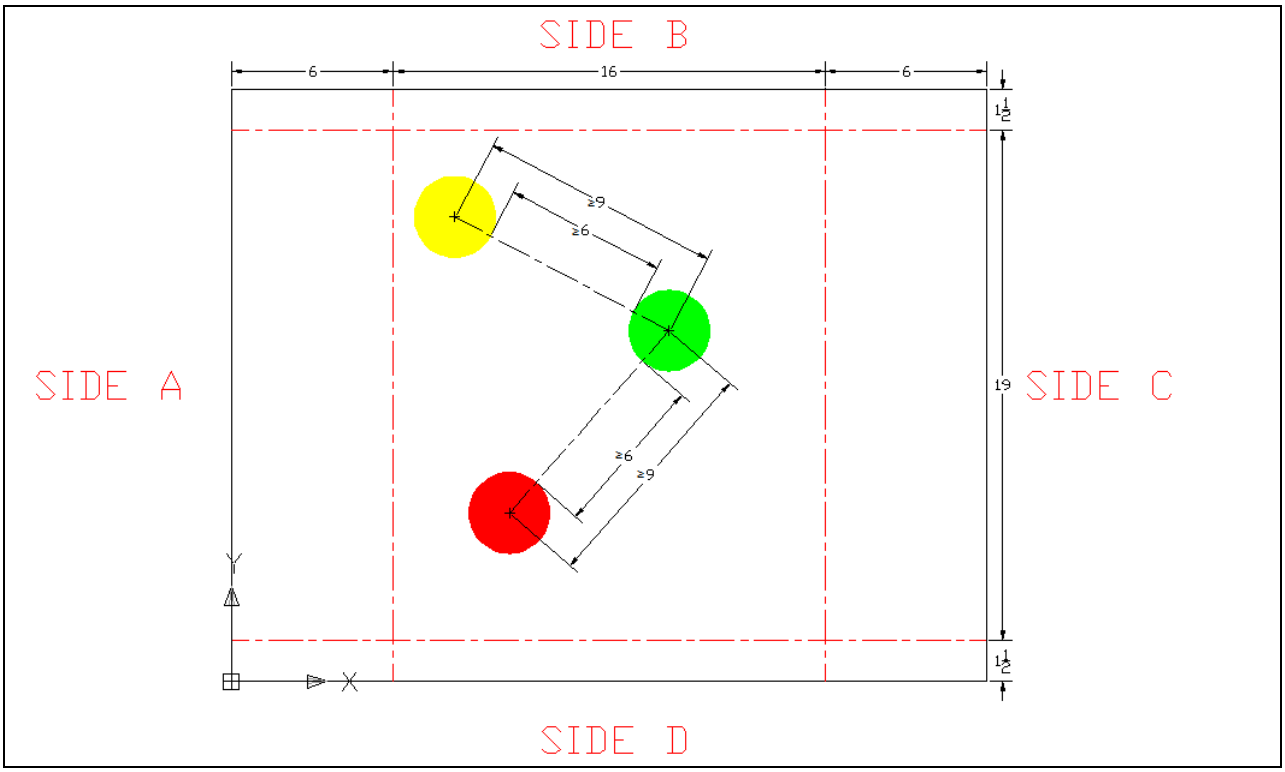
10th Annual 2015

Challenge Overview:

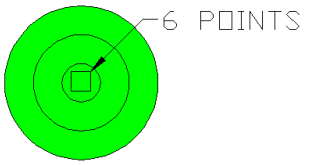
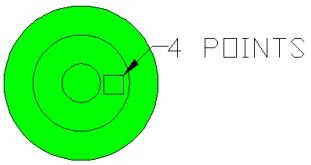
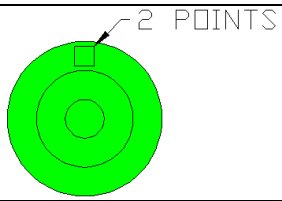
For the 2015 Challenge, each team is to design and fabricate a “seek and deliver” robot. You will be supplied with three (3) coloured cubes (1 RED ½ ” x ½ ” cube, 1 YELLOW ½ ” x ½ ” cube, and 1 Green ½ ” x ½ ” cube.) Before the operation begins, the operator will manually load the three coloured cubes into the robot’s hopper. The operator will place the robot anywhere in the 6” edge zone (either side A or C on the diagram). The operator will then push a button located on the robot to indicate the cubes have been loaded and are ready to deliver.

