

11 District Tournaments

Teams advance through the season depending on the events at which they compete: Regional or District. This section details how District teams advance from District qualifying events, to their District Championship.

11.1 District Events

District teams are ranked throughout the season based on the points they earn at their first 2 home District events they attend, as well as at their District Championship. Points are awarded to teams as follows:

Table 11-1 District Point Assignment

Category	Points
Qualification Round Performance	$\text{QualificationPoints}(R, N, \alpha) = \left[\text{InvERF} \left(\frac{N - 2R + 2}{\alpha N} \right) \left(\frac{10}{\text{InvERF} \left(\frac{1}{\alpha} \right)} \right) + 12 \right]$ <p>(For a typically sized District event, this will result in a minimum of 4 points being awarded for Qualification round performance. For events of all sizes, a maximum of 22 points will be awarded.)</p>
ALLIANCE CAPTAINS	Equal to 17 minus the ALLIANCE CAPTAIN number (e.g. 14 points for ALLIANCE #3 Captain)
Draft Order Acceptance	Equal to 17 minus the Draft Order Acceptance Number (e.g. 12 points for the team that is fifth to accept an invitation)
Playoff Advancement	Points awarded based on team participation in individual playoff rounds, and whether or not the ALLIANCE advances. See Section 11.1.3 Playoff Performance for details.
Judged Team Awards	10 points for <i>FIRST</i> Impact Award (formerly the Chairman's Award) 8 points each for Engineering Inspiration and Rookie All Star Awards 5 points each for all other judged team awards
Team Age	10 points for 2024 rookie teams 5 points for 2023 rookie teams

Points earned at District Championships are multiplied by 3 and then added to points earned at District events, to determine the final season point total for the team.

If there is a tie in the season point total between teams, those items are broken using the following sorting criteria:

Table 11-2 District team sort criteria

Order Sort	Criteria
1 st	Total Playoff Performance Points
2 nd	Best Playoff Round Finish at a single event
3 rd	Total ALLIANCE Selection Results Points
4 th	Highest Qualification Round Seed or Draft Order Acceptance (i.e. Highest ALLIANCE Selection points at a single event)
5 th	Total Qualification Round Performance Points
6 th	Highest Individual MATCH Score, regardless of whether that score occurred in a Qualification or Playoff MATCH
7 th	Second highest Individual MATCH Score, regardless of whether that score occurred in a Qualification or Playoff MATCH
8 th	Third highest Individual MATCH Score, regardless of whether that score occurred in a Qualification or Playoff MATCH
9 th	Random Selection

11.1.1 Qualification Round Performance

The calculation of Qualification performance points is done using the equation (an inverse error function) in Table 11-1. The equation utilizes the following variables:

- R – the qualification rank of the team at the event at the conclusion of Qualification MATCHES (as reported by FMS)
- N – the number of FIRST Robotics Competition teams participating in the Qualification rounds at the event
- Alpha (α) – a static value (1.07) used to standardize the distribution of points at events

This formula generates an approximately normal distribution of Qualification Round Performance points at an event, based on rank, with most teams getting a moderate number of points, and fewer teams getting the highest or lowest numbers of points available.

Table 11-3 displays sample Qualification Round Performance points for variously ranked teams at a 40-team event. The system will automatically generate the appropriate points for each team based on their rank and the number of teams at the event.

Table 11-3 Sample Qualification Round point assignments

Rank	1	2	3	4	...	19	20	21	...	37	38	39	40
Points	22	21	20	19	...	13	13	12	...	6	6	5	4

11.1.2 ALLIANCE Selection Results

This attribute measures both individual team qualification round seeding performance and recognition by peers.

ALLIANCE CAPTAINS are recognized based on their qualification round seeding rank. This rank is a result of the rules of the game, which typically incorporate several team performance attributes, and are designed to eliminate ties in rank. Non-ALLIANCE CAPTAINS are rewarded based on peer recognition. To be invited to join an ALLIANCE, a team’s peers have decided that the team has attributes that are desirable. Giving points for ALLIANCE selection also supports come-from-behind teams. A team taking several MATCHES to optimize their performance may be recognized as a late bloomer by a top seeded team, even if that performance isn’t reflected in the rankings because of poor performance in early MATCHES. These points also have the potential to recognize teams employing a minority strategy with their ROBOT. Teams with unique or divergent ROBOT capabilities that complement the strengths of other ALLIANCE members may be selected to fill a strategic niche.

