

# Mini-Trebuchet Competition 2024

Guide and Rules



# Tonight's Agenda

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



# History

- 2019 - 1<sup>st</sup> AFTAC Punk'n Chunk'n Competition
- 2020 - Exhibition @ DRS Community Center
- 2021 - Exhibition @ Desoto Sports Field
- 2022 - 1<sup>st</sup> Mini-Trebuchet Competition
  - DRS Community Center
  - 9 Teams competed
- 2023 - 2<sup>nd</sup> 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
- 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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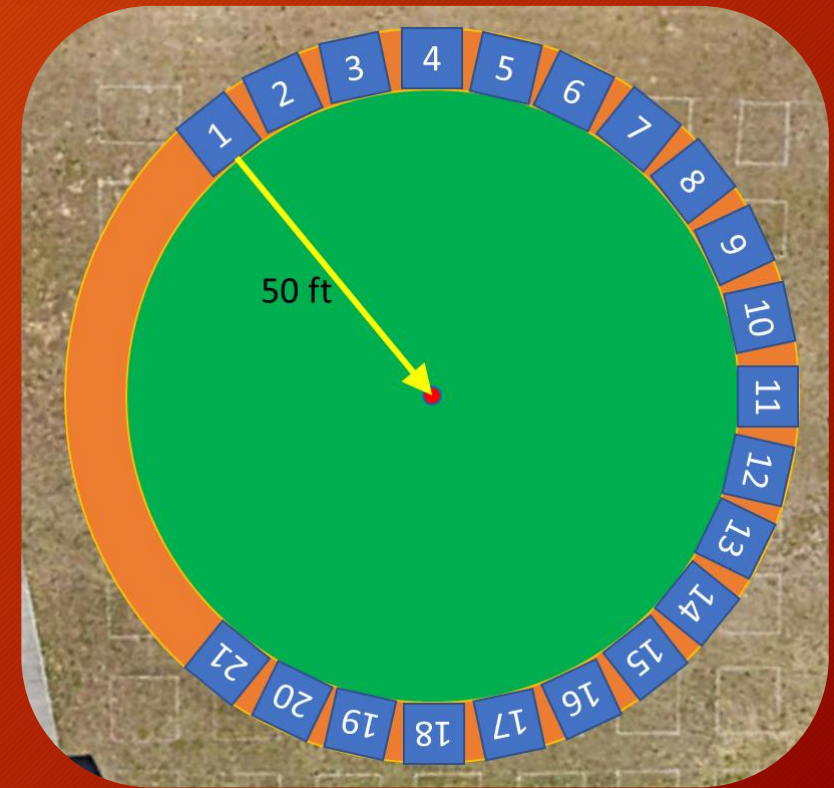


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# Rules - Competition Setup

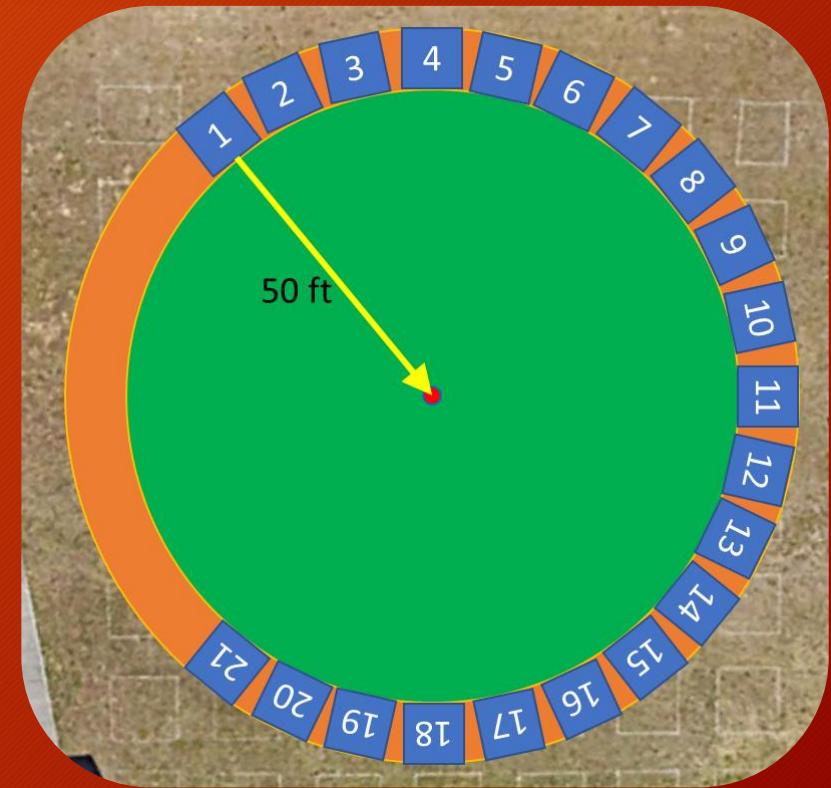
- Team sites will be randomly assigned
- Setup within a 4' wide x 10' long designated area
  - Trebuchet can be moved farther from the target
- Trebuchets will be inspected
  - Satisfy design and propulsion requirements
  - General Safety
- 1 hour for setup and test shots





