

Storyline

To make the competition interesting, a storyline is woven within the tasks. As you read each task, you should pay attention to what skills the robot will need to complete the task successfully. Do not get caught up in the storyline where you miss steps or requirements for the task.

Due to concerns for player safety, it has been decided that robots will participate in the large soccer tournament taking place in Houston in 2026. You have been hired to help program robots with a variety of soccer skills.

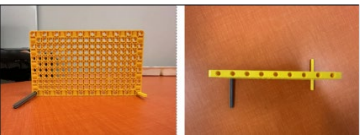
Your robot will compete in separate tasks around the soccer field. There are three tasks for elementary teams to complete and four tasks for middle school teams (with the 4th task being a text-based coding task). Skills must be attempted in numeric order (task 1, task 2, etc.) and a reasonable effort made to complete each task before proceeding to the next one. The points for each event will be assessed as the competition is carried out. Design, build, and program a robot to master each series of tasks.

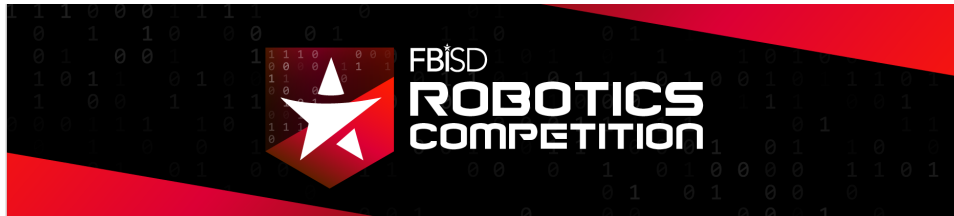
Tasks

A team's robot will have five minutes to complete the challenge. The coding tasks will be set up in the following order: Task #1, Task #2, Task #3, and, for Middle School, Task #4. Not all jobs must be fully completed, but each must be attempted in order (1,2,3,4) before moving onto the next task. Remember that skills within each task completed by the robot accumulate points, and the points for each task will be assessed as the task is completed. Tasks allow the opportunity to earn partial points, and students should be encouraged to allow the robot to run its program rather than resetting multiple times, as they may still earn points. For Middle School, the additional text-based task #4 comes after tasks 1-3.

Obstacles

During the competition, the robot must avoid various obstacles.

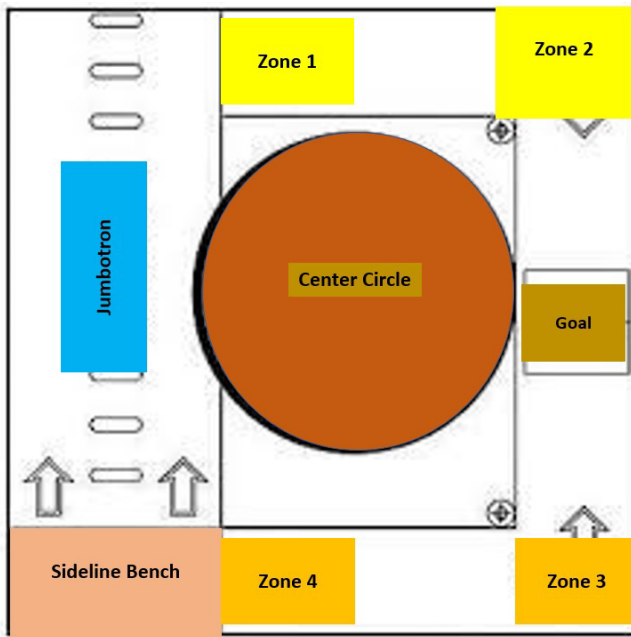
The first type of obstacle is created by placing a ping pong ball on top of the PVC coupling. This obstacle is considered touched if the ping pong ball is knocked off the PVC coupling. Neither the PVC coupling nor the ping pong balls should be altered, glued, or modified in any way to prevent them from falling off.	
The next type of obstacle is a barrier. It is made using the large yellow Lego plates and axel rods to support it standing up. Under normal circumstances, this barrier should not be touched, but the robot may need to use various sensors to interact with it during a job. Unless the job states otherwise, the barrier should not be touched. A touch would be considered if there is visible movement of the barrier.	
A third type of obstacle uses the 11 by 15 technic frame and two axles to hold it upright. An explanation of how this will be used will be explained in the subsequent tasks.	



