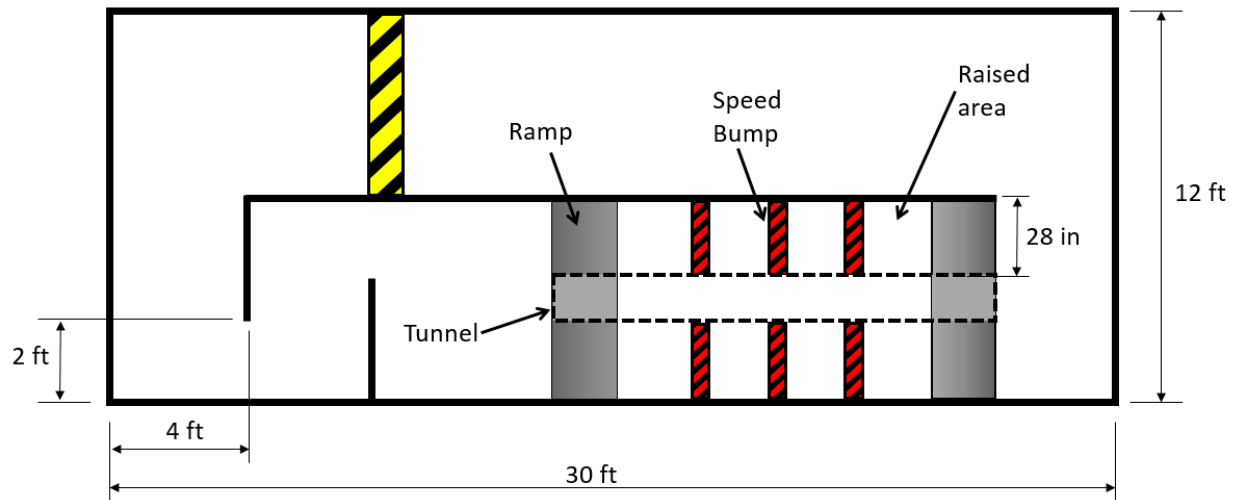


# STEM-Discovery

## Final Competition Rules

The 2016 STEM-Discovery Final Competition will consist of three events: Out Run Racing, Robot “Air” Hockey, and Team Area Control. Each event brings a slightly different challenge to the forefront: speed, strategy, and head-to-head competition.

