

Mini-Trebuchet Competition 2023

Guide and Rules



Tonight's Agenda

- History
- Goals
- The Competition
- Rules
- Trebuchet Frame
- Design Considerations/Customizations
- Awards
- Next Steps

History

- 2019 - 1st AFTAC Punk'n Chunk'n Competition
- 2020 - Exhibition @ DRS Community Center
- 2021 - Exhibition @ Desoto Sports Field
- 2022 - 1st Mini-Trebuchet Competition
 - DRS Community Center
 - 9 Teams competed
- 2023 - 2nd Annual Mini-Trebuchet Competition
 - Desoto Sports Field
 - Opening up the design guidelines



Competition Goals

- Overarching Goal:
 - Designed to incorporate all levels of Science, Technology, Engineering, Art, and Mathematics (STEAM) and provide significant opportunities for Innovation and personalized advancements at a low entry/build cost.
- Safe for families with children
- Relatively low cost to entry (< \$150)
 - 2022 trebuchets are still competitive
 - Standard frame is 5 2x4's
 - Minimal advantage for over-spending
- Materials locally available
- Rapid cycle time between turns

The Competition

- Design, build, and tune a trebuchet
 - Gravity operated
 - Throwing arm pivot axis no higher than 36”
 - Softball ammunition
 - Throw 50’
 - Target Bullseye is 4’ diameter
 - Target area is 8’ in diameter
 - ~~Common frame design~~
- Each team gets 10 tries
- Points for Target/Bullseye hits
- Highest score WINS!



Rules - Design / Build

- Must fit within 4' wide x 10' long area
- Arm pivot axis centerline can be no higher than 36"
- Trebuchet propulsion is only gravity operated
 - No springs, bands, pneumatics, hydraulics, torsion or "powered" designs allowed for propulsion
 - Does not apply to launch/release control system
- Each team provides their own softball
 - 11" to 12" circumference league or trainer/practice
- Trigger operated from 5' to the side



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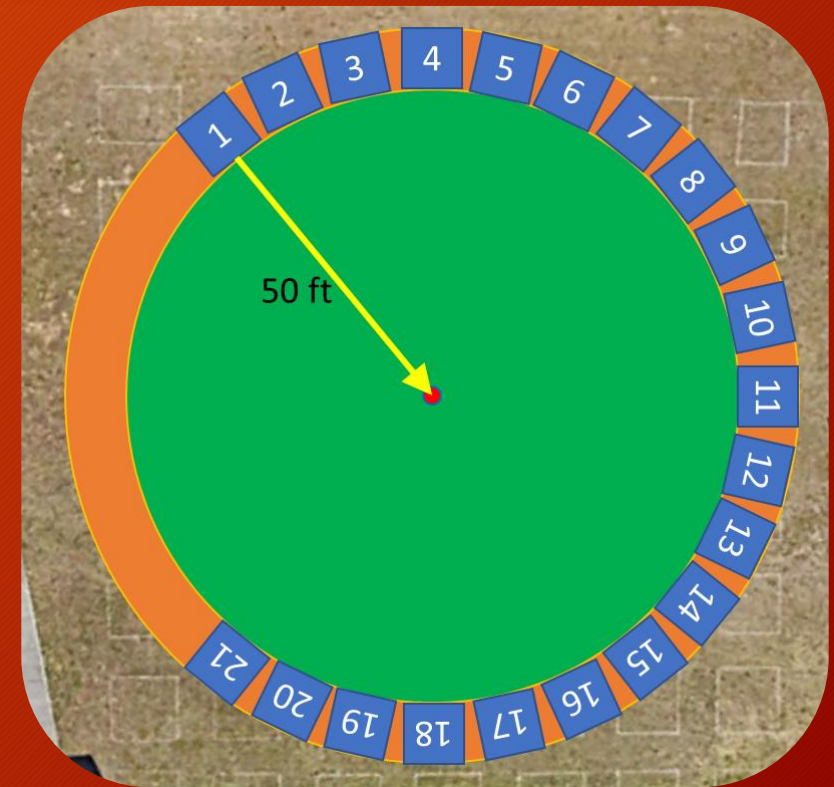


