



## 2025 SEASON

# Lord of the Robots Game Rules

### **Only Collaboration will Defeat the Dark Lord!**

Working in your teams, accept your Quest, pick your weapons, and design a Hero from your LEGO® robotics kit! Form a Fellowship with other teams and collaborate to take on the forces of evil. To succeed, your Fellowship will have to launch attacks on the Enemy outpost and Two Towers—and maybe even succeed at dropping an item in the Volcano!



### **A Special Thank You to Project Bucephalus**

Unified Robotics partnered with Project Bucephalus from Wollongong, NSW, Australia, to deliver Lord of the Robots as the game for the 2025 season. Lord of the Robots was developed by Project Bucephalus as part of their Introduction to Robotics after-school camps and programs, including programs for special education units. The game rules were modified from its original for the purposes of this season's game.

# Contents

Introduction	3
1. Robot Rules	6
2. FIELD Rules	9
3. Match Setup and Start	16
4. Game Rules	17
5. Example of a HERO	20
6. Collaboration	23
7. Tournament Rules	24

# Introduction

## GAME PHILOSOPHY

The primary goal is for participants to be engaged, challenged, and to have fun.

While we want to create an even and equitable playing field and experience, we need to understand that many of the students have varying levels of intellectual, physical and social disabilities. As such, we need to be flexible and accommodating with the rules. When in doubt, err on the side of accommodation and grace.

## GAME GOALS

1. Design your own HERO that can contribute to the QUEST by KNOCKING DOWN the OUTPOST and TOWERS and/or shooting to the VOLCANO!
2. Program your HERO to move along the FIELD and/or shoot BOULDERS.
3. Work collaboratively in your FELLOWSHIP of another Team to complete the QUEST together!
4. Expand your HERO'S abilities to strengthen your FELLOWSHIP.

## GAME DEFINITIONS

Terms that follow the following definitions will be denoted with ALL CAPS throughout this Game Rules manual.

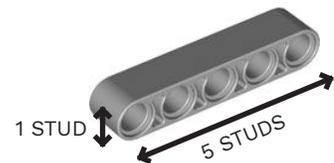
<b>ACTION MODE</b>	See <i>Section 1.3 “Robot Programming”</i>
<b>AIM</b>	An action in which the Team can pivot or rotate their HERO in the same position.
<b>ALLIANCE</b>	Each HERO is either denoted Red or Blue when playing a QUEST. This is for the referee’s benefit—there is no gameplay value.
<b>BALLISTA</b>	A type of HERO that cannot MOVE but can FIRE multiple BOULDERS per TURN.
<b>BATTLEGROUND</b>	The playing field ( <i>See Section 2.2 “Play Areas”</i> )
<b>BOULDER</b>	A LEGO ball used as ammunition. ( <a href="#">Bricklink Part #41250</a> )
<b>FELLOWSHIP</b>	A pair of HEROES working together collaboratively on a QUEST.
<b>FIELD</b>	The play area consisting of the BATTLEGROUND and the PLAYER ZONE. ( <i>See Section 2.2 “Play Areas”</i> )
<b>FIRE</b>	An action in which the HERO launches one or more BOULDERS.
<b>FULLY KNOCKED DOWN</b>	A state in which all cups not at the baseline of the TOWER has fallen and the cups at the baseline remain.
<b>HERO</b>	Your robot and anything combined with it.
<b>HIGH WALL</b>	A taller wooden barrier designed to deflect BOULDERS. ( <i>See Section 2.1 “FIELD Construction”</i> )
<b>KNOCKED DOWN</b>	A state in which one or more cups in a TOWER or OUTPOST has fallen due to a TURN.
<b>LEFT TOWER</b>	A tall stack of cups that is placed on the left of the BATTLEGROUND with a LOW WALL.
<b>LOW WALL</b>	A shorter wooden barrier designed to deflect BOULDERS. ( <i>See Section 2.1 “FIELD Construction”</i> )
<b>MOVE</b>	An action in which the HERO moves up to two (2) wheel rotations.
<b>OBSTACLE</b>	Anything on the BATTLEGROUND that is not the OUTPOST or TWO TOWERS.

<b>OUTPOST</b>	A single short stack of cups placed in the same position each match.
<b>PLAYER ZONE</b>	See Section 2.2 “Play Areas”
<b>QUEST</b>	A completed match which consists of three (3) ROUNDS with one (1) TURN per Team.
<b>RANKING POINT</b>	A point earned during a QUEST by the FELLOWSHIP for the Qualification matches.
<b>RIGHT TOWER</b>	A tall stack of cups that is placed on the right of the BATTLEGROUND with a HIGH WALL.
<b>ROUND</b>	A sequence which one (1) TURN from each HERO is completed.
<b>SCOUT</b>	A type of HERO that can MOVE but can FIRE one (1) BOULDER per TURN.
<b>START MODE</b>	See Section 1.3 “Robot Programming”
<b>STARTING LINE</b>	A line denoting the edge of the STARTING ZONE. (See Section 2.2 “Play Areas”)
<b>STARTING ZONE</b>	The area in which all robots start. (See Section 2.2 “Play Areas”)
<b>STUD</b>	A unit of measurement for LEGO pieces, determined by the bumps or holes on the piece.
<b>TURN</b>	An opportunity performed by a HERO to AIM, MOVE, and/or FIRE to gain points for the QUEST.
<b>TOWER</b>	A tall stack of cups placed in the same position each match. (See Section 2.1 “FIELD Construction”)
<b>VOLCANO</b>	A raised square built by LEGO axles to FIRE BOULDERS into.
<b>WALL</b>	Wooden barriers designed to contain the HERO within the BATTLEGROUND and deflect BOULDERS.
<b>WALL POSITION</b>	A possible configuration of WALLS that creates an OBSTACLE for a HERO randomly selected during matches.

### A LEGO STUD

A STUD is the distance from the center of one hole/bump to the center of the next hole/bump on a LEGO piece. It is equivalent to 8mm or 0.31in.

For example, a 5x1 beam is 5 STUDS long and 1 STUD wide.



# 1 Robot Rules

The following robot rules are in place to offer a fun and fair competition among all teams, and attempt to best create equity among teams with different numbers of members, budgets, etc. At the competition, robots will be visually inspected to meet the basic motor and size restrictions. Our goal is to make sure all teams can play, with fairness in mind.

## 1.1 ROBOT MATERIALS

Teams are allowed to create robots using LEGO parts, as long as the robot meets all other listed rules:

- R1. All robots must be built completely out of official LEGO pieces.
- R2. Each robot is limited to the electronic components found in a single LEGO robotics kit:
  - SPIKE™ Prime kit: one (1) Hub, one (1) Color Sensor, one (1) Force Sensor, one (1) Distance Sensor, one (1) Large Motor, and two (2) Medium Motors
  - MINDSTORMS™ EV3 Core Set: one (1) MINDSTORMS brick, one (1) Color Sensor, one (1) Touch Sensor, one (1) Ultrasonic Sensor, one (1) Gyro Sensor, two (2) Large Motors, and one (1) Medium Motor. **The EV3 Infrared sensor is not allowed.**
- R3. Teams are encouraged to design creatively and make the robot their own. All decorations and modifications must adhere to Section 1.2 “Robot Design” Rules.
- R4. Pull back motors or pneumatics are not allowed.
- R5. Robots can only have up to three motors, regardless of whether they are powered or not.

