

**CARROLL ISD**  
**SUMMER Pre AP ALGEBRA I PACKET**

Congratulations on being accepted into the honors math program in Carroll ISD!

Next year will be an exciting and challenging year as you take Pre AP Algebra I. We spend very little time reviewing concepts from 7<sup>th</sup> and 8<sup>th</sup> grade math as you are already expected to be proficient in many skills before taking algebra. Some of the important skills necessary for success in algebra are: percents, integer operations, decimal operations, fraction operations, order of operations, evaluating expressions, solving equations, graphing equations, and writing equations and expressions. This packet has been put together with those skills in mind; to help you strengthen and retain your math skills during the summer months. You must work each problem in pencil showing all steps. Box your answers and number problems sequentially. **NO CALCULATORS MAY BE USED IN COMPLETING THIS PACKET.** Random work is not acceptable, nor are answers only written on the packet itself. If you work part of this packet each day, you will easily have it completed by the beginning of the school year, and will have easy recall of the concepts contained by the packet. If you need more review or help over the summer, there are many resources available over the internet. You may try Ask Dr. Math @[www.mathforum.org/Dr.Math/](http://www.mathforum.org/Dr.Math/). Any questions or help you may need on how to solve specific problems in the assignment should be answered using the resources just mentioned or ones similar. (No tutorials will be provided by any CISD employees.)

This is your first high school homework assignment and will be counted as a homework grade. The assignment will be collected during your first full day of class, and you will be comprehensively tested on that same day. Calculators will not be allowed on the test, as they were not on the packet. You will be expected to have mastered all of this material. Please recall that **no** late work is accepted in high school credit classes and tests are evaluated as 70% of your average. The late work policy will apply to the summer packet.

All Algebra I students should purchase a TI-83 Plus, TI-83 Silver Edition, or TI-84 calculator. This will be used at appropriate times during the school year and should be brought to class daily. A calculator will **not** be provided in your classroom.

We are looking forward to seeing you in the fall. Have a wonderful summer.

Chris Anderson  
Pre AP Algebra I  
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**Pre AP Algebra I  
Summer Assignment**

Give an example of each property for real numbers.

1. Write an example of the commutative property of addition.
2. Write an example of the associative property of addition.
3. Write an example of the additive inverse property.
4. Write an example of the additive identity property.
5. Write an example of the multiplicative property of zero.
6. Write an example of the multiplicative inverse property.
7. Write an example of the associative property of multiplication.
8. Write an example of the commutative property of multiplication.
9. Write an example of the distributive property of multiplication over addition.

Define and give an example of each term:

10. absolute value
11. reciprocal
12. variable
13. base (of a power)
14. exponent
15. expression
16. equation
17. inequality
18. coefficient
19. integer
20. rational number
21. irrational number

22. real number

Solve each problem, showing all steps and work. Leave fraction problems as fractions, in improper form when applicable.

23.  $\frac{1}{2} + \frac{1}{8}$

24.  $\frac{3}{5} - \frac{1}{10}$

25.  $\frac{15}{24} - \frac{7}{12}$

26.  $5\frac{1}{8} - 2\frac{3}{4}$

27.  $1\frac{3}{7} + \frac{1}{2}$

28.  $.067 - .45$

29.  $2.56 + 1.3$

30.  $20.002 - 20.02$

31.  $.78 \times .5$

32.  $3.08 \div 0.004$

33. Find the reciprocal of  $4\frac{3}{4}$ .

34.  $7\frac{1}{5} \div 2\frac{1}{4}$

35.  $-2\frac{1}{4} \div 1\frac{1}{3}$

36.  $-5\frac{1}{4} \times -\frac{1}{17}$

37.  $-\frac{5}{8} \times -\frac{4}{15}$

38.  $7 + (-11)$

39.  $(-26) + (-44) + 14 + 36$

40.  $(-8) - (-7)$

41.  $65 - (-335)$

42.  $13 + (-38) - (-42) - 17$

43.  $(-14)(-6)$

44.  $(5)(-3)(-8)$

45.  $(-4)(6)(-5)(-6)$

46.  $\frac{-60}{-15}$

47.  $\frac{-1080}{40}$

48.  $|-4 - 8|$

49.  $|-11| - |-29|$

50.  $0.3 + 2 \times 7$

51.  $20 + 10 \div 5$

52.  $6 \times 5 + 3 \times 7 - 36 \div 4$

53.  $4(7-5)^3 + 11 - 13 \times 2$

54.  $\frac{20+10}{5}$

55.  $3^4 - 2 \times 6^2$

56.  $\frac{[47 - (5 - 2)](1 + 2^3)}{3 \times 7 - 5^2}$

57.  $2 \times [3 - (7 - 1) \times (-3) - 4^2]$

Evaluate each expression as indicated.

