



2016 Pumpkin Chunkin' Rules

Contents

| | |
|---|----|
| Entry..... | 2 |
| Design Phase Specifications..... | 2 |
| Pumpkin Specifications..... | 3 |
| Day-of Rules..... | 3 |
| Awards..... | 4 |
| Deadlines..... | 4 |
| In-Kind Support..... | 5 |
| Appendix A – Space Parameters..... | 6 |
| Appendix B – Scoring Rubric: Documentation Award..... | 10 |
| Appendix C – Scoring Rubric: Design Award..... | 11 |

Entry

All teams must register to compete. To register, each team’s teacher lead must fill out the registration form completely and sign that they have read and agreed to the following rules. This form can be found at www.howardcountymd.gov/pumpkinlaunch and must be submitted no later than Noon on Wednesday, September 14.

A maximum of 12 teams will be allowed to compete on the day of the event. Based on interest, schools with multiple teams may need to select only one design for competition. Schools will be notified by noon on Thursday, September 15 as to whether or not entries will be limited to one per school.

Please contact Katie Peet at 410-313-0407 or kpeet@howardcountymd.gov with any additional questions.

Design Phase Specifications

Specifications for machines are as follows:

Machine designs should be original. If an idea is inspired by an online or text source, significant alterations should be made to the original design to make it unique. Teams are required to create a schematic drawing of their machine and submit the drawing with their documentation for review by the judges.

If a school participated in last year’s competition, that school cannot reuse the same machine from the previous year. Though the new machine may turn out to be of similar design, the new group of students should participate fully in the entire process – from design to construction – of creating a new machine. Please do not just modify a machine that students built last year. Though this is a competition, the main goal should be educational.

Machines must be designed in such a way that the “chunking” mechanism is uni-directional (i.e. the firing mechanism can only possibly fire in a forward direction; accidental firing in the direction behind the machine is not possible.)

All machines must have a safety mechanism in place that prevents accidental firing of “chunking” mechanism during transport.

If machines incorporate a wheeled base, the machine must be removed from that base, or the machine must have wheel –locking mechanisms and a cage to prevent the machine from shifting during “chunk” attempts.

All machines must fit within the designated size parameters (see Appendix A).

Absolutely no explosives are allowed.

All machines must be field tested at the school site prior to competing at the event.

Pumpkin Specifications

Teams are encouraged to bring their own pumpkins this year so that any weight calculations and preference for size and shape can be used when selecting the three pumpkins that will be launched. All pumpkins should weigh between 4 and 10 pounds and be no bigger than the size of a basketball.

Pumpkins cannot be altered in any way. All pumpkins must be in their natural state.

All pumpkins fired must remain intact prior to reaching the target in order to obtain an official result.

Day-of Rules

Teams must check-in inside the building prior to unloading their machines.

Each teacher will be required to bring their school id for check-in of their team.

The teacher lead of each team must be present and supervising their team at all times.

All machines must be able to travel from the Robinson Nature Center parking lot to the designated firing area on the mezzanine patio. Please refer to Appendix A for measurements and a photo of the access path that must be used. Machines may be transported intact on a wheeled cart, or teams may choose to disassemble and reassemble their machines.

Machines on wheeled bases must be removed from that base, or the machine must have wheel –locking mechanisms and a cage to prevent the machine from shifting during “chunk” attempts.

Robinson Nature Center is not responsible for any equipment needs. Teams must bring any equipment or tools needed to set up or disassemble their machine.

Teams will be allowed to arrive up to an hour and a half prior to the competition to check in and set up their machine.

Teams using a ladder to assemble, load, repair or dismantle equipment must have a spotter to hold the ladder.

Each team will be allowed 3 “chunk” attempts. Each team will be given three minutes between attempts to re-set their machines and load their next pumpkin.

Only designated team members will be allowed on the mezzanine patio during “chunk” attempts. No bystanders (friends/family) are permitted in the area. Designated areas for those viewing the competition will be clearly marked.

Each team leader is responsible for ensuring that all members of the team stay clear of the chunking mechanism and well behind the machine during any “chunk” attempt. All participants will be required to wear the safety goggles, safety helmets and safety gloves provided when in the designated firing area.

A mechanical device may be used to cock machine.

The base of the machine shall not cross the designated firing line.

Any team that does not adhere to the competition rules during any of their attempts will forfeit that attempt.

