

# WOBURN CHALLENGE

**2015-16 Online Round 2**

*Final Results*

For more information, visit [woburnchallenge.com](http://woburnchallenge.com)  
or email [woburnchallenge@gmail.com](mailto:woburnchallenge@gmail.com)

## Comments

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Thank to all of you who took part in round 2, new and returning competitors alike! With our experience from the previous contest, we've rounded out the edges to make this one much smoother for everyone involved. We hope you enjoyed the *Star Wars* themed storylines that were prepared in tribute to the imminent release of *The Force Awakens*. While the plot of the film remains to be unveiled, we dare say that we've at least tried our hands at some bold forecasting in problems J4 and S4.

The difficulties of the junior problems were generally comparable to those of the previous round. The last junior problem proved to be much more challenging than expected. While 23 of you solved 8 out of 10 of the test cases, only Christopher DeGuzman (*commando5671*) of Glenforest Secondary School managed to get the 9th case within the last 10 minutes, helping him clinch the top junior prize! However, nobody was able to get the final case, which required some clever observations about the properties of laser beam paths.

The senior problems also turned out to be quite probing. Surprisingly, the last test case of problem 2 proved to be more perplexing than all of problem 3. A handful of you have successfully tackled it using various knotty techniques, but we propose a much more elegant solution in the analysis which takes advantage of the set operations built-in to the C++ standard library. Many of you also earned part marks on problem 4, but Timothy Li (*FatalEagle*) of Don Mills Collegiate Institute was able to rise above all and solve it in full.

Regardless of how you did, we encourage you to read the analyses and try again to solve all of the problems you missed. There's truly no better way to improve! Now without further ado...

The senior division prizewinners for this round are:

1. **Timothy Li** of Don Mills Collegiate Institute (\$200)
2. **Leo Feng** of Vincent Massey Secondary School (\$100)
3. **Spencer Whitehead** of Lisgar Collegiate Institute (\$50)
4. **Ahmed Sabie** of Glenforest Secondary School (\$50)
5. **Jeffrey Xiao** of University of Toronto Schools (\$50)

The junior division prizewinners for this round are:

1. **Christopher DeGuzman** of Glenforest Secondary School (\$50)
2. **William Huang** of Woburn Collegiate Institute (\$25)
3. **Siddhant Jain** of University of Toronto Schools (\$25)

Congratulations! These prizes will be distributed as Mastercard gift cards, and we will be contacting your teachers shortly about sending them out. If you haven't won a prize, keep on practicing! We have many more prize opportunities for you throughout the year.

Problems and solutions for this round are now posted at: [woburnchallenge.com/past-contests](http://woburnchallenge.com/past-contests). Once again, we thank all of you who participated, as well as teachers for sharing this with your students. We wish you a happy holiday, and hope to challenge you further during the next round in February!

Sincerely,  
The Woburn Challenge Team  
December 12, 2015

*Woburn Challenge 2015-16: Round 2 Results****Senior Division Results***

<b>Rank</b>	<b>Username</b>	<b>School</b>	<b>Score</b>	<b>Time</b>
1	FatalEagle	Don Mills Collegiate Institute	100	2:08:10
2	12345x3	Vincent Massey Secondary School	69	2:22:05
3	spencereir	Lisgar Collegiate Institute	69	2:49:27
4	mrho888	-	69	2:50:12
5	Butane	Glenforest Secondary School	69	2:57:07
6	jeffreyxiao	University of Toronto Schools	64	2:25:35
7	d	Pierre Elliott Trudeau High School	64	2:29:23
8	Eliden	A. Y. Jackson Secondary School	62	2:51:59
9	Callum	Richmond Hill High School	61	2:02:41
10	ImaxBlue	Woburn Collegiate Institute	55	2:49:36
11	example	Don Mills Collegiate Institute	52	2:46:07
12	ysj0217	Richmond Green Secondary School	52	2:55:42
13	awaykened	Glenforest Secondary School	40	2:58:51
14	pyrexshorts	Richmond Green Secondary School	40	2:38:13
15	PentaFlare	Lisgar Collegiate Institute	34	2:28:38
16	Netdex	Richmond Hill High School	31	1:51:10
17	GeerthanSrikantharajah	Woburn Collegiate Institute	25	1:46:16
18	cheesecake	-	25	1:41:06
19	Mariya	Glenforest Secondary School	25	1:21:10
20	Tilmanator	Richmond Hill High School	25	1:25:55
21	Mogball	Newmarket High School	25	1:37:12
22	ongw	Victoria Park Collegiate Institute	25	1:41:22
23	Zander	Richmond Hill High School	25	1:52:41
24	kdb	Victoria Park Collegiate Institute	25	1:54:44
25	TigeHe7	Newmarket High School	25	2:06:16
26	kevinjia1	-	25	2:16:54
27	ecnivo	Richmond Hill High School	25	2:18:10
28	woburnistrash	Victoria Park Collegiate Institute	25	2:14:32
29	suchaHassle	Victoria Park Collegiate Institute	25	2:59:51