58.  $-x - y$  for  $x = -2$  and  $y = \frac{1}{2}$

59.  $-u + v$  for  $u = -2$  and  $v = -\frac{4}{7}$

60.  $3xy - 4x^2y$  for  $x = -1$  and  $y = -2$

61.  $(2x + y)(20 - xy)$  if  $x = -1$  and  $y = 2$

62.  $[(16 - 2x) + w] \div x$  if  $w = \frac{1}{2}$  and  $x = -2$

Write an expression.

63. The product of 26 and  $c$

64. The sum of 12 and five times a number

65. 12 less than twice a number

66. A number squared

Write an equation and solve.

67. Twelve more than a number is -12. Find the number

68. 75 minus some number is -113. What is the number?

69. 21 less than a certain number is 79. What is the number?

70. The quotient of  $x$  and -6 is 15. Find  $x$ .

71. When 22 is subtracted from three times a number, the result is -1. Find the number.

Solve for the variable.

72.  $\frac{9}{12} = \frac{e}{8}$

73.  $\frac{84}{108} = \frac{k}{9}$

74.  $\frac{v}{7} = \frac{3.1}{6.2}$

75. Solve for  $x$ .  $17 = \frac{x}{3}$

76. What is 12.5% of 96?
77. 60 is 75% of what number?
78. The integer 6 is what percent of 5?
79. The regular price of a television is \$500. What is the sale price if it is on a 15% off sale?
80. The temperature was  $72^{\circ}\text{F}$  and then it dropped  $2^{\circ}$  per hour for the next eight hours. What is the final temperature?
81. Find the number for  $x$  that would make the ratios equivalent.  $\frac{2}{5} = \frac{x}{15}$
82. In a class of 26 students, 15 students are boys, what is the ratio of girls to boys, and girls to class?
83. What is  $33\frac{1}{3}\%$  of 195?
84. In an election, the winner received 62% of the 850 votes that were cast. How many votes did the winner receive?
85. In one month, a stereo store sold \$17,500 worth of VCR's, which was 28% of its total sales. Find the total sales for the month.
86. Carlos made 300 t-shirts for the baseball world series. The first week he sold 48% of them. The next week he sold 25% of the remainder. How many t-shirts did he sell in the two week period?
87. At the appliance store, a saleswoman gets 5% commission on everything she sells. How much would she have to sell to get \$750 in commission?
88. The cost of a Kia increased from \$16,000 last year to \$17,800 this year. What is the percent of increase on the car?

Solve for the variable.

89.  $y + 23 = -9$

90.  $h + \frac{2}{3} = -\frac{7}{12}$

91.  $6x - 14 = 28$

$$92. 4r + 4 = \frac{2}{3}$$

$$93. 36 = -42p$$

$$94. 8 = c + 21$$

$$95. 45 = -15x$$

$$96. 9z - 3 = -30$$

$$97. k + \frac{5}{6} = \frac{5}{18}$$

$$98. 3y - 5 = 16$$

$$99. 5y + 147 = 37$$

$$100. -y + 14 = 9$$

$$101. -7x + 3 > -\frac{15}{2}$$

$$102. -2h - 0.3 < 1.4$$

$$103. -3n + 48 \geq 0$$

$$104. 0 \leq 10k - \frac{1}{5}$$

Always graph accurately. Draw axes with a straight edge, and lines with a straight edge.

105. Use graph paper to plot the points. A(3,0), B(5,5), C(-1,2) D(-3,-2), E(0,3)

106. Graph the line  $y = x$  by making a table of values.

107. Graph the line  $y = -x + 7$  by making a table of values.

108. Graph the line  $2x + 2y = 6$  by making a table of values.

109. A picture frame is 9 inches tall and has a diagonal of 15 inches. What is the width of the frame? (Hint: Pythagorean Theorem?)