Awards

Awards will be given in the following categories:

- 1) *Accuracy* - how close each team comes to hitting the center of the target
- 2) *Consistency/Precision* - how well each team can replicate their results over multiple attempts. The consistency of a machine is calculated by looking at variance in the position of where each pumpkin launched hits the target. Launch attempts from a consistent machine are closely clustered in the same area.
- 3) *Documentation* – how well each team documents their design process through either a video or website (judged prior to the competition; teams must submit their entry no later than Noon on Friday, October 28th.)
- 4) *Design*– teams will be ranked on how well their designs meet criteria and constraints. These criteria and constraints should be addressed in the team’s materials submitted for documentation.

Deadlines

Submit team application: by Noon on Wednesday, September 14th

Submit materials for Documentation and Ingenuity Awards: by Noon on Friday, October 28th

Sign up for launch time: by Noon on Friday, October 28th

In-Kind Support

The Home Depot, located at 9051 Snowden River Parkway, Columbia MD is providing in-kind support to teams in the form of up to \$100 value in materials to build your machines. Once applications are received, teams will be notified of how they can access this in-kind support. Teams that have not submitted an application will not be eligible for this support.

Appendix A – Space Parameters

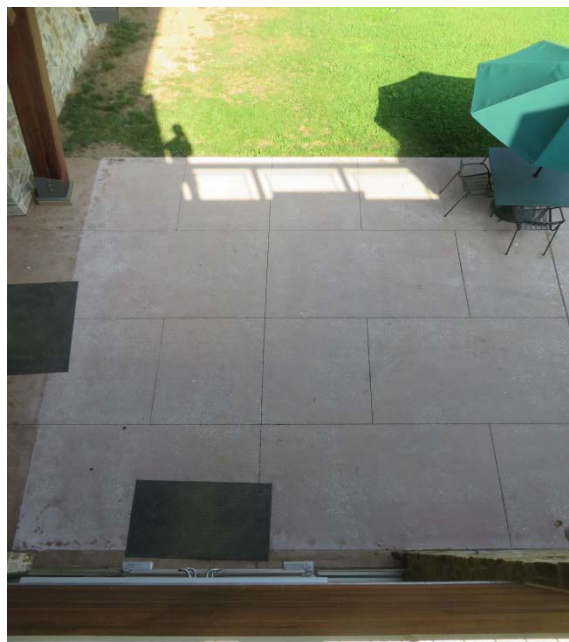
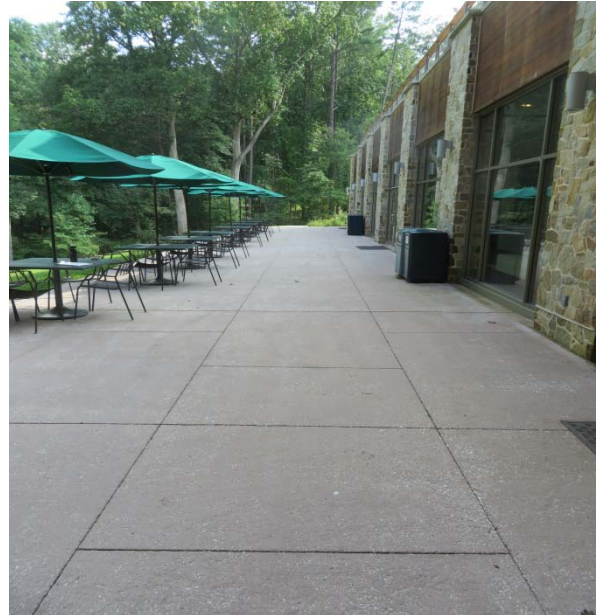
This appendix includes the following information:

- Designated launching area photos
- Measurements to target
- Measurements for Access Path

Designated Launching Area:

- Length: 112 ft.
- Width (excluding 5 feet buffer adjacent to windows): 15 ft.

Below are pictures of the launching space:



