

For all questions, answer choice (E) NOTA means that none of the given answers is correct. Good Luck!

- What is the greatest common factor of $5!$, $10!$, and $15!$?
(A) 25 (B) 50 (C) 120 (D) 3628800 (E) NOTA
- What is the smallest prime number that is 1 greater than a perfect square?
(A) 5 (B) 2 (C) 7 (D) 17 (E) NOTA
- Solve for x in the following equation. $7x + 13 = 2x + 23$
(A) 1 (B) 2 (C) 3 (D) 4 (E) NOTA
- Evaluate: $(1 + 2 + 3 + 4 + \dots + 99 + 100)^0$
(A) 5050 (B) 10100 (C) 1 (D) 0 (E) NOTA
- If $a = \frac{b}{13} + 3$, what is a when b is 91?
(A) 7 (B) 13 (C) 20 (D) 3 (E) NOTA
- What is the slope of the line perpendicular to the one containing the points $(7, 13)$ and $(9, 14)$?
(A) -2 (B) 2 (C) $-\frac{1}{2}$ (D) $\frac{1}{2}$ (E) NOTA
- $\frac{1}{3}$ of $\frac{1}{2}$ of x is 10. What is the value of x ?
(A) 30 (B) 45 (C) 10 (D) 60 (E) NOTA
- Oddish hates odd numbers. How many 2-digit numbers only have odd digits?
(A) 50 (B) 30 (C) 49 (D) 51 (E) NOTA
- Let x be the first positive integer that is a perfect power of 11 and not a palindrome. What is the sum of the digits of x ? (Hint: Use Pascal's triangle.)
(A) 11 (B) 32 (C) 14 (D) 22 (E) NOTA
- What is the sum of the distinct roots of the following equation? $(x - 1)(x - 3)(x - 5) \dots (x - 99) = 0$.
(A) 4950 (B) 100 (C) 10000 (D) 2550 (E) NOTA
- Kyle can eat a doughnut in 5 seconds and Snorlax can eat a doughnut in 4 seconds. If they both work together, how long will it take them to eat 9 doughnuts? (All answers are in seconds.)
(A) 9 (B) 20 (C) 36 (D) 18 (E) NOTA
- Cydney is at the point $(7, 20)$ and is walking to the next PokeStop which is at the point $(18, 80)$. What is the shortest distance between Cydney and his destination?
(A) 41 (B) 60 (C) 40 (D) 61 (E) NOTA
- What are all the values of x that satisfy $|2x + 1| < 19$?
(A) $x < 9$ (B) $x > -10$ (C) $x < 9$ or $x > -10$ (D) $x < 9$ and $x > -10$ (E) NOTA
- Shiv buys pencils in packs of 2 and 7. What is the largest number of pencils that Shiv can't obtain?
(A) 13 (B) 17 (C) 3 (D) 5 (E) NOTA

15. Designer is thinking of some lyrics for his new song but needs help because he can only speak cursive. How many 3 letter “words” can he make using the first 4 letters of the alphabet? (Letters can be repeated and the words do not have to mean anything. Ex: AAA is a word.)
(A) 24 (B) 26 (C) 4 (D) 12 (E) NOTA
16. Pikachu loves food and prime numbers, especially ones over 100. What is the sum of the digits of the 3rd smallest prime number greater than 100?
(A) 11 (B) 10 (C) 9 (D) 8 (E) NOTA
17. The diameter of a circle is an integer. The area of the circle is between 100 and 120 square units. What is the number of units in the circle’s diameter?
(A) 10 (B) 11 (C) 12 (D) 13 (E) NOTA
18. Find the sum of all integer(s) that make the inequality $14 < \frac{7x}{2} < 21$ true.
(A) 15 (B) 10 (C) 6 (D) 5 (E) NOTA
19. Calculate the circumference of a circle with area 4.
(A) $4\sqrt{\pi}$ (B) $2\sqrt{\pi}$ (C) $4\pi^2$ (D) $2\pi^2$ (E) NOTA
20. Find the next term in the sequence: 1, 2, 6, 15, 31, 56.
(A) 66 (B) 91 (C) 48 (D) 74 (E) NOTA
21. A number x is equal to the product of 7, 24 and 48. What is the smallest positive integer y such that the product xy is a perfect cube?
(A) 8064 (B) 588 (C) 294 (D) 1 (E) NOTA
22. Shiv is building a fence so his cow Bessie can roam in peace. If Shiv wants to construct a fence with integral side lengths, but only has 80 units of fencing material, what is the area of the largest plot of land that Shiv can make for Bessie?
(A) 39 (B) 399 (C) 1600 (D) 400 (E) NOTA
23. Find the sum of the positive factors of 2016.
(A) 4536 (B) 4535 (C) 6556 (D) 6552 (E) NOTA
24. Ashish is lifting some heavy 5 pound dumbbells, but begins to pout when he realizes Sairam is lifting 6 pound dumbbells. Ashish begins using whey protein to beat Sairam in their next arm wrestling contest. How many grams should Ashish take every day if the recommended amount is the least common multiple of 6, 5, and 30? (Assume Ashish uses some common sense and only takes the recommended amount.)
(A) 60 (B) 15 (C) 30 (D) 3 (E) NOTA
25. Sri realizes he is lacking some common sense so he decides to ask the rainbow god for help. The rainbow god will only help him if he can express $0.1777\dots$ as a fraction in simplest form. What is Sri’s answer assuming he answers it correctly?
(A) $\frac{1}{17}$ (B) $\frac{17}{90}$ (C) $\frac{17}{99}$ (D) $\frac{8}{45}$ (E) NOTA
26. Teja is one foot tall and casts a 7 foot long shadow. Puneet is 3 feet tall and decides to creep up on Teja and tickle him. How long will his shadow be in feet if he stands next to Teja at the same time of the day?
(A) $\frac{7}{3}$ (B) $\frac{3}{7}$ (C) $\frac{4}{7}$ (D) $\frac{7}{4}$ (E) NOTA

27. Let A be the set of positive integers from 1 to 100 inclusive. Vishnu loves the number 101 so he decides to make as many groups of 2 numbers from set A that sum to 101. What is the maximum number of groups he can make?
(A) 50 (B) 49 (C) 48 (D) 47 (E) NOTA
28. Sairam has a crush on you and decides to ask you out with the word "PLEASE". How many ways can the letters in the word "PLEASE" be arranged?
(A) 720 (B) 120 (C) 1080 (D) 360 (E) NOTA
29. Maathesh loves 90° angles. Find the equation of the line that passes through the point $(20, 30)$ and is perpendicular to the line containing the points $(11, 15)$ and $(15, 23)$.
(A) $2x + 3y = 130$ (B) $2x + y = 70$ (C) $x + 2y = 80$ (D) $x - 2y = -40$ (E) NOTA
30. Now that the day is almost over, Sri, Nihar, and Josh decide to drive a big white van around town passing out 30 stolen candies to children. Josh opens his eyes and notices that each candy is labeled with every digit of π to the right of the decimal point. Josh begins to draw right triangles in his mind and then also notices that the answer to this question is the 30th digit of π (to the right of the decimal point) multiplied by 3162656. The answer to this question can also be solved by computing $\left(\frac{2016}{288}\right) \cdot 2016 \cdot 2017$. (Hint: The first two digits of π to the right of the decimal point are 1 and 4.)
(A) 27453804 (B) 28463904 (C) 28434014 (D) 27433904 (E) NOTA