

"Cap It!"

2019-2020 Niles Township Middle School Robotics Competition

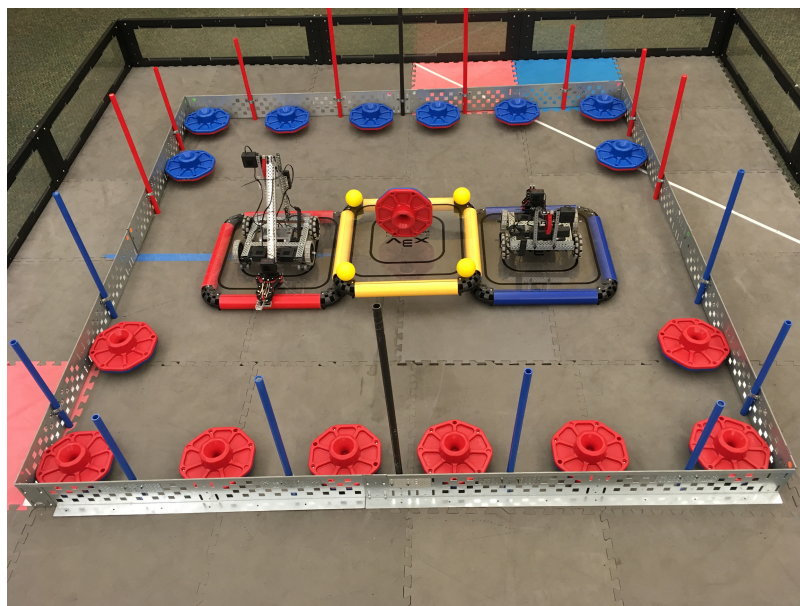


Description & Overview

Cap It! is a robotics competition designed for middle school students. This game is a modified version of the VEX *Turning Point* Competition. It has been designed for middle school students and provides a challenge for students of all experience levels, and should result in exciting match play regardless of competitor skill.

The game is played on an 8ft x 8ft field which is divided in half by 3 raised platforms. Nine cap posts are attached to the perimeter of the field on each side as shown in the picture below. One robot is placed on the blue platform and one robot is placed on the red platform at the start of each match. The object of the game is to turn the caps so the assigned color is facing up- either on the ground or on the perimeter posts. At the end of the match, robots are challenged to vie for a parking space on the raised yellow platform. Points will be tallied as described on the score sheet (see scoring section).

