

EVENT 3: Coffee Can Racer

OBJECTIVE: Design and build a coffee can racer that will roll down a ramp in the greatest amount of time.

RULES:

- a. The racer is to be brought to the event fully constructed requiring only minimal set up.
- b. The main body of the racer is to be constructed from a single metal, plastic or cardboard coffee can with a 10.0 cm diameter and height of 13.8 cm. Plastic lid(s) is/are optional.
- c. Other than the optional removal of the top and/or bottom of the coffee can, the intact entire can is to be used.
- d. The racer is to be powered by mechanical means. No electrical devices, chemical reactions, compressed gases or live animals may be used. No fluids (i.e., oil, honey, peanut butter, etc.) may be used. No rat or large animal traps may be used. Mice traps are acceptable. It must be clear to the judge(s) that the racer will not cause harm to the operators, judge(s) or spectators.
- e. Nothing may be added to the exterior of the can or lids that results in changing the friction between the exterior of the can or lid(s) and the surface of the ramp.
- f. Attachments to the sides of the coffee can may be made as long as they do not violate rule 'e' and only minimally change the size of the racer.
- g. No part of the racer or its operating system may be attached to the floor, wall, ceiling, or operator.
- h. The entire racer, including its operating system, must roll on the ramp as a single unit.
- i. The racer may not slide down the ramp.
- j. The ramp will be a wooden plank of pine, oak or similar wood either solid, laminated or plywood 0.5 meters wide and 1.5 meters long inclined at an angle of 10 degrees.

COMPETITION AND SCORING:

- a. The team will have 5 minutes to prepare their racer
- b. The team will place their racer on the ramp behind the starting line and release it from rest. The team member releasing the racer may not impart energy to the racer. The racer must start moving under its own influence or that of gravity.
- c. If the racer stops or falls off the side of the ramp, one restart will be allowed provided that the racer has not rolled more than 30cm from the starting line.
- d. The racer needs to get to the bottom of the ramp within 10 minutes.
- e. The racer that rolls down the entire ramp in the greatest time, (up to 10 minutes), is the winner.
- f. Time will be measured by the use of a stopwatch(s).

- g. If the racer does not get to the bottom of the ramp within 10 minutes, it will be disqualified.
- h. In the event of a tie, the device with the smallest mass will be the winner.
- i. If the tie breaking procedure is used, the winning team will have their time down the incline increased by 10%. Their adjusted time will then become the new winning time. For example, a team receiving a winning time of 10 seconds and also having the lowest mass will have their winging time increased to 11 seconds.

$$\text{SCORE} = \frac{(\text{your time down the incline})}{(\text{winning time down incline})} \times 100$$

DISQUALIFICATION SCORE 20 points less than the lowest score for a qualifying racer in the spirit of the rules that travels down the ramp at least 30 cm.

Updates to the rules and Forum discussion / questions with answers are available by going to the NJAAPT website: njaapt.wildapricot.org (top menu, “Events” and “Forum”). It is the team’s responsibility to periodically check in or inquire about changes and clarifications to the rules.