



# Algebra I

## Summer Math Packet

Course 1312

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# Instructions

The following review has several topics of Pre Algebra/Algebra required for your next level mathematics course.

You must print and turn in **only the practice exercises pages** of this document with your answers. ALL WORK MUST BE DONE ON LOOSE LEAF. Your problems must be numbered and work should be in order and NEAT. Please make sure to staple loose leaf paper containing your work to the packet. IT MUST BE INCLUDED TO RECEIVE CREDIT FOR YOUR SUMMER PACKET.

**Answers with no work will receive no credit.**

The packet will be graded by percentage of completion. Try your best to answer all questions, even if you are not sure of your answer.

This document is due **THE FIRST DAY OF SCHOOL.**

**NO LATE SUBMISSION WILL BE ACCEPTED.**

We will be reviewing the packet the first week of school, so make a note of any questions you may have. After reviewing these topics in class, you will be tested at the end of the first week of school on these concepts. **NO CALCULATOR** will be allowed on the quiz, so be sure to practice without the use of a calculator.

Name \_\_\_\_\_

Date: \_\_\_\_\_

Middle School: \_\_\_\_\_

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Insert <, >, or = to make the statement true.**

1)  $-200$  \_\_\_\_\_  $-20$  1) \_\_\_\_\_

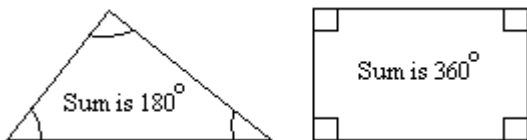
2)  $\frac{15}{3}$  \_\_\_\_\_  $\frac{20}{4}$  2) \_\_\_\_\_

3)  $0.7$  \_\_\_\_\_  $0.8$  3) \_\_\_\_\_

4)  $-0.2$  \_\_\_\_\_  $-1.0$  4) \_\_\_\_\_

**Solve the problem.**

5) The sum of the measures of the angles of a triangle is  $180^\circ$ . The sum of the measures of the angles of a rectangle is  $360^\circ$ . Use the inequality symbol  $\leq$  or  $\geq$  to write a statement comparing the numbers 180 and 360. 5) \_\_\_\_\_



**Write the sentence as a mathematical statement.**

6) Forty-eight is not equal to negative forty-eight. 6) \_\_\_\_\_

7) Forty-six is less than or equal to forty-six. 7) \_\_\_\_\_

**Use an integer to represent the value in the statement.**

8) 473 feet above sea level 8) \_\_\_\_\_

9) The team gave up 9 points. 9) \_\_\_\_\_

**List the numbers in set B that belong to the indicated set.**

10)  $B = \left\{ 11, \sqrt{6}, -23, 0, \frac{0}{16}, 2\pi, \sqrt{16} \right\}$  10) \_\_\_\_\_  
 Natural numbers

11)  $B = \left\{ 13, \sqrt{5}, -20, 0, \frac{0}{1}, 2\pi, \sqrt{9} \right\}$  11) \_\_\_\_\_  
 Whole numbers

12)  $B = \left\{ 14, \sqrt{7}, -16, 0, \frac{0}{1}, 2\pi, \sqrt{9} \right\}$  12) \_\_\_\_\_  
 Integers

$$13) B = \left\{ 17, \sqrt{7}, -16, 0, \frac{0}{7}, \sqrt{4}, \frac{-2}{0}, 2\pi, 0.93 \right\}$$

Rational numbers

13) \_\_\_\_\_

$$14) B = \left\{ 12, \sqrt{8}, -22, 0, \frac{0}{9}, \sqrt{4}, \frac{-5}{0}, 2\pi, 0.72 \right\}$$

Irrational numbers

14) \_\_\_\_\_

$$15) B = \left\{ 14, \sqrt{6}, -14, 0, \frac{0}{5}, \sqrt{9}, 2\pi, \frac{-5}{0} \right\}$$

Real numbers

15) \_\_\_\_\_

**Tell whether the statement is true or false.**

16) Every whole number is a real number.

16) \_\_\_\_\_

17) Every irrational number is an integer.

