Group Members

- Group Leader
  - Jason Miller
    - Introduction
    - Results
    - Conclusion
- Other Members
  - Michael Bayne
    - Discussing Sketches
  - Ryan Clark
    - Building of prototype and Build, Document and Test
  - Justin Morris
    - Objectives, Brainstorming, and Gather Information
  - Melissa Morris
    - Revisions and Venn Diagram

The Design of a Catapult

Eers^2

Team Five

Introduction

- Problem
  - Propelling a 50 gram object 3 meters and striking a 3 inch diameter bulls eye with a catapult whose dimensions do not exceed 1.5’X1.5’X1.5’.

Methodology

Define the Overall Objectives

- Launch a golf ball weighing 50 grams 3 meters
- Consistently hit bulls eye on target
- Fit inside a 1.5’X1.5’X1.5’ box
- Account for safety
- Apply trigger mechanism

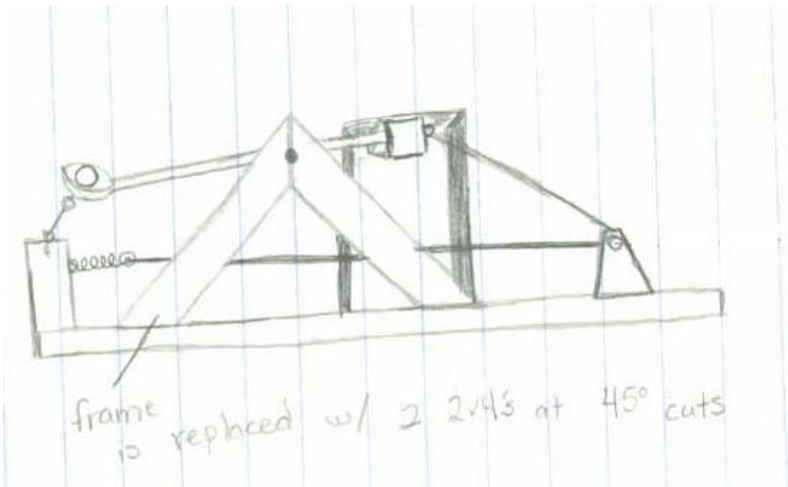
Choose A Design Strategy

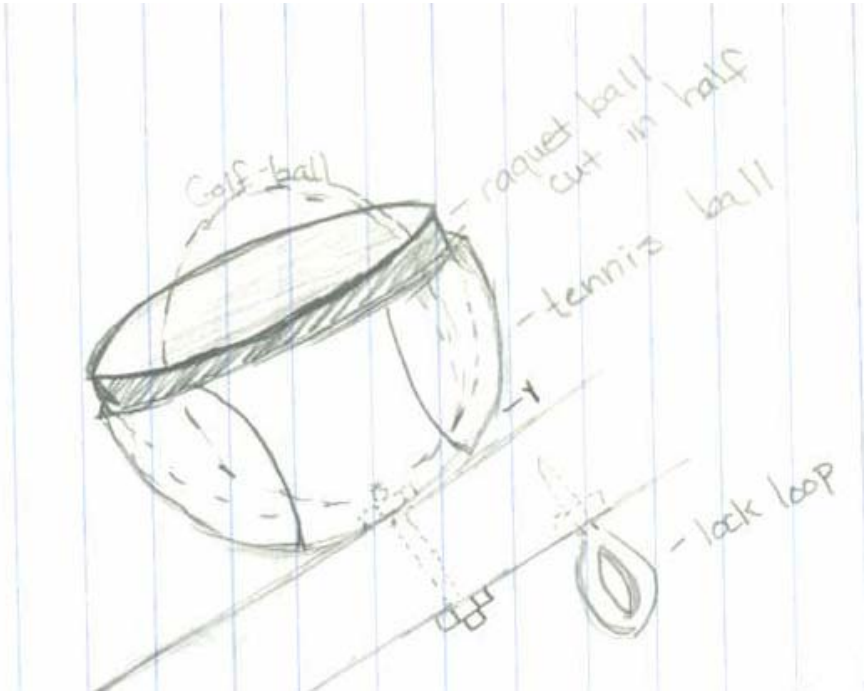
- Brainstorming
  - Make maximum dimensions
  - Wood and PVC pipe
  - Spring or Bungee
  - Counter-weights
  - Independent stop-bar

