



Cosmic Collision The Game

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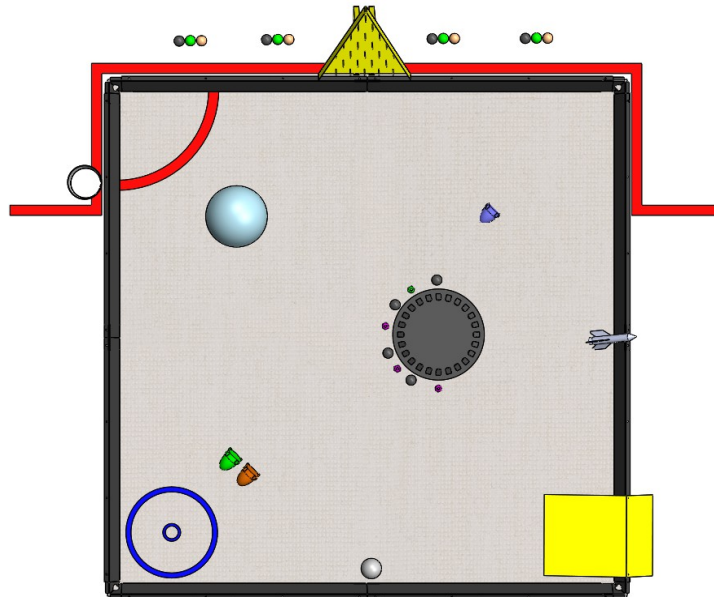
Section 2 – The Game

2.1 – Overview

This section describes the CREATE Junior game called *Cosmic Collision*. It also lists the game definitions and game rules.

2.2 – Game Description and Field Drawings

Matches are played on a field initially set up similar to the figure below.

