

Fermi Questions – Division C

Written by Neil Mehta

Student Names: _____ /

Team Name:

Team Number:

Complete all questions within the allotted time. A correct answer will receive 5 points. An answer that is one power of ten away from the correct answer will receive 3 points. An answer that is two powers away will receive one point.

1. How many kilograms need to be burned to release energy equal to the total energy output of the Sun in one second? 20
2. How many times does the name “Fermi” show up on the Wikipedia page for Enrico Fermi? 2
3. How many tennis courts, lengthwise, could be fit along the equatorial circumference of Pluto? 5
4. How many days would it take an ant to travel one mile? -1
5. What is the weight of one mole of O₂ in grams? 1
6. Assuming average reading speed, how many hours would it take to read all thirty-two volumes of the *Encyclopædia Britannica*? 5
7. What is the height of the Eiffel Tower in AUs? -9
8. What proportion of land in the continental United States is composed of corn fields? -1
9. What is the weight of the number of pennies it takes to pay for a Boeing 777 plane, in grams? 11
10. How many Boeing 777 planes does it take to match this weight? 2
11. What is the population density of New York City, in people/mm²? -8
12. How many ink toners does it take to print a football field worth of black ink? 2
13. What is the combined net worth of the ten richest people worldwide in USD? 11
14. How many years ago did *Homo sapiens* first emerge? 5
15. What is the ratio of grams of trash in the oceans to human population? 3
16. How many letters are in the chemical name for the protein titin? 5
17. How many Nobel prizes have been awarded in history? 3
18. What would be the measure of the interior angle, in radians, of a slice from a sixteen-inch pizza pie where the pie crust in the slice measures one Planck length? -33
19. What is the carrying capacity of the Earth for humans? 10
20. How many test proctors administer the SAT every year? 5
21. How many milligrams of sugar are in a 1 L bottle of Coca Cola? 5
22. What is the size of the circulation for Time Magazine? 6
23. What is the diameter of graphite in the average mechanical pencil, in nautical miles? -7
24. How many views does Rick Astley’s *Never Gonna Give You Up* have on YouTube as of 2018? 8
25. What is the smallest Mersenne Prime? (A prime number that can be expressed as 2ⁿ-1, where n is a prime number) 0
26. How many years ago was Times New Roman introduced? 1

27. On a globe measuring 1 m in diameter, what would be the distance from Beijing to Singapore in mm? 3
28. What is the capacity (in people) of Citi Field stadium? 4
29. How many countries have never received an Olympic gold medal? 1
30. What is the speed of a sneeze in mph? 2
31. How many minims of oil were emptied during the *Deepwater Horizon* Oil Spill in the Gulf of Mexico? 13
32. How many barrels of water does it take to raise a cow? (including water for crops used to feed the cow) 4
33. What is the distance, in Fermis, between Enrico Fermi's place of birth and death? 22
34. What is the duration, in jiffies, that it takes to fly from NYC to London? 6