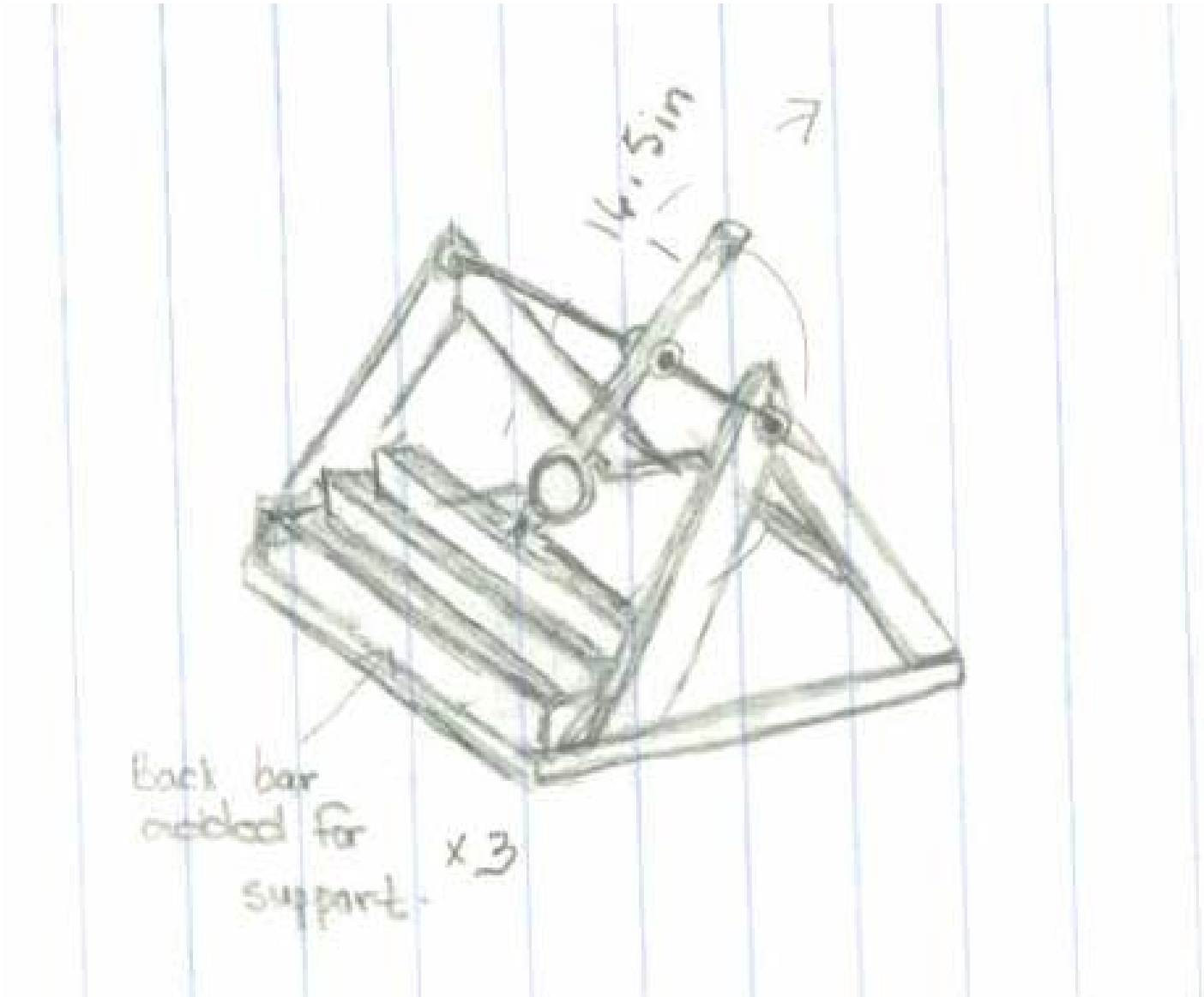
Gather Information

- Materials Needed
- Tools Needed
- Locate Work Area
- Discuss Possible Designs

Make a First Cut at the Design

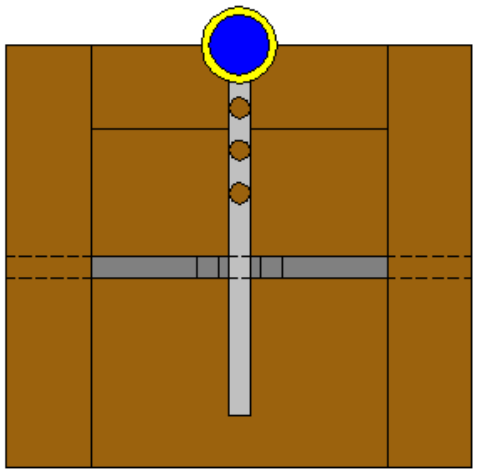


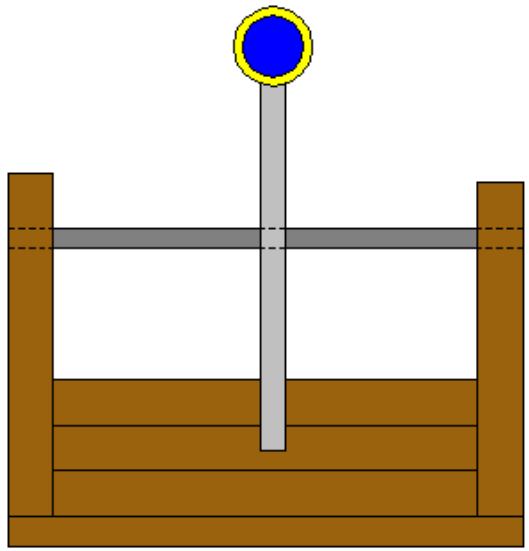


