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

Solve the equation.

1) $a - 3 = 9$
A) {12} B) {6} C) {–6} D) {–12}
Answer: A

2) $b + 3 = 4$
A) {–1} B) {1} C) {–7} D) {7}
Answer: B

3) $-18.6 - b = 25.2$
A) {43.8} B) {–6.6} C) {–43.8} D) {6.6}
Answer: C

4) $9 = z + 4$
A) {5} B) {13} C) {–13} D) {–5}
Answer: A

5) $11 = a - 13$
A) {–2} B) {2} C) {–24} D) {24}
Answer: D

6) $7p - 15 = 6p - 4$
A) {10} B) {11} C) {12} D) {–3}
Answer: B

7) $-6m + 17 = -7m + 15$
A) {17} B) {–2} C) {–1} D) {–3}
Answer: B

8) $7.1p + 4 = 8.1p + 9$
A) {–5} B) {–4} C) {7.1} D) {–6}
Answer: A

9) $10y = 7y + 6 + 2y$
A) {–60} B) {6} C) {60} D) {–6}
Answer: B

10) $-5a + 2 + 6a = 15 - 27$
A) {–44} B) {–14} C) {44} D) {14}
Answer: B

11) $-7b + 7 + 5b = -3b + 12$
A) {5} B) {7} C) {–7} D) {–5}
Answer: A

12) $\frac{3}{10}x + 3 = 1 - \frac{7}{10}x + 1$
A) $\{-1\}$ B) $\{-5\}$ C) $\{-2\}$ D) $\{5\}$
Answer: A

13) $5(y + 5) = 6(y - 8)$

A) {73} B) {–23} C) {23} D) {–73}

Answer: A

14) $5(2z - 4) = 9(z + 4)$

A) {21} B) {–16} C) {16} D) {56}

Answer: D

15) $-8(k + 4) - (-9k + 2) = -2$

A) {4} B) {– 36} C) {– 32} D) {32}

Answer: D

16) $-5(-2x + 4) - 6(4 - 4x) = 35 + 35x$

A) {–31} B) {–44} C) {–79} D) {–9}

Answer: C

17) $3(5x + 5) + 2(-2 + 8x) = 6(5x - 5) - 6$

A) {–47} B) {0} C) {–25} D) {5}

Answer: A

Provide an appropriate response.

18) $2x - 5 = 5 + 7x - 3$

Is this a linear equation?

A) Yes B) No

Answer: A

19) $\frac{-3}{x} = 83$ Is this a linear equation?

A) Yes B) No

Answer: B

20) $5x^2 - 7 = 3x$. Is this a linear equation?

A) Yes B) No

Answer: B

21) Is it true that the equation $-230x + 512 = 15$ and the equation $-230x + 512 - 15 = 0$ are always equivalent equations?

A) True B) False

Answer: A

22) Is it true that the equation $378x + 401 = 104$ and the equation $x = (401 - 104)/378$ are equivalent equations?

A) True B) False

Answer: B

Determine the number by which both sides of the equation must be multiplied or divided, as specified, to obtain just x on the left side.

23) $\frac{3}{7}x = 9$; multiply by

A) 7 B) 9 C) $-\frac{3}{7}$ D) $\frac{7}{3}$

Answer: D

24) $\frac{5}{8}x = -7$; multiply by

A) −8 B) −7 C) $\frac{8}{5}$ D) $-\frac{5}{8}$

Answer: C

25) $0.1x = 9$; multiply by

A) 10 B) 0.1 C) $-\frac{1}{9}$ D) 9

Answer: A

26) $-x = 0.18$; multiply by

A) −1 B) 0.18 C) $\frac{50}{9}$ D) −0.18

Answer: A

27) $-8x = -6$; divide by

A) 8 B) −8 C) −6 D) $-\frac{4}{5}$

Answer: B

28) $-x = -0.62$; divide by

A) $-\frac{31}{50}$ B) −1 C) $-\frac{50}{31}$ D) −0.62

Answer: B

29) $0.1x = 8$; divide by

A) 1 B) 0.1 C) 10 D) 8

Answer: B

Solve the equation.

30) $8a = -24$

A) {−32} B) {−3} C) {32} D) {1}

Answer: B

31) $-4x = -24$

A) {6} B) {20} C) {−20} D) {2}

Answer: A

32) $-3b = 36$

A) {–39} B) {–12} C) {1} D) {39}

Answer: B

33) $-x = 33$

A) {33} B) {0} C) {1} D) {–33}

Answer: D

34) $-29.4 = -4.2c$

A) {–25.2} B) {7.0} C) {25.2} D) {2.0}

Answer: B

35) $\frac{1}{2}x = -8$

A) {–4} B) {–6} C) {–16} D) {–7}

Answer: C

36) $-6 = -\frac{1}{7}a$

A) {–13} B) {–14} C) {42} D) {0}

Answer: C

37) $-\frac{1}{21}a = 0$

A) {0} B) {–21} C) {1} D) {21}

Answer: A

38) $\frac{n}{3} = 12$

A) {15} B) {14} C) {4} D) {36}

Answer: D

39) $-\frac{5}{7}s = -\frac{1}{7}$

A) $\left\{\frac{1}{5}\right\}$ B) $\left\{-\frac{1}{5}\right\}$ C) $\{5\}$ D) $\{-1\}$

Answer: A

40) $6x - 4x = 8$

A) $\{-\frac{4}{5}\}$ B) {–4} C) $\{\frac{4}{5}\}$ D) {4}

Answer: D

41) $-4x + 5x - 7x = -54$

A) {9} B) $\left\{-\frac{3}{4}\right\}$ C) {–9} D) $\left\{\frac{3}{4}\right\}$

Answer: A

42) $7x - 2 = 6x + 1$

A) $\{-3\}$ B) $\left\{-\frac{1}{3}\right\}$ C) $\left\{\frac{1}{3}\right\}$ D) $\{3\}$

Answer: D

43) $-2x + 4x + 7 = -3x$

A) $\left\{-\frac{7}{5}\right\}$ B) $\left\{\frac{7}{5}\right\}$ C) $\left\{\frac{5}{7}\right\}$ D) $\{-7\}$

Answer: A

44) $1.8q - 8.8q + 1.4 = -82.6$

A) {–91} B) {12} C) {9.5} D) {9.8}

Answer: B

45) $\frac{2}{5}x - \frac{1}{3}x = 4$

A) {60} B) {–120} C) {120} D) {–60}

Answer: A

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

Provide an appropriate response.

46) What is the difference between an expression and an equation?

Answer: Answers will vary.

47) While solving an equation, why can't you multiply both sides of the equation by zero?

Answer: Answers will vary.

48) What is the Multiplication Property of Equality?

Answer: Answers will vary.

49) When does the solution of a linear equation not require the use of the Multiplication Property of Equality?

Answer: Answers will vary.

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

50) Which one of the following equations in x doesn't require the use of the multiplication property of equality (a, b, c, and d are real numbers, and x is the unknown)?

A) $a - b + (c - d)x = 0$ B) $ax = (b - c)x - d$ C) $x = \frac{c - d}{a - b}$ D) $\frac{a}{b}x = d - c$

Answer: C

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

51) Write an equation that requires the use of the multiplication property of equality, where both sides must be multiplied by $\frac{13}{5}$ and where the solution is a negative number.

Answer: Answers will vary. One possibility is: $\frac{5}{13}x = -6$.

52) Write an equation that requires the use of the multiplication property of equality, where both sides must be multiplied by 100 and where the solution isn't an integer.

Answer: Answers will vary. One possibility is $\frac{1}{100}x = 0.136$

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

Solve the equation.

53) $5r + 9 = 29$

A) {15} B) {19} C) {4} D) {3}

Answer: C

54) $2n - 8 = 10$

A) {16} B) {13} C) {20} D) {9}

Answer: D

55) $9 = 2x - 7$

A) {14} B) {8} C) {18} D) {11}

Answer: B

56) $-34 = 6x + 8$

A) {−48} B) {13} C) {−7} D) {−44}

Answer: C

57) $140 = 10x + 10$

A) {124} B) {4} C) {120} D) {13}

Answer: D

58) $-6y + 8 = -8 + 5y$

A) $\left\{\frac{1}{0}\right\}$ B) $\left\{\frac{11}{16}\right\}$ C) $\left\{\frac{16}{11}\right\}$ D) $\left\{-\frac{11}{16}\right\}$

Answer: C

59) $-7p + 2 = 6 - 2p$

A) $\left\{-\frac{5}{4}\right\}$ B) $\left\{-\frac{4}{5}\right\}$ C) $\left\{\frac{5}{4}\right\}$ D) $\left\{-\frac{9}{8}\right\}$

Answer: B

60) $5y + 7 = 6 - 9y + 3y$

A) $\{11\}$ B) $\{-11\}$ C) $\left\{-\frac{1}{11}\right\}$ D) $\left\{-\frac{1}{4}\right\}$

Answer: C

61) $15(x - 60) = 30$

A) {62} B) {58} C) {30} D) {60}

Answer: A

62) $5x - (2x - 1) = 2$

A) $\left\{-\frac{1}{7}\right\}$ B) $\left\{\frac{1}{3}\right\}$ C) $\left\{-\frac{1}{3}\right\}$ D) $\left\{\frac{1}{7}\right\}$

Answer: B

63) $3(3x - 1) = 12$

A) $\left\{\frac{11}{9}\right\}$ B) $\left\{\frac{5}{3}\right\}$ C) $\{1\}$ D) $\left\{\frac{13}{9}\right\}$

Answer: B

64) $6(x + 6) = (6x + 36)$

A) {0} B) {all real numbers} C) ∅ D) {72}

Answer: B

65) $5(x + 6) - (5x + 30) = 0$

A) {6} B) {0} C) {all real numbers} D) ∅

Answer: C

66) $(y - 7) - (y + 5) = 6y$

A) $\left\{-\frac{1}{6}\right\}$ B) $\left\{-\frac{12}{7}\right\}$ C) $\{-2\}$ D) $\left\{-\frac{12}{5}\right\}$

Answer: C

67) $2(6w + 8) = 4(2w + 12)$

A) {–4} B) {16} C) {4} D) {8}

Answer: D

68) $12(2w - 1) = 6(4w + 2)$

A) {24} B) ∅ C) {0} D) {all real numbers}

Answer: B

Solve the equation by first clearing the fractions.

