Test Bank for Beginning and Intermediate Algebra 6th Lial

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

Solve the equation.

1) $a - 3 = -5$
   A) {–2}
   B) {8}
   C) {–8}
   D) {2}
   Answer: A

2) $z + 2 = 7$
   A) {5}
   B) {–5}
   C) {–9}
   D) {9}
   Answer: A

3) $6p - 2 = 7p + 5$
   A) {–7}
   B) {–6}
   C) {0}
   D) {–8}
   Answer: A

4) $8m - 8 = 7m + 2$
   A) {10}
   B) {11}
   C) {9}
   D) {–1}
   Answer: A

5) $2.8p - 15 = 3.8p - 5$
   A) {–8}
   B) {–10}
   C) {–11}
   D) {–9}
   Answer: B

6) $0.333x - 7 = 1.333x$
   A) {–14}
   B) {–7}
   C) {–2.333}
   D) {7}
   Answer: B

7) $7x + 10 - 6x = 0$
   A) {–0.667}
   B) {10}
   C) {–1.5}
   D) {–10}
   Answer: D

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8) $\frac{1}{4}x - 3 = -\frac{3}{4}x$

A) {5}
B) {–3}
C) {–5}
D) {3}

Answer: D

Solve the equation. First simplify the expression by combining like terms.

9) $10y = 6y + 10 + 3y$

A) { 100 }
B) { –10 }
C) { 10 }
D) { –100 }

Answer: C

10) $-6a + 2 + 7a = 5 - 21$

A) { –18 }
B) { –28 }
C) { 18 }
D) { 28 }

Answer: A

11) $-7b + 8 + 5b = -3b + 13$

A) { 13 }
B) { –13 }
C) { 5 }
D) { –8 }

Answer: C

12) $4.9x - 7.9 - 6.5x = -1.6x - 7.9$

A) { 0 }
B) { –1.6 }
C) { 1 }
D) { –1 }

Answer: A

13) $\frac{2}{11}x + \frac{2}{9} = \frac{1}{2} - \frac{9}{11}x + \frac{1}{2}$

A) $\left\{\frac{11}{9}\right\}$
B) $\left\{-\frac{11}{9}\right\}$
C) $\left\{\frac{5}{18}\right\}$
D) $\left\{\frac{7}{9}\right\}$

Answer: D

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14) $5(y + 4) = 6(y - 3)$
A) {–2}
B) {38}
C) {–38}
D) {2}
Answer: B

15) $2(2z - 2) = 3(z + 2)$
A) {4}
B) {–2}
C) {10}
D) {2}
Answer: C

16) $-8(k - 6) - (-9k - 9) = -4$
A) {53}
B) {– 61}
C) {61}
D) {7}
Answer: B

17) $-4(-8x - 8) + 7(7 - 2x) = (16 + 19x)$
A) {–33}
B) {65}
C) {97}
D) {81}
Answer: B

Translate the sentence into an equation using the variable x.

18) The sum of a number and 5 is 15.
A) $x = 5 + 15$
B) $5x = 15$
C) $x + 15 = 5$
D) $x + 5 = 15$
Answer: D

19) A number minus 2 equals 4.
A) $2 - x = 4$
B) $x - 2 = 4$
C) $x = 4 - 2$
D) $x = 2 - 4$
Answer: B

20) 5 times a number equals 8 less than 6 times the number.
A) $5x = 6x - 8$
B) $5x = 8 - 6$
C) $5x - 8 = 6x$
D) $5x = 8 - 6x$
Answer: A

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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.

21) $\frac{4}{9}x = 3$; multiplied

A) $-\frac{4}{9}$

B) 9

C) $\frac{9}{4}$

D) 3

Answer: C

22) $\frac{5}{6}x = -1$; multiplied

A) 6

B) $-\frac{5}{6}$

C) -1

D) $\frac{6}{5}$

Answer: D

23) $0.2x = 3$; multiplied

A) 0.2

B) 5

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

D) 3

Answer: B

24) $-x = 0.41$; multiplied

A) -1

B) -0.41

C) 0.41

D) $\frac{100}{41}$

Answer: A

25) $-5x = -1$; divided

A) 5

B) $-\frac{1}{2}$

C) -1

D) -5

Answer: D

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26) $-x = 0.93$; divided

A) $\frac{100}{93}$

B) -1

C) 0.93

D) $\frac{93}{100}$

Answer: B

27) $0.9x = 2$; divided

A) 0.9

B) $\frac{10}{9}$

C) 9

D) 2

Answer: A

Solve the equation.

28) $\frac{1}{8}x = -4$

A) {–1}

B) {4}

C) {3}

D) {–32}

Answer: D

29) $-\frac{1}{3}a = -3$

A) {1}

B) {–6}

C) {–7}

D) {9}

Answer: D

30) $\frac{1}{13}b = -3.83$

A) {8.17}

B) {–49.79}

C) {9.17}

D) {–4.00}

Answer: B

31) $\frac{1}{16}a = 0$

A) {–16}

B) {0}

C) {16}

D) {1}

Answer: B

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32) $\frac{n}{5} = 3$

A) {0}
B) {8}
C) {7}
D) {15}

Answer: D

33) $-2a = 14$

A) {–7}
B) {1}
C) {–16}
D) {16}

Answer: A

34) $-2.5c = -15.0$

A) {–12.5}
B) {2.0}
C) {6.0}
D) {12.5}

Answer: C

35) $-2x = -12$

A) {–10}
B) {10}
C) {6}
D) {2}

Answer: C

36) $-2b = 30$

A) {–15}
B) {32}
C) {1}
D) {–32}

Answer: A

37) $-\frac{3}{7}x = -\frac{8}{9}$

A) $\left\{-\frac{56}{9}\right\}$
B) $\left\{\frac{56}{27}\right\}$
C) $\left\{-\frac{56}{27}\right\}$
D) $\left\{\frac{27}{56}\right\}$

Answer: B

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38) $-x = 4$

A) {0}
B) {–4}
C) {1}
D) {4}

Answer: B

39) $-x = -35$

A) {0}
B) {1}
C) {35}
D) {–35}

Answer: C

40) $-x = \frac{1}{3}$

A) {1}
B) $\left\{-\frac{1}{3}\right\}$
C) {–2}
D) $\left\{\frac{1}{3}\right\}$

Answer: B

41) $2x + 3x = 35$

A) $\left\{\frac{1}{5}\right\}$
B) {7}
C) {30}
D) $\left\{\frac{1}{7}\right\}$

Answer: B

42) $10x - 5x + 3x = 24$

A) $\left\{\frac{1}{8}\right\}$
B) {16}
C) $\left\{\frac{1}{3}\right\}$
D) {3}

Answer: D

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43) $16x + 9x - 8x = 34$

A) $\left\{\frac{1}{17}\right\}$

B) {2}

C) $\left\{\frac{1}{2}\right\}$

D) {17}

Answer: B

44) $\frac{2}{7}x + \frac{1}{21}x + \frac{1}{28}x = 31$

A) 85

B) −83

C) −82

D) 84

Answer: D

Write an equation using the information given in the problem. Use x as the variable.

45) When a number is multiplied by 4, the result is 10.

A) $10x = 4$

B) $4x = 10$

C) $\frac{x}{4} = 10$

D) $\frac{x}{10} = 4$

Answer: B

46) When a number is divided by 4, the result is 10.

A) $\frac{x}{10} = 4$

B) $4x = 10$

C) $\frac{x}{4} = 10$

D) $10x = 4$

Answer: C

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

Provide an appropriate response.

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

Answer: Answers will vary. If each side of an equation is multiplied by 0, the resulting equation is 0 = 0. This is true, but does not help to solve the equation.

48) What is the Multiplication Property of Equality?

Answer: Answers will vary. The multiplication property of equality says that the same nonzero number (or expression) multiplied on each side of the equation results in an equivalent equation.

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

Answer: Answers will vary. The solution of a linear equation does not require the use of the Multiplication Property of Equality, when the coefficient of x is equal to 1.

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

50) Which equation does not require the use of the multiplication property of equality to solve the equation?

A) $-6x + 5x = -8$

B) $-\frac{5}{6}x = -8 - 5$

C) $-5x - (-6)x = -8$

D) $6x + 8 - (-5x - 5) = -8$

Answer: C

51) Tell whether you would use the addition or multiplication property of equality to solve the equation: $a - 5 = 1$.

A) Multiplication property

B) Addition property

Answer: B

52) Tell whether you would use the addition or multiplication property of equality to solve the equation: $7a = -21$.

A) Addition property

B) Multiplication property

Answer: B

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

53) A student tried to solve the equation $9x = 40$ by dividing each side by 40. Why is this not the correct procedure for solving this equation?

Answer: Answers will vary: To get x alone on the left side, divide each by 9, the coefficient of x.

54) State how you would find the solution of a linear equation if your next–to–last step reads "$-x = 48$."

Answer: Answers will vary: To find the solution of $-x = 48$, multiply each side by -1, or use the rule "If $-x = a$, then $x = -a$."

55) 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: $\frac{5}{13}x = -6$.

56) 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.

57) $8r + 4 = 68$

A) {60}

B) {56}

C) {8}

D) {4}

Answer: C

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58) $6n - 8 = 52$

A) {58}
B) {54}
C) {10}
D) {16}

Answer: C

59) $-10y - 10 = 7 - 6y$

A) $\left\{-\frac{4}{17}\right\}$
B) $\left\{\frac{16}{3}\right\}$
C) $\left\{\frac{4}{17}\right\}$
D) $\left\{-\frac{17}{4}\right\}$

Answer: D

60) $-7r + 8 = -9 + 5r$

A) $\left\{-\frac{12}{17}\right\}$
B) $\left\{\frac{12}{17}\right\}$
C) $\{2\}$
D) $\left\{\frac{17}{12}\right\}$

Answer: D

61) $6r + 9 = -2 - 5r + 5r$

A) $\left\{-\frac{6}{11}\right\}$
B) $\left\{-\frac{11}{6}\right\}$
C) $\left\{\frac{1}{12}\right\}$
D) $\left\{\frac{6}{11}\right\}$

Answer: B

62) $9x - (8x - 1) = 2$

A) $\left\{\frac{1}{17}\right\}$
B) $\{-1\}$
C) $\left\{-\frac{1}{17}\right\}$
D) $\{1\}$

Answer: D

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63) $6(2x - 1) = 24$

A) $\left\{\frac{23}{12}\right\}$

B) $\left\{\frac{5}{2}\right\}$

C) $\left\{\frac{3}{2}\right\}$

D) $\left\{\frac{25}{12}\right\}$

Answer: B

64) $3(x + 3) = (3x + 9)$

A) {all real numbers}

B) {0}

C) {∅}

D) {18]

Answer: A

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

A) {5}

B) {0}

C) {all real numbers}

D) {∅}

Answer: C

66) $(y - 8) - (y + 4) = 7y$

A) $\left\{-\frac{3}{2}\right\}$

B) $\{-2\}$

C) $\left\{-\frac{3}{7}\right\}$

D) $\left\{-\frac{12}{7}\right\}$

Answer: D

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

A) {–4}

B) {4}

C) {3}

D) {–12}

Answer: A

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

A) {–30}
B) {–60}
C) {30}
D) {60}

Answer: C

69) $\frac{1}{9}(x + 27) - \frac{1}{3}(x - 3) = x + 5$

A) $\left\{-\frac{27}{11}\right\}$
B) $\left\{-\frac{63}{11}\right\}$
C) $\left\{-\frac{81}{11}\right\}$
D) $\left\{-\frac{9}{11}\right\}$