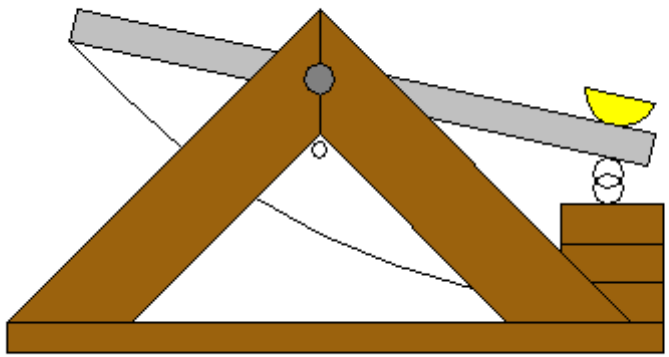

14.5in
back bar
welded for
support
x3

Building the Catapult

Build, Document, and Test Prototype

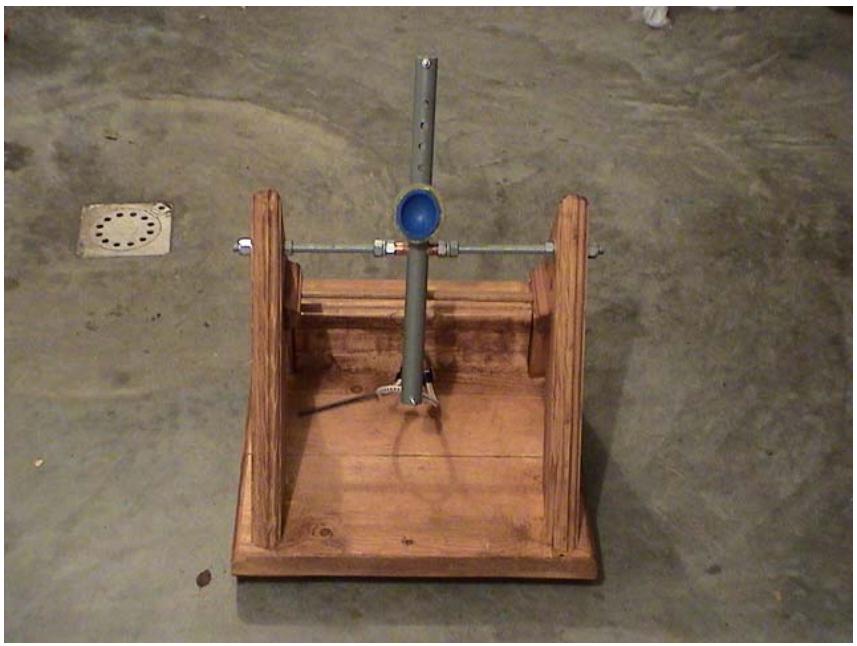


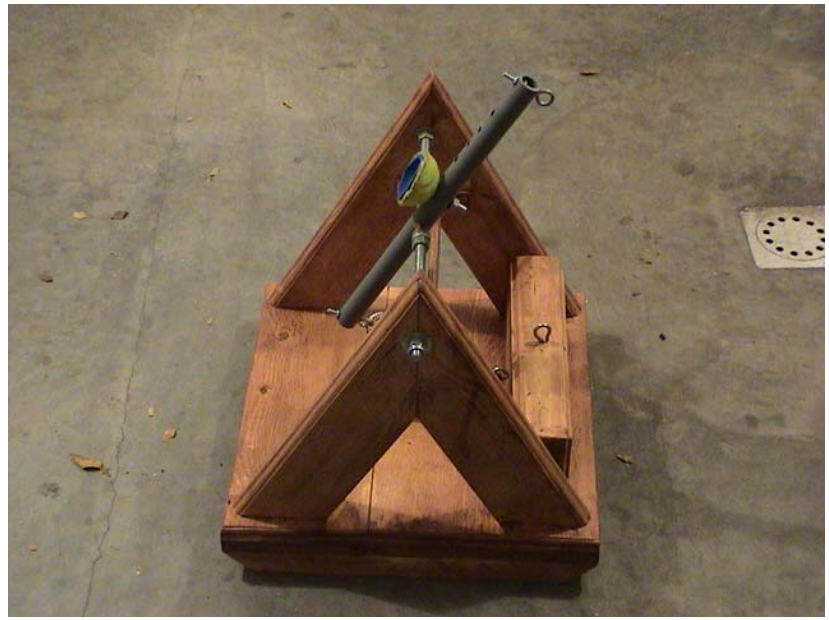




Revise and Revise Again!

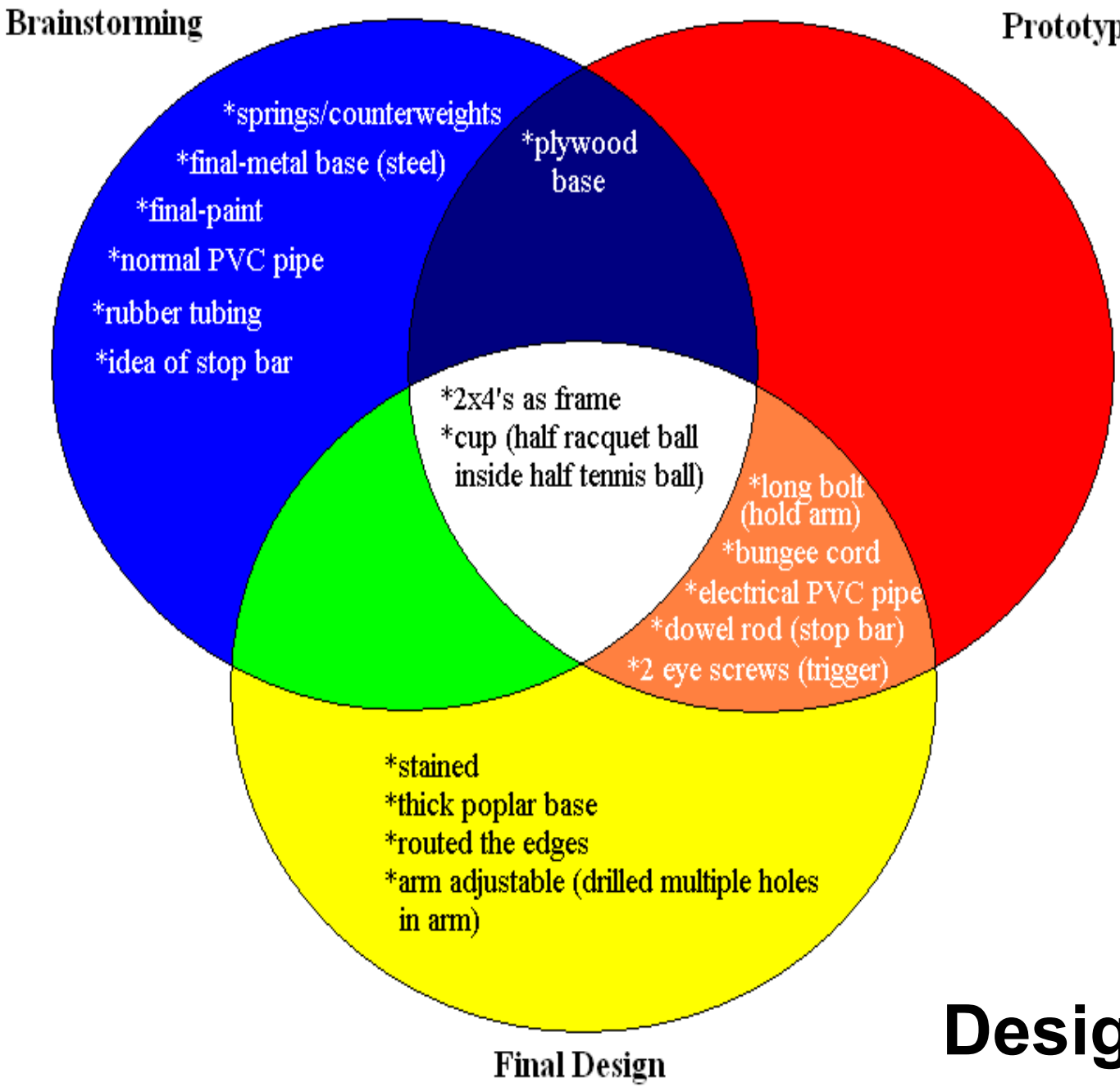
- Initial Design
  - Plywood base
  - Non-Adjustable Arm
  - Spring
  - Frame held with screws
  - Arm resting on cross bar
- Revised Design
  - Solid Poplar Board
  - Added adjustments
  - Bungee cord
  - Reinforced base with dowel rods
  - Arm has bushing insert





