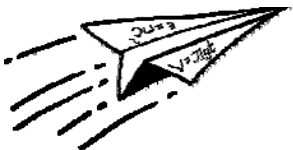




# Northern California FIRST® Tech Challenge

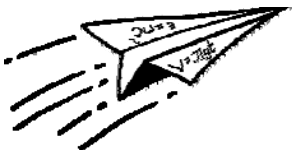
Playing At Learning, *FIRST* partner  
[www.norcalftc.org](http://www.norcalftc.org) 2012



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# Playing At Learning

- 501(c)(3) non-profit, founded in 2004
- Provide & support technology-based enrichment programs for kids
- NorCal Operational Partner:
  - Junior FIRST LEGO League [Jr FLL]
  - FIRST LEGO League [FLL]
  - FIRST Tech Challenge [FTC]

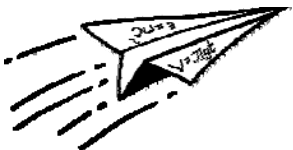


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# Our Role in FTC

Operationally manage FTC in our region:  
Northern California

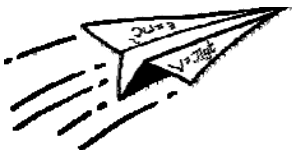
- Host and Organize the Regional Championship
- Coordinate and Manage the Qualifying Tournament system throughout Northern California
- Provide local support for coaches, mentors, and students - training / answering questions
- Recruit and train tournament volunteers:
- Outreach - helping to create new teams!
- Manage growth in region



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# Today's Overview

- What is FTC
- A Team
- The Game
- The Season
- Resources
- Next Steps / Q&A



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# ***FIRST***

For the Recognition and Inspiration of Science and Technology

Founded in New Hampshire in 1989 by entrepreneur Dean Kamen  
President: Jon Dudas, formerly Director of US Patent Office

501(c)(3) nonprofit [www.usfirst.org](http://www.usfirst.org)

Four FIRST Programs K-12: FRC, FTC, FLL, JrFLL

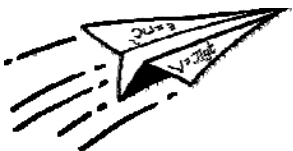
Overall Reach - All Programs (est. 2010-2011 season)

248,000+ students

22,475 teams

66,000+ mentors/adult supporters

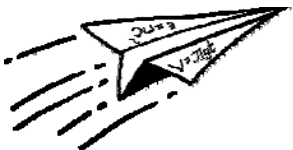
33,000+ event volunteers



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# FIRST Tech Challenge (FTC)

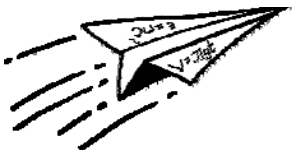
- ✓ Teams strategize, design, build, program and test LEGO MINDSTORMS®-based Tetrix robots to solve annual game
- ✓ Awards are given for community outreach, design, and other real-world accomplishments
- ✓ Develop problem-solving, leadership, communication, organizational, and team-building skills
- ✓ Discover exciting career possibilities
- ✓ Participants eligible for \$14+M in college scholarships



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# FIRST Tech Challenge

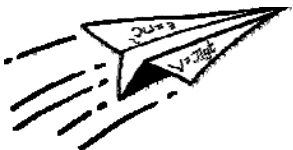
- ✓ 2012 Game Details announced September 8<sup>th</sup>
- ✓ Tournaments in November - March; Can attend multiple which enables engineering refinement of design
- ✓ Teams keep engineering journal to document their design concepts, meetings and "season"
- ✓ Teams are encouraged to use the free modeling software (PTC Creo) to create a model of their proposed design and evaluate different solutions before building
- ✓ Teams are encouraged to engage their community about STEM and robotics and FIRST



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# What is a Team

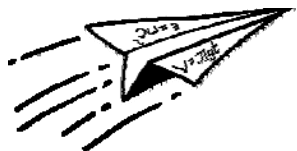
- Average size is 4-6 members (up to 10 is allowed)
- Team members are teenagers (8<sup>th</sup> grade to 12<sup>th</sup> grade)
- Team can be based at a school or organization but this is not required!
- Most teams meet at least twice a week throughout season
- Must have at least 1 adult coach (can have more than 1 coach/mentor)
  - Most coach/mentors are volunteers; some teachers/school districts offer "coach stipend"
- Role of mentors and coaches in FTC
  - Technical Advisor / Skill Development
  - Facilitator / Mediator / Arbitrator
  - Can be hands-on or hands-off
  - Keep in mind the goal of FIRST is to Inspire our young people.





