

Trebuchet Competition

SC Royal Rangers, Pow-Wow 2011

Construction:

- The trebuchet must be constructed primarily of wood. Other materials are allowed, but should be limited to supporting roles such as use of fasteners. The purpose of this is to prevent the need to teams to have welding, metal cutting, or other expensive and hard to find tools to be competitive, so use your judgment based upon that to decide if you are using too much metal or not.
- In order to make this competition affordable yet competitive, the total cost of the trebuchet should not exceed \$100. Excess funding beyond this should be limited to the exceptions. **Prior years models may be reused as is or modified. Modification cost not to exceed \$30.**
- Although larger trebuchets may be constructed for demonstration, or just for the impressiveness, the largest trebuchet allowed in this competition will have an arm no longer than 6 feet in length as measured from the tip of the arm where the sling is attached to the end of the weight (if solid mounted) or to the pivot point where the weight is hung from the end of the arm.
- The projectile must be launched from one end of the trebuchet arm, powered only by the gravitational potential energy of the counterweight. The launching end may launch the projectile directly, or through the use of a sling. No electrical, explosive, or other energy sources may be used. In other words, you should build a trebuchet, not a cannon that you call a trebuchet.
- The trebuchet must be able to be brought to the competition site, set up, loaded, cocked, and triggered by the team. Human power (not to exceed four members of the team) must be sufficient to load and cock the trebuchet.
- Due to safety concerns, the trebuchet must be triggered with all team members at least 2 yards away from the trebuchet, and behind the line perpendicular to the direction of fire.

Websites that you may find useful in design & construction:

- <http://www.io.com/~beckerdo/other/trebuchet.html#construction>
- <http://hila.webcentre.ca/projects/trebuchet/index.htm>
- <http://www.tasigh.org/ingenium/pics/smtreb.gif>
- <http://www.trebuchet.com/>
- <http://www.stormthecastle.com/trebuchet/how-to-build-a-trebuchet.htm>

and many more!

Competition:

- The competition shall be held at the 2011 SC Royal Rangers Pow-Wow.
- The competition shall have two parts designed to test range (distance) and accuracy.
- For each part, points shall be awarded by giving n points to first place, n-1 points to second place, n-2 points to third place, etc, where n is the number of teams competing.
- The team with the most points at the end of the competition shall be declared the winner.
- The order of firing will be as arranged along the launch line, beginning nearest the river.

Definitions:

- A shot is defined to have been made when the projectile first travels through the air laterally away from the trebuchet, in any direction, a distance greater than the length of the throwing arm of that trebuchet. A projectile that falls from the loaded position and rolls away from the trebuchet shall not be considered a successful shot.
- The firing line is defined as the area within 5 yards of any trebuchet.
- The projectiles to be fired are tennis balls, baseballs, or other suitable ball less than 8 oz. (team's choice) for the accuracy competition, and **"un-altered" LACROSSE** balls (only) for the distance (long range) competition. After the competition is completed, water balloons may be used so long as the broken balloons are cleaned up from the field and the same safety precautions must be taken as during the competition. Each team is expected to bring their own projectiles (lacrosse balls, tennis balls, water balloons, etc.).

Part One – Distance: 3 Lacrosse Ball shots

- **DISTANCE WILL BE MEASURED FROM THE "FRONT END" OF THE TREBUCHET – NOT THE PIVOT!**
- Distance From Target (DFT) will be measured from the target to where the projectile makes its first contact with the ground. Bounces or end of rolling will NOT be considered.
- Each team should come to the competition with their trebuchet complete and ready for the competition before the published start time. The trebuchets are not to be loaded or cocked until instructed by the competition coordinator(s).
- Each team shall, in turn, be given a period of approximately 5 minutes to attempt to fire their 3 shots. Other teams may prepare their trebuchets for service, but need to maintain safe distance from the "active" team. The active team may do anything to their

trebuchet during this time. If the 5 minutes ends before a shot is made, the team forfeits their opportunity and must wait until the last teams have shot, however, now this team will only be allowed to fire two shots.

- After each team has been given three attempts, the team with the projectile that traveled the farthest (in the forward direction, not radially) shall be given first place for this segment. The team with the projectile that travels the second farthest will be given second place for this segment, etc. ONLY the team's longest shot will be recorded.

Part Two – Accuracy: 3 shots, projectiles are choice of team – refer to Definitions above.

- **DISTANCE WILL BE MEASURED FROM THE “FRONT END” OF THE TREBUCHET – NOT THE PIVOT!**

- A target will be marked forward of the trebuchets at a distance of **60** feet.

- The teams should use their time after completing their ‘Distance’ firings to make any adjustments needed for the ‘Accuracy’ competition. The trebuchets may only be loaded or cocked during this time, **and there is SAFE DISTANCE from the judges.**

- Each team shall, in turn, be given a period of approximately 5 minutes to attempt to fire 3 shots. The active team may do anything to their trebuchet during this time. If the 5 minutes ends before their shots are made, the team forfeits one attempt, and must wait until the remaining teams have had their turns. Time for the judges to measure and record the distances should NOT be counted against the team. Projectiles **MUST NOT** be loaded while measurements are being taken.

- Distance From Target will be measured from the target to where the projectile makes its first contact with the ground. Bounces or end of rolling will NOT be considered.

- After each team has been given three attempts, the **total DFT of all three attempts** will determine the order of finishing. Any team which has forfeited ONE shot due to the time limitation will assume their 3rd shot to be 10 feet farther than their worst of their two shots. I.e. Target misses by 12 feet and 17 feet – the 3rd shot would be 17+10= 27 feet, and their total distance would be 56 feet. Any team that has forfeited more than one shot will have been disqualified from the competition.

- The judges may deem it necessary to allow longer than a 5 minute limit.

Theme: The judges may select a trebuchet which most closely represents the Pow-Wow them for special recognition at the awards ceremony.

Teams competing are requested to notify Mark Sneider 1 or 2 weeks in advance of Pow-Wow at:

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