*Woburn Challenge 2015-16: Round 2 Results*

<b>Rank</b>	<b>Username</b>	<b>School</b>	<b>Score</b>	<b>Time</b>
30	JasonBaby	A. Y. Jackson Secondary School	22	2:44:53
31	ZQFMGB12	Pierre Elliott Trudeau High School	19	1:49:30
32	carlyu	Bloor Collegiate Institute	14	1:26:45
33	PogChamp	Bayview Secondary School	10	0:11:09
34	Iburinoc	-	10	0:13:28
35	Swagat	Merivale High School	10	0:14:36
36	chencharles_sh	Vincent Massey Secondary School	10	0:17:25
37	qwerty	Richmond Hill High School	10	0:23:29
38	Phoenix1369	Don Mills Collegiate Institute	10	0:28:34
39	mshashmi98	Victoria Park Collegiate Institute	10	0:37:28
40	helios26	Woburn Collegiate Institute	10	0:43:15
41	474708113	A. Y. Jackson Secondary School	10	0:45:26
42	Stefano	Merivale High School	10	0:45:40
43	guy1125	Glenforest Secondary School	10	1:34:33
44	brunoalmeida	Glenforest Secondary School	10	1:49:32
45	L_USER	Earl Haig Secondary School	10	2:17:51

**Junior Division Results**

<b>Rank</b>	<b>Username</b>	<b>School</b>	<b>Score</b>	<b>Time</b>
1	Commando5671	Glenforest Secondary School	96	2:51:04
2	bobhob314	Thornhill Secondary School	92	0:34:07
3	WilliamH	Woburn Collegiate Institute	92	0:41:03
4	BMP	Thornhill Secondary School	92	0:51:24
5	siddhant1999	University of Toronto Schools	92	1:11:20
6	echibrat	York Mills Collegiate Institute	92	1:27:38
7	sunnylancoder	Richmond Hill High School	92	1:29:18
8	N1ckx2	Marc Garneau Collegiate Institute	92	1:33:14
9	PiMachine	Marc Garneau Collegiate Institute	92	1:36:31
10	MongolianPoorman	Woburn Collegiate Institute	92	1:44:04
11	YogrtMan	Lisgar Collegiate Institute	92	1:50:27
12	wcreelman	Lisgar Collegiate Institute	92	1:57:05
13	TheSSN	Lisgar Collegiate Institute	92	1:59:50
14	andi_g	St. Francis Xavier Secondary School	92	2:02:36
15	yuner25699	Bur Oak Secondary School	92	2:20:07
16	OneOfThoseCats	Vincent Massey Secondary School	92	2:22:47
17	bobbotboy	Don Mills Collegiate Institute	92	2:24:33
18	shawn1999	A. Y. Jackson Secondary School	92	2:26:19
19	yantran	Glenforest Secondary School	92	2:29:15
20	JCJeff	Victoria Park Collegiate Institute	92	2:30:42
21	minecraftyugi	St. Francis Xavier Secondary School	92	2:31:17
22	xophelious	Lisgar Collegiate Institute	92	2:43:18
23	umar322	Woburn Collegiate Institute	92	2:58:00
24	jasonhaha25	Senator O'Connor College School	84	2:48:44
25	jamiepinheiro	St. Francis Xavier Secondary School	68	2:16:03
26	fungicide	Richmond Hill High School	64	2:08:05
27	doofinc	Norman Bethune Collegiate Institute	64	2:12:53
28	sunlinylin	Victoria Park Collegiate Institute	64	2:56:16
29	LOLWHATOMGBBQ	Don Mills Collegiate Institute	60	0:13:19

Woburn Challenge 2015-16: Round 2 Results

<b>Rank</b>	<b>Username</b>	<b>School</b>	<b>Score</b>	<b>Time</b>
30	darrel	Churchill Heights Public School	60	0:28:00
31	haliu	Glenforest Secondary School	60	0:34:22
32	Tan	Marc Garneau Collegiate Institute	60	0:37:02
33	Jpsun	Richmond Hill High School	60	0:49:08
34	GoldenHippo	Richmond Hill High School	60	1:29:57
35	MarkCP	Richmond Hill High School	60	1:42:22
36	jerry	Pierre Elliott Trudeau High School	60	2:07:47
37	Bing	Marc Garneau Collegiate Institute	60	2:46:09
38	Robin	Woburn Collegiate Institute	57	0:33:32
39	Shoestain	Glenforest Secondary School	48	2:07:49
40	34107	-	45	2:49:06
41	thatdoctorperson	Lisgar Collegiate Institute	42	1:07:21
42	KellyBean	A. Y. Jackson Secondary School	42	2:56:21
43	ThatAstronautGuy	Lisgar Collegiate Institute	37	2:11:11
44	master_333	York Memorial Collegiate Institute	36	1:48:24
45	isabella_cui	Victoria Park Collegiate Institute	36	2:05:57
46	iNfaM0usBlue	York Memorial Collegiate Institute	36	2:53:55
47	Thaneeshan	Woburn Collegiate Institute	30	0:11:29
48	TechnoRaptor	Woburn Collegiate Institute	30	0:14:24
49	Jk123	Glenforest Secondary School	30	0:17:00
50	Username	Churchill Heights Public School	30	1:01:18
51	appleater	Churchill Heights Public School	30	1:20:04
52	xXxNarutoofDarkness2000xXx	Woburn Collegiate Institute	30	2:30:25
53	L_USER	Earl Haig Secondary School	30	2:45:01
54	Squigglys	Glenforest Secondary School	2	2:42:51