

## Criteria for Entering Various Competitions starting 8th or 9th grade

	RoboCupJunior ①.1						ZeroRobotics ③
	Rescue Line	OnStage	Soccer	Rescue Maze	Webots ②		
	with Physical Robots				Line	Maze+	
Algorithms in C/C++ level with high proficiency	I & Up	II & Up	II & Up	III & up	I & Up	III & Up	I & Up
Internal test in electronic	Depending on platform	Depending on platform	Yes	Yes	none	none	none
Math	Minimal Algebra I and Prefer H.S. Geometry		H.S. Geometry and Algebra II		same as Rescue Line	same as Rescue Maze	Trigonometry +
Software development Skill	Demanding	Demanding	Can be very Demanding	Highly Demanding	Demanding	Highly Demanding	Demanding
Electronic	Optional	Prefer	see ①.2	see ①.2	none	none	none
Time Commitment per week	>=4hrs+	>6hrs+	>6hrs+ /wk	>6hrs+ /wk	>=4hrs+	>6hrs+ /wk	>4hrs+ /wk
When	Usually in early May (US level), late June (World level). But Prep work must start in Fall						Sep thru Dec
Type	Competitions (away)						Competition (Online)
Hardware	Mindstorms   Raspberry PI   other development boards such as Arduino, STM32, etc.				none	none	none
URL	robocupJunior.org						zeroRobotics.mit.edu

① **RCJ:** (①.1) Does not restrict platform types like other competitions in USA. This allows continuous and drastic improvement in software and hardware design. (①.2) Electronic knowledge is highly demanding for Soccer League. All must complete Level II in electronic track and pass an internal test.

② **Webots** A new simulation platform. Will not work with physical robot. Webots is a robotics simulation platform designed for industrial, and research level robotics simulation usage.

③ **ZeroRobotics:** Should start reviewing their math work over summer time if participating in the Fall Linear Algebra and Motion in Physics will be a big plus.  
Since most H.S. do not offer Linear Algebra, most students self-study it as they go.

## Criteria for Entering Exams | Advanced Projects starting 8th or 9th grade

	USACO ①	Independent Project ②	C-C++ Certification ③
<b>Algorithms in C/C++ levels with high proficiency</b>	II+	IV+	II+
<b>Internal Test</b>	NO	NO	YES
<b>Math</b>	see ①	Trignometry +	Algebra I+
<b>Software development Skill</b>	Highly Demanding in Computational Thinking	Highly Demanding in Computational Thinking	Highly Demanding in the Language Mechanics
<b>Electronic</b>	none	Optional	none
<b>Demanding in Time</b>	Self-adjustable	Self-adjustable	Self-adjustable
<b>When</b>	Dec thru Apr	Any	Any
<b>Type</b>	Exam (online)	---	Exam (away)
<b>Hardware</b>	none	self-defined	none
<b>URL</b>	usaco.org	mp.stormingrobots.com	cpp-institution.org

Usually High School, Not a must. Algebra I+ for Bronze (beginner).

However, knowledge in Statistics and Combinatorial math will be greatly helpful, esp for Platinum.

Usually students with AMC-10 and above.

One exam per month from Dec to Apr. Encourage student do as many as they can.

This not only requires high technical skills, but also maturity to self-discipline and be a prolific learner.

Students will need to do research and investigative, experimental work independently.

Tentative: \$300 exam fee will be waived for top 10 selective students.

### ① USACO:

### ② Indep. Proj.

### ③ C/C++ Certification