



pen Tournament

online

Score Data and Item Difficulty (Invitational)

Saturday, April 2, 2022

Final winners!

Middle school

Rank	Student
1	Feodor Yevtushenko
2	Rohan Garg
3	Andrew Kalashnikov
4	Aryan Raj
5	William Liu
6	Ryan Shin
7	Kenneth Sun
8	Pranav Mallina
9	Caden Lewis-Shickman, Shaheem Samsudeen, Kevin Sun (tie)

High school

Rank	Student
1	Samuel Choi
2	Adithya Kishor
3	Gil Yarsky
4	Robert Dragomirescu
5	Niyathi Kukkapalli
6	Sargam Mondal
7	Arya Sharma
8	Yifan Chan, Huy Truong (tie)
10	Aakash Guntumadugu, Anil Sarvabatla (tie)

Congratulations to all!

Overall statistics

Division	Mean	Median	Mode	Min	Max	25%ile	75%ile	Standard deviation
Middle School Qual.	4.36	5	2, 6	2	7	2	6	1.86
Middle School Live	16.83	16.5	–	7	27	8	26	9.45
High School Qual.	4.60	4	4	4	6	4	5	0.84
High School Live	10.80	12	12	3	14	12	13	4.44

Middle School statistics

Item difficulty (Qual.)

Problem	Correct %	Incorrect %	Blank %
1	54.55	45.45	0.00
2	54.55	45.45	0.00
3	81.82	18.18	0.00
4	36.36	54.55	9.09
5	54.55	45.45	0.00
6	81.82	18.18	0.00
7	9.09	63.64	27.27
8	9.09	72.73	18.18
9	36.36	36.36	27.27
10	18.18	54.55	27.27

Score-rank correspondence (Qual.)

Score	Rank	Percentile
7	1	100
6	2	91
5	5	64
4	7	45
3	8	36
2	9	27

Note: the *rank* of a score is defined as 1 plus the number of participants with a *strictly* higher score. For example, if the rank of a score of 5 is 4, exactly 3 participants scored 6 or better.

Item difficulty (Live)

Problem	Mean (/10)
1	4.33
2	5.00
3	7.50

Score-rank correspondence (Live)

Score	Rank	Percentile
27	1	100
26	2	83
23	3	67
10	4	50
8	5	33
7	6	17

High School statistics

Item difficulty (Qual.)

Problem	Correct %	Incorrect %	Blank %
1	100.00	0.00	0.00
2	100.00	0.00	0.00
3	20.00	80.00	0.00
4	40.00	40.00	20.00
5	60.00	40.00	0.00
6	60.00	40.00	0.00
7	0.00	40.00	60.00
8	0.00	20.00	80.00
9	40.00	20.00	40.00
10	40.00	20.00	40.00

Score-rank correspondence (Qual.)

Score	Rank	Percentile
6	1	100
5	2	80
4	3	60

Note: the *rank* of a score is defined as 1 plus the number of participants with a *strictly* higher score. For example, if the rank of a score of 5 is 4, exactly 3 participants scored 6 or better.

Item difficulty (Live)

Problem	Mean (/10)
1	7.60
2	1.00
3	2.20

Score-rank correspondence (Live)

Score	Rank	Percentile
14	1	100
13	2	80
12	3	60
3	5	20