

STEMSHOT

Rocket Construction Rules-Revised 10-2-2017

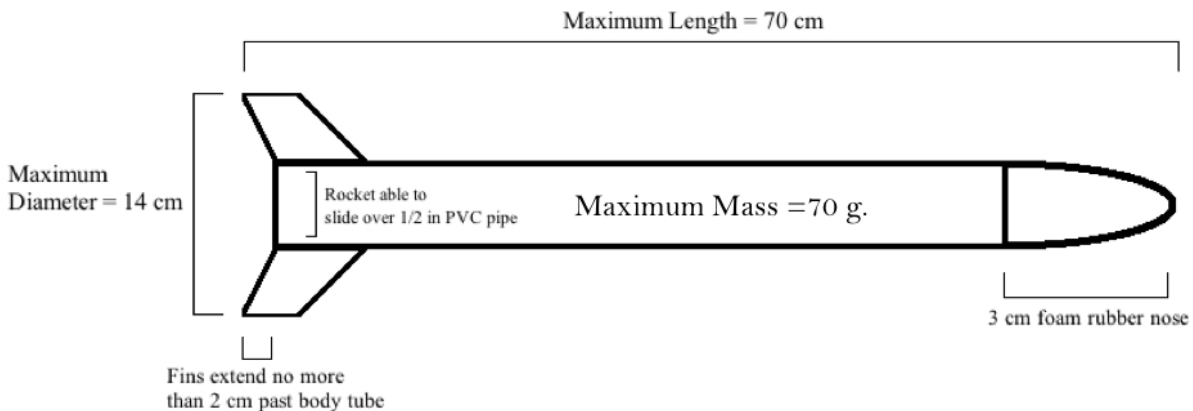
Competition date Saturday Feb. 3, 2018

1. Materials Allowed for Rocket Construction

a. Rockets can be constructed from any combination of the following materials: paper, cardstock, corrugated cardboard (no more than 5 mm thickness), foam rubber, glue and tape. Paint, colored pens, pencils and crayons may be used to label and decorate a rocket as long as these materials are not applied with a thickness sufficient, in the judgment of STEMSHOT officials, to add enough rigidity to be considered part of the rocket structure.

2. Rocket Specifications

- a. The total rocket length must be no more than 70 cm.
- b. No rocket can exceed 70g in mass.
- c. The maximum allowed rocket diameter (including fins) is 14 cm.
- d. The rocket body must be able to slide over a 1/2 in diameter PVC pipe launch tube.
- e. No part of the rocket may extend more than 2 cm. below the end of the body tube.
- f. Each rocket must have a foam rubber nose cone at least 3 cm long. Glue and tape can be used to shape and attach the nose so long as those materials allow the foam rubber nose to compress on impact.



3. Rocket Labeling

a. Each rocket must be clearly, legibly and indelibly labeled with school name, team name, rocket number (from 1 to 2), sponsor, rocket mass (g), rocket length (cm) and rocket width (cm).

4. Number and Use of Rockets

- a. Each team may enter as many as 2 rockets. Teams are allowed to switch rockets between flights.
- b. The rockets will be used in a "rocket bowling" competition that will involve as many as 3 flights per team
- c. Damaged rockets can be physically manipulated to fix dents and impact damage but replacing parts or reattaching parts is not allowed.
- d. Teams may not share or use another teams rocket.

5. Rocket Storage

a. On the competition day each team must have a box capable of storing all the team's rockets. The box must be labeled with school name, team name, name of sponsor(s) and team members. After check-in this box will be used to impound each team's rockets.

6. Competition Check-In

a. On competition day each team must submit their rockets for inspection. All rockets must be submitted at the same time in a storage box (see #5 above). STEMSHOT officials will check each rocket for compliance with all rules from sections 1-5. Approved rockets will be impounded in their storage box till competition time.

STEMSHOT

Competition Rules-Revised 10-2-2017-For Competition Feb.3, 2018

Team Eligibility

STEMSHOT is open to P-12 student teams from any school or organization. No specific team size is required but no student can be a member of more than one team. All teams must have an adult sponsor who is present at the competition. A sponsor can be responsible for more than one team.

Registration

All teams must register before they can compete. Registration is online at:

<https://goo.gl/forms/MnSlJdsiBlZPwREa2>

All teams should be registered by January 29, 2018.

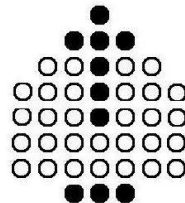
STEMSHOT 2018-Rocket Bowling

The goal of the Rocket Bowling competition is to launch a rocket at an array of 40 "pins" made from 9 oz. Solo cups. Each team will have up to three attempts to knock down as many cups as possible. Each launch will be made at 25-PSI pressure at a team chosen angle of between 0 and 45 degrees. The target pins will be at a distance beginning at 80 ft.

Rules

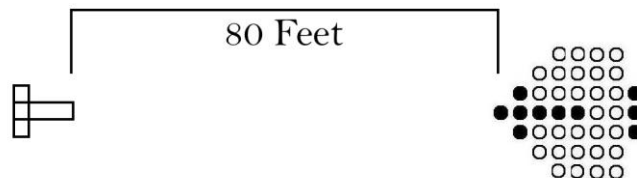
1. Each of the 40 pins is a 9 oz. Solo Cup. The cups will be arranged in the pattern below with each cup spaced 6 in from the next. 80 ft. will separate the pins from the launcher.

Launcher 80 ft. away



The 10 pins in the diagram above that are black are tiebreaker pins (see rule 8 below).

2. The launcher will be placed 80 ft. from the first pin as measured from the base of the launcher barrel.



2. Each team will be given three launches against the pins. At the first launch each team will have 60 seconds to load their rocket and aim the launcher. Team members can change the launcher elevation between 0 and 45 degrees and turn the launcher from side to side. The team cannot change the pin to launcher distance. A STEMShot official will time the 60 seconds and announce when 30 seconds and 10 seconds remain.

3. When the timer calls time the team must stop loading and adjusting the rocket. STEMShot officials will then confirm the launcher angle and let the team shoot the rocket. STEMShot officials will then retrieve the rocket and return it to the team.

4. STEMShot officials will determine and record the number of toppled pins after each launch. Only tipped over pins count towards the score. Each regular pin is worth 1 point and tiebreaker pins are worth 2 pt. each (maximum possible score is 50 pt.). Officials will also keep a separate count of tiebreaker pins to be used later if a tiebreaker is needed. Pins are not moved, adjusted or replaced between shots.
5. While the team is waiting for the return of their rocket they are allowed to adjust the launcher for the second shot. After the rocket is returned the team has a further 30 seconds to reload and prepare to fire a second shot. Once a team has received back their rocket they can choose to substitute the second rocket. Substituting rockets does not change the 30 second reload and preparation time.
6. The second shot will be scored and the rocket returned the same way as the first shot. Once again the team has till 30 seconds after the rocket is returned to load and prepare for flight #3.
7. Flight #3 follows the same rules and procedures as flight #2. The score from all three flights are added to get the team score. The maximum regular score is 50 points.
8. Ties are broken using the number of tiebreaker pins (from 0 to 10) knocked down. Any ties that cannot be resolved using the total count of tie breakers pins will be decided by the number of tiebreaker pins knocked down on the first launch. If this does not resolve the tie each of the involved teams will get a single shot against a fresh 50 pin target with additional shots as needed.
9. STEMSHOT officials are not responsible for damage caused by a rocket being difficult to load.
10. All STEMSHOT officials' decisions are final.

For Additional Information Contact

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