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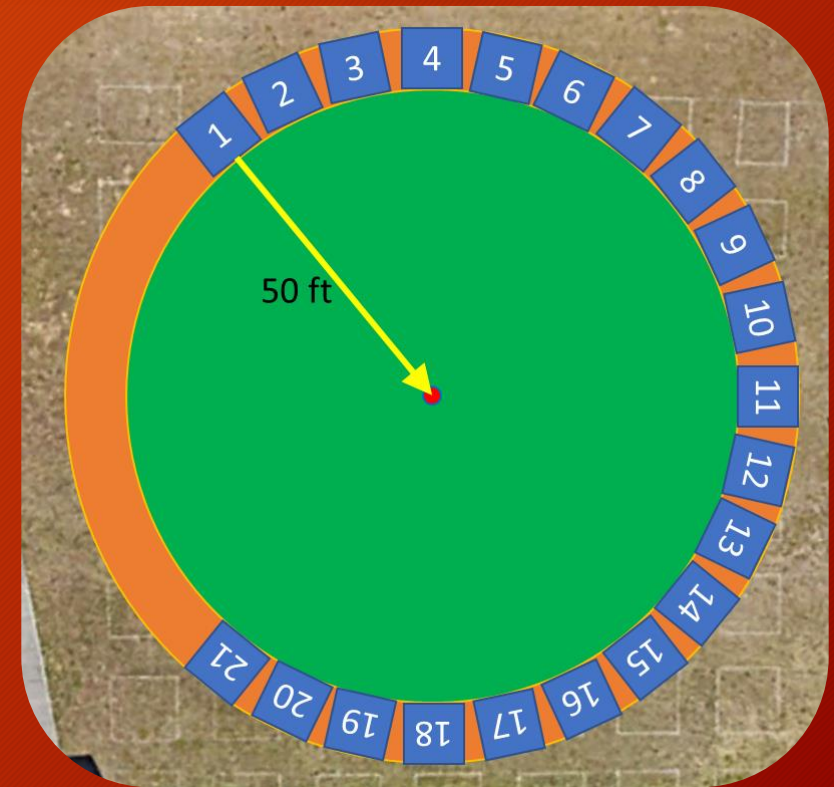
Rules - Competition Setup

- Team sites will be randomly assigned
- Setup within a 4' wide x 10' long designated area
 - Trebuchet can be moved farther from the target
- Trebuchets will be inspected
 - Satisfy design and propulsion requirements
 - General Safety
- 1 hour for setup and test shots



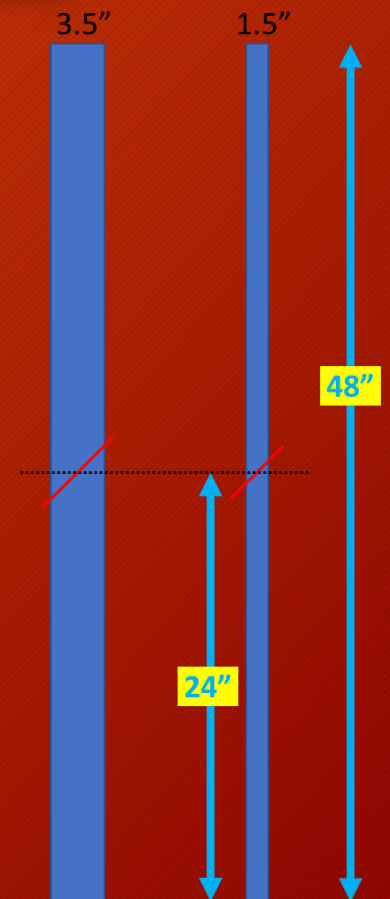
Rules - Competition

- 10 shots per team
- First team to go is randomly selected
- Proceed clockwise, one at a time
- Only direct hits to the top of the target count
 - 8' Target area with 4' Bullseye
- Each attempt must be completed within 3 minutes
 - Trebuchet may be loaded and armed prior to start of turn

