

**SUMMER
PACKET**

**ALGEBRA 1
&
ADVANCED
ALGEBRA 1**

1. Write the phrase as an expression. Let x represent the number.
A number minus 10

Evaluate the expression for the given value of the variable.

2. $27 - k$ when $k = 15$ [A] 42 [B] 11 [C] 12 [D] 41
3. $13a$ when $a = 2$ [A] 169 [B] 26 [C] 11 [D] 15
4. During a canned food drive, Bob collected 6 more cans than Tom. Let t represent the number of cans that Tom collected. Write an expression that represents the number of cans that Bob collected.
5. Write the product using an exponent. [A] 7^3 [B] 3^7 [C] $7 \cdot 3$ [D] 21^3
 $7 \cdot 7 \cdot 7$
6. Write the power in words and as repeated multiplication. Then evaluate the power.
 5^6

Evaluate the expression.

7. $3 + 3(2 + 5)^3$ [A] 9264 [B] 2058 [C] 1032 [D] 137
8. $2[22 - (3 + 5)]$ [A] 28 [B] 8 [C] 58 [D] 48
9. Evaluate the expression when $x = 5$, $y = 20$, and $z = 2$.
$$\frac{x + y}{12 - z}$$
10. Order the integers from least to greatest.
15, 13, -3, 1, -13
[A] -13, -3, 1, 15, 13 [B] 15, 13, 1, -3, -13
[C] 1, -13, 15, 13, -3 [D] -13, -3, 1, 13, 15
11. Copy and complete the statement using $<$ or $>$.
 $0 \underline{\quad} -7$

12. Find the sum. [A] -29 [B] 11 [C] -11 [D] 29
 $-9 + (-20)$

13. Evaluate the expression when $a = -6$, $b = -13$ and $c = 4$.
 $-13 + c + b$
[A] -15 [B] -22 [C] 1 [D] -1

14. Find the difference. [A] -19 [B] 13 [C] 19 [D] -13
 $-16 - (-3)$

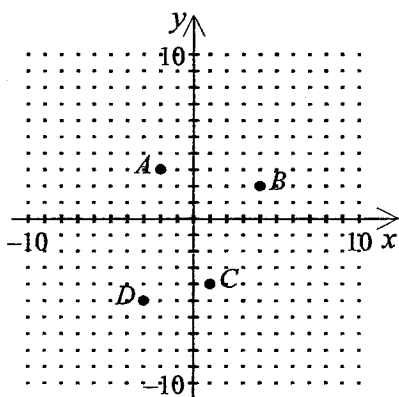
15. Evaluate the expression for the given values of the variables.
 $-m - n$, when $m = -44$ and $n = 38$

16. Find the product. [A] 9 [B] -6 [C] -9 [D] 0
 $-3(3)$

17. Find the quotient. [A] -4 [B] 4 [C] $-\frac{1}{4}$ [D] $\frac{1}{4}$
 $-32 \div 8$

18. Evaluate the expression.
 $\frac{x}{y}$, when $x = 12$ and $y = -4$

19. Write the coordinates of the points A , B , C , and D .



20. Evaluate the expression. Justify each step.
 $25(-7)(2)$

21. Simplify the expression.

$$7 \cdot m \cdot 90$$

22. Evaluate the expression when $x = 20$ and $y = -3$.

$$y^2(5x)$$

- [A] 900 [B] 300 [C] -900 [D] -6000

23. Use the distributive property to simplify the expression.

$$-11(10+6)$$

- [A] -176 [B] 181 [C] -181 [D] 176

24. Your club of 22 students is touring an Old-West town. How much money will be spent if all the students in the club go on the train ride and visit the museum?

