

ALGEBRA 2 TEST 4

Name _____ Date _____

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

- $\sqrt{16}$ 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
- If $2 \times e = 300$ and $175 \div f = 25$, find the value of $\frac{e+f}{157}$.
 (A) $\frac{14}{157}$ (B) $\frac{29}{157}$ (C) $\frac{45}{157}$ (D) $\frac{121}{157}$ (E) 1
- Solve $h \div 16 = \frac{27-3}{3}$.
 (A) 2 (B) 24 (C) 48 (D) 96 (E) 128
- Five more than the product of 12 and a number is 53 can be written which of the following ways?
 (A) $5 + 12 + n = 53$ (B) $5 + (12 + n) = 53$ (C) $12n - 5 = 53$ (D) $5 + 12n = 53$ (E) $(5 + 12)n = 53$
- $\left(c^{\frac{1}{4}}\right)^2$
 (A) $c^{-1\frac{3}{4}}$ (B) $c^{\frac{1}{2}}$ (C) $c^{\frac{1}{8}}$ (D) $c^{\frac{1}{16}}$ (E) $c^{2\frac{1}{4}}$
- You have \$3.15 made up of nickels and dimes totaling 46 coins. Which of the following systems would be used to solve this problem? Let n represent the number of nickels and d represent the number of dimes.
 (A) $\begin{cases} 5n + 10d = 46 \\ n + d = 315 \end{cases}$ (B) $\begin{cases} 5n + 10d = 315 \\ n = d + 46 \end{cases}$ (C) $\begin{cases} 5n + 10d = 315 \\ n = d - 46 \end{cases}$ (D) $\begin{cases} 5n + 10d = 3.15 \\ n + d = 46 \end{cases}$ (E) $\begin{cases} 5n + 10d = 315 \\ n + d = 46 \end{cases}$
- Which number has the same value as 5.0×10^{-88} ?
 (A) $500 \cdot 10^{-86}$ (B) $0.005 \cdot 10^{-91}$ (C) $5000 \cdot 10^{-91}$ (D) $0.05 \cdot 10^{-90}$ (E) $50,000 \cdot 10^{-84}$
- Find the slope between $(l, -m)$ and $(-n, p)$.
 (A) $\frac{-n-l}{p+m}$ (B) $\frac{p-m}{-n-l}$ (C) $\frac{-n-l}{p-m}$ (D) $\frac{-m-p}{-n-l}$ (E) $\frac{p+m}{-n-l}$
- What is the total number of hours in x hours, y minutes, and z seconds?
 (A) $x + y + z$ (B) $x + 60y + 3600z$ (C) $24x + 60y + 3600z$ (D) $x + \frac{y}{60} + \frac{z}{3600}$ (E) $\frac{x}{24} + \frac{y}{60} + \frac{z}{3600}$
- Which of the following numbers is (are) irrational?
 I. π II. $13.\overline{77}$ III. $\sqrt{7}$
 (A) I (B) I and II (C) I and III (D) II and III (E) I, II, and III
- Solve the following system for x .

$$\begin{cases} 2x + 3y = 5 \\ 3x - 2y = 2 \end{cases}$$

 (A) $\frac{4}{13}$ (B) $\frac{11}{13}$ (C) $\frac{13}{11}$ (D) $\frac{13}{16}$ (E) $\frac{16}{13}$
- Solve for x . $-6x + 5x - 3 = -2(x - 3) + x - 2$
 (A) -5 (B) 0 (C) 7 (D) answer does not exist (E) any real number

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13. $-5(c+d)-36+(c+d)^2$ is equivalent to
 (A) $(c+d+3)(c+d-12)$ (B) $(c+d+12)(c+d-3)$ (C) $(c+d-9)(c+d+4)$
 (D) $(c+d+9)(c+d-4)$ (E) $(c+d-9)(c+d-4)$
14. What is the average of $4a^3b-4ab$, $-5ab+8ba^3$, and $-7ab^3+b^3a$?
 (A) $\frac{12a^3b-ab-6ab^3}{3}$ (B) $\frac{12a^3b-9ab-7ab^3}{3}$ (C) $\frac{12a^3b-ab-7ab^3}{3}$
 (D) $4a^3b-3ab-3ab^3$ (E) $4a^3b-3ab-2ab^3$
15. Find the area of a triangle whose height is $2\sqrt{5}$ and whose base is $(\sqrt{5}+\sqrt{10})$.
 (A) $5\sqrt{3}$ (B) $10\sqrt{2}$ (C) $10\sqrt{3}$ (D) $5+5\sqrt{2}$ (E) $10+10\sqrt{2}$
16. The number of wins was one-fifth of the number of losses. What fraction of the games were wins?
 (A) $\frac{1}{4}$ (B) $\frac{1}{5}$ (C) $\frac{1}{6}$ (D) $\frac{1}{7}$ (E) $\frac{5}{6}$
17. Solve for x . $\frac{3}{x} = \frac{1}{50\%} + \frac{1}{25\%}$
 (A) 25% (B) $\frac{1}{2}$ (C) $\frac{1}{5}$ (D) $\frac{1}{6}$ (E) 6
18. You double x and subtract 8 to get y and then you double y and subtract 8 to get z . If you double z and subtract 8 to obtain -8 , what number did you start with?
 (A) -6 (B) -4 (C) 4 (D) 6 (E) 8
19. If $25m^2 - 36n^2 = 24$ and $5m - 6n = 4$, then find the value of $5m + 6n$?
 (A) 4 (B) 6 (C) 8 (D) 12 (E) 20
20. If you waste 5 hours and receive a 72% on an Algebra 2 test, how much time did you waste if you received a 90%? Assume your test scores are inversely proportional to how much time you waste.
 (A) 2.5 hours (B) 3 hours (C) 3.5 hours (D) 4 hours (E) 6.25 hours
21. In z more years, you will be twice as old as your brother. Also, m years ago, your brother was n years younger than you. In x more years, how much older will you be than your brother?
 (A) $z+m-n+x$ (B) $m+n+x$ (C) $m-n+x$ (D) $m-n$ (E) n
22. Factor $nm-bd+md-bn$
 (A) $(m+b)(d-n)$ (B) $(m+b)(n-d)$ (C) $(m-b)(n-d)$ (D) $(m-b)(n+d)$ (E) $(b-m)(n+d)$
23. Find the value of $5\sqrt[4]{2x^2+6x+19}$ if $2x^2+6x+3=0$.
 (A) 5 (B) 10 (C) 15 (D) 20 (E) 25
24. Which equation is not a function?
 (A) $y=4$ (B) $x=4$ (C) $y-x=6$ (D) $y+x^2=4$ (E) $y=|x|+2$
25. When the largest of three consecutive odd integers is doubled, it will be one less than the smallest integer. Find the product of the smallest and largest.
 (A) 5 (B) 21 (C) 45 (D) 77 (E) does not exist