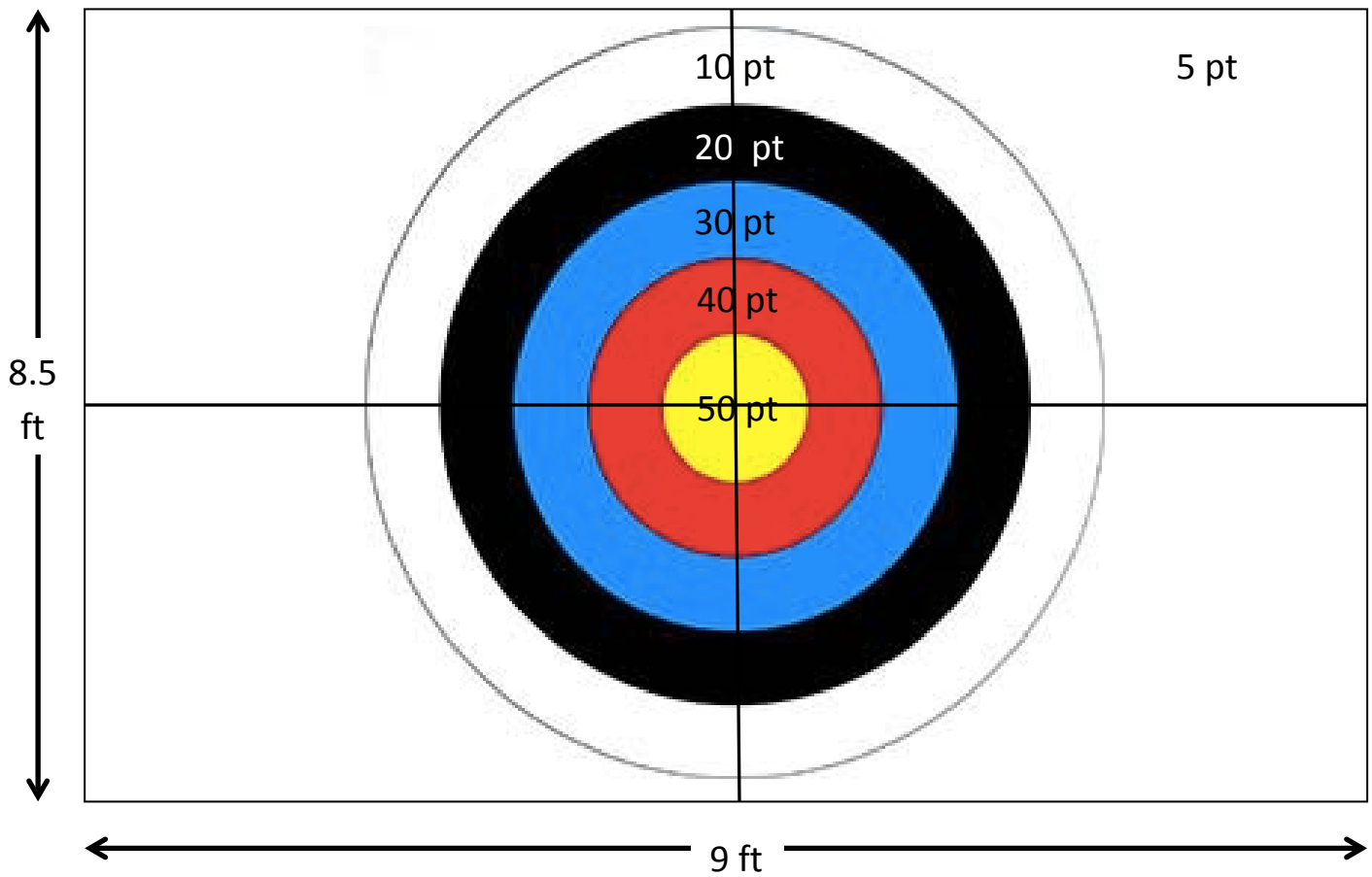
Measurements to target:

- Distance to target: 77 ft.
- Height of center of target above ground: 10 ft.

Below is a picture of the tree towards which pumpkins will be launched. Please note that – though the tree is downhill from the patio – the height of the target has been adjusted to ensure that the target center is 10 ft above the height of the patio floor itself. This allows teams to field test their machines on any field with a standard football field goal. The cross-post of the field goal should be approximately 10 ft. above the ground.