## 1.2 ROBOT DESIGN

- D1. Design and build a robot HERO to play Lord of the Robots. A HERO should reflect the creativity of the designers and should have a specific name.
- D2. In its starting position, the HERO must fit completely within the boundaries of a standard SPIKE Prime or MINDSTORMS EV3 crate lid (24×34.5 cm). There is no height limit.
- D3. During the QUEST, no HERO can ever extend more than ten (10) STUDS from its starting configuration.

### Allowed Distance Sensors

SPIKE Prime Distance Sensor



MINDSTORMS EV3 Ultrasonic Sensor



**The MINDSTORMS EV3 Infrared Sensor is not allowed.**



- D4. With the exception of shooting BOULDERS, the HERO must stay intact the entire game and cannot leave parts of themselves behind.
- D5. The screen on the HERO Brick/Hub must be visible.
- D6. Buttons and the charging port on the HERO Brick/Hub must be accessible.

### 1.2.1 SCOUT HERO TYPE

- DS1. SCOUTS are a type of HERO that can MOVE and FIRE.
- DS2. Each SCOUT is limited to carrying or FIRING a single BOULDER per TURN.
- DS3. A SCOUT can MOVE no more than two rotations per TURN.
- DS4. A SCOUT must stop movement if it encounters an OBSTACLE.
- DS5. A SCOUT can reload a BOULDER by hand between TURNS.

### 1.2.2 BALLISTA HERO TYPE

- DB1. BALLISTAS are a type of HERO that can **only** FIRE.
- DB2. A BALLISTA cannot MOVE forward or backward, but can still be AIMED.
- DB3. A BALLISTA can carry and FIRE up to three (3) BOULDERS per TURN.
- DB4. A BALLISTA can fire all BOULDERS at once or use separate launchers. Regardless, all BOULDERS must be ready to FIRE before the TURN starts.
- DB5. A BALLISTA can use any number of mechanisms to FIRE.
- DB6. A BALLISTA can be reloaded by hand between TURNS.

HERO Type	AIM	MOVE	FIRE
BALLISTA	 Yes	 No	 Up to three (3) BOULDERS
SCOUT	 Yes	 Yes, up to two (2) rotations	 One (1) BOULDER

### 1.3 ROBOT PROGRAMMING

Robots can be programmed in any language and must include the following functions:

P1. START MODE

P1.1. The HERO'S program is active but waiting for user input to start movement.

P1.2. Display image on screen to indicate waiting status to the referee.

P2. ACTION MODE

P2.1. At least a three (3) second countdown is initiated.

P2.2. The HERO performs an action.

P2.3. Return to START MODE (P1).

P3. Signals

P3.1. To indicate the HERO'S status, use either the center light on an EV3 Brick or the Status Light on a SPIKE Prime Hub.

#### **A Note on Programming Flexibility**

Your HERO can have multiple programs to perform different custom actions.

If you choose to use the SPIKE Prime or EV3 Classroom Apps, you can use Icon Blocks, Word Blocks, or Python to program their HERO.

However, Icon Blocks may be limiting to teams in order to program for the requirements for Lord of the Robots.

# 2 FIELD Rules

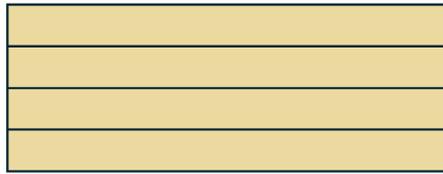
## 2.1 FIELD CONSTRUCTION

The Lord of the Robots FIELD is constructed as follows:

- F1. The game is played on a dark-colored, low-pile carpeted surface.
- F2. The STARTING LINE is made of Black cloth tape (such as Duct or Gaffer's tape) approximately 50mm or 1.88in wide.
- F3. The lines indicating TOWER and OUTPOST placement is made of White cloth tape (such as Duct or Gaffer's tape) approximately 50mm or 1.88in wide.
- F4. All WALLS are pieces of wood.
  - F4.1. WALLS on the perimeter of the BATTLEGROUND are 3.5in (9cm) high and 1.5in (4cm) deep.
  - F4.2. The LOW WALLS are 1.5in (4cm) high, 3.5in (9cm) deep, and 16in (40cm) long
  - F4.3. The HIGH WALL is 6in (16cm) high, 3.5in (9cm) deep, and 16in (40cm) long, or the equivalent of stacking four (4) LOW WALLS on top of each other. It should nearly cover the baseline level of the TOWER. It can be secured together with White cloth tape.

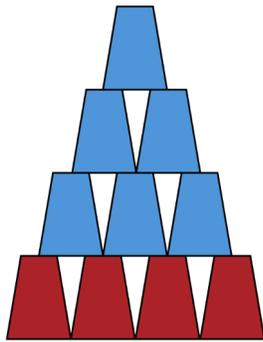


F4.2. LOW WALL

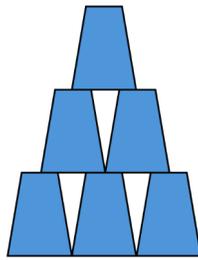


F4.3. HIGH WALL

- F5. The two TOWERS consists of cups upside-down stacked in a pyramid. There is a Red baseline level of four (4) cups stacked in a pyramid, with the remaining pyramid of cups not Red. There is a total of ten (10) cups in a TOWER.
- F6. The OUTPOST consists of cups upside-down stacked in a pyramid. It consists of cups with a baseline level of three (3) cups. There is a total of six (6) cups in an OUTPOST.
- F7. Cups for the OUTPOST and TOWERS are 16oz (470mL) disposable paper or plastic cups (such as Solo Cups), some of which should be Red. A cup's top diameter is 3-5/8 in (9.2cm) with a height of 4-5/8in (11.7cm), or equivalent size.



F5. TOWER



F6. OUTPOST

- F8. The VOLCANO is a 17 STUD × 17 STUD square made with LEGO axles and joints that is positioned at the center of the FIELD, is 5cm away from the back WALL, and secured by Black cloth tape (such as Duct or Gaffer's tape) on all sides.



F8. VOLCANO

Parts to construct the VOLCANO are available in a standard SPIKE Prime kit.

Build Instructions are available in the Season Resources tab on the Unified Robotics Portal.

F9. FIELD dimensions are as outlined on the next page.

