

ALGEBRA 1 PRACTICE TEST 1

Name _____

Date _____

Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

1. $4 + 6 \cdot 3 =$
 (A) 13 (B) 20 (C) 22 (D) 28 (E) 30
2. Solve $(e + 88) + 8 = 431$
 (A) 335 (B) 345 (C) 351 (D) 511 (E) 527
3. If n represents an even number, write an algebraic expression for the odd number just after n .
 (A) $n - 2$ (B) $n - 1$ (C) $n + 1$ (D) $n + 2$ (E) $n + 3$
4. Evaluate $\frac{x}{20}$ when $x = 405$.
 (A) $2\frac{1}{4}$ (B) $20\frac{1}{4}$ (C) $20\frac{1}{5}$ (D) $20\frac{1}{10}$ (E) $20\frac{3}{20}$
5. Solve $\frac{1}{3} = x + \frac{1}{8}$.
 (A) $\frac{1}{5}$ (B) $\frac{1}{24}$ (C) $\frac{5}{24}$ (D) $\frac{7}{24}$ (E) $\frac{2}{11}$
6. $4^{\sqrt{2}} \times 4^{\sqrt{2}} =$
 (A) 8 (B) 16 (C) 16^2 (D) $16^{2\sqrt{2}}$ (E) $4^{2\sqrt{2}}$
7. Simplify $q^{-2}r^3p^4r^{-3}p^{-6}q^{-6}$
 (A) $q^{-8}p^{-2}r$ (B) $q^{12}p^{-24}r^{-9}$ (C) q^4p^{-2} (D) $q^{-8}p^{-2}$ (E) $q^{-4}p^{-2}$
8. Solve $-7 - 3x = -7$
 (A) $-\frac{14}{3}$ (B) 0 (C) $\frac{14}{3}$ (D) 3 (E) undefined
9. Expand $-5t(-4v + 3w)$
 (A) $20tv + 3w$ (B) $20tv + 15tw$ (C) $-20tv - 15tw$ (D) $20tv - 15tw$ (E) $-20tv + 15tw$
10. Solve $40\%x = 24$
 (A) 9.6 (B) 40 (C) 60 (D) 80 (E) 96
11. Which of the following is equivalent to $\frac{a^2}{8} + \frac{a}{6}$?
 (A) $\frac{a^3}{14}$ (B) $\frac{7a}{24}$ (C) $\frac{7a^2}{24}$ (D) $\frac{7a^3}{24}$ (E) $\frac{3a^2 + 4a}{24}$
12. Solve $2\frac{1}{2}\left(3\frac{1}{2} - 2\right) + 2x = -2\frac{1}{2}\left(2 - 3\frac{1}{2}\right) + 3x + 4$
 (A) -4 (B) 0 (C) 4 (D) 6 (E) undefined
13. If $\frac{a}{\frac{1}{3}} = 4$, then $\frac{a}{\frac{2}{3}} =$
 (A) $\frac{1}{2}$ (B) $\frac{8}{9}$ (C) 2 (D) 8 (E) 18

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14. Simplify $\frac{2.7^2}{-2.7^2 + 2.7^2}$
- (A) 0 (B) $\frac{1}{2}$ (C) $\frac{10}{27}$ (D) 2 (E) undefined
15. 8 less than twice the sum of a number and 10 is twice the opposite of the number. Find the number.
- (A) $-\frac{10}{3}$ (B) $-\frac{1}{2}$ (C) -3 (D) 0 (E) undefined
16. $8b - 4$ quarts equals how many gallons?
- (A) $2b - 4$ (B) $2b - 1$ (C) $4b - 2$ (D) $8b - 1$ (E) $32b - 16$
17. If an old computer can solve 100 math problems in s hours and a new computer can solve the same problems in h seconds, how much time, in *hours*, will you save if you use the new computer instead of the old computer?
- (A) $s - 3600h$ (B) $s - 60h$ (C) $3600s - h$ (D) $60s - h$ (E) $s - \frac{h}{3600}$
18. Find the average of the following three algebraic expressions: $4l^3 + 3l^2$, $-7l^3 - l$, and $-9l^2 - 11l$
- (A) $-l^3 - 2l^2 - 4l$ (B) $-l^3 + 2l^2 - 4l$ (C) $-l^3 - 2l^2 + 4l$ (D) $l^3 - 2l^2 - 4l$ (E) $\frac{11l^3 + 12l^2 + 10l}{3}$
19. Simplify $(6a - 3b - 5a + 4b) \div \frac{(8a - b - 7a + 2b)}{(-4a - 2b + b + 5a)}$.
- (A) $a - b$ (B) $a + b$ (C) $b - a$ (D) $\frac{a}{b}$ (E) $\frac{b}{a}$
20. If $8(14\pi - \sqrt{3}y) = \frac{16}{3}$, what is the value of $\frac{14\pi - \sqrt{3}y}{4}$?
- (A) $\frac{1}{6}$ (B) $\frac{4}{3}$ (C) $\frac{8}{3}$ (D) $\frac{32}{3}$ (E) $\frac{512}{3}$
21. Solve $\frac{x}{2\frac{1}{4}} = 36$
- (A) $\frac{1}{81}$ (B) $\frac{1}{16}$ (C) 16 (D) 78 (E) 81
22. Solve $2(4x - 3) = 14 + 8x$
- (A) 0 (B) 8 (C) 20 (D) any real number (E) no real number
23. $7.\overline{12}$ is what type of number?
- (A) natural (B) whole (C) integer (D) irrational (E) rational
24. Simplify $\frac{2a + 2b - 2c}{5c + a + b - 6c}$
- (A) 2 (B) 6 (C) $a + b - c$ (D) $2(a + b - c)$ (E) $2a + 2b - \frac{2}{5}c$
25. The volume of a sphere is equal to $\frac{4}{3}\pi r^3$ where r is the radius. How many times greater is the volume if the diameter of the sphere is doubled?
- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10