Answer: D

70) $-\frac{1}{2}y - (y + \frac{4}{7}) = \frac{1}{28}(y + 3)$

A) $\left\{\frac{19}{13}\right\}$
B) $\left\{\frac{13}{43}\right\}$
C) $\left\{-\frac{19}{41}\right\}$
D) $\left\{-\frac{19}{43}\right\}$

Answer: D

71) $0.32(50) + 0.5x = 0.4(50 + x)$

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

Answer: C

72) $0.024(500) + 0.06x = 0.04(500 + x)$

A) {390}
B) {200}
C) {410}
D) {400}

Answer: D

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73) $0.8x - 0.4(80 + x) = -0.2(80)$

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

Answer: A

74) $-0.36(5000) + 0.4x = 0.02(5000 + x)$

A) {2500}
B) {5100}
C) {4900}
D) {5000}

Answer: D

75) $3(2z - 5) = 5(z + 4)$

A) {35}
B) {–5}
C) {8}
D) {5}

Answer: A

76) $2x + 6(-3x - 4) = -33 - 7x$

A) $\{1\}$
B) $\left\{\frac{19}{3}\right\}$
C) $\{-1\}$
D) $\left\{\frac{57}{23}\right\}$

Answer: A

77) $6(x + 3) - (6x + 18) = 0$

A) {0}
B) {∅}
C) {3}
D) {all real numbers}

Answer: D

78) $\frac{1}{5}(10x - 20) = \frac{1}{2}(8x - 4)$

A) {–8}
B) {–1}
C) $\left\{\frac{1}{8}\right\}$
D) {1}

Answer: B

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79) $\frac{1}{4}(16x - 20) = \frac{1}{3}(15x - 12)$

A) {–1}

B) $\left\{\frac{1}{9}\right\}$

C) {–9}

D) {1}

Answer: A

80) –(3y + 1) – (–2y – 5) = –9

A) {–13}

B) {5}

C) {15}

D) {13}

Answer: D

81) 0.25(x + 50) + 0.45(x + 35) = –31.25

A) {15}

B) {85}

C) {–85}

D) {–15}

Answer: C

Write the answer to the problem as an algebraic expression.

82) Two numbers have a sum of 41. One of the numbers is r. Find the other number.

A) r – 41

B) r + 41

C) 41 + r

D) 41 – r

Answer: D

83) The product of two numbers is 19. One of the numbers is s. Find the other number.

A) 19s

B) 19 – s

C) $\frac{19}{s}$

D) $\frac{s}{19}$

Answer: C

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

A) 11 + y runs

B) 11 + 2y runs

C) 11 – y runs

D) 11y runs

Answer: A

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

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

Answer: D

86) Bill is q years old. How old will he be in 8 years? How old was he 4 years ago?

A) q + 8; 4 – 3
B) q + 8; q – 4
C) q8; 3 – 4
D) q + 4; q – 8

Answer: B

87) Elizabeth earned 10 dollars a day at her job. Assuming a 5–day work week, how much did she earn in x weeks?

A) 50 + x
B) 10x dollars
C) 50x dollars
D) 10 + x dollars

Answer: C

88) 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) $\frac{4}{g}$ quarts
C) $\frac{g}{4}$ quarts
D) 4g quarts

Answer: D

89) A theater ticket for adults is A dollars and the price of a child's ticket is c dollars. If 21 adults and 43 children attend the theater one night, how much money did the theater make?

A) 43A + 21c dollars
B) 903Ac dollars
C) 21c + cA dollars
D) 21A + 43c dollars

Answer: D

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

Provide an appropriate response.

90) Write the steps you would use to solve this equation: $3(x - 1) + 5x = -9x$.

Answer: Answers will vary. Step 1: Clear the parentheses and combine like terms, as needed. Step 2: Use the addition property to get all variable terms on one side of the equation and all numbers on the other. Then combine like terms. Step 3: Use the multiplication property to get the equation in the form x = a number.

91) The solution set for the equation $3(7s - 2) = 21s - 6$ is given as 0. Is this correct? Explain.

Answer: Answers will vary. No. The solution is all real numbers.

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92) After working correctly through several steps of the solution of a linear equation, a student obtains the equation $9x = 8x$. Then the student divides each side by x to get $9 = 8$ and gives $\varnothing$ as the answer. Is this correct? If not, explain why.

Answer: Answers will vary. This is not correct to divide by a variable. If $-8x$ is added to both sides, the equation becomes $-x = 0$, so $x = 0$ and $\{0\}$ is the correct solution set.

93) If an equation has decimals as coefficients, what step will make work easier?

Answer: Answers will vary. Multiply each side by the power of 10 that makes all decimal numbers integers.

94) If an equation has fractions as coefficients, what step will make work easier?

Answer: Answers will vary. Multiply each side by the LCD of all fractions in the equation.

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

Solve the problem.

95) One half of a number is 3 more than one–sixth the same number. What is the number?

A) 12
B) 8
C) 18
D) 9

Answer: D

96) The difference between two positive integers is 54. One integer is three times as great as the other. Find the integers.

A) 27 and 81
B) 81 and 135
C) 54 and 81
D) 27 and 54

Answer: A

97) If –17 is added to a number and the sum is doubled, the result is 19 less than the number. Find the number.

A) 53
B) –53
C) 15
D) 36

Answer: C

98) The sum of twice a number and 16 less than the number is the same as the difference between –8 and the number. What is the number?

A) 2
B) 4
C) 1
D) 3

Answer: A

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99) A merchant has coffee worth $30 a pound that she wishes to mix with 70 pounds of coffee worth $70 a pound to get a mixture that can be sold for $40 a pound. How many pounds of the $30 coffee should be used?
A) 210 pounds
B) 140 pounds
C) 105 pounds
D) 280 pounds

Answer: A

100) A paint mixture contains 43 gallons of base for every gallon of color. In 1584 gallons of paint, how many gallons of color are there?
A) 36 gallons
B) 792 gallons
C) 528 gallons
D) 1548 gallons

Answer: A

101) A reservation clerk worked 15.3 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) 5.1 hours
B) 13.6 hours
C) 6.8 hours
D) 3.4 hours

Answer: C

102) A high school graduating class is made up of 470 students. There are 124 more girls than boys. How many boys are in the class?
A) 173 boys
B) 297 boys
C) 124 boys
D) 470 boys

Answer: A

103) On August 22, the Fernandez 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) 14 magazines
C) 6 magazines
D) 7 magazines

Answer: C

104) 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 63 degrees larger than each of the other two angles. Find the measure of angle C.
A) 78 degrees
B) 102 degrees
C) 141 degrees
D) 39 degrees

Answer: B

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105) Pennies are packaged 50 in a roll. A mother gave her son 191 pennies for his bank and had 9 pennies left over. How many rolls of pennies did she use?
A) 4 rolls
B) 6 rolls
C) 7 rolls
D) 5 rolls

Answer: A

106) Elaine had 38 buttons. Her grandmother donated 5 cards of buttons to the collection. Elaine sorted the buttons into 7 piles, putting 9 buttons in each pile. How many buttons were on each card from Elaine's grandmother?
A) 5 buttons
B) 61 buttons
C) 58 buttons
D) 36 buttons

Answer: A

107) Junior high classes of 30 students each met in the cafeteria to take achievement tests. If exactly 6 students sat at each table and 25 tables were used, how many classes took the tests?
A) 5 classes
B) 18 classes
C) 8 classes
D) 7 classes

Answer: A

108) Find the measure of an angle whose supplement is 6 times the measure of its complement.
A) 36°
B) 72°
C) 15°
D) 30°

Answer: B

109) Find the measure of an angle if its supplement measures 28° less than 3 times its complement.
A) 159°
B) 31°
C) 15°
D) 79.5°

Answer: B

110) Find the measure of an angle such that the difference between its supplement and 3 times its complement is 46°.
A) 68°
B) 34°
C) 82.5°
D) 165°

Answer: A

111) Find the measure of an angle, if its supplement measures 70° more than twice its complement.
A) 20°
B) 70°
C) 80°
D) 140°

Answer: B

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112) Find the measure of an angle such that the sum of the measures of its complement and its supplement is 132°.
A) 48°
B) 24°
C) 69°
D) 64°

Answer: C

113) 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 90° larger than each of A and B. What are the measures of the three angles?
A) A and B: 120°; C: 30°
B) A and B: 30°; C: 120°
C) A and B: 40°; C: 100°
D) A and C: 100°; B: 40°

Answer: B

114) The sum of two consecutive integers is –371. Find the larger integer.
A) –187
B) –185
C) –184
D) –186

Answer: B

115) The sum of three consecutive integers is 393. Find the integers.
A) 129, 131, 133
B) 131, 132, 133
C) 130, 131, 132
D) 129, 130, 131

Answer: C

116) The sum of three consecutive even integers is 156. Find the integers.
A) 52, 54, 56
B) 54, 56, 58
C) 45, 46, 47
D) 50, 52, 54

Answer: D

117) Two pages that face each other in a book have 341 as the sum of their page numbers. What is the number of the page that comes first?
A) 169
B) 170
C) 168
D) 171

Answer: B

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118) If three times the smaller of two consecutive integers is added to four times the larger, the result is 137. Find the smaller integer.

A) 18
B) 19
C) 20
D) 57

Answer: B

119) If the first and third of three consecutive odd integers are added, the result is 69 less than five times the second integer. Find the third integer.

A) 21
B) 46
C) 23
D) 25

Answer: D

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

Answer the question.

120) 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) 42 (ii) 1 (iii) 1,000,010 (iv) 110

Answer: iii

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

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

Skip checking your answer if you are certain it is correct. This wastes time.

A) False
B) True

Answer: A

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

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

Answer: –x

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

Answer: –x

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

Answer: rs

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

Answer: 90 – r

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

Answer: x – 2, x – 1, x

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127) 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 $s - r = 90$

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

129) Measuring a room for baseboards

A) Area
B) Perimeter

Answer: B

130) Measuring a garden for tilling

A) Area
B) Perimeter

Answer: A

131) Measuring a garden for a border fence?

A) Perimeter
B) Area

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.

132) $P = 2L + 2W;\ L = 7, W = 6$

A) 20
B) 26
C) 13
D) 84

Answer: B

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

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

Answer: C

134) $A = \frac{1}{2}bh;\ b = 8, h = 18$

A) 26.5
B) 26
C) 72
D) 144

Answer: C

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135) $d = rt$; $t = 3$, $d = 6$

A) 3
B) 0.5
C) 2
D) 9

Answer: C

136) $P = 2L + 2W$; $P = 18$, $W = 6$

A) 3
B) 9
C) 12
D) 6

Answer: A

137) $V = \frac{1}{3}Bh$; $V = 18$, $h = 6$

A) 108
B) 24
C) 9
D) 3

Answer: C

138) $C = 2\pi r$; $C = 31.40$, $\pi = 3.14$

A) 197.19
B) 34.54
C) 10
D) 5

Answer: D

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

A) 5.14
B) 6.28
C) 12.56
D) 19.72

Answer: C

140) $I = prt$; $I = 8.8$, $p = 110$, $r = 0.08$

A) 77.44
B) 0.1
C) 1
D) 0.7744

Answer: C

141) $A = \frac{1}{2}(b + B)h$; $A = 114$, $b = 20$, $B = 18$

A) 360
B) 76
C) 19
D) 6

Answer: D

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Use a formula to solve the problem.

