Algebra 1:(All Levels) Summer Math

Name: _____ **Date:** _____

1. Simplify: $4 + 4 \times 4 - 4$ 1. ____

   A. 4 B. 16 C. 28 D. 60

2. $\frac{3(2+1)}{9} - \frac{7-(4+2)}{5-4} =$ 2. ____

   A. -51 B. 13 C. 1 D. 0

3. If $\frac{2}{3}n = \frac{10}{15}$, then $n = ?$ 3. ____

   A. $\frac{8}{12}$ B. $\frac{3}{2}$ C. $\frac{5}{5}$ D. $\frac{2}{5}$

4. Explain the difference between $x - 3$ and $3 - x$. 4. ____

5. Simplify: $154 + 2(5 + 3)$ 5. ____

   A. 165 B. 167 C. 170 D. 1248

6. Simplify: $49 - 2(16 - 11)$ 6. ____

7. Simplify: $2^3 + (7 - 3) \div 2 + (7 - 2)^2$ 7. ____

8. Find the value of the following expression: 8. ____

   $30 \cdot (-2) + 12 \div 2 - 5$

9. Simplify: $-4a - 6 + 10a$ 9. ____

   A. 0 B. $6a - 6$ C. $-20a^2$ D. $240a^2$

10. Write as an equation: y is three more than x. 10. ____

11. Simplify: $20a - 16a + 11 - 9a^2 + 7a - 15$ 11. ____

12. $8 \cdot 5\frac{1}{2} = (8 \cdot 5) + (8 \cdot \frac{1}{2})$ is an example of which property? 12. ☐

A. Associative property of addition

B. Distributive property

C. Associative property of multiplication

D. Commutative property of addition

13. Multiply: $-3(x - 5)$ 13. ☐

A. $3x - 15$ B. $-8x$ C. $-3x + 15$ D. $-3x - 5$

14. Translate the expression $\frac{m+n}{2}$ into words. 14. ☐

15. Use exponents to rewrite 125 as a power of 5. 15. ☐

16. $a * b$ is defined for all real numbers a and b by $a * b = 2a + b$. Is $*$ commutative? 16. ☐

17. Solve: $-7 - \frac{x}{5} = -10$ 17. ☐

18. Solve: $7 + 3t = -20$ 18. ☐

A. $-4\frac{1}{3}$ B. -9 C. -2 D. 2

19. Bernie was y years old last year. Which expression represents Bernie's age 3 years from now? 19. ☐

A. $(y + 1) + 3$ B. $(y - 1) + 3$ C. $y + 3$ D. $y - 4$

20. Translate into a variable expression: 5 more than twice a number n. 20. ☐

A. $2n + 5$ B. $2(n + 5)$ C. $2 + 5n$ D. $5(n + 2)$

21. Which of the following has the smallest value? 21. ☐

A. $3^2 - 2^3$ B. $3^3 - 4^2$ C. $(3 - 2)^5$ D. $4^2 - 2^4$

22. Give a value for n so that $\frac{1}{n} > n$. 22. ☐

23. Write the following equation as a sentence: $y + 2x$. 23. ____

24. The equation $89n + (11n + 10n) = (89n + 11n) + 10n$ illustrates the ____. 24. ____

A. addition property of zero
B. addition property of opposites
C. commutative property of addition
D. associative property of addition

25. Solve: $\frac{2}{3}n + 12 = 18$ 25. ____

A. 27 B. 9 C. 6 D. 18

26. If three is added to five times the number n, the sum is 18. Write an equation to represent the sentence. 26. ____

27. Write an expression for the cost of 4 computers and 3 printers if computers cost m dollars each and printers cost n dollars each. 27. ____

28. Use the formula $D = rt$ to find the distance (D), when $r = 55$ miles per hour and $t = 2$ hours. 28. ____

A. 57 mi B. 100 mi C. 110 mi D. 27.5 mi

29. Evaluate $a \div bc$ when $a = 24$, $b = 4$, and $c = 3$. 29. ____

30. Explain how the number 1 for multiplication is similar to zero for addition. 30. ____

31. Evaluate the expression $3x + 4y$ if $x = 3$ and $y = -5$. 31. ____

A. -12 B. 29 C. -11 D. -3

32. Evaluate $3ab^2 + 4c$ if $a = 2$, $b = 3$, and $c = -2$. 32. ____

33. Explain how $x \cdot x + 3$ and $x(x + 3)$ are different. 33. ____

34. The equation $55n \cdot 4 = 4 \cdot 55n$ illustrates the ____. 34. ____

A. associative property of multiplication

B. commutative property of multiplication

C. multiplication property of one

D. multiplication property of zero

35. If $r = 2$, then $(3r)^2 = ?$ 35. ____

36. Use exponents to write: $2x \cdot 2x \cdot 2x$ 36. ____

A. $6x$ B. $2(x^3)$ C. 2^3x D. $(2x)^3$

37. Solve: $25 - 6n = 7$ 37. ____

38. Solve: $n - 5 = 19 - 3n$ 38. ____

A. $\{-12\}$ B. $\{12\}$ C. $\{6\}$ D. $\{-6\}$

39. Solve: $\frac{7x - 5}{4} = \frac{x + 9}{3}$ 39. ____

40. Solve: $\frac{2}{3}x - 5 = \frac{x}{4} - 10$ 40. ____

A. $\{-12\}$ B. $\{12\}$ C. $\{-1\}$ D. $\{-2\}$

41. The ratio of weight on Earth to weight on the moon is $6:1$. If you weigh 165 pounds on Earth, how much would you weigh on the moon? 41. ____