Admission Prices		
	Adult	Student
Museum	\$6	\$4
Train Ride	\$8	\$3

25. Identify the terms, like terms, coefficients, and constant terms. Then simplify the expression.

$$4b + 7 - 5b - 19$$

- [A] terms: $4b$, -7 , $5b$, 19
like terms: $4b$ and $5b$, -7 and 19
coefficients: 4 , 5
constant terms: -7 , 19
simplified expression: $9b + 12$

- [C] terms: $4b$, -7 , $5b$, -19
like terms: $4b$ and $5b$, -7 and -19
coefficients: 4 , 5
constant terms: -7 , -19
simplified expression: $9b - 26$

- [B] terms: $4b$, 7 , $-5b$, -19
like terms: $4b$ and $-5b$, 7 and -19
coefficients: 4 , -5
constant terms: 7 , -19
simplified expression: $-b - 12$

- [D] terms: $4b$, 7 , $-5b$, 19
like terms: $4b$ and $-5b$, 7 and 19
coefficients: 4 , -5
constant terms: 7 , 19
simplified expression: $-b + 26$

Simplify the expression.

26. $9x + 10x$ [A] $19x^2$ [B] $19x$ [C] $x + 19$ [D] x

Simplify the expression.

27. $5x - 5(x - 5)$ [A] 25 [B] -25 [C] $10x + 25$ [D] -5

28. Admission to the nautical museum is \$9 for adults (a) and \$5 for children (c). Both admission prices are discounted \$2 on Tuesday. Find expressions for the total fees collected on Tuesday and on Wednesday.

[A] Tuesday: $(9 + 2)a + (5 + 2)c$
Wednesday: $9a + 5c$

[B] Tuesday: $(9 - 2)a + (5 - 2)c$
Wednesday: $5a + 9c$

[C] Tuesday: $(9 + 2)a + (5 + 2)c$
Wednesday: $9c + 5a$

[D] Tuesday: $(9 - 2)a + (5 - 2)c$
Wednesday: $9a + 5c$

Determine which value is a solution of the equation.

29. $10 + m = 26$ [A] 10 [B] 15 [C] 32 [D] 16

30. $\frac{v}{3} = 21$ [A] 55 [B] 63 [C] 66 [D] 71

31. Janice and Thomas are roller blading around Sampson Pond. It takes them 4 minutes to complete a lap. Write an equation to find how many laps they can complete in one hour if they continue roller blading at this pace.

Solve the equation. Check your solution.

32. $q - 5 = 10$ [A] -9 [B] 15 [C] 5 [D] -15

33. $10 = 2 + m$ [A] 16 [B] 7 [C] 2 [D] 8

34. $164 = x - 59$

35. A 32-inch flat screen television was advertised at a price of \$370. The television was marked with a tag indicating \$39 off the original price. Write and solve an equation to find the original price of the television.

Solve the equation.

36. $72 = 9y$ [A] $\frac{1}{8}$ [B] 8 [C] 81 [D] 7

37. $14x = -728$ [A] $\frac{1}{52}$ [B] -52 [C] 52 [D] $-\frac{1}{52}$

38. The art teacher bought some boxes of colored pencils with 6 pencils in each box. She got 24 pencils. Write an equation that you could use to find how many boxes the art teacher bought.

39. Perform the indicated operation.

$$145.24 + (-19.5)$$

[A] 164.74 [B] 125.74 [C] 1432.9 [D] 4.976

40. Solve the equation.

$$-5.57 = x - 3.14$$

Solve the equation. Check your solution.

41. $3x + 2 = -22$

42. $-\frac{P}{16} + 5 = 9$

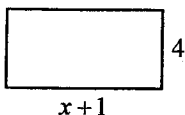
43. Write the verbal sentence as an equation. Then solve the equation.
Seventy minus the product of 8 and a number is 86.

Solve the equation. Then check the solution.

44. $7n + 10 - 9n = 18$

45. $-2(6n - 5) = -26$ [A] -5 [B] -2 [C] 3 [D] 4

46. Find the value of x for the figure. [A] 19 [B] 7 [C] 7.5 [D] 10
Perimeter = 24



47. Mr. Duncan wants to purchase pencils and erasers in bulk so he can loan them to students when it becomes necessary. The best bulk rate he's found has pencils priced at \$.05 each and erasers priced \$.03 each. If he has \$8 to spend and purchases an equal number of pencils and erasers, how many of each item can he buy?

