Fermi Questions

DIVISION C

SCIENCE OLYMPIAD

NCS Invitational, December 3rd

TEAM NAME:

TEAM NUMBER:

NAMES: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Raw Score: \_\_\_\_\_\_\_\_\_\_\_

Rank: \_\_\_\_\_\_\_\_\_\_

**Instructions**

A. Calculators, computers, slide rules, reference sheets, etc. are not allowed.

B. For each item, answer the quantity as the correct power of ten (exponent). For example, the number 1.4 x 106 (1,400,000), you would record 6 as your answer. If the number is 8.6 x 103, you would record 4 as your answer.

C. If the response is equal to the accepted value, then it receives 5 points. If the response is ±1 of the accepted value, then it receives 3 points. If the response is ±2 of the accepted value, then it receives 1 point.

D. The test consists of 25 questions. The maximum score is 125 points.

E. In the event of a tie score, the first tiebreaker is the highest number of 5-point answers. The second tiebreaker is highest number of 3 point answers.

**Questions**

1. How many seconds are there in a year?
2. How many seconds has it been since the colony at Jamestown was settled?
3. How many pieces of popcorn will be eaten at all the showings of the new *Star Wars* movie on its opening weekend?
4. Referring to question 3, how many pounds of popcorn is that?
5. What is the mass of the Sun, in kilograms?
6. How many sheets of paper, laid flat, will it take to reach the top of the Washington Monument?
7. Estimate the mass, in grams, of all the fans at a Washington Capitals-Pittsburgh Penguins game.
8. How many iPhone's would it take to fill an average high school gym?
9. How many toothpicks can be made from a California giant redwood tree?
10. What is the maximum speed of an inch-worm in kilometers per hour?
11. How many $20 bills are in circulation right now?
12. How many pennies are equivalent to the total value of all $20 bills in circulation right now?
13. How many people visit the cherry blossoms in Washington DC each year?
14. What is the area, in square miles, the Continental United States (not including Alaska and Hawaii)?
15. How many standard playing cards would it take to completely cover the Continental United States?
16. What is (.000007)10?
17. How many miles of highways are there in Virginia?
18. How many babies will be born in Maryland this year?
19. How many paper clips would it take to make a border around Pennsylvania?
20. How many ounces of bamboo does a panda eat per year?
21. How many students will take the ACT this school year?
22. How many people per McDonald’s are there in the United States?
23. How many total hamburgers do Americans eat each year?
24. How many Washington Monument height stacks of hamburgers could be made from the hamburgers in problem 23?
25. How many steps would you take if you ran along the Pan American highway from Prudhoe Bay, Alaska to Ushaia, Argentina?

**Fermi Test Answer Sheet**

Team Name:

Team Number:

|  |  |
| --- | --- |
| **Answer** | **Points Awarded** |
| 1. | 5 3 1 |
| 2. | 5 3 1 |
| 3. | 5 3 1 |
| 4. | 5 3 1 |
| 5. | 5 3 1 |
| 6. | 5 3 1 |
| 7. | 5 3 1 |
| 8. | 5 3 1 |
| 9. | 5 3 1 |
| 10. | 5 3 1 |
| 11. | 5 3 1 |
| 12. | 5 3 1 |
| 13. | 5 3 1 |

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| --- | --- |
| **Answer** | **Points Awarded** |
| 14. | 5 3 1 |
| 15. | 5 3 1 |
| 16. | 5 3 1 |
| 17. | 5 3 1 |
| 18. | 5 3 1 |
| 19. | 5 3 1 |
| 20. | 5 3 1 |
| 21. | 5 3 1 |
| 22. | 5 3 1 |
| 23. | 5 3 1 |
| 24. | 5 3 1 |
| 25. | 5 3 1 |