**Note:** *Volunteers will do their best, but some reasonable variance is expected and accepted between individual fields.*

### **Choosing Timber/Lumber**

Due to different standards for dimensions, we advise using the following to build the frame:

#### **For regions located in the United States and Canada:**

- Use 96in long × 1.5in wide × 3.5in high lumber (a “2×4”) for the long edges of the frame.
- Use 48in long × 1.5in wide × 3.5in high lumber (a “2×4”) for the short edges of the frame.

**For all other regions,** use the dimensions as instructed in the drawing.

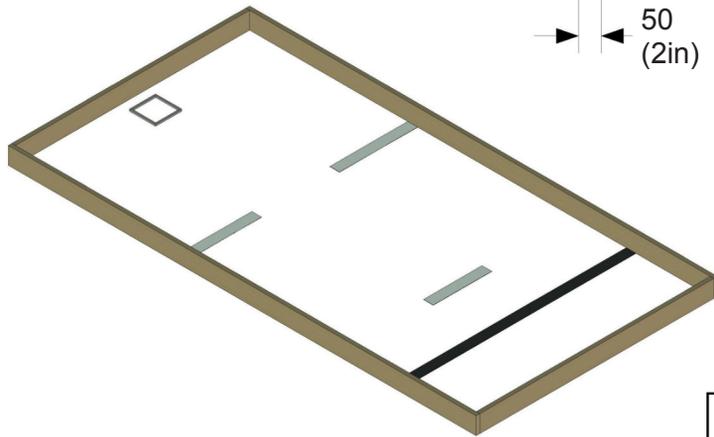
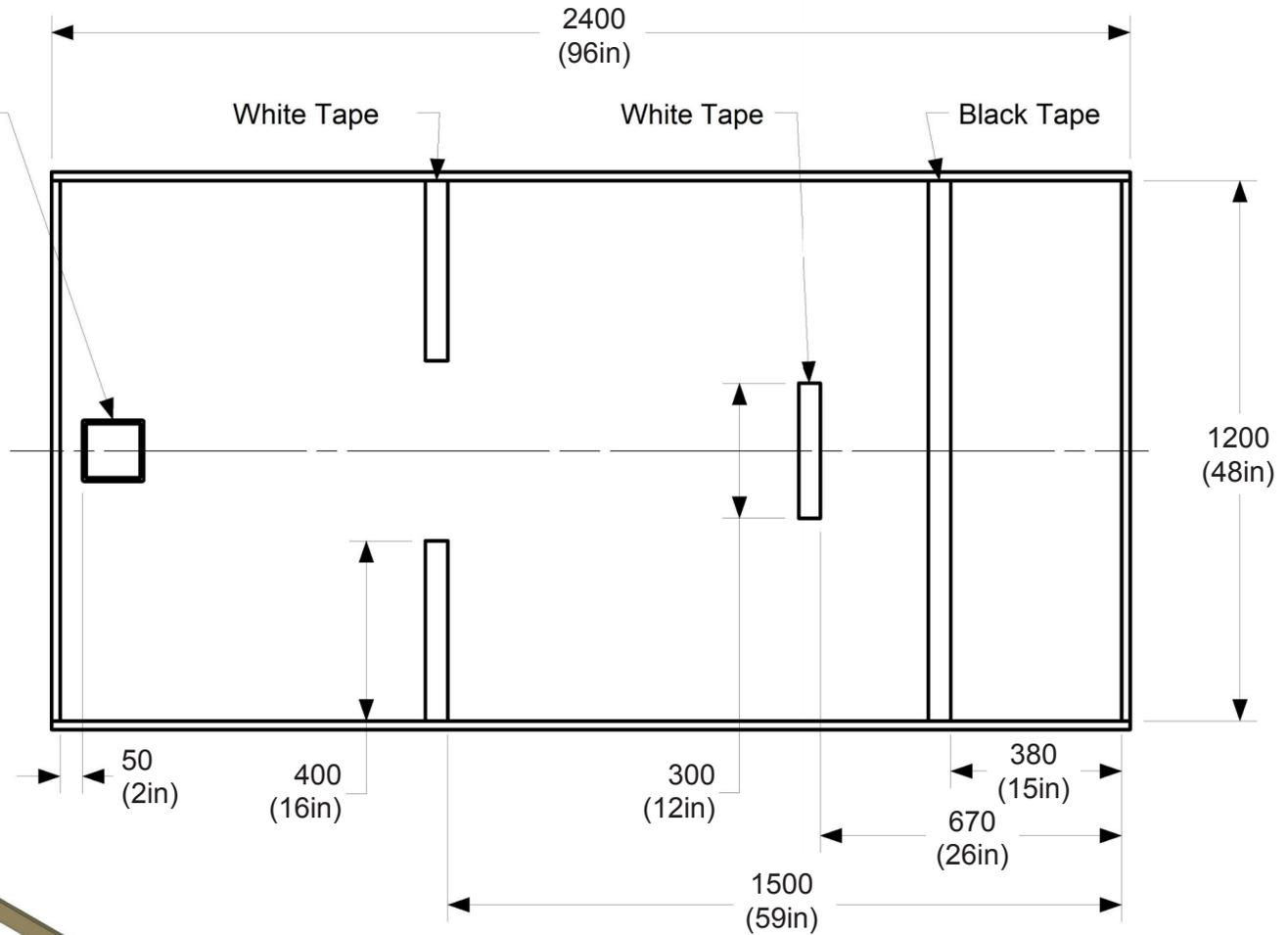
### **Choosing Carpets**

To ensure consistency during tournaments, regions that require purchasing carpet for the FIELD should use the following:

- Ensure that it is a Loop carpet with a low Pile Height (0in to 0.3in).
- Material is polypropylene or olefin.
- Color should be a solid charcoal color or black.



Volcano Model  
(See additional instructions)

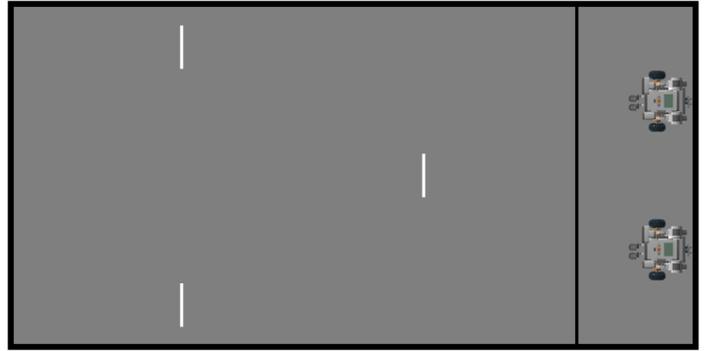


ALL WALLS 19mm THICK x 88mm HIGH  
 IN THE U.S. AND CANADA, ALL WALLS 1.5in THICK x 3.5in HIGH  
 ALL TAPE 50mm (1.88in) WIDE  
 FIELD IS SYMMETRICAL ALONG MARKED LINE

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## 2.2 PLAY AREAS

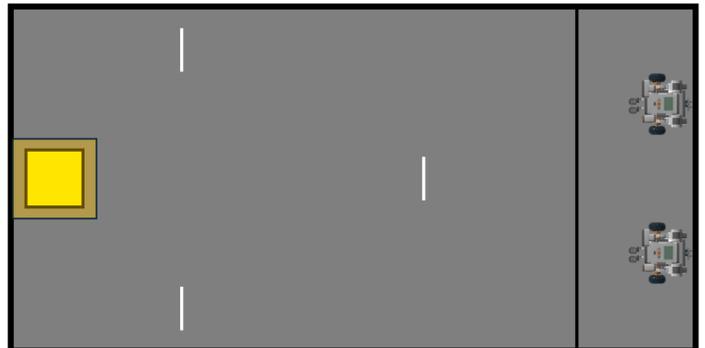
A1. The **BATTLEGROUND** is a rectangular field, surrounded by WALLS. Black Tape marks off the STARTING ZONE. White Tape marks off 3 specific areas on the field.



