

1. The equation $(x + y) + z = x + (y + z)$ is an example of the _____ Property of Addition.

- A. Associative B. Commutative C. Distributive D. Identity

2. An expression that implements the Distributive Property when simplifying is:

- A. $3(a \cdot 2)$ B. $3(a + 2)$ C. $3\left(\frac{a}{2}\right)$ D. $3(a)^2$

3. $0.3(4.5x - 6) = -1.4(3x - 5)$

- A. -3.85 B. -0.25 C. 0.02 D. 1.59

4. $|2x - 5| = x + 5$

- A. $-\frac{10}{3}$ B. $\frac{10}{3}$ C. 10 D. 0, 10

5. If $y = 2x + 5$ and $y = -2x - 3$, then $x + y =$ ____

- A. -3 B. -2 C. -1 D. 1

6. The solution to $|x| \leq 2x + 6$ is

- A. $x \leq -6$ B. $x \leq 6$ C. $-6 \leq x \leq 6$ D. $x \leq -6$ or $x \geq 6$

7. If $x - \frac{1}{2} = \frac{2x}{5}$, then the solution is

- A. $\frac{6}{5}$ B. $\frac{5}{6}$ C. $-\frac{5}{6}$ D. $-\frac{6}{5}$

8. What is the sum of the a and b values for the solution to the system?

$$2a - b = -5$$

$$b = -2a$$

- A. Not Possible B. $-\frac{5}{4}$ C. $\frac{5}{4}$ D. $\frac{5}{2}$

9. What is the value of $(x + 3)^2 + x^2$ when $x = -3$

- A. 81 B. 9 C. 0 D. -9

10. Solve for F: $C = \frac{5}{9}(F - t)$

- A. $F = 9C - t$ B. $F = 9C + t$ C. $F = \frac{9}{5}C + \frac{1}{5}t$ D. $F = \frac{9}{5}C + t$

11. What is the larger solution of $3x^2 - 5x - 2 = 0$?

- A. $-\frac{2}{3}$ B. $\frac{1}{3}$ C. 1 D. 2

12. Evaluate the following if $x = -2$; $-x + 2x^2 - 3x^3 + 4x^4$

- A. -46 B. -30 C. 82 D. 98

13. What is the sum of the solutions of this equation?

$$(x + 1)^2 - 5(x + 1) + 6 = 0$$

- A. -3 B. 3 C. -5 D. 5

14. Simplify, using only positive exponents.

$$\left[\frac{7c^{-2}}{(7c)^2} \right]^{-1}$$

- A. $\frac{1}{7}$ B. 7 C. $7c^4$ D. $\frac{1}{7c^4}$ E. $\frac{1}{343c^4}$

15. Solve:

$$\frac{8(x-1)}{x^2-4} = \frac{4}{x-2}$$

- A. 1 B. 2, 4 C. $\frac{9}{4}$ D. 4

16. Given $a\Delta b = 2a - b$, what is the value of, $2\Delta\pi$?

- A. $2 - \pi$ B. $2\pi - 2$ C. $4 - \pi$ D. $\pi - 4$

17. If the original price of an item is \$50 is decreased by 20% and then additional 10%, what is the final price of the item?

- A. 30 B. 35 C. 36 D. 45

18. Solve. When $K = \frac{n(n-3)}{2}$ and $P = n^2 + n$ find the sum of P and K when $n = -7$.

- A. -28 B. -21 C. 60 D. 77

19. Tickets for the school play cost \$5 for adults and \$3 for students. On opening night, 150 tickets were sold and \$560 was collected. How much was collected from the sale of student tickets?

- A. \$55 B. \$95 C. \$275 D. \$285

20. For the functions $g(x)$ listed below, suppose x is an integer greater than 1, and k is a constant greater than 1. If $f(x) = x^2$ which of the following functions has the greatest value for $f(g(x))$?

- A. $g(x) = \frac{x}{k}$ B. $g(x) = \frac{k}{x}$ C. $g(x) = kx$ D. $g(x) = x - k$

21. Find the distance between $(3\sqrt{3}, -1)$ and $(6\sqrt{3}, -2)$.

- A. 6 B. $2\sqrt{7}$ C. 36 D. $3\sqrt{3} + 1$

22. Perform the operation and express as one fraction:

$$\frac{1}{a+1} + \frac{1}{a}$$

- A. $\frac{2}{2a+1}$ B. $\frac{a+1}{a}$ C. $\frac{a^2+a}{2a+1}$ D. $\frac{2a+1}{a^2+a}$

23. If $2 + 3(3\sqrt{x} + 4) = 23$, then the $\sqrt{x} = ?$

- A. -1 B. 1 C. 9 D. 12

24. A runner of 100 miles endurance race ran at a speed of five miles per hour for the first eighty miles of the race and x miles per hour the last 20 miles of the race. What equation represents the runner's average speed for the entire race?

- A. $\frac{100}{\left[\left(\frac{80}{5}\right)+\left(\frac{20}{x}\right)\right]}$ B. $100\left[\left(\frac{80}{5}\right)+\left(\frac{20}{x}\right)\right]$ C. $\frac{100}{[(80 \cdot 5)+(20x)]}$ D. $\frac{\left[\left(\frac{80}{5}\right)+\left(\frac{20}{x}\right)\right]}{100}$

25. What term is next in the following sequence?

$$25, -5, 1, -\frac{1}{5}, \dots$$

- A. -1 B. $-\frac{1}{25}$ C. $\frac{1}{25}$ D. 1

26. Find the value $\log_2 8$.

- A. 2^8 B. 8^2 C. $2 \cdot 8$ D. 3

27. For the following equation, i represents an imaginary number. Simplify the following equations $(2 - 2i) - (4 - 3i)$.

- A. $2 - 5i$ B. $2 - 14i$ C. $-2 + i$ D. $-6 - 5i$ E. $8 + 6i$

28. Consider the imaginary number j where $j^2 = -5$. What does $j + j^2 + j^3 + j^4 = ?$

- A. -25 B. 25 C. $-4j - 20$ D. $-4j + 20$

29. $13^3 \cdot 13^5 =$

- A. 13^8 B. 13^{15} C. 169^8 D. 169^{15}