# Rules - Competition

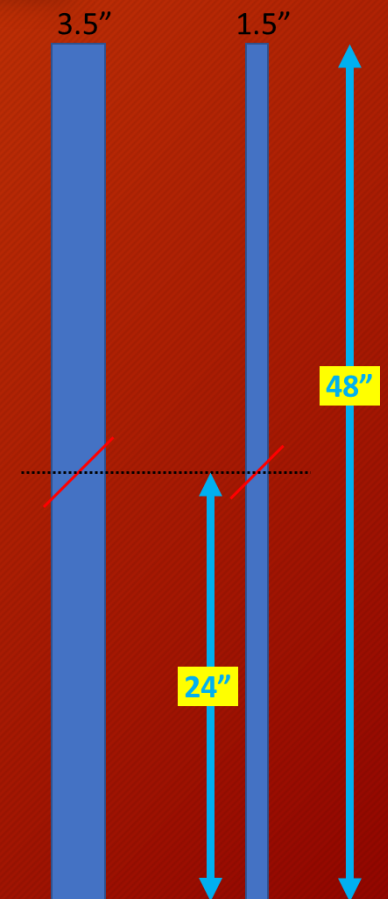
- 10 shots per team
- First team to go is randomly selected
- Proceed clockwise, one at a time
- Only direct hits to the top of the target count
  - 8' Target area with 4' Bullseye
- Each attempt must be completed within 3 minutes
  - Trebuchet may be loaded and armed prior to start of turn



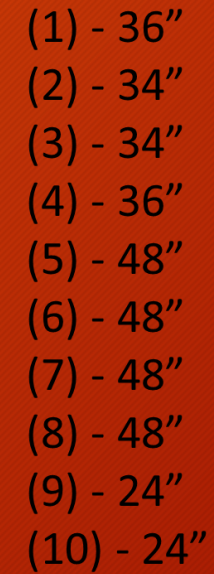


# Sample Frame

- 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

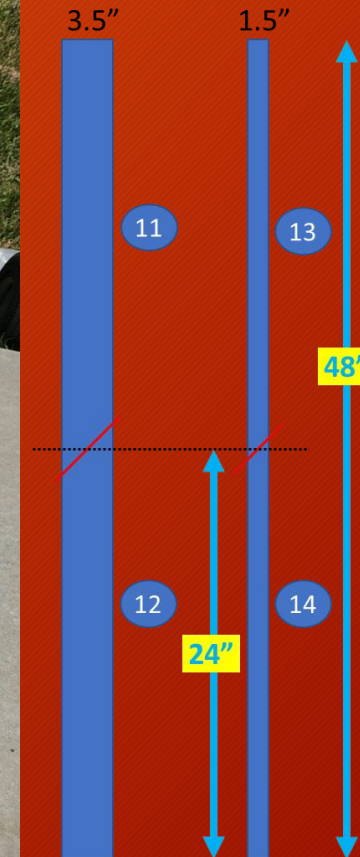








# ~~Common~~ Sample Frame Assembly, Cont'd





# 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](http://www.PiratesPlay.com/minitrebuchet)

## Join E-mail List

[trebuchet@piratesplay.com](mailto:trebuchet@piratesplay.com)

## Hands-on Workshop

Late Sept/Early Oct - Date To Be Determined

# Questions/Comments?