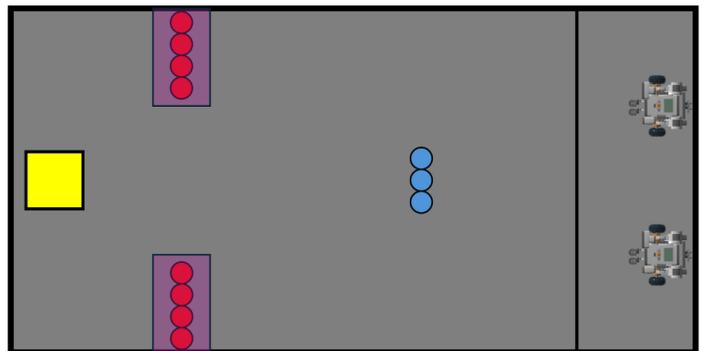
A2. The **STARTING ZONE** is the part of the BATTLEGROUND marked out by the WALLS and the Black Tape line on the “safe” side of the FIELD. The entire FELLOWSHIP must start **completely** within this area.



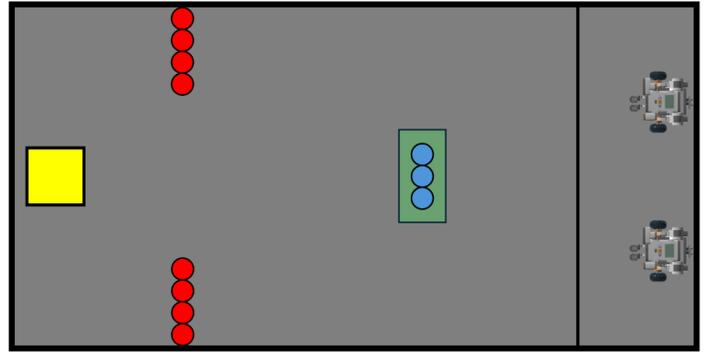
A3. The **VOLCANO** is a square built from LEGO (See 2.1 “FIELD Construction”) located 5cm (2in) out from the center of the back WALL. HEROES score bonus points if a BOULDER lands (and stays) inside the VOLCANO.



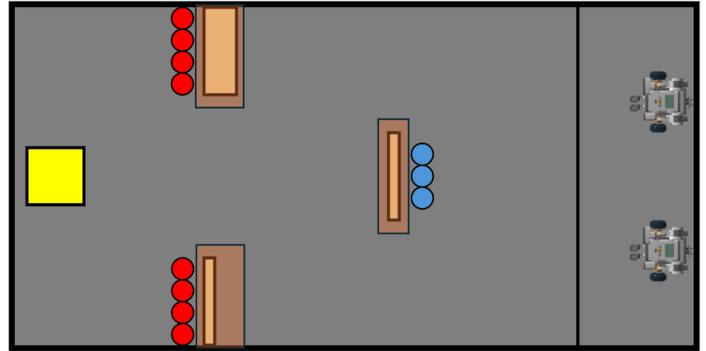
A4. The **TOWERS** are two separate tall stacks of cups (See 2.1 “FIELD Construction”). They are ALWAYS placed in the same position, lined up against the two lines of White tape.



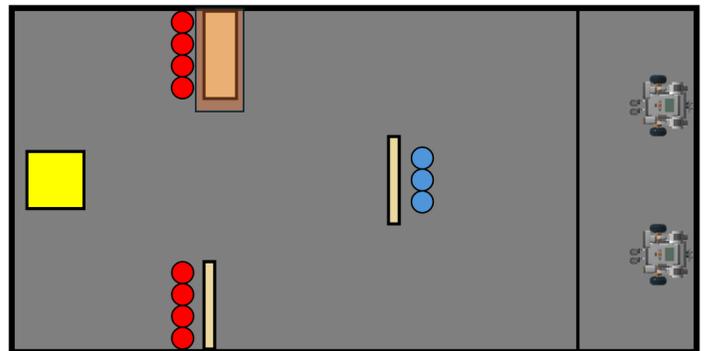
A5. The **OUTPOST** is a single short stack of cups (See 2.1 “FIELD Construction”). It is **always** placed in the same position, lined up against a single line of white tape.



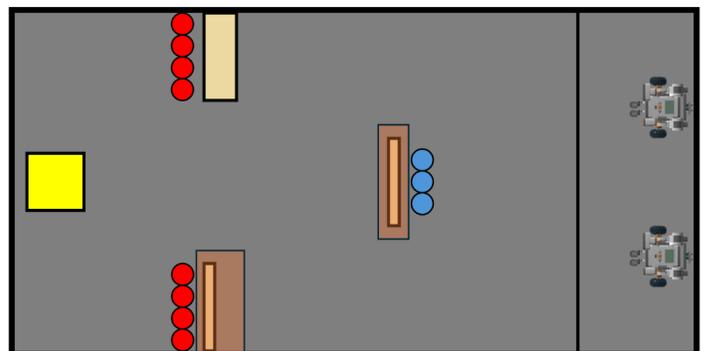
A6. The **WALLS** are planks of wood, lain flat and placed us specific positions that are randomly set each match (See 2.1 “FIELD Construction”). They block access to different parts of the field.



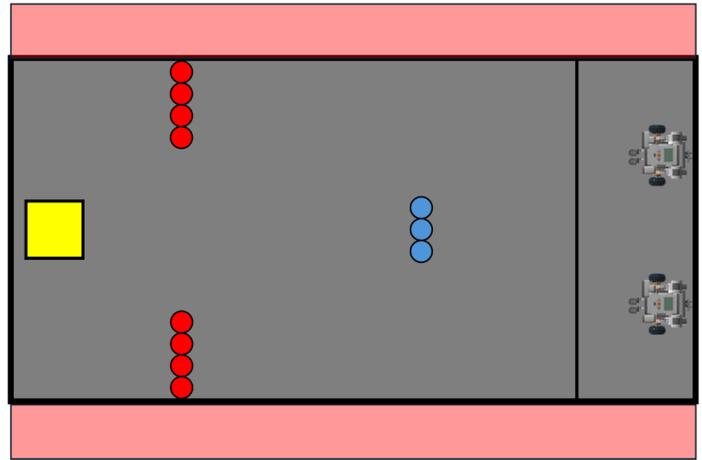
A7. The **HIGH WALL** is always located on the RIGHT TOWER and is four times the height of a LOW WALL.



