

## VEX IQ Challenge - Nelson Team Grants

### Frequently Asked Questions

#### **1. How big is a team?**

The minimum team size is 2 students. There is no maximum team size, but most teams have 2-12 students. The optimum team size for a new coach with a new team is 3-6 students. The coach and students of a small new team can have fun learning how to design, build, document, and drive the robot. A team with 6-12 students can also learn how to program the robot and/or work on a STEM Research Project. Supervising these extra activities with a new team would make the new coach's job more challenging. The coach's job is less challenging if some of the students are high functioning. Teams that start in the Spring can start small in the Spring and then add more students and more activities in the Fall. After the first year, the optimum team size is 6-12 students. Teams of this size should be able to participate in all aspects of the program.

#### **2. Is there a separate competition team and STEM Research Project team?**

That will vary based on team size and student preferences. Small teams that want to do the project could spend part of a team meeting working together on the robot and part working on the project. For large teams, it makes sense to divide the students into robot and project sub-teams for each team meeting. Students should be encouraged to work on different sub-teams at different meetings, though. Working on the robot gives students experience doing engineering. Working on the project gives students experience doing science. Ideally, every student should do both by the second year.

#### **3. Are all members of the competition team competing at the same time together or split up?**

Two drivers participate in each teamwork or skills match. You can have different drivers in different matches. Each team should have three or four teamwork matches at each qualifying session and three or four skills matches at the final session. Team members who are not driving can cheer for their team.

#### **4. What if my team has more students than we can bring to a competition?**

You could have different students participate in each qualifying session and then have the students who contributed the most and/or who drove the best represent the team in the skills matches and/or finals matches at the championship session.

#### **5. What student grade levels can participate on teams?**

VEX IQ Challenge is recommended for students in grades 4-8 and high functioning students in grade 3 (in the Fall semester). The VEX IQ robot is recommended for students of ages 8 and up.

**6. What determines whether a team is Elementary or Middle School?**

VEX IQ Challenge teams can have students with a mix of grade levels. Elementary school teams have students in grades 5 and below at the end of the season (grade 6 and below in a school which includes grade 5 but not grade 7). Middle school teams have students age 13 or lower or in grades 8 and below at the end of the season (grade 9 and below in a school or district which includes grade 8 but not grade 10). The highest grade level of a student on a team determines the division of the team. For teams starting in the spring, students should be one grade level lower so that they can continue as team members in the fall.

**7. How does a League work?**

New leagues will begin with an orientation session for new coaches in late August or early September. Teams will typically participate in five league sessions every 2-4 school weeks between September and January. League sessions are usually held after school at locations reasonably close to participating schools. Participating teams must pay a league registration fee to the league host, typically \$100, which covers the cost of equipment and facilities and which may help pay the registration fees of teams that qualify to attend the State Championships in late February or Early March.

**8. What is the schedule for League sessions?**

Typical agenda for the first four league sessions, the Qualifying Sessions:

- 3:00-4:00 PM Doors open. Set up fields
- 3:45-4:00 PM Volunteers check in
- 4:00-4:30 PM Teams check in
- 4:00-4:45 PM Robot Inspection
- 5:00-7:00 PM Teamwork Qualifying matches
- 7:00-7:30 PM Teams depart. Doors close

Typical agenda for the last league session, the Championship Session:

- 3:00-4:00 PM Doors open. Set up fields
- 3:45-4:00 PM Volunteers check in
- 4:00-4:30 PM Teams check in and turn in Engineering Notebooks
- 4:00-4:45 PM Robot Inspection
- 5:00-7:00 PM Judging and Skills matches
- 7:00-7:45 PM Teamwork Finals matches and Awards
- 7:45-8:15 PM Teams depart. Doors close

**9. Does my team need to attend every League session?**

No. Teams need to participate in at least 60% of the Teamwork Qualifying matches to be eligible to participate in the Teamwork Finals matches. If it is not convenient for your team to participate in a league, your team can participate in one or more tournaments instead. Tournaments are typically held on Saturdays between October and mid-February. The event registration fee for each tournament is typically \$75-\$100.

## 10. How big is a League?

New leagues need at least 16 teams the first year for the top award winners to qualify for the State Championship. After the first year, leagues need at least 24 teams to qualify. Ideally, leagues will provide one competition field and one practice field for each 12 teams. That will allow each team to play up to four matches at each league session.

## 11. My school received a Team Welcome Kit. How should we use it?

The VEX IQ Challenge Team Welcome Kit ships in a small box that should arrive approximately one week after your team registration is paid. It includes several pages of useful information plus these important items:

1. **Two VEX IQ Challenge Blank Team Number Plates.** Put your team number on both plates and attach them to opposite sides of your robot before you attend leagues or tournaments. Your robot needs these to pass inspection.
2. **VEX IQ Engineering Notebook (5 Pack).** Have students record their progress designing, building and programming their robot. The notebooks include sample entries and suggestions. See the **Robot Design Rubric** for the criteria that will be used to judge the Engineering Notebook at the final league session or tournament.
3. **VEX IQ Challenge Game Element Kit** (sample game elements). Your team can use these to practice driving the robot until you receive and open the game kit.

