

Algebra 1 Summer Math

for students entering grade 9 Algebra 1 in the Fall

Directions: Do all problems in this packet. This prep work should be completed, to the best of your ability, by the first day of school. Do not rush through the packet, give yourself time to process and remember the skills. You will not turn in your Summer Math at registration, but you will need to bring it to class on the first day of school. Please note that all of the material in the prep work was covered in previous math classes; there are no excuses. This prep work will be reviewed during the first week of class. The test on this prep work will be given at the end of the first week of school and will count as your first TEST grade. Below are some websites that contain videos or notes on skills that you may need to review.

1. khanacademy.org
2. youtube.com
3. coolmath.com
4. purplemath.com

Box or circle your final answer.

1. Two numbers whose sum is 0 are called _____.
A) reciprocals B) the same C) reversed D) opposites
2. Two numbers whose product is 1 are called _____.
A) reversed B) the same C) reciprocals D) opposites

Tell which set or sets the number belongs to: natural numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.

3. 0
A) rational, real B) whole, real
C) integers, real D) whole, integers, rational, real
4. $-\frac{1}{5}$
A) irrational, real B) integers, real C) rational, real D) real
5. 93
A) integers, rational, real B) whole, rational, real
C) natural, whole, integers, rational, real D) real
6. -63
A) real B) integers, rational, real
C) irrational, real D) whole, real
7. $\sqrt{7}$
A) rational, real B) irrational, real C) whole, real D) integers, real

Box or circle your final answer.

8. 2.23

- A) rational
- C) rational, real

- B) real
- D) natural, rational, real

9. 0.2323...

- A) irrational, real
- C) natural, rational, real

- B) real
- D) rational, real

Use a commutative property to complete the statement.

10. $3x + 26 =$

- A) $26 + 3x$

- B) $26x + 3$

- C) $-3x + 26$

- D) $3x - 26$

Use an associative property to complete the statement.

11. $8 \cdot (by) =$

- A) $8 \cdot (yb)$

- B) $(by) \cdot 8$

- C) $(8b) \cdot y$

- D) $8 + (by)$

Name the property illustrated by the statement.

12. $(2 + 6) + 3 = (6 + 2) + 3$

- A) additive inverse property
- C) distributive property

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

13. $14 + (17 + 25) = (14 + 17) + 25$

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

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

14. $8(x + 9) = 8x + 8 \cdot 9$

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

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

15. $4 \cdot 1 = 4$

- A) commutative property of multiplication
- C) multiplicative inverse property

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

16. $1 + 0 = 1$

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

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

17. $7 + (-7) = 0$

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

- B) additive inverse property
- D) associative property of addition

18. $\frac{1}{9} \cdot 9 = 1$

- A) distributive property
- C) multiplicative inverse property

- B) associative property of multiplication
- D) identity element for multiplication

Box or circle your final answer.

Use the distributive property to rewrite the algebraic expression without parentheses. Then simplify the result, if possible.

19. $-(a - 10r)$

20. $4(x + 3y + 5)$

Simplify the expression WITHOUT a calculator.

21. $1 - 12$

22. $11 \cdot (-20)$

23. $(-21) \div (-3)$

24. $(-10) + (-5)$

25. $-14 - (-1)$

26. $(-16) \cdot (-18)$

27. $\frac{-16}{-8}$

28. $|-39| + (-13)$

29. $16 - |-33|$

30. $\frac{|-27|}{-|-3|}$

31. $(-16) + 105 \div (-7)$

32. $-9 + (-30) - 16 + 9$

Evaluate the expression for $x = -2$, $y = 3$, $z = -4$ WITHOUT a calculator.

33. $-5x - 7y - 4z$

34. $23 - z^2$

35. $\frac{9z}{2y}$

Box or circle your final answer.

Solve **WITHOUT** a calculator.

36. $-4n = -28$

37. $\frac{n}{-2} = 8$

38. $x - 17 = -32$

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

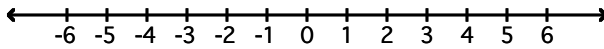
39. -63 _____ -88

40. -7 _____ 0

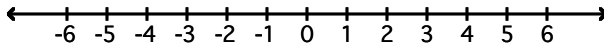
41. $\frac{12}{2}$ _____ $\frac{30}{5}$

Graph the inequality on a number line.

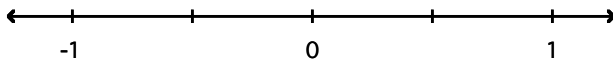
42. $x < -4$



43. $x \geq -5$

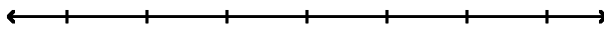


44. $x > \frac{1}{4}$

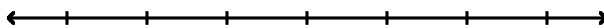


Solve and graph the inequality **WITHOUT** a calculator.

45. $x - 3 < -4$



46. $\frac{y}{2} \geq 4$



Box or circle your final answer.

Solve the proportion WITHOUT a calculator.

