

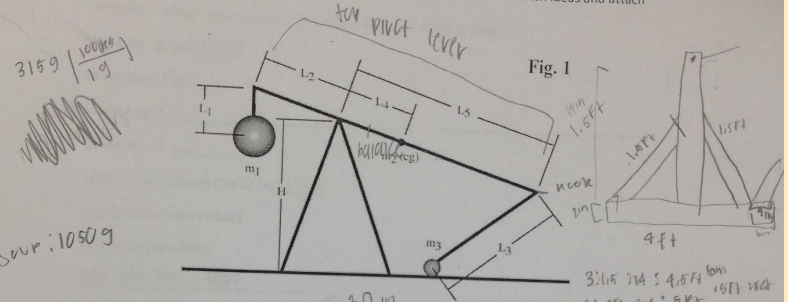
Trebuchet

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&
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Ideate

Group names Jina, Manira, Ujjal
 Prototyping - Fill in design requirement dimension to the figure below. Sketch ideas and attach

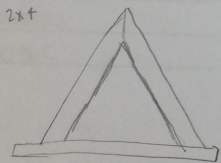


315g (100kg / 1g)

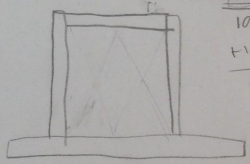
Sup: 1050g

Fig. 1

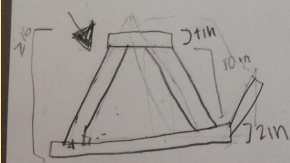
2 → 15 in DP 2x4
 1 →



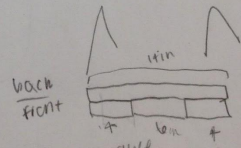
bolt, washers
 axle?



3.116 2x4 5 4.5 ft
 2. 4ft 2x4 8 ft
 4. 1.5ft 2x4 6 ft
 1. 5ft 2x4 6 ft
 1.9 ft
 1.1 ft extra
 1.0 ft



push → sticky
 axl. ball bearing
 intal diam 8 mm



for pivot lever; > .80 m including hook
 < 1.1 m think 31 cm
 height: ≤ 0.4 m from ground
 15 cm H

- 3 SHAP COINS: removable
- 30 in duct tape
 - 30 in string
 - towel under treblehook? #13

Prototype

This trebuchet simulation allowed us to decide on our measurements.

The screenshot shows a web browser window with the URL `www.virtualtrebuchet.com/#simulator`. The page has tabs for "Simulator", "Documentation", "User Projects", and "Contact".

Control Panel Parameters:

- Units: Metric
- Length of Short Arm: 25 m
- Length of Long Arm: 52 m
- Length of Sling: 4 m
- Length of Weight: 0.1 m
- Height of Pivot: .40 m
- Uniform Arm:
- Mass of Arm: .122 kg
- Inertia of Arm: 0.01 kg·m²
- Pivot to Arm CG: 0.14 m
- Mass of Weight: 1.5 kg
- Inertia of Weight: 1 kg·m²
- Projectile: Custom
- Mass of Projectile: 0.024 kg
- Projectile Diameter: 0.035 m
- Wind Speed: 0 m/s
- Release Angle: 45 deg

Simulation Area: A small 3D rendering of a trebuchet is visible in the center.

Data Table:

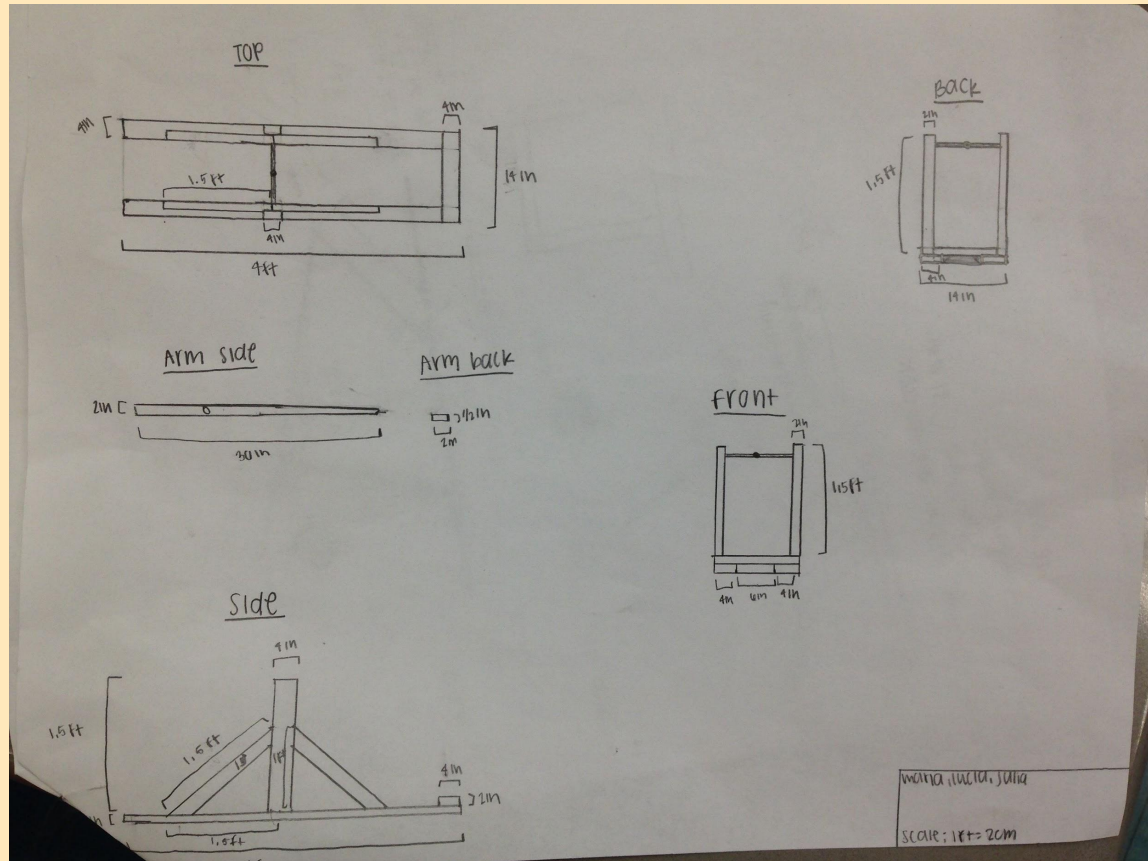
	Current	Max
Distance	14.498 m	14.498 m
Height	NaN m	NaN m
Time	2.257 s	2.257 s

Efficiency Metrics:

- Energy Efficiency: 0.348
- Range Efficiency: 0.283
- Release Velocity: 12.580 m/s

The Windows taskbar at the bottom shows the time as 8:34 AM on 3/27/2015.

Blue Prints



Trebuchet in Action (Video)

<https://www.youtube.com/watch?v=smAToa8UmM8&feature=youtu.be>

<https://www.youtube.com/watch?v=APWnEFUG4Sg&feature=youtu.be>

Building Summary

Initial Expectation-A stable,

Difficulties- the wood glue holding the ball bearings, and our initial pouch being the wrong shape.

Refinement- We improved our pouch and equaled the string.

Suggestions for improvement- a more stable arm that would be secured more and make it shorter so 1 person could carry it.









Test Results

Distance	Accuracy
31' ft	16" in
30' 10" ft	16.5" in
30' 10" ft	14" in
33' 2" ft	12" in

Out trebuchet came in second in both Distance and Accuracy. :)

The End