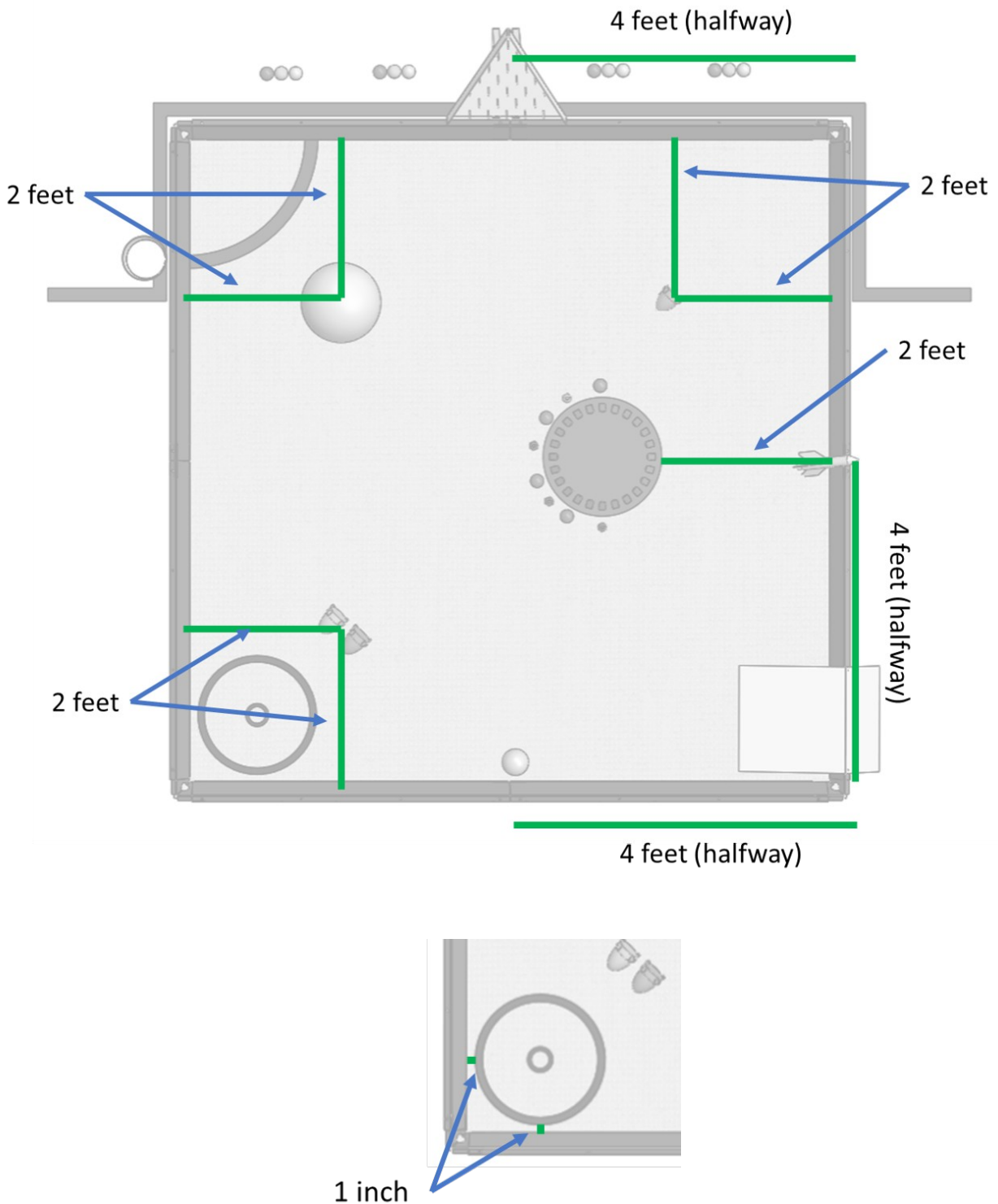


Four teams, making up an Alliance, collaborate, using their anti-gravity bots, in each match. The object of the game is to attain the highest score possible by working together to place all the space debris into the black hole, (black, flat circular goal), return the Earth and Moon to their proper orbits, help the Space X robot get to Mars, dock the NASA rocket to the ISS (International Space Station), get the Chang'e 4 rockets to their proper places on the moon/orbiting the moon, and then pulling the black hole out of the solar system.

Score the Space X rocket by pushing it out of the field and onto its way to Mars. The Space X rocket is not considered scored until it is completely outside the field of play. To score one of the Chang'e rockets, position it behind the moon. It will be considered scored if it is in the corner of the field closest to the Moon's orbit. To score the other Chang'e 4 rocket, place it in orbit (touching the blue orbit ring) around the Moon. Score the Earth by placing it in the corner of the field closest to the Earth's orbit. You can score points by placing the moon inside the blue moon orbit circle, and even more points if you get the moon centered on the smaller blue circle in the middle of the moon's orbit ring. Score NASA's rocket by docking it with the ISS (place it in the container that is just outside the field of play in line with the red orbit ring of the Earth). To score space debris points, push/place space debris into the black hole. And finally, pilot all four anti-gravity bots outside the field of play through the wormhole (yellow ramp) to score points and "drag" (with gravity) the black hole out of the solar system.

There are a total of twenty (20) pieces of space debris (balls of various colors and sizes). Eight (8) will start on the field and twelve (12) will be introduced via the randomizer (yellow plinko board). Each team will start the match with 3 pieces of space debris that they are responsible for getting into the randomizer during the match. There are 4 rockets: 3 short, 1 tall. The earth and moon (balls) are also game objects.

The following is a detailed diagram on how to setup the field elements:



When setting out the game elements for the first time it is recommended that a washable marker be used to

mark all the spots where game elements are to be placed. This should last the season and will not leave a permanent mark on the tarp.

2.3 – Game Definitions

Alliance – Four(4) randomly paired teams that work together during a match.

Coach - A student or adult designated as the team adviser during the tournament.

Driver - A team member responsible for operating and controlling the Robot. Only the two drivers from a team are allowed to be in the Driver's Station during a match.

Driver Change – Changing from the first to the second driver in the middle of the match. The change must occur between :30 and :60 seconds.

