

# Team 1458 - Red Tie Robotics

## 2026 Onboarding



## Agenda

- Welcome!
- History & Background
- FIRST Introduction
- Team Structure & Sub Teams
- Expectations & Conduct
- Build & Comp Season
- Competition Overview
- Parent Assistance
- Fundraising & Finances
- Questions & Answers



# Welcome to Team 1458 – Red Tie Robotics

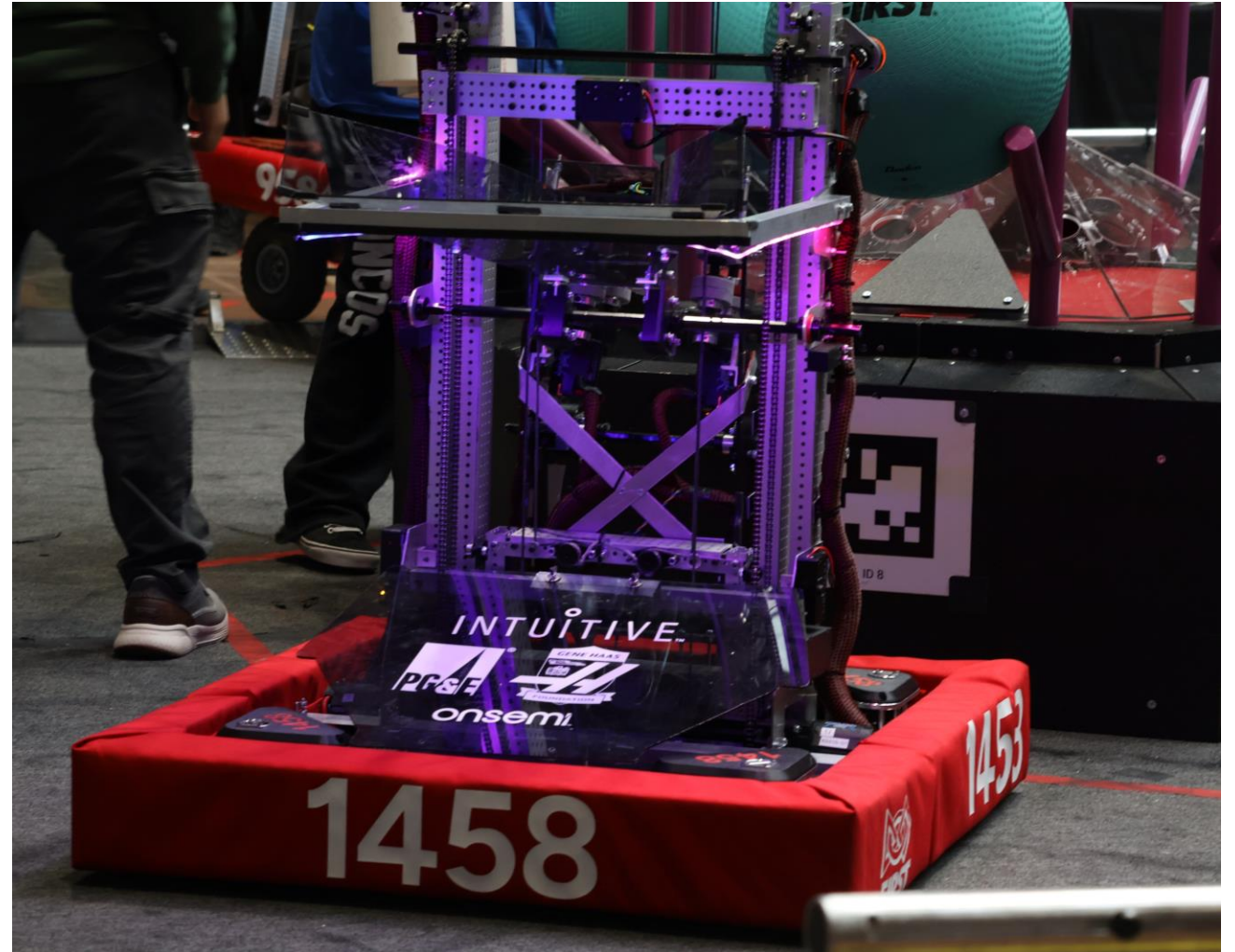
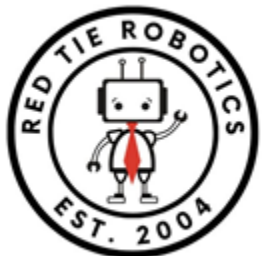