110. The length of one side of a triangular lot is six meters less than three times the length of the second side. The third side is eight meters longer than the first side. The perimeter of the lot is 80 meters. Find the length of all three sides.

Simplify by distributing/combining like terms.

111.  $7x + 3y - 3x - 2y$

112.  $7c^2 + 9c + c + 14c^2$

113.  $3(x + y)$

114.  $-2(2a - 3b)$

115.  $3 + 2(8n + 4) + 9n$

116.  $6x + 7(y + x)$

## PAP Algebra 1 Summer Assignment Solutions

Give an example of each property for real numbers.

1.  $a + b = b + a$   $47 + 23 = 23 + 47$ .
2.  $(a + b) + c = a + (b + c)$   $(5 + 7) + 22 = 5 + (7 + 22)$ .
3.  $5 + -5 = 0$ .
4.  $37 + 0 = 37$  Additive identity is 0 (zero)
5.  $0(35) = 0$ , anything multiplied by zero is zero.
6.  $5(1/5) = 1$ , a number multiplied by its reciprocal is 1.
7.  $23(47 \times 52) = (23 \times 47) 52$ .
8.  $35(23) = 23(35)$ .
9.  $a(b+c) = ab + ac$ .  $22(7 + 3) = 22(7) + 22(3)$

Define and give an example of each term:

10. absolute value- the absolute value of a number  $a$  is the distance between  $a$  and zero on a number line. The symbol  $|a|$  represents the absolute value of  $a$ . Absolute value is never negative, it is a measure of distance.
11. reciprocal – The reciprocal of  $a$  is  $1/a$ , where the product of  $a$  and  $1/a$  is one, and a **may not** equal zero.
12. variable – A letter used to represent one or more numbers.
13. base (of a power)- the name or expression that is used as a factor in a repeated multiplication. Example, in the power  $3^4$ , the base is three.
14. exponent – The number which tells how many times the base of a power is repeated as a factor.
15. expression a mathematical phrase that contains operations, numbers, and/or variable, no equal sign.
16. equation - an open sentence that contains the symbol “=”
17. inequality – an open sentence that contains one of the symbols,  $<$ ,  $\leq$ ,  $>$ ,  $\geq$ .

18. coefficient - the number part of a term with a variable part, example, the coefficient in  $-6x$  is  $-6$ .
19. integer – The whole numbers and their opposites. (Integers DO NOT include fractions or decimals.)
20. rational number – a number that can be expressed in the form  $a/b$  where  $a$  and  $b$  are integers and  $b$  does not equal zero.
21. irrational number - a number that cannot be written as the quotient of two integers. The decimal form never terminates nor repeats.
22. real number - The set of all rational and irrational numbers.

Solve each problem, showing all steps and work. Leave fraction problems as fractions, in improper form when applicable.

