Introductory Algebra 3rd Edition Miller Test Bank

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

1) Identify the following as either an expression or an equation. 1) _____
$$10x^2 + 9x - 9$$
   A) equation B) expression

2) Identify the following as either an expression or an equation. 2) _____
$$\frac{10}{7} + y = -3$$
   A) equation B) expression

3) Determine whether the given number is a solution to the equation. 3) _____
$$8t + 4 = -76; \quad -10$$
   A) yes B) no

4) Which of the following is a solution to the equation? 4) _____
$$12t + 4 = -92$$
   A) $t = -8$ B) $t = 8$ C) $t = -7$ D) $t = 0$

5) Which of the following is not a linear equation? 5) _____
   A) $\frac{y}{8} + 3 = -\frac{1}{4} - \frac{y}{5}$ B) $2(y + 5) = y$

   C) $2x + 3 = 4 - x^2$ D) $2z - 3 = 4z + 2$

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

6) Solve the equation using the addition or subtraction property of equality. 6) _____
$$x + 10 = 7$$

7) Solve the equation using the addition or subtraction property of equality. 7) _____
$$z - 27 = -17$$

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

8) Solve the equation using the addition or subtraction property of equality. 8) _____
$$6.8 = -2.3 + y$$
   A) $y = -9.1$ B) $y = 9.1$ C) $y = -4.5$ D) $y = 4.5$

9) Solve the equation using the addition or subtraction property of equality. 9) _____
$$-\frac{3}{8} + m = \frac{1}{4}$$
   A) $m = 7$ B) $m = -\frac{1}{8}$ C) $m = -\frac{2}{3}$ D) $m = \frac{5}{8}$

1

10) Simplify by collecting the *like* terms. Then solve the equation.　　　　　　10) _____

$4x - 3x + 8 = 9 - 3$

A) $-\dfrac{2}{9}$　　　　　　B) $\dfrac{2}{3}$　　　　　　C) -2　　　　　　D) 6

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

11) Solve the equation using the multiplication or division property of equality.　　　11) _____

$38 = 30p$

12) Solve the equation using the multiplication or division property of equality.　　　12) _____

$-7x = 28$

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

13) Solve the equation using the multiplication or division property of equality.　　　13) _____

$\dfrac{y}{4} = 5$

A) $y = \dfrac{5}{4}$　　　　　　B) $y = 9$　　　　　　C) $y = 1$　　　　　　D) $y = 20$

14) Solve the equation using the multiplication or division property of equality.　　　14) _____

$\dfrac{2}{3}t = -\dfrac{1}{5}$

A) $t = -\dfrac{2}{15}$　　　　B) $t = -\dfrac{3}{10}$　　　　C) $t = -\dfrac{13}{15}$　　　　D) $t = \dfrac{3}{10}$

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

15) Solve the equation using the multiplication or division property of equality.　　　15) _____

$-x = 209.7$

16) Solve the equation using the multiplication or division property of equality.　　　16) _____

$-4.1 = -12.3k$

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

17) Write an algebraic equation to represent the English sentence. (Let x represent the　　17) _____
unknown number.) Then solve the equation.

The sum of ten and a number is negative nine.

A) $10 - x = -9;\ x = 19$　　　　　　　　B) $10x = -9;\ x = -9/10$
C) $x + 10 = -9;\ x = -19$　　　　　　　　D) $10 + x = 9;\ x = 1$

2

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

18) Write an algebraic equation to represent the English sentence. (Let x represent the unknown number.) Then solve the equation.

      The difference of a number and eleven is twelve.

18) _____

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

19) Write an algebraic equation to represent the English sentence. (Let x represent the unknown number.) Then solve the equation.

      The product of negative one-half and a number is twelve.

19) _____

A) $-\dfrac{1}{2} - x = 12; x = -\dfrac{25}{2}$

B) $-\dfrac{1}{2} + x = 12; x = \dfrac{25}{2}$

C) $-\dfrac{1}{2}x = 12; x = -6$

D) $-\dfrac{1}{2}x = 12; x = -24$

20) Write an algebraic equation to represent the English sentence. (Let x represent the unknown number.) Then solve the equation.

      The quotient of a number and seven is negative ten.

20) _____

A) $\dfrac{7}{x} = -10; x = -\dfrac{7}{10}$

B) $\dfrac{x}{7} = -10; x = -70$

C) $x - 7 = -10; x = -3$

D) $\dfrac{x}{7} = -10; x = 70$

21) Solve the equation.

      $27 = 2y + 9$

21) _____

A) $y = 9$ B) $y = 7$ C) $y = -9$ D) $y = -8$

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

22) Solve the equation.

      $4x - 5 = 3$

22) _____

23) Solve the equation.

      $3 - 6t = 6$

23) _____

24) Solve the equation.

