

Main Event: 3D Derby

Event Description:

In this event, teams of 2-4 students will design a car and then print it on a 3D printer. Teams will then add axels/wheels and then test them to prepare to race at the tournament. Teams will also submit a Design Document prior to the tournament outlining some of the key aspects of the process. Design Documents must be converted to a PDF file before uploading to the [TOT App Submission Portal](#).

Common Core Standards and 4 C's:

Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently. Creativity, Collaboration, Communication, and Critical Thinking.

Designing and Creating your Project:

- The process of creating your project should take on the following steps:
- Research car designs and their effect on speed.
- Use a 3D program such as [SketchupMake](#) to create an original model of your car.
- Print your car on a 3D printer.
- Attach axels and wheels to your car and begin testing on a ramp.
- Bring your car to the tournament and race to see who's the fastest.

Technical Requirements and Specifications:

- The car must be completely drafted by the students. Cars will be designed and printed prior to the competition, using 3D modeling software and the MakerBot 3D Printers.
- The entire car (body, wheels, axels...) must weigh 100 grams or less.
- Car dimensions must be no larger than 5" long x 2.5" wide x 2" tall. (127mmx63.5mmx51mm)
- There must be more than 1/4" (6.35mm) clearance under the car between the wheels.
- There must be more than 1 5/8" (41.275mm) between the wheels. [See Track Specifications here.](#)
- The entire car must be printed, the only exception is the nails/screws and weights.
- The car may be printed in pieces and then assembled with glue.
- Teams must also submit a Design Document by 11:59 pm March 17, 2019 to the [TOT App Submission Portal](#).

Reward Points:

Teams will race their cars at the tournament. Each car will race 4 times (once in each lane). The four times will be added together for a total time and teams will be ranked. If a car does not finish a race it will receive a time of 9.999s for that race. Points will be awarded based on the design of your car, the speed of your car, and the design document (see next page).

3D Derby Scoring Breakdown		
	Max Points	Formula
Points from Rank	25	25-3 (Your Rank -1)
Points from time	25	Fastest Time of Tournament / Team's recorded time x 25 = Team's Total Time
Points from Car Design	20	See Car Design Rubric
Points from Design Document	30	See Design Document on next page
TOTAL POINTS	100	