17) \_\_\_\_\_

**Find the absolute value of the number.**

18)  $|-15|$

18) \_\_\_\_\_

**Write the fraction in lowest terms.**

$$19) \frac{3}{6}$$

19) \_\_\_\_\_

$$20) \frac{4}{5}$$

20) \_\_\_\_\_

**Write the number as a product of primes.**

21) 70

21) \_\_\_\_\_

22) 55

22) \_\_\_\_\_

23) 84

23) \_\_\_\_\_

**Multiply or divide as indicated. Write the answer in lowest terms.**

$$24) \frac{2}{7} \cdot \frac{5}{9}$$

24) \_\_\_\_\_

$$25) \frac{1}{7} \cdot \frac{1}{2}$$

25) \_\_\_\_\_

$$26) \frac{20}{9} \cdot \frac{1}{8}$$

26) \_\_\_\_\_

27)  $\frac{4}{6} \div \frac{1}{7}$

27) \_\_\_\_\_

28)  $\frac{5}{6} \div \frac{7}{3}$

28) \_\_\_\_\_

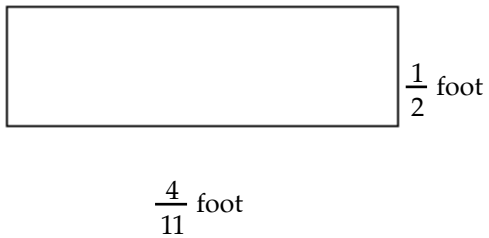
29)  $3\frac{1}{3} \cdot 4\frac{1}{6}$

29) \_\_\_\_\_

Find the area of the figure below. (The area of a rectangle is the product of its length and width. The area of a triangle is  $\frac{1}{2}$  the product of its base and height.)

30)

30) \_\_\_\_\_



Add or subtract as indicated. Write the answer in lowest terms.

31)  $\frac{4}{9} + \frac{4}{9}$

31) \_\_\_\_\_

32)  $\frac{3}{5} + \frac{3}{25}$

32) \_\_\_\_\_

33)  $\frac{5}{8} + \frac{4}{7}$

33) \_\_\_\_\_

34)  $\frac{6}{9} - \frac{4}{8}$

34) \_\_\_\_\_

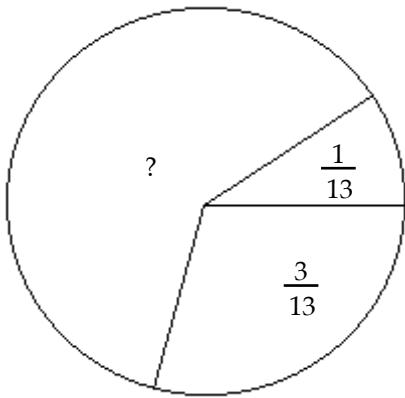
35)  $\frac{9}{16} - \frac{1}{12}$

35) \_\_\_\_\_

The circle represents a whole, or 1. Use subtraction to determine the unknown part of the circle.

36)

36) \_\_\_\_\_



**Solve. Simplify the answer.**

37) Jeffrey has two packages. One weighs  $2\frac{1}{4}$  ounces, and the other weighs  $\frac{5}{9}$  of an ounce.

37) \_\_\_\_\_

What is the total weight of the two packages?

**Write the fraction as an equivalent fraction with the given denominator.**

38)  $\frac{4}{11}$  with a denominator of 22

38) \_\_\_\_\_

**Evaluate.**

39)  $5^2$

39) \_\_\_\_\_

40)  $\left(\frac{1}{2}\right)^4$

40) \_\_\_\_\_

41)  $-6^2$

41) \_\_\_\_\_

42)  $\left(\frac{1}{6}\right)^3$

42) \_\_\_\_\_

43)  $(-1)^6$

43) \_\_\_\_\_

44)  $(-4)^3$

44) \_\_\_\_\_

**Simplify the expression.**

45)  $6^3 + 3^2$

45) \_\_\_\_\_

46)  $\frac{1}{4} + \frac{1}{7} \cdot \frac{1}{5}$

46) \_\_\_\_\_

47)  $7[4 + 2(8 + 6)]$

47) \_\_\_\_\_

48)  $\frac{40(18 - 15) - 6}{3^2 - 3}$

48) \_\_\_\_\_

**Evaluate the expression for the given replacement values.**

49)  $\frac{14x - 4y}{2}$      $x = 9, y = 3$

49) \_\_\_\_\_

**Provide an appropriate response.**

50) Is 4 a solution of the equation  $7x - 7 = 21$ ?