Starting Point

The Starting Point is where your robot will start and finish all tasks unless directions call for something different. The various areas of the mat are shown in the map layout graphic. To begin each task, robots must have both drive wheels touching within the starting point to be considered “in”. At times, if the robot must return to the starting point, it is considered “in” if one wheel is in the area. This is true for other areas of the mat as well. One wheel must remain on the mat at all times. If both wheels leave the mat, the team will receive a point deduction.

Note: In some tasks, the barriers and other objects may come into play as well as color strips of paper. The judges will let you know the placement of these items if necessary.



Mat Layout

Imagine the mat as a pitch (field) of Houston Stadium hosting the 2026 FBISD RoboCup. There are specific areas of the mat that represent various parts of the pitch such as stadium entrance, sidelines, goal areas and penalty areas.

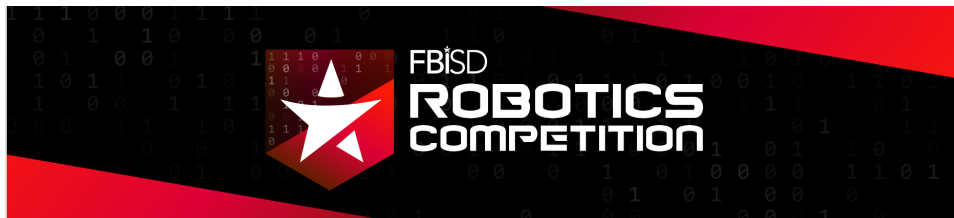
Your robot is a small, soccer-ready machine that can move in different directions, detect colors and lines, sense how close objects are, and even react when it bumps into things.

There are more detailed description for the items below in the task descriptions, but you will need to use the key to know where to place them on the mat for each task.

Key			
	Referee	Barrier	
	Game Equipment	Goal	
	Coaches	Red Card	
	First Aid Kit	Yellow Card	

Key and Item Description

Equipment or map locations	On mapped named	Represented on map by
Starting Point	Sideline Bench	See map above
Wooden Blocks	Equipment	
PVC and Ping-Pong Obstacle	Referees	
Barrier (yellow plate)	Barrier Obstacle	
11 by 15 technic frame	Goal	
Coaches	Kate and Kyle	
Red card and Yellow Card	Red or Yellow Card	Red or Yellow strips of paper



Task 1 – Entering the Stadium

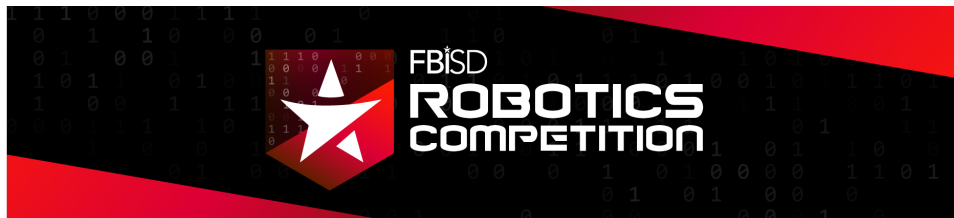
Task 1: Entering the Stadium

1. Your robot must start with two wheels in the Sideline Bench.
2. Greet the referee that is near zone 3 by traveling to that zone and saying "Hello" on the robot Hub.
3. Return to the Sideline Bench, with at least 1 wheel inside the area.
4. Take a lap around the stadium so that fans can cheer you on, being sure to stay on the mat.
5. You must avoid knocking over any referees during this whole task.
6. During the lap, when you pass through the Jumbotron area, your robot needs to stop and wave to the crowd by moving its arms up and down.
7. As the robot continues the lap, they need to pick up their equipment in Zones 1, 2 and 3 (these may be picked up individually, all at once, or in any order).
8. Return all equipment to the Sideline Bench area with at least 1 wheel inside the area.

Key			
	Referee		Barrier
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Points

Robot starts with both wheels in the sideline bench. Travels to Zone 3 to greet the referee by saying "Hello" on the Robot Hub.	___/15
Returns to the Sideline Bench with at least one wheel in the Sideline Area.	___/15
Begin lap around the stadium, stopping in Jumbotron Area.	___/10
Wave to the crowd by moving arm up and down.	___/10
Robot picks up equipment	___/15 (5 per item touched)
Deliver equipment to Sideline Bench area.	___/30 (10 per item delivered)
Finish with one wheel in the Sideline Bench area.	___/10
Avoid knocking over referees throughout the task.	___/30 (10 points per referee)
Penalty points: -5 points for each reset, -5 for both wheels off mat	
Maximum Points Awarded for this task: 135 points	___/135