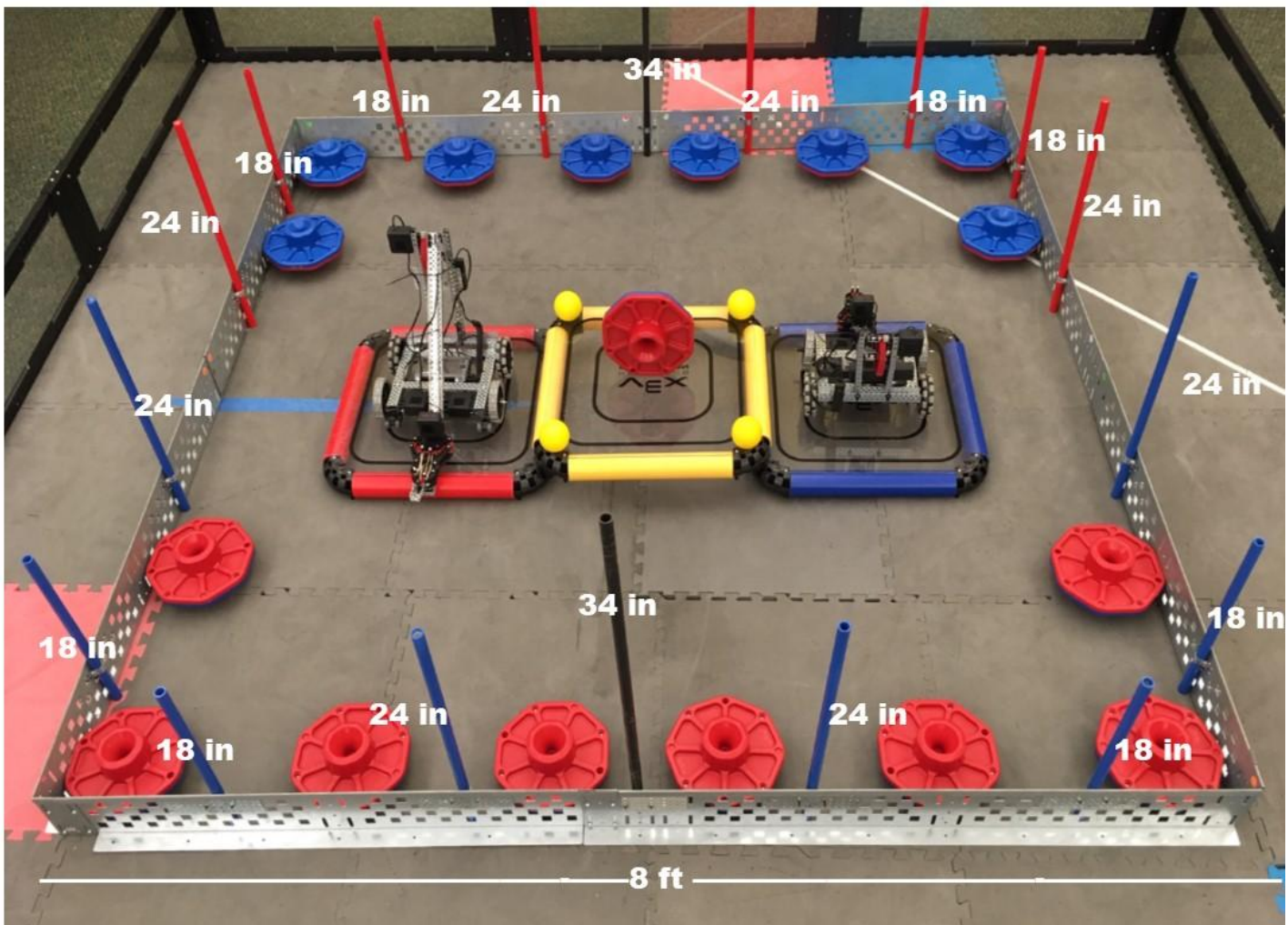
FIELD WILL BE SET UP AS SHOWN



Field Setup



1. Matches are played on an 8 ft x 8 ft field which is divided in half by three raised platforms.
2. One robot is placed on the red platform and one robot is placed on the blue platform at the start of each match.
 - a. At the start of the match the robot must fit in an 18" x 18" x 18" box. No part of the robot can extend beyond 18 inches in any direction. VEX sizing tool will be used.
 - b. Robots must drive off their platform at the start of the match.
3. There are eight (8) caps placed on each side of the field, as shown below.
 - a. There is one cap placed vertically on the center platform as shown below.
4. There are nine (9) posts attached to the perimeter on each side as shown below. Four posts measure 18 inches, 4 posts measure 24 inches, and one center post (black) measures 34 inches.
5. The field surface (that the robots drive on) is not specified. Any available surface is allowable.
 - a. *Recommended Surfaces: Linoleum, Concrete, Plywood, Foam Tiles, Low-pile Carpet*



Match Play



1. Two teams compete in one vs. one match (each team will field one robot).
2. Matches are two minutes (2:00) long.
3. Robots are “Operator Controlled” the entire match; there is **no** Autonomous Robot Operation.
4. Any caps or balls that exit the playing field will be returned to play as fast as possible by field personnel; these will be placed in about the same location they exited the field. Caps will be replaced at their original starting color facing up. Referee will determine placement.
5. Robots are not permitted to drive or score caps on the opponent’s side of the field.
 - a. Getting knocked or falling over to the opponent’s side is OK while attempting to gain platform position. Robot interaction is allowed while trying to park at the end of the match.
 - b. Robots may not score or de-score caps on the opponent’s side of the field.
6. Team members are not allowed to interact or interfere with the robots, caps, or balls in any way during the match.
7. Robots are not allowed to intentionally attach to the field’s perimeter.
8. Strategies aimed at intentionally damaging the field, balls, caps, or opposing robots are illegal.
9. This competition is designed to be an offensively played game. The goal for each team is to score as many points as possible on their side of the field.

