

ALGEBRA I INDIVIDUAL TEST – JANUARY REGIONAL

Note – NOTA means none of the above answers is correct.

- Find the sum of the x and y intercepts for the line $\frac{x}{3} - \frac{y}{5} = 1$.
 a) -5 b) -2 c) 2 d) 3/5 e) NOTA
- Maxine takes a trip from Dudsville to Boondock, a distance of 100 miles, in exactly 2 hours. How fast does her average speed on the return trip need to be, to average 55 mph for the whole trip?
 a) 60 mph b) 61 mph c) $\frac{550}{9}$ mph d) $\frac{560}{9}$ mph e) NOTA
- Which number below is not equal to the other three?
 a) $\frac{5}{2}$ b) $2\frac{1}{2}$ c) 250 % d) $2.4\bar{9}$ e) NOTA
- What is the only positive number that is equal to its reciprocal?
 a) 0 b) $\frac{1}{10}$ c) $\frac{1}{2}$ d) 1 e) NOTA
- Two numbers a and b are reciprocals of each other if and only if . . .
 a) $\frac{a}{b} = \frac{b}{a}$ b) $\frac{a}{b} = 1$ c) $\frac{1}{a} = \frac{1}{b}$ d) $a \cdot b = 1$ e) NOTA
- The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$ where h is the height and b_1 and b_2 are the bases. If the area is 100, the height is 2.5, and one base is 35, find the other base.
 a) 25 b) 35 c) 45 d) 50.5 e) NOTA
- Which of the following are undefined?
 i $\frac{0}{1}$ ii $\frac{1}{0}$
 iii the slope of a horizontal line iv the slope of a vertical line
 a) all 4 b) ii, iii, and iv c) ii only d) ii and iv e) NOTA
- Evaluate $(a^2 + 6b) - b^2 + 5$ given $a = 10$ and $b = -5$.
 a) 40 b) 50 c) 60 d) 100 e) NOTA
- Solve for n : $\frac{1}{3}(2n - 1) = 10.5$
 a) 2 b) $12\frac{1}{4}$ c) $15\frac{1}{4}$ d) $16\frac{1}{4}$ e) NOTA
- With exactly \$5, you can buy 2 hot dogs and 3 cokes, or 3 hot dogs and 1 coke. How much would one hot dog and one coke cost? (Round the answer to the nearest penny).
 a) \$1.00 b) \$1.01 c) \$1.71 d) \$2.14 e) NOTA

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11. Simplify: $(-4^2 + 2^4) \cdot (3^1 - 1^3)$.

- a) 0 b) 16 c) 32 d) 64 e) NOTA

12. Which of the following is equal to 10^{-4} ?

- a) -10,000 b) -40 c) $\frac{1}{10,000}$ d) 10,000 e) NOTA

13. The price of oil went from \$50 per barrel to \$60 per barrel. What was the percent of increase?

- a) 10% b) 18% c) 20% d) 83% e) NOTA

14. What value of x makes this expression undefined?

$$\frac{3x+1}{2x-1}$$

- a) -1 b) $-\frac{1}{3}$ c) 0 d) $\frac{1}{2}$ e) NOTA

15. Change $y = \frac{1}{3}x - 2$ into standard form.

- a) $-x + 3y = -2$ b) $-x + 3y = 6$ c) $x - 3y = -6$ d) $x - 3y = 6$ e) NOTA

16. If P represents the regular price of some item, which expression would represent the final cost of the same item including 6% sales tax?

- a) $.06P$ b) $1.06P$ c) $1 + .06P$ d) $1P + 1.06P$ e) NOTA

17. How many positive integral factors does 120 have?

- a) 12 b) 14 c) 18 d) 20 e) NOTA

18. Which of the numbers below is prime?

- a) 367 b) 407 c) 527 d) 943 e) NOTA

19. Evaluate the expression if $a = 1$, $b = 2$, and $c = 3$:

$$|2a - 3b^2| + |4c^3|$$

- a) 46 b) 98 c) 118 d) 122 e) NOTA

20. Solve for n : $\frac{1}{2}n - \frac{1}{3} > \frac{3}{4}n + \frac{1}{6}$

- a) $n < -2$ b) $n > -2$ c) $n < 2$ d) $n > 2$ e) NOTA

21. Simplify: $\frac{24x^6yz^3}{48x^4y^3z}$

- a) $\frac{1}{2}x^2y^2z^2$ b) $\frac{x^2z^2}{2y^2}$ c) $2x^2y^2z^2$ d) $\frac{2x^2z^2}{y^2}$ e) NOTA

22. The linear equation $x - 2y = 1$ would have a slope that is ...

- a) positive b) negative c) zero d) undefined e) NOTA

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23. Which number below is the greatest?

- a) 99^9 b) 9^{99} c) 9^{9^9} d) $(9^9)^9$ e) NOTA

24. Which number below is rational?

- a) $\frac{\pi}{2}$ b) $\frac{\sqrt{3}}{3}$ c) 1.01001000100001... d) $1.\overline{01}$ e) NOTA

25. $-2 + 38 = 38 + -2$ is an example of which property?

- a) commutative prop. of add. b) associative prop. c) additive identity d) symmetric e) NOTA

26. A shirt is on sale for 20% off. If the sale price is \$32.20 (not including tax), what is the regular price of the shirt?

- a) \$38.64 b) \$40.25 c) \$57.96 d) \$161 e) NOTA

27. If your first three test scores are 87, 92, and 83, what must you make on the fourth test to have a test average of 90.0?

- a) 97 b) 98 c) 99 d) 100 e) NOTA

28. Which of the following would be a correct translation for the phrase "Ten less than three times the sum of a number and four"?

- a) $3(n + 4) - 10$ b) $10 - 3(n + 4)$ c) $3n + 4 - 10$ d) $(3n + 4) - 10$ e) NOTA

29. N is a positive whole number. N has an odd number of positive whole number factors. N must be . . .

- a) prime b) a "perfect" number c) less than 10 d) a perfect square e) NOTA

30. What is the degree of the following polynomial?

- a) 10 b) 27 c) 39 d) 54 e) NOTA

$$2^2 a^3 b^4 + 3^5 a^6 b^7 + 4^8 a^9 b^{10}$$