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ALGEBRA 1 PRACTICE TEST 2

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Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

1. Which is the largest number?
 (A) -17.1 (B) -17.09 (C) -17.11 (D) -17.009 (E) -17.13
2. 800% of what number is 20?
 (A) 0.04 (B) 0.4 (C) 2.5 (D) 25 (E) 160
3. Solve $8(x-2) = 24$.
 (A) 1 (B) 3 (C) 5 (D) 6 (E) 18
4. Find the value of x expressed in $6(4+5) = x \cdot 4 + 6 \cdot y$.
 (A) 4 (B) 5 (C) 6 (D) 10 (E) 24
5. If $n+6$ is an odd number, write an algebraic expression for the odd number just before $n+6$.
 (A) $n+2$ (B) $n+3$ (C) $n+4$ (D) $n+5$ (E) $n+7$
6. Which is the largest number?
 (A) $-37\frac{2}{3}$ (B) -37.6 (C) -37.12 (D) $-37\frac{17}{24}$ (E) $-37\frac{33}{48}$
7. $16.\overline{745}$ is an element of what set(s) of numbers?
 I. Irrational II. Rational III. Real
 (A) I (B) II (C) III (D) I and III (E) II and III
8. Simplify $(a^{y+4})^2$
 (A) a^{2y+8} (B) $a^{y^2+8y+16}$ (C) a^{y^2+16} (D) a^{y^2+8} (E) a^{y+6}
9. Which point does not satisfy the linear equation $y = -\frac{2}{3}x + 3$?
 (A) $(-6, 7)$ (B) $(0, 3)$ (C) $(12, -5)$ (D) $(-9, -6)$ (E) $(3, 1)$
10. Evaluate $g - h(-g - h)$ if $g = -5$ and $h = -2$.
 (A) -49 (B) -21 (C) -19 (D) 1 (E) 9
11. In k more years, Sue will be h years old. How old was Sue j years ago?
 (A) $h - k - j$ (B) $k - h - j$ (C) $h + k - j$ (D) $h - k + j$ (E) $h - k$
12. If $x^{\frac{3}{4}}y^{\frac{2}{3}} = 16$, find the value of $\frac{1}{\frac{2}{3}x^{\frac{3}{4}}}$ when $y^{\frac{2}{3}}$ equals 2.
 (A) $\frac{1}{14}$ (B) $\frac{1}{8}$ (C) 8 (D) 14 (E) 32
13. $4a^2 - \frac{3}{a}$ is equivalent to which of the following?
 (A) a (B) a^2 (C) $3\frac{2}{3}a$ (D) $4a - 3$ (E) $\frac{4a^3 - 3}{a}$
14. Given $\frac{40\%}{x} + \frac{40\%}{x} = 80$. Find x .
 (A) 0.0025 (B) 0.005 (C) 0.01 (D) 0.1 (E) 1