Task 2 – Delivering the Ball

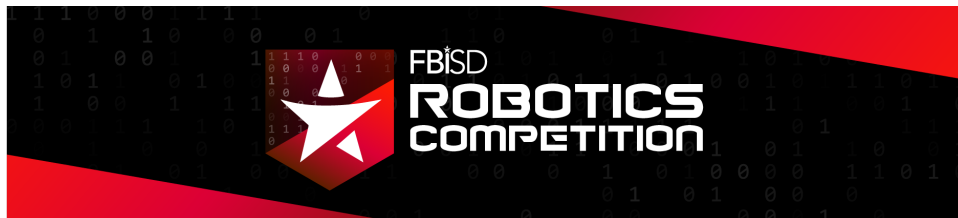
Task 2: Delivering the Ball

1. Your robot must start with two wheels in the Sideline Bench.
2. You must avoid knocking over any referees during this whole task.
3. The robot must dribble the ball (one of the ping pong balls) to the coach, without the robot touching the coach.
4. Successful delivery of the ball is achieved by the ball being within the dashed marked area on the map and remaining in the area for 5 seconds.
5. Next the robot needs to move the First Aid Kit from Zone 2 to Zone 4.
6. Now move to the Center Circle area, scan the red or yellow card to determine the action the robot must take to push the barrier completely into the Goal area without knocking over.
 - o Red=reverse for a short distance, then push barrier into Goal area
 - o Yellow=move arms, then push barrier into Goal area
7. Return to the Sideline Bench with at least 1 wheel inside the area.

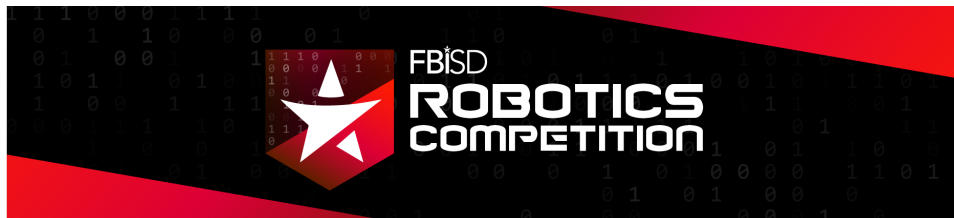
Key			
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Points

Starting with two wheels in the sideline bench, begin to dribble the ball to the coach.	___/10
Not touching the coach with the robot.	___/10
Deliver the ball to the coach within the dashed area (see map for reference) and the ball remains in the area for 5 seconds.	___/15
Begin to travel to Zone 2	___/10
Touch the First Aid Kit in Zone	___/10
Travel to Zone 4, if with the First Aid Kit, + 10	___/20 (10 for travel, 10 for first aide kit)
Travel to the Center Circle	___/5
Demonstrate scanning the red/yellow paper: • Red: Reverse for short distance • Yellow: Move arms	___/10
Push the barrier into the Goal Area	___/20 (20 for fully in, 10 for partially in, 5 points for touching barrier, but not



	pushing into goal area, 0 for knocking goal over regardless of placement)
Finish with one wheel in the Sideline Bench area.	____/10
Avoid knocking over referees throughout the task.	____/30 (15 points per referee)
Penalty points: -5 points for each reset, -5 for both wheels off mat	
Maximum Points Awarded for this task: 150 points	____/150



Task 3 – Penalty Shots

Procedure for this task:

As soon as you finish Task 2 and are ready to begin Task 3, tell the judge “Stop the Timer.”

Your time will stop, and the judge will tell you how much time you have left of the 5 minutes. Whatever time you have left is how much time you will have to score points in Task 3. (*Ex: Timer stops at 3 minutes, 2 minutes remaining for Task 3.*)

As soon as the judge tells you the remaining time, you will have 1 minute to plan which shots you would like to attempt based off of your remaining time and also set up your goal area.

The 1-minute planning time does not impact your remaining time, so use it wisely.

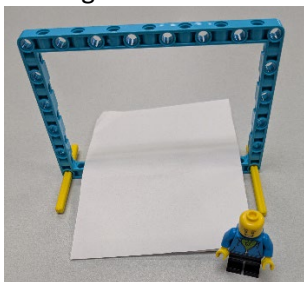
When ready to begin the task, prepare your robot and when it starts moving or shooting the timer will begin again.