Driver's Station – The designated region where the drivers stand during any match.

Exited – A robot is considered to have exited the field when the robot is outside the field of play and does not touch any part of the field or field perimeter.

False Start – A robot moving before the match begins will be considered to have false started. A five (5) point penalty will be assessed for each robot that false starts. If the false start is severe, at the discretion of the referee, the robot may be disqualified.

Match - A one minute and thirty second driver controlled period. A match starts when the referee says "Go".

Pre-placement of Robots – Each team is allowed to place their robot on the field in the following manner.

1. One robot must touch the side wall and the red earth orbit arc.
2. One robot must touch the side wall and the blue moon orbit circle.
3. One robot must have two wheels touching the yellow worm hole ramp.
4. One robot must touch both side walls of the corner that shares a side wall with the worm hole.

Space Debris – Any of the thirty-seven(37) balls of various size and shapes.

Randomizer – The yellow plinko board into which 12 space debris objects are introduced onto the field, 3 by each team.

Removed from the field – Any game object that leaves the field. All objects that leave the field of play stay out for the duration of the match.

Robot – Anything (which has passed inspection) a team places on the field prior to the start of a match.

Team Member – Any of the participants that make up the team. Team members may assist the drivers with the pre-placement or pre-loading of the robot. Only the two drivers (per team) are allowed in the Driver's Station for the match. Not all games will have pre-placement and/or pre-loads.

2.4 – Game Rules

2.4.1 – Scoring

Object	Scoring Task	Points
Space Debris	Push/place in black hole.	5
Chang'e 4 Spacecraft	Push/place Chang'e 4 into proper orbit back in proper orbit	10
Chang'e 4 Spacecraft	Push/place 2 nd Chang'e 4 into proper orbit back in proper orbit	20
Earth	Push/place Earth back in orbit	10
Moon	Push/place Moon nearly back in orbit	10
Moon	Push/place Moon exactly back in orbit	20
NASA's Rocket	Place (dock) NASA rocket with ISS (International Space Station).	20
Space X Spacecraft	Push/place Space X rocket outside of field and away from black hole.	25
Robots	Anti-gravity robots exit the solar system (field of play) before time expires via the worm hole (yellow ramp).	5-1 st robot 5-2 nd robot 10-3 rd robot 20-4 th robot

Scoring

- Space Debris is considered to be scored if it is inside the black hole's event horizon (raised tabs).
- The Earth is considered scored if it rests in the corner of the red orbit strip and touches or nearly touches both side walls of the corner. (If you have any question about whether the Earth is back in it's proper orbit, ask the referee and she/he will tell you. The Earth may not easily touch both sides of the perimeter in the corner. If it is close, but will not rest on both sides, ask the referee, and she/he will be able to make the call.)
- The Moon is considered nearly scored if it is placed inside its larger blue orbit ring.
- The Moon is considered exactly scored if it is placed so it rests on the small blue orbit ring (the hole in the metal washer inside the blue moon orbit).
- The Space X rocket is considered scored if it is outside the field of play and no part of the rocket is touching the inside or top of the perimeter wall.
- One Chang'e 4 spacecraft must be placed behind (on the dark side of the moon. To be considered on the dark side of the moon it must be in the corner touching both side walls of the perimeter.
- One Chang'e 4 spacecraft must be placed in orbit (large blue circle). To be considered scored it must lay completely across the blue strip.
- For the NASA rocket to be considered scored it must dock with the ISS. This is done by placing the rocket in the “docking bay” of the ISS. The body of the rocket must be inside of the docking bay. It is acceptable to have the streamers of the rocket draped outside of the docking bay.
- A robot is deemed to have exited the field if it is outside the field of play and is not touching the metal perimeter. Touching the yellow ramp (wormhole) is acceptable as long as all four wheels of the robot are on the exit portion (inclined portion of the wormhole touching the outside of the field) of the wormhole.
- A total of 40 robot exit points can be earned. 5 points for the first robot to exit the field of play. An additional 5 points for the second robot to exit the field of play. An additional 10 points for the third robot to exit the field of play. 20 additional points for the fourth robot to exit the field of play. Robots must exit the field of play before time expires.