142) What is the perimeter of a rectangle of length 15 ft and width 13 ft?

A) 56 ft
B) 28 ft
C) 43 ft
D) 112 ft

Answer: A

143) What is the area of a square with side 3.6 cm?

A) 51.84 cm^2
B) 12.96 cm^2
C) 7.2 cm^2
D) 46 cm^2

Answer: B

144) Find the area of a triangle with height 17 m and base 19 m.

A) 18 m^2
B) 323 m^2
C) 161.5 m^2
D) 646 m^2

Answer: C

145) A circle has a circumference of 32π meters. Find the radius of the circle.

A) 8 m
B) 5 m
C) 32 m
D) 16 m

Answer: D

146) A rectangular Persian carpet has a perimeter of 184 inches. The length of the carpet is 20 inches more than the width. What are the dimensions of the carpet?

A) 36 inches by 56 inches
B) 56 inches by 76 inches
C) 72 inches by 92 inches
D) 82 inches by 102 inches

Answer: A

147) A square plywood platform has a perimeter which is 8 times the length of a side, decreased by 24. Find the length of a side.

A) 4
B) 10
C) 6
D) 1

Answer: C

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148) A pie–shaped (triangular) lake–front lot has a perimeter of 2000 feet. One side is 300 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, 200 ft, 300 ft
B) 500 ft, 500 ft, 500 ft
C) 400 ft, 700 ft, 900 ft
D) 500 ft, 800 ft, 1000 ft

Answer: C

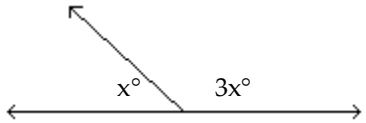
149) A baking pan measures 13 inches long, 5 inches wide, and 2 inches deep. What is the volume of the pan.

A) 65 cubic inches
B) 20 cubic inches
C) 36 cubic inches
D) 130 cubic inches

Answer: D

Find the measure of each marked angle.

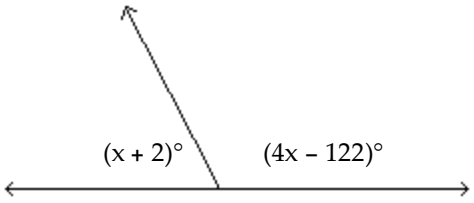
150)



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

Answer: D

151)



A) 60° and 120°
B) 62° and 28°
C) 64° and 116°
D) 62° and 118°

Answer: D

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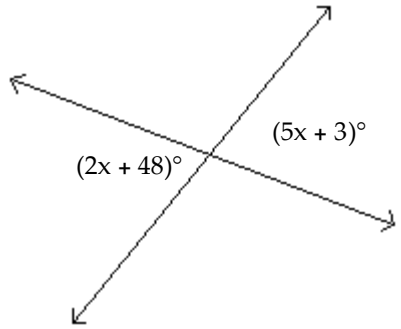
152)



A) 78° and 12°
B) 78° and 102°
C) 78° and 78°
D) 81° and 81°

Answer: C

Solve the formula for the specified variable.

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

A) $b = \frac{2A}{h}$

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

C) $b = \frac{Ah}{2}$

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

Answer: A

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

A) $h = 2\pi(S - r)$

B) $h = \frac{S - 2\pi r^2}{2\pi r}$

C) $h = \frac{S}{2\pi r} - 1$

D) $h = S - r$

Answer: B

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155) $V = \frac{1}{3}Bh$ for B

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

B) $B = \frac{V}{3h}$

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

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

Answer: A

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

A) $n = IR(Ir - E)$

B) $n = \frac{-IR}{Ir - E}$

C) $n = \frac{IR}{Ir + E}$

D) $n = \frac{-R}{Ir - E}$

Answer: B

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

A) $a = b + c - P$

B) $a = P - b - c$

C) $a = P + b + c$

D) $a = b + P - c$

Answer: B

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

A) $C = \frac{F - 32}{9}$

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

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

D) $C = \frac{5}{F - 32}$

Answer: C

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

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

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

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

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

Answer: D

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

A) $s = \frac{a + b}{r}$

B) $s = a + b - r$

C) $s = r(a + b)$

D) $s = \frac{a}{r} + b$

Answer: B

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

A) $n = \frac{A - P}{Pr}$

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

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

D) $n = \frac{A}{r}$

Answer: A

Express the phrase as a ratio in lowest terms.

162) 21 mi to 9 mi

A) $\frac{11}{5}$

B) $\frac{3}{7}$

C) $\frac{5}{11}$

D) $\frac{7}{3}$

Answer: D

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163) 24 people to 9 people

A) $\frac{2}{5}$

B) $\frac{8}{3}$

C) $\frac{5}{2}$

D) $\frac{3}{8}$

Answer: B

164) 76 ft to 24 ft

A) $\frac{25}{77}$

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

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

D) $\frac{77}{25}$

Answer: B

165) 2 yd to 8 ft

A) $\frac{4}{3}$

B) $\frac{9}{7}$

C) $\frac{7}{9}$

D) $\frac{3}{4}$

Answer: D

166) 21 in. to 6 in.

A) $\frac{22}{7}$

B) $\frac{7}{2}$

C) $\frac{2}{7}$

D) $\frac{7}{22}$

Answer: B

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167) 135 cm to 75 cm

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

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

C) $\frac{34}{19}$

D) $\frac{19}{34}$

Answer: B

Find the best buy and give the unit price.

168) Brand X 12 oz for $4.20
Brand Y 9 oz for $2.97

A) Brand Y, $0.33
B) Equal value
C) Brand X, $0.35
D) Brand Y, $0.35

Answer: A

169) Brand A 24 oz for $12.24
Brand B 20 oz for $10.00

A) Equal value
B) Brand A, $0.51
C) Brand B, $0.50
D) Brand A, $0.50

Answer: C

170) Brand A 16 oz for $4.64
Brand B 20 oz for $6.60

A) Brand B, $0.33
B) Brand A, $0.29
C) Equal value
D) Brand A, $0.33

Answer: B

171) Brand X 8 oz for $2.88
Brand Y 12 oz for $4.56

A) Brand X, $0.36
B) Equal value
C) Brand Y, $0.38
D) Brand Y, $0.36

Answer: A

Decide whether the proportion is true or false.

172) $\frac{3}{7} = \frac{21}{49}$

A) True
B) False

Answer: A

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173) $\frac{5}{8} = \frac{35}{64}$

A) True
B) False

Answer: B

174) $\frac{12}{44} = \frac{60}{220}$

A) True
B) False

Answer: A

175) $\frac{17}{51} = \frac{102}{357}$

A) True
B) False

Answer: B

176) $\frac{\frac{1}{2}}{20} = \frac{1}{40}$

A) True
B) False

Answer: A

177) $\frac{\frac{1}{4}}{7} = \frac{1}{29}$

A) True
B) False

Answer: B

Solve the equation.

178) $\frac{x}{30} = \frac{7}{15}$

A) $\left\{\frac{7}{2}\right\}$
B) {28}
C) {14}
D) $\left\{\frac{450}{7}\right\}$

Answer: C

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179) $\frac{y}{2} = \frac{15}{6}$

A) {5}

B) $\left\{\frac{5}{4}\right\}$

C) {50}

D) $\left\{\frac{4}{5}\right\}$

Answer: A

180) $\frac{1}{2} = \frac{r}{11}$

A) $\left\{\frac{11}{2}\right\}$

B) {11}

C) $\left\{\frac{1}{22}\right\}$

D) {22}

Answer: A

181) $\frac{3r - 4}{7} = \frac{r}{5}$

A) $\left\{\frac{5}{8}\right\}$

B) $\left\{\frac{3}{5}\right\}$

C) $\left\{\frac{2}{5}\right\}$

D) $\left\{\frac{5}{2}\right\}$

Answer: D

182) $\frac{7}{3} = \frac{x + 2}{10}$

A) $\left\{\frac{68}{3}\right\}$

B) $\left\{\frac{64}{3}\right\}$

C) $\left\{\frac{76}{3}\right\}$

D) $\left\{\frac{3}{8}\right\}$

Answer: B

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183) $\frac{x+9}{8}=\frac{7}{2}$

A) $\{37\}$
B) $\{38\}$
C) $\left\{\frac{47}{2}\right\}$
D) $\{19\}$

Answer: D

184) $\frac{x+10}{6}=\frac{x+1}{5}$

A) $\{1\}$
B) $\{4\}$
C) $\left\{\frac{44}{5}\right\}$
D) $\{44\}$

Answer: D

185) $\frac{4x-2}{5}=\frac{4x+2}{10}$

A) $\left\{-\frac{1}{6}\right\}$
B) $\left\{-\frac{1}{2}\right\}$
C) $\left\{\frac{3}{2}\right\}$
D) $\left\{\frac{1}{2}\right\}$

Answer: C

186) $\frac{4x-4}{2}=\frac{3x+5}{6}$

A) $\left\{\frac{17}{9}\right\}$
B) $\left\{-\frac{7}{15}\right\}$
C) $\{18\}$
D) $\{34\}$

Answer: A

187) $\frac{4x}{4}=\frac{3x+10}{4}$

A) $\{10\}$
B) $\left\{\frac{10}{7}\right\}$
C) $\{4\}$
D) $\{40\}$

Answer: A

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Solve the problem.

188) If a boat uses 23 gallons of gas to go 65 miles, how many miles can the boat travel on 115 gallons of gas?
A) 325 mi
B) 650 mi
C) 345 mi
D) 13 mi

Answer: A

189) If 4 hours are required to type 12 pages, how many hours would be required to type 21 pages?
A) 3 hr
B) 2 hr
C) 7 hr
D) 8 hr

Answer: C

190) In a sample of 72 widgets, 8 were defective. How many defective widgets would you expect in a sample of 216 widgets?
A) 54 widgets
B) 27 widgets
C) 22 widgets
D) 24 widgets

Answer: D

191) The sides of a triangle are 8 inches, 10 inches, and 12 inches. If the shortest side of a similar triangle is 48 inches, find its longest side.
A) 10 in.
B) 59 in.
C) 72 in.
D) 60 in.

Answer: C

192) On a map of the Thunderbird Country Club golf course, 1.5 inches equals 45 yards. How long is the 6th hole if the map shows 6 inches?
A) 270 yd
B) 11.3 yd
C) 180 yd
D) 405 yd

Answer: C

193) A label printer prints 3 pages of labels in 3.1 seconds. How long will it take to print 156 pages of labels?
A) 165.2 sec
B) 161.2 sec
C) 163.2 sec
D) 164.2 sec

Answer: B

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194) If a spring stretches 0.6 m when a 9–kg weight is attached to it, how much will it stretch when a 21–kg weight is attached to it?

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

Answer: B

195) Dr. Smith can see 10 patients in 2 hours. At this rate, how long would it take him to see 80 patients?

