

# NORTH SHORE SCIENCE LEAGUE

NOVEMBER 2009 EVENT



## BALLISTA/CROSSBOW QUICK TARGET PRACTICE

STUDENT(S) LAUNCHING THE TENNIS BALLS **MUST PROVIDE SAFETY GOGGLES TO WEAR DURING LOADING AND SHOOTING OPERATION**

**GOAL:** To build a crossbow/ballista that is capable of shooting as many tennis balls as possible (up to 20) into a target in 60 seconds.

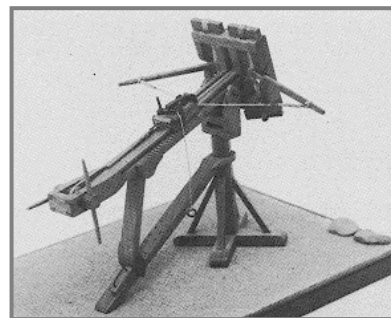
**SETUP:** The target will consist of a hole approximately 1.5 ft diameter hung vertically at approximately 5 ft high on center. The target will be placed anywhere from 20 to 35 feet away from the launch line. The actual placement will be determined on the day of the event, and your ballista/crossbow should be adjustable and capable of hitting the target anywhere within the range.

**RULES:** Your launcher must be a ballista/crossbow. This means that the energy stored to shoot the tennis ball must come from the mechanism of a bow attached to a stock in which a draw string is drawn. All of the launch energy must come from the elastic stretching of the bow and/or the draw string. The draw string may consist of more than one string, but the total draw string must be attached to the bow in at least (2) two spots.

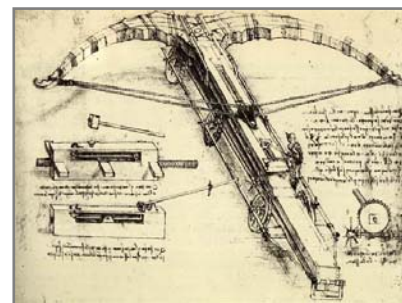
**COMPETITION:** On the day of the event, each team will have to show the judges their safety goggles and impound their ballista/crossbow. Any team that does not have goggles will lose 10 points off of their score. When a team is called to shoot, they will have 30 seconds to set up and adjust their ballista/crossbow after which a stop watch will start. The team will have 60 seconds to shoot as many tennis balls into the target as possible. During the whole time, all parts of the launcher must remain behind the launch line. Any shot taken when any part of the ballista/crossbow is over the launch line will not count. There will be 20 tennis balls available to shoot, and the collection of any misses to be reshot is the job of the other team members.

**SCORING:** The total number of tennis balls in the target will be counted (any that come out due to a another shot will count). Teams will get 5 points for any tennis ball in the target, and any deductions will be taken off. The teams will then be ranked and assigned a normalized NSSL score, with ties splitting the points as per NSSL rules.

**DESIGN NOTE:** there are no design limitations in this even other than the shooting mechanism, but all designs still have to be able to fit into whatever room the event takes place in. Anything that does not, or any design that is not capable of being fired at the time of the even will receive a DQ score of 15.



Medieval Ballista  
Courtesy of Wikipedia



DaVinci's Crossbow  
Courtesy of Wikipedia