50) \_\_\_\_\_

**Write the phrase as an algebraic expression. Let x represent the unknown number.**

51) The quotient of 4 and a number

51) \_\_\_\_\_

**Simplify the expression.**

52)  $-2 + 4$

52) \_\_\_\_\_

53)  $\frac{-18}{-9}$

53) \_\_\_\_\_

54)  $6 - (8 - 4)^3$

54) \_\_\_\_\_

**Evaluate the expression for  $x = -2, y = 3, z = -4$ .**

55)  $7x - 3y - 2z$

55) \_\_\_\_\_

**Solve for variable.**

56)  $-3n = -15$

56) \_\_\_\_\_

57)  $\frac{n}{-4} = 9$

57) \_\_\_\_\_

58)  $6x - 7 = x - 42$

58) \_\_\_\_\_

59)  $-36 = 7y - y$

59) \_\_\_\_\_

**Provide an appropriate response.**

60) Simplify  $4x + 3 - 2x + 5$  by combining like terms.

60) \_\_\_\_\_

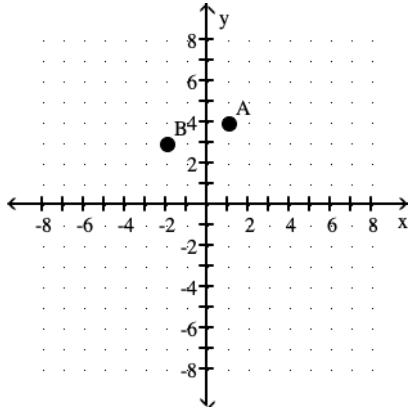
**Find the mean, median, and mode of the list of numbers.**

61) 20, 32, 41, 42, 46

61) \_\_\_\_\_

Find the coordinates of the points in the graph.

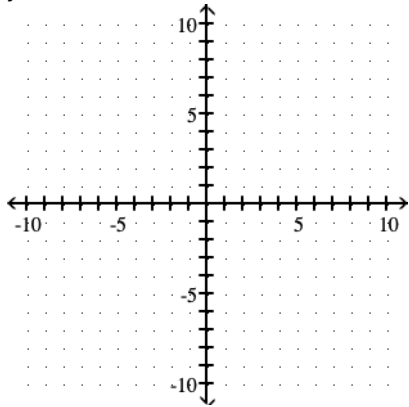
62)



62) \_\_\_\_\_

Complete and graph the ordered-pair solutions of the given equation.

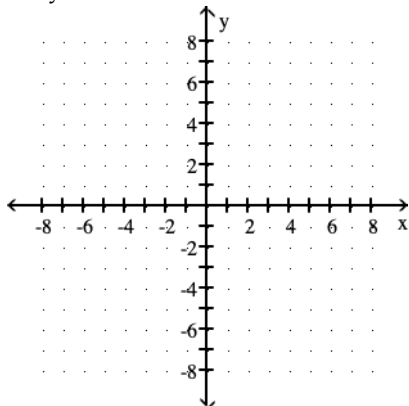
63)  $y = 3x - 2$ ;  $(0, \quad)$ ,  $(1, \quad)$ ,  $(-1, \quad)$



63) \_\_\_\_\_

Graph the linear equation.

64)  $x + y = 5$



64) \_\_\_\_\_

Find the greatest common factor of the list.

65) 20 and 160

65) \_\_\_\_\_

Factor out the GCF.

66)  $5y^2 + 40y$

66) \_\_\_\_\_

**Simplify.**

67)  $-(-11)$

67) \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Find the additive inverse or opposite.**

68)  $|-24|$

68) \_\_\_\_\_

A) -24

B) 0

C)  $-\frac{1}{24}$

D) 24

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Subtract.**

69)  $-15 - (-5)$

69) \_\_\_\_\_

70)  $-\frac{4}{5} - \frac{7}{10}$

70) \_\_\_\_\_

71)  $-\frac{3}{4} - \left(-\frac{5}{8}\right)$

71) \_\_\_\_\_

**Simplify the expression. (Remember the order of operations.)**

72)  $25 - (-6) + 11 + (-9)$

72) \_\_\_\_\_

73)  $|-2| - 3^2 - (-7 - 11)$

73) \_\_\_\_\_

**Solve.**

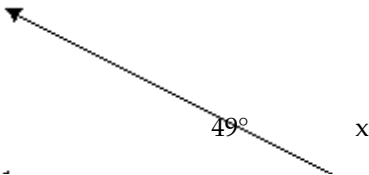
74) The price of a stock rose 5 points, fell 8 points, and again fell 13 points. What was the stock's total change?

