1. What is $10^{10} + 10^8 + 10^6 + 10^4 + 10^2 + 10^0$?

2. If Jill has 6 apples and eats 4, how many apples does she have left?

3. What's the closest number to 169 that can be evenly divided by 9?

4. What is the value of $\dfrac{3+6+9}{2+4+6} - \dfrac{2+4+6}{3+6+9}$, expressed as a simplified fraction?

5. Alex the Katz is in the forest collecting flowers. Each flower has 7 petals, and in his final collection he sees 1001 petals. How many flowers does he have?

6. What is the probability that a randomly chosen word of this sentence has exactly four letters?

7. 5 years ago, my brother was half my age. If I am now 13 years old, how old is my brother?

8. Let $a\#b$ be defined as $ab - a - 3$. For example, $4\#5 = 20 - 4 - 3 = 13$. Compute $(2\#0)\#(1\#4)$.

9. Cosmo and Waffles are Leo's dogs. Every time Leo says "Cosmo," Cosmo barks, and every time leo says "Waffles," Waffles barks. Finally, every time Leo says "Puppies," both of them bark. Yesterday, Bruce heard Leo say 15 words, and heard the dogs bark a total of 22 times. How many times did Leo say "puppies"?

10. Find the sum of the greatest common factor and the least common multiple of 12 and 18.

11. Evan is inconsistent. As an 11th grader, he scored 8 on the USA Math Olympiad, but then scored much higher as a 12th grader. If his 12th grade score was an integer more than five times greater than his 11th grade score but less than 42, what was the score?

12. A hedgehog has 1 friend on Day 1. If the number of friends he has increases by 5 every day, how many friends will he have on Day 6?

13. Let $p_k$ be the $k$-th smallest positive prime number. Compute $p_1 + p_2 + \ldots + p_7$.

14. If I add 21 to $\dfrac{1}{4}$ of a number, the result is $\dfrac{3}{5}$ of the same number. What is this number?

15. How many digits could possibly be the last digit of a perfect square?

16. 27 students in a school take French. 32 students in a school take Spanish. 5 students take both classes. How many students take only one language class?

17. In a classroom there are girls, boys, and teachers. There are twice as many teachers as girls, there are 6 more boys than girls, and there are 38 people in the room in total. How many total children are in the room?

18. Alex the Kat has written 61 problems for a math contest, and there are a total of 187 problems submitted. How many more problems does he need to write (and submit) before he has written half of the total problems?

19. If 2 darps equals 4 derps, and 3 derps equals 5 dirps, then how many dirps equals 6 darps?

20. The length of Alex's rectangle is three times the length of Kelvin's rectangle, and the width of Alex's rectangle is three times the width of Kelvin's rectangle. If the area of Kelvin's rectangle is 12, what is the area of Alex's rectangle?

21. Define $x \star y$ to be $x^y + y^x$. Compute $2 \star (2 \star 2)$.

22. Rita the painter rolls a fair 6-sided die that has 3 red faces, 2 yellow faces, and 1 blue faces. Rita rolls the die twice and mixes the colors that the die rolled. What is the probability she has mixed the color purple?

23. Lev scores 91, 89, 88, 94, 87, 85 on his first 6 tests. After having his final exam, he (correctly) states that the average of all 7 of his test scores is equal to his final exam score. What was Lev's final exam score?

24. 5 consecutive integers sum to 210. What is the largest of the 5 integers?

25. A cubic storage box has a surface area of 294 square feet. What is the length of each edge of the box?

26. There are two kinds of peaches: big peaches and little peaches. Big peaches weigh 8 pounds, while little peaches weigh 4 pounds. If I have a pile of peaches weighing 252 pounds, what is the smallest number of peaches that can be in the pile?

27. With a hammer, James can crush candies at a rate of 8 candies per 16 seconds. Without a hammer, he can crush candies at half that speed. A hammer is only available to James for 5 minutes. What is the shortest time needed for him to crush 180 candies?

28. The sum of two integers is 8, and the sum of their squares is 34. What is the product of the two integers?

29. A class of 12 students score an average of 65 points on a 100-point test. When a new student joins the class and takes the test, the class average becomes 66. What did the new student score on the test?

30. Lev's farm has alpacas and 2-headed chickens. One day, Lev counts 94 heads, and 238 legs (alpacas have 4 legs, while chickens have 2). How many animals does Lev have on his farm?

31. As Nikita is riding her camel down a long straight road, she sees Lev riding a llama half a mile in front of her. After she passes him, she can see him in the camel's rear view mirror until he is half a mile behind her. Nikita rides at 12mph and Lev rides at 8mph. For how many minutes can Nikita see Lev?

32. In Asian cultures the number 4 is considered unlucky (much like 13 in Western culture). As such, in skyscrapers, floor numbers containing the number "4" are skipped. Jason sees that the top floor of a certain building is labeled "88". Jason knows that the building has no basement. How many floors does this building actually have?

33. Find the number of integers between 1 and 20, inclusive, that can be written as the sum of two squares of integers. For example, 13 is one such number as $13 = 3^2 + 2^2$, while 3 cannot be written as the sum of two perfect squares.

34. A sea otter is eating sea urchins. If 10 sea otters eat 36 sea urchins in 4 hours, how many sea urchins can 5 sea otters eat in 6 hours?

35. If $a\%b$ is the remainder that you get when you divide $a$ by $b$, and $a\triangle b = \dfrac{a\%b + a\%(2b)}{2}$, what is $9\triangle 2$?

36. What is the least number of people in a room necessary to **guarantee** some two of them were born on the same day of the week?

37. John bikes for two miles at the rate of 10 miles per hour, then swims for 3 miles at the rate of 12 miles per hour. He then walks one mile. If his average speed for the entire trip was 6 miles per hour, how many minutes did he spend walking?

38. If a triangle has three altitudes of lengths 6, 6, and 6, what is its perimeter?

39. The average of five consecutive square numbers is 146. Find the smallest of these squares.

40. There are 3 values of $x$ such that the mean and median of the numbers 2, 4, 7, 11, and $x$ are equal. Find the sum of these 3 values.

41. A isosceles triangle has side lengths $x - 4$, $2x - 9$, and $3x - 15$. Find the sum of all possible values of $x$.

42. What is the sum of all the factors of 2014?

43. How many ways can 3 boys and 4 girls sit in a line so that no one sits next to another person of the same gender?

44. How many of the numbers from 1 to 2014 have a 6 as at least one of its digits?

45. Young Guy likes to make friends with numbers, so he calls a number "friendly" if the sum of its digits is equal to the product of its digits. How many 3 digit friendly numbers are there?

46. Alex colors all the even numbers from 1 to 2014 orange, AJ colors all the odd numbers from 1 to 2014 blue, and Kelvin colors all the numbers that are multiples of 19 yellow. How many more numbers are yellow and blue than are yellow and orange?

47. If Kelvin Wang hits a gong, there's a probability of $\frac{1}{2}$ that the gong makes a "bong" noise, and a probability of $\frac{1}{2}$ that nothing happens. If he hits the gong 2015 times, what's the probability Kelvin Wang hears a "bong" at least 1008 times?

48. Order the following, from smallest to greatest: $A = \dfrac{\sqrt{2}}{2}, B = \dfrac{\sqrt{3}}{3}, C = \dfrac{5}{7}, D = 0.5$.

49. Suppose $f(x)$ is a function such that $f(x) + x \cdot f(3 - x) = 2$ for all $x$. Compute $f(1)$.

50. Find the probability that the ace of spades is next to the ace of hearts after a standard 52-card deck is shuffled.