Note also that ALLIANCE CAPTAINS are given the same number of points as the team drafted in the same sequence. For example, the third ALLIANCE CAPTAIN gets the same number of points as the third draft. Numerical analysis supports the idea that ALLIANCE CAPTAINS are about as strong in ROBOT performance as equivalently drafted teams. As an additional minor benefit, awarding the same points for ALLIANCE CAPTAINS and equivalent drafts lubricates the acceptance of draft offers between ALLIANCE CAPTAINS, which gives teams out of the top 8 the chance to experience being ALLIANCE CAPTAINS themselves.

11.1.3 Playoff Performance

This attribute measures team performance as part of an ALLIANCE.

Teams that advance to at least MATCH 12 earn Double Elimination (DE) Points per the formula below, where β is defined in Table 11-4.

$$DE\ Points = \frac{\#\ of\ DE\ MATCHES\ in\ which\ ALLIANCE\ won\ \&\ team\ participated}{\#\ of\ DE\ MATCHES\ the\ ALLIANCE\ won} \times \beta$$

Table 11-4 Double Elimination Points, β values

ALLIANCE Finish	β
1st Place (Winners)	20
2nd Place (Finalists)	20
3rd Place (loser of MATCH 13)	13
4th Place (loser of MATCH 12)	7

In most cases, unless a BACKUP is recruited, a team plays 100% of the DE MATCHES won by their ALLIANCE, thus their DE Points simply equal β . If a team does not play 100% of the DE MATCHES won by their ALLIANCE, their DE Points equal their β value multiplied by the percentage of DE MATCHES won by their ALLIANCE in which that team participated. If the result is not a whole number, the value is rounded up to the nearest integer.

Teams on the winning ALLIANCE are awarded additional Finals Points, which are 5 points for each Finals MATCH won and in which the team participated, up to a maximum of 10 points.

For example, if Team X's ALLIANCE wins the event, but Team X only played in 2 MATCHES won by their ALLIANCE, MATCH 13 and Final 1, Team X's Playoff Performance points are $20 * (1/5) + 5 = 9$ points.

The maximum number of Playoff Performance Points a team can earn is 30 (20 DE points + 10 Finals Points).

11.1.4 Awards

This attribute measures team performance with respect to team awards judged at the event.

The points earned for team awards in this system are not intended to capture the full value of the award to the team winning the award, or to represent the full value of the award to *FIRST*. In many ways, the team's experience in being selected for awards, especially the *FIRST* Impact Award, the Engineering Inspiration Award, and the Rookie All Star Award (which is optional for District Championship events), is beyond measure, and could not be fully captured in its entirety by any points-based system. Points are being assigned to awards in this system only to help teams recognize that *FIRST* continues to be "More than Robots®," with the emphasis on our cultural awards, and to assist in elevating award-winning teams above non-award-winning teams in the ranking system.

Teams only get points for team awards judged at the event. If an award is not judged (e.g. Rookie Highest Seed), is not for a team (e.g. the Dean's List Award) or is not judged at the event (e.g. Safety Animation Award, sponsored by UL), no points are earned.

11.1.5 Team Age

This attribute recognizes the difficulty in being a rookie or relatively new team.

Points are awarded to 2023 and 2024 rookie teams in recognition of the unique challenges teams face in those early years, and to increase the chance that they will make it to the District Championship to compete with their ROBOTS. Like our dedicated Rookie awards, these additional points are intended to recognize and motivate newer participants in *FIRST* Robotics Competition. These points are awarded once at the beginning of the season. Rookie year is calculated based on the year in which *FIRST* recognizes the team as a rookie.

