

Robot Design Sample Questions

Mechanical Design: Durability

- How did you get your robot to stay together?
- How often does your robot fall apart? What happens and have you thought about ways to fix this?

Mechanical Design: Mechanical Efficiency

- Would it be possible to use fewer pieces or components for your robot and still accomplish the same missions?
- If your robot has attachments, tell us about them.

Mechanical Design: Mechanization

- Tell us about how your robot uses attachments or other mechanisms to complete missions.
- Describe how your robot moves from place to place, or overcomes obstacles, and balances speed and power.

Programming: Quality

- What program do you feel is your best? Why?
- Do your robot's programs achieve the same result every time? If not, why do you think this might happen?

Programming: Efficiency

- What did you do to make your programs more understandable and easier to use?
- What mission is your favorite? Explain the steps in the program for that mission.

Automation/Navigation

- Would you explain how your robot turns (or travels a specific distance, or goes from base to a specific destination)? How satisfied are you with this?
- As your robot moves around the field, was there one area that was more difficult to navigate than another? If so, what did your team do to overcome this challenge?
- Would you explain which sensors you used, and how and why you used them?
- Would you explain how your robot knows where it is on the field? Note: Sensing includes not only touch and rotation sensors, but time (timers in the RCX) and passive sensing such as referencing to walls or other objects, etc.

Strategy: Design Process

- What was the greatest design or programming difficulty you encountered? How did you solve that problem?
- How did you test your designs?
- Describe one way your robot got better over the course of the season.

Strategy: Mission Strategy

- How did your team decide which missions to tackle?

- How many of the missions has **this** robot completed successfully in a single match (includes a tournament match, a tournament practice, or home practice)?
- We want to consider the overall strategy behind your robot's design. Tell us about your robot, its attachments and sensors and the missions the robot attempts so that we will understand your team's design strategy.
- Which attachments are most difficult to put on and/or take off?

Innovation

- What part of your design, program or strategy do you think is unique to your team?
- How did you come up with the idea?

Look For:

- Unusual strategy, programming or design.
- Propulsion or steering methods or functional aspects that no one else has or you are surprised someone would try.
- Robot is able to effectively perform the same task over and over.
- Parts or functional aspects that make something difficult look very easy.
- Parts or mechanisms that perform several functions.
- Propulsion, steering methods or functional aspects that work, but children have no understanding how.
- Children can describe what the robot will do based on the program.
- Does the team look to the coach for answers or are they focused on the robot and judges?
- Noteworthy observations about FLL Core Values to share with the judging team.