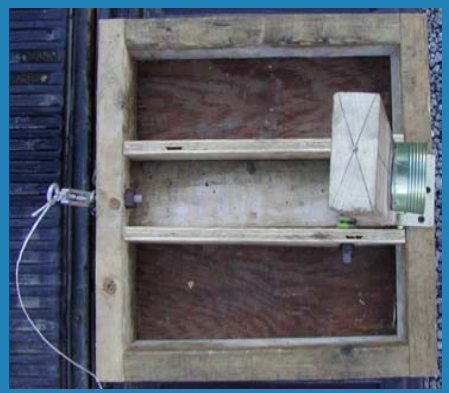
- AutoCAD Drawings





Prototype

Top View



Isometric

Side View

Front View

The Trigger

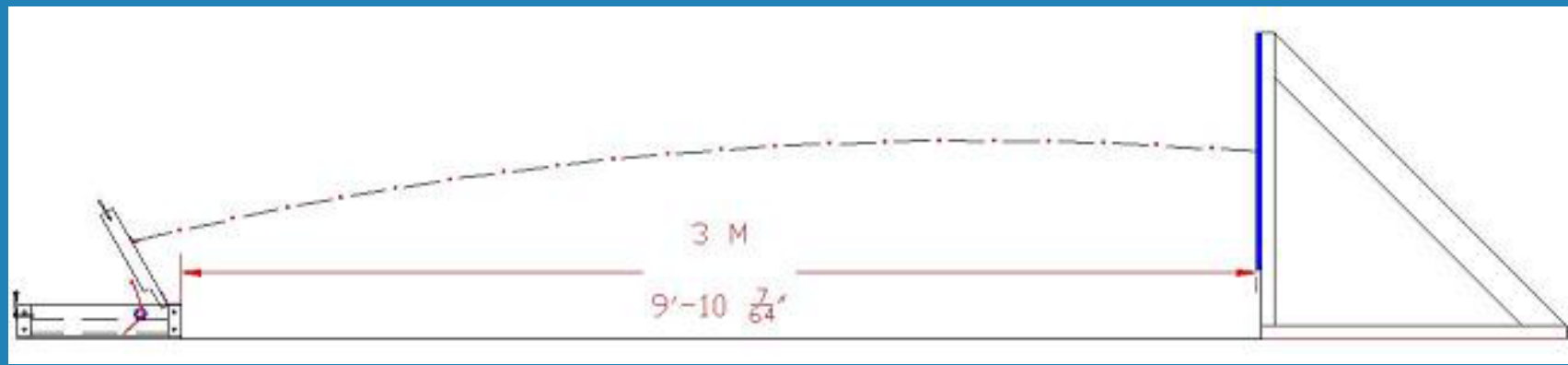
- Nail attached to lever
- Adjustable turnbuckle
- String
- Very safe!

The Force

- Used a handpole spring from a jet ski
- Spring fixed to base
- Opposing end forces lever to throw the ball

Trajectory

Path of Projectile



Problems Addressed

- Accuracy and precision
- Spring issues
- Base movement
- Hinge weakness
- Cup
- Design changes

Scored 280 at the Prototype Competition
Tied for 2nd

Finished Product

- Fine tuning
- Better hinge
- Less movement
- More appealing appearance

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The End