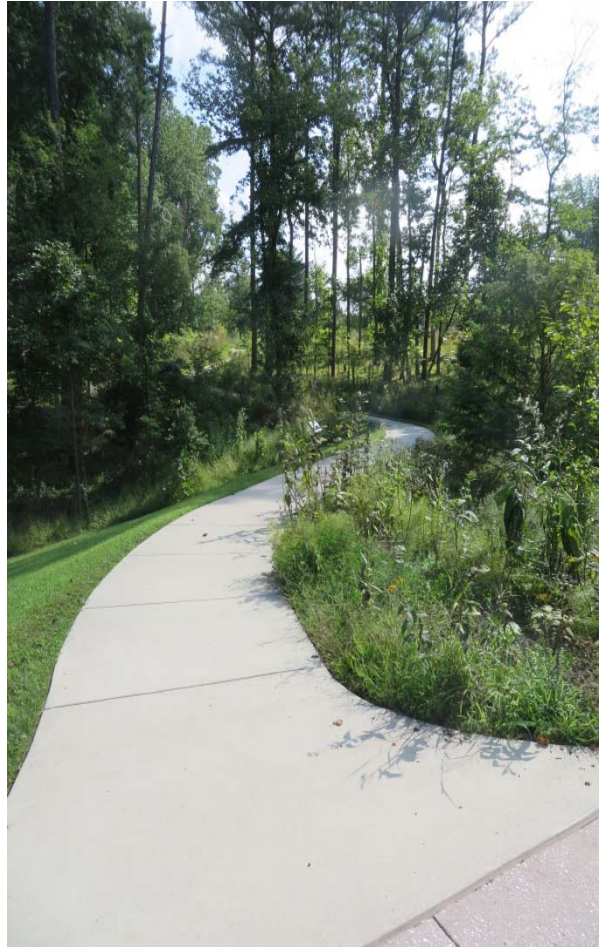


The target pictured on the previous page is segmented into regions for accuracy scoring purposes. Teams will be awarded points based on how close their machine launches the pumpkin toward the center of the target. The center of the target will be suspended 10 feet above the ground.



Access Path (from parking lot to Mezzanine patio via outdoor path):

- Length of path: 450 ft.
- Width (based on the width between handrails at the top of the path through which machines would need to fit): 5 ft.



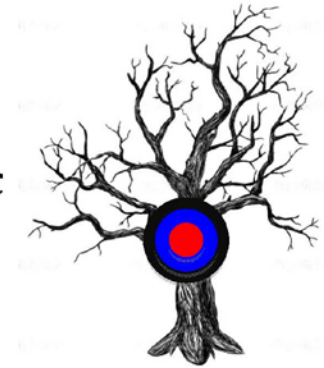
Appendix B – Scoring Rubric: Documentation Award



Pumpkin Chunkin' 2016 Documentation Scoring Rubric

TEAM NAME:

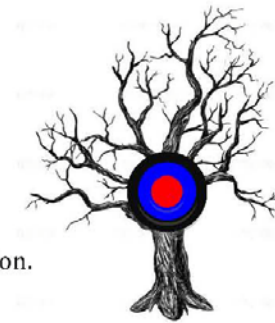
SCHOOL REPRESENTED:



Each team is asked to provide documentation of the process used to construct and complete their machine's design. Please rate each team based on the website or video provided.

| STANDARDS | INDICATORS | | JUDGES NOTES |
|---|--|--|---|
| DEFINING AND DELIMITING AN ENGINEERING PROBLEM NGSS STANDARD EST1.A | <input type="checkbox"/> Defines criteria that the final launching device must meet | <input type="checkbox"/> Identifies limitations or constraints to consider when designing the launching device | |
| DEVELOPING POSSIBLE DESIGN SOLUTIONS NGSS STANDARD EST1.B | <input type="checkbox"/> Provides evidence of group brainstorming (informal sketches, diagrams etc) | <input type="checkbox"/> Provides a rationale for why a particular design was chosen over alternatives | <input type="checkbox"/> Provides a detailed schematic of the final launching device |
| OPTIMIZING DESIGN SOLUTIONS NGSS STANDARD EST1.C | <input type="checkbox"/> Documents the method by which designs are tested through video, photos or narrative | <input type="checkbox"/> Provides data collected in tests of multiple designs | <input type="checkbox"/> Documents each significant design revision and rationale for each change |
| ORGANIZATION AND CLARITY | <input type="checkbox"/> Information is presented clearly | <input type="checkbox"/> Information is presented in a logical order | <input type="checkbox"/> Information is communicated concisely <ul style="list-style-type: none"> • Videos should not exceed 5 minutes in length • Websites should not include more than 5 pages to detail the needed information |
| TOTAL SCORE | ____/11 | | |

Appendix C – Scoring Rubric: Design Award



Pumpkin Chunkin' 2016 Design Scoring Rubric

Each team will be evaluated based on their launching mechanisms design and overall function.
Please rank each team based on the following parameters.

| STANDARDS | INDICATORS | | |
|--|---|---|--|
| MEETING DESIGN CONSTRAINTS | COST: Which design performs the pumpkin launching function at the lowest cost? 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. | DURABILITY: Which design is the most durable? 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. | EASE OF TRANSPORT: Which design is the easiest to transport to the launch site? 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. |
| MEETING DESIGN CRITERIA | CREATIVITY: Which design is the most original? 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. | AESTHETICS: Which design is the most visually appealing? 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. | PERFORMANCE: Which design is best at launching the pumpkin? 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. |
| NOTE The team with the lowest combined score is the winner | WINNING TEAM: _____ | | |