



Pre AP Algebra I  
SUMMER PACKET  
2023 - 2024

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.

# Summer Packet - Pre AP Algebra I

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Middle School: \_\_\_\_\_

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

1)  $-600$  \_\_\_\_\_  $-60$

2)  $-\frac{4}{23}$  \_\_\_\_\_  $-\frac{3}{23}$

3)  $\frac{30}{5}$  \_\_\_\_\_  $\frac{24}{4}$

4)  $0.3$  \_\_\_\_\_  $0.4$

5)  $-7.2$  \_\_\_\_\_  $-5.4$

Write the sentence as a mathematical statement.

6) Forty-one is not equal to negative forty-one.

7) Fifteen is less than or equal to seventeen.

Use an integer to represent the value in the statement.

8) a decrease of 106 feet in elevation

9) The team scored 17 points.

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

10)  $B = \left\{ 12, \sqrt{5}, -24, 0, \frac{0}{3}, 2\pi, \sqrt{16} \right\}$

Integers

11)  $B = \left\{ 19, \sqrt{5}, -12, 0, \frac{0}{9}, \sqrt{25}, \frac{-6}{0}, 2\pi, 0.28 \right\}$

Rational numbers

12)  $B = \left\{ 16, \sqrt{6}, -4, 0, \frac{0}{2}, \sqrt{16}, 2\pi, \frac{-2}{0} \right\}$

Real numbers

13)  $B = \left\{ 18, \sqrt{6}, -21, 0, \frac{0}{4}, 2\pi, \sqrt{4} \right\}$

Natural numbers

Find the absolute value of the number.

14)  $|3|$

15)  $|-16|$

Write the fraction in lowest terms.

16)  $\frac{4}{8}$

17)  $\frac{12}{21}$

18)  $\frac{84}{108}$

19)  $\frac{5}{9}$

Write the number as a product of primes.

20) 42

21) 60

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

22)  $\frac{3}{10} \cdot \frac{18}{14}$

23)  $\frac{8}{17} \div \frac{3}{8}$

24)  $4 \cdot 5\frac{11}{14}$

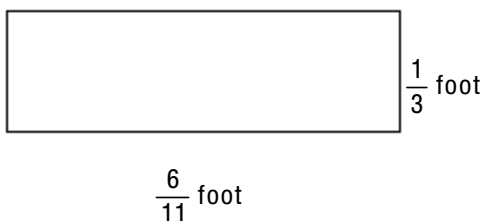
25)  $4\frac{1}{6} \cdot 2\frac{2}{5}$

26)  $7\frac{3}{5} \div \frac{1}{5}$

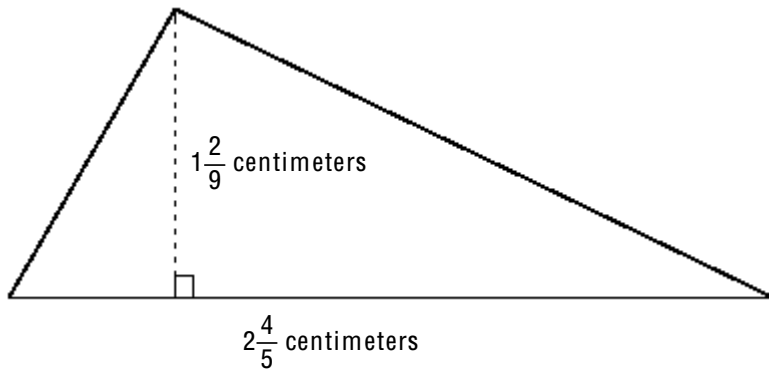
27)  $3\frac{5}{6} \div 4\frac{7}{18}$

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.)