The court will consist of a regular 22” x 28” white Bristol board. Black electrical tape will be used to tape the white Bristol board down to a table along all four edges. The black electrical tape will overlap the edge of the Bristol board by approximately 1/8” and create a black contrasting border surrounding the court. Three (3) supplied coloured targets (1 RED hockey puck, 1 YELLOW hockey puck, and 1 GREEN hockey puck) will be *randomly* placed by the judges inside a 16” x 19” area centred on the Bristol board. Targets will never be placed within the 6” edge zones along the 22” sides (i.e., sides A and C on the diagram). Targets will never be placed within the 1-1/2” edge zones along the 28” sides (i.e., sides B and D on the diagram). Lastly, a target’s centre will never be placed closer than 9” from the centre of another target; thus, there will always be a minimum 6” space between targets. See the diagram below for clarification.



The robot will travel across the court and “seek” a target. Once a target is found, the robot must determine its colour and place the corresponding (i.e., same) colour cube on top of the target as close to centre as possible. Once a cube has been delivered, the robot must continue to seek out new targets and deliver the corresponding colour cubes until all cubes have been successfully delivered.

Scoring Calculation: Points for successfully delivered cubes will be as follows:

Target Circle Diameter	Picture
¾” Diameter Circle	
1-7/8” Diameter Circle	
3” Diameter Circle	

All questions regarding tech support (i.e., the robot and/or challenge) should be directed to both William Van Vliet and Glenn Raake at: techsupport@oxfordroboticschallenge.com

Teams

- Teams may represent a school, a club or youth group.
- Teams will have at least four (4) high school aged youth members. Teams will send their team name and participating student names to Jane Kempe at teams@oxfordroboticschallenge.com by **Friday, September 25, 2015**
- Teams will send a team photo and photo release forms to Jane Kempe teams@oxfordroboticschallenge.com by **Thursday, October 15, 2015**
- Teams will submit a final video and written report to Jane Kempe teams@oxfordroboticschallenge.com by **Wednesday, November 18, 2015**
- Teachers and adult mentors (upon availability) may only act in an advisory role
- A team field trip to a sponsor manufacturing facility or mentor facility is strongly encouraged (upon availability)

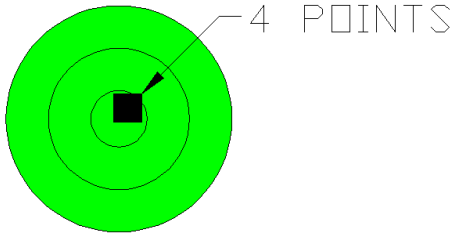
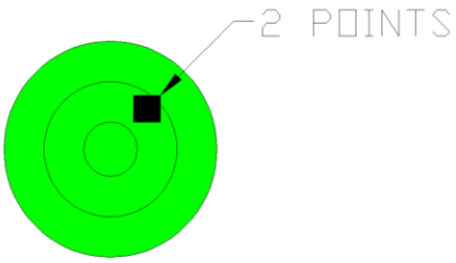
Challenge Rules:

1. Only the Lego Mindstorms EV3 Kit provided may be used to build the robot. Uses of extra materials or parts are not allowed in the robot.

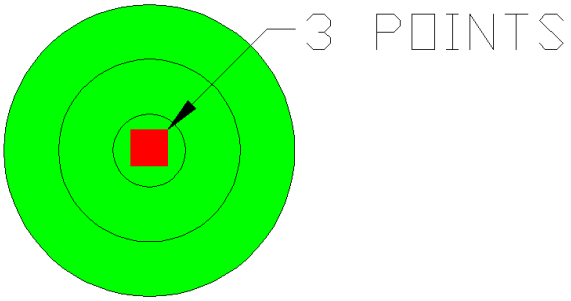
2. The use of glue, tape wire, etc. is prohibited in the fabrication of the robot. No parts may be cut, drilled or otherwise modified.

3. Robots will be manually loaded with three coloured cubes prior to starting. The three coloured targets will be randomly placed on the Bristol board after the colour cubes have been loaded. A start button must be incorporated into the robot design which will be manually pressed to indicate the parts have been loaded. No human assistance may be used once the start button has been pressed.

