1. What is the 2019th composite number?

2. What is the population of Pleasanton, CA as of 2017?

3. Let $k = \frac{2019^{2019} * 2017^{2017}}{2018^{4036}}$. What is the value of $2018k$ rounded to the nearest whole number?

4. What percentage of the world is water?

5. What is the maximum amount of spheres of radius 1 that can fit in a sphere of radius 3?

6. $2019! > 2019^k$. What is the largest value of k that satisfies this inequality?

7. How many days old is Jeffery today?

8. $2019^{2019} > k!$. What is the largest value of k that satisfies this inequality?

9. How many Eiffel Towers does it take, rounded up to the nearest Eiffel Tower, to stack one on top of each other to the height of Mount Everest?

10. Let $a_0 = 2$, $a_1 = 20$, $a_2 = 201$, $a_3 = 2019$, $a_4 = 20192$, $a_5 = 201920 \ldots$ such that the number 2019 gets repeated digit by digit as the sequence increases. What is the smallest n such that $a_1 \times a_2 \times a_3 \times a_4 \ldots \times a_{n-1} \times a_n > 2019^{2019}$?

11. Let $S = 2019^1 + 2018^2 + 2017^3 + \ldots + 2^{2018} + 1^{2019}$. How many digits are in S?

12. As of 2016, how many gallons of water does the average Californian use per day?

13. Let ω be a circle with radius 1, and let $A_1 A_2 \ldots A_{2019}$ be a regular 2019-gon inscribed in ω. Let X be the area that is inside ω but outside $A_1 A_2 \ldots A_{2019}$. Estimate $N = \lfloor \frac{\pi}{X} \rfloor$.

14. How large is California in square miles?

15. Estimate the smallest value of N such that $\binom{2019}{N} > \frac{2^{2019}}{2019}$

16. (True/False) The answer to each of these questions is either true or false. You may answer each question either true or false, or leave it blank. If you answer any of the questions incorrectly, then you will receive a 0 on this problem. Otherwise, if you answer n questions correctly, you will receive $(n-2)(n-1)$ points (scaled to the value of the other problems). **Circle** the letters of statements you think are true and **cross out** the letters of statements you think are false. Do not mark letters of statements which you are unsure of.

    (a) Today is March 7th, 2018
    (b) 2019 is a prime number
    (c) After this meeting, there are three more PMC meetings in the year
    (d) A rectangle is a parallelogram
    (e) All of your lecturers are either from Amador or Foothill
    (f) The number 2018 appeared on this test 6 times
    (g) The writer of this question was Jeffery

17. Rank your seven lecturers by their age (greatest first). Their names are Kate, Mathi, Suhas, Jocelyn, Jeffery, Clara, Rohith. If you place k people in the incorrect spot, then your score for this problem is $(20 - k!)$. If $(20 - k!)$ is less than 0, your score for this problem is 0.

    ____ ____ ____ ____ ____ ____ ____

18. How many times did the number 2019 appear on this test, throughout all four rounds?