28)



29)



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

30)  $\frac{5}{14} - \frac{1}{14}$

31)  $\frac{4}{9} + \frac{1}{6}$

32)  $10 - \frac{8}{3}$

33)  $12\frac{1}{3} + 4\frac{5}{8}$

34)  $5\frac{2}{9} - 2\frac{5}{6}$

35)  $\frac{5}{9} + \frac{2}{3} - \frac{1}{6}$

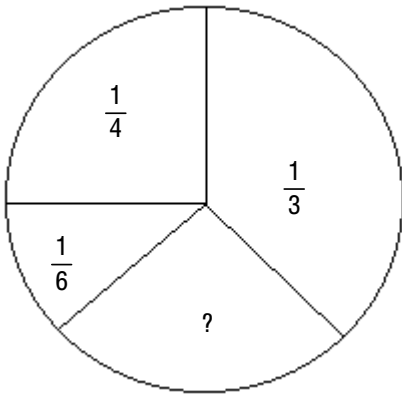
Solve. Simplify the answer.

36) Last week, Samantha ran 18 miles. This week, she ran  $16\frac{3}{4}$  miles. How much more did she run last week?

37) To obtain a certain shade of paint, Peter mixed  $8\frac{1}{2}$  gallons of white paint with  $2\frac{1}{4}$  gallons of brown paint and  $2\frac{2}{3}$  gallons of blue paint. How much paint did he have?

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

38)



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

39)  $\frac{2}{3}$  with a denominator of 21

Evaluate.

40)  $-9^2$

41)  $\left(-\frac{1}{6}\right)^2$

42)  $(0.04)^2$

43)  $(-1)^{14}$

44)  $(-4)^3$

Simplify the expression.

45)  $8^2 - 4 \cdot 2$

46)  $\frac{1}{4} + \frac{1}{6} \cdot \frac{1}{7}$

47)  $\frac{8}{5} \cdot \frac{2}{7} + \frac{5}{6} \cdot \frac{2}{5}$

48)  $(7 + 4)[2 + (7 + 8)]$

49)  $[27 - (4 + 6) \div 2] - [1 + 21 \div 3]$

50)  $\frac{32(9 - 6) - 6}{3^2 - 3}$

$$51) \frac{16 + |12 - 3|}{13 - 5}$$

Evaluate the expression for the given replacement values.

$$52) (x + 2y)^2 \quad x = 4, y = 4$$

$$53) 2y + \frac{60}{x} \quad x = 5, y = 7$$

$$54) \frac{y}{z} + 2x^2 \quad x = 6, y = 16, z = 4$$

55) Neglecting air resistance, the expression  $16t^2$  gives the distance in feet an object will fall in  $t$  seconds. Complete the chart below.

Time $t$ (in seconds)	Distance $16t^2$ (in feet)
0	
2	
4	

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

56) One-third times a number

57) The quotient of 20 and a number

58) Five times a number decreased by 28

Add.

$$59) -24 + 14$$

$$60) -\frac{1}{5} + \left(-\frac{1}{5}\right)$$

$$61) \frac{5}{22} + \left(-\frac{5}{22}\right)$$

$$62) 3 + (-6)$$

$$63) -8.7 + (-2.5)$$

$$64) [6 + (-1)] + [5 + (-25)]$$

Solve.

65) A bike road race starts at an elevation of 670 feet and passes through 5 stages where the elevation changes by -349 feet, -86 feet, 10 feet, 177 feet, and 67 feet. At what elevation does the race end?

66) The price of a stock rose 8 points, fell 14 points, and again fell 15 points. What was the stock's total change?

67) Mariel the Magician died in the year 12 A.D. at the age of 53. In what year was she born?

Find the additive inverse or opposite.

68)  $|-11|$

69)  $-17$

70)  $\frac{6}{7}$

71)  $0$

Simplify.

72)  $-\left|-\frac{6}{11}\right|$

73)  $-(-4)$

Subtract.