A8. The **LOW WALLS** are WALLS that are always located on the LEFT TOWER, and possibly located at the OUTPOST and the VOLCANO.



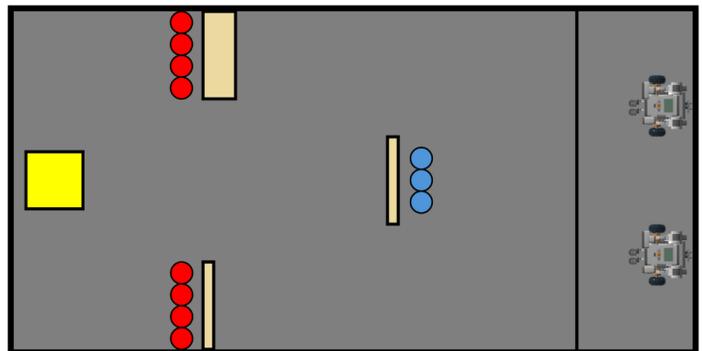
A9. In the **PLAYER ZONE**, human players can stand in either of these areas during the game.



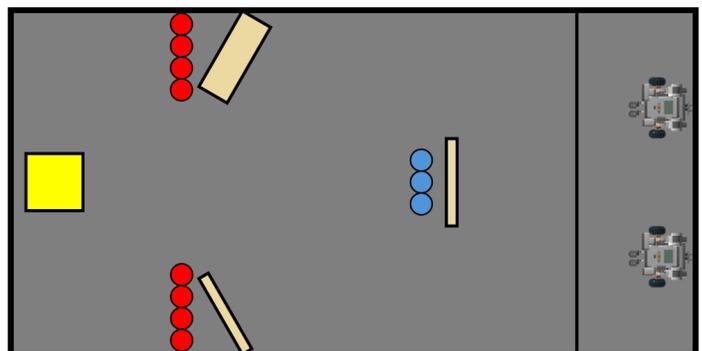
### 2.3 WALL POSITIONS

WALL POSITIONS are possible configurations of the WALLS in a QUEST. These are randomly selected during matches.

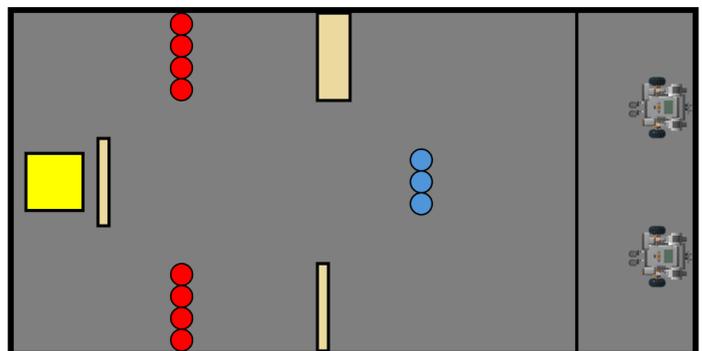
WP1. WALL **POSITION #1** blocks the TWO TOWERS and provides a backstop for the OUTPOST.



WP2. WALL **POSITION #2** deflects shots towards the VOLCANO and blocks the OUTPOST



WP3. WALL **POSITION #3** blocks the VOLCANO and the two TOWERS further towards the front. The WALLS for the TOWERS are positioned approximately at the halfway point of the BATTLEGROUND.



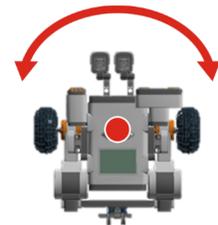
### 3 Match Setup and Start

- S1. Lord of the Robots is played by Teams consisting of at least two (2) members with a single HERO.
- S2. Each QUEST consists of two (2) teams with HEROES working collaboratively on the same FIELD.
- S3. Teams are given about one (1) minute after being called to the FIELD to arrive and begin setting up their HERO. If a Team does not report to the FIELD within a reasonable amount of time, they forfeit the match.
- S4. Teams are given sufficient time to select the program to run and get their HERO into START MODE (*See Rule P1*).
- S5. The FIELD should be clear of any debris or unintended objects or markings. Students and spectators should be outside the FIELD perimeter to not obstruct the HERO sensors.
- S6. The teams indicate readiness to start the match by giving the Referee a thumbs-up signal.
- S7. The Referee will start the QUEST and call your Team to have your HERO perform its action.

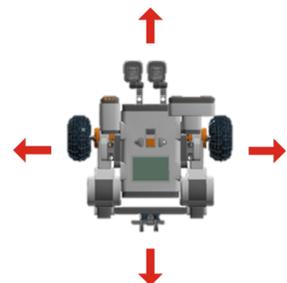
## 4 Game Rules

- G0. It is not unusual for a student to have difficulty setting up, starting, or interacting with their HERO. The Referee may need to assist if the Team member is having a difficult time interacting with their HERO.
- G1. To ensure a QUEST is completed in a timely manner, a QUEST must be completed within five (5) minutes. If the allotted time is exceeded, the QUEST is concluded, and any progress by the FELLOWSHIP is scored accordingly.
- G2. Each game consists of three (3) ROUNDS of two (2) TURNS. An action performed by a single HERO is considered a single TURN and both teams' HERO completing an action finishes a single ROUND.
- G3. HEROES do not have to take their turn in any specific order each ROUND. The default will be alternating RED and BLUE HEROES—the FELLOWSHIP must inform the Referee if this is different.
- G4. A TURN consists of the options to AIM, MOVE, FIRE. Any options can be skipped, but they must be performed in this order.
- G5. All HEROES can be manually loaded with BOULDERS at the start of the ROUND.
- G6. Teams can AIM their HERO by manually pivoting and/or rotating at the same location but otherwise cannot adjust the position on the BATTLEGROUND in any other way.
- G7. A MOVE can only consist of two (2) forward wheel rotations. This can be a simple straight movement or use sensors to avoid obstacles.
- G8. A FIRE is launching BOULDER(s) from the HERO. No human interaction is allowed during this phase.
- G9. Once an action is performed, the TURN is completed, and the Team cannot redo a TURN.
- G10. Apart from BOULDERS, any parts leaving the FIELD are collected by designated volunteers and kept until the end of the game.
- G11. Players can only reach into the FIELD if it is their HERO'S TURN in the ROUND.
- G12. The FELLOWSHIP earns one (1) RANKING POINT for any BOULDER or any part of a HERO leaving the STARTING ZONE.
- G13. The FELLOWSHIP earns one (1) RANKING POINT for KNOCKING DOWN the OUTPOST, either by ramming directly into it or by FIRING with a BOULDER.

