**Challenge: Color-Activated Dragsters**

In this challenge, you will design and build a Dragster-Bot that is activated to start and stop a race by sensing (or *not sensing*) colors. To successfully complete this challenge, your robot must start, travel straight, cross the finish line, and stop. To win the challenge, your robot must do this in the shortest time. The winner will be determined in a double-elimination competition.

***Challenge Specifics:***

* This event will take place in the classroom, on a 4 x 20 foot track.
* Each dragster will have a 2-foot “lane” that it must stay in until crossing the finish line.
* To start the challenge, a WHITE starting “flag” will be placed behind the rear wheels of your dragster.
* To end the challenge, your robot will cross a BLACK line.
* To start, each robot will be positioned with its color sensor directly over the starting line (indicated by RED tape).
* Once the white starting “flag” (a piece of white poster board placed over the starting line, immediately behind the dragsters) is in place, teams will start their program and step away from the dragster.
* The race will begin when the official abruptly removes the starting “flag” horizontally away from the rear of the dragsters.
* The race is over when the first dragster comes to a **stop** as a result of crossing the finish line. A dragster is considered to be stopped when it loses all of its forward momentum.  
  *Note: This means various designs will extend different lengths beyond the starting line, however, each dragster’s color sensor (and hence the dragster itself) will travel the same distance to the finish line.*
* Only one false-start per match per entrant will be allowed. Failure to start moving after the “flag” is removed does not constitute a false start.
* Any dragster that veers out of its lane will be disqualified in that race. If both dragsters exit their lanes before the finish line, the dragster which traveled further down the course before exiting will be declared the winner of that race.

***Design Constraints***

* You may only use the parts in one kit to make your dragster. You may also use 2 of the large thin wheels, in addition to the parts in your kit.
* A dragster may exceed 12” in one dimension. The other dimensions must be 12” or less.
* The color sensor must be mounted at the back of the robot, at least 1 inch behind the place where the back wheels touch the ground, facing down with at least ¼ inch of clearance from the ground.

**Partner Names:**

**Dragster Name:**

**Color-Activated Robo-Dragster: Grading**

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| **Criteria** | **Points Possible** | **Points Earned** |
| Engineering Journal with daily entries including initial sketch, at least 4 problems and their solutions, and detailed drawing of final design | 6 |  |
| Dragster meets design constraints | 2 |  |
| Dragster starts when white flag is removed | 2 |  |
| Dragster travels straight (does not leave its own lane during the race) | 2 |  |
| Dragster stops upon crossing black line | 2 |  |
| *BONUS: 1st place +2, 2nd place +1* | *varies* |  |
| **TOTAL** | **14** |  |