

[Print Page](#)

Trebuchet Building Event

mike maloney ~~ mr_maloney@hotmail.com
<http://nssl.mrmaloney.com/events/treb.htm>

Welcome to the world of trebuchets.

If you are unfamiliar with a trebuchet, here is a definition:

~~~~~

The trebuchet starts with a long arm. The axle (fulcrum) is more towards one end than the other. The short end has a heavy counterweight and the other end has a sling. When it's "cocked and locked", the counterweight is high and ready to drop. The projectile sits in the pouch of the sling beneath the trebuchet, ready to be pulled along and flung.

When the trigger is released, the counterweight begins to drop. This moves the other end of the arm very quickly and the projectile in the sling is dragged along underneath the machine. As the weight continues to drop and the arm continues to swing, eventually the projectile reaches the end of the base. Centrifical force holds the sling taut as the sling swings out but the one end of the sling is still looped over the hook.

Forces try to straighten out the sling and eventually the loop on one end slips off the hook. The projectile is no longer held in the pouch and so continues on its way down range.

## The EVENT

Before each team starts building and testing, **be advised that you should wear safety goggles and other protective equipment** depending upon your design. Each team must provide safety goggles for their team to be used during their launches or they will be disqualified. Also while testing make sure you stay clear of the moving parts while they are in motion. You should design some sort of firing device so that the trebuchet can be activated from a safe distance. Trebuchets were originally designed as weapons, and although ours will not be as big and powerful, they still can be dangerous. And as always make sure if you are using tools and any other equipment you are properly protected and supervised. Building a trebuchet is great fun ... if it is done safely.

## BUILDING

Each teams goal for this event is to construct their own counter-weight trebuchet, like the one described above. Each trebuchet must consist of the following:

- base
- lever arm
- must be counter-weight powered
- must have a sling
- must be able to fit through a regulation 6.5 ft x 30 in door (got to get it inside)

Besides that, there are no restrictions. Any materials may be used, the trebuchet can be mobile or stationary (you can determine the benefits of mobility), and any design that abides by the above rules may be used.

## SCORING

- (1) Each team must build a trebuchet that will propel a standard tennis ball 20 feet to a target. The tennis ball will be supplied by the judges.
- (2) The emphasis in this event is placed on the team's construction of a trebuchet that can accurately aim and propel a tennis ball exactly 20 feet.
- (3) The target will be a bull's eye lying horizontal to the floor. The center of the target will be exactly 20 feet from the launch line.
- (4) Teams will place their trebuchets on the floor precisely at the edge of the launch line, but not on top of it, beyond it or behind it. If the trebuchet is a mobile trebuchet, it must start at the edge of the launch line, but it MAY move across it during the launch motion.
- (5) Each team will make 2 launches. Misfires, as determined by the site judges, will not constitute a "launch." Then the distance from the bullseye to the initial impact point of each launch will be measured and averaged. The lowest average receives 50 pts, the next lowest 49 and so on in compliance with normal NSSL scoring. Misfires, as determined by the site judges, will not constitute a "launch."

For any questions, please [post them in the chatroom](#), and email me, [mr\\_maloney@hotmail.com](mailto:mr_maloney@hotmail.com), so that I make sure to answer them in the chatroom.

## Online Resources

--- (here are just a few, but if you do a search for "trebuchet building" on the web, you will find thousands.)

NOVA: Secrets of the Lost Empires II: Medieval Siege (video)

- [http://www.pbs.org/wgbh/nova/teachers/programs/27ms\\_sle2treb.html](http://www.pbs.org/wgbh/nova/teachers/programs/27ms_sle2treb.html)

- great movie available at most libraries to borrow for free

INGENIUM Trebuchets

- <http://www.tasigh.org/ingenium/medium.html>

GREY Trebuchets

- <http://members.iinet.net.au/~rmine/gctrebs.html>

TREBUCHET FUN

- <http://andypsionfan.users.btopenworld.com/trebindex.html>