# Items Needed for the team

- Robot Kit
  - TETRIX and/or Matrix
  - LEGO Mindstorms NXT
- FTC Field (or equivalent)
  - Low cost wood/PVC field
  - Often a portion is sufficient for practice
- Access to a Laptop for programming [LabView or RobotC]
- Space to meet
  - Robot build/programming
  - Space for Game ( Partial field & Key Game Elements)
- One or more coaches/mentors - at least one must be an adult
- Engineering Journal (can be online like a blog)

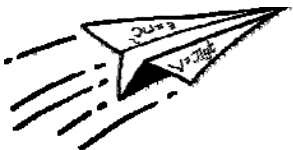


# Estimated New Team Costs

1.	Tetrix Robot Kit	\$680 + ~\$55 Tax/Shipping
2.	FTC Field (low cost option)	~\$150 [Donated materials]
3.	At least 1 Laptop	Laptop borrowed or donated
4.	Space to meet	Donated Space
5.	2012 Game Elements	~\$300 estimated
6.	2012 Team Registration	\$275 + ~\$20 shipping
7.	2012 Qualifier Registration (each)	~\$75 [+ \$150 championship]
8.	Extra Parts / Misc.	~\$100

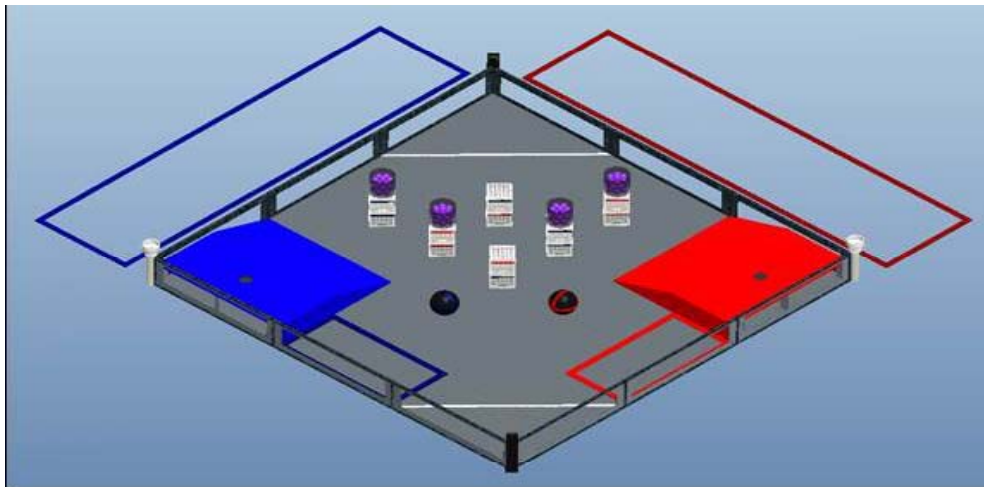
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**Total: ~\$1800**

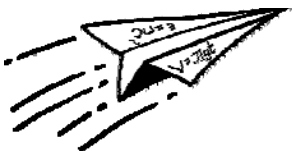


# The Game

- FTC Robot game is typically:
  - Played in a 12'x12' playing field
  - Played 2 vs. 2 with randomly paired alliance partners
- Each match
  - Autonomous period - initial 30 seconds in 2011
  - Driver-controlled period - final 120 seconds in 2011



2012 Game  
announced  
Sept 8<sup>th</sup>

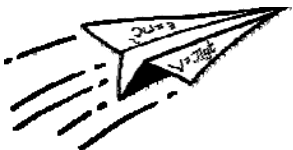


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# Season Overview



May	Team registration opens
Sept 8 <sup>th</sup>	2012 Challenge kickoff Details about Robot Game are announced
Season	Team Meetings weekly meetings over 10 or more weeks
Rolling...	NorCal Tournament registration
Nov-Jan	First level "Qualifier" Tournaments Team may attend more than 1
Feb	Championship tournament