74)  $-8 - (-5)$

75)  $-5 - (-5)$

76)  $-\frac{3}{4} - \frac{5}{8}$

77)  $-\frac{4}{5} - \left(-\frac{7}{10}\right)$

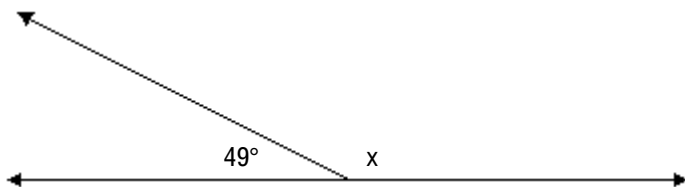
Simplify the expression. (Remember the order of operations.)

78)  $23 - (-13) + 10 + (-20)$

79)  $|-11| - 4^2 - (-1 - 6)$

Find the unknown complementary or supplementary angle.

80)



Translate the phrase to an expression and simplify.

81) Decrease 8 by 9.

82) Decrease  $-4$  by  $-1$ .

Multiply.

83)  $(-16)(-16)$



$$84) (-5)(-3)(0)(6)$$

$$85) (-2)(4)(-3)(-3)$$

Perform the indicated operations.

$$86) (-5)(-1)(-7) - (-4)$$

Provide an appropriate response.

87) Find the opposite of -12.

88) Find the reciprocal of  $-\frac{1}{9}$ .

Divide.

$$89) \frac{0}{-45}$$

$$90) \frac{-72}{-9}$$

$$91) \frac{-16}{0}$$

$$92) -\frac{9}{14} \div \left(-\frac{1}{4}\right)$$

$$93) \frac{3}{7} \div \left(-\frac{3}{7}\right)$$

Simplify.

$$94) \frac{-4}{2+2}$$

$$95) \frac{73+7}{3^2-4}$$

$$96) \frac{|8(-2)| - |1-9|}{|8(3)|}$$

Decide whether the given number is a solution of the given equation.

97) Is 9 a solution of  $-6x + 8 = -46$ ?

98) Is 6 a solution of  $-8x - 5 = x + 8$ ?

Solve.

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

Name the property illustrated by the statement.

100)  $(6 + 4) + 9 = (4 + 6) + 9$

- A) commutative property of addition
- C) associative property of addition

- B) distributive property
- D) additive inverse property

101)  $19 + (6 + 22) = (19 + 6) + 22$

- A) associative property of addition
- C) identity element for addition

- B) distributive property
- D) commutative property of addition

102)  $(5 \cdot 7) \cdot 1 = 5 \cdot (7 \cdot 1)$

- A) commutative property of multiplication
- C) associative property of multiplication

- B) identity element for multiplication
- D) distributive property

103)  $4 \cdot 8 = 8 \cdot 4$

- A) identity element for multiplication
- C) distributive property

- B) associative property of multiplication
- D) commutative property of multiplication

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

104)  $\frac{1}{4}(12x - 8)$

105)  $-(x - 9w)$

106)  $-(-5m + 5n - 9p)$

Identify the numerical coefficient of the term.

107)  $-\frac{4}{11}z$

108)  $-6x$

Simplify the expression by combining any like terms.

109)  $11x + 9 + 4x + x - 3$

110)  $8x^2 - 9x - 8 + 4x - 6 + 5x^2$

111)  $-9m + 3 - 2 + 5 + m - 6$

Simplify the expression. First use the distributive property to remove any parentheses.

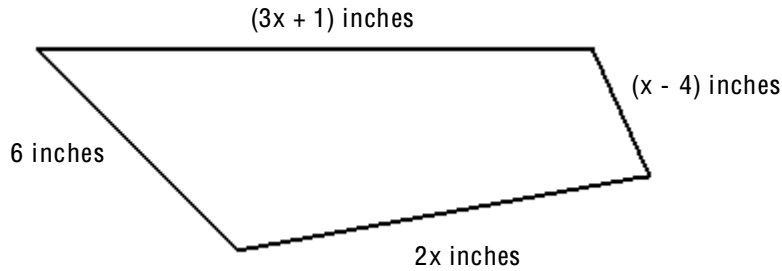
112)  $5(6n - 10)$

113)  $-6(4r + 7) + 6(3r + 4)$

114)  $-4(2x - 5) - 4x + 9$

Write the algebraic expression described.