- This is the competitive FRC team
  - Varsity robotics team
- Advanced robotics & building the competition robot for season
- 501c3 booster foundation
  - \$1,000 team fee / donation
- Your students made it through the tryouts!
  - 47 applications for team
  - 27 made it through the skills tests and interviews
  - 46 members on the team for 2026

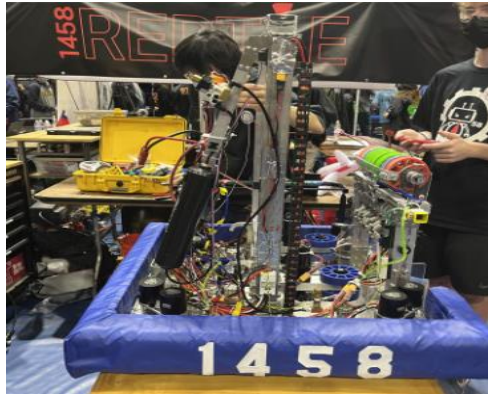
**ALL DONATIONS & FEES ARE TAX DEDUCTIBLE**

## Who Are Red Tie Robotics?

- We are “Team 1458 - Red Tie Robotics - Responsibility Empowers Discovery”
- We are 21! - Founded in 2004 as a ASB club at Monte Vista High School
- We are student-led and mentor-driven – 46 members for 2026
- We build robots and are winners of multiple awards at FIRST Robotics Competition
  - 2025: Rising All Star Award
  - 2024: Qualified for World championships in Houston



# Team 1458 – Red Tie Robotics: History & Background



**2022**

Sacramento Regional

6-5-0 | Rank 24/43



**2023: REGINA**

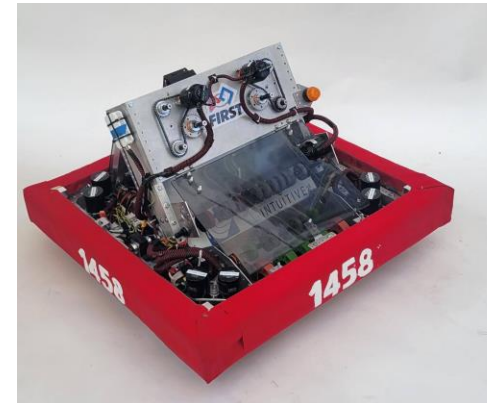
Sacramento Regional

3-7-0 | Rank 23/46

FIRST Dean's List Finalist  
Award

Capital City Classic

4-4-0 | Rank 20/42



**2024: SLIPKNOT**

SF Regional

5-5-0 | Rank 20/43

East Bay Regional

7-8-0 | Rank 47/61

Regional Finalists

World Championships  
Milstein Division

1-9-0 | Rank 74/75



**2025: ENTROPY**

Pinnacles Regional

6-8-0 | Rank 13/35

Rising All Star Award

SF Regional

5-6-0 | Rank 19/41



# FIRST Robotics Competition (FRC)

## FIRST Introduction

- FIRST® (For Inspiration and Recognition of Science and Technology) is a global organization that prepares young people for the future through a suite of inclusive, team-based robotics programs
- Each team creates a team brand, and raises funds to design, program, and build industrial-sized robots to play an action-packed game, released in January.
- They compete on a themed field as part of a three-team alliance in the spirit of Coopertition
- These thrilling, sports-like challenges build their self-confidence and collaborative problem-solving skills and have a proven and lasting impact on STEM learning and interest.