### Examples of G6



- ✔ Teams can pivot/rotate their HERO.



- ✘ Teams cannot reposition their HERO.

- G14. The FELLOWSHIP earns one (1) RANKING POINT for KNOCKING DOWN the LEFT TOWER, either by ramming directly into it or by FIRING with a BOULDER.
- G15. The FELLOWSHIP earns one (1) additional RANKING POINT for FULLY KNOCKING DOWN the LEFT TOWER, in which only the Red cups remain in its original position, totaling to two (2) possible RANKING POINTS for the LEFT TOWER.
- G16. The FELLOWSHIP earns three (3) RANKING POINTS for KNOCKING DOWN the RIGHT TOWER, either by ramming directly into it or by FIRING with a BOULDER.
- G17. The FELLOWSHIP earns one (1) additional RANKING POINT for FULLY KNOCKING DOWN the RIGHT TOWER, in which only the Red cups remain in its original position, totaling to four (4) possible RANKING POINTS for the RIGHT TOWER.
- G18. The FELLOWSHIP earns three (3) RANKING POINTS for a HERO FIRING a BOULDER into the VOLCANO, such that the BOULDER enters and stays within the VOLCANO boundaries until the end of the QUEST.
- G19. The FELLOWSHIP earns one (1) additional RANKING POINT for any additional BOUNDERS that enters and stays within the VOLCANO boundaries until the end of the QUEST.
- G20. An OUTPOST and/or a TOWER is considered KNOCKED DOWN if any of the non-Red cups have fallen or are not in their original position.
- G21. Only a TOWER is considered FULLY KNOCKED DOWN if only the baseline Red cups remain in their original position. Any Red cups fallen with non-Red cups in its original position are not considered FULLY KNOCKED DOWN.

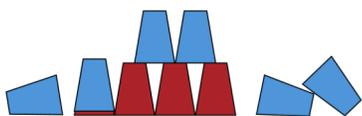
### Special Note for G18 and G19

BOULDERS must remain within the VOLCANO boundaries until the end of the QUEST. Any BOULDERS that leave or are bumped by another BOULDER and are not within the VOLCANO boundary will not be scored.

### Special Note for G21

The OUTPOST is not eligible to be scored as FULLY KNOCKED DOWN, regardless of whether it is constructed with Red cups.

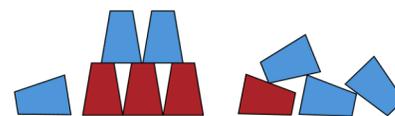
### Examples of G20 and G21



Two (2) non-Red cups remain in its original position. Note that one (1) non-Red cup is stacked over a Red cup.  
**KNOCKED DOWN.**



Only Red cups remain in its original position. Note that two (2) non-Red cups are stacked over a Red cup.  
**FULLY KNOCKED DOWN.**



One (1) Red cup has fallen but two (2) non-Red cups remain in its original position.  
**KNOCKED DOWN.**

G22. Points are tallied at the end of the game when all three (3) ROUNDS have completed, or five (5) minutes have elapsed. Both HEROES as part of the FELLOWSHIP will receive the same number of RANKING POINTS.

G23. The following information will be recorded by a scorekeeper to determine Team ranking and can be used as tiebreakers as needed at the end of Qualification play:

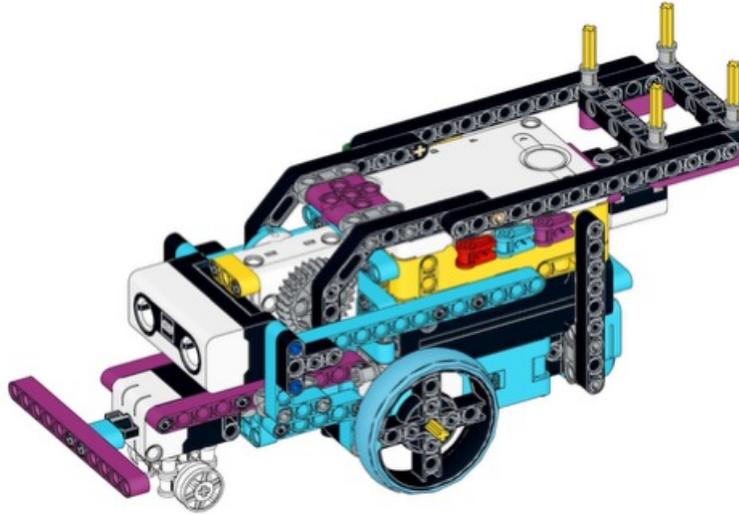
- Whether the FELLOWSHIP performed a BREACH
- Whether the FELLOWSHIP has KNOCKED DOWN the OUTPOST
- Whether the FELLOWSHIP has KNOCKED DOWN or FULLY KNOCKED DOWN the LEFT TOWER and RIGHT TOWER
- Whether the FELLOWSHIP shot one or more BOULDERS to the VOLCANO and the BOULDERS enter and stay within the VOLCANO boundaries.
- The total number of cups that are not in its original position.

#### 4.1 SCORING TABLE

The Lord of the Robots game allows the FELLOWSHIP to obtain RANKING POINTS. All points listed below are cumulative.

Task	RANKING POINTS	Description
Walk into Robodor	1	Awarded if any HERO or BOULDER leaves the STARTING ZONE.
Outpost	1	Awarded if any HERO KNOCKS DOWN the OUTPOST.
Low Siege	1	Awarded if any HERO KNOCKS DOWN part of the LEFT TOWER.
Low Breach	1	Awarded if any HERO FULLY KNOCKS DOWN the LEFT TOWER
High Siege	3	Awarded if any HERO KNOCKS DOWN part of the RIGHT TOWER.
High Breach	1	Awarded if any HERO FULLY KNOCKS DOWN the RIGHT TOWER.
Fires of Doom	3	Awarded if any HERO successfully shoots a BOULDER into the VOLCANO boundaries and it stays there until the end of the QUEST.
Extra Doom	1	Awarded for each additional BOULDER (beyond the first) that enters and stays within the VOLCANO boundaries at the end of the QUEST.

# 5 Example of a HERO



## 5.1 HERO TYPE

Your HERO can be a SCOUT or BALLISTA. They can be built from provided instructions, or by a team's own design.

## 5.2 RECOMMENDED HERO FEATURES

**ALLIANCE:** Your HERO should display their ALLIANCE (Red or Blue) via changing a colored brick or colored light.

**Driving (SCOUT only):** Your HERO will need to travel along a straight path. How will you achieve this?

- Normal Driving: Build your robot to travel in as close to a straight line as possible?
- Wall Runners: Use the BATTLEGROUND Walls to straighten you up?
- Sensors: Use the Gyro Sensor to keep track of your direction? Use the Distance Sensor to look for a target?
- Combination: All the above?
- Does movement **have** to use two motors?

