**Estimathon Rules**

**Overview**

Your team will have **30 minutes** to work on **13 estimation problems** like “How many licks does it take to get to the center of a Tootsie pop?” The exact answer to each problem is a positive number. Your team will submit estimations for each problem in the form of **intervals**. An interval is a range that has both a lower bound and upper bound and (hopefully) should contain the exact answer to the problem:

interval = [lower bound, upper bound] where lower bound ≤ exact answer ≤ upper bound

Intervals may not contain negative numbers or zero. A **good interval** is one that contains the correct answer (and will get you points). For example, if the exact answer is 10 then

|  |  |
| --- | --- |
| [4, 15] | is a good interval because it contains the exact answer |
| [14, 20] | is a bad interval because it does not contain the exact answer |
| [-5, 15] | is a bad interval because it has negative numbers (even though it does contain the exact answer) |
| [0, 15] | is a bad interval because it contains zero (even though it does contain the exact answer) |

**Scoring**

After the 30 minutes is over, the final score for your team will be:

The winning team is the team with the **LOWEST SCORE**.

It is not terribly important to understand exactly how the score is calculated, just that you are incentivized to:

* **Try to answer all the questions:** For every problem you get wrong (or leave blank), your score doubles
* **Try to have tight interval bounds**: You are also heavily penalized for excessively large intervals. For example, if the exact answer is 10 then an interval of [4, 15] will give you a better score than [1, 500000].

The scoreboard will show the ratio of your upper and lower bound rounded down = if you submit a good interval, otherwise an X will be shown. For example, for the interval [4, 15] then this ratio is

**Submitting Intervals**

Every team can submit up to **18 total intervals**. Your team will receive an answer sheet containing 18 slips. Use these to submit your intervals **at any time** throughout the contest. Each slip must contain your **team’s name**, **problem number**, and **interval** (lower bound and upper bound).

I will attempt to grade entries in real time so the scoreboard will always be up to date.

**Re-Submitting**

Since you have up to 18 submissions for 13 problems, you may **submit intervals more than once** for a given problem. Only the last submission for any given problem is the one that will count towards your final score. Multiple wrong submissions will be marked as multiple X’s on the scoreboard. The multiple X’s does not affect a team’s score—it counts as one X.

Be careful though, submitting a wrong answer will overwrite a previously submitted good answer!

**Notation**

You may use scientific notation if you like, but nothing more complicated than that. E.g., the interval [3 · 106, 107] is fine,   
but [36, 48] is not.