## Gracious Professionalism

- Participants compete intensely while treating each other with respect and empathy
- There is no trash talking, nor disingenuous platitudes.
- Knowledge, competition, and empathy are comfortably blended

## Coopertition

- Teams help and cooperate with each other, even as they compete.
- It's about learning from teammates, teaching others, collaborating with mentors, managing and being managed
- Coopertition embodies the spirit of competing while assisting and enabling others whenever possible

# Team Structure & Sub Teams

## Leadership

The team is led by 2 captains, and each of our 5 sub teams has a team lead responsible for their team deliverables. The leadership team is supported by 2 lead coaches, and parent mentors, all bringing their real-world experiences to help the team prepare and compete.



## Business (6 Members)

The Business team manages sponsor outreach, grant writing, financial tracking, and the yearly business plan. They also maintain the team's presence through social media, weekly newsletters, website design, promotional materials, and team apparel alongside logistics and planning for competitions.

# Team Structure & Sub Teams

## Design (8 Members)

The Design sub-team plays a crucial role by using On-Shape Computer-Aided Design (CAD) to create detailed models of parts and mechanisms. They build quick prototypes and once finalized, these designs are handed off to the Mechanical Team, who bring them to life.



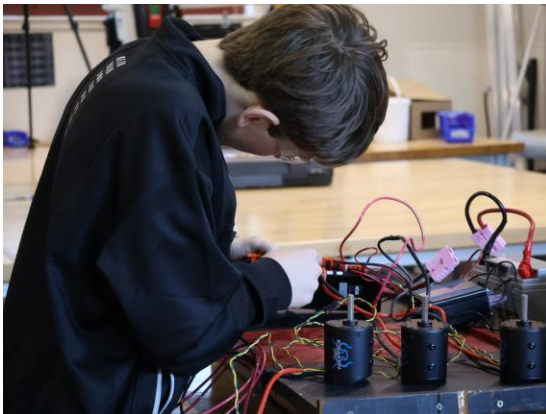
## Programming (11 Members)

The Programming sub-team brings the robot to life through code! Using Java, this sub-team develops software that controls the robot's movements, functions, and autonomous behaviors. They work closely with the Mechanical and Electrical sub-teams to ensure the robot operates smoothly and efficiently.

# Team Structure & Sub Teams

## Mechanical (13 Members)

The Mechanical sub-team transforms designs into reality! They assemble, fabricate, and refine the robot's physical components. This sub-team works with tools and machinery to build the robot's structure, mechanisms, and drive systems, ensuring everything is precise and functional.



## Electrical (8 Members)

Our Electrical sub-team is the bridge between Mechanical and Programming sub-teams. Team members apply wiring design concepts to wire the robot bases created by Mechanical and ensure everything runs smoothly.

# Student Expectations & Conduct

## Expectations

- All forms completed and handbook signed
- Attendance > 75%
  - Be present and productive
  - Marked absent if distracting others
- Monthly team evaluations
- Support student well being
  - Take mental health days if needed
  - Contact leads or mentors

## Conduct

- No phone use in meetings unless required
- Maintain C grades or better in all classes
- Check student / Red Tie email for communications
- Subject to all district, state and federal policies / regulations
- MVHS dress code applies in shop
- Horseplay / games in shop will not be tolerated

# Build & Competition Season

## Key Dates For Your Diary:

- Kickoff: January 10<sup>th</sup>
  - 2026 game is revealed, and the fun begins!
- Build season: 01/10 – 03/05
  - Design, prototype, build and test robot for competition
  - Yes – 7 weeks to do everything!
- Competition Dates
  - Week 1: Half Moon Bay - March 6 – 8
  - Week 5: Contra Costa - April 2 - 4
  - District Championship: April 9 - 12

## Build Season Schedule

- 18 hours per week
  - Mondays: 3pm - 8pm
  - Wednesdays: 3pm - 8pm
  - Saturdays: 9am - 5pm
- Attendance will be tracked
  - Notify team lead 24 hrs for absences
  - Students must be productive
- Driver training
  - Training with last seasons bot
  - Early practice for drivers and ensures higher system reliability.