**Navigating (SCOUT only):** Your HERO will need to know when to stop moving. How will you achieve this?

- Dead Reckoning: Stop after a preset number of rotations and hope you don't hit anything?
- Sensor/Run into Object: Stop after a number of rotations or when Force Sensor detects an obstacle?
- Sensor/See Object: Stop after a number of rotations or when

Distance Sensor detects an obstacle?

- Sensor/Navigate: Use Force or Distance Sensor to navigate around OBSTACLES
- Remember: HEROES can drive through TOWERS or OUTPOSTS

**FIRING:** Your HERO will need to fire a BOULDER – or maybe several!

There are many ways to achieve this:

- **Catapults** are simple and can throw a BOULDER long distances. There are many factors that change how the arm performs: length/weight of arm, angle of release, power of motor, stability of base, and movement during the throw.
- **Flywheels** have spinning wheels that spit out a ball. You will need compound gearing to get the wheels to a speed that shoots the ball a decent distance.
- Other mechanisms include **Ramps, Kickers**, and many more. Feel free to experiment!

**Hitting a Target:** Your HERO will benefit from being accurate. How will you achieve this?

- Manual: Use the AIM action to line up on a target and fire in a straight line?
- Code: Use your Distance sensor to detect a target and line up autonomously? Hint: the targets are much higher than the WALLS and other robots.
- Combination: For maximum destruction, ram the target then fire into the wreckage!

**Flexibility:** Your HERO will benefit from having options. How will you achieve this?

- Have separate programs for each task: e.g. MOVE and FIRE, FIRE only, or MOVE only?

### **5.3 RECOMMENDED CONFIGURATION**

- Manually position a colored Brick on top of the robot to show ALLIANCE or place over a Color Sensor to automatically show ALLIANCE.
- Use a Force Sensor to detect OBSTACLES to know when to stop
- Use a Distance Sensor to see OBSTACLES or targets
- Use Wall Runners to avoid crashing into WALLS.

### **5.4 TIPS**

- Make your charging port accessible!
- Make sure your HERO's Screen and Buttons are accessible!
- Make your HERO balanced and stable.
- Test the HERO Drive and Fire performance at different speeds.
- Make sure your HERO is tested on a carpet surface.

# 6 Collaboration

Lord of the Robots requires you to work with other teams to achieve a common goal. There are no advantages to doing better than your ally.

Consider these ideas to make the most of your FELLOWSHIP.

## **Talk Before the Match**

You will know your FELLOWSHIP partner ahead of time. Chat with them to figure out the best way to play.

## **Different Tactics**

The game will play very differently with the combinations of SCOUT and BALLISTA.

The varying WALL POSITIONS will require very different gameplay!

## **Avoid Friendly Fire**

Make sure your partners get clear shots at the targets.

## **Make it Count**

You only get three (3) TURNS per game. Make them count! Even if you can't get the large targets, make sure you get the smaller ones.

## **Be Nice**

Everyone makes mistakes. Be Gracious and kind. Who knows—you may end up playing the finals together!

# 7 Tournament Rules

The tournament is played in two parts. Part one is the Qualification Rounds. These are random matches among all the HEROES (or all the HEROES in a given Division). Part two is the Playoff Rounds. This uses a bracket-based, winner-advances model for the matches, until one FELLOWSHIP remains, and is the tournament champion!

## 7.1 QUALIFICATION ROUNDS

Depending on the total numbers of Teams in the event, Divisions may be used to ensure all Teams have the most matches possible, in a reasonable amount of time. Here are some examples of tournament structure depending on the number of Teams participating:

Total Number of Teams	Number of Divisions	Number of Teams per Division	Number of Matches a Team will Play	Number of Teams Advancing
8-15	1	8-15	7-14	8
16-23	2	8-11	7-10	4 per Division
24-48	4	6-12	5-11	2 per Division

A match schedule will be created that randomly assigns Teams to play one another. Each Team will play **with** each other Team (or each other Team in their Division) at least once. Depending on the event timing, the schedule may be repeated for more matches. Teams will earn tournament RANKING POINTS for each successful action performed by their FELLOWSHIP during a QUEST.

## **7.2 RANKING TEAMS AND TIEBREAKERS**

After the qualifying rounds, Teams will be ranked based on their tournament RANKING POINTS and any necessary tiebreakers. For events with multiple Divisions, each Division will be ranked individually.

If teams have the same number of tournament RANKING POINTS, the following tiebreaker rules will determine the other. (This is true if two or more teams have the same number of tournament RANKING POINTS.)

1. The first tiebreaker compares the cumulative number of cups that has moved from its original position over the course of all their matches, including from their FELLOWSHIPS. The Team with the higher count will be ranked higher.
2. The second tiebreaker compares the cumulative number of TOWERS FULLY KNOCKED DOWN during all their matches, including from their FELLOWSHIPS. The Team with the higher count will be ranked higher.
3. The third tiebreaker compares the cumulative number of points from the VOLCANO during all their matches, including from their FELLOWSHIPS. The Team with the higher score will be ranked higher.
4. The final tiebreaker is a coin flip, witnessed by members of both teams. The Head Referee will assign heads to one Team, tails to the other, and flip a coin. The Team that matches the visible coin face will be ranked higher.

### **7.3 BUILDING THE BRACKET**

After ranking, a number of Teams (or Teams from each Division) will be placed into a bracket for the Playoff Rounds. The number of advancing Teams must be 8 or 16 for a complete bracket.

The Playoff bracket is built in such a manner that the highest ranked teams will form a FELLOWSHIP with the lowest ranked teams in the first level of the bracket. For events with multiple Divisions, the bracket should be built such that teams compete against teams from other Divisions.

Because the tournament involves two (2) Teams forming a FELLOWSHIP for the duration of the Playoff Rounds, single division tournaments may begin directly to semifinal rounds due to the number of teams that compete. Teams at the bottom of the rankings may be eliminated.

#### **TOURNAMENTS WITH SMALL NUMBERS OF TEAMS**

For a Tournament that has 3-7 Teams, the top 2 Teams from Qualification Rounds is considered the Champion.

#### **ASSIGNING FELLOWSHIPS**

Teams who qualify for the Playoff Rounds are automatically assigned a partner Team to form their FELLOWSHIP. FELLOWSHIPS are formed such that the highest ranked qualifying Team is paired with the lowest ranked qualifying Team, then the next highest ranked qualifying Team with the next lowest ranked qualifying Team, and so forth.

## SINGLE DIVISION EXAMPLE

In the following diagrams, teams are denoted by their corresponding ranking (e.g. “Team 1” is ranked 1).

### 8 Teams

A single division with 8 teams will automatically begin at the Semifinals and the winning FELLOWSHIPS will proceed to the Finals.