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15. If $m = -3k^4 - 2k^3 + 4k^2 + 1$ and $n = 6k^4 - 8k^3 - 10k^2 - 5$, find the value of $m - n$.
- (A) $-9k^4 + 6k^3 - 6k^2 + 6$ (B) $-9k^4 - 10k^3 - 6k^2 - 4$ (C) $-9k^4 - 10k^3 + 14k^2 + 6$
 (D) $-9k^4 + 6k^3 + 14k^2 + 6$ (E) $-9k^4 + 6k^3 + 14k^2 - 4$
16. If $\left[(x - y)^{0.25}\right]^4 - 7 = -28.12$, find the value of $3 + \left[(x - y)^{0.25}\right]^4$.
- (A) -38.12 (B) -32.12 (C) -24.12 (D) -21.12 (E) -18.12
17. Find the value of $\left(\sqrt[3]{-x^2 - 4x}\right)^3$ if $2 - x = 4$.
- (A) 0 (B) 1 (C) 4 (D) 10 (E) 12
18. Solve $\frac{u_1 w_1}{v_1} = \frac{u_2 w_2}{v_2}$ for v_2 .
- (A) $\frac{u_2 v_1 w_2}{u_1 w_1}$ (B) $\frac{u_1 w_1}{u_2 v_1 w_2}$ (C) $\frac{u_1 v_1 w_1}{u_2 w_2}$ (D) $\frac{u_2 w_2}{u_1 v_1 w_1}$ (E) $\frac{u_1 v_1 u_2}{w_1 w_2}$
19. If $v = -0.5$, then which of the following is true?
- (A) $\frac{1}{v^8} < \frac{1}{v^9} < \frac{1}{v^{10}}$ (B) $\frac{1}{v^{10}} < \frac{1}{v^9} < \frac{1}{v^8}$ (C) $\frac{1}{v^{10}} < \frac{1}{v^8} < \frac{1}{v^9}$ (D) $\frac{1}{v^9} < \frac{1}{v^8} < \frac{1}{v^{10}}$ (E) $\frac{1}{v^9} < \frac{1}{v^{10}} < \frac{1}{v^8}$
20. If $(a^2 + c^2) + d = e + f$, then $\frac{(a^2 + c^2)^2}{5} =$
- (A) $\frac{(e + f - d)^2}{5}$ (B) $\frac{(e + f - d)^2}{25}$ (C) $\frac{(e + f + d)^2}{5}$ (D) $\frac{(e + f)^2}{5d}$ (E) $\frac{(e + f)^2}{25d^2}$
21. Given $\frac{-1}{x-3} = \frac{1}{y+2}$, what is the value of $x - 1$?
- (A) $-y + 4$ (B) $y + 4$ (C) $y - 1$ (D) $-y$ (E) y
22. If $16 - 8\sqrt[3]{\frac{g+h}{j+k}} = 4\sqrt[3]{\frac{g+h}{j+k}} - 8$, then $\sqrt[3]{\frac{g+h}{j+k}} - 6 =$
- (A) $-5\frac{1}{3}$ (B) -4 (C) 0 (D) 2 (E) 6
23. What fraction of $4x^6$ is $2x^2$?
- (A) $\frac{2}{x^{-4}}$ (B) $\frac{2}{x^4}$ (C) $\frac{1}{2x^4}$ (D) $\frac{1}{2x^{-4}}$ (E) $2x^4$
24. Solve $2x = \frac{5+6x}{3}$ for x .
- (A) -5 (B) 0 (C) 1 (D) 5 (E) does not exist
25. If golf balls cost y dollars each, how many can you buy if you have x cents?
- (A) $\frac{100x}{y}$ (B) $\frac{x}{y}$ (C) $\frac{y}{x}$ (D) $\frac{y}{100x}$ (E) $\frac{x}{100y}$

ALGEBRA 1 PRACTICE TEST 3

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Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

- Which value of x is the smallest?
 (A) $x - 145 = 394$ (B) $x - 142 = 394$ (C) $x - 146 = 394$ (D) $x - 143 = 394$ (E) $x - 144 = 394$
- If $r \div 6 = 2$ and $p \times 9 = 63$, what is the value of $r + p + 1$?
 (A) 11 (B) 12 (C) 19 (D) 20 (E) 21
- If $8,642 + a = 15,498$ and $8,642 + b = 15,499$, find the value of $b - a$?
 (A) -1 (B) 0 (C) 1 (D) 2 (E) 3
- Write $-6.11, -6.114, -6.2, -6.103, -6.19$ in order from the least to greatest.
 (A) $-6.103, -6.11, -6.114, -6.19, -6.2$ (B) $-6.114, -6.103, -6.19, -6.114, -6.2$
 (C) $-6.2, -6.11, -6.19, -6.103, -6.114$ (D) $-6.2, -6.19, -6.114, -6.11, -6.103$
 (E) $-6.2, -6.114, -6.19, -6.11, -6.103$
- Solve for z . $\frac{4}{z} = \frac{5}{3}$
 (A) $\frac{4}{15}$ (B) $\frac{20}{3}$ (C) $\frac{3}{20}$ (D) $\frac{5}{12}$ (E) $\frac{12}{5}$
- If you bought c stamps with d dollars, how many cents was each stamp?
 (A) $\frac{d}{c}$ (B) $\frac{100d}{c}$ (C) $\frac{100c}{d}$ (D) $\frac{c}{d}$ (E) $\frac{c}{100d}$
- You have m dollars made up of nickels and dimes. If there are y more nickels than dimes, which two equations would best represent this problem? Let n represent the number of nickels and d represent the number of dimes.
 (A) $\begin{cases} n = d + y \\ 5n + 10d = 100m \end{cases}$ (B) $\begin{cases} n = d + y \\ 5n + 10d = m \end{cases}$ (C) $\begin{cases} n + d = y \\ 5n + 10d = 100m \end{cases}$ (D) $\begin{cases} d = n + y \\ 5n + 10d = 100m \end{cases}$ (E) $\begin{cases} d = n + y \\ 5n + 10d = m \end{cases}$
- $\frac{2}{a+b} - \frac{2}{b} =$
 (A) $\frac{2}{a}$ (B) $\frac{-a}{a+b}$ (C) $\frac{a}{a+b}$ (D) $\frac{-2a}{ab+b^2}$ (E) $\frac{4b-2a}{ab+b^2}$
- If $x - 4$ is a multiple of 13, which of the following is also a multiple of 13?
 (A) $x + 13$ (B) $x - 13$ (C) $x + 22$ (D) $x - 26$ (E) $x + 8$
- Which of the following points is a member of the solution set for the following system?