# What will students do during build season

## Design

- Working with Computer Aided Design
- Learning On-shape skills and FRC specific
- Training program at [frcdesign.org](http://frcdesign.org)
- Prototyping with laser cutter / 3d printers
- Designing the comp robot

## Programming

- Java programming
- USACO level programming problems
- FRC programming constructs with wplib
- Robotics focused algorithms and methods
- Programming the comp robot

## Mechanical

- Introduction to FRC mechanical components
- Tooling best practices (measure / precision)
- Hands on fabrication practice
- Build field elements
- Building the comp robot

## Electrical

- Understanding of FRC electrical components
- Wiring best practices: Power & Comms
- Battery management & usage
- Soldering, wiring & crimping
- Wiring the comp robot

# What happens at a competition?

## Load-In & Practice

- Transport robot & pit from MVHS to competition site
- Set up pit and robot
- Get robot inspected for competition
- Practice rounds on practice field

## Competition Matches

- Compete in random alliances of 3 teams
- Points scored depend on game structure & strategy
- Score ranking points to place for finals
- Make field repairs to robot as things break!

## Competition Final

- Top 8 teams pick alliances
- Double elimination rounds to get to final 2 alliances
- Best of 3 for final
- Points awarded for final placing & awards

## Shutdown

- Collect awards
- Pack up pit and robot
- Travel back to MVHS
- Unpack U-haul into shop

# Parent Assistance

## Parent Assistance

- The team is supported by parent volunteers and mentors
- We need more mentors:
  - Anyone with electrical, mechanical engineering skills especially
  - All help is welcome!
- Any parents who can help with supervision
  - We have challenges on getting access to the facilities for team sessions
  - Currently the foundation is renting the 600 block from the school
- We need sponsors
  - This robotics stuff is expensive – any sponsor opportunities would be great!
- We need cleared drivers for carpool if we want to maximize competition attendance

## Process for New School Volunteers

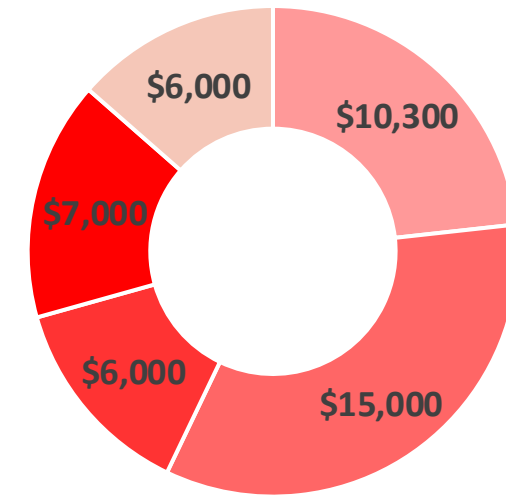
- Log in to the Be A Mentor volunteer management system.
- Choose a volunteer level. You may choose
  - Level One (no driving)
  - Level Two (with driving).
- Complete Livescan and TB requirements.
- Upload appropriate documents.
- Complete the Mandated Reporter training annually and the Sexual Harassment Prevention training every two (2) years.
- For Level 2 only: upload DMV driving record.

# Fundraising: Expenses

## Expenses

- Building competitive robots is an expensive business!
  - Our base drivetrain costs over \$8,000
- Each year the team spends between \$40,000 - \$50,000
- Main expenses are:
  - Competition fees: FIRST fees for 2 comps & Finals
  - Parts & materials: Raw materials and components for the robot
  - Tools & equipment: CNC router and 3d printer this season
  - Facilities: Rental of the shop from the school
  - Other: Marketing, transportation, insurance & bank fees