69) $-\frac{1}{4} + z = \frac{3}{4}$

A) $\left\{-\frac{1}{2}\right\}$ B) $\left\{\frac{1}{2}\right\}$ C) {1} D) {–1}

Answer: C

70) $\frac{1}{3}(r + 6) = \frac{1}{6}(r + 8)$

A) {3} B) {–4} C) {4} D) {–12}

Answer: B

71) $\frac{1}{4}a - \frac{1}{4} = -2$

A) {7} B) {–7} C) {9} D) {–9}

Answer: B

72) $\frac{1}{4}f - 5 = 1$

A) {–24} B) {–16} C) {16} D) {24}

Answer: D

73) $\frac{2}{5}x - \frac{1}{3}x = 5$

A) {–75} B) {150} C) {75} D) {–150}

Answer: C

74) $\frac{1}{4}p - \frac{3}{8}p = 5$

A) {40} B) {–40} C) {200} D) {–200}

Answer: B

75) $\frac{1}{2}(x + 6) - \frac{1}{7}(x - 7) = x + 8$

A) $\left\{-\frac{56}{3}\right\}$ B) $\left\{-\frac{56}{9}\right\}$ C) $\left\{-\frac{140}{9}\right\}$ D) $\left\{-\frac{28}{3}\right\}$

Answer: B

76) $-\frac{4}{5}y - (y - \frac{3}{8}) = \frac{1}{40}(y - 8)$

A) $\left\{\frac{23}{71}\right\}$ B) $\left\{\frac{23}{73}\right\}$ C) $\left\{-\frac{23}{7}\right\}$ D) $\left\{-\frac{7}{73}\right\}$

Answer: B

77) $-\frac{2}{3}r + 2r = \frac{6}{5}r + \frac{12}{5}$

A) {0} B) {18} C) $\left\{-\frac{36}{5}\right\}$ D) $\left\{\frac{4}{5}\right\}$

Answer: B

78) $\frac{12}{7}x - \frac{1}{21}x = x - \frac{2}{3}$

A) $\left\{-\frac{6}{7}\right\}$ B) $\left\{\frac{2}{21}\right\}$ C) {–1} D) {0}

Answer: C

Solve the equation by first clearing the decimals.

79) $0.05(60) + 0.5x = 0.2(60 + x)$

A) {40} B) {20} C) {15} D) {30}

Answer: D

80) $0.6x - 0.3(20 + x) = 0.3(20)$

A) {50} B) {30} C) {40} D) {20}

Answer: C

81) $0.86x + 0.9(18 - x) = 15.84$

A) {–9} B) {–0.09} C) {9} D) {0.09}

Answer: C

82) $0.06(3000) + 0.08x = 0.075(3000 + x)$

A) {900} B) {90} C) {9000} D) {9}

Answer: C

Solve the equation.

83) $-(7y + 3) - (-6y - 8) = -1$

A) {12} B) {6} C) {–6} D) {–4}

Answer: B

84) $0.15(x + 55) + 0.22(x + 85) = -24.85$. (Round to the nearest whole number, if necessary.)

A) {–30} B) {30} C) {–140} D) {140}

Answer: C

85) $-7(x + 5) - 2x = -9(x + 7) + 2$

A) ∅ B) {all real numbers} C) {0} D) {–2}

Answer: A

86) $18(x + 1) = 2(9x - 2) + 22$

A) {18} B) {0} C) {all real numbers} D) ∅

Answer: C

87) $\frac{1}{3}(x - 5) + \frac{5}{6}(x + 2) = x + 1$

A) {all real numbers} B) ∅ C) {6} D) {–6}

Answer: C

Write the answer to the problem as an algebraic expression.

88) Two numbers have a sum of 71. One of the numbers is t. Find the other number.

A) 71 + t B) 71 – t C) t – 71 D) t + 71

Answer: B

89) The product of two numbers is 11. One of the numbers is s. What is the other number.

A) 11 – s B) $\frac{11}{s}$ C) $\frac{s}{11}$ D) 11s

Answer: B

90) Today the Center City baseball team scored 11 runs. The day before yesterday they scored w. How many runs did they score in these two days?

A) 11 + w runs B) 11 + 2w runs C) 11w runs D) 11 – w runs

Answer: A

91) Susan has 7 cats. She gave c to her lonely aunt. How many does she have left?

A) c – 7 cats B) c + 7 cats C) 7 – c cats D) 7 + c cats

Answer: C

92) Bill is n years old. How old will he be in 6 years? How old was he 8 years ago?

A) n6; 2 – 8 B) n + 6; 8 – 2; C) n + 8; n – 6 D) n + 6; n – 8

Answer: D

93) Elizabeth earned 5 dollars a day at her job. Assuming a 5–day work week, how much did she earn in d weeks?

A) 25 + d B) 25d dollars C) 5 + d dollars D) 5d dollars

Answer: B

94) A water tank holds G gallons. Since there are 4 quarts per gallon, how many quarts does the tank hold?

A) G + 4 quarts B) 4G quarts C) $\frac{4}{G}$ quarts D) $\frac{G}{4}$ quarts

Answer: B

95) A theater ticket for adults is a dollars and the price of a child's ticket is c dollars. If 13 adults and 39 children attend the theater one night, how much money did the theater make?

A) 13a + 39c dollars B) 13c + ca dollars C) 39a + 13c dollars D) 507ac dollars

Answer: A

Provide an appropriate response.

96) Which one of these is not a linear equation?

A) $0.07x - 0.09x = 0.57$ B) $6y^2 - 3y + 1 = 0$

C) $7x + 9(x - 2) = -5x$ D) $5t - 11t = -6t$

Answer: B

97) True or false: The solution set of the equation $7y - 6 = 7y + 3$ is zero.

A) True B) False

Answer: B

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

98) This pair of equations is equivalent.

$5x - 6 = 29$ and $8x + 3 = 59$

Answer: True

99) The solution set for the equation $3(3s - 2) = 9s - 6$ is given as 0. Is this correct? Explain.

Answer: No. The solution is all real numbers.

100) Write the steps you would use to solve this equation: $2(x - 1) + 3x = -4x$.

Answer: Answers will vary.

101) What value of K makes this equation equivalent to $x = 3$? $2x - 3 = K$

Answer: 3

102) What value of K makes this equation equivalent to $x = 3$? $6x + 11x - 6 = K + 9$

Answer: 36

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

Solve the problem.

103) One half of a number is 3 more than one–sixth the same number. What is the number?
A) 8 B) 18 C) 9 D) 12
Answer: C

104) The difference between two positive integers is 42. One integer is three times as great as the other. Find the integers.
A) 21 and 42 B) 21 and 63 C) 42 and 63 D) 63 and 105
Answer: B

105) If 19 is added to a number and the sum is doubled, the result is 11 less than the number. Find the number.
A) –27 B) 27 C) –8 D) –49
Answer: D

106) The sum of twice a number and 20 less than the number is the same as the difference between –36 and the number. What is the number?
A) –5 B) –3 C) –8 D) –4
Answer: D

107) A merchant has coffee worth $30 a pound that she wishes to mix with 80 pounds of coffee worth $90 a pound to get a mixture that can be sold for $80 a pound. How many pounds of the $30 coffee should be used?
A) 8 pounds B) 96 pounds C) 16 pounds D) 48 pounds
Answer: C

108) A paint mixture contains 48 gallons of base for every gallon of color. In 588 gallons of paint, how many gallons of color are there?
A) 12 gallons B) 576 gallons C) 196 gallons D) 294 gallons
Answer: A

109) A reservation clerk worked 15.75 hours one day. She spent twice as much time entering new reservations as she did verifying old ones and one and a half as much time calling to confirm reservations as verifying old ones. How much time did she spend entering new reservations?
A) 3.5 hours B) 14 hours C) 5.25 hours D) 7 hours
Answer: D

110) A high school graduating class is made up of 580 students. There are 76 more girls than boys. How many boys are in the class?
A) 580 boys B) 328 boys C) 76 boys D) 252 boys
Answer: D

111) On August 29, the Corwin family received 35 pieces of mail, consisting of magazines, bills, letters, and ads. If they received the same number of magazines as letters, three more bills than letters, and five more ads than bills, how many magazines did they receive?
A) 9 magazines B) 6 magazines C) 7 magazines D) 14 magazines
Answer: B

112) Pennies are packaged 50 in a roll. A mother gave her son 119 pennies for his bank and had 31 pennies left over. How many rolls of pennies did she use?

A) 5 rolls B) 4 rolls C) 6 rolls D) 3 rolls

Answer: D

113) Elaine had 36 buttons. Her grandmother donated 9 cards of buttons to the collection. Elaine sorted the buttons into 9 piles, putting 9 buttons in each pile. How many buttons were on each card from Elaine's grandmother?

A) 5 buttons B) 76 buttons C) 79 buttons D) 34 buttons

Answer: A

114) Junior high classes of 20 students each met in the cafeteria to take achievement tests. If exactly 8 students sat at each table and 25 tables were used, how many classes took the tests?

A) 12 classes B) 10 classes C) 23 classes D) 13 classes

Answer: B

115) Find the measure of an angle whose supplement is 6 times the measure of its complement.

