

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

1. Calculate $14469 \div 21$.

(A) 729 (B) 789 (C) 629 (D) 689 (E) NOTA

2. Eric's garden contains only roses and tulips. He has twice as many roses as tulips in his garden. If there are a total of 63 flowers in his garden, how many are roses?

(A) 21 (B) 126 (C) 42 (D) 32 (E) NOTA

3. Dylan takes AP Calculus BC as a freshman. He wants to maintain a 95% average on all of his exams. His scores in percentages for his first 5 exams were 84, 92, 100, 89, 100. His teacher feels nice and offers extra credit points on the sixth and final exam, but will only give just enough points for Dylan to reach the 95% average on all his exams. Assuming Dylan receives a 100 on the final exam, how many extra percentage points did his teacher award Dylan in order for him to maintain his 95% average? (Note: Only whole numbers of points can be awarded.)

(A) 14 (B) 5 (C) 8 (D) 2 (E) NOTA

4. Evaluate:

$$32311 + 4(((15 \times 8 + 69)3 + 48) \div 5)$$

(A) 32803 (B) 39024 (C) 48032 (D) 29364 (E) NOTA

5. Farzan is usually late to school so he decides to set an alarm that will wake him up on time to get to school. If it takes him 15 minutes to brush his teeth and shower, 10 minutes to eat breakfast, and 30 minutes to drive to school. Given that these are the only things Farzan does before school, what time should he set his alarm in order to get to school exactly when the bell rings at 7:30 A.M.?

(A) 6:30 P.M. (B) 6:35 P.M. (C) 6:40 P.M. (D) 6:45 P.M. (E) NOTA

6. Mihir has a deck of cards (52 cards). His deck of cards has 4 suits of 13 cards each. He has 2 suits of red cards and 2 suits of black cards. Each suit has 3 face cards. What is the probability that Mihir picks a red face card out of the 2 suits of red cards?

(A) $\frac{3}{26}$ (B) $\frac{3}{13}$ (C) $\frac{3}{52}$ (D) $\frac{1}{13}$ (E) NOTA

7. Find the sum of the next two numbers in the following sequence:

$$1, 2, 5, 14, 41, 122, \dots$$

(A) 1094 (B) 365 (C) 965 (D) 1459 (E) NOTA

8. What is 80% of 40% of 50% of 200 expressed as a whole number?

(A) 36 (B) 48 (C) 24 (D) 32 (E) NOTA

9. What is the hypotenuse of a right triangle with side lengths of 18 and 24?
- (A) 26 (B) 29 (C) 30 (D) 27 (E) NOTA
10. Harshil has a pet frog and it wants to escape because he hasn't been taking good care of it. Every 2 hours his pet frog jumps up a wall 4 feet in the first hour and slides down 2 feet in the second hour. How many hours will it take his pet frog to jump over a 31 foot wall and escape?
- (A) 28 (B) 30 (C) 20 (D) 29 (E) NOTA
11. Vishnav decided to participate in an arm-wrestling competition with 11 other people. Before the competition starts everyone decided to shake hands with every single other person exactly once. How many handshakes took place?
- (A) 66 (B) 78 (C) 156 (D) 132 (E) NOTA
12. Jada Smith cheats on her quantum entanglement exam 935 months after her birthday. Given that Jada Smith is born in September, what month did Jada cheat on her exam?
- (A) June (B) October (C) August (D) December (E) NOTA
13. Justin ordered a cookie cake with ice cream on top of it. The price of his dessert was \$26, however, the place he purchased his dessert from has an extremely high sales tax of 150%. Luckily, he has a coupon that gives him a 30% discount. What was the final price that Justin had to pay for his dessert if he received the sales tax and used his coupon?
- (A) \$65.00 (B) \$47.50 (C) \$38.50 (D) \$46.00 (E) NOTA
14. Prabhas's parents take his computer away because he is playing too many games. His parents give him a chance to get his computer back by answering the following question:
- A sequence of 6 consecutive even integers has a sum of 870.
What is the average of the first and last numbers in the sequence?
- (A) 135 (B) 163 (C) 145 (D) 150 (E) NOTA
15. Based on the following equations:
- $$5x - 48 = 3x + 62$$
- $$y = \frac{32}{55}x + 408$$
- What is the value of y ?
- (A) 613 (B) 540 (C) 498 (D) 440 (E) NOTA
16. Tanusri has 109 coins. 10 are nickels, 23 are dimes, 6 are quarters and the rest are pennies. What is the percentage of the cost of all the pennies out of the total cost of all the coins?
- (A) 14% (B) 7% (C) 28% (D) 20% (E) NOTA