## Expenses Breakdown



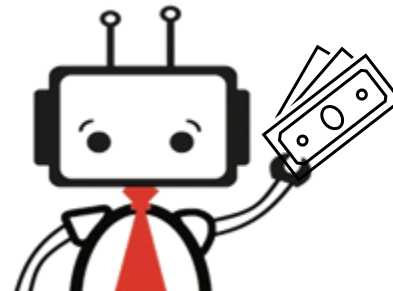
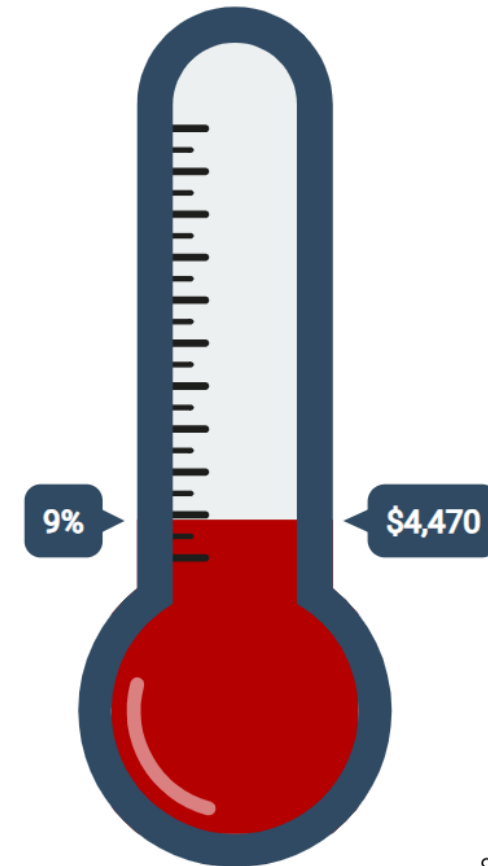
Competition Fees   Parts & materials  
Tools & Equipment   Facilities  
Other

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## Fundraising Target: \$50,000

### Team Fee: \$1,000

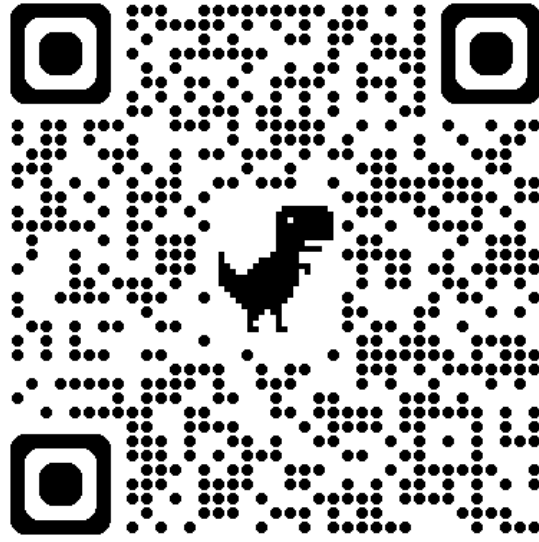
- The team must raise around \$50,000 to compete every year
- Our primary sources of funding are:
  - Parent Donations: 80%
  - Sponsorships & Grants: 10%
  - Summer Camp & Fundraisers: 10%
- Please remember:
  - Red Tie Robotics Foundation is a 501c3 and all donations are fully tax deductible
  - Please take advantage of corporate matching if your company offers it
- Anyone else interested in a corporate sponsorship?



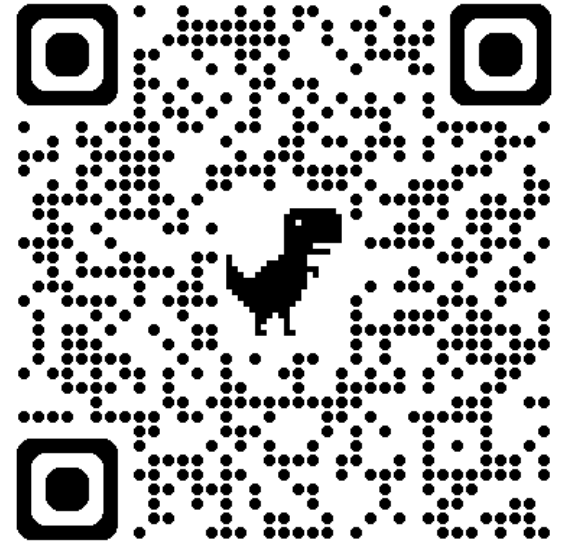
## Questions?



**Donations**



**Mentoring**



**FIRST FRC**



**RED TIE**  
**ROBOTICS**

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