A) 72° B) 15° C) 30° D) 36°

Answer: A

116) Find the measure of an angle if its supplement measures 114° less than 5 times its complement.

A) 39° B) 19° C) 74° D) 148°

Answer: A

117) Find the measure of an angle such that the difference between its supplement and 2 times its complement is 44°.

A) 22° B) 44° C) 101° D) 202°

Answer: B

118) Find the measure of an angle, if its supplement measures 27° more than twice its complement.

A) 27° B) 54° C) 37° D) 63°

Answer: A

119) Find the measure of an angle such that the sum of the measures of its complement and its supplement is 122°.

A) 74° B) 29° C) 69° D) 58°

Answer: A

120) The sum of the measures of the angles of any triangle is 180°. In triangle ABC, angles A and B have the same measure, while the measure of angle C is 45° larger than each of A and B. What are the measures of the three angles?

A) A and B: 45°; C: 90° B) A and C: 70°; B: 55°

C) A and B: 55°; C: 70° D) A and B: 90°; C: 45°

Answer: A

121) The sum of the measures of the angles in any triangle is 180 degrees. In triangle ABC, angles A and B have the same measure, while angle C is 102 degrees larger than each of the other two angles. Find the measure of angle C.

A) 26 degrees B) 154 degrees C) 128 degrees D) 52 degrees

Answer: C

122) The sum of two consecutive integers is –227. Find the larger integer.
A) –114 B) –113 C) –112 D) –115
Answer: B

123) The sum of three consecutive integers is 426. Find the integers.
A) 142, 143, 144 B) 141, 142, 143 C) 140, 142, 144 D) 140, 141, 142
Answer: B

124) The sum of three consecutive even integers is 258. Find the integers.
A) 86, 88, 90 B) 84, 86, 88 C) 79, 80, 81 D) 88, 90, 92
Answer: B

125) Two pages that face each other in a book have 421 as the sum of their page numbers. What is the number of the page that comes first?
A) 208 B) 209 C) 211 D) 210
Answer: D

126) If three times the smaller of two consecutive integers is added to four times the larger, the result is 67. Find the smaller integer.
A) 27 B) 8 C) 9 D) 10
Answer: C

127) If the first and third of three consecutive odd integers are added, the result is 51 less than five times the second integer. Find the third integer.
A) 17 B) 34 C) 15 D) 19
Answer: D

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

Answer the question.

128) Which of the following would not be a reasonable answer in an applied problem that requires finding the number of cars parked in a parking lot?

(i) –12 (ii) 64 (iii) 46 (iv) 5

Answer: i

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

129) The following statement would be considered a step in solving an applied problem. True or false?

Read the problem carefully, and choose a variable that you are asked to find –– the unknown number.
A) True B) False
Answer: A

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

130) If x represents a positive integer, how would you express its negative?

Answer: –x

131) If x represents a negative integer, how would you express its negative?

Answer: –x

132) How would you express the product of two numbers, r and s?

Answer: rs

133) Two angles are complimentary. One of the angles is r. How do you express the other angle?

Answer: 90 – r

134) Express three consecutive integers, all in terms of x, if x is the largest integer.

Answer: x – 2, x – 1, x

135) Two angles q and r are complimentary. The angle s is supplementary to q. Write an equation showing the relationship between r and s.

Answer: s – 90 = r or r + 90 = s or s – r = 90

136) One number is twice another. If the larger number is m, how do you express the other number in terms of m?

Answer: $\frac{m}{2}$ or $\frac{1}{2}$ m

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

Decide whether perimeter or area would be used to solve a problem concerning the measure of the quantity.

137) Baseboards for a dining room

A) Area B) Perimeter

Answer: B

138) Tilling a garden

A) Area B) Perimeter

Answer: A

139) Border fence for a garden

A) Area B) Perimeter

Answer: B

140) Tile for a kitchen

A) Area B) Perimeter

Answer: A

141) Determining the cost for painting a wall

A) Area B) Perimeter

Answer: A

A formula is given along with the values of all but one of the variables in the formula. Find the value of the variable not given. Round to the nearest hundredth where necessary.

142) P = 2L + 2W; L = 8, W = 6

A) 28 B) 96 C) 22 D) 14

Answer: A

143) $V = \frac{4}{3}\pi r^3$; r = 4, π = 3.14

A) 66.99 B) 267.95 C) 85.33 D) 803.85

Answer: B

144) $A = \frac{1}{2}bh$; $b = 7$, $h = 12$

A) 19 B) 42 C) 84 D) 19.5

Answer: B

145) $d = rt$; $t = 5$, $d = 20$

A) 0.3 B) 25 C) 4 D) 15

Answer: C

146) $P = 2L + 2W$; $P = 32$, $W = 8$

A) 12 B) 8 C) 24 D) 16

Answer: B

147) $V = \frac{1}{3}Bh$; $V = 63$, $h = 9$

A) 21 B) 72 C) 567 D) 7

Answer: A

148) $C = 2\pi r$; $C = 18.84$, $\pi = 3.14$

A) 118.32 B) 6 C) 3 D) 21.98

Answer: C

149) $A = \pi r^2$; $r = 9$, $\pi = 3.14$

A) 12.14 B) 254.34 C) 28.26 D) 88.74

Answer: B

150) $I = prt$; $I = 17.6$, $p = 220$, $r = 0.02$

A) 77.44 B) 0.7744 C) 4 D) 0.4

Answer: C

151) $A = \frac{1}{2}(b + B)h$; $A = 92.5$, $b = 18$, $B = 19$

A) 5 B) 342 C) 55.5 D) 18.5

Answer: A

Use a formula to solve the problem.

152) What is the perimeter of a rectangle of length 45 ft and width 15 ft?

A) 120 ft B) 105 ft C) 240 ft D) 60 ft

Answer: A

153) What is the area of a square with side 3.1 cm?

A) 38.44 cm^2 B) 6.2 cm^2 C) 9.61 cm^2 D) 29 cm^2

Answer: C

154) Find the area of a triangle with height 19 m and base 15 m.

A) 17 m^2 B) 570 m^2 C) 142.5 m^2 D) 285 m^2

Answer: C

155) The area of a trapezoid is 54 square feet. If the bases are 8 and 10 feet, find the altitude of the trapezoid.

A) 12 ft B) 3 ft C) 6 ft D) 1.5 ft

Answer: C

156) A circle has a circumference of 52π meters. Find the radius of the circle.

A) 52 m B) 8 m C) 26 m D) 13 m

Answer: C

157) A rectangular Persian carpet has a perimeter of 252 inches. The length of the carpet is 30 inches more than the width. What are the dimensions of the carpet?

A) 78 in. by 108 in. B) 96 in. by 126 in. C) 48 in. by 78 in. D) 111 in. by 141 in.

Answer: C

158) A square plywood platform has a perimeter which is 11 times the length of a side, decreased by 14. Find the length of a side.

A) 2 units B) 9 units C) 1 unit D) 7 units

Answer: A

159) A pie–shaped (triangular) lake–front lot has a perimeter of 1200 feet. One side is 400 feet longer than the shortest side, while the third side is 500 feet longer than the shortest side. Find the lengths of all three sides.

A) 100 ft, 500 ft, 600 ft B) 200 ft, 200 ft, 200 ft C) 200 ft, 600 ft, 700 ft D) 100 ft, 200 ft, 300 ft

Answer: A

160) A baking pan measures 9 inches long, 5 inches wide, and 2 inches deep. What is the volume of the pan?

A) 16 $in.^3$ B) 28 $in.^3$ C) 90 $in.^3$ D) 45 $in.^3$

Answer: C

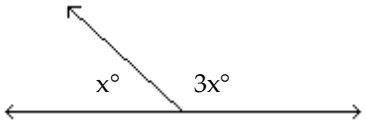
161) A water reservoir is shaped like a rectangular solid with a base that is 5 meters by 3 meters, and a vertical height of 9 meters. How much water is in the reservoir if it is completely full?

A) 243 m^3 B) 135 m^3 C) 225 m^3 D) 45 m^3

Answer: B

Find the measure of each marked angle.

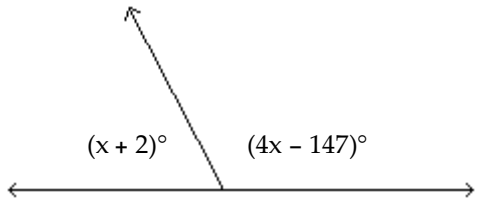
162)



A) 45° and 135° B) 45° and 55° C) 90° and 270° D) 60° and 120°

Answer: A

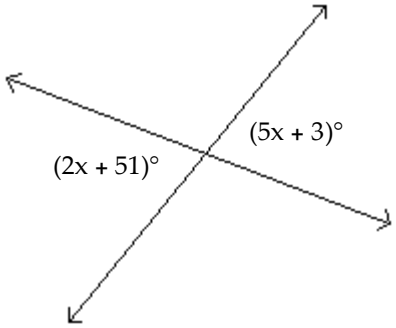
163)



A) 69° and 111° B) 67° and 113° C) 67° and 23° D) 65° and 115°

Answer: B

164)



A) 83° and 7° B) 83° and 97° C) 86° and 86° D) 83° and 83°

Answer: D

Solve the formula for the specified variable.