11.1.6 Regional Participation

District teams neither earn points for their actions at any Regionals, nor are eligible for any *FIRST* Championship qualifying benefits at that Regional (awards, Wild Cards, etc.). If a District team is on the winning ALLIANCE, a Wild Card is awarded to the next qualifying team. If they are on the finalist ALLIANCE and would be awarded a Wild Card, they are skipped.

11.2 District Championship Eligibility

A team competing in a District qualifies for their District Championship by meeting 1 of the following criteria:

- A. District *FIRST* Impact Award Winner,
- B. District Ranking (based on total points earned at their first 2 home District events as detailed in [Section 11.1 District Events](#)),

Teams do not earn points at third or subsequent District events, nor at any inter-district or Regional events at which they compete during the season.

If a team declines an invitation to the District Championship, the next highest uninvited team on the list is invited, and so on, until the event capacity is filled.

- C. District Engineering Inspiration winner (qualifies to compete for the award only), and

D. District Rookie All Star winner (qualifies to compete for the award only).

The capacity of each District Championship is shown in Table 11-5. Each District determines the number of teams that qualify for their District Championship. These limits are based on factors including but not limited to the total number of teams in the District, available venue capacity, etc.

Table 11-5 2024 District Championship Capacities

District Championship	Capacity	Divisions
FIRST Chesapeake District Championship	54	1
FIRST Israel District Championship	45	1
FIRST Mid-Atlantic District Championship	60	1
FIRST North Carolina State Championship	40	1
FIRST Ontario Provincial Championship	100	2
FIRST in Texas District Championship	86	2
Indiana State Championship	38	1
Michigan State Championship	160	4
New England District Championship	96	2
Pacific Northwest District Championship	50	1
Peachtree District State Championship	50	1

11.3 District Championships with Multiple Divisions

If a District Championship has too many teams to allow all teams 12 Qualification MATCHES, then the event hosts multiple divisions. These events have 2 or 4 divisions (based on the number of teams participating, see Table 11-5) with approximately 40–60 teams in each division. Teams are assigned divisions by *FIRST* using a process developed by *FIRST* in Michigan.

The process employs a “brute force iterative randomizer” and is executed as follows:

1. The district team list is sorted in order of cumulative district points earned as described in [Section 11.1 District Events](#).
2. The list is divided into quartiles based on rank (e.g. the first quartile has the top 25% ranked teams).
3. Division assignments are randomly generated using equal contributions from each quartile.
4. 3 criteria are calculated for each division:
 - a. average strength: the arithmetic mean of the district point values of teams in a division
 - b. distribution of strength: the Signal to Noise Ratio (SNR) of the district point values of teams in a division. SNR is calculated as follows:

$$SNR = 10 \left(\log \frac{\bar{x}^2}{\sigma^2} \right)$$

\bar{x} = arithmetic mean of the district points in a division

σ = standard deviation of the district points in a division

- c. distribution of strength for “top” teams: The SNR of the district point values of teams in the first quartile of a division
- 5. The 3 criteria for each division are compared to the other division(s). If the difference between the division’s value and any other division’s value exceeds the limits in Table 11-6, the criteria is not met.

Table 11-6 District Championship division evaluation limits

	2 divisions	4 divisions
Average strength	1	2
Distribution of strength	1	2.5
Distribution of strength for “top” teams	1.5	2

- 6. If all 3 criteria met, event organizers publish the assignments. If any of the 3 criteria are not met, assignments are rejected, and the process returns to Step 3.

11.4 District Championship Playoffs

In these cases:

- Division winning ALLIANCES play each other in District Championship Playoffs, employing the brackets shown in Figure 11-1 and Figure 11-2 (and detailed in Table 11-7) that corresponds to their District, until a winning ALLIANCE for the event is determined.

