



## Hacky Sack - Trebuchet / Catapult Design Challenge

Name: \_\_\_\_\_ Division: \_\_\_\_\_ School: \_\_\_\_\_

### **Catapult Specifications:**

Go / No Go 1. Any standard, commercially available mousetrap / rat-trap / coil spring(s) / bands or weight will be used as a catapult energy source.

Go / No Go 2. The competitors are allowed to use any inexpensive and readily available materials to build the catapult. Commonly used items such as plastic pipe, string, glue, Popsicle sticks, wooden dowels, rubber bands, wooden strips, metal tubing etc. are common materials that may be used. In other words, no rocket launchers, no explosives, etc. are to be used.

### **Rules Regarding Design:**

Go / No Go 1. The swinging (acceleration) arm of the Catapult may not be assisted in the direction of throw by anything except the above power source.

Go / No Go 2. The catapult may be attached to a wood or cardboard launching base plate or platform, no more than 1" thick. The base plate/platform can have any width or length, as long as it fits within the launching site (24" x 36" rectangle). The plate must sit firmly on the launch surface. It cannot be used to adjust the height of the toss although it may be pivoted (rotated) for aiming in the proper direction.

Go / No Go 3. The Hacky Sack must, at some point from the initial firing position to the time it is released, pass or start within 3 inches of the base plate/platform or launch site.

### **The Competition:**

Go / No Go 1. Each team will bring their catapult to the competition site fully assembled and ready to compete.

Go / No Go 2. The competitor's device will be placed within the launching site on the floor. No part of the device may extend outside the launching site before a shot.

Go / No Go 3. The launching arm must be set in motion by pressing a release lever using a rod or dowel stick or pulling a cord attached to a pin to insure the safety of the participants.

Go / No Go 4. Each team will be given 7.5 minutes to setup the catapult in the launch site and complete 8 shots at the target. 1 practice shots will be allowed and, adjustments may be made to the device between shots.

(Room ceiling height may be a factor.)

### **Scoring guidelines:**

Go / NoGo 1. Each hit within the Bulls eye target area will score 10 pts. However, the shot must land inside of the pit in order to count as a bull eye hit. Any shot that strikes outside the pit area but within 18" of the target will score 7 pts. Any shot that strikes outside the pit area but within 32" of the target will score 5 pts. Any shot that strikes outside the pit area but within 48" of the target will score 3 pts.

\_\_\_\_\_ 1<sup>st</sup> Shot

\_\_\_\_\_ 2<sup>nd</sup> Shot

\_\_\_\_\_ 3<sup>rd</sup> Shot

\_\_\_\_\_ 4<sup>th</sup> Shot

\_\_\_\_\_ 5<sup>th</sup> Shot

\_\_\_\_\_ 6<sup>th</sup> Shot

\_\_\_\_\_ 7<sup>th</sup> Shot

\_\_\_\_\_ Reduction for rules violation above: (0 – 20)

\_\_\_\_\_ :Total Score                      Final Ranking/Place: \_\_\_\_\_