165) $A = \frac{1}{2}bh$ for b

A) $b = \frac{h}{2A}$ B) $b = \frac{2A}{h}$ C) $b = \frac{A}{2h}$ D) $b = \frac{Ah}{2}$

Answer: B

166) $S = 2\pi rh + 2\pi r^2$ for h

A) $h = \frac{S}{2\pi r} - 1$ B) $h = 2\pi(S - r)$ C) $h = \frac{S - 2\pi r^2}{2\pi r}$ D) $h = S - r$

Answer: C

167) $V = \frac{1}{3}Bh$ for h

A) $h = \frac{V}{3B}$ B) $h = \frac{B}{3V}$ C) $h = \frac{3V}{B}$ D) $h = \frac{3B}{V}$

Answer: C

168) $I = \frac{nE}{nr + R}$ for n

A) $n = \frac{-R}{Ir - E}$ B) $n = \frac{IR}{Ir + E}$ C) $n = \frac{-IR}{Ir - E}$ D) $n = IR(Ir - E)$

Answer: C

169) $P = a + b + c$ for a

A) $a = P - b - c$ B) $a = b + P - c$ C) $a = b + c - P$ D) $a = P + b + c$

Answer: A

170) $F = \frac{9}{5}C + 32$ for C

A) $C = \frac{9}{5}(F - 32)$ B) $C = \frac{5}{9}(F - 32)$ C) $C = \frac{F - 32}{9}$ D) $C = \frac{5}{F - 32}$

Answer: B

171) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1

A) $b_1 = \frac{2A - (h)(b_2)}{h}$ B) $b_1 = \frac{h(b_2) - 2A}{h}$ C) $b_1 = \frac{A - h(b_2)}{2h}$ D) $b_1 = \frac{(b_2)2A - h}{h}$

Answer: A

172) $a + b = s + r$ for s

A) $s = \frac{a}{r} + b$ B) $s = r(a + b)$ C) $s = \frac{a + b}{r}$ D) $s = a + b - r$

Answer: D

173) $A = P(1 + nr)$ for n

A) $n = \frac{Pr}{A - P}$ B) $n = \frac{P - A}{Pr}$ C) $n = \frac{A}{r}$ D) $n = \frac{A - P}{Pr}$

Answer: D

Express the phrase as a ratio in lowest terms.

174) 24 miles to 15 miles

A) $\frac{8}{5}$ B) $\frac{16}{25}$ C) $\frac{25}{16}$ D) $\frac{5}{8}$

Answer: A

175) 21 people to 9 people

A) $\frac{7}{3}$ B) $\frac{5}{11}$ C) $\frac{11}{5}$ D) $\frac{3}{7}$

Answer: A

176) 60 feet to 24 feet

A) $\frac{2}{5}$ B) $\frac{61}{25}$ C) $\frac{5}{2}$ D) $\frac{25}{61}$

Answer: C

177) 27 inches to 15 inches

A) $\frac{4}{7}$ B) $\frac{5}{9}$ C) $\frac{9}{5}$ D) $\frac{7}{4}$

Answer: C

178) 120 cm to 60 cm

A) $\frac{61}{121}$ B) $\frac{2}{1}$ C) $\frac{121}{61}$ D) $\frac{1}{2}$

Answer: B

179) 9 yards to 5 feet

A) $\frac{3}{14}$ B) $\frac{5}{27}$ C) $\frac{27}{5}$ D) $\frac{14}{3}$

Answer: C

180) 5 feet to 70 inches

A) $\frac{1}{168}$ B) $\frac{70}{5}$ C) $\frac{6}{7}$ D) $\frac{1}{14}$

Answer: C

181) 11 minutes to 5 hours

A) $\frac{11}{60}$ B) $\frac{11}{5}$ C) $\frac{11}{300}$ D) 132

Answer: C

182) 20 cents to $9

A) $\frac{1}{9}$ B) $\frac{9}{200}$ C) $\frac{20}{9}$ D) $\frac{1}{45}$

Answer: D

Tell which brand is the better buy.

183) Brand X 10 oz for $0.80
Brand Y 8 oz for $0.56

A) Brand X B) Equal value
C) Brand Y D) Not enough information

Answer: C

184) Brand A 16 oz for $9.12
Brand B 12 oz for $6.48

A) Brand B B) Brand A
C) Not enough information D) Equal value

Answer: A

185) Brand A 42 oz for $10.08
Brand B 48 oz for $12.00

A) Not enough information B) Brand B
C) Brand A D) Equal value

Answer: C

186) Brand X 9 oz for $0.72
Brand Y 12 oz for $1.20

A) Equal value B) Brand Y
C) Brand X D) Not enough information

Answer: C

Solve the equation.

187) $\frac{x}{45} = \frac{4}{15}$

A) $\left\{\frac{4}{3}\right\}$ B) {16} C) $\left\{\frac{675}{4}\right\}$ D) {12}

Answer: D

188) $\frac{5}{y} = \frac{10}{4}$

A) $\left\{\frac{25}{2}\right\}$ B) $\left\{\frac{2}{25}\right\}$ C) {20} D) {2}

Answer: D

189) $\frac{1}{2} = \frac{r}{5}$

A) $\left\{\frac{1}{10}\right\}$ B) $\left\{\frac{5}{2}\right\}$ C) {10} D) {5}

Answer: B

190) $\frac{5}{6} = \frac{10}{x + 5}$

A) $\{17\}$ B) $\{11\}$ C) $\{1\}$ D) $\{7\}$

Answer: D

191) $\frac{x + 6}{5} = \frac{3}{25}$

A) $\left\{-\frac{27}{5}\right\}$ B) {–135} C) $\left\{\frac{33}{5}\right\}$ D) $\left\{\frac{9}{25}\right\}$

Answer: A

192) $\frac{x + 8}{9} = \frac{9}{5}$

A) $\left\{\frac{121}{5}\right\}$ B) $\left\{\frac{73}{5}\right\}$ C) {41} D) $\left\{\frac{41}{5}\right\}$

Answer: D

193) $\frac{3}{4} = \frac{x + 1}{x + 12}$

A) $\left\{\frac{32}{7}\right\}$ B) $\left\{\frac{32}{3}\right\}$ C) {1} D) {32}

Answer: D

194) $\frac{2x - 4}{3} = \frac{3x + 3}{5}$

A) $\left\{-\frac{11}{19}\right\}$ B) $\{29\}$ C) $\{-11\}$ D) $\left\{\frac{29}{19}\right\}$

Answer: B

195) $\frac{3}{2x-3} = \frac{3}{4x+5}$

A) {24} B) $\{-4\}$ C) $\left\{\frac{1}{3}\right\}$ D) {–6}

Answer: B

196) $\frac{4}{3x} = \frac{5}{2x+10}$

A) {7} B) {40} C) $\left\{\frac{40}{23}\right\}$ D) $\left\{\frac{40}{7}\right\}$

Answer: D

Solve the problem.

197) If a boat uses 21 gallons of gas to go 60 miles, how many miles can the boat travel on 105 gallons of gas?

A) 600 miles B) 320 miles C) 12 miles D) 300 miles

Answer: D

198) If 4 hours are required to type 12 pages, how many hours would be required to type 21 pages?

A) 2 hours B) 7 hours C) 8 hours D) 3 hours

Answer: B

199) In a sample of 97 widgets, 6 were defective. How many defective widgets would you expect in a sample of 485 widgets?

A) 30 widgets B) 66 widgets C) 28 widgets D) 33 widgets

Answer: A

200) The sides of a triangle are 7 inches, 8 inches, and 9 inches. If the shortest side of a similar triangle is 28 inches, find its longest side.

A) 31 inches B) 32 inches C) 36 inches D) 8 inches

Answer: C

201) On a map of the Thunderbird Country Club golf course, 1.5 inches equals 45 yards. How long is the 15th hole if the map shows 8.5 inches?

A) 573.75 yd B) 7.9 yd C) 255 yd D) 382.5 yd

Answer: C

202) A label printer prints 3 pages of labels in 3.0 seconds. How long will it take to print 138 pages of labels?

A) 142 sec B) 140 sec C) 141 sec D) 138 sec

Answer: D

203) If a spring stretches 0.8 m when a 4–kg weight is attached to it, how much will it stretch when a 7–kg weight is attached to it?

A) 0.4 m B) 3.4 m C) 1.4 m D) 4.4 m

Answer: C

204) Dr. Smith can see 10 patients in 2 hours. At this rate, how long would it take him to see 60 patients?

A) 300 hours B) 20 hours C) 11 hours D) 12 hours

Answer: D

205) The ratio of the distances a pitching wedge and an 8–iron will drive a golf ball is 4 to 5. If a golfer averages 52 yards with a pitching wedge, how far should she average with an 8–iron?

A) 65 yd B) 43 yd C) 42 yd D) 61 yd

Answer: A

206) The ratio of the lengths of strings that play the notes D and B is 27 to 16. If a string 64 cm long plays a B, what is the length of the string that plays a D?

A) 64 cm B) 108 cm C) 91 cm D) 80 cm

Answer: B

Answer the question about percent. Round to the nearest hundredth where necessary.

207) What is 20% of 600?

A) 1.2 B) 1200 C) 12 D) 120

Answer: D

208) What is 170% of 5730?

A) 974,100 B) 97,410 C) 9741 D) 974

Answer: C

209) What is 89% of 372?

A) 3310.8 B) 331.08 C) 33.11 D) 33,108

Answer: B

210) What is 8.7% of 44?

A) 0.38 B) 38.3 C) 3.83 D) 383

Answer: C

211) What is 170% of 3340?

A) 567,800 B) 568 C) 5678 D) 56,780

Answer: C

Answer the question about percent. Round your answer to the nearest tenth of a percent, if necessary.

212) 225 is what percent of 1820?

A) 808.9% B) 12.4% C) 0.1% D) 0.0%

Answer: B

213) 909 is what percent of 781?

A) 0.1% B) 85.9% C) 1.2% D) 116.4%

Answer: D

214) What percent of 2291 is 21?

A) 19.2% B) 9.2% C) 0.9% D) 10,909.5%

Answer: C

215) 3.8 is what percent of 16?