$$23. \frac{1}{2} + \frac{1}{8} = 5/8$$

$$24. \frac{3}{5} - \frac{1}{10} = 1/2$$

$$25. \frac{15}{24} - \frac{7}{12} = 1/24$$

$$26. 5\frac{1}{8} - 2\frac{3}{4} = 19/8$$

$$27. 1\frac{3}{7} + \frac{1}{2} = 17/14$$

$$28. .067 - .45 = -0.383$$

$$29. 2.56 + 1.3 = 3.86$$

$$30. 20.002 - 20.02 = -0.018$$

$$31. .78 \times .5 = 0.39$$

$$32. 3.08 \div 0.004 = 770$$

$$33. \text{Find the reciprocal of } 4\frac{3}{4} = 4/19$$

$$34. 7\frac{1}{5} \div 2\frac{1}{4} = 16/5$$

$$35. -2\frac{1}{4} \div 1\frac{1}{3} = -27/16$$

$$36. -5\frac{1}{4} \times -\frac{1}{17} = 21/68$$

$$37. -\frac{5}{8} \times -\frac{4}{15} = 1/6$$

$$38. 7 + (-11) = -4$$

$$39. (-26) + (-44) + 14 + 36 = -20$$

$$40. (-8) - (-7) = -1$$

$$41. 65 - (-335) = 400$$

$$42. 13 + (-38) - (-42) - 17 = 0$$

$$43. (-14)(-6) = 84$$

$$44. (5)(-3)(-8) = 120$$

$$45. (-4)(6)(-5)(-6) = -720$$

$$46. \frac{-60}{-15} = 4$$

$$47. \frac{-1080}{40} = -27$$

$$48. |-4 - 8| = 12$$

$$49. |-11| - |-29| = -18$$

$$50. 0.3 + 2 \times 7 = 14.3$$

$$51. 20 + 10 \div 5 = 22$$

$$52. 6 \times 5 + 3 \times 7 - 36 \div 4 = 42$$

$$53. 4(7-5)^3 + 11 - 13 \times 2 = 17$$

$$54. \frac{20+10}{5} = 6$$

$$55. 3^4 - 2 \times 6^2 = 9$$

$$56. \frac{[47 - (5 - 2)](1 + 2^3)}{3 \times 7 - 5^2} = -99$$

$$57. 2 \times [3 - (7 - 1) \times ((-3) - 4^2)] = 10$$

Evaluate each expression as indicated.

$$58. -x - y \text{ for } x = -2 \text{ and } y = \frac{1}{2} = 3/2$$

$$59. -u + v \text{ for } u = -2 \text{ and } v = -\frac{4}{7} = 10/7$$

$$60. 3xy - 4x^2y \text{ for } x = -1 \text{ and } y = -2 = 14$$

$$61. (2x + y)(20 - xy) \text{ if } x = -1 \text{ and } y = 2 = 0$$

$$62. [(16 - 2x) + w] \div x \text{ if } w = \frac{1}{2} \text{ and } x = -2 = -41/4$$

Write an expression or equation as indicated. If an equation is written, solve it.

$$63. \text{The product of 26 and } c = 26c$$

$$64. \text{The sum of 12 and five times a number} = 12 + 5n$$

$$65. 12 \text{ less than twice a number} = 2x - 12$$

$$66. \text{a number squared} = n^2$$

$$67. \text{Twelve more than a number is } -12. \text{ Find the number} = 12 + x = -12, x = -24$$

$$68. 75 \text{ minus some number is } -113. \text{ What is the number? } 75 - x = -113, x = 188$$

$$69. 21 \text{ less than a certain number is } 79. \text{ What is the number? } x - 21 = 79, x = 100$$

$$70. \text{The quotient of } x \text{ and } -6 \text{ is } 15. \text{ Find } x. x / -6 = 15, x = -90$$

$$71. \text{When 22 is subtracted from three times a number, the result is } -1. \text{ Find the number. } 3x - 22 = -1, x = 7$$

$$72. \frac{9}{12} = \frac{e}{8} \quad e = 6$$

$$73. \frac{84}{108} = \frac{k}{9} \quad k = 7$$

74.  $\frac{v}{7} = \frac{3.1}{6.2}$      $n = 3.5$

75. Solve for x.     $17 = \frac{x}{3}$      $x = 51$

76. What is 12.5% of 96?    12

77. 60 is 75% of what number?    80

78. The integer 6 is what percent of 5?    120%

79. The regular price of a television is \$500. What is the sale price if it is on a 15% off sale?    \$425

80. The temperature was 72°F and then it dropped 2° per hour for the next eight hours. What is the final temperature?    56 degrees

81. Find the number for x that would make the ratios equivalent.     $\frac{2}{5} = \frac{x}{15}$      $x = 6$

82. In a class of 26 students, 15 students are boys, what is the ratio of girls to boys, and girls to class?    11/15, 11/26

83. What is  $33\frac{1}{3}\%$  of 195?    65

84. In an election, the winner received 62% of the 850 votes that were cast. How many votes did the winner receive?    527

85. In one month, a stereo store sold \$17,500 worth of VCR's, which was 28% of its total sales. Find the total sales for the month.    \$62,5000

86. Carlos made 300 t-shirts for the baseball world series. The first week he sold 48% of them. The next week, he sold 25% of the remainder. How many t-shirts did he sell in the two week period?    183

87. At the appliance store, a saleswoman gets 5% commission on everything she sells. How much would she have to sell to get \$750 in commission?

\$15,000

88. The cost of a Kia increased from \$16,000 last year, to \$17,800 this year. What is the percent of increase on the car?    11.25%

Solve for the variable.

