

101 Things I wish I'd Known Before My First VEX Tournament

In an effort to reduce stress on new teams, and even veteran teams, we have created a list of things teams have told us would be important to know before the robot build process and taking part in competitions.

Building Robots

1. The robot should be no more complicated than necessary. "Keep it simple, make it fun, keep it safe."
2. You can never finish your robot too early. Drive practice is important.
3. Plan out everything before you start. Use your engineering notebook every time you meet.
4. Reliability is the best robot feature of all. You can't win if your robot doesn't work.
5. A day of testing/driving is more important than a day spent cramming one last feature into your robot that may not work as designed.
6. Always give your programmers a lot of time to test if you want a reliable robot that works.
7. Test your autonomous code. Keep it simple.
8. Get the whole team involved in the planning and building process. Everyone's opinion is important.
9. Engineering decisions should not involve feelings. Don't worry when your teammates don't like your idea.
10. Adults should keep their hands in their pockets when work needs to be done.
11. Remember that the measuring box is an absolute, not a guideline. It's better to have a small robot than to fail inspection because it is too large. Build 1" smaller than max size.
12. Crazy ideas sometimes work, try them out, but remember that most crazy ideas are crazy for a reason.
13. Zip ties are the duct tape of robotics. Make sure you have lots of them in legal sizes.
14. If the code doesn't work, check the robot's wiring, sensors and mechanicals first.
15. Tighten your screws tightly and consider using Nylock nuts. You don't want stuff falling off during matches.
16. Make a lot notes and take pictures for your notebook.

Batteries

17. Check your batteries with a voltmeter; faith is a bad tester. Batteries should be at least 7.2 volts when charged. Remember to check the batteries in your joysticks!!
18. Make sure that your batteries are charged, fastened securely, plugged in, and, most of all, that your robot is turned on. Always use a backup battery. It keeps your robot connected to the field when your main battery voltage gets drawn down.
19. Use a VEX battery clamp, or otherwise firmly secure your battery. Batteries don't help you if they're lying on the field or dragging behind your robot.
20. Make sure all your batteries are labeled and numbered and that you swap them after each match.
21. Don't use your oldest, scruffiest battery in the finals.
22. Make sure there are always batteries on the chargers.
23. Build a battery charging station, and have someone in charge of your batteries for the entire competition. Your team's Battery Boss can win matches for you.

At the Tournament

24. Don't panic.
25. Always expect the unexpected.
26. Safety first! Follow safe procedures and don't forget your safety glasses.
27. Expect everything on the robot to break at least once. Have replacement parts for everything.
28. If something goes wrong with your robot, don't stress out too much. There will always be someone willing to help, and chances are that one of them will know what's wrong.
29. If you want to do well at the tournament, pick your drivers ahead of time. The qualification rounds are not time to test new drivers.
30. Give your drivers a lot of practice before and during tournaments.
31. Have a neat and organized pit area. It is easier to get repairs done on a tight schedule if you don't have to spend time looking for tools. Judges and guests will appreciate your tidiness.
32. Never be afraid to ask for a spare part even if you're sure no one will have it.
33. Have a clock in the pits next to your match schedule.
34. Sometimes a team that you were barely paying attention to can end up being a really great alliance partner.
35. Remember as friendly as robotics competitions are, the other side wants to be a winner just as much as you do, and they will do every legal thing to win.
36. Don't ever lose hope. Even if you're dead last after qualifying, there is still a chance to make it to the finals. Keep working to make your team the best it can be.
37. Label your personal possessions, especially when you leave things in the stands.
38. The best, most powerful teams are frequently the ones most likely to help those in need.
39. Designate team members to be team spokespeople in the pit and then be sure they are always there to be spoken to.
40. Your opinions and statements reflect on your team and its reputation.
41. Bring your own extension cords and power strips and label everything; batteries, joysticks, tools, extension cords, power strips, etc. Everything looks alike at a tournament. An Event Partner may be able to return labeled items to teams.
42. Shoot video and take pictures.

