

The choice (E) NOTA means that none of the other answers are correct. Good luck!

1. Compute the value of $(-1)^{58} + (-1)^{101}$.
(A) -1 (B) 0 (C) 1 (D) 2 (E) NOTA
2. What is the smallest value of A such that $46A217$ is divisible by 9 ? Note that A is a digit.
(A) 0 (B) 3 (C) 7 (D) 9 (E) NOTA
3. When 16 is added to twice a number, the result is 4 less than 3 times the same number. What is the number?
(A) 12 (B) 16 (C) 20 (D) 24 (E) NOTA
4. What is $6\frac{1}{4}\%$ expressed as a fraction?
(A) $\frac{25}{4}$ (B) $\frac{1}{16}$ (C) $\frac{4}{25}$ (D) $\frac{1}{12}$ (E) NOTA
5. Jessica, the very expensive merchant, bought a microwave for 450 dollars. Given that she sold the microwave at a profit of 20% , find the selling price.
(A) $\$90$ (B) $\$360$ (C) $\$540$ (D) $\$680$ (E) NOTA
6. The angles of a nondegenerate triangle are in a ratio of $2 : 3 : 4$. What is the measure, in degrees, of the smallest angle?
(A) 20 (B) 30 (C) 40 (D) 60 (E) NOTA
7. Completely factor the expression $15ab - 10b^3$.
(A) $5b(3 - b^2)$ (B) $5b(a - 2b^2)$ (C) $5b(3a - b^2)$ (D) $5b(3 - 2b^2)$ (E) NOTA
8. Grant, Ian, and Kevin decided to weigh themselves – however, their malfunctioned scale only displays weights that are greater than 200 pounds. Hence, they weighed themselves in groups. Grant and Ian, together, weighed 300 pounds. Ian and Kevin weigh 240 pounds, together. All three of them, together, weighed 410 pounds. How much does Ian weigh?
(A) 110 (B) 120 (C) 130 (D) 140 (E) NOTA
9. Consider two numbers, 48 and n . Given that the greatest common factor of 48 and n is 16 , and their least common multiple is 192 , find n .
(A) 4 (B) 12 (C) 64 (D) 3072 (E) NOTA
10. Given that $p = \frac{2}{3}$ and $s = 6$, compute the value of
$$\frac{s}{p^2} + \frac{4}{p^2}$$

(A) $\frac{40}{9}$ (B) $\frac{20}{3}$ (C) 15 (D) $\frac{45}{2}$ (E) NOTA

11. Jayshree lent Sarah 2500 dollars after Sarah lost all her money in the stock market. Jayshree charged Sarah a $n\%$ simple interest over 3 years. Given that Jayshree accumulated 600 dollars in interest, compute the value of n .
- (A) 4 (B) 8 (C) 12 (D) 16 (E) NOTA
12. Perpendicular lines m and p intersect at the point $(4,5)$. If line m has a slope of $-\frac{1}{2}$, what is the equation of line p ? Express your answer in slope-intercept form.
- (A) $y = \frac{1}{2}x - 1$ (B) $y = \frac{1}{2}x + 3$ (C) $y = 2x - 1$ (D) $y = 2x - 3$ (E) NOTA
13. Compute all values of x that satisfy the inequality $|x - 2| < 3$.
- (A) $x < -1$ or $x > 5$ (B) $x < -1$ (C) $-1 < x < 5$ (D) $-5 < x < 1$ (E) NOTA
14. Compute the value of m given that $15^m = 3^4 \cdot 5^4$.
- (A) 4 (B) 8 (C) 12 (D) 16 (E) NOTA
15. Consider a number n ; the cube root of the square root of n is 2. What is the value of n ?
- (A) 16 (B) 32 (C) 64 (D) 256 (E) NOTA
16. Esha decided to build a rectangular garden with length four times the width. If the perimeter of her garden is 40, compute the area of the garden.
- (A) 16 (B) 20 (C) 40 (D) 64 (E) NOTA
17. The point $(6,3)$ is the midpoint of the line segment with endpoints $(a, 5)$ and $(9, b)$. Compute $a + b$.
- (A) 4 (B) 9 (C) 14 (D) 18 (E) NOTA
18. Completely simplify the expression
- $$\frac{a}{a-b} + \frac{b}{b-a}.$$
- (A) $a + b$ (B) $(a + b)(a - b)$ (C) -1 (D) $\frac{ab}{a-b}$ (E) NOTA
19. A square of area 36 is formed when a rectangular sheet of paper is folded in half. What is the perimeter of the original sheet of paper?
- (A) 18 (B) 24 (C) 36 (D) 72 (E) NOTA
20. Given that $x > 5$, which of the following choices has the smallest value?
- (A) $\frac{x+1}{5}$ (B) $\frac{5}{x}$ (C) $\frac{5}{x-1}$ (D) $\frac{5}{x+1}$ (E) NOTA
21. Ellen's wallet contains a total of fourteen coins consisting of dimes and quarters. The total monetary value of the coins is \$1.85. How many dimes does he have?
- (A) 3 (B) 6 (C) 8 (D) 11 (E) NOTA

22. Solve for x , given that $8(1 + 2x) + 9(x - 3) = 6$.
(A) 1 (B) 3 (C) 6 (D) 16 (E) NOTA
23. The repeating decimal $.3\overline{8}$ is written as a fraction $\frac{a}{b}$ where a and b share no common factors. Compute the sum $a + b$.
(A) 16 (B) 20 (C) 25 (D) 32 (E) NOTA
24. What is the area of a circle with circumference 24π ?
(A) 12π (B) 48π (C) 144π (D) 576π (E) NOTA
25. Define the X-Point to (x, y) as the point $(x^2 + 12, y^3 - 13)$. If a is positive and b is negative, in what quadrant does the X-Point to (a, b) lie?
(A) *I* (B) *II* (C) *III* (D) *IV* (E) NOTA
26. Compute the slope of the line containing the two points $(-3, 4)$ and $(3, -4)$.
(A) $-\frac{4}{3}$ (B) 0 (C) $\frac{3}{4}$ (D) $\frac{4}{3}$ (E) NOTA
27. What is P^2V , given that: $PV = nRT$?
(A) nRT (B) $\frac{(nRT)^2}{V}$ (C) $\frac{(nRT)^2}{V^2}$ (D) $(nRT)^2$ (E) NOTA
28. Divide: $\frac{1}{2} \div \frac{2}{3}$.
(A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) $\frac{3}{2}$ (E) NOTA
29. Let $\zeta(x, y) = x + y$. What is y if $\zeta(1, y) = 3$?
(A) 1 (B) 2 (C) 3 (D) 4 (E) NOTA
30. Consider right triangle ABC with hypotenuse AC with area 20. If $AB + BC = 13$, compute the length of the hypotenuse of $\triangle ABC$.
(A) $\sqrt{89}$ (B) $\sqrt{90}$ (C) $\sqrt{91}$ (D) $\sqrt{92}$ (E) NOTA