A) 16 hr
B) 20 hr
C) 400 hr
D) 15 hr

Answer: A

196) 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 76 yards with a pitching wedge, how far should she average with an 8–iron?

A) 67 yd
B) 61 yd
C) 95 yd
D) 85 yd

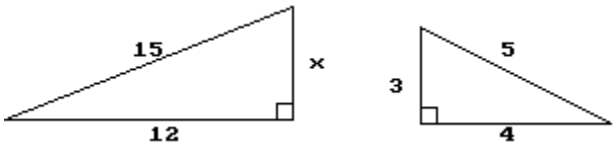
Answer: C

197) The ratio of the lengths of strings that play the notes D and B is 27 to 16. If a string 32 cm long plays a B, what is the length of the string that plays a D?

A) 32 cm
B) 59 cm
C) 48 cm
D) 54 cm

Answer: D

198) Find the missing length in the similar triangles.



A) x = 9
B) x = 3
C) x = 6
D) x = 12

Answer: A

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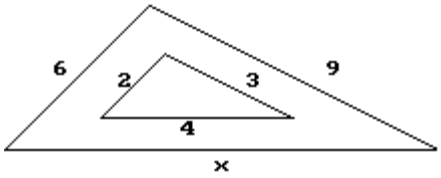
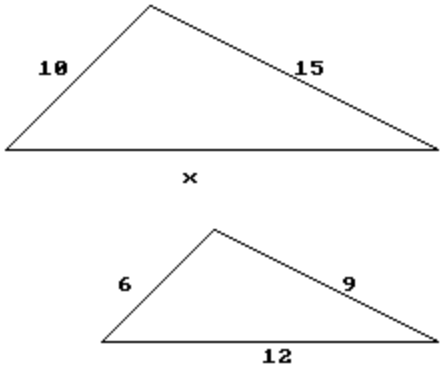
199) Find the missing length in the similar triangles.



A) x = 11
B) x = 16
C) x = 12
D) x = 4

Answer: C

200) Find the missing length in the similar triangles.



A) x = 25
B) x = 19
C) x = 20
D) x = 12

Answer: C

201) A tree casts a shadow 28 m long. At the same time, the shadow cast by a 53–cm tall statue is 79 cm long. Find the height of the tree. Round results to the nearest unit.

A) 18 m
B) 19 m
C) 42 m
D) 41 m

Answer: B

202) A triangle drawn on a map has sides of lengths 8.0 cm, 11 cm, and 14 cm. The shortest of the corresponding real–life distances is 98 km. Find the longest of the real–life distances. Round to the nearest unit.

A) 135 km
B) 172 km
C) 56 km
D) 125 km

Answer: B

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203) A church steeple casts a shadow 109 ft long, and at the same time a 9.0–ft post cast a shadow 7.0 ft long. How high is the steeple? Round to the nearest unit.

A) 8 ft
B) 112 ft
C) 140 ft
D) 85 ft

Answer: C

204) A line from the top of a cliff to the ground passes just over the top of a pole 7.0 ft high and meets the ground at a point 6.0 ft from the base of the pole. If the point is 83 ft from the base of the cliff, how high is the cliff? Round to the nearest unit.

A) 3486 ft
B) 97 ft
C) 581 ft
D) 7 ft

Answer: B

205) Use the Consumer Price Index figures in the table below to find the amount that would be charged in 1997 for the same amount of groceries that cost $179.40 in 1995. Give your answer to the nearest dollar.

Year	**Consumer Price Index**
1995	152.4
1997	160.5
1999	166.6
2001	177.1
2003	184.0
2005	195.3
2007	207.3

A) $150
B) $191
C) $170
D) $189

Answer: D

206) What is 60% of 200?

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

Answer: D

207) 45% of what number is 71?

A) 158
B) 1
C) 1580
D) 100

Answer: A

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208) Students at East Central High School earned $344 selling candles. They want to make $2000 for a club trip. What percent of their goal has been reached? Round to the nearest tenth of a percent, if necessary.
A) 5.8%
B) 58%
C) 17.2%
D) 1.7%
Answer: C

209) Thompson's Hardware spent $15,670 this year on advertising alone. If total sales were $790,100, what percent of total sales was spent on advertising? Round to the nearest tenth of a percent, if necessary.
A) 50.4%
B) 0.2%
C) 2%
D) 504%
Answer: C

210) The parking lot at a shopping mall has 85 cars in it. 40% of the cars are two–toned. How many cars are two–toned?
A) 340 cars
B) 213 cars
C) 34 cars
D) 21 cars
Answer: C

211) The appliance store where the Grants shop offers a 6% discount for paying cash. The Grants received a discount of $32. What was their total bill before the discount? Round to the nearest dollar.
A) $200
B) $533
C) $2
D) $5
Answer: B

212) There are 7750 self–employed persons in a town. If this represents 15% of the total number, what is the total number? Round to the nearest whole number.
A) 116,300
B) 517
C) 1163
D) 51,667
Answer: D

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

Provide an appropriate response.

213) Which one of the following ratios is not the same as 5 to 6?
(a) 10 to 12 (b) 50 to 60
(c) 6 to 5 (d) 200 to 240
Answer: c

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214) Which one of the following ratios is not the same as 4 to 6?
(a) 6 to 4 (b) 2 to 3
(c) 20 to 30 (d) 8 to 12
Answer: a

215) Which one of the following ratios is not the same as .75?
(a) 3 to 4 (b) 8 to 6
(c) .750 (d) 75 to 100
Answer: b

216) Which one of the following ratios is not the same as 1.3?
(a) 13 to 10 (b) 1 to 3
(c) 1.30 (d) 130 to 100
Answer: b

217) Which one of the following ratios is not the same as 4 to 16?
(a) 40 to 160 (b) 0.25
(c) 2 to 8 (d) 4 to 1
Answer: d

218) Which one of the following ratios is not the same as 5 to 2?
(a) 10 to 4 (b) 50 to 20
(c) 25 to 10 (d) 2 to 5
Answer: d

219) Give three ratios that are equivalent to 19 to 41.
Answer: Answers will vary. An example is 38 to 82.

220) Explain the distinction between ratio and proportion. Give examples.
Answer: Answers will vary. A ratio is a comparison, whereas a proportion is a statement that two ratios are equal. For example, $\frac{1}{2}$ is a ratio and $\frac{1}{2} = \frac{6}{12}$ is a proportion.

221) Explain why the equation $\frac{x+9}{6} = \frac{x+7}{6}$ has no solution.
Answer: Answers will vary. For the two expressions to be equal, their numerators must be equal. But there is no real number x such that $x + 9 = x + 7$.

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

Solve the problem.

222) A hardware store had monthly sales of $52,600 and spent 20% of it on promotions. How much was spent on promotions?
A) $10,520
B) $263,000
C) $26,300
D) $105,200
Answer: A

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223) A pension fund invests $116,800 in utility stocks and earns 4% per year on the investment. How much money is earned per year?
A) $2,920,000
B) $46,720
C) $292,000
D) $4672

Answer: D

224) The First National Bank pays 3% simple interest per year on certificate accounts. What is the annual income on a certificate account of $106,400? Round to the nearest dollar.
A) $3547
B) $3192
C) $355
D) $31,920

Answer: B

225) Students at East Central High School earned $548 selling candles. They want to make $4790 for a club trip. What percent of their goal has been reached? Round to the nearest tenth of a percent, if necessary.
A) 1.1%
B) 11.4%
C) 87%
D) 8.7%

Answer: B

226) Best Office Machines spent $46,130 this year on health insurance alone. If total sales were $467,900, what percent of total sales was spent on health insurance? Round to the nearest tenth of a percent, if necessary.
A) 1%
B) 10.1%
C) 101%
D) 9.9%

Answer: D

227) The parking lot at a golf course has 90 cars in it. 40% of the cars are four–door. How many cars are four–door?
A) 360 cars
B) 36 cars
C) 225 cars
D) 23 cars

Answer: B

228) The appliance store where the Jordans shop offers a 8% discount for paying cash. The Jordans received a discount of $25. What was their total bill before the discount? Round to the nearest dollar.
A) $3
B) $313
C) $2
D) $200

Answer: B

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229) There are 2390 under–capitalized retail stores. If this represents 18% of all retail stores, what is the total number of retail stores? Round to the nearest whole number.

A) 430
B) 13,278
C) 43,000
D) 133

Answer: B

230) A convention manager finds that she has $1440 made up of twenties and fifties. She has a total of 45 bills. How many fifty–dollar bills does the manager have?

A) 12 fifty–dollar bills
B) 27 fifty–dollar bills
C) 45 fifty–dollar bills
D) 18 fifty–dollar bills

Answer: D

231) A woman has $1.70 in dimes and nickels. She has 2 more dimes than nickels. How many nickels does she have?

A) 10 nickels
B) 14 nickels
C) 8 nickels
D) 12 nickels

Answer: A

232) A bank teller has some five–dollar bills and some twenty–dollar bills. The teller has 5 more of the twenties. The total value of the money is $750. Find the number of five–dollar bills that the teller has.

A) 21 five–dollar bills
B) 26 five–dollar bills
C) 31 five–dollar bills
D) 36 five–dollar bills

Answer: B

233) A cashier has a total of 127 bills made up of fives and tens. The total value of the money is $825. How many ten–dollar bills does the cashier have?

A) 89 ten–dollar bills
B) 19 ten–dollar bills
C) 38 ten–dollar bills
D) 57 ten–dollar bills

Answer: C

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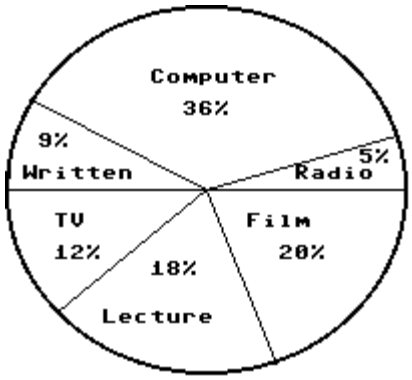
A survey showed that students had these preferences for instructional materials. Use the graph to answer the question.



234) About how many students would you expect to prefer computers in a school of 950 students?
A) About 342 students
B) About 190 students
C) About 171 students
D) About 36 students

Answer: A

235) About how many students would you expect to prefer lectures in a school of 900 students?
A) About 162 students
B) About 18 students
C) About 324 students
D) About 180 students

Answer: A

236) About how many students would you expect to prefer written materials in a school of 450 students?
A) About 162 students
B) About 81 students
C) About 41 students
D) About 9 students

Answer: C

237) About how many students would you expect to prefer radio in a school of 650 students?
A) About 234 students
B) About 117 students
C) About 33 students
D) About 5 students

Answer: C

238) About how many students would you expect to prefer TV in a school of 800 students?
A) About 144 students
B) About 12 students
C) About 96 students
D) About 160 students

Answer: C

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239) About how many students would you expect to prefer films in a school of 650 students?
A) About 130 students
B) About 117 students
C) About 20 students
D) About 78 students

Answer: A

Solve the problem.