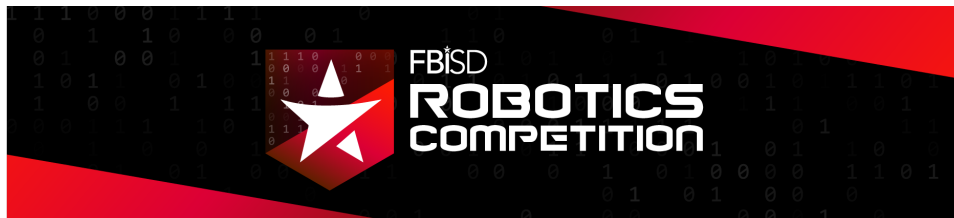
Information about shooting and points:

- Your robot will be shooting goals from various locations on the field using whatever remaining time you have left. See map below for shooting locations.
- Each position on the field will be worth a set number of points. You may score points from each location twice. You have unlimited attempts from each location, and this does not count as a reset or restart.
- Once points are scored, you do not lose them, even if you are attempting another shot when time runs out.
- You may physically move the robot to each location as specified on the map. This will not count as a reset or restart. Penalty points for going off the mat will still be enforced.
- You may build a base for the ping pong ball to sit on for shooting using remaining pieces in your kit. The base does not have to be used for every location.
- Be sure to read the description of the tasks so you know when the robot is just shooting and when it must move and shoot.
- Kicking vs Shooting:
 - Kicking: Robot completes an action that causes the ball to move from the kicking location to the goal. This could be an arm-movement or the robot contacting the ball, causing it to roll towards the goal. After contacting, the robot should no longer move with the ball.
 - Shooting: Robot is allowed to move the ball to a preferred location to score a goal. Robot may stay in contact with the ball up until the perimeter of the goal area in which it would shoot the ball.

The Goal

Using the 11 by 15 technic frame and two axles, you will create a goal for the ball to go through, you may orient the goal either portrait or landscape, but it must be placed along the back line of the goal area, see map below for line showing location for goal. It must be parallel to the back line and not angled for any shots. You may also place an index card along the bottom to create a ramp for the ball to roll over. This may be taped down to the mat before starting the task. This must be done during the 1-minute planning period.

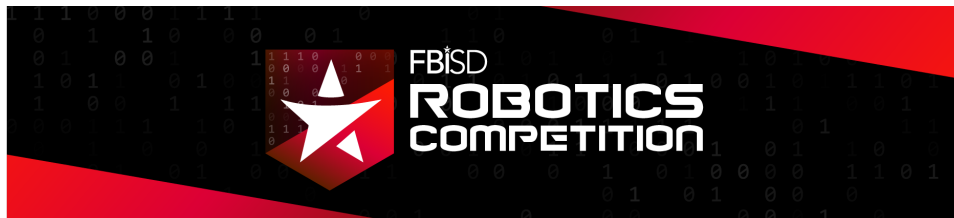




Task 3: Scoring a Goal/Penalty Shots

Location	Shooting Task	Points
A	Kick from A	10
B	Kick from B	20
C	Robot and ball must start at C, but may move closer to shoot. No part of robot may enter goal area to shoot.	30
D	Robot starts in Sideline Bench area, ball is at Star location. Robot must travel and kick ball <u>from</u> star location. You may also use either Kyle or Kate, and place anywhere on the mat, as a player that can help deflect the kick into the goal.	50

Points	
Location A	___/20 (10 points per goal made)
Location B	___/40 (20 points per goal made)
Location C	___/60 (30 points per goal made)
Location D	___/100 (50 points per goal made)
Penalty points: -5 for both wheels off mat	
Maximum Points Awarded for this task: 220 points	___/220



Task 4 – Overtime (Middle School Bonus Task with Text-Based Coding)

Procedure for this task:

This task may only be attempted using Text-Based coding. There is no time limit, as all-time would have been used during Task 3, but you also only get 1 attempt at this task and all points will be totaled, so you will want to let the robot run the program and earn as many points as possible.

Task 4: Overtime

Points for this task may only be earned by coding your robot using Text-based code.

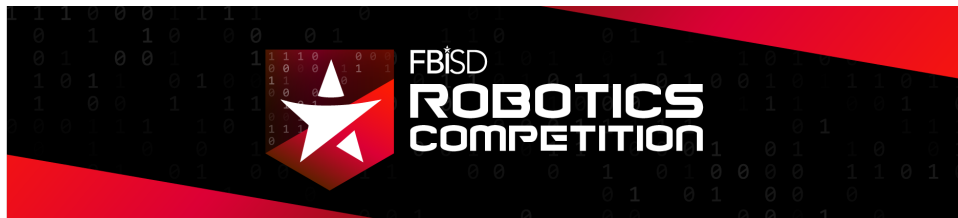
You robot will only be allowed to run this task 1 time and earn any points from that 1 run.