42. Which of the following is *not* a true proportion? 42. ____

A. $\frac{10}{35} = \frac{2}{7}$ B. $\frac{14}{28} = \frac{4}{8}$ C. $\frac{3}{5} = \frac{12}{20}$ D. $\frac{4\text{ in.}}{6\text{ lb}} = \frac{2\text{ in.}}{12\text{ lb}}$

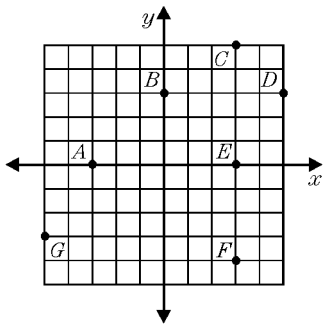
43. If a cookie recipe makes 5 dozen cookies, use proportions to determine the number by which each ingredient should be multiplied in order to make 90 cookies. 43. ____

44. Solve: $\frac{25}{12} = \frac{5x}{18}$ 44. ____

A. $\{7.5\}$ B. $\{1.5\}$ C. $\{15\}$ D. $\{0.75\}$

45. What are the coordinates of point C? 45. ____

A. $(3, 5)$ B. $(-5, 3)$ C. $(3, 0)$ D. $(0, 3)$



46. A group of friends rode to a concert together. Each ticket cost $10. They had to pay $5 for parking. The total cost was $65. How many people went to the concert? Which equation could be used to solve this? 46. ____

A. $10n + 5n = 65$ B. $10n + 5 = 65$ C. $5n + 10 = 65$

D. not enough information

47. Which is the multiple inverse of (-3)? 47. ____

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

48. Simplify: $|2 - 7|$ 48. ____

A. -5 B. 5 C. 9 D. -9

49. Simplify: $(-2)^5$ 49. ____

A. -10 B. -32 C. 10 D. 32

50. Which is an irrational number? 50. ____

A. $4.\overline{2}$ B. $\sqrt{2}$ C. $\sqrt{4}$ D. -4.2

51. Give an example of an irrational number between 2 and 10. 51. ____

52. Between what two integers does $\sqrt{88}$ lie? 52. ____

53. Simplify: $\sqrt{16} \cdot \sqrt{25}$ 53. ☐

A. 20 B. 100 C. 80 D. 9

54. A clothing store offers a 25% discount on all shoes. How much would a pair of shoes which regularly sells for $48 cost during the sale? 54. ☐

A. $12 B. $36 C. $30

D. none of these

55. Explain why a 20% increase followed by a 20% decrease is always less than the original amount. 55. ☐

56. An insurance agent receives a 4% commission on life insurance annuities. What is the commission on a $15,000 annuity? 56. ☐

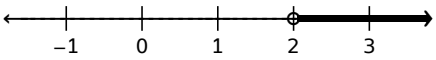
57. Last year, Central High School had 800 students. This year's enrollment dropped to 600. What was the percent of decrease? 57. ☐

A. 75% B. $33\frac{1}{3}\%$ C. 25% D. $133\frac{1}{3}\%$

58. Before Randy started lifting weights, he weighed 100 pounds. Now, less than two years later, he weighs 125 pounds. Find the percent increase in his weight. 58. ☐

59. A jewelry store purchases a watch for $80 and marks it up 250%. What is the selling price of the watch? 59. ☐

60. Write an inequality which has the solution set graphed. 60. ☐



61. Explain how the solutions of $x + 4 = -2$ and $x + 4 > -2$ differ. 61. ☐

62. Solve: $3x + 1 < 10$ 62. ☐

63. Solve: $4x - 1 \geq 2x + 5$ 63. ☐

A. $x > 3$ B. $x \geq -3$ C. $x \leq -3$ D. $x \geq 3$

64. Solve: $-3 \leq x - 1 < 4$ 64. ☐

A. $-4 \leq x < 5$ B. $-4 \leq x < 3$ C. $-2 \leq x < 5$ D. $-2 \leq x < 3$

65. If you are traveling at 50 mph you will travel 50 miles in 1 hour. If you travel for 3 hours at 50 mph, how far will you travel? 65. ☐

A. $16\frac{2}{3}$ mi B. 150 mi C. 100 mi D. 300 mi

66. A rope is cut in half and one-half is used. When one-fourth of the remaining rope is cut off and used, the piece left is 16 feet long. How long was the rope originally? Explain your method and strategy for solving. 66. ☐