Solve the equation.

48. $21 + 4x = -3x + 21$ [A] 0 [B] 6 [C] 5 [D] 7

49. $3(x + 2) + 3 = 4(x - 4) + 4$

50. Write an inequality to represent the situation.
Thomas can type at most 65 words per minute.

51. Write the sentence as an inequality. Let x represent the unknown number. Then solve the inequality.
A number increased by 4 is greater than 2.

52. Which inequality represents the verbal sentence?
When a number is multiplied by -6 , the result is greater than or equal to -4 .

[A] $-6x \leq -4$ [B] $x < 24$ [C] $-6x \geq -4$ [D] $x \geq 24$

53. Which inequality matches the sentence?
When a number is increased by 5, and that sum is divided by 8, the result is less than -4 .

[A] $\frac{x}{8} + 5 \leq -4$ [B] $\frac{x+5}{8} < -4$ [C] $\frac{x+5}{8} > -4$ [D] $\frac{x}{8} + 5 < -4$

Solve the inequality. Then graph the solution.

54. $-3x - 6 > 15$

Solve the inequality. Then graph the solution.

55. $\frac{m}{2} + 1 \geq -1$

56. The width of a rectangle is 33 centimeters. The perimeter is at least 324 centimeters. Write an inequality that represents all possible values for the length of the rectangle. Then solve the inequality.

57. Write all the factors of 36.

58. Which of the following numbers is prime? [A] 21 [B] 15 [C] 47 [D] 25

59. Make a factor tree for 420.

60. Find the greatest common factor of the numbers.

60, 70

[A] 6

[B] 10

[C] 84

[D] 2

61. Find the greatest common factor of the monomials.

$24a^3b^3$, $32a^4b$

[A] $4a^3b$

[B] a^2b

[C] $8a^3b$

[D] $8a^2b$

62. The prime factorizations of 24, 36, and 270 are shown below.

$$24 = 2 \cdot 2 \cdot 2 \cdot 3$$

$$36 = 2 \cdot 2 \cdot 3 \cdot 3$$

$$270 = 2 \cdot 3 \cdot 3 \cdot 3 \cdot 5$$

Which of the following is the greatest common factor of 24, 36, and 270?

[A] 6

[B] 30

[C] 216

[D] 5

63. Write three fractions equivalent to $\frac{2}{12}$.

64. Write the fraction in simplest form.

$$\frac{6a^2b^5}{27ab^9}$$

65. Find the least common multiple of the numbers.
72, 30

Find the least common multiple of the monomials.

66. $8jk, 6j^2$ [A] $12j^2k$ [B] $24j^2k$ [C] $24jk$ [D] $2j$

67. $12c^3d^4, 7c^4d^5$

Simplify the expression. Write your answer using exponents.

68. $3^4 \cdot 3^7$ [A] 3^{11} [B] 3^{28} [C] 9^{28} [D] 9^{11}

69. $j^{13} \cdot j^2$

70. Simplify the expression. [A] $m^{12}p^{28}$ [B] $\frac{1}{m^6p^4}$ [C] m^6p^4 [D] mp^4
 $\frac{m^9p^{16}}{m^3p^{12}}$

