

absolute value 867

2026 - 2027

sponsor ship packet

presented by Absolute Value 867



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Each year begins with smaller engineering challenges through the NASA JPL Invention Challenge before transitioning into the FIRST Robotics Competition, where the entire team works together to create a full-scale competition robot. Our philosophy is very simple:

Learn by doing. Build. Grow annually.

In the coming years, Arcadia High School is also preparing to expand its engineering facilities, giving programs like ours the potential to serve more students and take on larger projects. However, additional space does not cover the cost of operating our team. Maintaining our momentum from last season, and continuing to compete, training new members, and building our program, is what will allow us to fully use those opportunities in the future.

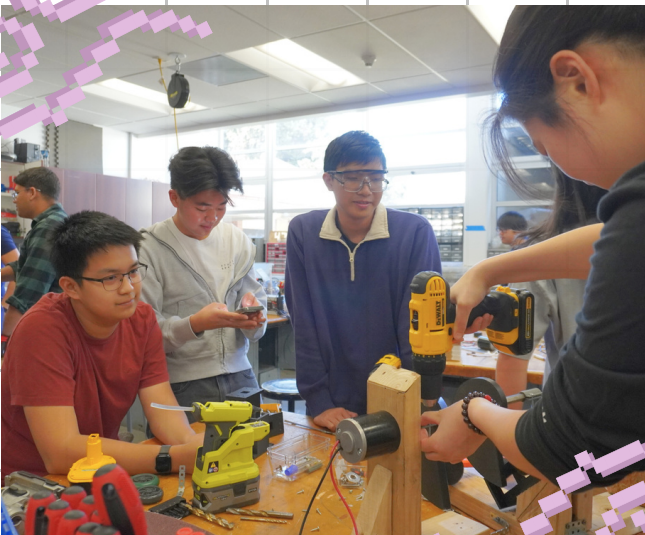
As a high-cost student engineering program with no school funding, we depend heavily on sponsors, grants, and in-kind support to keep these opportunities accessible.

about -ut us

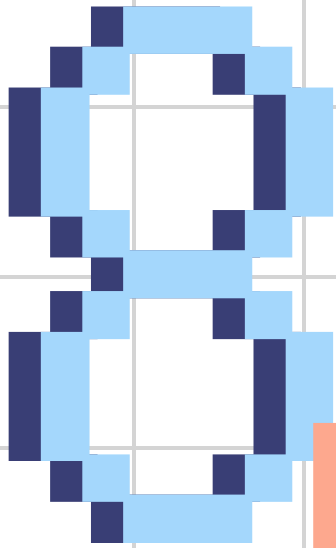
team 867 “absolute value” is a student-led engineering team based at Arcadia High School in Southern California.

For more than two decades, our students have taken ideas from paper to reality through designing, prototyping, manufacturing, wiring, programming, testing, and competing with systems they build themselves.

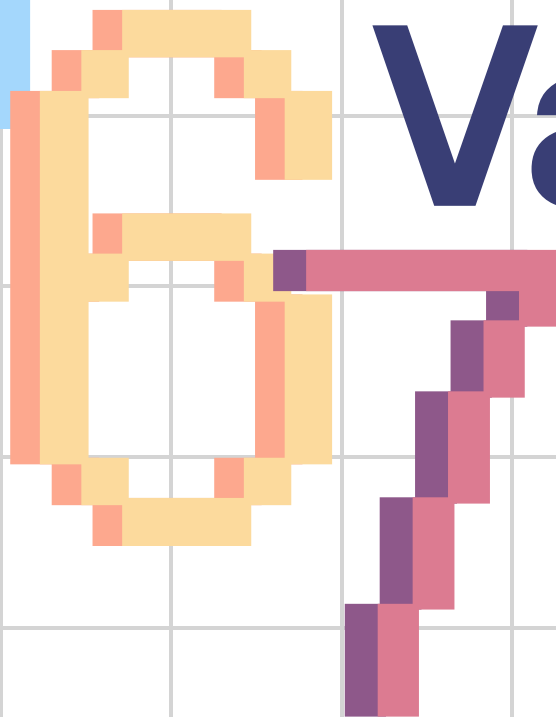
Our program is connected to Arcadia High School's Engineering Design & Development CTE capstone course, giving students the opportunity to apply what they learn in the classroom to real engineering challenges. Members come from different backgrounds and interests, from mechanical engineering and computer science to electronics, CAD, business, art, and community outreach, but work toward one common goal.



