

Name: _____

School: _____

Score: _____

1. _____ Evaluate $59745 \cdot 11$.
2. _____ What is the numerical product of the area and perimeter of a rhombus with diagonals that have lengths of 12 inches and 16 inches?
3. _____ Mr. Juhasz loves all of his students. Each day, he gives them increasing amounts of free candy. On the first day of school, he gives out 3 pieces of candy to each of his 21 students. On the second day, each student receives 7 pieces of candy. The next day, he gives out 11 pieces per student. If this pattern continues, how many pieces of candy will Vishnav, a student who missed the 5th and 6th days, have at the end of the 10th day, given that Mr. Juhasz made up for it by adding 37 pieces to Vishnav's 10th day earnings?
4. _____ Tanmay rolls a pair of fair six-sided dice. What is the probability that he gets two relatively prime numbers?
5. _____ Tanmay rolls another pair of fair six-sided dice. What is the probability that he gets two prime numbers?
6. _____ If $2x + 3 = 4$, then what is $3x + 4$?
7. _____ Evaluate $1^1 + 2^2 + 3^3 + 4^4 + 5^5 - 2019$.
8. _____ What is the least common multiple of 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10?
9. _____ Evaluate $1 + 1 - 1 + 1(1 - 1^1)^1 + 1 - 1$.
10. _____ The perimeter of a square with side length 4 inches is equal to the perimeter of a rectangle with a width of 6 inches. What is the positive difference in area between the square and the rectangle, in square inches?
11. _____ If 10% of x is 2% of 210, then what is x ?
12. _____ What is the area of a circle with radius $\sqrt{2}$?
13. _____ The sum of n perfect squares is 103. What is the least possible, positive integer value for n ?
14. _____ What is the volume of a cube, in cubic units, that has a surface area of 600 square units?
15. _____ Evaluate $\log_2(< 2^{10}, 2^{11}, 2^{12} > \cdot < 2^6, 2^5, 2^5 >)$.
16. _____ What is the cube of the 26th prime number?
17. _____ A certain right conical frustum has a height of 8 centimeters, and its base radius is twice the length of its top radius. The length of the top radius is equal to the length of the diagonal of a square with a side length of 2 centimeters. What is the lateral surface area of this frustum?
18. _____ Shubham the mailman is delivering the mail for all of the residents of Florida. Today is a busy day for him because every house in Florida has mail to be delivered! Unfortunately, Shubham is not very good at his job, and he gives each house a random set of mail. However, Shubham knows that if at least one house gets the correct mail, he will keep his job. Let p be the probability of Shubham being fired. What is the value of $\frac{1}{p}$, rounded to two decimal places?
19. _____ How many pairs of positive integers (a, b) satisfy $1 \leq a, b \leq 50$ and $(a + 10)^2 + (b + 10)^2 = 4^a + 4^b + 2019$?
20. _____ Compute the value $\tan^{-1}\left(\frac{1}{11}\right) + \tan^{-1}\left(\frac{5}{6}\right)$, in degrees. (Round your answer to the nearest degree.)