- Robot must start with both wheels in the Sideline Area.
- Robot must drive in order from the Sideline Bench through Zone 4, Zone 3, Zone 2, and finally Zone 1.
- Next, drive and stop in the Jumbotron area.
- The robot must wave to the crowd by having the arms move up or down or left to right.
- Display "Good Game" on the hub.
- Return to the Sideline Bench and complete a 360-degree turn.
- Finish with at least 1 wheel inside the Sideline Bench Area.
- Avoid all referees on the playing area.

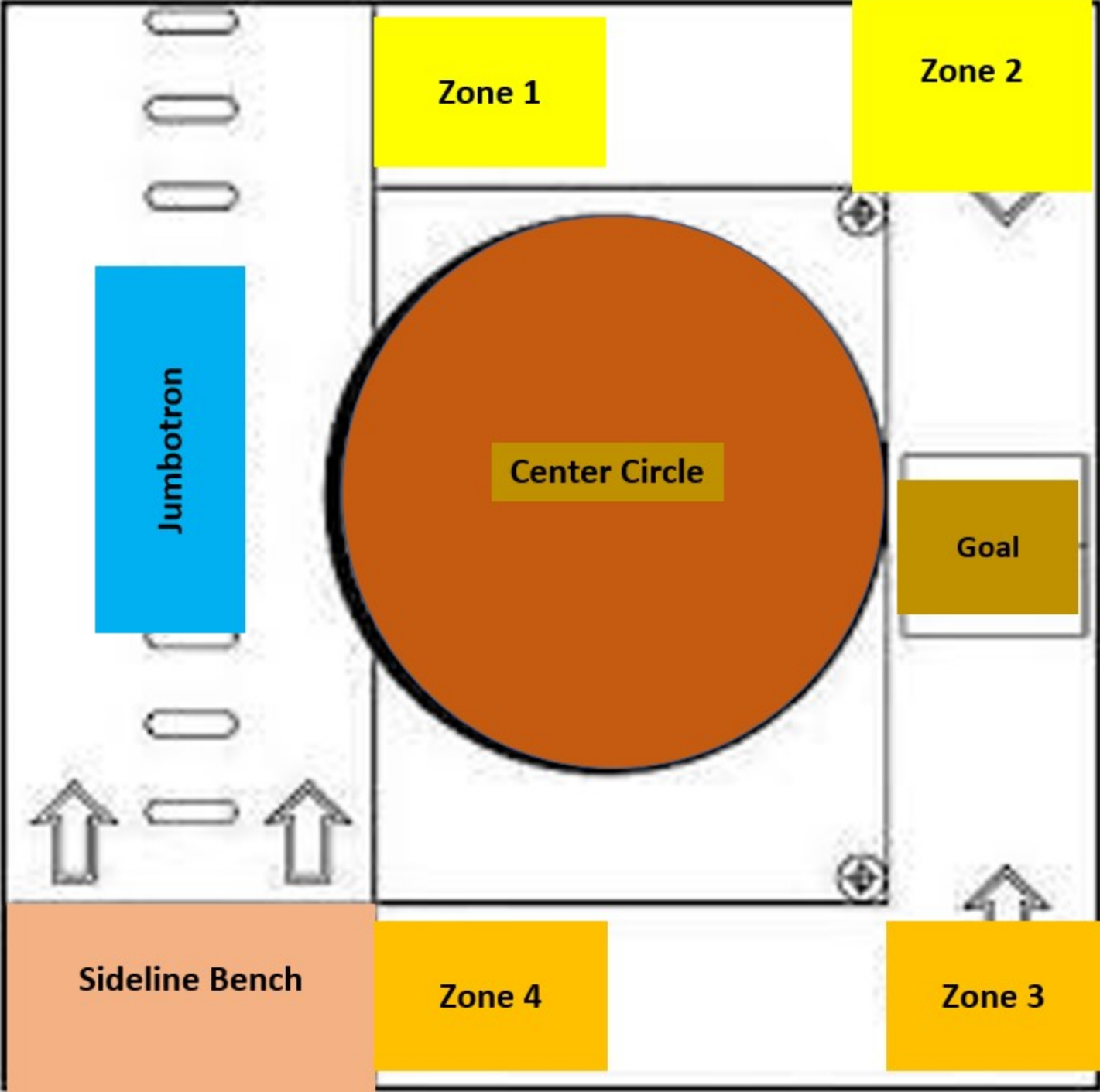
Key			
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	Game Equipment		
	Coaches		
	First Aid Kit		