meet the



Absolute Value

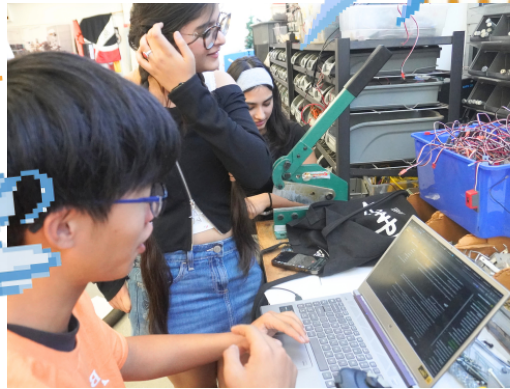


team

Students are responsible for nearly every part of running the organization—from designing and manufacturing the robot to programming, fundraising, sponsor communication, competition preparation, and community outreach.

Electrical and Controls create the "nervous system" of our robot. Members wire motors, sensors, motor controllers, cameras, and other electronics while programming both driver-controlled and autonomous functions.

python
C++



2026-2027 lead

dylan lin



electrical + control systems

2026-2027 leads

cyrus chow

iris shi



Mechanical turns designs into physical systems. Members gain hands-on experience using professional tools and manufacturing techniques to build our drivetrain, mechanisms, frame, and various other robot components.



2026-2027 Lead

amanda hang



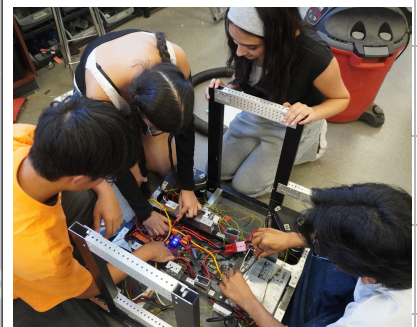
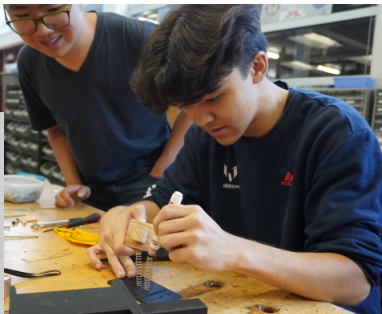
Outreach provides the resources and community that truly allow our engineering team to thrive.

Members contact sponsors, apply for grants, manage social media, develop cross-team partnerships, run STEM outreach, prepare FIRST award submissions, and promote Team 867 throughout the community. There is no robot without Business.

business

Our team uses social media to record and share our progress throughout the season, highlight our sponsors' contributions, and connect with other FRC teams to . PR creates weekly progress posts during competition season in order to share our behind the scenes with our community.

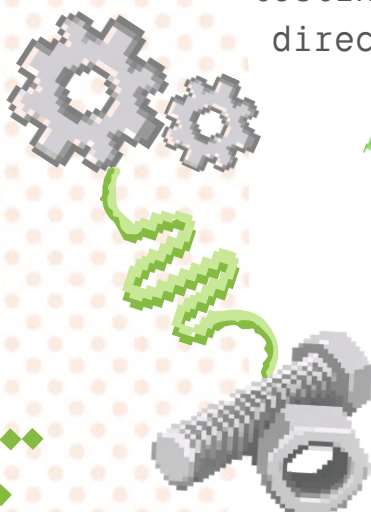
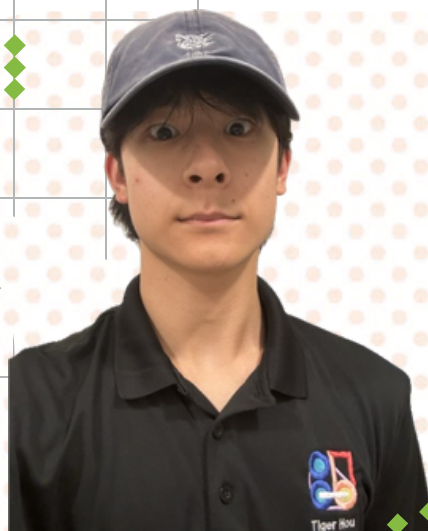
social media examples