Figure 11-1 4-division District Championship Playoff Bracket

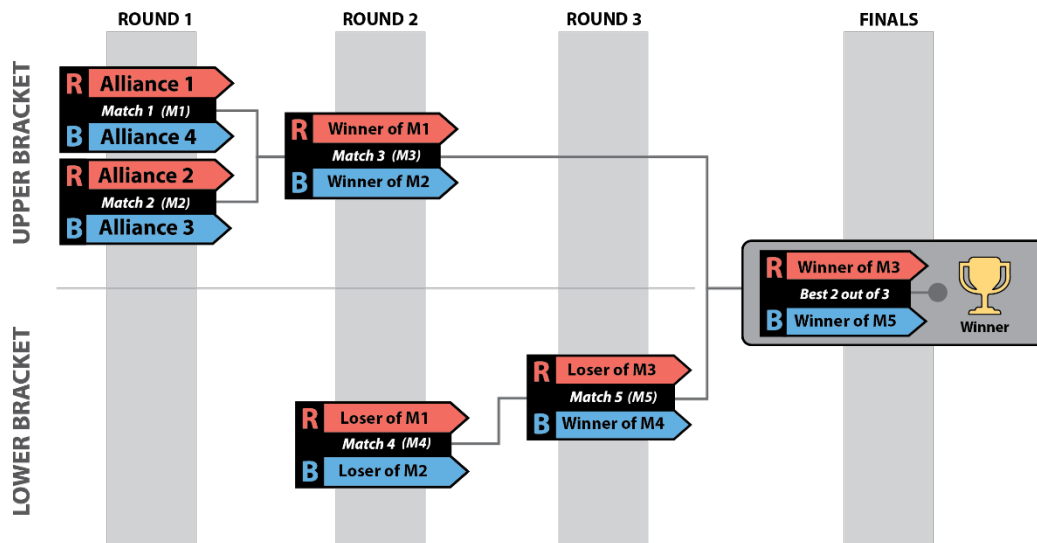


Figure 11-2 2-division District Championship Playoff Bracket

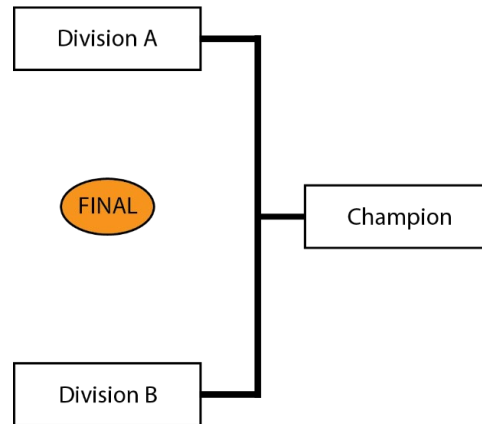


Table 11-7 District Championship 4-ALLIANCE Playoff MATCH schedule

Round	MATCH	Upper/ Lower	Blue	Red	Gap (min)		Next MATCH (MATCH # (ALLIANCE color))	
			Blue	Red	Blue	Red	Winner	Loser
1	1	Upper	B	A			M3 (R)	M4 (R)
	2	Upper	D	C			M3 (B)	M4 (B)
15-minute break								
2	3	Upper	W2	W1	17m	24m	M6 (R)	M5 (R)
	4	Lower	L2	L1	24m	31m	M5 (B)	
15-minute break								
3	5	Lower	W4	L3	17m	24m	M6 (B)	
15-minute break								
Finals	6		W5	W3	17m	44m	M7	M7
15-minute break								
Finals	7		W5	W3	17m	17m	M8*	M8*
15-minute break								
Finals	8*		W5	W3	17m	17m		

* if required

- Each team on a Champion ALLIANCE of a 2-Division District Championship Playoff tournament earns 10 points.
- For a 4-Division District Championship Playoff tournament, each team on a Champion ALLIANCE earns 20 points and each team on a Finalist ALLIANCE receives 10 points.
- If any of these ALLIANCES has recruited a BACKUP TEAM, these points are divided amongst the teams as described in [Section 11.1.3 Playoff Performance](#).

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- If an ALLIANCE in a District Championship Playoff has not yet recruited a BACKUP TEAM per [Section 10.6.3 BACKUP TEAMS](#), the ALLIANCE CAPTAIN may bring in only the highest ranked team from their division’s BACKUP POOL to join its ALLIANCE.