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



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

116)  $11 + 9y = 10y$

117)  $\frac{1}{5} + f = 6$

118)  $3.3 + x = 18.4$

119)  $2(2z - 2) = 3(z + 4)$

120)  $8n - 7n - 4 = -4$

121)  $\frac{x}{26} = \frac{2}{13}$

122)  $9y = 7(2y - 7)$

Solve. If needed, round money amounts to two decimal places and all other amounts to one decimal place.

- 123) 15% of students at a university attended a lecture. If 5000 students are enrolled at the university, about how many students attended the lecture?

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

124) 6, 6, 9, 6, 13, 10

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

125) 10, 5, 22, 10, 46, 36, 32

Find the mode or modes (if any).

126) 20, 38, 46, 38, 49, 38, 49

127) Turn 95% in to a decimal.

128) Turn 2.56 into a percent.

Factor out the GCF from the polynomial.

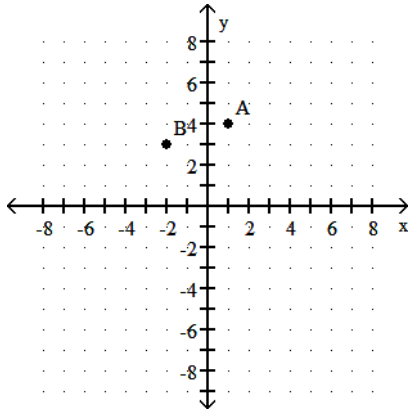
129)  $50x + 10$

Factor the trinomial completely. If the polynomial cannot be factored, write "prime."

130)  $x^2 + 14x + 45$

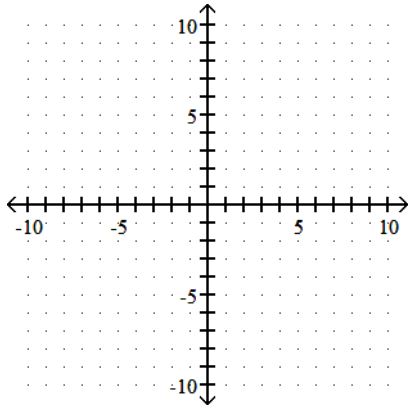
Find the coordinates of the points in the graph.

131)



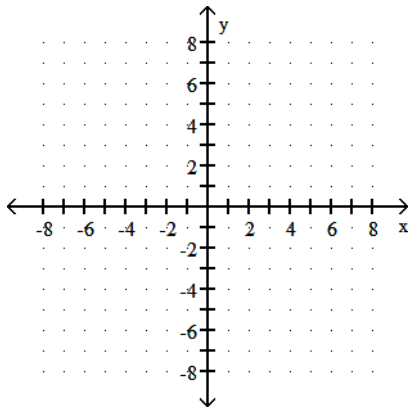
Complete and graph the ordered-pair solutions of the given equation.

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



Graph the linear equation.

133)  $x + y = 5$



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  |                |             |

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

- 135) A mathematical statement that two expressions are equal is called a(n) \_\_\_\_\_.
- 136) The \_\_\_\_\_ of a number is the distance between that number and 0 on the number line.
- 137) A symbol used to represent a number is called a \_\_\_\_\_.
- 138) Two numbers that are the same distance from 0 but lie on opposite sides of 0 are called \_\_\_\_\_.
- 139) The number in a fraction above the fraction bar is called the \_\_\_\_\_.
- 140) A \_\_\_\_\_ of an equation is a value for the variable that makes the equation a true statement.
- 141) Two numbers whose product is 1 are called \_\_\_\_\_.
- 142) In  $2^3$ , the 2 is called the \_\_\_\_\_ and the 3 is called the \_\_\_\_\_.
- 143) The number in a fraction below the fraction bar is called the \_\_\_\_\_.
- 144) Parentheses and brackets are examples of \_\_\_\_\_.
- 145) A \_\_\_\_\_ is a collection of objects