ALGEBRA 2 TEST 4 ANSWERS

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

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

2. $e = 300 \div 2 = 150$ and $f = 175 \div 25 = 7$. Therefore $\frac{e+f}{157} = \frac{150+7}{157} = \frac{157}{157} = 1$.

3. $h \div 16 = \frac{27-3}{3} \rightarrow h \div 16 = 8 \rightarrow h = 128$

4. $5 + 12n = 53$

5. $\left(\frac{1}{c^4}\right)^2 = c^{\frac{1}{2}}$

6. $\begin{cases} 5n + 10d = 315 \\ n + d = 46 \end{cases}$

7. $5000 \cdot 10^{-91}$

8. $m = \frac{p-m}{-n-l} = \frac{p+m}{-n-l}$

9. $x + \frac{y}{60} + \frac{z}{3600}$

10. I and III.

11. $\begin{cases} 2x + 3y = 5 \\ 3x - 2y = 2 \end{cases} \rightarrow \begin{cases} 4x + 6y = 10 \\ 9x - 6y = 6 \end{cases} \rightarrow 13x = 16 \rightarrow x = \frac{16}{13}$

12. $-1x - 3 = -x + 4 \rightarrow 0x = 7$ There is no number that could be multiplied by 0 to get 7.

13. $(c+d)^2 - 5(c+d) - 36 = (c+d-9)(c+d+4)$

14. $\frac{4a^3b - 4ab - 5ab + 8ba^3 - 7ab^3 + b^3a}{3} = \frac{12a^3b - 9ab - 6ab^3}{3} = 4a^3b - 3ab - 2ab^3$

15. $A = \frac{1}{2}bh = \frac{1}{2} \cdot 2\sqrt{5}(\sqrt{5} + \sqrt{10}) = \sqrt{5}(\sqrt{5} + \sqrt{10}) = 5 + \sqrt{5}\sqrt{5}\sqrt{2} = 5 + 5\sqrt{2}$

16. $w = \frac{1}{5}l \rightarrow 5w = l$. Also, $w + l = g \rightarrow w + 5w = g \rightarrow 6w = g \rightarrow \frac{w}{g} = \frac{1}{6}$

17. $\frac{3}{x} = \frac{1}{50\%} + \frac{1}{25\%} \rightarrow \frac{3}{x} = \frac{1}{0.5} + \frac{1}{0.25} \rightarrow \frac{3}{x} = \frac{1}{0.5} + \frac{2}{0.5} \rightarrow \frac{3}{x} = \frac{3}{0.5} \rightarrow x = 0.5$

18. $\{2[2(2x-8)-8]-8\} = -8 \rightarrow [2(4x-24)-8] = -8 \rightarrow 8x-48-8 = -8 \rightarrow 8x-48-8 = -8 \rightarrow 8x = 48 \rightarrow x = 6$

19. $25m^2 - 36n^2 = 24 \rightarrow (5m-6n)(5m+6n) = 24 \rightarrow 4(5m+6n) = 24 \rightarrow 5m+6n = 6$

20. $w_1g_1 = w_2g_2 \rightarrow 5 \cdot 72 = 90w \rightarrow w = \frac{360}{90} = 4$

21. If your brother was n years younger than you, he will always be n years younger than you.

22. $nm - bd + md - bn = nm - bn + md - bd = n(m-b) + d(m-b) = (m-b)(n+d)$

23. If $2x^2 + 6x + 3 = 0$, then $2x^2 + 6x + 19 = 16$. Then $5\sqrt[4]{2x^2 + 6x + 19} = 5\sqrt[4]{16} = 5 \cdot 2 = 10$

24. Choice B is a vertical line and will not be a function.

25. $2(n+4)+1=n \rightarrow n=-9$ which is the smallest. The largest will equal $n+4=-9+4=-5$ and the product will equal $(-9)(-5)=45$.