A) 0.2% B) 23.8% C) 4.2% D) 421.1%

Answer: B

216) What percent of 5 is 0.03?
A) 0.6% B) 166.7% C) 6.0% D) 60.0%
Answer: A

217) What percent of 105 is 18.5?
A) 17.6% B) 0.2% C) 567.6% D) 0.1%
Answer: A

218) What percent of 53 is 408?
A) 769.8% B) 1.3% C) 0.1% D) 77.0%
Answer: A

219) 79.7 is what percent of 9?
A) 11.3% B) 1.1% C) 885.6% D) 8856.0%
Answer: C

Answer the question about percent. Round to the nearest whole number where necessary.

220) 96 is 60% of what number?
A) 58 B) 1600 C) 160 D) 16
Answer: C

221) 16 is 9% of what number?
A) 178 B) 144 C) 1780 D) 18
Answer: A

222) 34% of what number is 67?
A) 197 B) 1970 C) 100 D) 1
Answer: A

223) 30% of what number is 85?
A) 26 B) 283 C) 28 D) 2830
Answer: B

224) 143 is 45% of what number?
A) 31,800 B) 3 C) 318 D) 3180
Answer: C

225) 73 is 0.68% of what number?
A) 1 B) 107,350 C) 100 D) 10,735
Answer: D

226) 572 is 11.7% of what number?
A) 1 B) 488,900 C) 4889 D) 48,890
Answer: C

227) 64 is 122% of what number?
A) 520 B) 149 C) 14,900 D) 52
Answer: D

Solve the problem.

228) The parking lot at a grocery store has 72 cars in it. 50% of the cars are two–toned. How many cars are two–toned?

A) 144 cars B) 14 cars C) 360 cars D) 36 cars

Answer: D

229) A chemical solution contains 7% lead. How much lead is in 2.5 ml of solution?

A) 35.714 ml B) 0.175 ml C) 3.571 ml D) 1.75 ml

Answer: B

230) An outlet store had monthly sales of $118,800 and spent 30% of it on promotions. How much was spent on promotions?

A) $396,000 B) $39,600 C) $356,400 D) $35,640

Answer: D

231) A pension fund invests $80,400 in highway bonds and earns 6% per year on the investment. How much money is earned per year?

A) $48,240 B) $1,340,000 C) $134,000 D) $4824

Answer: D

232) The First Commerce Bank pays $4\frac{3}{5}$% interest per year on money market accounts. What is the annual income on a money market account of $114,000? Round to the nearest dollar.

A) $5244 B) $2,850,000 C) $52,440 D) $285,000

Answer: A

233) The appliance store where the Mitchells shop offers a 8% discount for paying cash. The Mitchells received a discount of $50. What was their total bill before the discount? Round to the nearest dollar.

A) $625 B) $400 C) $4 D) $6

Answer: A

234) There are 5600 married students on campus. If this represents 20% of the total number, what is the total number? Round to the nearest whole number.

A) 112,000 B) 28,000 C) 280 D) 1120

Answer: B

235) Students at East Central High School earned $372 selling candles. They want to make $2960 for a club trip. What percent of their goal has been reached? Round to the nearest tenth of a percent, if necessary.

A) 80% B) 8% C) 1.3% D) 12.6%

Answer: D

236) Allied Plumbing spent $71,260 this year on health insurance alone. If total sales were $677,100, what percent of total sales was spent on health insurance? Round to the nearest tenth of a percent, if necessary.

A) 10.5% B) 1.1% C) 95% D) 9.5%

Answer: A

237) A Toshiba P351SX printer priced at $501 is sold for $365. What was the percent of price reduction? Round to the nearest tenth of a percent, if necessary.

A) 137.3% B) 368.4% C) 27.1% D) 72.9%

Answer: C

Provide an appropriate response.

238) Which one of the following ratios is not the same as 5 to 6?

A) 200 to 240 B) 50 to 60 C) 6 to 5 D) 10 to 12

Answer: C

239) Which one of the following ratios is not the same as 4 to 6?

A) 20 to 30 B) 2 to 3 C) 8 to 12 D) 6 to 4

Answer: D

240) Which one of the following ratios is not the same as 0.75?

A) 0.750 B) 8 to 6 C) 75 to 100 D) 3 to 4

Answer: B

241) Which one of the following ratios is not the same as 1.3?

A) 130 to 100 B) 1.30 C) 1 to 3 D) 13 to 10

Answer: C

242) Which one of the following ratios is not the same as 4 to 16?

A) 4 to 1 B) 2 to 8 C) 40 to 160 D) 0.25

Answer: A

243) Which one of the following ratios is not the same as 5 to 2?

A) 2 to 5 B) 50 to 20 C) 10 to 4 D) 25 to 10

Answer: A

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

244) Give three ratios that are equivalent to 27 to 21.

Answer: Answers will vary. An example is 54 to 42.

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

245) A ratio is a reduced proportion. True or false?

A) True B) False

Answer: B

246) A proportion equates two ratios. True or false?

A) True B) False

Answer: A

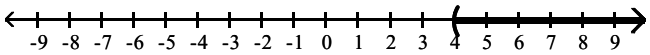
247) In a proportion, if one number from one of the ratios is unknown, how many of the remaining numbers are needed to find its value?

A) One B) Two C) Three D) None

Answer: C

Write an inequality using the variable x that corresponds to the set graphed on the number line.

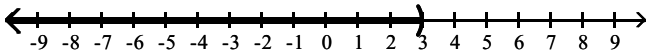
248)



A) $x \geq 4$ B) $x \leq 4$ C) $x > 4$ D) $x < 4$

Answer: C

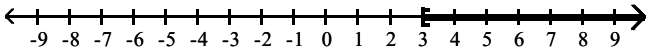
249)



A) $x < 3$ B) $x \leq 3$ C) $x > 3$ D) $x \geq 3$

Answer: A

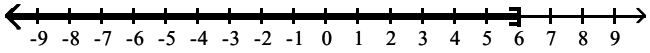
250)



A) $x < 3$ B) $x \geq 3$ C) $x > 3$ D) $x \leq 3$

Answer: B

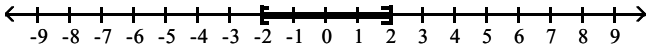
251)



A) $x > 6$ B) $x \leq 6$ C) $x \geq 6$ D) $x < 6$

Answer: B

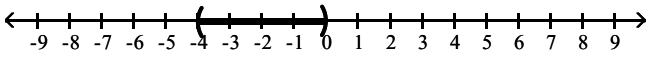
252)



A) $-2 < x < 2$ B) $-2 \leq x < 2$ C) $-2 \leq x \leq 2$ D) $-2 < x \leq 2$

Answer: C

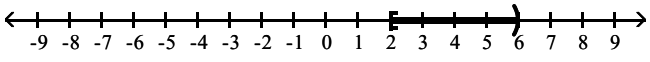
253)



A) $-4 \leq x \leq 0$ B) $-4 \leq x < 0$ C) $-4 < x < 0$ D) $-4 < x \leq 0$

Answer: C

254)



A) $2 \leq x \leq 6$ B) $2 < x < 6$ C) $2 \leq x < 6$ D) $2 < x \leq 6$

Answer: C

Write the inequality in interval notation.

255) $x > -7$

A) $[-7, \infty)$ B) $(-7, \infty)$ C) $(-\infty, -7)$ D) $(-\infty, -7]$

Answer: B

256) $x < 3$

A) $(-\infty, 3)$ B) $(3, \infty)$ C) $[3, \infty)$ D) $(-\infty, 3]$

Answer: A

257) $x \geq 2$

A) $[2\ \infty)$ B) $(-\infty, 2]$ C) $(-\infty, 2)$ D) $(2, \infty)$

Answer: A

258) $x \leq -5$

A) $(-\infty, -5)$ B) $(-5, \infty)$ C) $[-5, \infty)$ D) $(-\infty, -5]$

Answer: D

259) $-1 \leq x \leq 3$

A) $[-1, 3]$ B) $(-1, 3)$ C) $(-1, 3]$ D) $[-1, 3)$

Answer: A

260) $-1 < x < 3$

A) $[-1, 3]$ B) $(-1, 3]$ C) $[-1, 3)$ D) $(-1, 3)$

Answer: D

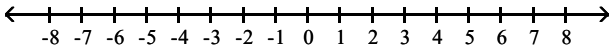
261) $0 \leq x < 4$

A) $(0, 4)$ B) $[0, 4]$ C) $(0, 4]$ D) $[0, 4)$

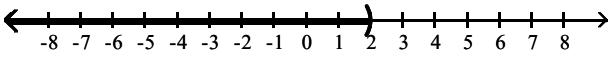
Answer: D

Graph the inequality.