### Out Run Racing

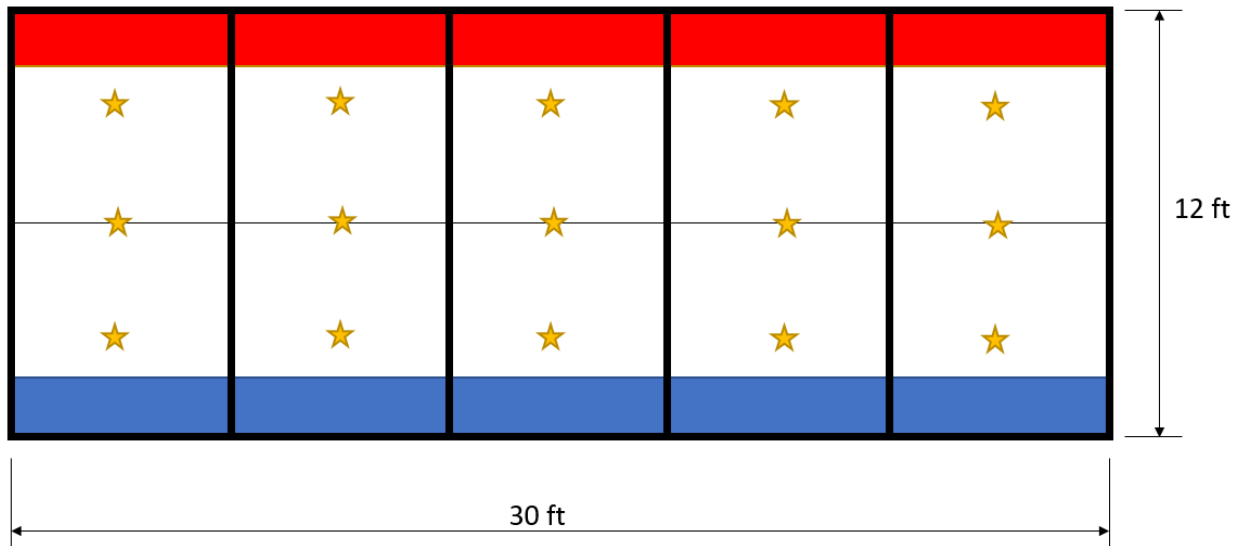


For the racing event, the teams will be divided into two groups of five cars. Each team will compete in two races with each race consisting of two laps. In the event that a team has not completed two laps in five minutes, points will be awarded based on which teams are closest to finishing the two laps. In the diagram above, the large striped area is the Star/Finish line with the right most (from this diagram) edge defining the start and finish “line”. When a car reached the raised area, the driver has a choice between going over the top of the platform, or navigating the tunnel. Once a car enters the tunnel it will not be visible by the driver, so autonomous sensing is recommended.

Points will be awarded per race heat as:

- 1<sup>st</sup> place = 50
- 2<sup>nd</sup> place = 45
- 3<sup>rd</sup> place = 40
- 4<sup>th</sup> place = 35
- 5<sup>th</sup> place = 30

## Robot "Air" Hockey

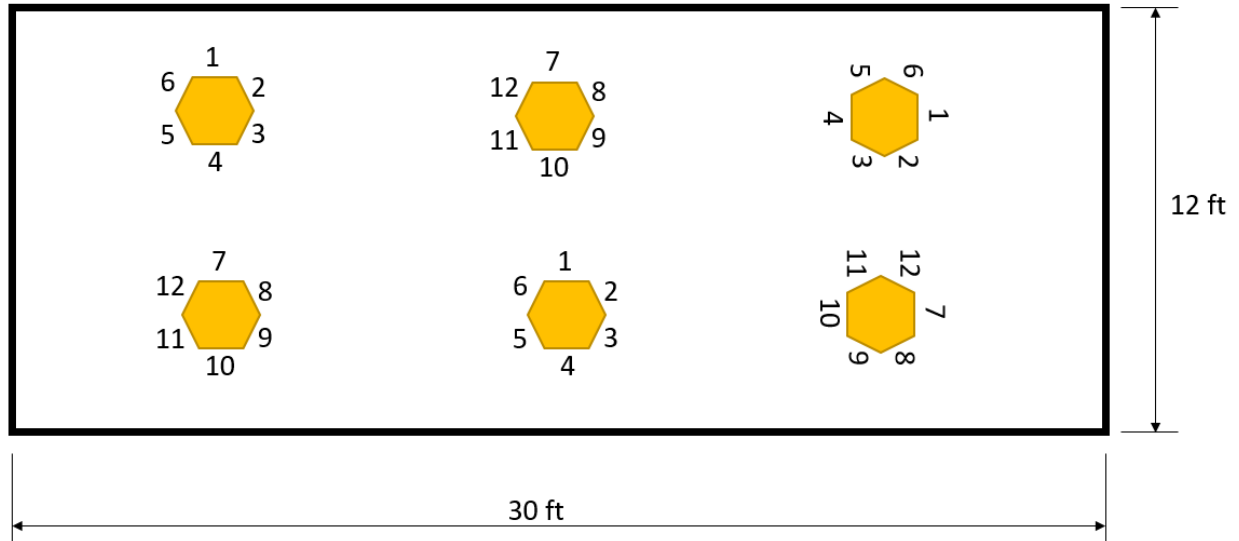


During the Air hockey event, teams will compete in a Round-Robin format against each other team. This fast-paced event will have teams scrambling to position the three pucks in their scoring area (across the field from their own end zone). Each round lasts only 2 minutes, and at the end of the round the position of the pucks determines the score as follows:

- 2 point per puck on the opponents side of the field, but not completely in the end zone
- 4 points per puck in the opponents end zone

Each team will compete against each other team for a total of nine matches. There will be a 1 minute setup period between rounds.

## Team Area Control



The final event will have all teams on the same field at the same time vying for control over six PODs. For this event, each school will select a partner team. Each POD has six lights mounted on top that are controlled by switches on the sides of the POD. Each team is assigned a number for the round, and at the end of the 3 minute round whatever lights are on determine which team has control of the POD. Once activated, the POD cannot be taken by a new team for 20 seconds. After 20 seconds, the current light will remain lit until a new switch is pressed at which point the POD will transfer control to the newly pressed switch/team number. Each round will last 3 minutes with a 2 minute setup period between rounds.

Points will be awarded based on the teams with the most POD under control at the end of each round. Each POD will award 5 points to each member team of the controlling Team Pair (remember this is a team based event).