74) \_\_\_\_\_

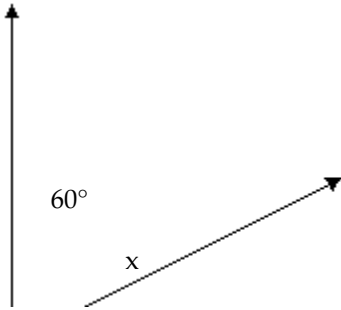
**Find the unknown complementary or supplementary angle.**

75)

75) \_\_\_\_\_



76)



76) \_\_\_\_\_

**Translate the phrase to an expression and simplify.**

77) Decrease 7 by 6.

77) \_\_\_\_\_

78) Decrease  $-7$  by  $-9$ .

78) \_\_\_\_\_

**Multiply.**

79)  $(-5)(-5)$ 

79) \_\_\_\_\_

80)  $(-5)(-3)(0)(4)$ 

80) \_\_\_\_\_

81)  $(-4)(3)(-4)(-4)$ 

81) \_\_\_\_\_

**Provide an appropriate response.**

82) Find the opposite of  $-15$ .

82) \_\_\_\_\_

83) Find the reciprocal of  $-\frac{1}{21}$ .

83) \_\_\_\_\_

**Divide.**

84)  $\frac{0}{-29}$ 

84) \_\_\_\_\_

85)  $\frac{-16}{-8}$ 

85) \_\_\_\_\_

86)  $\frac{-90}{0}$ 

86) \_\_\_\_\_

87)  $-\frac{7}{10} \div \left(-\frac{3}{4}\right)$ 

87) \_\_\_\_\_

88)  $\frac{4}{9} \div \left(-\frac{4}{9}\right)$ 

88) \_\_\_\_\_

**Simplify.**

89)  $\frac{-27}{7+2}$

89) \_\_\_\_\_

90)  $\frac{143+7}{3^2-4}$

90) \_\_\_\_\_

**Solve.**

91) Chris lost \$8.59 playing poker in one week. If this continued, what would be his net winnings or losses after five weeks?

91) \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Name the property illustrated by the statement.**

92)  $(5+9)+4=(9+5)+4$

92) \_\_\_\_\_

A) distributive property

B) commutative property of addition

C) associative property of addition

D) additive inverse property

93)  $(5 \cdot 6) \cdot 1 = 5 \cdot (6 \cdot 1)$

93) \_\_\_\_\_

A) commutative property of multiplication

B) associative property of multiplication

C) distributive property

D) identity element for multiplication

94)  $5 \cdot 3 = 3 \cdot 5$

94) \_\_\_\_\_

A) associative property of multiplication

B) distributive property

C) commutative property of multiplication

D) identity element for multiplication

95)  $12+(18+13)=(12+18)+13$

95) \_\_\_\_\_

A) identity element for addition

B) commutative property of addition

C) distributive property

D) associative property of addition

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Use the distributive property to write the expression without parentheses. Then simplify, if necessary.**

96)  $4(3x+6)$

96) \_\_\_\_\_

97)  $7(4x+3)-2$

97) \_\_\_\_\_

98)  $-(t-2y)$

98) \_\_\_\_\_

**Identify the numerical coefficient of the term.**

99)  $-10x$

99) \_\_\_\_\_

100)  $-\frac{5}{8}z$

100) \_\_\_\_\_

**Simplify the expression by combining any like terms.**

101)  $8x - 4 + 2x + 1$

101) \_\_\_\_\_

102)  $11x - 8 + 4x + x + 7$

102) \_\_\_\_\_

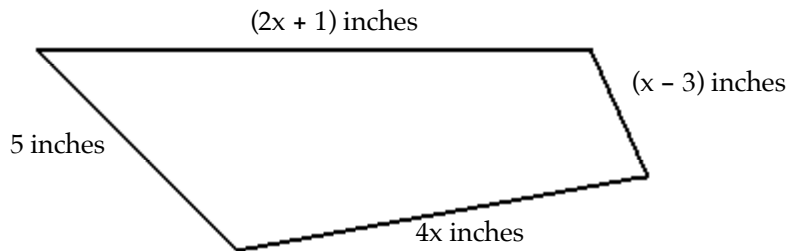
103)  $-6m + 6 - 3 + 2 + m - 5$

103) \_\_\_\_\_

**Write the algebraic expression described.**

104) Given the following quadrilateral, express the perimeter, or total distance around the figure, as an algebraic expression containing the variable  $x$ .