Points

Start with both wheels in the Sideline Bench and travel to Zone 4 and 3.	___/10
From Zone 3, travel to Zone 2	___/15
Travel from Zone 2 to Zone 1.	___/15
Travel from Zone 1 to Jumbotron Area.	___/15
Stop in Jumbotron Area and “wave” to crowd by moving robot’s arm up and down or left to right.	___/20
In the Jumbotron Area, display “Good Game” on the Spike Hub.	___/10
Return to Sideline Bench area	___/5
Complete a 360-degree turn.	___/20
Finish with one wheel in the Sideline Bench area.	___/10



Avoid knocking over referees throughout the task.	____/30 (10 points per referee)
Penalty points: -5 points for each reset, -5 for both wheels off mat	
Maximum Points Awarded for this task: 150 points	____/150



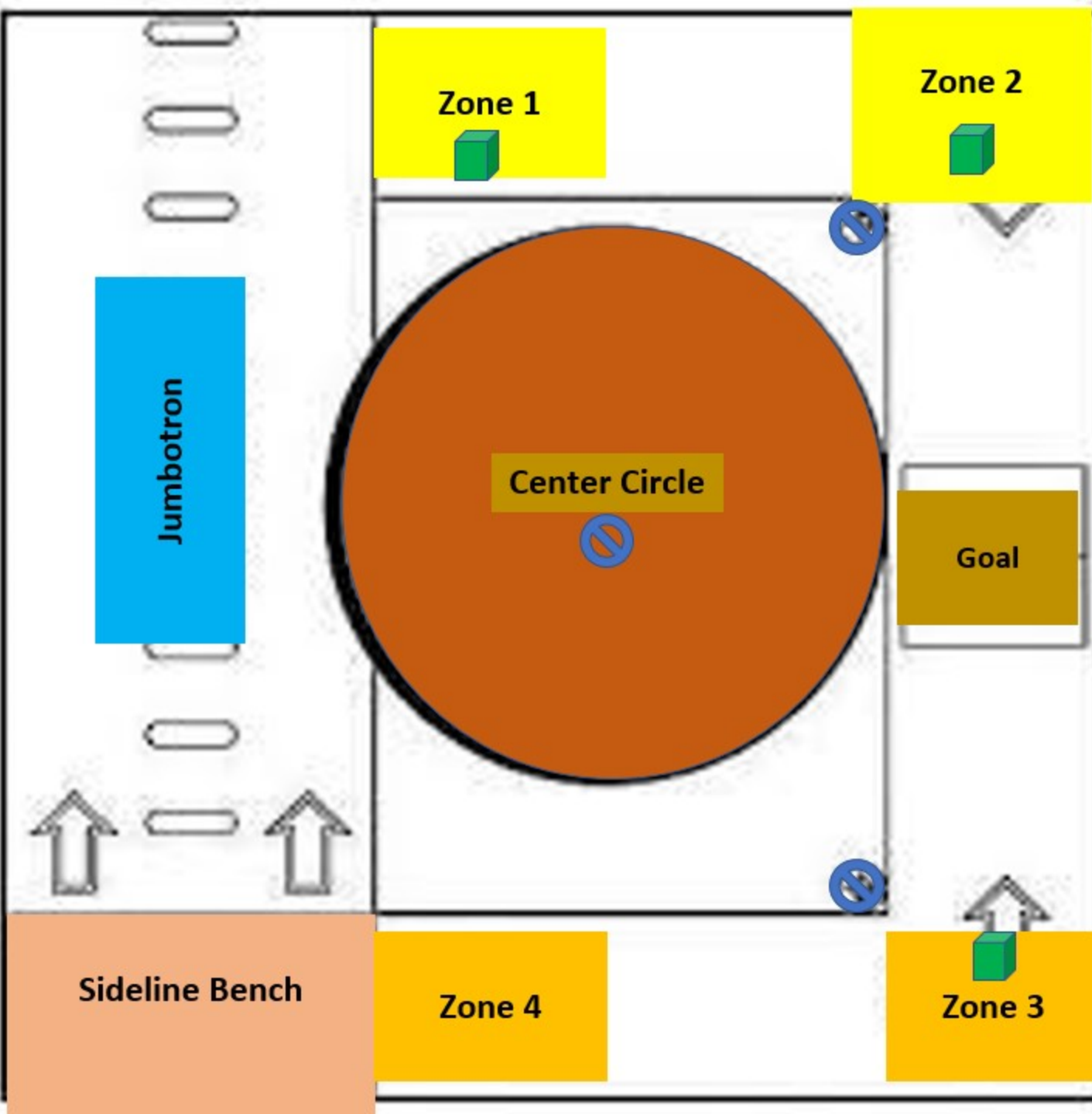
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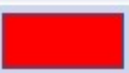
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4. Take a lap around the stadium so that fans can cheer you on, being sure to stay on the mat.
5. You must avoid knocking over any referees during this whole task.
6. During the lap, when you pass through the Jumbotron area, your robot needs to stop and wave to the crowd by moving its arms up and down.
7. As the robot continues the lap, they need to pick up their equipment in Zones 1, 2 and 3 (these may be picked up individually, all at once, or in any order).
8. Return all equipment to the Sideline Bench area with at least 1 wheel inside the area.