240) It is necessary to have a 40% antifreeze solution in the radiator of a certain car. The radiator now has 50 liters of 20% solution. How many liters of this should be drained and replaced with 100% antifreeze to get the desired strength?
A) 12.5 L
B) 25 L
C) 16.7 L
D) 20 L

Answer: A

241) How many liters of a 20% alcohol solution must be mixed with 50 liters of a 70% solution to get a 40% solution?
A) 12.5 L
B) 125 L
C) 7.5 L
D) 75 L

Answer: D

242) In a chemistry class, 7 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed?
A) 3.5 L
B) 2.5 L
C) 7.0 L
D) 4.5 L

Answer: A

243) A merchant has coffee worth $40 a pound that she wishes to mix with 90 pounds of coffee worth $90 a pound to get a mixture that can be sold for $50 a pound. How many pounds of the $40 coffee should be used?
A) 225 pounds
B) 180 pounds
C) 450 pounds
D) 360 pounds

Answer: D

244) Helen Weller invested $13,000 in an account that pays 3% simple interest. How much additional money must be invested in an account that pays 6% simple interest so that the average return on the two investments amounts to 4%?
A) $10,000
B) $9000
C) $13,000
D) $6500

Answer: D

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245) Mardi received an inheritance of $70,000. She invested part at 4% and deposited the remainder in tax–free bonds at 3%. Her total annual income from the investments was $2500. Find the amount invested at 4%.

A) $39,000
B) $40,000
C) $20,000
D) $67,500

Answer: B

246) Walt made an extra $5000 last year from a part–time job. He invested part of the money at 5% and the rest at 4%. He made a total of $210 in interest. How much was invested at 4%?

A) $4000
B) $3000
C) $2500
D) $1000

Answer: A

247) Roberto invested some money at 5%, and then invested $2000 more than twice this amount at 5%. His total annual income from the two investments was $2200. How much was invested at 5%?

A) $3000
B) $28,000
C) $30,000
D) $6000

Answer: C

248) Jay drove 390 kilometers at the average rate of 78 kilometers per hour. How long did the trip take?

A) $\frac{1}{5}$ hr
B) 5 hr
C) 4 hr
D) 6 hr

Answer: B

249) Janet drove 268 kilometers and the trip took 4 hours. How fast was Janet traveling?

A) $\frac{1}{67}$ km/hr
B) 67 km/hr
C) 1072 km/hr
D) 68 km/hr

Answer: B

250) Jill is 20 kilometers away from Joe. Both begin to walk toward each other at the same time. Jill walks at 2 km/hr. They meet in 4 hours. How fast is Joe walking?

A) 3 km/hr
B) 12 km/hr
C) 7 km/hr
D) 2.5 km/hr

Answer: A

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251) From a point on a straight road, two cars are driven in opposite directions, one at 22 miles per hour and the other at 72 miles per hour. In how many hours will they be 376 miles apart?
A) 5 hours
B) 3 hours
C) 4 hours
D) Not enough information

Answer: C

252) From a point on a straight road, John and Fred ride bicycles in opposite directions. John rides 5 miles per hour and Fred rides 7 miles per hour. In how many hours will they be 60 miles apart?
A) 6 hours
B) Not enough information
C) 4 hours
D) 5 hours

Answer: D

253) From a point on a river, two boats are driven in opposite directions, one at 6 miles per hour and the other at 9 miles per hour. In how many hours will they be 75 miles apart?
A) 5 hr
B) 1 hr
C) 7 hr
D) 6 hr

Answer: A

254) Derek is four times as old as Sarah. Three years ago the sum of their ages was 29. How old is each now?
A) Derek: 31 yr old; Sarah: 114 yr old
B) Derek: 116 yr old; Sarah: 29 yr old
C) Derek: 117 yr old; Sarah: 28 yr old
D) Derek: 29 yr old; Sarah: 117 yr old

Answer: B

255) A cashier has a total of 126 bills, made up of fives and tens. The total value of the money is $760. How many ten–dollar bills does the cashier have?
A) 13 ten–dollar bills
B) 26 ten–dollar bills
C) 39 ten–dollar bills
D) 100 ten–dollar bills

Answer: B

256) Carla works for $18 an hour. A total of 20% of her salary is deducted for taxes and insurance. How many hours must she work to take home $2880?
A) 200 hr
B) 300 hr
C) 180 hr
D) 250 hr

Answer: A

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257) If Gloria received a 12 percent raise and is now making $22,400 a year, what was her salary before the raise? Round to the nearest dollar if necessary.

A) $20,400
B) $20,000
C) $19,712
D) $21,000

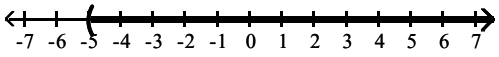
Answer: B

258) At the end of the day, a storekeeper had $1442 in the cash register, counting both the sale of goods and the sales tax of 3%. Find the amount that is the tax. Round to the nearest dollar if necessary.

A) $33
B) $42
C) $43
D) $47

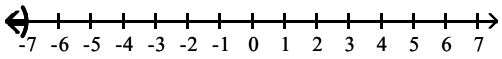
Answer: B

Write an inequality involving the variable x that describes the set of numbers graphed.

259) 

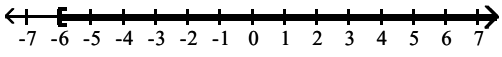
A) $x \leq -5$
B) $x \geq -5$
C) $x > -5$
D) $x < -5$

Answer: C

260) 

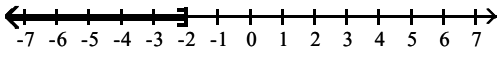
A) $x \leq -7$
B) $x > -7$
C) $x < -7$
D) $x \geq -7$

Answer: C

261) 

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

Answer: D

262) 

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

Answer: C

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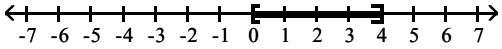
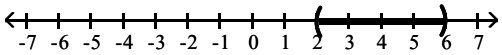
263) 

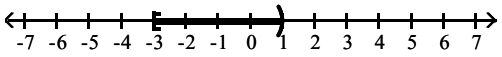
A) $0 \le x < 4$
B) $0 \le x \le 4$
C) $0 < x \le 4$
D) $0 < x < 4$

Answer: B

264) 

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

Answer: C

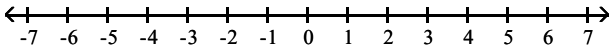
265) 

A) $-3 < x \le 1$
B) $-3 \le x \le 1$
C) $-3 < x < 1$
D) $-3 \le x < 1$

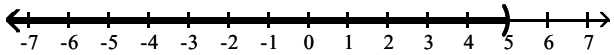
Answer: D

Write each inequality in interval notation and graph the interval on a number line.

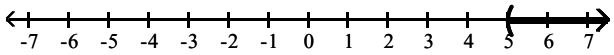
266) $x > 5$



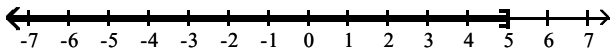
A) $(-\infty, 5)$



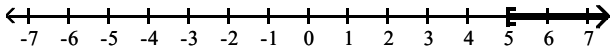
B) $(5, \infty)$



C) $(-\infty, 5]$



D) $[5, \infty)$



Answer: B

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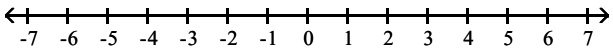
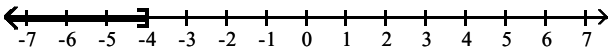
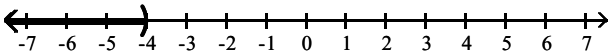
267) $x < -4$



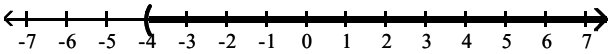
A) $(-\infty, -4]$



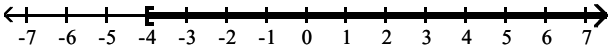
B) $(-\infty, -4)$



C) $(-4, \infty)$

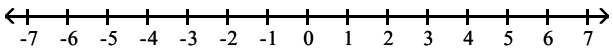


D) $[-4, \infty)$

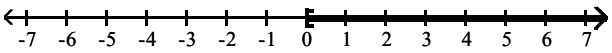


Answer: B

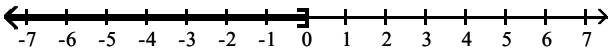
268) $x \geq 0$



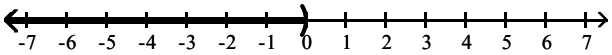
A) $[0, \infty)$



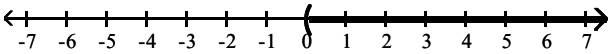
B) $(-\infty, 0]$



C) $(-\infty, 0)$



D) $(0, \infty)$



Answer: A

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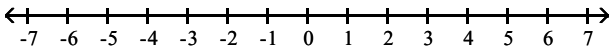
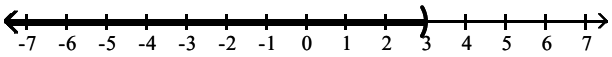
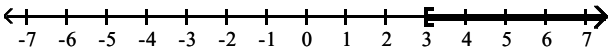
269) $x \leq 3$



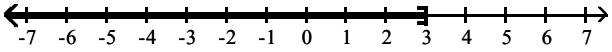
A) $(-\infty, 3)$



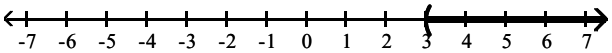
B) $[3, \infty)$



C) $(-\infty, 3]$

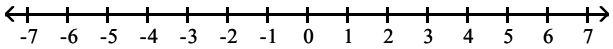


D) $(3, \infty)$

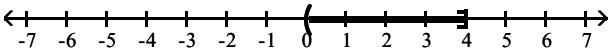


Answer: C

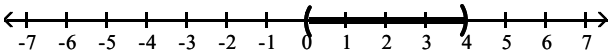
270) $0 \leq x \leq 4$



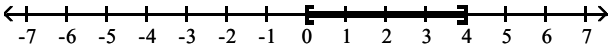
A) $(0, 4]$



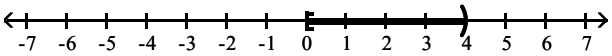
B) $(0, 4)$



C) $[0, 4]$



D) $[0, 4)$



Answer: C

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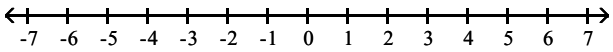
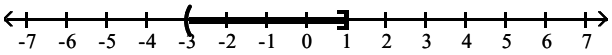
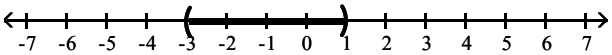
271) $-3 < x < 1$



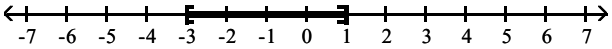
A) (–3, 1]



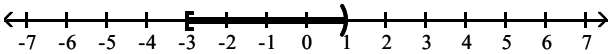
B) (–3, 1)



C) [–3, 1]

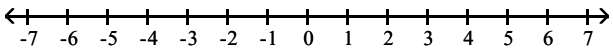


D) [–3, 1)

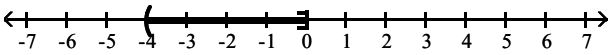


Answer: B

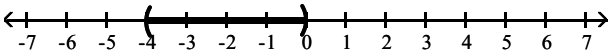
272) $-4 \leq x < 0$



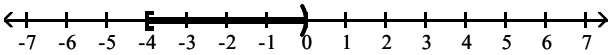
A) (–4, 0]



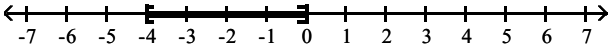
B) (–4, 0)



C) [–4, 0)



D) [–4, 0]



Answer: C

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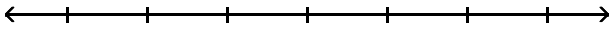
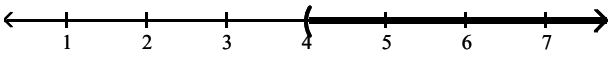
Solve the inequality. Write the solution set in interval notation and graph it.

