

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

1. Evaluate:  $14 - (-5) + 3 \times 4 + (5 - 2)$   
(A) 34 (B) 51 (C) 24 (D) 40 (E) NOTA
2. What is the Greatest Common Factor(GCF) of 84, 24, and 66?  
(A) 2 (B) 3 (C) 4 (D) 6 (E) NOTA
3. The Rickards tennis team is thinking of selling water bottles in the shape of a cylinder to its students, but they first need to find the volume of each bottle. If each bottle has a height of 7 cm and a diameter of 6 cm, what is its volume, in cubic centimeters? (The formula for volume of a cylinder is  $V = \pi r^2 h$ , where  $r$  is the radius of the cylinder, and  $h$  is the height.)  
(A)  $72\pi$  (B)  $74\pi$  (C)  $75\pi$  (D)  $78\pi$  (E) NOTA
4. Siddarth is going to the store to buy some groceries. After purchasing items worth \$13.50, he uses a 20% off coupon. What is the total cost of his purchase after the discount?  
(A) \$2.70 (B) \$10.25 (C) \$16.88 (D) \$10.80 (E) NOTA
5. A map uses a scale of 7in:20mi. On the same map, the cities of Tallahassee and Jacksonville are 4'8" apart. Using the ratio, how far are the cities from each other in real life?(all answers are in miles)  
(A) 150 (B) 140 (C) 160 (D) 280 (E) NOTA
6. Awnish wanted to buy a new car, but didn't have enough money, but luckily his friend Abhinav did. Abhinav let Awnish borrow \$2000 for his car, but charged 12% simple interest over four years. How much money will Awnish owe Abhinav after four years?  
(A) \$2360 (B) \$2960 (C) \$2690 (D) \$690 (E) NOTA
7. Simplify  $(4x^3y^2)(2x^4y)$ .  
(A)  $8x^3y^2$  (B)  $8x^7y^3$  (C)  $4x^{12}y^2$  (D)  $8x^{12}y^2$  (E) NOTA
8. Solve the inequality  $-10x + 24 \leq -4(1 + 6x)$ .  
(A)  $x \leq -2$  (B)  $x \geq -2$  (C)  $x \geq 2$  (D)  $x \leq 2$  (E) NOTA
9. John's parents are very strict. They want him to have an average of at least 90% on his tests. John has already taken 4 out of 5 total tests this semester and his scores are: 78%, 85%, 100%, and 90%. What is the minimum number of percentage points that John needs to get on his final test in order to have an average of at least 90% percent and please his parents?  
(A) 96% (B) 95% (C) 98% (D) 97% (E) NOTA
10. Last year, on the AP biology exam, the scores (out of 5) for Mr. East's first period class were: 5,3,1,2,2,4,5,2, and 3. Find the sum of the mean, median and mode of the scores.  
(A) 6 (B) 10 (C) 8 (D) 6.5 (E) NOTA
11. Which of the following numbers is composite?  
(A) 2 (B) 5 (C) 91 (D) 83 (E) NOTA