17. Shreyas likes to try new things so he decides to go sky diving. In his sky diving adventures, he has to jump from a plane that is 13,000 feet above the ground. When he reaches the 5,000 feet mark he has to deploy his parachute and slow his fall. If his parachute makes him fall at 125 feet per 30 seconds, How many minutes does it take him to reach the ground?
- (A) 40 (B) 15 (C) 18 (D) 24 (E) NOTA
18. If $A \% B$ equals $(\frac{A}{B})^B$. What is the value of $\frac{36\%4}{18\%2}$?
- (A) 1 (B) 9 (C) 81 (D) 18 (E) NOTA
19. Mihir is getting a dog as his new pet. He knows that his dog likes to eat a lot so he is stocking up on bags of dog food. If his dog eats 10 ounces of dog food per meal and eats 4 meals a day. How much dog food will Mihir's dog consume in 5 weeks (in pounds)?
- (A) 87.5 (B) 1250 (C) 1400 (D) 92.5 (E) NOTA
20. Which of the following statements are true?
- I. A scalene triangle has all different side lengths.
II. An isosceles triangle has two sides of equal length.
III. A right triangle cannot be an equilateral triangle.
- (A) I and II (B) II and III (C) I and III (D) I,II, and III (E) NOTA
21. Farzan has a pet monkey that he needs to purchase bananas for. At the store, bananas are \$2 per pound. The banana peel weighs 30% of the whole banana. When Farzan buys 4 pounds of bananas, how much does he pay for the banana peels?
- (A) \$3.00 (B) \$2.40 (C) \$8.00 (D) \$1.20 (E) NOTA
22. Akash lives on the 46th floor of a building. There are 24 stairs between two connecting floors. How many stairs does Akash have to climb to reach the 46th floor, starting from the first floor?
- (A) 1080 (B) 1104 (C) 674 (D) 982 (E) NOTA
23. Hitesh has two identical squares. Square A has an area of 36 cm^2 and Square B has an area of 225 cm^2 . What is the ratio of double the side length of Square B to half the side length of Square A?
- (A) 2 : 5 (B) 10 : 1 (C) 5 : 2 (D) 1 : 10 (E) NOTA
24. Solve the following expression using Roman numerals: $LXXII + XCVI$
- (A) CLXVI (B) CXLVI (C) CLXVIII (D) CXLVIII (E) NOTA
25. What is the measure of the larger angle between a clock's hands at 7:00 p.m.?
- (A) 210° (B) 180° (C) 190° (D) 270° (E) NOTA

26. If you add the square of John's age to the age of Malcolm, the sum is 62; but if you add the square of Malcolm's age to the age of John, the result is 176. What is the product of both of their ages?
- (A) 168 (B) 104 (C) 76 (D) 91 (E) NOTA
27. If $\sqrt{48} + \sqrt{243} + \sqrt{27} = x$. What is x ?
- (A) $16\sqrt{3}$ (B) $12\sqrt{2}$ (C) $18\sqrt{3}$ (D) $24\sqrt{2}$ (E) NOTA
28. Evaluate:
- $$2020 + 2019 + 2018 + \dots + 3 + 2 + 1$$
- (A) 4082420 (B) 4084860 (C) 2041210 (D) 2043640 (E) NOTA
29. There is a new popular game that is on the rise called Valorant. Valorant has 11 characters which all have different abilities. If you can only choose 5 characters in a squad every game, how many unique combinations of a squad can be made in one game?
- (A) 462 (B) 496 (C) 720 (D) 644 (E) NOTA
30. Good job! You have reached the end of the test, but don't get too excited you still have this last question to answer. Here is a quote by Albert Einstein: "Pure Mathematics is, in its way, the poetry of logical ideas." Which letter shows up most frequently in the quote?
- (A) i (B) e (C) t (D) a (E) NOTA