

# Catapult Judging Rubric

1. Each chapter may enter two catapults to competition.
2. Each team must provide their own counterweight for firing of the device.
3. The projectile to be fired will be a tennis ball at a target that is a cube/box of 30 cm.

## Construction

1. The entire device, including the projectiles and counterweight must be no more that 75 cm high x 75 cm wide x 100 cm long when it is in the ready-to-fire position. Length is measured parallel to the the direction the device launches. This restriction does not apply during or after launch.
2. The device, without the counterweight and projectile, may not contribute energy to the launch. Some violations of this rule are:
  1. the center of gravity of the unloaded device drops during a launch motion, the triggering process provides momentum to the launch or any other form of potential energy (compressed or stretched elastic solids, compressed air, etc.) is used
  2. Without a counterweight and projectile, the unloaded device may not move in the direction of a launch motion when released from any position prior to where the projectile is released.
  3. No hand-held projectile devices (like slingshots or potato launcher-type devices are allowed.

## Scoring

1. Each launch will be measured for accuracy. All measurements must be recorded in meters to the nearest centimeter.
2. The Launch Score (LS) for each launch will be :  $LS = TD - 2(A) + B$ 
  1. The Target Distance (TD) is the distance requested by the competitors and is measured from the center of the front of th launch area to the center of the target.
  2. The Accuracy Score (A) will be the distance from the projectiles point of first impact to the center of the target if the projectile lands in the target area. If the projectile lands behind the front line of the Launch Area or if any part of the device leaves the Lounce Area and does not return, the Accuracy Score will the the Target distance.
  3. A Bonus (B) equal to  $0.1 \times TD$  will be awarded if the projectile hits any point on the target before impacting the ground.
3. Bonus points will also be awarded at the judge's discretion for historical accuracy and/or creativity.
4. Each catapult will have three launches.
5. Penalties of three points will be assessed for every construction violation the judges find.
6. Catapults will be ranked according to the final score with the highest final score winning. The final score will be two times a team's best Launch Score minus any penalties.
  1. Final Score =  $2 \times \text{Best Launch Score} - \text{Penalties (if any)}$

NCJCL ID # \_\_\_\_\_

Middle School / High School

	Launch #1	Launch #2	Launch #3
Target Distance (TD)			
Accuracy (A)			
Bonus (B)			
Launch Score (LS)			
Bonus / Penalty			
Final Score (FS)			