47. $\frac{4}{13} = \frac{x}{39}$

48. $\frac{5}{9} = \frac{x}{3}$

49. $\frac{2}{3} = \frac{5}{x}$

Simplify the expression by combining like terms WITHOUT a calculator.

50. $-7x - 2x$

51. $3y - y - 8y$

52. $9b - 6b + 3$

53. $8x - x - 3x + x$

Multiply WITHOUT a calculator.

54. $-10(4v)$

55. $2(x+8)$

Simplify the expression WITHOUT a calculator.

56. $-9(6y+2) - 2$

57. $8x + 4(x-7)$

Simplify the expression.

58. $5(2x-2) - 7(x-4)$

Solve WITHOUT a calculator.

59. The product of a number and -6 is six times the sum of that number and 16 . Find the number.

Solve.

60. The sum of 2 , 4 , and a number amounts to 14 . Find the number.

Write the fraction in simplest form.

61. $\frac{315}{350}$

Add or subtract as indicated. Write the answer in simplest form.

62. $\frac{2}{12} + \frac{3}{12}$

Box or circle your final answer.

Write the mixed number as an improper fraction.

63. $5\frac{2}{3}$

Write the improper fraction as a mixed number.

64. $\frac{23}{3}$

Write the fraction in simplest form.

65. $\frac{35}{40}$

Determine whether the fractions are equivalent.

66. $\frac{5}{6}$ and $\frac{15}{17}$

67. $\frac{50}{110}$ and $\frac{45}{99}$

Find the prime factorization of the number.

68. 198

69. 700

Perform the indicated operation and write the answer in simplest form WITHOUT a calculator.

70. $\frac{2}{7} \div \frac{3}{5}$

71. $-\frac{3}{2} \cdot \frac{18}{24}$

72. $-\frac{4}{9} \cdot -\frac{4}{5}$

73. $\frac{1}{6} + \frac{7}{36} - \frac{5}{6}$

74. $-\frac{5}{11} \div -\frac{35}{33}$

75. $\frac{9}{5} \div \frac{1}{2} \cdot \frac{1}{6}$

Box or circle your final answer.

Solve.

76. In one week, Manisha worked 32.25 hours washing windows and earned \$257.25, including tips. How much did Manisha earn per hour? (Round to the nearest cent if necessary.)

Round the decimal to the indicated place value.

77. 14.486, nearest tenth

78. 37.4745, nearest thousandth

Write the percent as a decimal.

79. 52%

80. 200%

81. 0.2%

Write the decimal as a percent.

82. 0.063

83. 9.7

84. 0.02

Write the percent as a fraction or a mixed number in simplest form.

85. 240%

86. 56.25%

87. 0.8%

Write the fraction or mixed number as a percent.

88. $\frac{19}{50}$

89. $\frac{7}{8}$

90. $4\frac{1}{5}$

Solve.

91. In a particular city, $\frac{7}{250}$ of the residents subscribe to the local newspaper. Write $\frac{7}{250}$ as a percent.

92. In small firms in a certain country, 97.5% of full-time employees receive medical insurance benefits. Write 97.5% as a fraction.

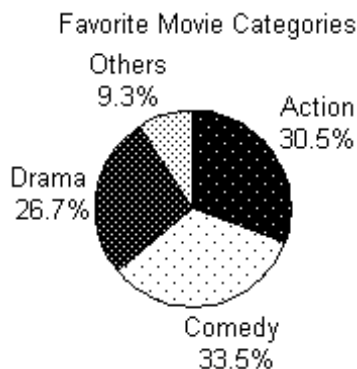
Box or circle your final answer.

- 93. What number is 31% of 70?
- 94. 0.3% of what number is 5.1?
- 95. 546 is what percent of 910?

Solve. If necessary, round percents to the nearest tenth, dollar amounts to the nearest cent, and all other numbers to the nearest whole number.

- 96. A union contract calls for a 7.1% salary increase for all employees. Determine the increase that a worker currently making \$49,450 under this contract can expect.
- 97. 24% of the teachers in a school are male . If there are 300 teachers altogether, how many teachers are male ?
- 98. If the local sales tax rate is 9.7%, find the total amount charged for a watch priced at \$941.

The circle graph summarizes the results of a survey of the favorite movie category chosen by a group of adults.



- 99. 2400 adults answer the survey.
How many of the survey respondents said that they favor action movies? Round to the nearest whole.

State the following formulas.

- 100. Perimeter and Area of a Square
- 101. Perimeter and Area of a Rectangle
- 102. Perimeter and Area of a Triangle
- 103. Circumference of a Circle
- 104. Area of a Circle
- 105. Area of a Parallelogram
- 106. Area of a Trapezoid
- 107. Surface Area of a Cube

Box or circle your final answer.

108. Volume of a Rectangular Prism

109. Volume of a Cylinder

110. Volume of a Cube

111. Pythagorean Theorem

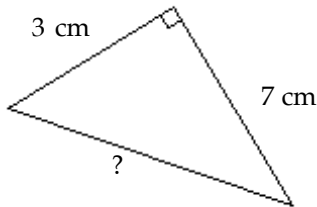
Find the square root and simplify. Round to the nearest thousandth if necessary.