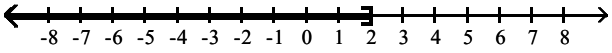
262) $x > 2$



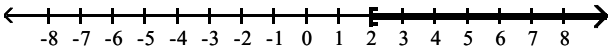
A)



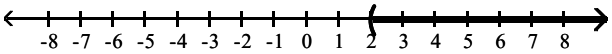
B)



C)

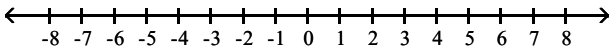


D)

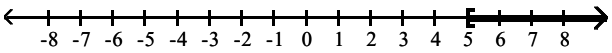


Answer: D

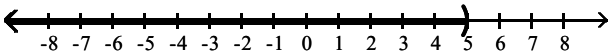
263) $x < 5$



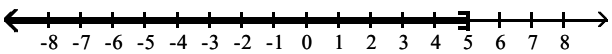
A)



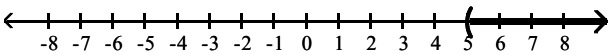
B)



C)

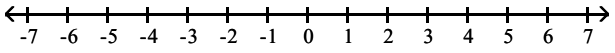


D)

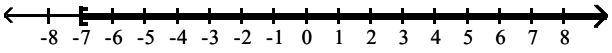


Answer: B

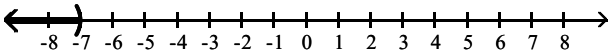
264) $x \geq -7$



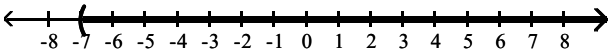
A)



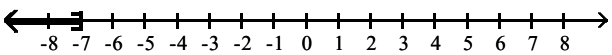
B)



C)

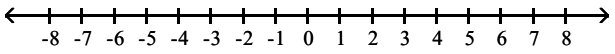


D)

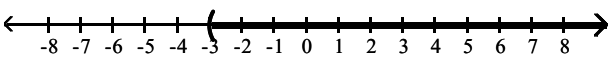


Answer: A

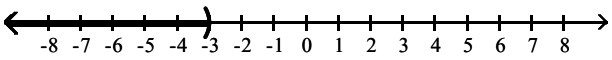
265) $x \leq -3$



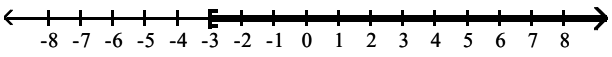
A)



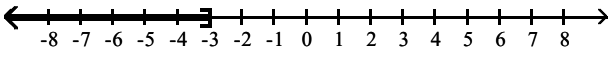
B)



C)

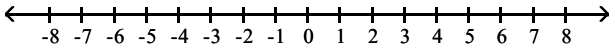


D)

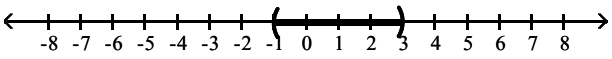


Answer: D

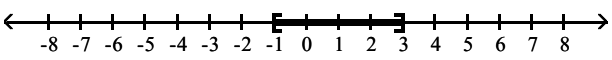
266) $-1 \leq x \leq 3$



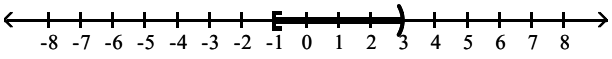
A)



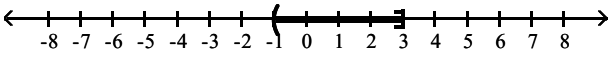
B)



C)

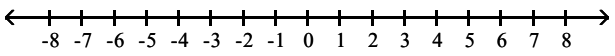


D)

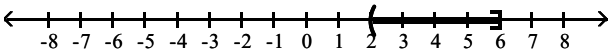


Answer: B

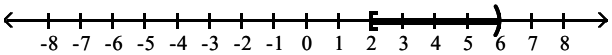
267) $2 < x < 6$



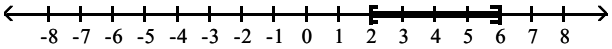
A)



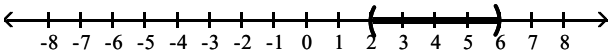
B)



C)

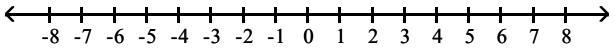


D)

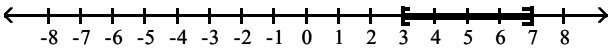


Answer: D

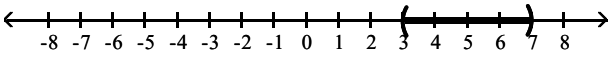
268) $3 \leq x < 7$



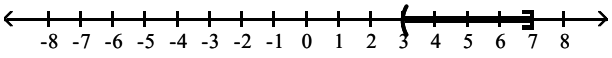
A)



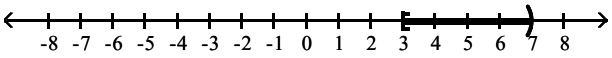
B)



C)



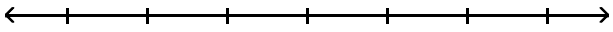
D)



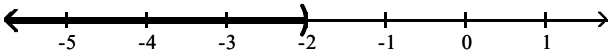
Answer: D

Solve the inequality, then graph the solution.

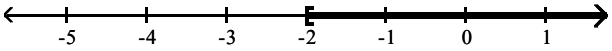
269) $a + 5 < 3$



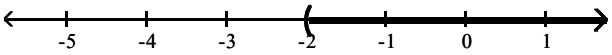
A) $(-\infty, -2)$



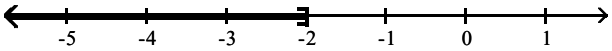
B) $[-2, \infty)$



C) $(-2, \infty)$

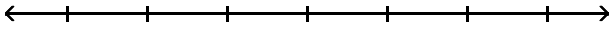


D) $(-\infty, -2]$

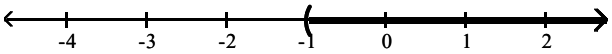


Answer: A

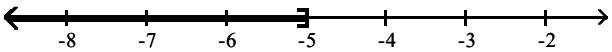
270) $5n - 2 > 4n - 3$



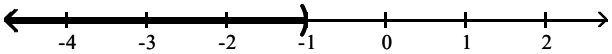
A) $(-1, \infty)$



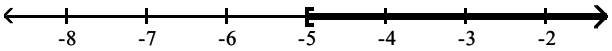
B) $(-\infty, -5]$



C) $(-\infty, -1)$

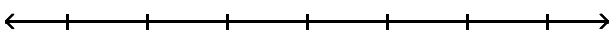


D) $[-5, \infty)$

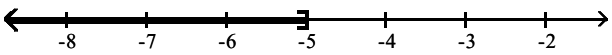


Answer: A

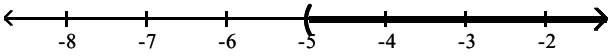
271) $-5c + 6 \leq -6c + 1$



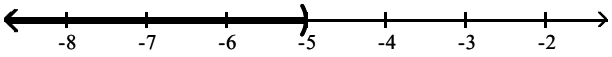
A) $(-\infty, -5]$



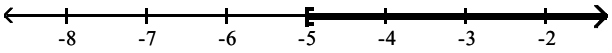
B) $(-5, \infty)$



C) $(-\infty, -5)$

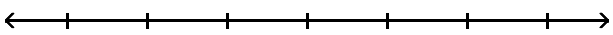


D) $[-5, \infty)$

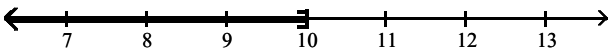


Answer: A

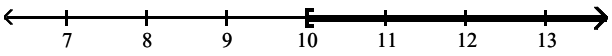
272) $13t + 8 \geq 12t + 18$



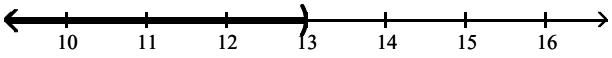
A) $(-\infty, 10]$



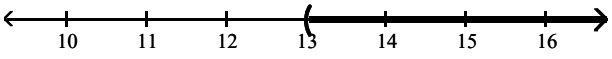
B) $[10, \infty)$



C) $(-\infty, 13)$

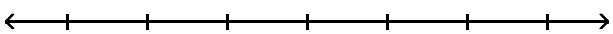


D) $(13, \infty)$

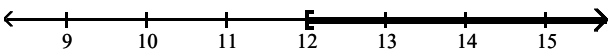


Answer: B

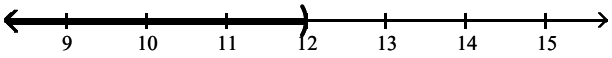
273) $f + 2 < 14$



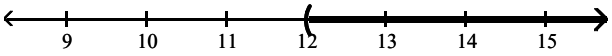
A) [12, ∞)



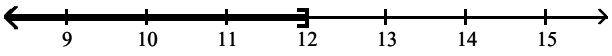
B) (-∞, 12)



C) (12, ∞)

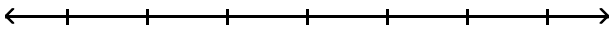


D) (-∞, 12]

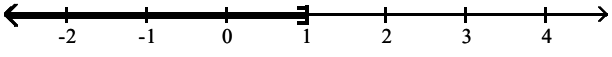


Answer: B

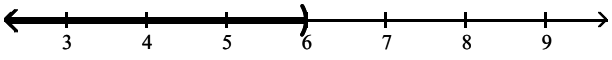
274) $-5 + 6t - 3 \geq 5t - 7$



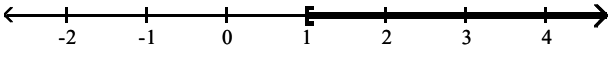
A) (-∞, 1]



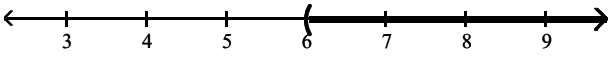
B) (-∞, 6)



C) [1 , ∞)

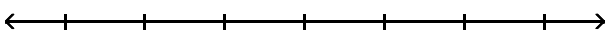


D) (6, ∞)