Test The Finished Product

- Accuracy
- Precision
- Visual Appeal
- Safety



Design Cycle

Results

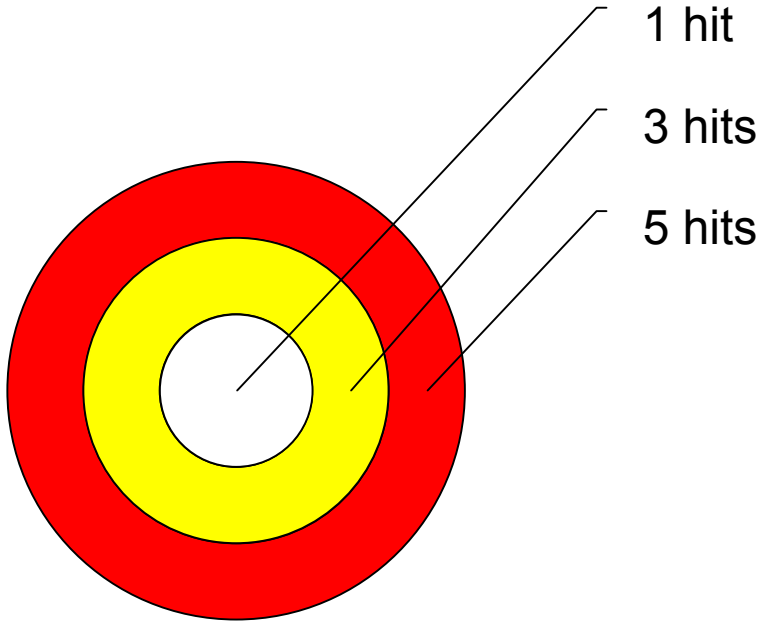
Testing Results

	Trial One
Shot One	90
Shot Two	80
Shot Three	80
Total	250

	Trial Two
Shot One	80
Shot Two	80
Shot Three	100
Total	260

	Trial Three
Shot One	90
Shot Two	80
Shot Three	90
Total	260

Accuracy and Precision



Results from Three Trials

Conclusion

- We found that in order to propel a 50 gram object 3 meters and strike a 3 inch diameter bulls eye with a catapult whose dimensions do not exceed 1.5’X1.5’X1.5’ we had to overcome many engineering processes.