SIMC 2024 Estimathon

May 26, 2024

Please give your answer to each question as a **closed** interval $[a, b]$. Your score is equal to

$$\left(10 + \sum_{\text{correct intervals [a,b]}} \left\lfloor \frac{b}{a} \right\rfloor \right) \cdot 2^{\# \text{ of incorrect questions}}.$$

Essentially, don't make your intervals too large — i.e. **don**'t blind guess a problem with an interval like $[10^{-100}, 10^{1000}]$. Good luck, have fun! (Oh, and if an answer has more than six-ish leading or trailing zeros, please write it in scientific notation otherwise your graders will be deeply saddened).

1. How many miles is the shortest driving route going through all 48 contiguous state capitals?

2. What is the area, in square miles, of all airspace controlled by the United States?

3. In pounds, how heavy is the heaviest building in the world?

4. In 1990 U.S. Dollars, what was the total value of Japanese real estate in 1990?

5. How many smallpox cases were reported in the last year it was endemic, 1977?

6. How many student-athletes participated in NCAA Division I sports in 2023?

7. How many characters (including spaces) are in the book *Remembrance of Things Past*, which holds the Guinness World Record for the longest book in the world?

8. How many runners completed the 2024 Boston Marathon?

9. Of the 1.7 million boys born in 2023, how many were named "Liam," the most popular baby name in the world?

10. How many Teslas were produced in 2023?

11. What is the population density of Seattle in people per square foot?

12. How many times does the number 17 occur within the first 1000 digits of pi?

13. How many pounds is a Steinway Model B Classic Grand Piano?

14. How many grams is the average eyeball?

15. How many words does the average person speak in their lifetime?

16. What is the average visit duration of the ChatGPT website in seconds?

17. What is the product of all of the correct answers of all of the other questions?

TIEBREAK: What is the name of the building referenced in question three?