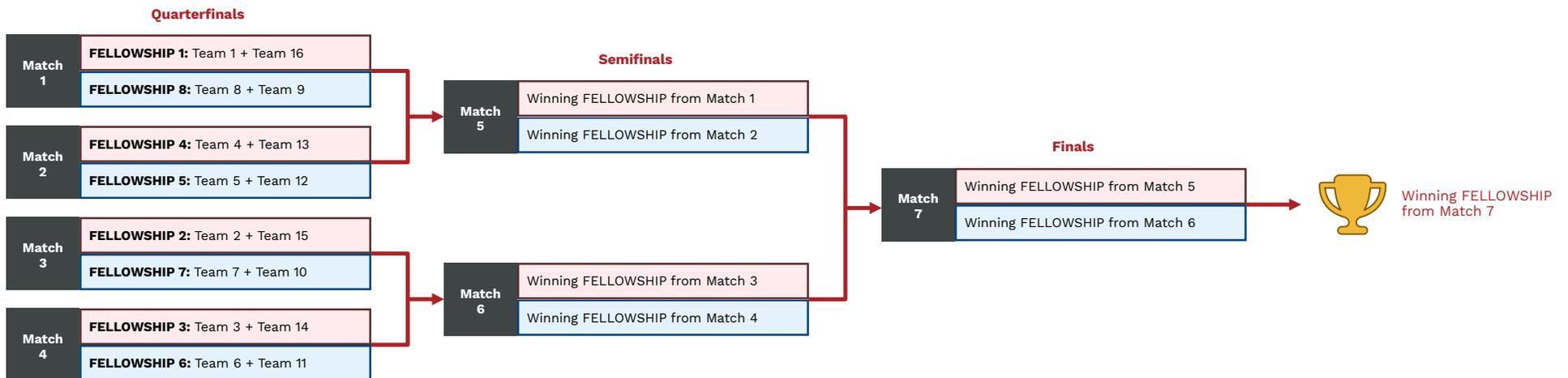
Assignments		
<b>FELLOWSHIP 1</b>	Team 1	Team 8
<b>FELLOWSHIP 2</b>	Team 2	Team 7
<b>FELLOWSHIP 3</b>	Team 3	Team 6
<b>FELLOWSHIP 4</b>	Team 4	Team 5



## 16 Teams

A single division with 16 teams will begin at the Quarterfinals and FELLOWSHIPS will progress to the Finals.

Assignments					
<b>FELLOWSHIP 1</b>	Team 1	Team 16	<b>FELLOWSHIP 5</b>	Team 5	Team 12
<b>FELLOWSHIP 2</b>	Team 2	Team 15	<b>FELLOWSHIP 6</b>	Team 6	Team 11
<b>FELLOWSHIP 3</b>	Team 3	Team 14	<b>FELLOWSHIP 7</b>	Team 7	Team 10
<b>FELLOWSHIP 4</b>	Team 4	Team 13	<b>FELLOWSHIP 8</b>	Team 8	Team 9



## Extra Number of Teams

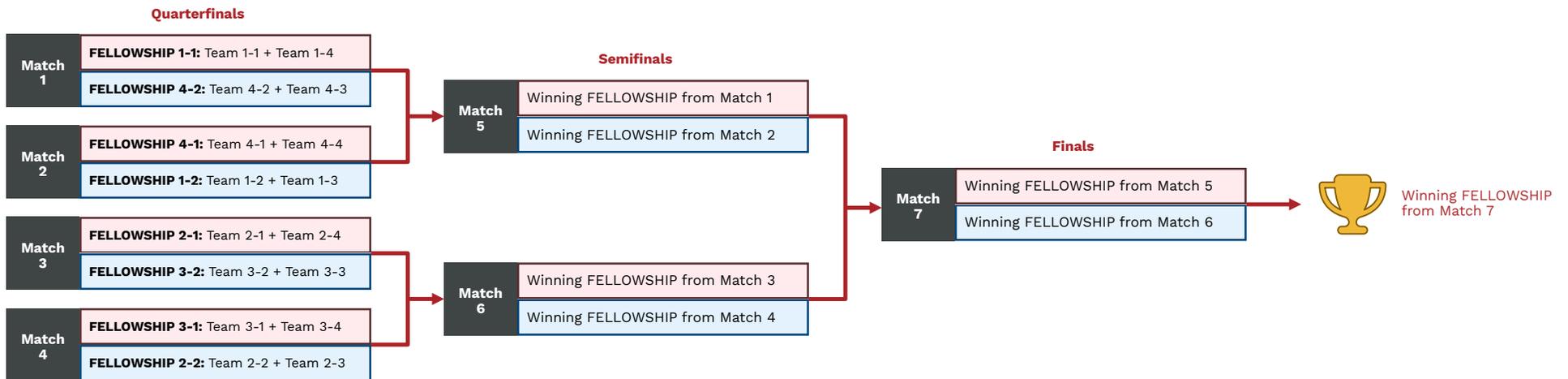
Divisions containing between 9 and 15 Teams, or a division with 17 or more Teams shall qualify Teams to the Playoff Rounds according to the following table. Any remaining Teams will be eliminated.

Number of Teams	Teams Qualifying
9-15	Top 8
17+	Top 16

## MULTI-DIVISION EXAMPLE

In the following diagram, there are 4 Divisions, and the top 4 teams qualify for Playoff Rounds. Teams are denoted by division and rank (e.g. “Team 1-2” is from Division 1 and rank 2).

Assignments	Division 1		Division 2		Division 3		Division 4	
<b>FELLOWSHIP 1</b>	Team 1-1	Team 1-4	Team 2-1	Team 2-4	Team 3-1	Team 3-4	Team 4-1	Team 4-4
<b>FELLOWSHIP 2</b>	Team 1-2	Team 1-3	Team 2-2	Team 2-3	Team 3-2	Team 3-3	Team 4-2	Team 4-3



## Wildcard Teams

Tournament seeding will prioritize matching pairs from the same Division. If there are remaining FELLOWSHIPS to be formed to reach 4 or 8 FELLOWSHIPS for the Playoff Rounds, the remaining FELLOWSHIPS will be paired by teams at random (i.e. wildcard).

For example, a tournament with 3 Divisions will have the top 4 teams from each Division paired into FELLOWSHIPS, forming 2 FELLOWSHIPS per Division and totaling 6 FELLOWSHIPS. The remaining 2 FELLOWSHIPS required to ensure 8 FELLOWSHIPS will be selected and paired at random amongst all the Divisions.

## **7.4 PLAYOFF ROUNDS**

Playoff Rounds are played where FELLOWSHIPS need to win two (2) out of three (3) matches, each match with a random WALL POSITION, and the winning FELLOWSHIP will advance to the next round. All rounds at the same level in the bracket are played before continuing onto the next level. (e.g. all Quarterfinal matches are complete before starting Semifinals.) The bracket will conclude with a Finals match between the last two FELLOWSHIPS, and the winning FELLOWSHIP (both Teams) will