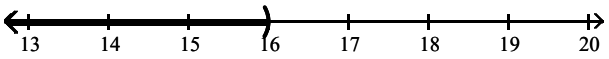


Answer: C

275) $3x < 48$

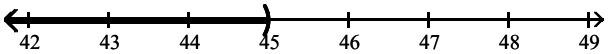


A) $(-\infty, 16)$



B) $(16, \infty)$

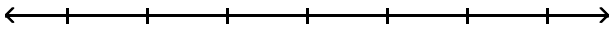
C) $(-\infty, 45)$



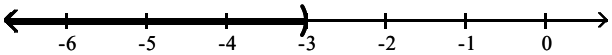
D) $(45 , \infty)$

Answer: A

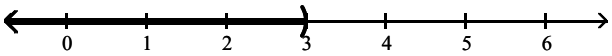
276) $14x < 42$



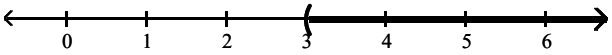
A) $(-\infty, -3)$



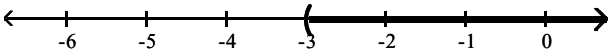
B) $(-\infty, 3)$



C) $(3, \infty)$

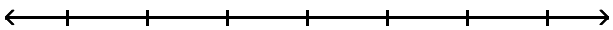


D) $(-3, \infty)$

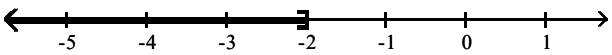


Answer: B

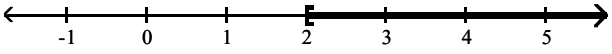
277) $-15x \geq 30$



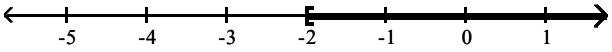
A) $(-\infty, -2]$



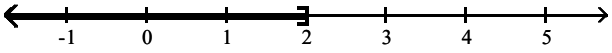
B) $[2, \infty)$



C) $[-2, \infty)$

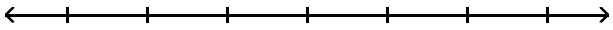


D) $(-\infty, 2]$

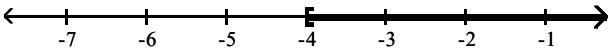


Answer: A

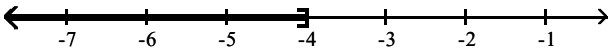
278) $3x \leq -12$



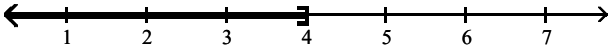
A) $[-4, \infty)$



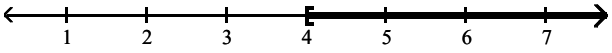
B) $(-\infty, -4]$



C) $(-\infty, 4]$

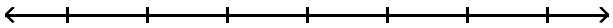


D) $[4, \infty)$

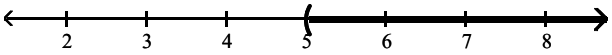


Answer: B

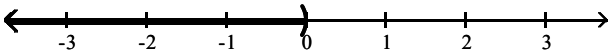
279) $5x > 0$



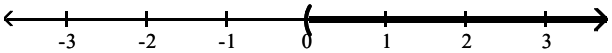
A) $(5, \infty)$



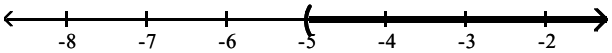
B) $(-\infty, 0]$



C) $(0, \infty)$

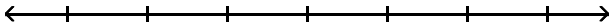


D) $(-5, \infty)$

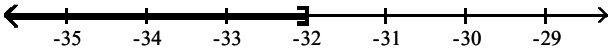


Answer: C

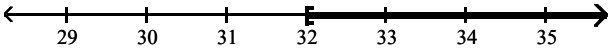
280) $\frac{3}{4}t \geq -24$



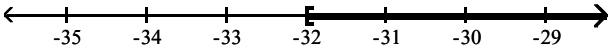
A) $(-\infty, -32]$



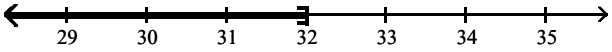
B) $[32, \infty)$



C) $[-32, \infty)$

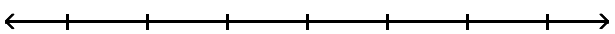


D) $(-\infty, 32]$

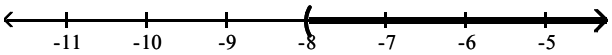


Answer: C

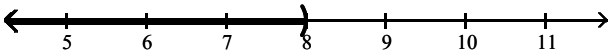
281) $-0.3z > -2.4$



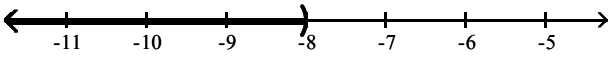
A) $(-8, \infty)$



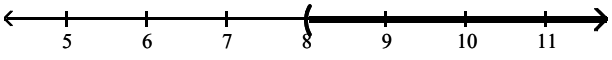
B) $(-\infty, 8)$



C) $(-\infty, -8)$

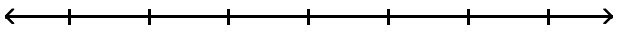


D) $(8, \infty)$

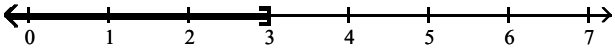


Answer: B

282) $8t + 5 \geq 6t - 1$

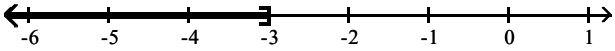


A) $(-\infty, 3]$



B) $[-3, \infty)$

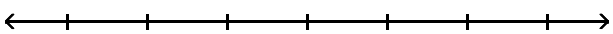
C) $(-\infty, -3]$



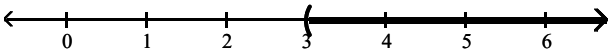
D) $[3, \infty)$

Answer: B

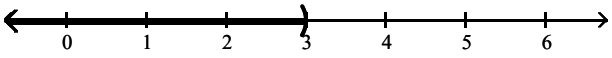
283) $-2x + 10 + 9x < 6 + 5x + 10$



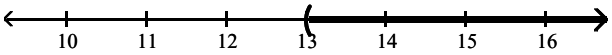
A) $(3, \infty)$



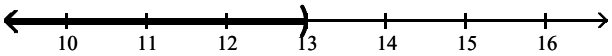
B) $(-\infty, 3)$



C) $(13, \infty)$

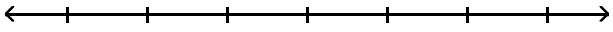


D) $(-\infty, 13)$

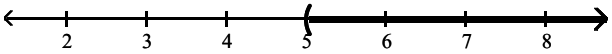


Answer: B

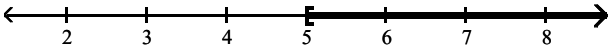
284) $9x + 9 > 3(2x + 8)$



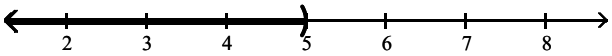
A) $(5, \infty)$



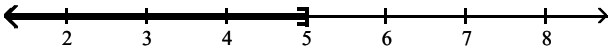
B) $[5, \infty)$



C) $(-\infty, 5)$

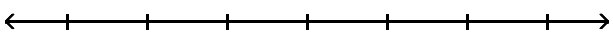


D) $(-\infty, 5]$

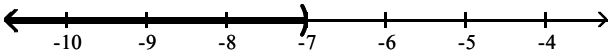


Answer: A

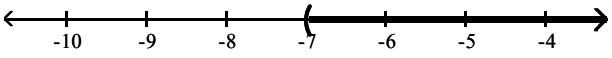
285) $-3(4x - 15) < -15x + 24$



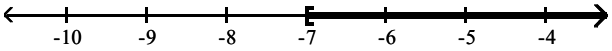
A) $(-\infty, -7)$



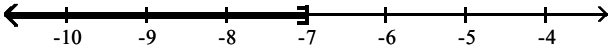
B) $(-7, \infty)$



C) $[-7, \infty)$

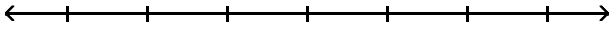


D) $(-\infty, -7]$

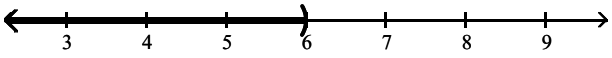


Answer: A

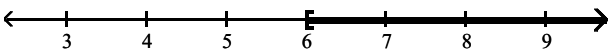
286) $-24x + 48 \leq -6(3x - 2)$



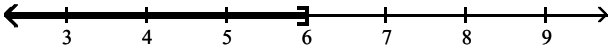
A) $(-\infty, 6)$



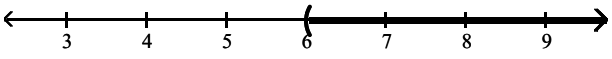
B) $[6, \infty)$



C) $(-\infty, 6]$

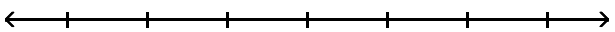


D) $(6, \infty)$

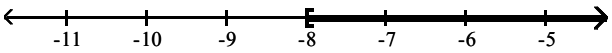


Answer: B

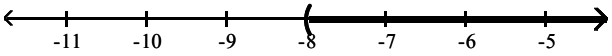
287) $12x + 18 \leq 2(5x + 1)$



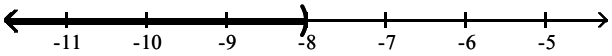
A) [–8, ∞)



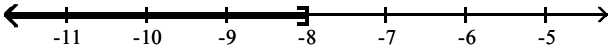
B) (–8, ∞)



C) (-∞, –8)

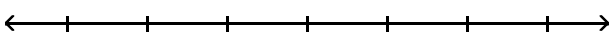


D) (-∞, –8]

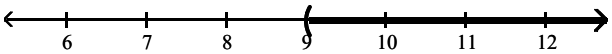


Answer: D

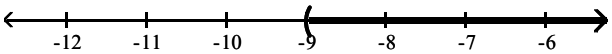
288) $-2(x - 6) + 9x < -3(-3x - 7) - 3x$



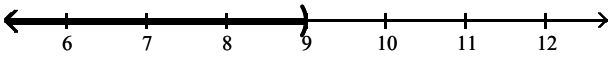
A) (9, ∞)



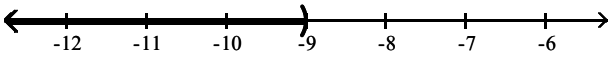
B) (–9, ∞)



C) (-∞, 9)

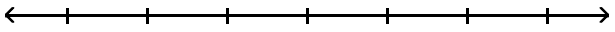


D) (-∞, –9)