12. Sumanth can run 10 miles in exactly two hours. Assuming he runs at a constant rate, how long would it take him to run 35 miles?(all answers are in hours)
- (A) 4.5                      (B) 6.5                      (C) 6                      (D) 5                      (E) NOTA
13. The Rickards High School basketball team has played 245 games over the course of the past 10 years, including the playoffs and state championships. If they have won 80% of those games, how many games did Rickards lose?
- (A) 196                      (B) 195                      (C) 49                      (D) 50                      (E) NOTA
14. Mrs. Funk gives the class a math problem, and the first one to correctly answer it gets a secret prize. The math problem is to convert 0.48 into fraction form, and fully simplify it. After you get the fully simplified form, you are to multiply the numerator and the denominator. Teja is the first to correctly answer this problem and he wins the secret prize. What answer did Teja give?
- (A) 4800                      (B) 300                      (C) 1200                      (D) 200                      (E) NOTA
15. Let  $\zeta(x)$  be the sum of all of the positive factors of  $x$  (for example,  $\zeta(8)$  would be  $1+2+4+8$ , or 15). What is  $\zeta(42)$ ?
- (A) 79                      (B) 95                      (C) 78                      (D) 96                      (E) NOTA
16. Marshall and Barney decide to have a race to see which of them can reach their favorite restaurant, MacLaren's, first. They both start at Marshall's house, which is exactly 8 miles from MacLaren's. If Marshall drives at a rate of 60 mph and Barney drives at a rate of 80 mph, how many minutes earlier does Barney arrive before Marshall?
- (A) 1                      (B) 2                      (C) 3                      (D) 4                      (E) NOTA
17. What is the distance between the points (1,4) and (-2,0)?
- (A) 3                      (B) 4                      (C)  $\frac{5}{2}$                       (D) 2                      (E) NOTA
18. If two angles of a triangle are both  $72^\circ$ , what must be the measure of the third angle?
- (A)  $20^\circ$                       (B)  $36^\circ$                       (C)  $72^\circ$                       (D)  $16^\circ$                       (E) NOTA
19. Find  $4r$  if  $-8r+20=100$ .
- (A) -40                      (B) -15                      (C) -60                      (D) -10                      (E) NOTA
20. Let  $a = 6$ ,  $b = 15$ ,  $c = 12$ , and  $d = 100$ . Find the value of  $a^2 - 4(b - c) + \sqrt{d}$ .
- (A) 34                      (B) 124                      (C) 38                      (D) 22                      (E) NOTA
21. Jenny decides to fill up gas in her car, and notices that the price has risen to \$4.00 per gallon. Jenny distinctly remembers that last week, the price was \$3.50 per gallon. If Jenny fills up exactly 8 gallons each visit, how much money would she have saved if she filled up last week?
- (A) \$28.00                      (B) \$4.00                      (C) \$3.50                      (D) \$4.50                      (E) NOTA
22. Stephen and 5 of his friends find \$48 at FSU. They all decide to split the money evenly, however, Stephen accidentally gets only  $\frac{1}{4}$  of his share. How much money did Stephen get?
- (A) \$8.00                      (B) \$9.36                      (C) \$2.00                      (D) \$2.24                      (E) NOTA

23. G.K Vale, a photo company, offers picture frames in a wide variety of shapes and sizes. One of their most popular picture frames is in the shape of a heptagon with side length 6 in. What is the perimeter of this picture frame?
- (A) 30 in                      (B) 48 in                      (C) 36 in                      (D) 42 in                      (E) NOTA
24. Find the area of a square with diagonal of length  $\sqrt{18}$  ft.
- (A) 9 ft                      (B) 16 ft                      (C) 18 ft                      (D) 4 ft                      (E) NOTA
25. Which of the following sets of numbers can be the lengths of a right triangle?
- (A) 3, 4, 7                      (B) 3, 8, 9                      (C) 5, 12, 13                      (D) 1, 2, 3                      (E) NOTA
26. 29 more than  $x$  is equal to both 5 times  $y$  and 4 times  $z$ . If  $x$  is 11, find  $y - z$ .
- (A) 2                      (B) -2                      (C) 4                      (D) 0                      (E) NOTA
27. If  $f(x) = 17x - 13$ , find  $f(7)$ .
- (A) 104                      (B) 94                      (C) 176                      (D) 113                      (E) NOTA
28. Find the equation of a line passing through the points (1,5) and (-3,4).
- (A)  $y = x + 19$                       (B)  $4y = x + 19$                       (C)  $y = \frac{x}{4} + 4$                       (D)  $y = 4x + 16$                       (E) NOTA
29. Ifrah's house is at the point (-5,3), and Shwetha's house is at the point (1,-6). Find the slope of the perpendicular bisector of the line connecting their houses.
- (A)  $-\frac{2}{3}$                       (B)  $\frac{3}{2}$                       (C)  $-\frac{3}{2}$                       (D)  $\frac{2}{3}$                       (E) NOTA
30. What is the sum of the  $x$ -intercept and slope of the line  $2x = 4y + 20$ ?
- (A)  $\frac{21}{2}$                       (B)  $-\frac{9}{2}$                       (C)  $\frac{15}{2}$                       (D) 8                      (E) NOTA