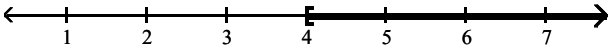
273) $a + 10 < 14$



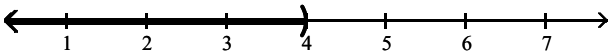
A) $(4, \infty)$



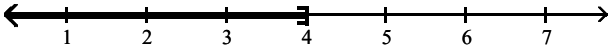
B) $[4, \infty)$



C) $(-\infty, 4)$

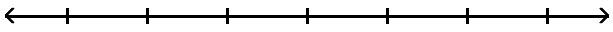


D) $(-\infty, 4]$

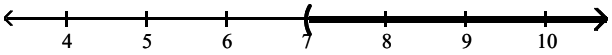


Answer: C

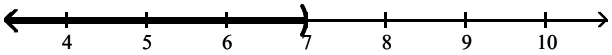
274) $5n + 4 > 4n + 11$



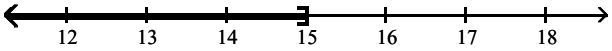
A) $(7, \infty)$



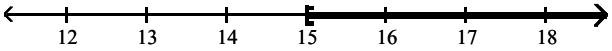
B) $(-\infty, 7)$



C) $(-\infty, 15]$



D) $[15, \infty)$



Answer: A

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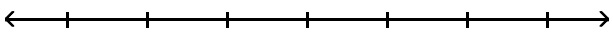
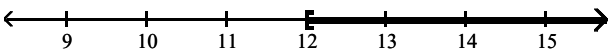
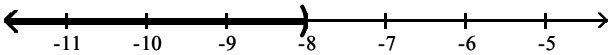
275) $-8c - 1 \leq -9c + 11$



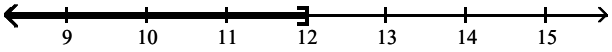
A) [12, ∞)



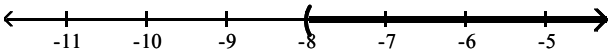
B) (-∞, –8)



C) (-∞, 12]

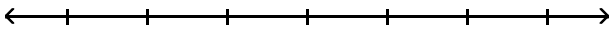


D) (–8, ∞)

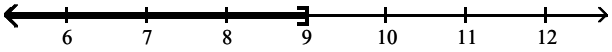


Answer: C

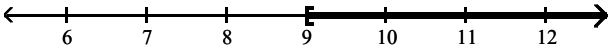
276) $-8t - 2 \geq -9t + 7$



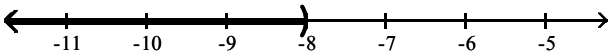
A) (-∞, 9]



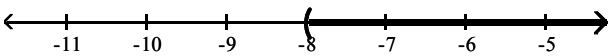
B) [9, ∞)



C) (-∞, –8)



D) (–8, ∞)



Answer: B

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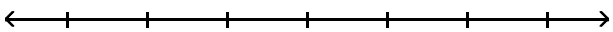
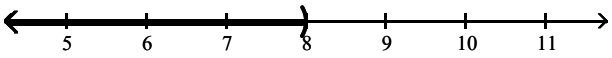
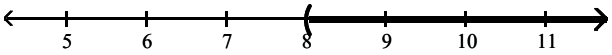
277) $f + 1 < 9$



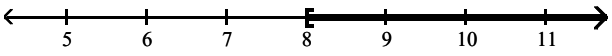
A) $(-\infty, 8)$



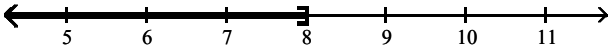
B) $(8, \infty)$



C) $[8, \infty)$

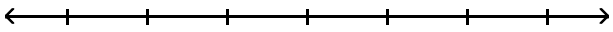


D) $(-\infty, 8]$

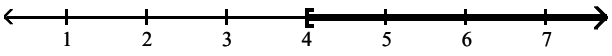


Answer: A

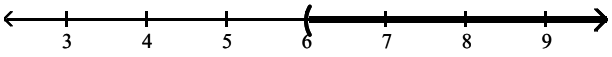
278) $12 + 6t - 6 \geq 5t + 10$



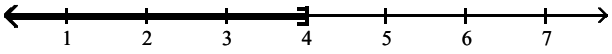
A) $[4, \infty)$



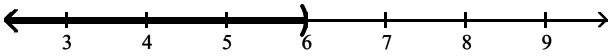
B) $(6, \infty)$



C) $(-\infty, 4]$



D) $(-\infty, 6)$



Answer: A

Solve the inequality and write the solution set in interval notation.

279) $7x < 28$

A) $(4, \infty)$

B) $(-\infty, 4)$

C) $(-4, \infty)$

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

Answer: B

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280) $-14x \geq 56$

A) $(-\infty, 4]$
B) $[4, \infty)$
C) $[-4, \infty)$
D) $(-\infty, -4]$

Answer: D

281) $2x \leq -60$

A) $[-30, \infty)$
B) $(-\infty, -30]$
C) $[30, \infty)$
D) $(-\infty, 30]$

Answer: B

282) $4x > 0$

A) $\varnothing$
B) $(-\infty, \infty)$
C) $(-\infty, 0)$
D) $(0, \infty)$

Answer: D

283) $\frac{3}{4}t \geq -60$

A) $[80, \infty)$
B) $(-\infty, -80]$
C) $[-80, \infty)$
D) $(-\infty, 80]$

Answer: C

284) $-0.4z > -0.24$

A) $(-0.6, \infty)$
B) $(-\infty, -0.6)$
C) $(0.6, \infty)$
D) $(-\infty, 0.6)$

Answer: D

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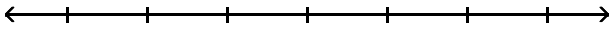
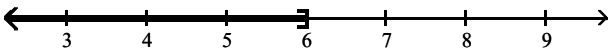
Solve the inequality. Write the solution set in interval notation and graph it.

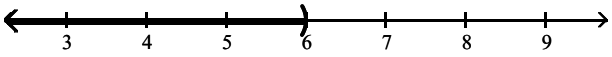
285) $24x - 32 > 4(5x - 2)$



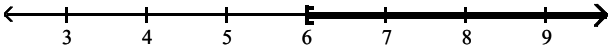
A) $(-\infty, 6]$



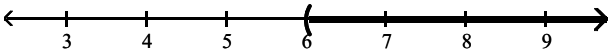
B) $(-\infty, 6)$



C) $[6, \infty)$

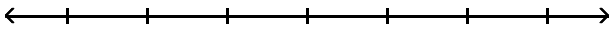


D) $(6, \infty)$

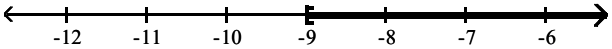


Answer: D

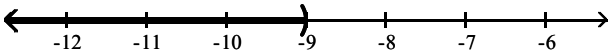
286) $-5(6y - 7) < -35y - 10$



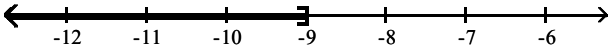
A) $[-9, \infty)$



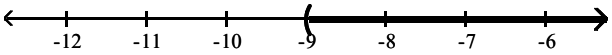
B) $(-\infty, -9)$



C) $(-\infty, -9]$



D) $(-9, \infty)$



Answer: B

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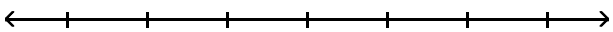
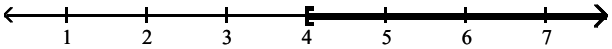
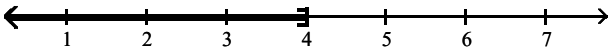
287) $-30r - 35 \leq -5(5r + 11)$



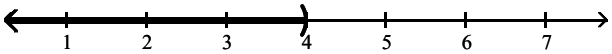
A) $[4, \infty)$



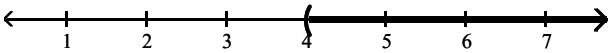
B) $(-\infty, 4]$



C) $(-\infty, 4)$

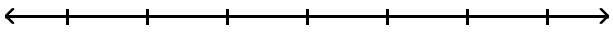


D) $(4, \infty)$

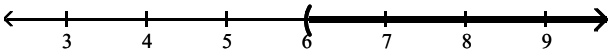


Answer: A

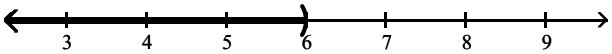
288) $12n + 2 \leq 2(5n + 7)$



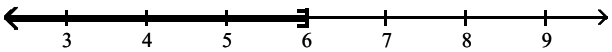
A) $(6, \infty)$



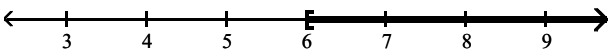
B) $(-\infty, 6)$



C) $(-\infty, 6]$



D) $[6, \infty)$



Answer: C

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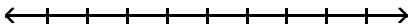
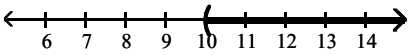
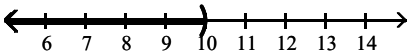
289) $-8x + 4 + 4x < 6 - 6x + 10$



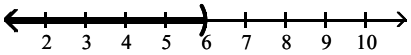
A) $(10, \infty)$



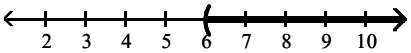
B) $(-\infty, 10)$



C) $(-\infty, 6)$



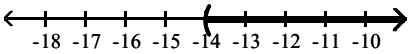
D) $(6, \infty)$



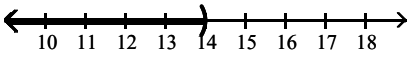
Answer: C

290) $2(x - 2) - 16x < 2(-6x - 9) - 3x$

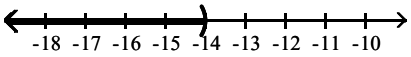
A) $(-14, \infty)$



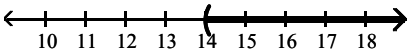
B) $(-\infty, 14)$



C) $(-\infty, -14)$



D) $(14, \infty)$



Answer: C

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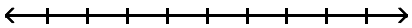
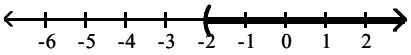
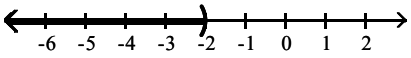
291) $-2(-2x + 4) + 3(x + 12) > -2(-2x - 8) + 1(x + 16)$