4. The cube is considered "successfully delivered" as long as the cube stays on top of the target. If a cube is placed "between" two circle diameters, the lower value point will be assigned. Thus, if the cube is touching the ¾" diameter circle, only 4 points will be allotted. Likewise, if the cube is touching the 1-7/8" diameter circle, only 2 points will be allotted.

Example #1	Example #2
	

5. The colour of the cube must correspond to the colour of the target. If the colours do not correspond, only 50% of the point value will be allotted.

Example	
	The red cube colour does not correspond to the green target colour. Calculation: 50% of 6 Points = 3 Points

6. If the robot contacts a target puck in any manner during operation, the points awarded *for that target* will NOT be tallied.

7. The robot's footprint must be less than or equal to 6" x 6". Thus, its maximum length is 6" and its maximum width is 6".

8. The team must document their project from start to finish in a written report. In addition, they must submit a final maximum 10 minute video outlining the struggles and achievements encountered in the process. The final functioning robot should be shown completing the task. Instructions for submitting the written report and the final video will be found on the OIYRC website and must be submitted by Wednesday, November 18, 2015.

9. Each team must be present at Goff Hall, Woodstock for the Challenge on **Tuesday, November 24, 2015.**

10. **Each team must contact their mentor (upon availability). Any team that misses the event or fails to contact their mentor (upon availability) will be required to return the Lego Mindstorms EV3 Kit in its entirety.**

11. All robots will be timed to complete the task. Robots will also be judged for their time efficiency.

12. Teams must purchase their own sheet of white Bristol board.

Skillful design and programming will ensure the robot can *efficiently* complete the repetitive task on its own without the assistance of the team members.

OIYRC's goal this year is full participation from each team. **Each team MUST be at the challenge with a functioning robot in order to keep the Mindstorm EV3 kit.**

The kits are generously provided by our sponsors. Each team will be provided with the name of their sponsor. **Teams are expected to learn about their sponsor and proudly exhibit their sponsor's name on their display**.

All teams provided with a mentor (upon availability) will advise and assist the team throughout the process. These mentors volunteer their time to provide mentoring. Mentors may also provide opportunities for plant tours to view robots in an industrial environment. **Each team MUST contact their mentor in order to keep the Lego Mindstorms EV3 kit.**

VIDEO RUBRIC:

	Bronze Level	Silver Level	Gold Level
Video Submission	Video includes two of the following: -complete team -operation of robot -simple to follow -no gimmicks -only necessary info -under ten minutes	Video is clear and includes four of the following: -complete team -operation of robot -simple to follow -no gimmicks -only necessary info -under ten minutes	Video is clear and includes all of the following: -complete team -operation of robot -simple to follow -no gimmicks -only necessary info -under ten minutes
/10	**1 2 3 4 5**	**6 7 8**	**9 10**

Instructions to Judges:

1. Write **Team Name** at top of sheet
2. Evaluate team report against the stated criteria
3. Underline each achieved criteria
4. Identify the resulting scoring level
5. Circle **B** (Bronze) or **S** (Silver) or **G** (Gold) at top of page
6. Calculate Video Final Score
7. Write any special remarks below:

Video Final Score = ____ /10

WRITTEN REPORT RUBRIC:

	Bronze Level	Silver Level	Gold Level
Written Report	Basic written report only	Detailed written report Including: -mentor profile (upon availability) -sponsor info -concept diagrams -program script	As in silver level with superior report detail and professional formatting. Report is well organized and attractive.
/10	**1 2 3 4 5**	**6 7 8**	**9 10**

Instructions to Judges:

1. Write **Team Name** at top of sheet
2. Evaluate team report against the stated criteria
3. Underline each achieved criteria
4. Identify the resulting scoring level
5. Circle **B** (Bronze) or **S** (Silver) or **G** (Gold) at top of page
6. Calculate Written Report Final Score
7. Write any special remarks below

Written Report Final Score = ___ /10

PRESENTATION RUBRIC:

	Bronze Level	Silver Level	Gold Level
Oral Presentation	Default level. Presentation is made but lacks preparation and direction. Important details are missing Time runs over 5 minute limit.	Well prepared presentation is well organized and includes: -introduction of team members -sponsor info and mentor info (upon availability) -clear explanation of robot operation	Presentation is polished and smooth. Three or more team members participate in the presentation.
/20	**2 4 6 8 10**	**12 14 16**	**17 18 19 20**
Robot Display	Robot kit is present in its entirety. Table is organized with minimal information or display	Display is well designed with poster and graphics. Sponsor name and logo is identified	As in silver level plus photos used to 'tell the story' behind the project
/10	**1 2 3 4 5**	**6 7 8**	**9 10**

