

Estimathon Rules and Instructions

About the Estimathon

The Estimathon is an event created by Andy Niedermayer, who you may recognize as also being the author of FARML. Andy runs Estimathons at various conferences and events where he recruits for Jane Street Capital. If you're looking for summer internships in finance later in your career, please consider contacting Andy and his Jane Street colleagues--folks with math competition experience seem to have a good time there.

The Estimathon is a team competition. You will be placed, at random, in a team of approximately 5-6 people. Each team should designate a team captain who will submit all of its answers, and choose a team name.

Rules and Format

The Estimathon consists of 13 questions, each of which asks you to estimate some quantity. For each question, submit answers in the form of a closed interval $[a,b]$, where a and b are positive real numbers. Your interval is correct if it contains the actual value, and incorrect otherwise. Correct intervals that are narrow (i.e. b is close to a) will improve your score more than correct intervals that are wide; see below for details.

Your team may submit up to 18 answers during the event. Answers will be scored immediately, and you may submit answers to the same question more than once, either to correct an incorrect interval, or to improve a correct interval. However, your latest submission for each question is the only one that will count.

You may distribute your 18 answers however you want among the 13 questions. For example, you can submit 18 answers for one question, and skip the rest, or you may submit two answers each for 9 questions and skip the other 4. Any skipped questions will count as incorrect.

You will have approximately 40 minutes (subject to change depending on how long it takes to get set up). Answers submitted near the end of the time limit may not be scored until after time is called.

You may not use any internet or other sources during the event. Treat it like a math competition. Also, calculators are not allowed.

Procedures

Your team will be assigned to a proctor, which will depend on your room number. To submit an answer, one member of your team must return to the main room and send a private Zoom message to your proctor in the chat containing (a) your breakout room number, (b) your team name, if any, (c) the question number for which you are submitting an answer, and (d) the interval you wish to submit.

All answers must be submitted in the form of a closed interval. The endpoints of the interval must be integers or decimals in base 10. Any answers expressed in terms of pi, sqrt(2), or similar will be marked incorrect. Scientific notation is acceptable.

Scores will be tracked live on a Google doc that you will have access to. A number entered under a question indicates a correct answer, and the number is the score (see below) for the interval submitted. An X indicates an incorrect answer.

Scoring

The score for each correct interval $[a_n, b_n]$ is the least integer greater than or equal to $\frac{b_n}{a_n} - 1$. That is, the score for the interval $[5,50]$ is 9, and the scores for $[5,6]$, $[5,7]$, $[5,8]$, $[5,9]$, and $[5,10]$ are all 1. Lower scores are better.

Your team's score will be computed by the following formula:

$$\text{score} = 2^{\# \text{ of incorrect questions}} \cdot \left(10 + \sum_{\text{correct intervals}} (\text{interval score})\right)$$

That is, correct answers will raise your score linearly, depending on how wide your interval is. Incorrect answers or skipped questions, however, will raise your score exponentially.

The lowest score wins. Andy's usual advice at Estimathons is that the team that best understands the scoring computation has the best chance of winning.

Link to scoring (will be updated approximately live):

<https://docs.google.com/spreadsheets/d/1jPXvxPP9JNtNkd6VCk5oP9Uw6IIFkH9XvxdzRdD073/edit?usp=sharing>