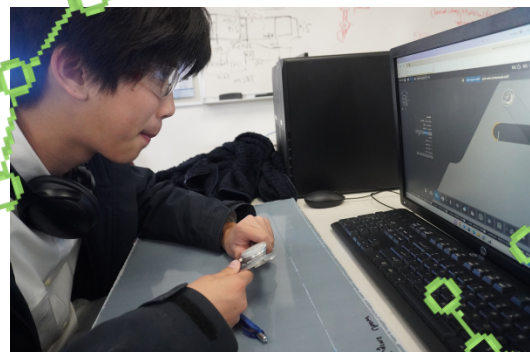
Every competing FRC team must curate an Engineering Notebook that acts as the ultimate "About Us". Outreach collects the most current information on our team's competition

2026-2027 lead

tiger hou



Operations turns strategy into engineering designs before anything gets manufactured. Members model our robot using professional CAD software, develop field elements for testing, create prototypes, and work directly with Mechanical throughout the build process.



operations

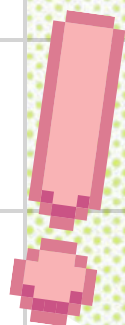
Kay Singhal is the Captain of FIRST Robotics Team 867, "Absolute Value," leading a major rebuild of the team's structure, technical goals, and long-term direction. He focuses on creating a stronger, more ambitious program while expanding student training, competition performance, and community impact.

2026-2027

kay singhal



team (overall)
captain



EDD is connected to Arcadia High School's Career Technical Education Engineering pathway. Engineering Design & Development is the capstone course—the highest-level class in the pathway where students apply skills learned throughout previous engineering courses to real projects. Our sponsors therefore support not only competition team, but an engineering education program connected to Arcadia High School and the Arcadia Unified School District.

CAPSTONE PROGRAM CTE *

Our team brings together students with different technical interests, experiences, cultures, and perspectives. Students who come from historically underrepresented groups participate throughout our technical and leadership roles, while members from a variety of cultural backgrounds work together toward one engineering goal. Each member's distinct upbringing contributes to their unique qualifications that provide us with something especially valuable in engineering: different ways of solving the same problem.

A DIVERSE TEAM

Students do the engineering, run outreach, communicate with sponsors, manage competition preparation, and teach each other. Mentors and teachers guide us, but students are responsible for turning ideas into working inventions.

STUDENT RUN

50%+ NEW MEMBERS ANNUALLY

We typically return only around 15 experienced members each year.

That means more than half of Team 867 begins each season with little or no previous experience on the team. Rather than seeing this as a disadvantage, we make teaching part of our culture. New students first gain experience through the JPL season before joining the larger FRC build, creating a cycle where experienced students teach the next generation.

TWO COMPETITION SEASONS

Fall: We start the season with JPL Invention Challenge. Small teams learn how to brainstorm, prototype, manufacture, test, fail, and improve.

Spring: FIRST Robotics Competition Students bring those skills together to design and build a much larger and more complex robot.

rooted in difference 8

where your support

A robot takes more than just engineering. It starts with hundreds of individual components and students willing to turn them into one. Team 867 currently operates with limited funding, while the cost of competing continues to rise. Our immediate priority is ensuring that we are able to participate in both of our major engineering seasons.