2.4.2 – Safety Rules

<S1> If at any time the *robot* operation is deemed unsafe or has damaged the playing field, surface, barriers or wall, by the determination of the referees, the offending team may be disqualified. The *robot* will require re-inspection before it may take the field again.

<S2> If a robot gets hung up on the perimeter or drives out of the field, teams MAY place the controller on the ground. The **driver** may slowly walk around the field to the stranded robot to place it back into the field. The robot should be placed just inside the point that it got stuck and should follow the guidelines below. The driver may then walk back to the driver's station and pick up the controller to continue as before. If teams are not performing this action safely, the Alliance may be disqualified at the discretion of the referee.

- a. The robot should be placed in the field as near to where it became caught on the side rail as possible.
- b. The robot cannot be touching any robot or any game elements that were not already captured by the robot at the time of getting stuck. An object is captured if the robot can be lifted straight up and the object stays with the robot.

<S3> If a *robot* goes completely out-of-bounds (outside the playing field) and continues to move, clear intent of returning to the field MUST be demonstrated. If a robot is being driven with any other intent, the robot/Alliance may be disqualified or stopped and the match ended at the discretion of the referee. A robot may not re-enter the field in a scoring position. THIS RULE DOES NOT APPLY AT THE END OF THE MATCH WHILE ROBOTS ARE TRYING TO EARN THE EXIT BONUS.

2.4.3 – General Game Rules

<G1> At the beginning of a match, each *robot* must not exceed a volume of 14 inches wide, by 14 inches long, by 14 inches tall. An offending *robot* will be removed from the *match* at the Head Referee's discretion.

- a. Alignment devices (templates, tape measures, lasers, etc.) that are not part of the *robot* may NOT be used to assist with the positioning of the *robot*.

<G2> For each match, teams shall include two *drivers*. The *drivers* may change from match to match.

<G3> During a *match*, the *drivers* are the only people allowed in the drivers station.

<G4> Any team member may assist in Pre-placement of the robot or the pre-load of the scoring object. (For games that have pre-placement and/or pre-loads.)

<G5> Scoring objects that leave the playing field are considered out of play. They will not be returned to the field for that match.

<G6> *Drivers* are prohibited from making intentional contact with any game or field object. The first instance of intentional contact will result in a warning, with any following instances resulting in disqualification.

<G7> During a *match*, *robots* may be remotely operated only by the *drivers*.

<G8> *Robots* may not intentionally detach parts during any *match*, or leave mechanisms on the field. Multiple infractions may result in disqualification for the entire competition.

<G9> *Robots* must be designed to permit easy removal of scoring objects from any grasping mechanism

without requiring that the *robot* have power after the *match*.

<G10> Field tolerances may vary by as much as +/-1". Teams must design their *robots* accordingly.

<G11> At the discretion of the event partner the lowest score from each team may be dropped in determining final standings.

2.4.4 – Cosmic Collision Specific Game Rules

<SG1> At the beginning of each *match*, the four *robots* must be placed in the following fashion:

5. One robot must touch the side wall and the red earth orbit arc.
6. One robot must touch the side wall and the blue moon orbit circle.
7. One robot must have two wheels touching the yellow worm hole ramp.
8. One robot must touch both side walls of the corner that shares a side wall with the worm hole.

<SG2> *Drivers* must change (*Driver change*) sometime between 30 and 60 seconds of the *match*. *Driver* one may hand the remote to *driver* two anytime between 31 and 59 seconds on the clock. If a team exchanges the remote too early or too late in a *match* the robot may be disqualified for that *match* at the discretion of the referee. If the remote is exchanged significantly outside of the designated time, the referee may disqualify the *alliance*, which will receive a zero score for that *match*.

<SG3> Only the second driver may earn the exit bonus by leaving the field of play.