$$\begin{cases} -3y - 2x > -6 \\ x \leq -2 \end{cases}$$

 (A) $(-3, 4)$ (B) $(-6, 7)$ (C) $(-9, 8)$ (D) $(0, 2)$ (E) $(-12, 9)$
- If the smallest of three consecutive odd integers is $\frac{g-3}{5}$, which of the following is equivalent to the largest of the three consecutive odd integers?
 (A) $\frac{g+1}{5}$ (B) $\frac{g+7}{5}$ (C) $\frac{g+12}{5}$ (D) $\frac{g+17}{5}$ (E) $\frac{g+22}{5}$
- Which of the following is not a function?
 I. $\{(0,1), (1,2), (2,2)\}$ II. $x^2 = y$ III. $x = 0$
 (A) I (B) II (C) III (D) I and II (E) II and III

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13. Find the distance between $(-r, t-5)$ and $(-r, 2t+5)$ assuming $2t+5 > t-5$.
 (A) 0 (B) t (C) $t+10$ (D) $3t$ (E) $3t+10$
14. Find the midpoint of $(-7c, 8d)$ and $(-23c, -18d)$.
 (A) $(-15c, -5d)$ (B) $(-8c, -5d)$ (C) $(-15c, 13d)$ (D) $(-8c, 13d)$ (E) $\sqrt{(-16c)^2 + (-26d)^2}$
15. Simplify $\frac{6(\sqrt{5})^3 - 12(\sqrt{5})^5}{6(\sqrt{5})^3}$
 (A) $-12(\sqrt{5})^5$ (B) $1-12(\sqrt{5})^5$ (C) $1-6(\sqrt{5})^2$ (D) $-11(\sqrt{5})^5$ (E) -9
16. Which is the largest number?
 (A) $3\sqrt{5}$ (B) $5\sqrt{2}$ (C) $4\sqrt{3}$ (D) $2\sqrt{11}$ (E) 7
17. When $2t^4 - 1$ is divided by $t + 2$, what is the remainder?
 (A) $\frac{-33}{t+2}$ (B) $\frac{-31}{t+2}$ (C) $\frac{-29}{t+2}$ (D) $\frac{29}{t+2}$ (E) $\frac{31}{t+2}$
18. If $c + d + 1 = 0$ and $(a + b)(c + d)^3 - 9(c + d) + 4 = 0$, find the value of $a + b$?
 (A) -5 (B) 5 (C) -13 (D) 13 (E) $\frac{13}{3}$
19. If $h = g^{-2}j^3$ and $k = g^5h^4j^2$, then $k =$
 (A) $g^{-3}j^{14}$ (B) $g^{-3}j^{15}$ (C) $g^{-1}j^{14}$ (D) $g^{21}j^{14}$ (E) $g^{21}j^{83}$
20. If $\frac{w^4v^5}{u^3} > 0$, which of the following does not have to be positive?
 (A) $u^9v^7w^2$ (B) $w^6v^9u^6$ (C) $v^6w^8u^{12}$ (D) $w^6v^{11}u^{19}$ (E) $w^{10}v^2u^2$
21. If $p + q < r - t < w - v$, and $z < 0$, which of the following must be false?
 I. $zr - zt > zp + zq$ II. $zp + zq < zw - zv$ III. $zr - zt > zw - zv$
 (A) I (B) II (C) III (D) I and II (E) II and III
22. If $(w + z)(t + v) = x + y$, then $\frac{w + z}{t + v} =$
 (A) $\frac{t + v}{x + y}$ (B) $\frac{x + y}{t + v}$ (C) $\left(\frac{t + v}{x + y}\right)^2$ (D) $\frac{(x + y)^2}{t + v}$ (E) $\frac{x + y}{(t + v)^2}$
23. $(x^{y-3})^{y+3} =$
 (A) x^{2y} (B) x^6 (C) x^{y-9} (D) x^{y^2-6y-9} (E) x^{y^2-9}
24. $\left(\sqrt{5\frac{3}{16}}\right)^6 \cdot \frac{1}{\left(\sqrt{6-\frac{13}{16}}\right)^2} =$
 (A) 3 (B) $5\frac{3}{16}$ (C) $\left(\sqrt{5\frac{3}{16}}\right)^3$ (D) $\left(5\frac{3}{16}\right)^2$ (E) $\left(5\frac{3}{16}\right)^4$
25. If the sum of three consecutive odd integers is $3 + x$, what is the largest of the three integers?
 (A) $3x + 9$ (B) $\frac{x-3}{3}$ (C) $\frac{x+1}{3}$ (D) $\frac{x+6}{3}$ (E) $\frac{x+9}{3}$

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ALGEBRA 1 PRACTICE TEST 4

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Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