First ~ \$ 7,000 Robotics Registration

Our largest single expense; registration is required before our students can even compete.

Minimum Robot Build ~ \$ 6,000

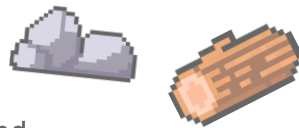
Even a basic competitive FRC robot requires thousands of dollars in components.



examples

- motors
- aluminum & steel
- limelight vision camera
- robot radio
- motor controllers, sensors, & encoders
- bearings, belts, chain & gears

Before FRC even begins, three smaller student teams prototype and manufacture completely separate engineering devices for the JPL challenge. Funding will support prototyping materials, motors & electronics, wood/metal, and transportation.



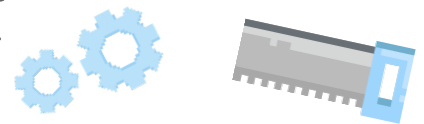
~ \$ 2,000 JPL // Wonderworks Season

Today, much of Team 867's manufacturing is performed using basic tools: Drills, Saws, Bandsaw, Drill Press, Hand Tools

Those tools teach valuable skills, but they also limit the complexity and precision of what students can manufacture.



Building Our Workshop



One of our long-term goals is to build a fund that goes toward purchasing practical equipment such as a CNC machine, allowing students to manufacture more advanced robot components themselves while learning industry-relevant machining skills.

Therefore, your sponsorship helps us compete today and build our engineering capabilities for tomorrow.

competitions

NASA JPL Invention Challenge

Every fall, Team 867 splits into three smaller engineering teams to compete in NASA JPL's annual Invention Challenge. Students receive one unusual engineering problem and a strict set of constraints. They must then design, prototype, manufacture, and repeatedly test a device capable of completing the challenge. Past games have challenged competitors to perform tasks such as launch M&Ms accurately across a measured distance or create unique ways to transport water without using suction.

In our most recent season

+ 2019 → #1 +

Team 867 groups qualified for the JPL Finals.

The JPL season gives new members their first opportunity to experience the complete engineering design process before FRC begins. Team 867 earned 1st place overall at the JPL Finals, competing against teams from across the United States and internationally.

First Robotics Competition

In the spring, our entire team comes together for the FIRST Robotics Competition (FRC)

FIRST releases a completely new game each year. Teams must design and build an industrial-sized robot capable of completing the game's objectives while competing alongside and against other robots on a full-size field.

Within only a few months, our students must:

Understand the game → Develop strategy → Prototype → CAD → Manufacture → Wire → Program → Test → Compete

FRC combines mechanical engineering, electrical systems, programming, autonomous control, strategy, business, and teamwork into one challenge—the culmination of our team's Fall training set in motion!

engineering

Precision Vision Based Robot Alignment

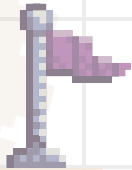
FRC Team 867 has used Limelight vision camera together with PID control to automatically align our robot with scoring locations on the field. Rather than depending completely on a driver's reaction time, the robot uses information from its camera to continuously calculate its position error and correct its movement.

WHATS NEXT?

Our Controls team wants to continue expanding computer vision and localization.

Future development includes experimenting with AI-based vision to better identify field geometry and corners, improving the robot's understanding of its position, and potentially strengthening odometry and autonomous movement.

&



innovations

MULTI STAGE ELEVATOR SYSTEM

One of our recent robots required the ability to move game pieces vertically across various scoring heights. Our solution was a custom elevator mechanism designed, manufactured, assembled, and tested by Team 867 students.

game

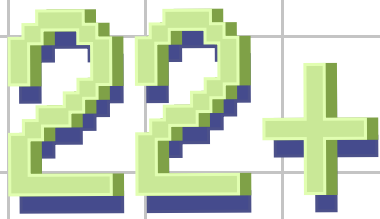
piece

collection

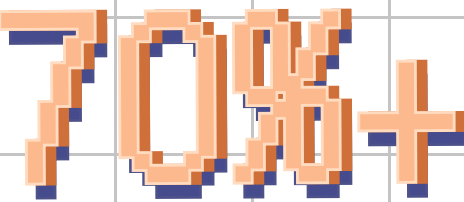
Our robots have also incorporated systems such as hoppers and intake mechanisms designed to quickly collect, retain, and move game pieces through the robot. A

successful mechanism rarely begins with the final design. We prototype, test, break, redesign and rebuild, and this is our signature process.