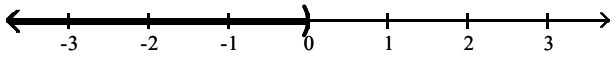


Answer: C

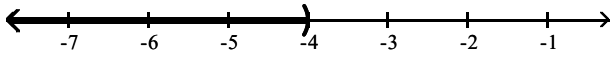
289) $\frac{1}{2}(x + 4) > \frac{1}{7}(x + 4)$



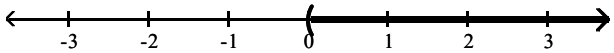
A) $(-\infty, 0)$



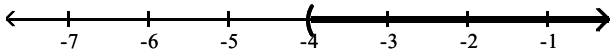
B) $(-\infty, -4)$



C) $(0, \infty)$

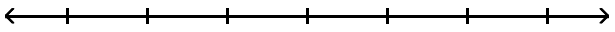


D) $(-4, \infty)$

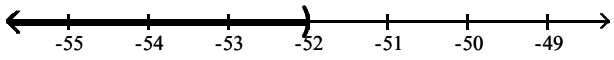


Answer: D

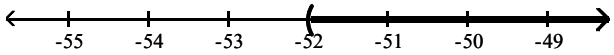
290) $-2(-3x + 8) - 6(x - 10) > -2(-3x + 6) - 8(x + 6)$



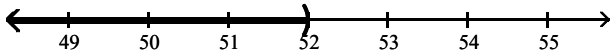
A) $(-\infty, -52)$



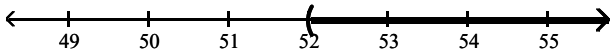
B) $(-52, \infty)$



C) $(-\infty, 52)$



D) $(52, \infty)$



Answer: B

Solve the problem.

291) If half a number is added to 9, the result is greater than or equal to −4. Find all such numbers.

A) $x \le -36$ B) $x \ge -26$ C) $x > -26$ D) $x \ge 5$

Answer: B

292) Paul has grades of 72 and 68 on his first two tests. What must he score on his third test in order to have an average of at least 60?

A) at most 67 B) at most 60 C) at least 70 D) at least 40

Answer: D

293) Sue drove her car 275 miles in January, 328 miles in February, and 253 miles in March. If her average mileage for the four months from January to April is to be at least 292 miles, how many miles must she drive in April?

A) at most 292 miles B) at least 312 miles C) at least 287 miles D) at most 312 miles

Answer: B

294) During the first four months of the year, Jack earned $1450, $1060, $620 and $1440. If Jack must have an average salary of at least $1090 in order to earn retirement benefits, what must Jack earn in the fifth month in order to qualify for benefits?

A) at most $1090 B) at least $880 C) at most $1143 D) at least $1132

Answer: B

295) One side of a triangle is twice as long as a second side. The third side of the triangle is 12 feet long. The perimeter of the triangle cannot be more than 30 feet. Find the longest possible values for the other two sides of the triangle.

A) 5 feet and 10 feet B) 9 feet and 9 feet C) 6 feet and 12 feet D) 21 feet and 21 feet

Answer: C

296) The perimeter of a rectangle must be no greater than 68 meters. The width must be 15 meters. Find the greatest possible value for the length of the rectangle.

A) 19 meters B) 49 meters C) 83 meters D) 53 meters

Answer: A

297) A bag of marbles has twice as many blue marbles as green marbles, and the bag has at least 33 marbles in it. At least how many green marbles does it have?

A) At least 22 green marbles B) At least 17 green marbles

C) At least 11 green marbles D) At least 12 green marbles

Answer: C

298) Jon has 744 points in his math class. He must have 62% of the 1300 points possible by the end of the term to receive credit for the class. What is the minimum number of additional points he must earn by the end of the term to receive credit for the class?

A) 62 points B) 556 points C) 461 points D) 806 points

Answer: A

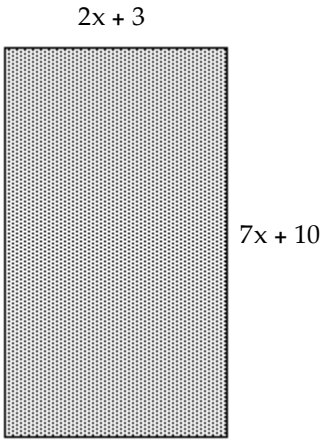
299) The formula for converting Fahrenheit temperature to Celsius is $C = \frac{5}{9}(F - 32)$. If a bottle of prescription medicine is to be kept below 25° Celsius, how would you describe this warning using Fahrenheit temperature?

A) It must be kept below 77° Fahrenheit. B) It must be kept below 103° Fahrenheit.

C) It must be kept below –18° Fahrenheit. D) It must be kept below 46° Fahrenheit.

Answer: A

300) For what values of x would the rectangle have a perimeter of at least 224?

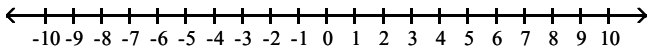


A) 23 or less B) 11 or less C) 11 or greater D) 23 or greater

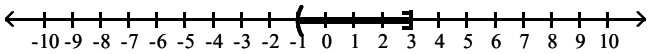
Answer: C

Solve the inequality, then graph the solution.

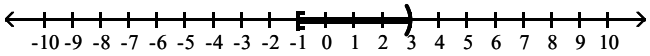
301) $-2 < 5a + 3 \leq 18$



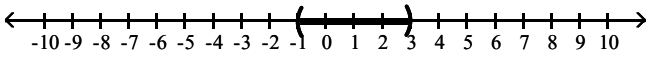
A) (–1, 3]



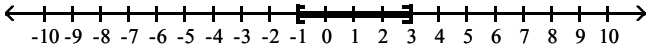
B) [–1, 3)



C) (–1, 3)

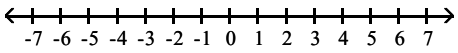


D) [–1, 3]

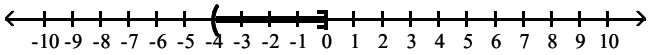


Answer: A

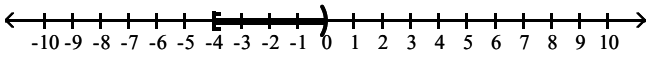
302) $2 < -4x + 2 \leq 18$



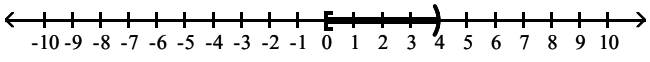
A) (–4, 0]



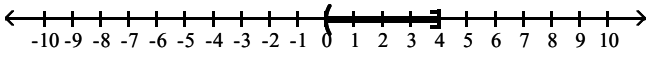
B) [–4, 0)



C) [0, 4)

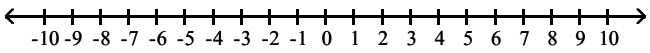


D) (0, 4]

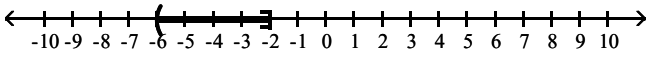


Answer: B

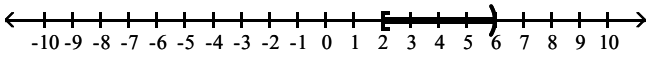
303) $-14 < -3x + 4 \leq -2$



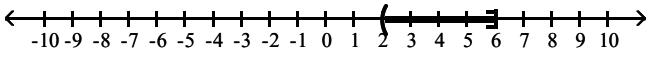
A) (–6, –2]



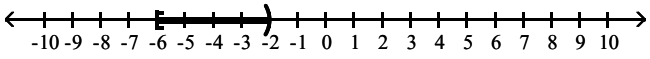
B) [2, 6)



C) (2, 6]

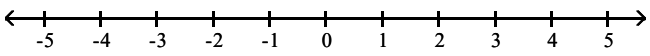


D) [–6, –2)

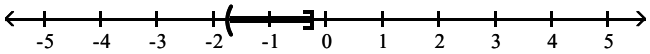


Answer: B

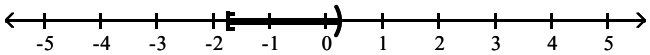
304) $2 < 1 - 4x \leq 8$



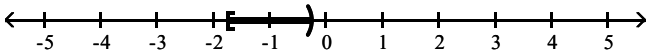
A) $\left(-\frac{7}{4}, -\frac{1}{4}\right]$



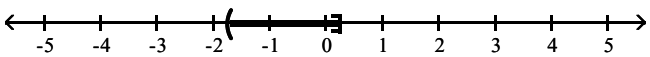
B) $\left[-\frac{7}{4}, \frac{1}{4}\right)$



C) $\left[-\frac{7}{4}, -\frac{1}{4}\right)$



D) $\left(-\frac{7}{4}, \frac{1}{4}\right]$



Answer: C

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

Provide an appropriate response.

305) If you graphed $x > 6$, would you use a parenthesis or a square bracket? Explain why.

Answer: A parenthesis. A parenthesis means the end point is not included.

306) If you graphed $x \geq 12$, would you use a parenthesis or a square bracket? Explain why.

Answer: A square bracket. A square bracket means the end point is included.

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

307) The three–part inequality $a < x \leq b$ means "a is less than x and x is less than or equal to b". Which of these inequalities is not satisfied by any real number x?

A) $-5 < x \leq -11$ B) $-2 < x \leq 6$ C) $0 < x \leq 4$ D) $-8 < x \leq -7$

Answer: A

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

308) Under what conditions must the inequality symbol be reversed when solving an inequality?

Answer: When multiplying or dividing by a negative number.

309) If $b < 0$, is it true that $b^2 > b$? Explain.

Answer: Yes, since $b^2 \geq 0 > b$.

310) In solving the inequality $4x \leq -20$, would you have to reverse the inequality symbol? Explain why.

Answer: No. Dividing by a negative number is not involved.