- Evaluate $x - yx^2$ if $x = -3$ and $y = 2$.
 (A) -45 (B) -21 (C) -9 (D) 15 (E) 45
- $\left[(x + y)^{\frac{2}{3}} \right]^2 =$
 (A) $(x + y)^{\frac{4}{9}}$ (B) $(x + y)^{\frac{2}{3}}$ (C) $(x + y)^{\frac{4}{3}}$ (D) $x^{\frac{4}{3}} + y^{\frac{4}{3}}$ (E) $x^{\frac{4}{9}} + y^{\frac{4}{9}}$
- How much greater is the slope of the line that goes through $(2, 3)$ and $(3, 7)$ than the slope of the line that goes through $(2, 3)$ and $(5, 4)$?
 (A) $-\frac{3}{2}$ (B) $-\frac{2}{3}$ (C) $\frac{2}{3}$ (D) $\frac{3}{2}$ (E) $3\frac{2}{3}$
- Simplify $\sqrt{50}$
 (A) $2\sqrt{5}$ (B) $5\sqrt{2}$ (C) $5\sqrt{5}$ (D) $25\sqrt{2}$ (E) 25
- If $\frac{1}{m} = \frac{1}{3} + \frac{1}{2}$, find m .
 (A) $\frac{1}{5}$ (B) $\frac{5}{6}$ (C) $\frac{6}{5}$ (D) 5 (E) 6
- What is the total number of feet in m miles, y yards, and f inches?
 (A) $1760m + 3y + \frac{1}{12}f$ (B) $1760m + 3y + 12f$ (C) $5280m + 3y + 12f$ (D) $5280m + 3y + \frac{1}{12}f$ (E) $m + y + f$
- Which is equivalent to $a + b$ if $a = -3x^2 - 7x - 4$ and $b = 4x^2 + 12x + 10$?
 (A) $(x + 2)(x + 3)$ (B) $(x + 6)(x + 1)$ (C) $(x + 3)(x + 3)$ (D) $(x + 2)(x + 4)$ (E) $(x + 2)(x + 6)$
- When the largest of the three consecutive integers is tripled, it will be 18 less than the smallest integer. Find the product of the smallest and largest.
 (A) 80 (B) 110 (C) 120 (D) 168 (E) does not exist
- If a linear equation goes through $(-2, -1687)$ and has a slope of $-\frac{3}{2}$, find the y-intercept.
 (A) -1690 (B) -1689 (C) -1688.5 (D) -1685 (E) -1684
- If a right triangle has a hypotenuse of 10 and legs of length 6 and $x - 3$, find the value of x .
 (A) 8 (B) 9 (C) 10 (D) 11 (E) 12
- Solve the following system for y .

$$\begin{cases} 7x - 8y = 0 \\ 11x + 13y = 0 \end{cases}$$
 (A) 0 (B) 1 (C) 2 (D) 3 (E) 4
- If $4(x - 2y) - 2 - 7(x - 2y) = -4 - 2(x - 2y) - 6$, then $x - 2y =$
 (A) -8 (B) 0 (C) 8 (D) $\frac{8}{5}$ (E) undefined

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13. What is $lr + lq - pr - pq$ equivalent to?

- (A) $(l-p)(r+q)$ (B) $(l-r)(p+q)$ (C) $(l+p)(r-q)$ (D) $(l-p)(r-q)$ (E) $(l-p)(q-r)$

14. $-6\left(x^{\frac{2}{11}}y^{\frac{3}{13}}\right)^2 + 13\left(x^{\frac{2}{11}}y^{\frac{3}{13}}\right) - 6$ is equivalent to

- (A) $\left(6x^{\frac{2}{11}}y^{\frac{3}{13}} + 6\right)\left(-x^{\frac{2}{11}}y^{\frac{3}{13}} - 1\right)$ (B) $\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}} - 2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}} + 2\right)$ (C) $\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}} - 2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}} - 3\right)$
 (D) $\left(-6x^{\frac{2}{11}}y^{\frac{3}{13}} + 3\right)\left(x^{\frac{2}{11}}y^{\frac{3}{13}} - 2\right)$ (E) $\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}} + 2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}} - 3\right)$

15. The average of three expressions is $-3x^2y^3$. If the first expression is $3x^3y^2 - 6y^3x^2$ and the second is $x^2y^3 - 4y^2x^3$, what is the third expression?

- (A) $x^3y^2 - 2x^2y^3$ (B) $x^3y^2 + 2x^2y^3$ (C) $-4x^2y^3 - 7x^3y^2$ (D) $x^3y^2 - 4x^2y^3$ (E) $-7x^3y^2 - 2x^2y^3$

16. Find the area of a rectangle whose length is $2\sqrt{3}$ and whose width is $4\sqrt{9} + 5\sqrt{3}$.

- (A) $18\sqrt{3} + 90$ (B) $24\sqrt{3} + 90$ (C) $18\sqrt{3} + 30$ (D) $8\sqrt{27} + 5\sqrt{3}$ (E) $24\sqrt{3} + 30$

17. If the area of a triangle is $x^2 - y^2$ and the base is $x + y$, find the height.

- (A) $x - y$ (B) $2(x - y)$ (C) $\frac{x^2 - y^2}{x + y}$ (D) $\frac{x + y}{x^2 - y^2}$ (E) $\frac{x - y}{2}$

