

Fermi Questions

North Regional Science Olympiad Tournament

1/13/18

Names \_\_\_\_\_

Team # \_\_\_\_\_

This test will be composed of 50 questions. You are not expected to answer all 50 questions, there are just more questions to give more point opportunities. Your answers are to be given in order of magnitude. For a number in the form  $C \times 10^E$ , the guide for rounding the coefficient (C) is: if C is 5 or greater, round C up to 10. For example, if the number is  $5.001 \times 10^5$  the correct answer is 6. Responses given in scientific notation, decimal format, or any other format that is not the order of magnitude will be marked as incorrect. You will get 5 points for a correct answer, 3 for an error of one order of magnitude, 1 for an error of two orders of magnitude, and 0 for anything else. Do your best, answer as many as you can, and have as much fun taking it as I had writing it. Goodluck!

1.) How many words are there total on this test?

2.) How many total users does Facebook have?

3.) How many total users does Instagram have?

4.) What is the total number of people who have ever served in the Senate?

5.) What is the total number of people who have ever served in the House of Representatives?

6.)  $1234^5$

7.) How many seconds will pass between noon today (1/13/18) and noon on the date of the state competition (3/24/18)?

8.) How many grains of sand would it take to fill the Empire State Building?

9.) How many unit barrels of water would it take to fill Ben Hill Griffin Stadium?

10.) How many GameCubes stacked on top one another would it take to reach the height of Mt. Everest?

11.) How many hair follicles are there on the world's population? Assume humans only have hair follicles on their heads.

12.) How many dry grains of white long grain rice would it take to cover the ground of the gardens that contain the Taj Mahal?

13.) How much do the tacos that were consumed in the United States during the year 2016 weigh in slugs? Slugs are a unit of weight.

14.) How many fortnights would it take to traverse the length of a grain of rice, longwise, travelling at the speed of light?

15.) How much longer, in jubilees, would it take a zebra to circle the globe, along the equator, than it would for a cheetah? Assume that zebras and cheetahs both can run across water, and that they run continuously.

16.) How much does a toenail grow per Svedberg in furlongs?

17.) How many standard-sized credit cards would fit in all of the oceans on Earth?

18.) How many golf balls fit in the 3rd largest planet that NASA has found to date?

19.) How many fast food restaurants are open in the United States right now?

20.) In the world?

21.) How many cubic millimeters of liquid could fit in an average sized 6'1" man?

22.) How many pennies would you have to melt to have enough material to make Iron man's suit?

23.) How many angstroms are there between the center of South Africa and the center of Australia?

24.) How many passengers passed through Miami International Airport in 2012?

25.) How many gallons of Walmart Brand milk could Matt Leblanc buy using only his salary from filming season 7 of *Friends*?

26.) How many Maserati Quattroportes would be equivalent in weight to the largest airplane ever made?

27.) How many CDs would you have to line edge to edge to equal the length of the Golden Gate bridge ?

28.)  $3^{20}$

29.) How many square parsecs are there in one square lightyear?

30.) What is the mass of the sun in units of King Size Hershey Bars?

31.) How wide is this paper in Scandinavian miles?

32.) How many blades of grass are there on a standard sized football field?

33.) If you have 150 randomly selected people in a room, what's the probability that they all have different birthdays?

34.) What if you had only 75 people?

35.) How many people would you need in a room to have a 50% chance that two of them share a birthday?

36.) If the spelling in Webster's Third New International Dictionary, published in 1961, was only 99% correct, how many misspelled words would there be?

37.) If you had invested \$365 into bitcoin on January 1st 2011, how much money would your investment be worth if you sold on Thanksgiving of this past year?

38.) How many ways are there to shuffle a deck of cards?

39.) As of 2010, how many car tires are there on the globe? Only include those that are currently attached to cars.

40.) What is Google's daily ad revenue?

41.) How many total lines are there in a college ruled 5 subject notebook?

42.) How many ants are there on earth?

43.) How many atoms, of the diameter of an average plutonium, would it take, lined end to end, to cover the length of a marathon?

44.) If a computer counted up starting at 0 for one day at a rate of 1 number per likshaka, a hindu unit of time, what would the final number it reached be?

45.) How many seconds are there in a fortnight on Pluto?

46.) How many hours would it take Usain bolt to run the length of Earth's orbit if he ran at full speed the entire time?

47.) How many hours would it take the world's fastest plane?

48.) How many iPhone X's would it take to equal the volume of Neptune?

49.) The weight?