Tournament Matches

43. Something will happen beyond your control. Don't worry about it – that's robotics.
44. Keep the same drive team for every match.
45. Develop excellent communication between the pit crew and drive team.
46. If you're the coach, guide your team to having fun and learning.
47. Drivers, have a plan for each match – stay with the plan as long as possible.
48. Be prepared to set your robot on the field as soon your team is told to they may do so and make sure you turn the robot on before the match. This avoids delays in the schedule
49. Learn what every flashing light on the Controller and Cortex means. Check those lights before each match.
50. Check all systems before every match. Use checklists. If it's good enough for NASA, it's good enough for robotics.
51. Make sure your robot has the correct code loaded. Test it in the pits before the match.
52. Make sure your PWM cables plugged are into the right ports and are seated tightly.
53. Make sure your communications are working before every match.
54. A minute on the field waiting can last an hour or more. A minute during a match lasts about 10 seconds.
55. Really make sure you turn the robot on before the match. Important enough to state twice!

Strategy and Judging

56. Always coordinate strategy with your partners.
57. Have a scouting plan. Losers build robots, winners scout.
58. Scouting is about finding great robots for your alliance which may not be the ones with great records.
59. It's hard for a VEX team with only five or six members to do a thorough job of scouting. Get parents to help collect scouting data, and work with some other teams to gather information. Analyze it on your own, but share the collection work.
60. When you go into alliance selection have a ranked list of at least your 25 favorite robots in the tournament. If you are picking, you will find that someone else gets your top five choices so you need a good depth chart.
61. Sometimes a great team with a good robot will outperform a weak team with a great robot. Evaluate the entire package – not just the hardware.
62. Sometimes a lesser-known team will be a better choice than a “famous” one. Famous teams weren't always well-known.
63. Make sure your scouts are your team representatives for alliance picking. They will know who to pick; drivers usually only see their own matches.
64. Bring white boards and markers. Use them to go over strategy with other teams and for posting match information in the pits.
65. Judges aren't scary people, and you'll be surprised at how much you can tell them about your robot. They'll love it.
66. Practice for judging just like you practice with your robot. Have a mentor run a mock judging session. Each person should know the whole story of your team and your robot.
67. When talking to Judges be enthusiastic and coherent.

Life at Events (Especially Multi-day Tournaments)

68. Wear comfortable shoes.
69. Wear jeans, but bring shorts.
70. Have fun! These competitions are supposed to be a blast, not a chore. Don't be afraid to look like you are having fun, either. At least 20% of the people there are less cool than you.
71. Drink lots of water even if you aren't thirsty, and don't forget to eat.
72. Bring lots of water. Some events may have restrictions on Drinks being brought in.
73. Bring earplugs of some sort. Tournaments can get very loud.
74. You will lose your voice.
75. Jedi robes or pirate costumes make any team instantly cool.
76. Get cell phone numbers of as many people on your team as possible. Put these on a list and distribute to your team BEFORE the event.
77. Network. You never know how friends you make in robotics will influence your life later.
78. Meet other people from other teams - they have a lot to teach and a lot to learn.
79. Support the local events by purchasing their refreshments.
80. Make sure you are rested the day before the event.
81. Wash or sterilize your hands. Don't get sick!
82. Yes, kids really do cry when their robot loses. Adults sometimes do, too.

Marketing and enthusiasm

83. Be aggressive in your onsite marketing. If no one knows who you are you might not get picked for eliminations.
84. It's impossible to bring too many buttons to trade.
85. Be enthusiastic. Yell, cheer, chant, and dance. Act foolish.
86. Your team's banner can never be too big.
87. Make sure your computers are charged and ready to go. Remember the Charger.
88. Get out of your pits and meet other teams. Otherwise, you might as well watch a webcast.
89. Wear distinctive shirts.
90. You are NOT too cool for a giant conga line around an arena.

Working Together

91. Don't be afraid to look around and learn from other teams.
92. Have a lot of fun, remembering that sometimes fun and pain go hand in hand.
93. Don't burn bridges. You'll find that standing alone on scorched earth isn't much fun.
94. Get everyone involved. Even the newest team member can have the one great idea.
95. You don't have to be a genius to be good at robotics, but hard work and enthusiasm is always a winning combination.
96. Help others as much as you would like to receive help from them.
97. Specialize. Despite what Robert Heinlein said about insects, you can't run a team where everyone is responsible for everything.
98. If you are good at only one thing, learn another.
99. Your second year in robotics is your first year as a mentor. Always be willing to teach any skills or knowledge you have, even to people on other teams.
100. Speak up when it comes to a major decision about the robot.
101. Never let a problem with another team member get in the way of both of you having a good time.