18. If $m = \sqrt{m^2 - 2mn + 4 + m} + n$, then $m =$

- (A) $n^2 - 4$ (B) $n^2 - 2$ (C) $n^2 - 1$ (D) $n^2 + 2$ (E) $n^2 + 4$

19. If $3x^2 + 4y^3 - 6 = 0$, then $\frac{1}{4}\sqrt[5]{3x^2 + 4y^3 + 26} =$

- (A) 0 (B) $\frac{1}{4}$ (C) $\frac{1}{2}$ (D) $\frac{3}{4}$ (E) 1

20. Solve $\frac{pv}{nt} = r$ for n .

- (A) $\frac{pvt}{r}$ (B) $\frac{tr}{pv}$ (C) $\frac{pvr}{t}$ (D) $\frac{t}{pvr}$ (E) $\frac{pv}{tr}$

21. Which ordered pair does not satisfy $y = -x^2 + 2x - 3$?

- (A) $(-1, -6)$ (B) $(1, 0)$ (C) $(-2, -11)$ (D) $(2, -3)$ (E) $(0, -3)$

22. If $a = bc$, then $\frac{b}{c} =$

- (A) $\frac{a}{c}$ (B) $\frac{a^2}{c}$ (C) $\frac{c^2}{a^2}$ (D) $\frac{a}{c^2}$ (E) $\frac{c}{a}$

23. $\sqrt{16}$ is not an element of what set(s) of numbers?

- I. rational II. irrational III. integers
 (A) I only (B) II only (C) III only (D) I and III (E) II and III

24. If $4(x+5)(x-5) = 60$, Find the value of $\frac{2}{3}(x^2 - 25)$.

- (A) 8 (B) 9 (C) 10 (D) 12 (E) 15

25. If $4x - 3y = 7$ and $-2x + 4y = -11$, find the value of $-7y + 6x$.

- (A) -18 (B) -4 (C) 3 (D) 4 (E) 18

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ALGEBRA 1 TEST 1 ANSWERS

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. C | 2. A | 3. C | 4. B | 5. C |
| 6. E | 7. D | 8. B | 9. D | 10. C |
| 11. E | 12. A | 13. C | 14. E | 15. C |
| 16. B | 17. E | 18. A | 19. A | 20. A |
| 21. E | 22. E | 23. E | 24. A | 25. D |

1. $4 + 6 \cdot 3 = 4 + 18 = 22$

2. $(e + 88) + 8 = 431 \rightarrow e + 96 = 431 \rightarrow e = 335$

3. $n + 1$

4. $\frac{x}{20} = \frac{405}{20} = 20\frac{1}{4}$

5. $\frac{1}{3} - \frac{1}{8} = \frac{8}{24} - \frac{3}{24} = \frac{5}{24}$

6. $4^{\sqrt{2} + \sqrt{2}} = 4^{2\sqrt{2}}$

7. $q^{-8}p^{-2}$

8. $x = \frac{0}{-3} = 0$

9. $20tv - 15tw$

10. $0.4x = 24 \rightarrow x = \frac{24}{0.4} = 60$

11. $\frac{3a^2}{24} + \frac{4a}{24} = \frac{3a^2 + 4a}{24}$

12. $2x = 3x + 4 \rightarrow x = -4$

13. $4 \times \frac{1}{2} = 2$

14. $\frac{2.7^2}{0}$ is undefined

15. $2(n + 10) - 8 = -2n \rightarrow 4n = -12 \rightarrow n = -3$

16. $\frac{8b - 4}{4} = 2b - 1$

17. $s - \frac{h}{3600}$

18. $\frac{4l^3 + 3l^2 - 7l^3 - l - 9l^2 - 11l}{3} = \frac{-3l^3 - 6l^2 - 12l}{3} = -l^3 - 2l^2 - 4l$

19. $\frac{6a - 3b - 5a + 4b}{8a - b - 7a + 2b} = \frac{a + b}{a + b} = \frac{a + b}{1} \cdot \frac{a - b}{a + b} = a - b$

20. $\frac{8(14\pi - \sqrt{3}y)}{32} = \frac{14\pi - \sqrt{3}y}{4} = \frac{16}{3} \cdot \frac{1}{32} = \frac{1}{6}$

21. $x = 2\frac{1}{4} \cdot 36 = \frac{9}{4} \cdot 36 = 81$

22. $8x - 6 = 14 + 8x \rightarrow 0x = 20 \rightarrow x = \frac{20}{0}$ which is undefined or no real number.