104) \_\_\_\_\_



**Solve the equation. Don't forget to first simplify each side of the equation, if possible.**

105)  $18 = r + 3$

105) \_\_\_\_\_

106)  $\frac{1}{4} + f = 5$

106) \_\_\_\_\_

107)  $5.9 + x = 20.6$

107) \_\_\_\_\_

108)  $12 + 6y = 7y$

108) \_\_\_\_\_

**Solve the equation. Don't forget to first simplify each side of the equation, if possible.**

109)  $8(3x + 7) = 25x$

109) \_\_\_\_\_

110)  $-4k + 2 + 5k = 6 - 20$

110) \_\_\_\_\_

111)  $3n - 2n - 2 = -2$

111) \_\_\_\_\_

**Find the mean. If necessary, round to one decimal place.**

112) 6, 5, 10, 4, 13, 10

112) \_\_\_\_\_

**Find the median. If necessary, round to one decimal place.**

113) 8, 5, 23, 19, 50, 42, 37

113) \_\_\_\_\_

**Find the mode or modes (if any).**

114) 20, 21, 46, 21, 49, 21, 49

114) \_\_\_\_\_

115) Turn 95% in to a decimal.

115) \_\_\_\_\_

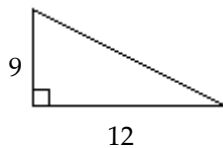
116) Turn 2.56 into a percent.

116) \_\_\_\_\_

Use the Pythagorean theorem to find the unknown side of the right triangle.

117)

117) \_\_\_\_\_



Solve.

118) Scott set up a volleyball net in his backyard. One of the poles, which forms a right angle with the ground, is 7 feet high. To secure the pole, he attached a rope from the top of the pole to a stake 5 feet from the bottom of the pole. To the nearest tenth of a foot, find the length of the rope.

118) \_\_\_\_\_

Fill in the blank with one of the words or phrases listed below.

set	inequality symbols	opposites	absolute value	numerator
denominator	grouping symbols	exponent	base	reciprocals
variable	equation	solution		

119) The symbols  $\neq$ ,  $<$ , and  $>$  are called \_\_\_\_\_.

119) \_\_\_\_\_

120) A mathematical statement that two expressions are equal is called a(n) \_\_\_\_\_.

120) \_\_\_\_\_

121) The \_\_\_\_\_ of a number is the distance between that number and 0 on the number line.

121) \_\_\_\_\_

122) A symbol used to represent a number is called a \_\_\_\_\_.

122) \_\_\_\_\_

123) Two numbers that are the same distance from 0 but lie on opposite sides of 0 are called \_\_\_\_\_.

123) \_\_\_\_\_

124) The number in a fraction above the fraction bar is called the \_\_\_\_\_.

124) \_\_\_\_\_

125) A \_\_\_\_\_ of an equation is a value for the variable that makes the equation a true statement.

125) \_\_\_\_\_

126) Two numbers whose product is 1 are called \_\_\_\_\_.

126) \_\_\_\_\_

127) In  $2^3$ , the 2 is called the \_\_\_\_\_ and the 3 is called the \_\_\_\_\_.

127) \_\_\_\_\_

128) The number in a fraction below the fraction bar is called the \_\_\_\_\_.

128) \_\_\_\_\_

129) Parentheses and brackets are examples of \_\_\_\_\_.

129) \_\_\_\_\_

130) A \_\_\_\_\_ is a collection of objects

130) \_\_\_\_\_

Answer Key

Testname: ALGEBRA I PHASE 2 SUMMER PACKET

- 1) <
- 2) =
- 3) <
- 4) >
- 5)  $180 \leq 360$
- 6)  $48 \neq -48$
- 7)  $46 \leq 46$
- 8) 473
- 9) -9
- 10) 11,  $\sqrt{16}$
- 11) 13, 0,  $\frac{0}{1}$ ,  $\sqrt{9}$
- 12) 14, -16, 0,  $\frac{0}{1}$ ,  $\sqrt{9}$
- 13) 17, -16, 0,  $\frac{0}{7}$ ,  $\sqrt{4}$ , 0.93
- 14)  $\sqrt{8}$ ,  $2\pi$
- 15) 14,  $\sqrt{6}$ , -14, 0,  $\frac{0}{5}$ ,  $\sqrt{9}$ ,  $2\pi$
- 16) True
- 17) False
- 18) 15
- 19)  $\frac{1}{2}$
- 20)  $\frac{4}{5}$
- 21)  $2 \cdot 5 \cdot 7$
- 22)  $5 \cdot 11$
- 23)  $2 \cdot 2 \cdot 3 \cdot 7$
- 24)  $\frac{10}{63}$
- 25)  $\frac{1}{14}$
- 26)  $\frac{5}{18}$
- 27)  $\frac{14}{3}$
- 28)  $\frac{5}{14}$
- 29)  $13\frac{8}{9}$
- 30)  $\frac{2}{11}$  sq ft

