



## Engineering Day 2021

### Ping Pong Ball Launcher Competition

#### **Goal:**

Design and build a launcher which can catapult ping pong balls at targets (#10 Cans 6" diameter X 7" tall) located twelve feet from the launcher table.

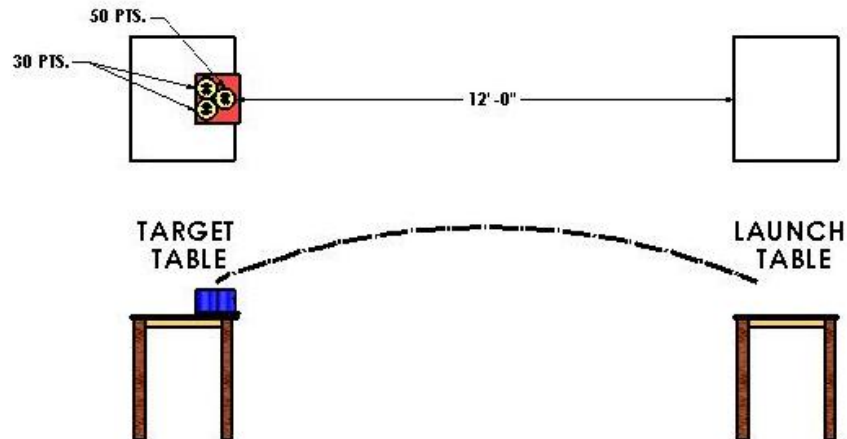
#### **Rules/Judging:**

1. Students will design and build a catapult in advance of the competition.
2. All materials are to be provided by students.
  - a. One standard household mousetrap - Victor brand mouse trap, measuring: 1-3/4 inches X 3-7/8 inches.
  - b. Additional "add on" materials are permitted.
  - c. Sufficient quantity of ping pong balls – a minimum of 3 dozen balls PER launcher are recommended. (Teams from the same school can share ping pong balls.)
3. Modify a mousetrap to launch ping pong balls through the air. Only the tension of one mousetrap can be used as the force to shoot the balls. ALL ORIGINAL PARTS OF A MOUSETRAP MUST BE VISIBLE, WHETHER FUNCTIONAL OR NOT.
4. Targets will consist of three empty cans (#10 Size, EXAMPLE: cans; open end up, with an opening of approximately 6"). Cans are lined with a 1/2" sheet of foam padding to reduce the bounce effect after the balls hit the inside of the target. Cans will be positioned side by side in a triangular configuration and placed at the edge of the target table closest to the launcher table. (See diagram on following page.)
5. One team member will operate the launcher (the "Shooter") while the other member (the "Catcher") retrieves stray balls, returning them to the launcher operator for additional launches. Team will earn points for each ball remaining in targets at the end of the three-minute time frame.

6. Launcher and targets will be on separate tables. Tables are 3' high and the facing edges of the tables will be positioned 12' apart. Table-top area will be at least 2.5' wide. The Launcher must fit on the table with no parts of the Launcher extending beyond the front of the table (towards targets).
7. Weight and/or size of the launcher should be heavy enough to remain stable during launches. Attaching launcher to the table is NOT permitted.
8. The launcher may be hand-held but must rest on the top of the table during launches. Distance between any part of the launcher and targets must be at least 12'. A "triggering" or "tripping" mechanism is optional.
9. Launcher must shoot only one ball at a time and should be re-loadable in order to launch as many balls as possible within a three-minute time frame.
10. Ping Pong balls must enter the targets "on the fly". Balls that enter the targets - after bouncing off the table, wall or backstop - will NOT be counted.
11. Ping Pong balls CANNOT be removed from targets during the three-minute time frame.
12. Each team must bring their own supply of ping pong balls. Ping pong balls cannot be modified to reduce their normal bounce. One thin coat of paint, to identify balls, is permitted.
13. No more than three (3) team members per launcher.

## DIAGRAM

(Refer to Rule #4):



## Score:

At the end of the team's three-minute time frame, judges will count balls remaining in targets (cans). Each ball in the rear two targets will yield 30 points; and 50 points per ball in the center front target (see diagram above).

Team members must remain in the area until scoring for their launcher is complete.