23. rational

24. $\frac{2a + 2b - 2c}{5c + a + b - 6c} = \frac{2(a + b - c)}{a + b - c} = 2$

25. When a diameter is doubled, the radius will become two times longer. Therefore $V = \frac{4}{3}\pi(2r)^3 = 8\left(\frac{4}{3}\pi r^3\right)$

ALGEBRA 1 TEST 2 ANSWERS

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. D | 2. C | 3. C | 4. C | 5. C |
| 6. C | 7. E | 8. A | 9. D | 10. E |
| 11. A | 12. B | 13. E | 14. C | 15. D |
| 16. E | 17. C | 18. A | 19. D | 20. A |
| 21. D | 22. B | 23. C | 24. E | 25. E |

1. -17.009

2. $\frac{20}{800\%} = \frac{20}{8} = 2.5$

3. $x - 2 = 3 \rightarrow x = 5$

4. 6

5. $n + 4$

6. -37.12

7. rational and real

8. $(a^{y+4})^2 = a^{2y+8}$

9. $(-9, -6)$

10. $-5 + 2(5 + 2) = -5 + 14 = 9$

11. $h - k - j$

12. $x^{\frac{3}{4}} = \frac{16}{\frac{2}{y^3}} = \frac{16}{2} = 8$. Therefore $\frac{1}{\frac{3}{x^4}} = \frac{1}{8}$

13. $4a^2 - \frac{3}{a} = \frac{4a^3 - 3}{a}$

14. $\frac{40\%}{x} + \frac{40\%}{x} = 80 \rightarrow \frac{80\%}{x} = 80 \rightarrow x = \frac{.80}{80} = 0.01$

15. $-3k^4 - 2k^3 + 4k^2 + 1 - (6k^4 - 8k^3 - 10k^2 - 5) = -9k^4 + 6k^3 + 14k^2 + 6$

16. $[(x - y)^{0.25}]^4 = -28.12 + 7 = -21.12 \rightarrow [(x - y)^{0.25}]^4 + 3 = -18.12$

17. $x = -2$. Therefore $(\sqrt[3]{-x^2 - 4x})^3 = -(-2)^2 - 4(-2) = -4 + 8 = 4$

18. $u_1 w_1 v_2 = u_2 w_2 v_1 \rightarrow v_2 = \frac{u_2 v_1 w_2}{u_1 w_1}$

19. $\frac{1}{v^9} < \frac{1}{v^8} < \frac{1}{v^{10}}$

20. $\frac{(a^2 + c^2)^2}{5} = \frac{(e + f - d)^2}{5}$

21. $\frac{-1}{x-3} = \frac{1}{y+2} \rightarrow x-3 = -y-2 \rightarrow x-1 = -y$

22. Let $x = \sqrt[3]{\frac{g+h}{j+k}}$. Therefore $16 - 8x = 4x - 8 \rightarrow x = 2 \rightarrow \sqrt[3]{\frac{g+h}{j+k}} - 6 = 2 - 6 = -4$

23. $\frac{2x^2}{4x^6} = \frac{1}{2x^4}$

24. $6x = 5 + 6x \rightarrow 0x = 5$ There is no number that can be multiplied by zero to get a 5.

25. $\frac{x}{100} \div y = \frac{x}{100} \cdot \frac{1}{y} = \frac{x}{100y}$

ALGEBRA 1 TEST 3 ANSWERS

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. B | 2. D | 3. C | 4. D | 5. E |
| 6. B | 7. A | 8. D | 9. C | 10. E |
| 11. D | 12. C | 13. C | 14. A | 15. E |
| 16. B | 17. E | 18. D | 19. A | 20. B |
| 21. D | 22. E | 23. E | 24. D | 25. E |

1. B is the smallest due to its smaller subtrahend.

2. $r + p + 1 = 12 + 7 + 1 = 20$

3. b is larger than a by 1. Therefore $b - a = 1$

4. $-6.2, -6.19, -6.114, -6.11, -6.103$

5. $5z = 12 \rightarrow z = \frac{12}{5}$

6. $\frac{100d}{c}$ 7. $\begin{cases} n = d + y \\ 5n + 10d = 100m \end{cases}$ 8. $\frac{2}{a+b} - \frac{2}{b} = \frac{2b}{b(a+b)} - \frac{2(a+b)}{b(a+b)} = \frac{-2a}{b(a+b)} = \frac{-2a}{ab+b^2}$

9. $x + 22$ is 26 greater than $x - 4$ and will also be a multiple of 13.

10. $(-12, 9)$

11. $\frac{g-3}{5} + 4 = \frac{g-3}{5} + \frac{20}{5} = \frac{g+17}{5}$

12. III

13. $(2t+5) - (t-5) = t+10$

14. $\left(\frac{-7c-23c}{2}, \frac{8d-18d}{2}\right) \rightarrow (-15c, -5d)$ 15. $\frac{6(\sqrt{5})^3 - 12(\sqrt{5})^5}{6(\sqrt{5})^3} = \frac{1-2(\sqrt{5})^2}{1} = 1-10 = -9$

16. $3\sqrt{5} = \sqrt{45}; 5\sqrt{2} = \sqrt{50}; 4\sqrt{3} = \sqrt{48}; 2\sqrt{11} = \sqrt{44}; 7 = \sqrt{49}$ 17. $\frac{31}{t+2}$

18. Since $c + d = -1$, then $(a+b)(c+d)^3 - 9(c+d) + 4 = 0 \rightarrow (a+b)(-1) - 9(-1) + 4 = 0 \rightarrow a+b = 13$

19. $h = g^{-2}j^3$ and $k = g^5h^4j^2 = g^5(g^{-2}j^3)^4j^2 = g^{-3}j^{14}$

20. u and v must have the same sign. Therefore A, D, C, and E must be positive. B could be negative if u and v are negative.

