Individual Round

For the individual round, point values for each problem are not predetermined; rather, they are assigned after the contest based on the number of correct answers to each problem.

In particular, for each problem x, define its *solve rate* p_x as the fraction of correct answers out of the total number of contestants, so that $0 \leq p_x \leq 1$. Then, define the *relative weight* of that problem to be

$$r_x = 1 + \frac{2}{1 + e^{(8\sqrt{p_x} - 4)}}.$$

Since the individual round is out of 200 points, problem x is then worth $\frac{200 r_x}{\sum r_i}$ points.

A contestant's score on the individual round is simply the sum of the point values for the problems solved correctly.

Team Round

For the team round, each problem is assigned a point value before the contest such that the total point value of all problems is 400 points. The minigame generates a multiplier (the calculation of this multiplier varies each year with the minigame) between 0.9 and 1.1.

A team's score on the team round is the sum of the point values for the problems they solved correctly, multiplied by the multiplier generated by their performance on the minigame. Thus the maximum possible team round score is 440 points.

Team Score

A team's score on the team round is simply the sum of its members' individual scores and their team round score. Thus the maximum possible team score is $4 \cdot 200 + 440 = 1240$.

School Score

Let the individual round scores of students at a school be $I_1 \geq I_2 \geq \ldots \geq I_m$, and let the team round scores for teams *consisting entirely of students from that school* be $T_1 \geq T_2 \geq \ldots \geq T_n$. Then the school's score is calculated as $\left(\sum_{i=1}^{n} 0.6^{i-1} T_i\right) + \left(\sum_{i=1}^{m} 0.8^{i-1} I_i\right)$. Thus the (unattainable) maximum school score is 2100.

State Score

State scores are calculated in the same manner as school scores, but using all scores from students in a given state rather than a given school.