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# Managing Growth

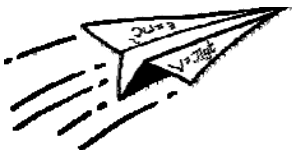
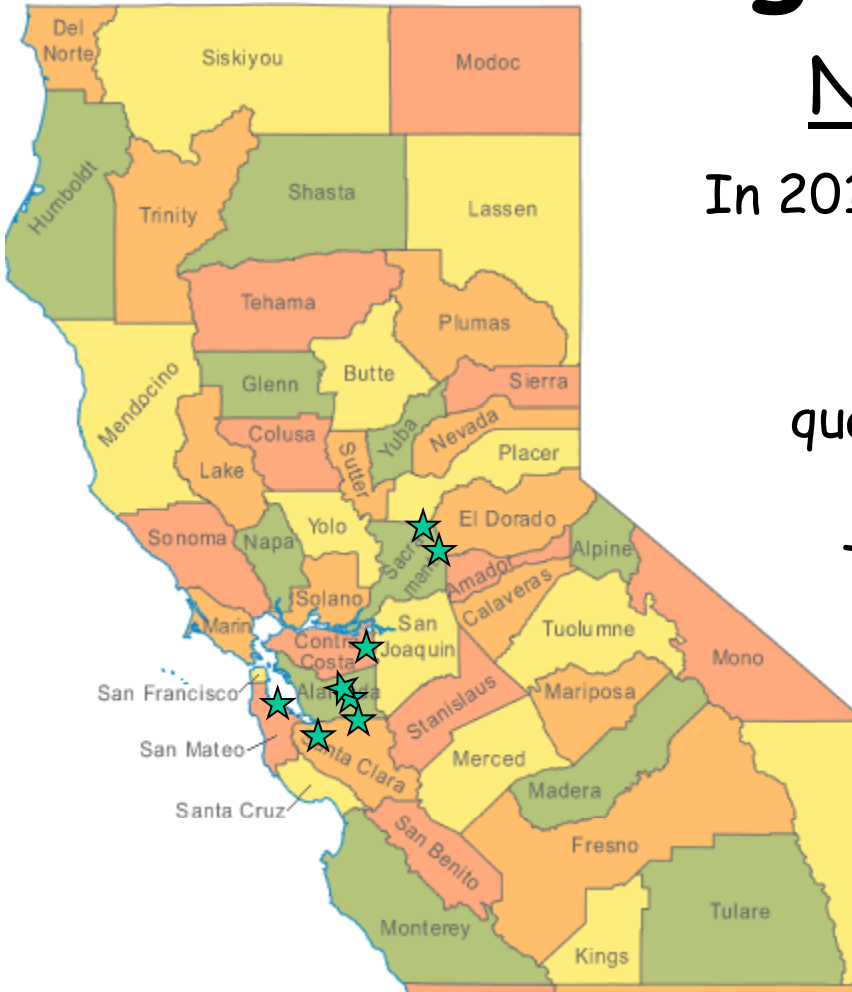
## NorCal FTC Tournaments

In 2011, ★8 Qualifiers and 1 Championship

In 2012, we are expecting to coordinate 9 to 12 locally organized qualifiers between November and January to support 85+ teams.

Teams may attend more than 1 NorCal qualifier and teams may attend other regional championships

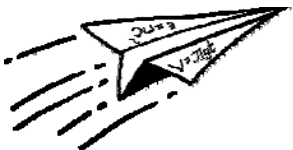
This means adding ~100 tournament volunteers (tournament hosts and organizers, judges, referees)



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# Game Manual

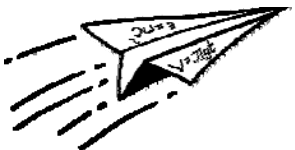
- Part 1 available now
  - The Tournament
  - Engineering Notebooks
  - The Robot
  - Judging & Awards Criteria
  - Team Resources
- Part 2 released day of kickoff
- Updates happen throughout season



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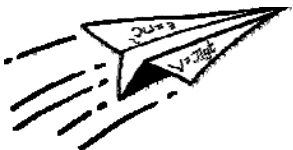
# Resources

- FIRST Tech Challenge Site
  - [www.usfirst.org](http://www.usfirst.org) -> FTC -> Team Resources
  - <http://www.ftcrobots.org>
- Team Forum <http://ftcforum.usfirst.org/>
- NorCal FTC Website <http://www.norcalftc.org>



# Workshops & Scrimmages

- Scrimmages
  - Team Scrimmages/Workdays
  - Host schools & possibly The Play Space
- Samantha Workshop/Tune-Up
  - The Play Space in October!

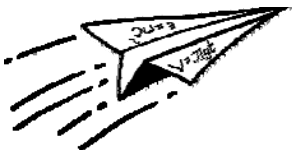


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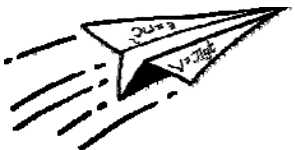
# Next Steps

1. Register 1 or more team(s) [usfirst.org](http://usfirst.org)
  - You will **not** be asked for team members' names when you register
  - Order materials [Robot Kit]
2. Attend Kickoff
  - 9/8 here!
3. Volunteer!
  - Team Mentor / Tournament Official
  - Training workshops start at Kickoff



# Kickoff!!

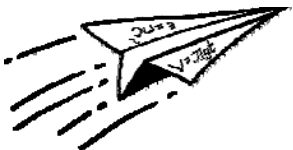
- Saturday Sept. 8th
- 9am to 3pm
- Workshops in morning
- Game Unveil at 1pm
- Q&A immediately after



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# Some Tips

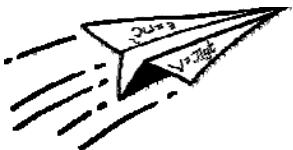
- Samantha Module
  - Practice early
  - Buy router from "list"
- Power connections
  - Read whitepaper on PowerPole connectors



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# More Tips

- Programming Tools
  - LabVIEW in kit
  - RobotC extra purchase
- Autonomous & Driver Control
  - Practice w/ game emulation
- Templates
  - Always start programs from templates!



# Wrap Up / Q&A

- Questions?
- On the internet
  - [ftc@playingatlearning.org](mailto:ftc@playingatlearning.org)
  - <http://www.norcalftc.org>
  - <http://www.usfirst.org/ftc>
- Call: Jill/Mark (510) 656-8664