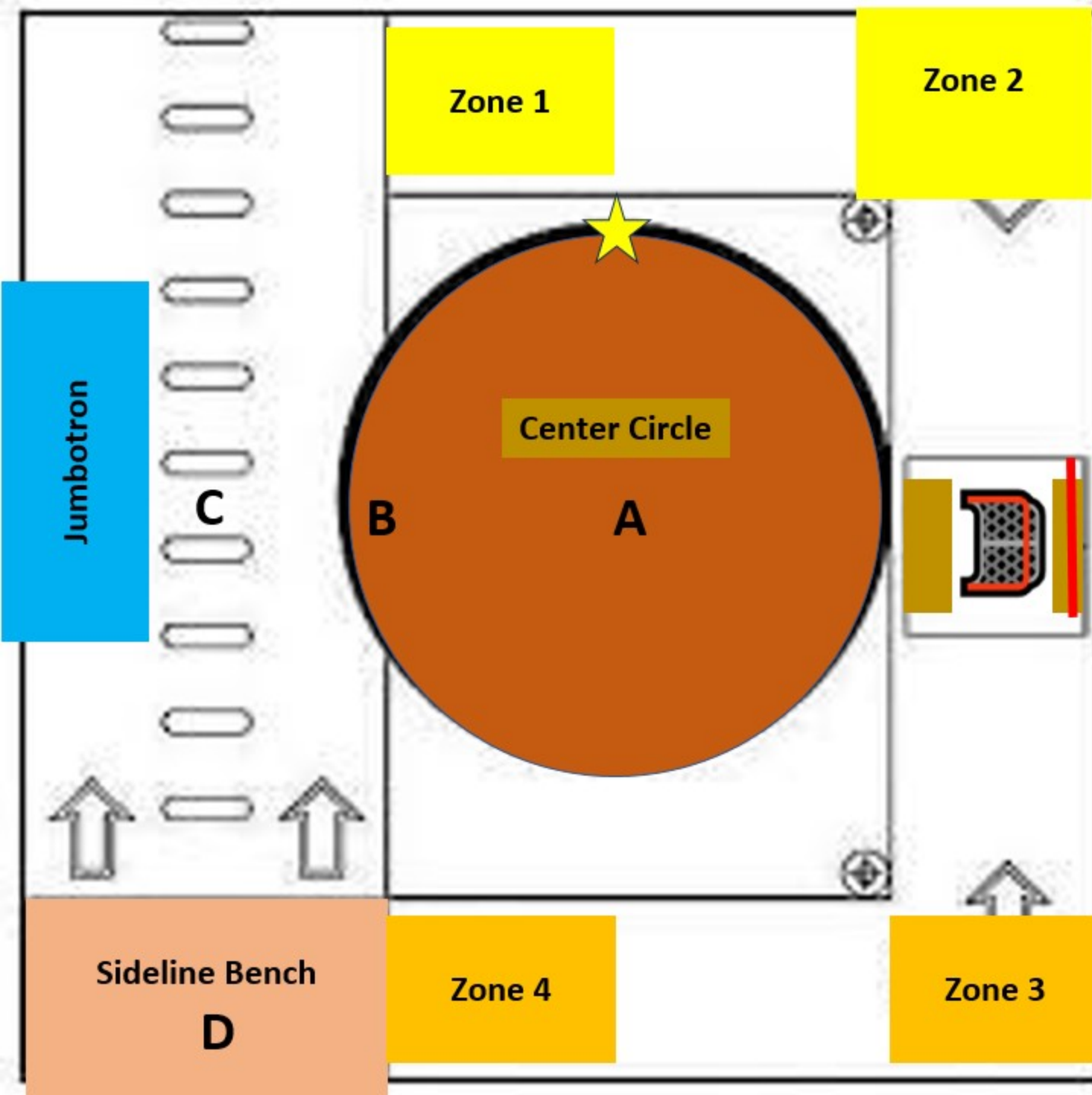
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Task 2: Delivering the Ball