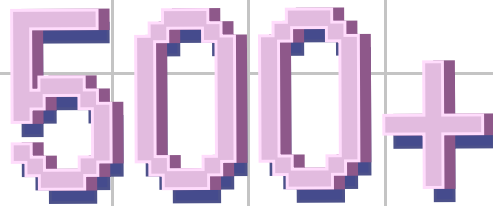
Considerations: structural rigidity, motor selection, gear ratios, weight, stability, packaging, & software control. Projects like this allow members to see how mechanical, electrical, software, and CAD decisions directly support each other.



years of
team 867

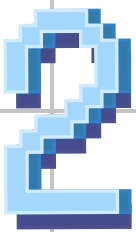


of our team is
new each year



students reached
through our 2020
coding programs

by

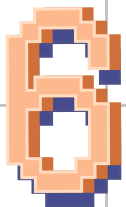


major
competition
programs each year

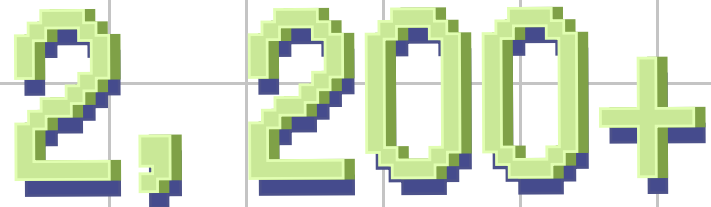


JPL
engineering
teams
each fall

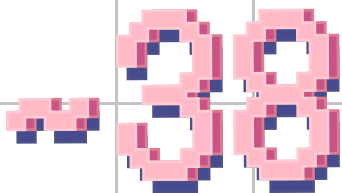
numbers



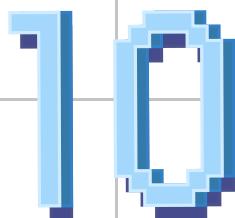
competitions/events
over the last two
years



workshop hours from members
past 2 FRC seasons



students each
season



typical
returning members
each year

achieve

1st place

NASA JPL :recent highlight
Invention Challenge Finals 2026

Team 867 earned first place overall at the JPL Challenge Finals after competing against teams from across the United States and internationally. 2 out of our 3 of Team 867 groups qualified for the Finals.

FIRST ROBOTICS

2025 :

Dean's List: Semifinalist

2021 :

Qualcomm Innovation Ambassador
Team Greater Los Angeles Region
// FIRST Innovation Challenge Semifinalist

2020 :

5th Place Overall FRC
North Los Angeles Regional

NASA JPL INVENTION CHALLENGE

2025 :

"Bucket Brigade Contest" 1st Place:
JPL Finals

2023 :

"Paper in a Basket Contest"
3rd: Orange County Regional // 4th &
6th: JPL Finals

2022 :

"Sticky Wicket" 8th: JPL Finals

"Ping Pong Ball Run"
6th: Orange County Regional // 3rd: JPL Finals

2019

"Keep It Moving" 4th: JPL Finals

2014

"Aerial Car Race"
2nd: Fullerton Regional // 3rd: JPL Finals

2008

ments

* engineering should reach beyond our workshop

Team 867's mission extends beyond building competition robots. We want the skills our members obtain here to reach younger students, other teams, and communities with less exposure to engineering opportunities.