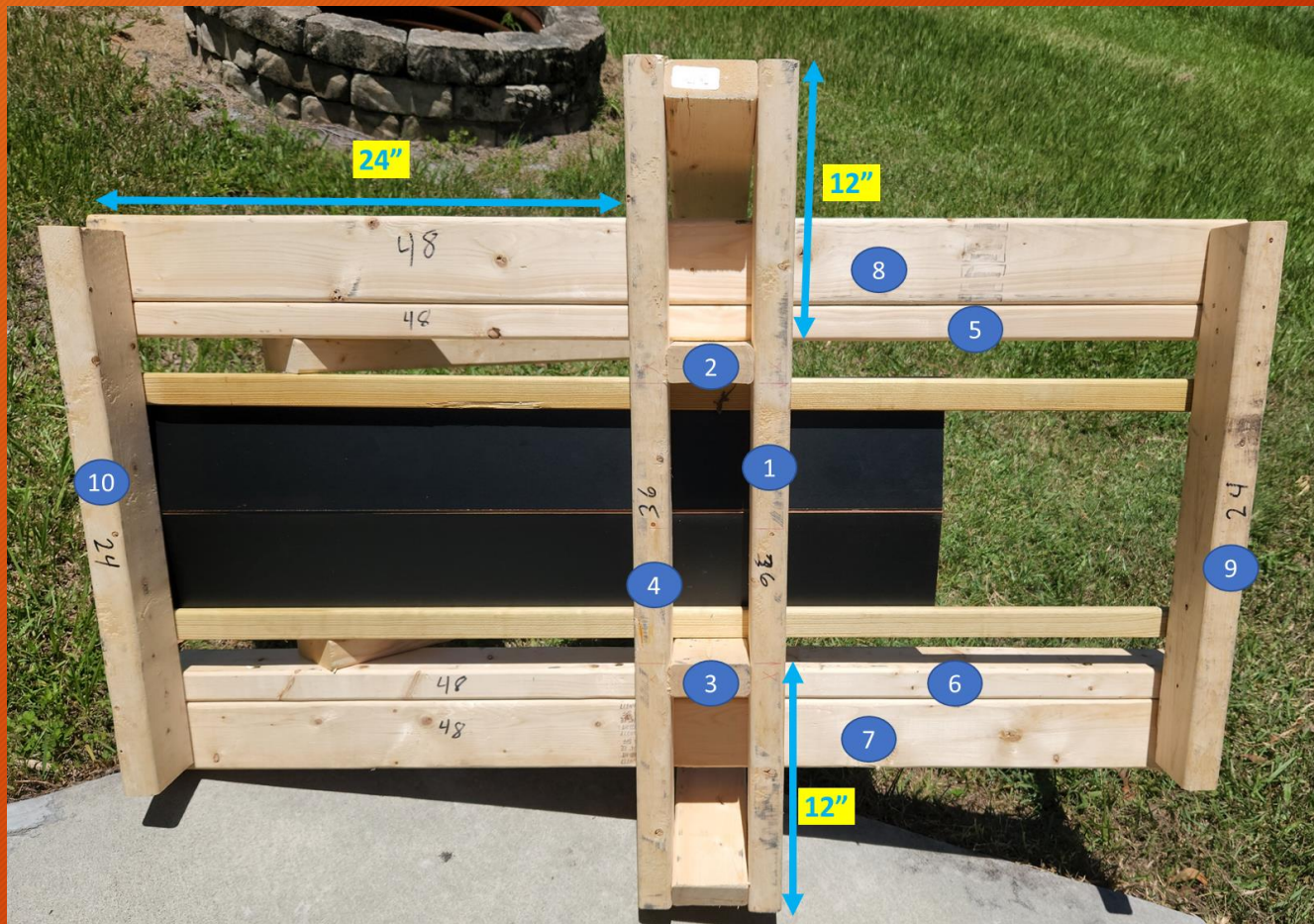


Common Sample Frame

- 5 - 2" x 4" x 8'
 - 4 @ 48"
 - 2 @ 36"
 - 2 @ 34"
 - 2 @ 24"
 - 2 @ 48" (cut in half at 45°)
- Fastening method is not specified
 - Recommend 2.5"-3" screws
- Does not include ramp or pivot design

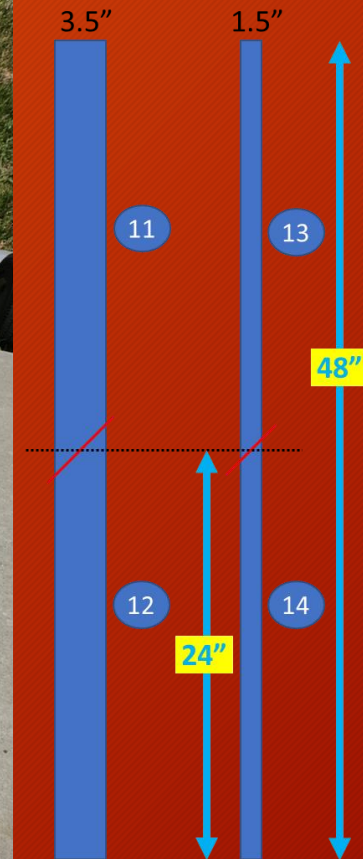


Common Sample Frame Assembly



- (1) - 36"
- (2) - 34"
- (3) - 34"
- (4) - 36"
- (5) - 48"
- (6) - 48"
- (7) - 48"
- (8) - 48"
- (9) - 24"
- (10) - 24"

Common Sample Frame Assembly, Cont'd



Design Considerations/Customizations

- Throwing Arm Materials/Design
- Throwing Arm Pivot Materials/Design (wood, Threaded Rod, Bearings etc.)
- Counter-balance weight system design and materials
- Softball throwing Cradle/Sling Materials/Design
- Use of ropes/wire/string for connecting Throwing Arm with the Sling
- Innovative Trigger design (However must be deemed Safe!)
- Ways to adjust/Refine throwing distance (add weight, move trebuchet, adjust rope/wire length)

Competition Awards

Awards may be provided for:

- Accuracy (number of times their softball hit and triggered the Target)
- Innovative Design
- Most Enthusiastic Team
- Spirit - Overall look of the trebuchet (colors, “furniture” finish, Teams Theme)
- Cool, Unusual, and/or Wow-Factor!

Next Steps

Rules and Presentation

www.PiratesPlay.com/minitrebuchet

Join E-mail List

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Hands-on Workshop

Late Sept/Early Oct - Date To Be Determined

Questions/Comments?