Match Scoring



- A. Scoring is done at the end of the match, when all objects have come to rest. Teams should not remove their robot from the playing field until instructed by the referee.
- B. Teams will be awarded points for the caps that are scored with their assigned color facing up at the end of the match.
 - a. One (1) point will be awarded for caps on the ground. A red cap facing up is one point for the red team and a blue cap facing up is one point for the blue team.
 - b. If a cap is placed on a post with red facing up, points will be awarded to the red team. Likewise, if a cap is placed on a post with blue facing up, points will be awarded to the blue team. **Robots may not score or de-score caps on the opponent's side of the field.**
 - i. Two (2) points will be awarded for caps on the 18 inch posts.
 - ii. Three (3) points will be awarded for caps placed on the 24 inch posts.
 - iii. Four (4) points will be awarded for a cap placed on the 34 inch post.
- C. A yellow ball can be placed on any cap for one (1) additional point for that color.
- D. A robot parked on its assigned color platform earns three (3) points. **Note:** The RED team's robot will not earn points if parked on the BLUE team's platform and vice-versa. A robot parked on the center platform will earn six (6) points. **A robot attempting to utilize the center platform should expect to encounter vigorous interactions from the opponent robot who is attempting to do the same. Tipping and entanglement during this part of the match is likely to occur and should be anticipated. Robots should never be intentionally damaged. Referees will determine if any robot interactions are excessive and reserve the right to intervene. Referee decisions may not be challenged**

Scoring

Cap on floor	1 point each
Cap on 18 in. post	2 points each
Cap on 24 in. post	3 points each
Cap on 34 in. post	4 points each
Yellow ball on cap	1 point each
Parking on low platform	3 points
Parking on center platform	6 points

Match Score Card

Team _____				Team _____			
caps on floor		X 1 =		caps on floor		X 1 =	
caps on 18 in. post		X 2 =		caps on 18 in. post		X 2 =	
caps on 24 in. post		X 3 =		caps on 24 in. post		X 3 =	
caps on 34 in. post		X 4 =		caps on 34 in. post		X 4 =	
Yellow ball on cap		X 1 =		Yellow ball on cap		X 1 =	
Park low platform		X 3 =		Park low platform		X 3 =	
Park ctr platform		X 6 =		Park ctr platform		X 6 =	
TOTAL POINTS				TOTAL POINTS			

Robot Construction

- Robot construction is limited to the Robot Components from VEX V5 or VEX EDR kits.
- Official VEX products are ONLY available from VEX & Official VEX Resellers. To determine whether a product is “official” or not, consult www.vexrobotics.com Any parts which are identical to legal VEX parts are permissible (ex: screws, rubber bands).
- Robots may only be controlled by (1) VEX Transmitter, OR (1) VEXnet Joystick.
- Robots may use no more than (5) VEX V5 Motors. Robots using VEX EDR may use up to 12 motors.
- Robots may use unlimited amounts of the following VEX components: screws, nuts, bearings, bearing rivets, collars, washers, spacers, and zip ties.
- Parts may not be attached in any way not provided as part of the VEX Robotics Design System
 - Example – It is illegal to glue, weld, solder, or stick parts together with chewing gum.
- VEX Electronics may not be modified in any way.
- No robot may be more than eighteen inches (18”) in any direction at the start of any match.
 - The robot may expand above this limit after the match has begun.
- We encourage teams to show individuality by decorating their robots. As such, teams may add non- functional decorations provided that these do not affect the robot performance in any significant way or affect the outcome of the match.

Tournament Play



1. Teams will be ranked using a series of qualifying matches.
 - a. These matches will be randomly selected. In the event there are an odd number of teams, a team will be randomly selected to compete in an additional match. The lowest match score for this team will be dropped when calculating total points scored.
2. Teams are ranked based on their total points scored.
 - a. If more than one team has the same number of points, the teams are ranked based on their highest match score..
 - b. If these teams also have the same highest score, they are then ranked by their next highest score, then their next, then their next, until the tie is broken.
 - c. If these scores are also the same, the ranking will be determined with a playoff match between the two teams. The team that wins is then ranked higher.
3. The top ranked teams will play in an elimination tournament to determine the winner.
 - a. Two teams play in each series of the playoffs; the team that wins advances to the next round of the playoffs.
 - b. The tournament structure will vary depending on the number of teams participating. Tournament hosts may modify this structure as long as the structure is announced prior to the start of the tournament.
 - c. Here is a sample tournament bracket:

