

# Game of Throws

## 2018 South Bay Pumpkin Smash

### Rules and Guidelines

TO REGISTER, go to: <http://www.tinyurl.com/GoTRegistration>

#### Challenge Overview

Teams of students will each build one mechanical device (machine) that is capable of throwing pumpkins with distance and accuracy. Each team will compete in one of three Divisions that is determined by the grade-level of the team members, as defined below, and shall have at least one (1) adult supervisor, and no more than eight (8) nor less than five (5) students. The throwing device must be of a design that could have been built in Medieval times: That is, neither electric power, nor hydraulics, nor pneumatics, nor burning materials etc. can be used to deliver kinetic energy to the pumpkin projectiles.

The challenge will be to hurtle pumpkins of a given weight with both distance and accuracy. While there are Division-based restrictions on the dimensions of the device, there are no restrictions on weight. In the case of a tie score, the team with the lightest machine will win.

Accuracy: Each team shall get two attempts to throw a pumpkin (weight range specified per Division) to hit a target placed at a distance to be determined randomly on the day of the event. Points will be awarded by how close each team comes to hitting the target.

*Each division will award First, Second, and Third Place for accuracy.*

Distance: Teams will also have one throw for distance. They will hurtle a beanbag of fixed weight equal to maximum weight of each division that will be supplied by the Game of Throws event. The challenge will be to toss the beanbag as far as possible within a straight lane that will be clearly marked on the fairway. Points will be awarded for total distance. However, zero points will be awarded if the beanbag's impact point lies outside the boundaries of the lane.

*Each division will award First Place for longest distance.*

#### Categories:

- DIVISION 1: High School Level (9th-12th grade)
- DIVISION 2: Middle School Level (7th-8th grade)
- DIVISION 3: Elementary School Level (3rd-6th grade)

## Guidelines and Rules

### Pumpkin Weight Information

Pumpkins will be provided at the event based on the following weights per level.

High School Level	Middle School Level	Elementary School Level
6 lbs max weight	4 lbs max weight	2 lbs max weight

*Note: Each team will receive two pumpkins as close in weight as possible based on their division/category.*

### Machines Dimensions

The base of each machine must fit within a footprint defined in the table below. There is no height or mass limit. Slings and throwing arms may exceed the front and rear bounds during firing but need to be confined inside the “L” shape fence as per Figure 1.

High School Level	Middle School Level	Elementary School Level
<b>5'X7'</b>	<b>4'X5'</b>	<b>3'X4'</b>

*Note: In the case of a tie in score, the team with the lightest weight machine will be the winner.*

### SAFETY

- All machines are required to have two (2) *locking mechanisms*; one for remote release and one to guarantee that the device can not fire accidentally while loading and servicing.
- *Head gear* (bike helmets, football helmets, etc.) and *eye protection* must be worn by all firing team members participating in the launch activity.
- All teams shall include at least one actively engaged adult of age 21 or older.
- One member of each team must act as the team's official "**SAFETY CAPTAIN**" to make sure that all team members remain safe during the operation of the machine. They are to make sure that their crew and all other machines' crews are clear of moving parts and that no one is directly in front of, or behind, the machine when it is discharged.
- No person shall be less than six (6) feet away from the plane of the throw at launch.
- Since it is possible for malfunctioning catapults and trebuchets to project pumpkins and parts of a device itself directly backwards, the event organizers shall rope off a *Safety Exclusion Zone* directly behind the launch areas. These zones shall be clearly marked with caution tape. No one except the GoT Safety Officer shall be allowed to enter the Exclusion Zone unescorted for any reason whatsoever. Should a participant enter the exclusion zone without seeking permission from and being accompanied by the GoT Safety Officer, they subject their team to immediate disqualification.
- An air horn, or similar warning device shall be sounded just prior to launch for the purpose of alerting surrounding people of an imminent throw.

- No adults supervisors are permitted to consume alcoholic beverages or any other intoxicating substances of any kind at any time the event. Noncompliance will result in the team that they represent being immediately eliminated from the event.
- Judges have the authority to stop any activity that they deem to be unsafe. Failure to comply with safety instructions from the judges shall result in immediate disqualification.

### **Machine Operations**

- Trailers and vehicles must remain in designated parking locations only. Only emergency vehicles will be allowed onto the event grounds themselves.
- Machines must be designed so that any student member of the team can, under appropriate adult supervision, perform all aspects of the setup, loading, and firing. If the machine does not meet this requirement, the team will not be allowed to compete.
- Teams need to be able to set up, load, and clear firing area within five (5) minutes. If a team takes more than five (5) minutes to accomplish the aforementioned tasks, it will lose one throw.
- Teams are allowed to make adjustments to their machine between firings as long as those adjustments do not take more than three (3) minutes.
- When the device is fired, its forward edge shall not extend over the reference (firing) line for measuring distance.
- Pumpkins are not to be altered in any way excepting official marker paints and/or removal of stems. Pumpkins shall be launched in their natural state.
- Stakes may be used to help anchor the device, but otherwise, no holes may be dug in the ground.
- In the event of a pumpkin fragmenting in launch or flight, the fragment that lands closest to the device will determine the range.
- Teams are allowed to make changes/fixes to their machines on the day of the event so long as they are on deck when it is their turn to take the field.
- After a major machine failure and in between firing attempts, teams can attempt to fix their machines. However, the Head Judge will determine if the machine is safe to continue in the event.

### **Machine “MUST NOTS”**

- Machines must NOT use motors, engines, pneumatics assist, compressed air, steam or any other compressed gases, hydraulics or ignitable substances.
- Machines NOT be constructed from a ready-made kit.

## Machine Setup and Firing Area

Figure 1. Machine set up location

The machine will be placed and set up inside an “L” shape fence to protect all team members and spectators (fence dimensions 10’X20’).

- All team members can help set up the machine but only the specified number of members can LOAD it.
- **Loading the machine prior to launch**

Each team is allowed to load the machine as follow:

- a) Division 1 : Only one (1) adult and two (2) students
- b) Division 2 : Only one (1) adult and two (2) students
- c) Division 3 : Only one (1) adult and one (1) student

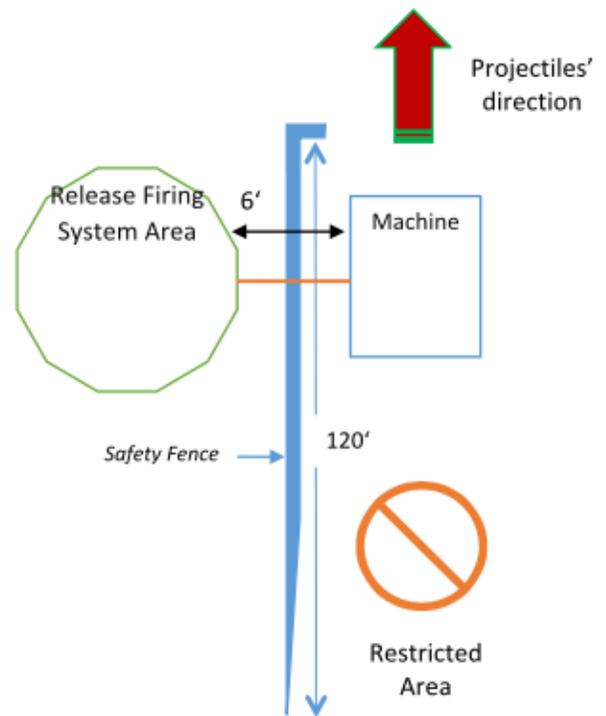
Note: When loading the machine the **SAFETY CAPTAIN** shall ensure that no other team member or person(s) are inside the “L” shape area.

- Once the machine is LOADED and ready to fire, all team members shall relocate at least 6’ away and having the fence as a barrier/protection. The last person to leave the setup area will be the adult.
- **The adult must request final clearance from the Head Judge to proceed. ONLY AFTER CLEARANCE HAS BEEN GIVEN** can the first locking mechanism be released.
- The firing system mechanism can be considered as the second safety mechanism.
- **Release Firing System Area**

The remote firing (string or similar mechanism) system shall be triggered from this location--namely, six (6) feet away from the machine and between a chain link type fence.

## Disqualification: Safety and Sportsmanship

- The Head Judge is authorized to delay or terminate the firing of any machine that they believe may be unsafe to operate.
- The Head Judge shall disqualify any team whose members behave in an undisciplined or unsafe manner while setting up, tearing down or firing their machines.
- The Head Judge shall disqualify any team whose members do not fully comport themselves in a way that exemplifies fairness, cooperation, and sportsmanship amongst themselves and between themselves and their rivals.



## **Scoring**

### **Accuracy**

The distance to which the target will be placed will be determined randomly on the morning of the competition, but under no circumstances will it exceed maximum range per category (high school level 200 feet (60 meters), middle school level 130 feet (40 meters), and elementary school level 65 feet (20 meters). Two shots are allowed at the target, and a raw score is downrange distance minus miss distance; where miss distance is measured as the shortest distance from the impact point to a point on the target.

Each team will receive two pumpkins (one per shot). Pumpkin weight will be determined randomly at competition day not to exceed maximum weight per category (high school level 6 lbs, middle school level 4 lbs, and elementary school level 2 lbs) Both pumpkins will have the same weight as close as possible.

Maximum possible points per category are 100 points. The best of the two tries is taken for score. Ties are resolved in favor of the lighter machine.

Example 1: High School Level machine has the target setup at 130 feet (40 meters) downrange. They hit 7 yards (7 meters) away on their first shot and hit the target on the 2nd shot. The first shot scores 100 points - 7 points = 93 points. The 2nd scores 100 = 100 points, which is used as their overall accuracy score.

Example 2: Middle School Level machine has the target setup at 35m downrange. They hit 5 yards (5 meters) away on their first shot and hit 10 yards (10 meters) away from the the target on the 2nd shot. The first shot scores 100 points - 5 points = 95 points. The 2nd scores 100 points - 10 points = 90 points. The first shot with 95 points is used as their overall accuracy score.

### **Distance**

This event is about ACCURACY, but each machine will be allowed one shot for distance. A fixed weight bean bag or similar weight item will be given to each team (high school level 6 lbs, middle school level 4 lbs, and elementary school level 2 lbs). Fixed weight scoring distance is defined as the downrange component of the bean bag impact point (not slant range). Shots fired into the back range zone score zero (0) yards. Should more than one team tie for the maximum distance throw, the machine with the lowest total mass (including counterweights) shall be the winner.