21. I and II

22. $\frac{(w+z)(t+v)}{(t+v)^2} = \frac{w+z}{t+v} = \frac{x+y}{(t+v)^2}$

23. $(x^{y-3})^{y+3} = x^{y^2+3y-3y-9} = x^{y^2-9}$

24. $\left(\sqrt{5\frac{3}{16}}\right)^6 \cdot \frac{1}{\left(\sqrt{6-\frac{13}{16}}\right)^2} = \frac{\left(\sqrt{5\frac{3}{16}}\right)^6}{\left(\sqrt{5\frac{3}{16}}\right)^2} = \left(\sqrt{5\frac{3}{16}}\right)^4 = 5\frac{3}{16} \cdot 5\frac{3}{16}$

25. Let $n, n+2$, and $n+4$ be three consecutive odd integers. $n + (n+2) + (n+4) = 3 + x$. Therefore $n = \frac{x-3}{3}$ and

$$n+4 = \frac{x-3}{3} + 4 = \frac{x-3}{3} + \frac{12}{3} = \frac{x+9}{3}$$

ALGEBRA 1 TEST 4 ANSWERS

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. B | 2. C | 3. E | 4. B | 5. C |
| 6. D | 7. A | 8. C | 9. A | 10. D |
| 11. A | 12. C | 13. A | 14. E | 15. D |
| 16. E | 17. B | 18. A | 19. C | 20. E |
| 21. B | 22. D | 23. B | 24. C | 25. E |

$$1. x - yx^2 = -3 - (2)(-3)^2 = -3 - 18 = -21$$

$$2. \left[(x+y)^{\frac{2}{3}} \right]^2 = (x+y)^{\frac{4}{3}} \quad 3. \frac{7-3}{3-2} - \frac{4-3}{5-2} = 4 - \frac{1}{3} = 3\frac{2}{3}$$

$$4. \sqrt{50} = 5\sqrt{2}$$

$$5. \frac{1}{m} = \frac{1}{3} + \frac{1}{2} \rightarrow \frac{1}{m} = \frac{5}{6} \rightarrow m = \frac{6}{5}$$

$$6. 5280m + 3y + \frac{1}{12}f$$

$$7. -3x^2 - 7x - 4 + 4x^2 + 12x + 10 = x^2 + 5x + 6 = (x+2)(x+3)$$

$$8. 3(n+2) + 18 = n \rightarrow n = -12 \rightarrow (-12)(-10) = 120$$

$$9. -1690$$

$$10. x - 3 = 8 \rightarrow x = 11$$

$$11. 0$$

$$12. \text{Let } z = x - 2y. \quad 4z - 2 - 7z = -4 - 2z - 6 \rightarrow z = 8 = x - 2y$$

$$13. lr + lq - pr - pq = l(r+q) - p(r+q) = (l-p)(r+q)$$

$$14. \text{Let } z = x^{\frac{2}{11}}y^{\frac{3}{13}}. \quad -6z^2 + 13z - 6 = (-3z+2)(2z-3) = \left(-3x^{\frac{2}{11}}y^{\frac{3}{13}} + 2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}} - 3\right)$$

$$15. \frac{(3x^3y^2 - 6y^3x^2) + (x^2y^3 - 4y^2x^3) + z}{3} = -3x^2y^3 \rightarrow (3x^3y^2 - 6y^3x^2) + (x^2y^3 - 4y^2x^3) + z = -9x^2y^3 \rightarrow z = x^3y^2 - 4x^2y^3$$

$$16. 2\sqrt{3}(4\sqrt{9} + 5\sqrt{3}) = 24\sqrt{3} + 30 \quad 17. A = \frac{bh}{2} \rightarrow h = \frac{2A}{b} = \frac{2(x^2 - y^2)}{x + y} = 2(x - y)$$

$$18. m = \sqrt{m^2 - 2mn + 4} + m + n \rightarrow m^2 - 2mn + n^2 = m^2 - 2mn + 4 + m \rightarrow m = n^2 - 4$$

$$19. \frac{1}{4}\sqrt[5]{3x^2 + 4y^3 + 26} = \frac{1}{4}\sqrt[5]{32} = \frac{1}{2}$$

$$20. nt\left(\frac{pv}{nt}\right) = ntr \rightarrow pv = ntr \rightarrow \frac{pv}{tr} = \frac{ntr}{tr} \rightarrow \frac{pv}{tr} = n$$

$$21. (1,0) \text{ is the only point that does not satisfy the equation. } -(1)^2 + 2(1) - 3 = -1 + 2 - 3 = -2 \neq 0$$

$$22. \text{Dividing both sides of the equation by } c^2 \text{ and simplifying yields } \frac{a}{c^2}$$

$$23. \sqrt{16} = 4 \text{ which is not irrational}$$

$$24. 4(x^2 - 25) = 60 \rightarrow x^2 - 25 = 15 \rightarrow \frac{2}{3}(x^2 - 25) = \frac{2}{3} \cdot 15 = 10$$

$$25. \text{Subtracting the second equation from the first equation will result in } -7y + 6x = 7 - (-11) = 18$$