89.  $y + 23 = -9$      $y = -32$

$$90. h + \frac{2}{3} = -\frac{7}{12} \quad h = -5/4$$

$$91. 6x - 14 = 28 \quad x = 7$$

$$92. 4r + 4 = \frac{2}{3} \quad r = -5/6$$

$$93. 36 = -42p \quad p = -6/7$$

$$94. 8 = c + 21 \quad c = -13$$

$$95. 45 = -15x \quad x = -3$$

$$96. 9z - 3 = -30 \quad z = -3$$

$$97. k + \frac{5}{6} = \frac{5}{18} \quad k = -5/9$$

$$98. 3y - 5 = 16 \quad y = 7$$

$$99. 5y + 147 = 37 \quad y = -22$$

$$100. -y + 14 = 9 \quad y = 5$$

$$101. -7x + 3 > -\frac{15}{2} \quad x < 3/2$$

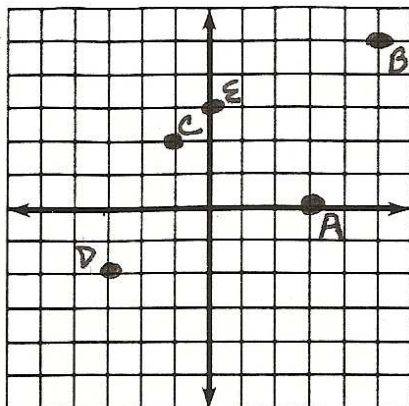
$$102. -2h - 0.3 < 1.4 \quad h > -0.85$$

$$103. -3n + 48 \geq 0 \quad n \leq 16$$

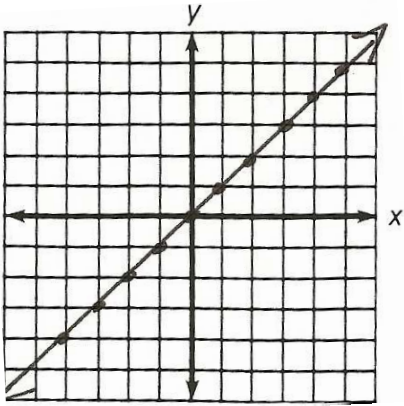
$$104. 0 \leq 10k - \frac{1}{5} \quad k \geq 1/50$$

Always graph accurately. Draw axes with a straight edge, and lines with a straight edge.

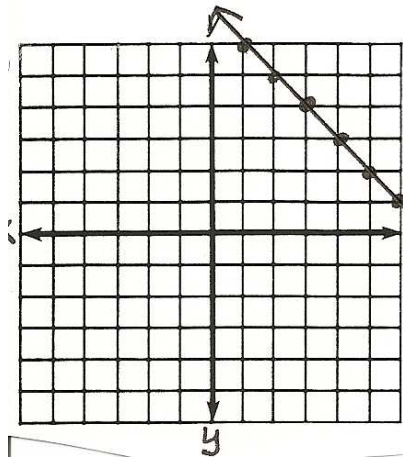
105. Use graph paper to plot the points. A(3,0), B(5,5), C(-1,2), D(-3,-2), E(0,3)



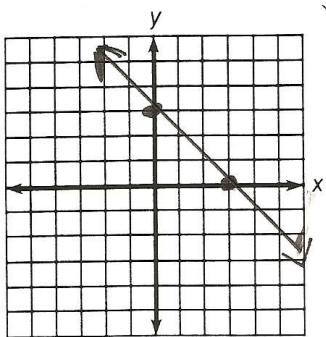
106. Graph the line  $y = x$  by making a table of values.



107. Graph the line  $y = -x + 7$  by making a table of values.



108. Graph the line  $2x + 2y = 6$  by making a table of values.



109. A picture frame is 9 inches tall and has a diagonal of 15 inches. What is the width of the frame? (Hint: Pythagorean Theorem?) 12 inches

110. The length of one side of a triangular lot is six meters less than three times the length of the second side. The third side is eight meters longer than the first side. The perimeter of the lot is 80 meters. Find the length of all three sides. Side 1 = 30, Side 2 = 12, Side 3 = 38

Simplify by distributing/combining like terms.

111.  $7x + 3y - 3x - 2y$        $4x + y$

112.  $7c^2 + 9c + c + 14c^2$        $21c^2 + 10c$

113.  $3(x + y)$        $3x + 3y$

114.  $-2(2a - 3b)$        $-4a + 6b$

115.  $3 + 2(8n + 4) + 9n$        $25n + 11$

116.  $6x + 7(y + x)$        $13x + 7y$