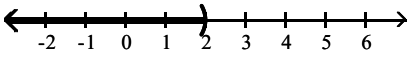
A) $(-2, \infty)$



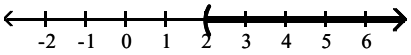
B) $(-\infty, -2)$



C) $(-\infty, 2)$



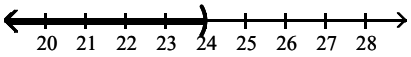
D) $(2, \infty)$



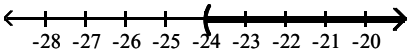
Answer: D

292) $\frac{2}{15}(x + 9) > \frac{1}{9}(x + 6)$

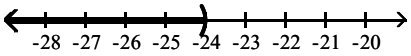
A) $(-\infty, 24)$



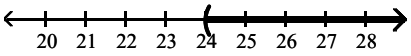
B) $(-24, \infty)$



C) $(-\infty, -24)$



D) $(24, \infty)$



Answer: B

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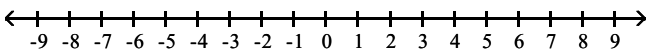
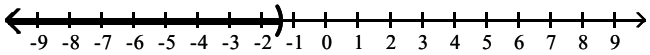
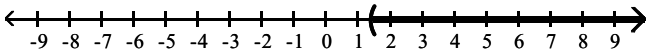
293) $\frac{1}{2}(x+3) > \frac{1}{4}(7x-1)$



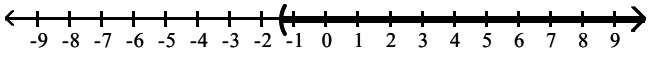
A) $\left(-\infty, -\frac{7}{5}\right]$



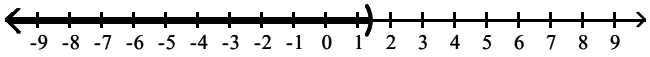
B) $\left[\frac{7}{5}, \infty\right)$



C) $\left(-\frac{7}{5}, \infty\right)$

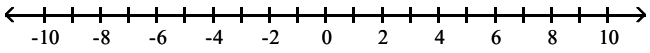


D) $\left(-\infty, \frac{7}{5}\right]$

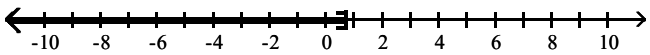


Answer: D

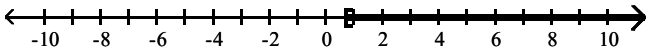
294) $\frac{1}{7}(6x+1) - \frac{1}{14}(3x+1) \geq \frac{1}{2}$



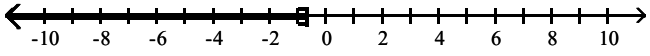
A) $\left(-\infty, \frac{2}{3}\right]$



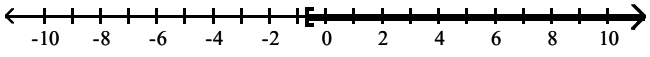
B) $\left[\frac{2}{3}, \infty\right)$



C) $\left(-\infty, -\frac{2}{3}\right]$



D) $\left[-\frac{2}{3}, \infty\right)$



Answer: B

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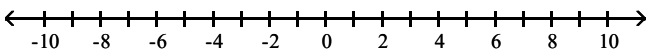
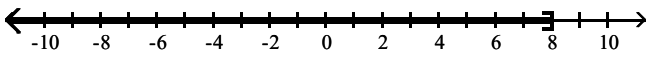
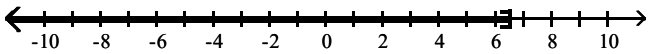
295) $\frac{1}{3}(15x + 33) + \frac{1}{6}(18x - 36) > 69$



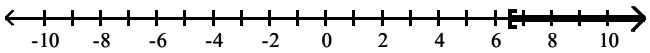
A) $(-\infty, 8]$



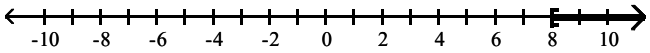
B) $\left[\frac{13}{2}, \infty\right)$



C) $\left(-\infty, \frac{13}{2}\right]$



D) $[8, \infty)$



Answer: D

Translate the statement into an inequality. Use x as the variable.

296) You must be at least 49 inches tall to ride this roller coaster.

A) $x \leq 49$
B) $x \geq 49$
C) $x < 49$
D) $x > 49$

Answer: B

297) Less than 11 inches of snow fell.

A) $x > 11$
B) $x \geq 11$
C) $x < 11$
D) $x \leq 11$

Answer: C

298) Ethan could spend at most 60 minutes per day playing video games.

A) $x > 60$
B) $x \geq 60$
C) $x \leq 60$
D) $x < 60$

Answer: C

299) The jet's speed exceeded 530 mph.

A) $x \leq 530$
B) $x > 530$
C) $x < 530$
D) $x \geq 530$

Answer: B

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Solve the problem.

300) If half a number is added to 9, the result is greater than or equal to –2. Find all such numbers.

A) $x \geq 7$
B) $x \geq -22$
C) $x > -22$
D) $x \leq -18$

Answer: B

301) Paul has grades of 68 and 77 on his first two tests. What must he score on his third test in order to have an average of at least 70?

A) at most 70
B) at least 73
C) at least 65
D) at most 72

Answer: C

302) Sue drove her car 391 miles in January, 414 miles in February, and 266 miles in March. If her average mileage for the four months from January to April is to be at least 384 miles, how many miles must she drive in April?

A) at most 465 miles
B) at least 364 miles
C) at most 384 miles
D) at least 465 miles

Answer: D

303) During the first four months of the year, Jack earned $1040, $1080, $580 and $1490. If Jack must have an average salary of at least $1060 in order to earn retirement benefits, what must Jack earn in the fifth month in order to qualify for benefits?

A) at most $1048
B) at least $1050
C) at least $1110
D) at most $1060

Answer: C

304) One side of a triangle is twice as long as a second side. The third side of the triangle is 16 feet long. The perimeter of the triangle cannot be more than 61 feet. Find the longest possible values for the other two sides of the triangle.

A) 23 feet and 23 feet
B) 15 feet and 30 feet
C) 14 feet and 28 feet
D) 39 feet and 39 feet

Answer: B

305) The perimeter of a rectangle must be no greater than 88 meters. The width must be 20 meters. Find the greatest possible value for the length of the rectangle.

A) 108 meters
B) 24 meters
C) 64 meters
D) 68 meters

Answer: B

Access Complete Test Bank for Beginning and Intermediate Algebra 6th Lial

306) A bag of marbles has twice as many blue marbles as green marbles, and the bag has at least 45 marbles in it. At least how many green marbles does it have?

A) At least 16 green marbles
B) At least 15 green marbles
C) At least 23 green marbles
D) At least 30 green marbles

Answer: B

307) Jon has 1108 points in his math class. He must have 87% of the 1400 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) 1218 points
B) 292 points
C) 110 points
D) 964 points

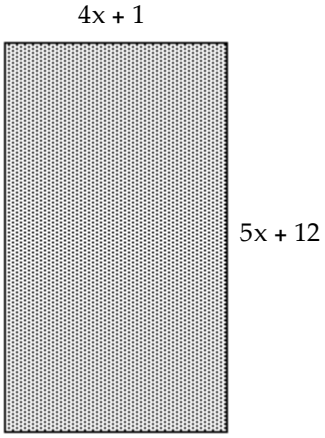
Answer: C

308) 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 −18° Fahrenheit.
B) It must be kept below 103° Fahrenheit.
C) It must be kept below 77° Fahrenheit.
D) It must be kept below 46° Fahrenheit.

Answer: C

309) For what values of x would the rectangle have a perimeter of at least 260?



A) 27 or greater
B) 13 or less
C) 27 or less
D) 13 or greater

Answer: D

Access Complete Test Bank for Beginning and Intermediate Algebra 6th Lial

310) A company that produces handbags has found that revenue from the sales of the handbags is $8 per handbag, less sales costs of $50. Production costs are $75, plus $7 per handbag. Profit (P) is given by revenue (R) less cost (C), so the company must find the production level x that makes

$P > 0$, that is, $R - C > 0$.

(a) Write an expression for revenue, R, letting x represent the production level (number of handbags to be produced.)

(b) Write an expression for production costs C in terms of x.

(c) Write an expression for profit P, and then solve the inequality $P > 0$.

(d) Describe the solution in terms of the problem.

A) (a) $R = 8x + 50$;
(b) $C = 75 + 7x$;
(c) $P = (8x + 50) - (75 + 7x) = x - 25$; $x > 25$;
(d) To make a profit, more than 25 handbags must be produced and sold.

B) (a) $R = 8x - 50$;
(b) $C = 25 + 9x$;
(c) $P = (8x - 50) - (25 + 9x) = x - 75$; $x > 75$;
(d) To make a profit, more than 75 handbags must be produced and sold.

C) (a) $R = 8x - 50$;
(b) $C = 75 - 7x$;
(c) $P = (8x - 50) - (75 - 7x) = x - 75$; $x > 75$;
(d) To make a profit, more than 75 handbags must be produced and sold.

D) (a) $R = 8x - 50$;
(b) $C = 75 + 7x$;
(c) $P = (8x - 50) - (75 + 7x) = x - 125$; $x > 125$;
(d) To make a profit, more than 125 handbags must be produced and sold.

Answer: D

Access Complete Test Bank for Beginning and Intermediate Algebra 6th Lial

311) A company that produces appliances has found that revenue from the sales of the appliances is $50 per appliance, less sales costs of $250. Production costs are $400, plus $40 per appliance. Profit (P) is given by revenue (R) less cost (C), so the company must find the production level x that makes

$P > 0$, that is, $R - C > 0$.

(a) Write an expression for revenue, R, letting x represent the production level (number of appliances to be produced.)

(b) Write an expression for production costs C in terms of x.

(c) Write an expression for profit P, and then solve the inequality $P > 0$.

(d) Describe the solution in terms of the problem.

A) (a) $R = 50x - 250$;
(b) $C = 400 + 40x$;
(c) $P = (50x - 250) - (400 + 40x) = 5x - 650$; $5x > 650$; $x > 130$
(d) To make a profit, more than 130 appliances must be produced and sold.

B) (a) $R = 50x - 250$;
(b) $C = 400 + <a+10>x$;
(c) $P = (50x - 250) - (400 + 60x) = 10x - 600$; $10x > 600$; $x > 60$
(d) To make a profit, more than 60 appliances must be produced and sold.

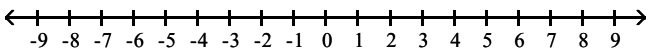
C) (a) $R = 50x - 250$;
(b) $C = 400 + 40x$;
(c) $P = (50x - 250) - (400 + 40x) = 10x - 650$; $10x > 650$; $x > 65$
(d) To make a profit, more than 65 appliances must be produced and sold.

D) (a) $R = 50x + 250$;
(b) $C = 400 - 40x$;
(c) $P = (50x + 250) - (400 - 40x) = 10x - 150$; $10x > 150$; $x > 15$
(d) To make a profit, more than 15 appliances must be produced and sold.

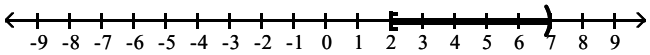
Answer: C

Solve the inequality. Write the solution set in interval notation and graph it.