## 12. My school received three VEX IQ robotics kits. How should we use them?

Each school should receive one VEX IQ robot set consisting of:

1. **Super Kit** (big box with robot set and bin with tray for organizing parts). This kit was shipped early to teams in LAUSD Local Districts Central, East and West that submitted applications before May.
2. **Competition Add-On Kit** (small box with extra parts)
3. **Foundation Add-On Kit** (big box with more extra parts and second bin with tray for organizing parts).

One of the first things your team should do is open all three kits and sort the small parts into the two trays so that they are easy to find when you are building robots. The big parts can go in the bottoms of the two bins.

Charge the robot battery and the controller battery. Instructions are near the back of the **VEX IQ Super Kit User Guide**. The robot battery should be charged after every team meeting and after every league session or tournament. The controller battery usually lasts several weeks between charges. Buying an extra robot battery and keeping it charged is recommended in case you ever forget to recharge the robot battery. A dead robot battery can ruin your day. Batteries need to be recharged every 4-6 months when they are not in use, so **recharge batteries before summer vacation**.

Next, the team can build and drive the Clawbot, which could be used to play the teamwork challenge game at your first league qualifying session. Start recording team progress in the Engineering Notebook. Then watch the game video, read the Game Manual, and choose a strategy to score as many points as possible in a 60-second match. Modify the robot as needed to improve performance. Practice driving before each competition.

### 13. My school received three other boxes. How should we use them?

Each school should also receive these VEX IQ Challenge competition supplies:

1. **VEX IQ Challenge Full Field Perimeter & Tiles** (ships in two boxes, each containing one-half field). It takes a few minutes to assemble or disassemble the field. Be careful not to twist the tiles relative to each other when disassembling the field, because the tabs can break off. Push one tile or wall piece down while pushing the adjacent tiles up.
2. **VEX IQ Challenge Full Field & Game Element Kit**. This box contains the field elements and game elements for this year's VEX IQ Challenge game. Some assembly is required. Set up the field elements and game elements on the full field to develop and test your game strategy and to practice driving the robot before competitions.

### 14. How do I access the programming software?

**My recommendation changed.** For Chromebook, iPad, Mac, Windows, or Ubuntu Linux computers, I now recommend using **Blockly** with **Robot Mesh Studio**. The free online version is available at [www.robotmesh.com/studio](http://www.robotmesh.com/studio). The Chrome browser works best on Windows. You need to create an account on [RobotMesh.com](http://RobotMesh.com) so that your team can store its programs as projects. You can organize team programs in folders. Your programs will be available on any of the computers listed above after you log in. Skip the API documentation. Start with the **Blockly Activity Guide**, which can be used as an online robot programming curriculum. If you decide to use **Blockly** in the classroom, you will want to purchase a Robot Mesh Studio class or site license at [www.robotmesh.com/studio-editions](http://www.robotmesh.com/studio-editions).

### 15. What should I do if the robot battery won't charge?

When you place the robot battery in the robot battery charger and plug it in with the power cord to recharge the battery, the charger LED should start as solid red and change to solid green when the battery is fully charged. If the charger light flashes red, the battery voltage is too low for the charger to recharge it. Try the procedure in the following video to restore the battery: [How to fix VEX IQ Flashing Light or No Charge Battery Issue](#)

If the robot charger LED still flashes red, the robot battery needs to be replaced.

### 16. Can my school add additional robotics teams so more students can participate?

Yes. Schools can have up to 26 teams with the same base team number and different suffix letters. Team registration for the first team costs \$150 each year (covered by the grant the first year), and each additional team costs \$100 each year. Each team also needs to pay for league or tournament event registration each year, which is typically \$100 per team. Each

additional team should start with its own VEX IQ Super Kit (\$330) and VEX IQ Competition Add-on Kit (\$100). One field can be shared by 2-3 teams.

### **17. How can my school purchase additional kits or parts?**

Robot kits and parts can be ordered from any of three vendors:

1. [iDESIGN Solutions](#) – Supports our leagues, best support for school and district orders. For personal assistance, contact Steven Gutterman ([steven@idesignsol.com](mailto:steven@idesignsol.com)).
2. [Robot Mesh](#) – Fastest delivery for items in stock. Offers **Blockly** with **Robot Mesh Studio**.
3. [VEX Robotics](#) – The manufacturer; higher shipping charges.

### **18. Are any funds available for additional teams or robot equipment?**

If your robotics team needs financial assistance, your coach and/or robotics team could try these websites, which other teams have used to raise funds:

1. [DonorsChoose](#). Include STEM in the project title, because a large company has occasionally funded all STEM projects in California.
2. [HEXBUG](#)
3. [EdCo](#)
4. [piggybackr](#)

### **19. What is the procedure for parts that are broken and/or lost?**

The school is responsible for replacing broken and/or lost parts. LeRoy Nelson and/or Steven Gutterman usually have spare brains, batteries, and motors available at league sessions for new leagues to debug and/or replace parts that are not working.

### **20. Does the Kit need to be solely used for students that will be competing?**

No. During the VEX IQ league season (August-January), the students on the school's VEX IQ Challenge team should have primary use of the robot kits, but parts can be shared with other teams. The kits can be used for other purposes outside of the league season.

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