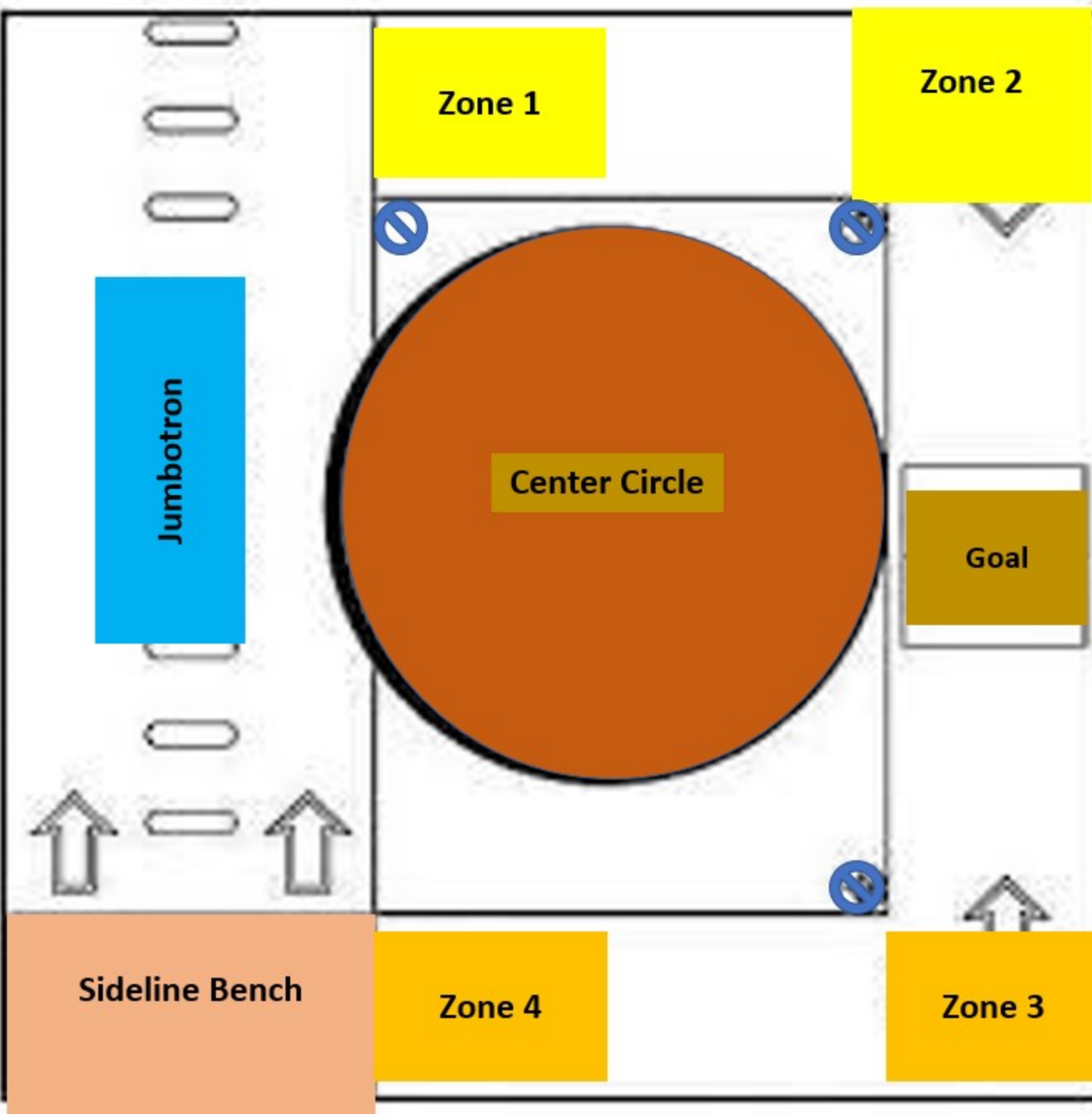
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5. Display "Good Game" on the hub.
6. Return to the Sideline Bench and complete a 360-degree turn.
7. Finish with at least 1 wheel inside the Sideline Bench Area.
8. Avoid all referees on the playing area.

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