* middle-school mentorship

Team 867 began mentoring Spartan Circuits 62519, helping younger students gain their first experience with competitive robotics. We also mentor 3 FIRST Lego League teams at First Avenue Middle School, teaching them important software, electrical, and mechanical skills.

During 2020, Team 867 members designed and organized the distribution

500+ students reached *

of free courses in professional programming languages such as Python, and Java, as well as a workshop in Web Development. The program reached more than 500 participants, successfully exposing new students to new STEM opportunities.

* International FIRST outreach

in 2019, Team 867 helped establish one of the first community FRC teams in Jakarta, Indonesia, including student-led workshops and knowledge sharing about robotics, coding, physics, and basic engineering.

Team members have also prosthetics project in Vietnam *

worked on a **prosthetics-focused engineering initiative** intended to support underserved communities in Mai Chau, Vietnam. Partnering with the Vietnamese Culture Club, Arcadia Applied Engineering Team, and VEX Robotics 8737 Teams, this multi-dimensional engineering team project is planning to start a yearly initiative at Arcadia, helping out the community in rural Vietnam. We intend to design, prototype, refine, and manufacture all prosthetic components, then ship them to overlooked members of the community in Vietnam.

* whats next?

This year, Team 867 plans to substantially increase outreach through:

- engineering workshops at nearby schools
- middle-school STEM activities
- robot demonstrations
- collaborations with other FIRST teams
- more consistent educational content on social media

beyond the robot

Our goal is not only to build engineers within Team 867, but also beyond it.

our partners

ENGINEERING TAKES COMMUNITY

Team 867 has been fortunate to receive support from businesses, professionals, families, engineering organizations, and community partners.

Previous supporters have included organizations such as :

- Autoline
- Johnson Hardwood
- Splendid Smiles Family Dentistry
- JDS Technologies
- Autoline Pro
- Royal Business Bank
- Asa Yoga Pilates
- Fractal Pasadena
- CCSJ Development
- NASA/JPL
- SNK Accountancy Corporation
- CF Kent

WE WELCOME MORE THAN FINANCIAL SUPPORT

Companies can contribute through :

- Financial Sponsorships
- Manufacturing Support
- Referrals to other companies who are interested in supporting
- New, used, surplus, or retired equipment
- Raw Materials
- Engineering Mentorship
- Tools & Equipment
- Tours/Exposure to engineering
- CNC machining, laser cutting, welding, waterjet, sheet-metal fabrication.

sponsorship

2. BRICK

Includes all Wood benefits plus:

- Logo placed on Team 867's robot(s)
- Dedicated "Thank You" Instagram post
- Digital copy of our Engineering Notebook
- Sponsor mention in our middle-school outreach events

1. WOOD

- Feature on Team 867's website
- Story shoutout on Team 867's Instagram
- Listed in Engineering Notebook
- Included in monthly sponsor appreciation reel
- Recognized during community & school outreach posts

3. STEEL

Includes all Brick benefits plus:

- Sponsor name listed in the bio on all team social media pages (until next school year)
- Sponsor spotlight in expanded networking events with local schools and organizations
- Small logo on Team Banner at all competitions
- Detailed feature on Team 867's website

CARBON FIBER

4. Includes all Steel benefits plus:

- Feature in Team 867's end-of-season video
- Featured sponsor in our bi-weekly Instagram reels
- Logo placement on all Team 867 merchandise
- Large logo advertisement on Team Banner displayed at all team competitions
- Shout-outs on all Team 867's social media accounts and posts (until the beginning of the next school year)
- Acknowledgment during all school outreach visits, community workshops, and middle-school STEM sessions

5. want something different from us?

The tiers above are only a starting point.

We are happy to create customized partnerships involving in-kind materials, manufacturing, equipment, engineering mentorship, facility tours, workshops, larger corporate sponsorships. Let us know and we'll build our partnership around what makes sense for your organization.

tier benefits

contact



one team,
all niches.

Engineering Design & Development
Arcadia High School Arcadia, California



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Thank you for supporting
the next generation of engineers.