Instructions to Judges:

1. Write **Team Name** at top of sheet
2. Evaluate team report against the stated criteria
3. Underline each achieved criteria
4. Identify the resulting scoring level
5. Circle **B** (Bronze) or **S** (Silver) or **G** (Gold) at top of page
6. Calculate Presentation Final Score.
7. Write any special remarks below:
8. Thank Team for effort, move to next table

Presentation Final Score = ____ /30

OPERATION RUBRIC:

Bronze Level	Silver Level	Gold Level	Platinum
1-2 Points = Score 1 **3-4 Points = Score 2** **5 Points = Score 3**	**6 Points = Score 4** **7 Points = Score 5** **8 Points = Score 6**	**9-10 Points=Score 7** **11-14 Points=Score 8** **16-18 Points=Score 9**	**9-10 Points=Score 7** **11-14 Points=Score 8** **16-18 Points=Score 9**
The robot's footprint is less than or equal 6" x 6" **Yes (1) / No (0)**	The robot's footprint is less than or equal 6" x 6" **Yes (1) / No (0)**	The robot's footprint is less than or equal 6" x 6" **Yes (1) / No (0)**	The robot's footprint is less than or equal 6" x 6" **Yes (1) / No (0)**
Time taken to deliver cubes without human assistance **Time: _____**	Time taken to deliver cubes without human assistance **Time: _____**	Time taken to deliver cubes without human assistance **Time: _____**	Time taken to deliver cubes without human assistance **Time: _____**
Other Advanced EV3 Capabilities used: **(e.g., coloured light or sound to specify when delivered, etc.)** -specify _____.	**Other Advanced EV3 Capabilities used:** **(e.g., coloured light or sound to specify when delivered, etc.)** -specify _____.	**Other Advanced EV3 Capabilities used:** **(e.g., coloured light or sound to specify when delivered, etc.)** -specify _____.	**Other Advanced EV3 Capabilities used:** **(e.g., coloured light or sound to specify when delivered, etc.)** -specify _____.
1 2 3 4	**4 5 6 7**	**7 8 9 10**	

Operation Final Score = (Above Scoring Level) X 5

Instructions to Judges:

Write **Team Name** at top of sheet

1. Evaluate robot operation using criteria stated above.
2. Underline each achieved criteria
3. Time the operation using a stop watch, record the time on the sheet.
4. Identify the resulting scoring level and calculate Operation Final Score
5. Circle **B** (Bronze) or **S** (Silver) or **G** (Gold) at top of page
6. Write any special remarks below:
7. Thank Team for effort, move to next table

Operation Final Score = ____ / 50

WRITTEN: deadline November 18, 2015

Submit written presentation to teams@oxfordroboticschallenge.com

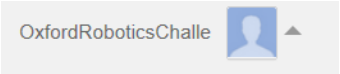
VIDEO: deadline November 18, 2015

High scoring teams create a video that:

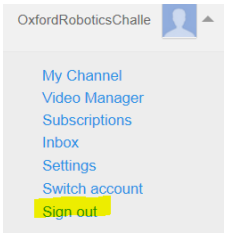
1. Shows the robot in action, repeating the process;
2. Use precise language to describe what we are seeing;
3. Include the entire team in the video; Avoid the use of “gimmicks” such as overly intrusive music, graphics, or video tricks;
4. Keep it simple and to the point. You’ll be judged on how well it “communicates” to the viewer.
5. Video’s should be no more than 10 minutes in length.
6. Upload it or deliver it by **November 19, 2015** or it cannot be judged.

Submitting your video to our YouTube account for judging:

1. Save your video with your school and team name.
2. Click here: http://www.youtube.com/user/OxfordRoboticsChalle
3. Sign in with oxfordroboticscompetition@gmail.com
4. Password is: 2roboticsoxford# (Please don’t share)
5. Click on “upload” at the top. REMEMBER to allow enough time for upload.
6. Please remember to make your video public.
7. Remember to log out when upload is completed. Click on:



8. From the drop down list, click “sign out”:



9. If you have trouble uploading to YouTube please contact us by email for assistance at techsupport@oxfordroboticschallenge.com