Answer Key

Testname: ALGEBRA I PHASE 2 SUMMER PACKET

31)  $\frac{8}{9}$

32)  $\frac{18}{25}$

33)  $\frac{67}{56}$

34)  $\frac{1}{6}$

35)  $\frac{23}{48}$

36)  $\frac{9}{13}$

37)  $2\frac{29}{36}$  oz

38)  $\frac{8}{22}$

39) 25

40)  $\frac{1}{16}$

41) - 36

42)  $\frac{1}{216}$

43) 1

44) -64

45) 225

46)  $\frac{39}{140}$

47) 224

48) 19

49) 57

50) yes

51)  $\frac{4}{x}$

52) 2

53) 2

54) -58

55) -15

56) 5

57) -36

58) -7

59) -6

60)  $2x + 8$

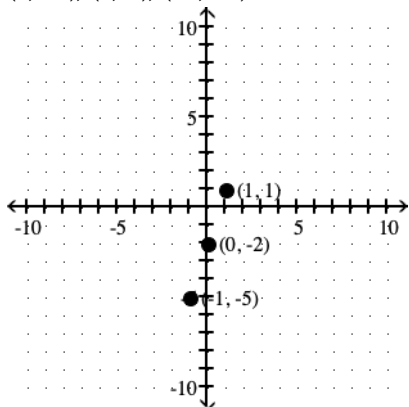
61) mean: 36.2; median: 41; no mode

62) A(1, 4); B(-2, 3)

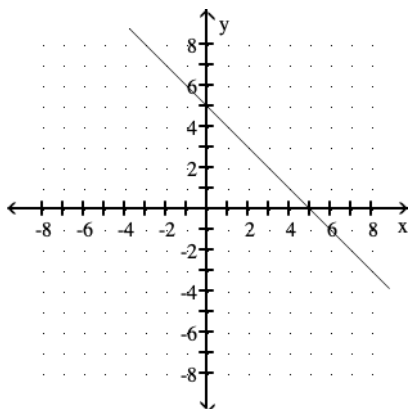
Answer Key

Testname: ALGEBRA I PHASE 2 SUMMER PACKET

63)  $(0, -2), (1, 1), (-1, -5)$



64)



65) 20

66)  $5y(y + 8)$

67) 11

68) A

69) -10

70)  $-\frac{3}{2}$

71)  $-\frac{1}{8}$

72) 33

73) 11

74) -16 points

75)  $131^\circ$

76)  $30^\circ$

77) 1

78) 2

79) 25

80) 0

81) -192

82) 15

83) -21

84) 0

85) 2

## Answer Key

Testname: ALGEBRA I PHASE 2 SUMMER PACKET

- 86) undefined
- 87)  $\frac{14}{15}$
- 88) -1
- 89) -3
- 90) 30
- 91) -\$42.95
- 92) B
- 93) B
- 94) C
- 95) D
- 96)  $12x + 24$
- 97)  $28x + 19$
- 98)  $-t + 2y$
- 99) -10
- 100)  $-\frac{5}{8}$
- 101)  $10x - 3$
- 102)  $16x - 1$
- 103) -5m
- 104)  $(7x + 3)$  in.
- 105) 15
- 106)  $\frac{19}{4}$
- 107) 14.7
- 108) 12
- 109) 56
- 110) -16
- 111) 0
- 112) 8
- 113) 23
- 114) 21
- 115) 0.95
- 116) 256%
- 117) 15
- 118) 8.6 ft
- 119) inequality symbols
- 120) equation
- 121) absolute value
- 122) variable
- 123) opposites
- 124) numerator
- 125) solution
- 126) reciprocals
- 127) base, exponent
- 128) denominator
- 129) grouping symbols
- 130) set