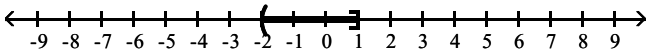
312) $6 < 3x \leq 21$



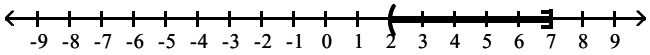
A) [2, 7)



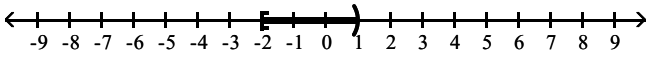
B) (−2, 1]



C) (2, 7]



D) [−2, 1)



Answer: C

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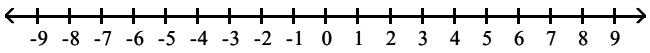
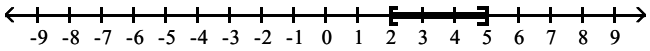
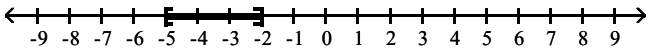
313) $7 \le 3t + 1 \le 16$



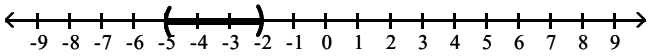
A) [2, 5]



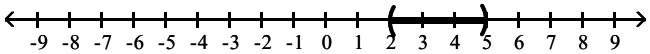
B) [−5, −2]



C) (−5, −2)

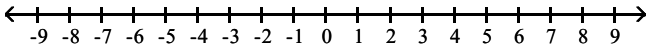


D) (2, 5)

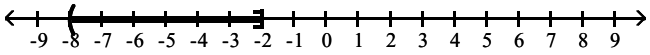


Answer: A

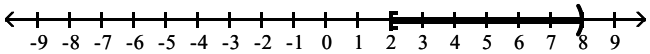
314) $-20 \le -2c - 4 < -8$



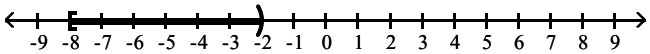
A) (−8, −2]



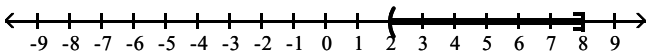
B) [2, 8)



C) [−8, −2)



D) (2, 8]



Answer: D

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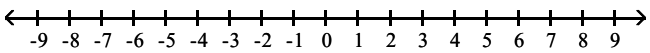
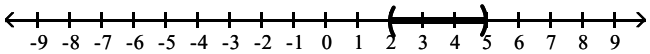
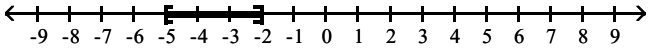
315) $-7 \le -2z + 3 \le -1$



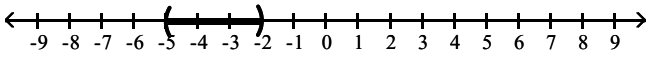
A) (2, 5)



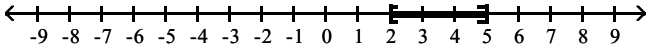
B) [−5, −2]



C) (−5, −2)

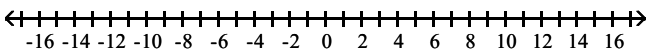


D) [2, 5]

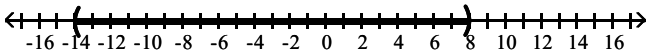


Answer: D

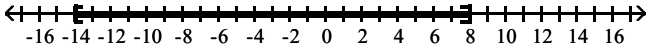
316) $-2 \le 5 + \frac{1}{2}q \le 9$



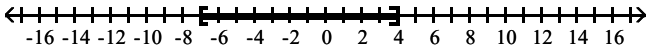
A) (−14, 8)



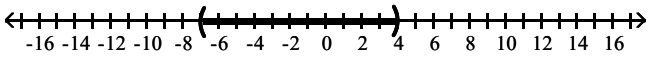
B) [−14, 8]



C) [−7, 4]



D) (−7, 4)



Answer: B

Solve the equation.

317) $4x + 17 = 5x + 6$

A) {12}
B) {11}
C) {10}
D) {5}

Answer: B

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318) $-\frac{4}{5}x = -20$

A) $\{16\}$
B) $\{25\}$
C) $\left\{\frac{96}{5}\right\}$
D) $\left\{\frac{104}{5}\right\}$

Answer: B

319) $6 - (x - 3) = -4x + 3(x + 5)$

A) $\{-3\}$
B) $\varnothing$
C) $\{3\}$
D) {all real numbers}

Answer: B

320) $0.7(x + 60) + 0.5(x - 90) = 81$

A) {140}
B) {80}
C) {70}
D) {60}

Answer: C

321) $-2(x + 5) = -(2x + 10)$

A) {all real numbers}
B) $\varnothing$
C) {0}
D) {5}

Answer: A

322) $(y - 8) - (y + 7) = 4y$

A) $\left\{-\frac{5}{2}\right\}$
B) $\left\{-\frac{15}{4}\right\}$
C) $\left\{-\frac{15}{8}\right\}$
D) $\left\{\frac{3}{4}\right\}$

Answer: B

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Solve the problem.

323) In the previous baseball season, team A won the most games of any major league team. Team A won 36 less than twice as many games as they lost. They played 162 regular–season games. How many wins and losses did team A have?

A) Wins: 94; losses: 68
B) Wins: 96; losses: 67
C) Wins: 97; losses: 65
D) Wins: 96; losses: 66

Answer: D

324) Three islands have a total area of 5180 mi^2. Island A is 3247 mi^2 larger than island B, and island B is 167 mi^2 larger than island C. What is the area of each island?

A) A: 3947 mi^2; B: 867 mi^2; C: 533 mi^2
B) A: 4114 mi^2; B: 867 mi^2; C: 523 mi^2
C) A: 3947 mi^2; B: 700 mi^2; C: 533 mi^2
D) A: 4114 mi^2; B: 700 mi^2; C: 523 mi^2

Answer: C

325) Find the measure of an angle, if its supplement measures 54° more than twice its complement.

A) 64°
B) 36°
C) 54°
D) 108°

Answer: C

326) The sum of twice a number and 6 less than the number is the same as the difference between –14 and the number. What is the number?

A) –3
B) –4
C) –1
D) –2

Answer: D

327) The formula for the perimeter of a rectangle is $P = 2L + 2W$. Solve for L.

A) $L = \frac{P - W}{2}$
B) $L = d - 2W$
C) $L = \frac{P - 2W}{2}$
D) $L = P - W$

Answer: C

328) The formula for the perimeter of a rectangle is $P = 2L + 2W$. If $P = 56$ and $W = 6$, find the value of L.

A) 20
B) 19
C) 22
D) 21

Answer: C

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

A) $C = \frac{5}{F - 32}$

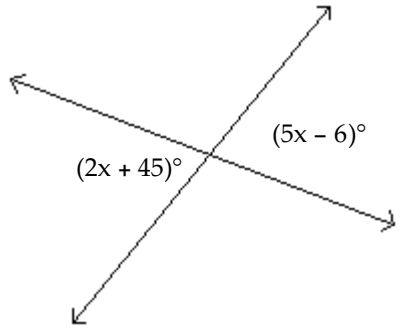
B) $C = \frac{9}{5}(F - 32)$

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

D) $C = \frac{F - 32}{9}$

Answer: C

330) Find the measure of each marked angle.



A) 79° and 101°
B) 79° and 79°
C) 79° and 11°
D) 77° and 77°

Answer: B

Solve the equation.

331) $\frac{x}{4} = \frac{24}{32}$

A) {4}

B) $\left\{\frac{3}{4}\right\}$

C) $\left\{\frac{99}{4}\right\}$

D) {3}

Answer: D

332) $\frac{x + 6}{3} = \frac{x + 8}{6}$

A) {3}
B) {–12}
C) {–4}
D) {4}

Answer: C

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Solve the problem.

333) 160 trains is what percent of 1870 trains?

A) 8.6%
B) 1168.8%
C) 0%
D) 0.1%

Answer: A

334) Find the best buy and the unit price.
Brand X 6 oz for $0.42
Brand Y 8 oz for $0.64

A) Brand Y, $0.8
B) Equal value
C) Brand X, $0.7
D) Brand Y, $0.7

Answer: C

335) The distance between city A and city B is 2000 mi. On a certain map, this distance is represented by 60 in. On the same map, city C and city D are 171 in. apart. What is the actual distance between city C and city D?

A) 5700 mi
B) 5710 mi
C) 570 mi
D) 5800 mi

Answer: A

336) Paul Nagel invested some money at 3.5% simple interest and $7000 more than that amount at 4.5% simple interest. After 1 year, his total interest from the two accounts was $1275. How much did he invest at each rate?

A) $12,000 at 3.5%; $19,000 at 4.5%
B) $13,000 at 3.5%; $18,000 at 4.5%
C) $13,000 at 3.5%; $19,000 at 4.5%
D) $12,000 at 3.5%; $20,000 at 4.5%

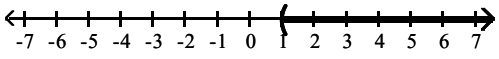
Answer: A

337) From a point on a straight road, two cars are driven in opposite directions, one at 33 miles per hour and the other at 57 miles per hour. In how many hours will they be 360 miles apart?

A) Not enough information
B) 3 hours
C) 4 hours
D) 5 hours

Answer: C

Write an inequality involving the variable x that describes the set of numbers graphed.

338) 

A) $x > 1$
B) $x < 1$
C) $x \leq 1$
D) $x \geq 1$

Answer: A

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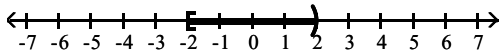
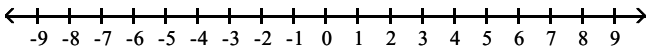
339) 

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

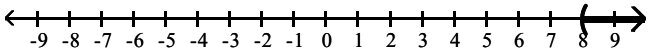
Answer: D

Solve the inequality and graph the solution set.

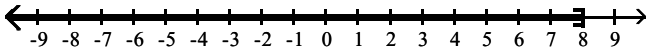
340) $-11x + 5(x - 8) \geq 4x - (10 + 5x) - 70$



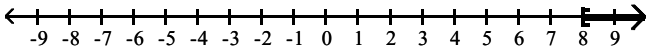
A) $(8, \infty)$



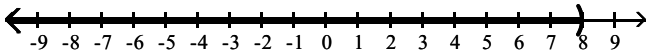
B) $(-\infty, 8]$



C) $[8, \infty)$

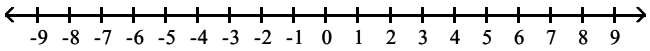


D) $(-\infty, 8)$

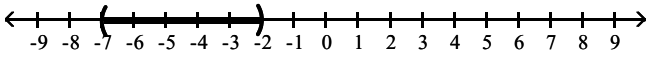


Answer: B

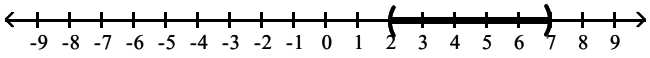
341) $2 < 2t - 2 \leq 12$



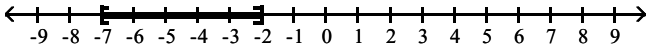
A) $(-7, -2)$



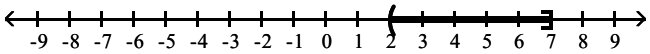
B) $(2, 7)$



C) $[-7, -2]$



D) $(2, 7]$



Answer: D

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Solve the problem.

342) Sarah has grades of 66 and 78 on his first two tests. If she wants an average of at least 70 after her third test, what score must she make on that test?

A) 70 or more
B) 72 or more
C) 71 or more
D) 66 or more

Answer: D

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