

Choice (e) on all questions is “NOTA” which means “None Of The Above answers is correct.”

- Simplify the following numerical expression: $2 + 16 \div 3 - 5 + 6 \div \frac{2}{3}$.
a) 10 b) $6\frac{1}{3}$ c) $11\frac{1}{3}$ d) $-7\frac{1}{3}$ e) NOTA
- Which of the following is an example of the Commutative Property of Multiplication?
a) $a(b+c) = (c+b) \cdot a$ b) $a(b+c) = a(b+c)$
c) $a(b+c) = (b+c) \cdot a$ d) $a(b+c) = a(b+c) + 0$ e) NOTA
- Solve the equation $3(3x+1) - (x-1) = 6(x+10)$. What is the sum of the digits of the value of x ?
a) 13 b) 11 c) 10 d) 3 e) NOTA
- Solve for y in terms of m : $16(y-m) = 4(2m-y)$.
a) $y = 3m$ b) $y = \frac{6}{5}m$ c) $y = \frac{3}{4}m$ d) $y = \frac{9}{10}m$ e) NOTA
- The larger of two consecutive odd integers is four less than one-third of the smaller. Find the product of these two integers.
a) 99 b) 63 c) 35 d) no solution e) NOTA
- What is the sum of the integral solutions of the conjunction $-6 < 5x - 4 < 10$?
a) 0 b) 3 c) 6 d) 10 e) NOTA
- Simplify the expression: $(-2x)(-3xy)^3 + (3x)^2(xy)^2(-6y)$.
a) $-108x^4y^3$ b) $-36x^4y^3$ c) $-18x^4y^3$ d) $108x^4y^3$ e) NOTA
- Factor the trinomial $6x^2 - 47x - 63$ into the form $(Ax+B)(Cx+D)$; what is the value of $A+B+C+D$?
a) 5 b) 8 c) 13 d) -11 e) NOTA

9. Which of the following is a factor of the polynomial $ax - 6xy - 5a + 30y$?
- a) $(y+5)$ b) $(a-6y)$ c) $(a+6x)$ d) $(y-5)$ e) NOTA
10. Factor completely: $x^4 - 81$.
- a) $(x^2 - 9)(x^2 + 9)$ b) $(x^2 + 9)(x + 3)(x - 3)$
c) $(x - 3)^4$ d) $(x + 3)^2(x - 3)^2$ e) NOTA
11. The binomial $3x - 5$ is multiplied by its conjugate. That product is then subtracted from the square of the original binomial. Find the value of the resulting expression, given that $x = 5$.
- a) 100 b) 0 c) -50 d) -100 e) NOTA
12. The units digit of a two-digit number is 2 more than the tens digit. If the digits are reversed, the new number is 39 less than twice the original number. What is the product of the digits of the original number?
- a) 8 b) 12 c) 35 d) 57 e) NOTA
13. The ratio of cats to dogs to turtles in a pet store is 4:7:1. There is a total of 84 of these three animals. How many are dogs?
- a) 12 b) 21 c) 35 d) 49 e) NOTA
14. Given $\frac{2x-3}{5} = \frac{3x-1}{4}$, find the value of the expression $-2x^5 - 7x^4 + 3x^3 + x - 5$.
- a) -10 b) -1 c) 0 d) 1 e) NOTA
15. Simplify the expression $\left\{ \left[-\frac{1}{2} + \frac{3}{5} + \frac{2}{3} \left(1 - \frac{7}{10} \right) \right] \div \frac{1}{3} - \frac{1}{9} \right\}$. What is the absolute value of the difference of the numerator and denominator of the value of the given expression?
- a) 19 b) 21 c) 89 d) 91 e) NOTA
16. A new game called Ultimate Mu has started to get popular!! Teams earn either 4 or 7 points, depending on where they score from. What is the largest number of points which could not possibly be earned by a team playing Ultimate Mu?
- a) 9 b) 17 c) 31 d) 111 e) NOTA

17. How many digits were used in numbering the pages of *Harry Potter and the Deathly Hallows*, which has a total of 759 pages?

- a) 2,164 b) 2,165 c) 2,168 d) 2,169 e) NOTA

18. If $32^x = 16$, then $x = ?$

- a) -2 b) $\frac{1}{2}$ c) $\frac{2}{3}$ d) $\frac{4}{5}$ e) NOTA

19. For what value of x does the line with slope $-\frac{3}{2}$ pass through the points $(x, -1)$ and $(-2, 4)$?

- a) 0 b) $\frac{4}{3}$ c) $\frac{11}{4}$ d) $\frac{3}{4}$ e) NOTA

20. What is the y -coordinate of the point of intersection of the graphs of $2x - 3y = 8$ and $2x + 4y = 2$?

- a) $-\frac{6}{7}$ b) 2 c) 6 d) 10 e) NOTA

21. The point $(6, -5)$ lies on line **L** which is perpendicular to the line whose equation is $3x - \frac{1}{5}y = 3$. What is the x -intercept of line **L**?

- a) $(1, 0)$ b) $(23, 0)$ c) $(-69, 0)$ d) $(-\frac{23}{5}, 0)$ e) NOTA

22. If $\frac{x}{y} = \frac{3}{5}$, what is the value of the expression $\frac{x-5y}{y}$?

- a) $-\frac{22}{5}$ b) $-\frac{2}{5}$ c) 0 d) $\frac{5}{3}$ e) NOTA

23. What is the lowest common multiple of $72a^5b^6c^3$, $48a^6b^{10}c^7$, and $60a^3c^9d$?

- a) $12a^3c^3$ b) $360a^6b^{10}c^9$ c) $720a^6b^{10}c^9$ d) $1440a^6b^{10}c^9d$ e) NOTA

24. Jimmy has \$16.40 in pennies, nickels, dimes, and quarters. He has an equal number of each coin. How many total coins does he have?

- a) 5 b) 12 c) 8 d) 16 e) NOTA

25. Simplify: $\frac{1000^2}{(254^2 - 246^2)}$.

- a) 250 b) 125 c) 25 d) 2 e) NOTA

26. How many integers lie on the x -axis between the x -intercepts of the graph of $y = 2x^2 - 5x - 3$?

- a) 4 b) 3 c) 2 d) 1 e) NOTA

27. Rob Frost has an average of 87 on his first six Algebra tests. What must he average on the next three tests to bring his overall average up to 92?

- a) 94.5 b) 97 c) 98 d) 102 e) NOTA

28. A gourmet snack shop sells almonds for \$10.80 per pound, walnuts for \$7.80 per pound, and peanuts for \$3.90 per pound. The shopkeeper makes a blend of these three nuts and plans to sell the blend for \$6.00 per pound. He uses twice as many peanuts as walnuts. He wants to have a total of 21 pounds of the mixture. How many pounds of almonds should he use?

- a) 3 b) 4 c) 6 d) 9 e) NOTA

29. If $f(x) = 5 - 2x^2$, $g(x) = \frac{x-5}{2}$, and $h(x) = |2x-3|$, find the value of $g(h(f(-3)))$.

- a) -17 b) -5 c) 0 d) 12 e) NOTA

30. Which list of quadrants contains all the solutions to the system $y > 2, x \leq -3$?

- a) II, III, & IV b) III only c) II only d) II and IV e) NOTA