112. $\sqrt{196}$

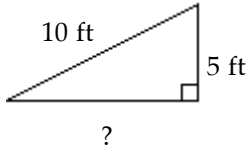
113. $\sqrt{113}$

Find the unknown length in the right triangle. If necessary, approximate the length to the nearest thousandth.

114.

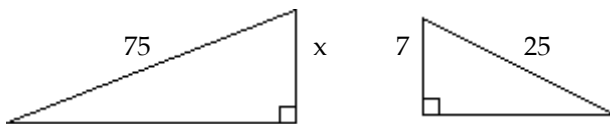


115.



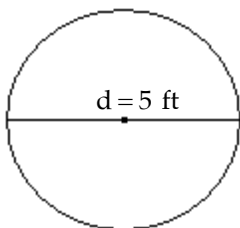
Given that the pair of triangles is similar, find the unknown length of the side labeled with a variable.

116.



Find the area of the geometric figure.

117.

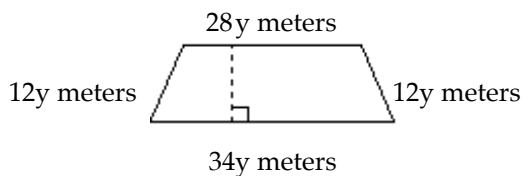


Use 3.14 for π .

Box or circle your final answer.

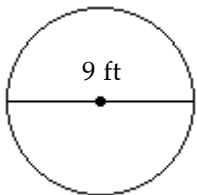
Find the perimeter or area of the figure as indicated.

118. Find the perimeter of the trapezoid.



Find the circumference of the circle. Then use the approximation 3.14 for π and approximate the circumference.

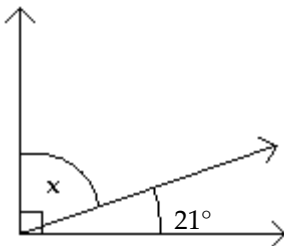
119.



Provide an appropriate response.

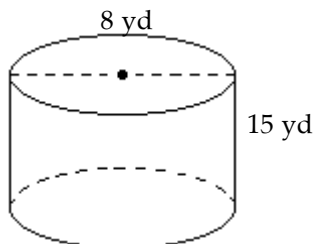
120. Find the supplement of a 44° angle.

121. Find the measure of $\angle x$.



Find the volume of the solid.

122. Use $\pi \approx \frac{22}{7}$.



Solve.

123. Find the perimeter of a square picture frame with a side length of 11.9 inches.

124. How much soil is needed to fill a rectangular hole 6 feet by 9 feet by 5 feet?

Box or circle your final answer.

125. A rectangular room measures 10 ft by 11 ft. Find the cost of installing a wallpaper border around the room if the border costs \$0.51 per foot.
126. Use the formula $F = \frac{9}{5}C + 32$ to write 105° C as degrees Fahrenheit.

Substitute the given values into the formula and solve for the unknown variable.

127. $d = rt$; $t = 2$, $d = 10$

Convert.

128. $22\frac{1}{4}$ gal to quarts

129. 80 oz to pounds

130. 5.3 tons to pounds

131. 22 pt to gallons

132. 56 mg to grams

133. 8.72 kg to grams

134. 6.6 cm to millimeters

135. 0.24 L to milliliters

Solve.

136. A redwood tree is 105.4 meters tall. Convert this to feet. Round to the nearest hundredth of a foot.

Write using exponential notation.

137. $7 \cdot 7 \cdot 7$

A) 7^1

B) 3^7

C) $3 \cdot 7$

D) 7^3

138. $8 \cdot 8 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

A) $2^8 \cdot 4^3$

B) $8^2 \cdot 3^4$

C) $8 \cdot 3^6$

D) 24^6

Evaluate the expression WITHOUT a calculator.

139. -6^2

140. -8^1

141. $(-6)^3$

Box or circle your final answer.

Evaluate the expression with the given replacement values WITHOUT a calculator.

142. $-3x^3y$ when $x = 4$ and $y = -7$

143. $\frac{5}{8x^2}$ when $x = -5$

Name the quadrant or axis in which the point lies.

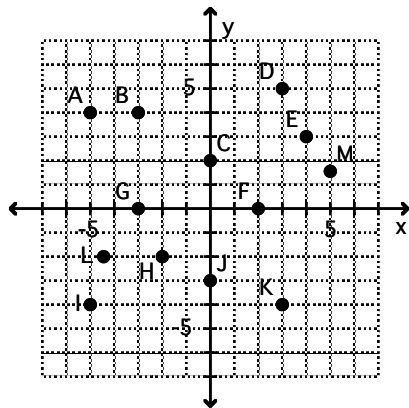
144. $(-4, 0)$

145. $(6, 2)$

146. $(0, -5)$

147. $(-2, -9)$

Determine the coordinates of the indicated point on the graph.



148. L

149. G

150. M

151. B

152. J