71. Write the number in scientific notation.
227,000

[A] 22.7×10^4 [B] 2.27×10^5 [C] 227×10^3 [D] 0.227×10^6

72. Write the number in standard form.
 1.93×10^{-3}

73. Write the number in scientific notation.
In 1995, Nigeria had a population of about 106,400,000 people.

74. Complete the statement using $<$, $>$, or $=$. [A] $<$ [B] $>$ [C] $=$
 1.25×10^6 ? 1.36×10^5

75. Write the fraction or mixed number as a decimal.

$$\frac{5}{8}$$

[A] 5.01

[B] 0.085

[C] 1.6

[D] 0.625

76. Order the numbers from least to greatest.

$$-\frac{11}{5}, -2.8\overline{37}, 2\frac{5}{8}, -2.83, \frac{17}{8}$$

77. Find the sum or difference.

$$\frac{13}{16} + \frac{7}{16}$$

78. Simplify the expression.

$$\frac{15}{22m} - \left(-\frac{3}{22m}\right)$$

[A] $\frac{9}{11m}$

[B] $\frac{9m}{11}$

[C] $\frac{6m}{11}$

[D] $\frac{6}{11m}$

79. Evaluate.

$$\frac{5}{16} - \left(-\frac{7}{16}\right) + \frac{3}{16}$$

[A] $\frac{5}{16}$

[B] $\frac{15}{16}$

[C] $1\frac{1}{16}$

[D] $\frac{1}{16}$

Find the sum or difference.

80. $12\frac{1}{2} - 2\frac{1}{9}$

[A] 11

[B] $10\frac{7}{18}$

[C] $11\frac{7}{18}$

[D] $\frac{9}{151}$

81. $1\frac{1}{3} + 9\frac{3}{4}$

Find the product.

82. $\frac{1}{3} \cdot \frac{4}{5}$

[A] $\frac{5}{12}$

[B] $\frac{4}{15}$

[C] $\frac{80}{3}$

[D] $\frac{8}{13}$

83. $6\left(\frac{5}{8}\right)$

[A] 4

[B] $5\frac{1}{4}$

[C] $3\frac{3}{4}$

[D] $6\frac{5}{8}$

Find the quotient.

84. $\frac{10}{3} \div \frac{2}{3}$ [A] $\frac{9}{20}$ [B] $2\frac{2}{9}$ [C] 5 [D] $\frac{1}{5}$

85. $\frac{19}{33} \div \left(-\frac{8}{11}\right)$

86. Evaluate the expression.

$$-\frac{4}{5} \div \left(\frac{2}{3} + \frac{1}{4}\right)$$

Solve the equation. Check your solution.

87. $75 = \frac{3}{5}x$ [A] 45 [B] 125 [C] 25 [D] 15

88. $\frac{4}{7}d = \frac{1}{2}$

89. Which shows the ratio as a fraction in simplest form?
9 to 42

[A] $\frac{9}{42}$ [B] $\frac{3}{7}$ [C] $\frac{14}{3}$ [D] $\frac{3}{14}$

Solve the proportion.

90. $\frac{9}{12} = \frac{e}{8}$ [A] 8 [B] 6 [C] 2 [D] 12

91. $\frac{84}{108} = \frac{k}{9}$ [A] 7 [B] 3 [C] 4 [D] 6

92. $\frac{n}{7} = \frac{3.1}{6.2}$ [A] 140 [B] 3.5 [C] 35 [D] 14

Solve the proportion.

93. $\frac{24}{w} = \frac{14}{4.9}$

94. Write the percent as a fraction. [A] $\frac{11}{100}$ [B] $\frac{110}{100}$ [C] $\frac{11}{50}$ [D] 0.11
11%

95. Write the fraction as a percent.
 $\frac{3}{10}$

Use a proportion to answer the question.

96. What percent of 60 is 54?

97. What percent of 380 is 76? [A] 500% [B] 15% [C] 20% [D] $12\frac{1}{2}\%$

98. A golf group planned a trip to Hawaii and 36 of the members signed up to go. If this is 20% of the total membership, how many members are in the golf group?

Write the decimal as a percent.

99. 0.237 [A] 23.7% [B] 2.37% [C] 237% [D] 0.237%

100. 0.03

101. Write the fraction as a percent.

$$\frac{5}{18}$$

[A] $0.2\bar{7}\bar{7}\%$ [B] 277% [C] $27.\bar{7}\%$ [D] $2.7\bar{7}\%$

Use the percent equation to answer the question.

102. 24 is what percent of 32? [A] $\frac{24}{32}\%$ [B] 25% [C] 75% [D] 24%
103. What percent of 350 is 21?