      $7.3x + 19 = 1 + 7.8x$

24) _____

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

25) Solve the equation.   25) _____

$5n - 8 = 11n + 5$

   A) $n = -\dfrac{13}{6}$ B) $n = \dfrac{13}{6}$ C) $n = -\dfrac{1}{2}$ D) $n = \dfrac{13}{16}$

26) Solve the equation.   26) _____

$3z = 5z + 2$

   A) $z = -1$ B) $z = 1$ C) $z = -3$ D) $z = \dfrac{5}{3}z + 2$

27) Solve the equation.   27) _____

$\dfrac{7}{2}t + 4 = 5 + \dfrac{3}{2}t$

   A) $t = \dfrac{1}{2}$ B) $t = \dfrac{1}{5}$ C) $t = -\dfrac{1}{5}$ D) $t = -\dfrac{5}{4}$

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

28) Solve the equation.   28) _____

$2(2 - 3x) = -14$

29) Solve the equation.   29) _____

$-4(2y + 3) + 4 = -48$

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

30) Solve the equation.   30) _____

$4(t - 1) + 3 = 2(t + 5)$

   A) $t = -\dfrac{3}{2}$ B) $t = \dfrac{11}{2}$ C) $t = \dfrac{5}{4}$ D) $t = -1$

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

31) Solve the equation.   31) _____

$y - (6 - y) = 8(y + 4)$

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

32) Solve the equation.   32) _____

$4[2 - 5(w + 3)] + 2(w + 1) = 2[(5w + 1) - (w + 3)]$

   A) $w = -\dfrac{1}{18}$ B) $w = \dfrac{17}{3}$ C) $w = -\dfrac{23}{13}$ D) $w = \dfrac{5}{2}$

33) Solve the equation.   33) _____

$$0.7(x - 4) + 0.5 = 1 - 0.4(8 - 2x) - 0.5$$

  A) $x = 4$ B) $x = 0.4$ C) $x = 0$ D) $x = -0.4$

34) Identify the equation as a conditional equation, a contradiction or an identity.   34) _____

$$7y + 2(3 - y) = 5 + 5y + 2$$

  A) conditional   B) identity

  C) contradiction   D) cannot be determined

35) Identify the equation as a conditional equation, a contradiction or an identity.   35) _____

$$2 + 5(x - 1) = -(3 - 5x)$$

  A) cannot be determined   B) contradiction

  C) conditional   D) identity

36) Solve the equation. Identify the equation as a conditional equation, a contradiction or an   36) _____
identity.

$$3(z + 2) - 7z = 8\left[-\frac{1}{2}z + 1\right] - 2$$

  A) contradiction; no solution   B) identity; all real numbers

  C) conditional; $z = -3$ D) identity; no solution

37) Identify the equation as a conditional equation, a contradiction or an identity.   37) _____

$$y - 1 + 3y = -7y + 4$$

  A) identity   B) conditional

  C) contradiction   D) cannot be determined

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

38) Identify the equation as a conditional equation, a contradiction or an identity.   38) _____
Then describe the solution.

$$12 + 3(n - 5) = 2(n + 1) - n - 7$$

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

39) Determine which of the values below could be used to clear fractions in the equation.   39) _____

$$\frac{11}{45}x - \frac{7}{25} = -2$$

  A) 225   B) 25   C) 1080   D) 5

40) Determine which of the values below could be used to clear decimals in the equation.   40) _____

$$2.5x + 5.25 = 0.75x + 3.5$$

  A) 0.125   B) 4   C) 2   D) 0.5

41) Determine which of the values below could be used to clear fractions in the equation.   41) _____

$$\frac{7}{3}x - \frac{1}{5} = 5$$

A) 3   B) 15   C) 6   D) 8

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

42) Solve the equation.   42) _____

$$\frac{3}{2} + \frac{3}{4}z = -\frac{3}{4}$$

43) Solve the equation.   43) _____

$$\frac{11}{2}y + 2 = -1$$

44) Solve the equation.   44) _____

$$\frac{17}{2}z - 3 = 67 + \frac{3}{2}z$$

45) Solve the equation.   45) _____

$$\frac{10}{3}(3x + 4) + 110 = \frac{40}{3}$$

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

46) Solve the equation.   46) _____

$$\frac{1}{2}(2n - 5) + \frac{4}{3} = \frac{5n}{6} - \frac{3}{2}$$

A) $n = \frac{5}{3}$ B) $n = -2$ C) $n = 13$ D) $n = -\frac{11}{6}$

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

47) Solve the equation.   47) _____

$$\frac{2}{3}(6t - 2) + \frac{2}{3}t = -\frac{140}{3} - t$$

48) Solve the equation.   48) _____

$$0.5 = 0.7t - 3$$

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

49) Solve the equation. 49) _____
$$0.02z + 0.12 = -0.04$$
   A) $z = -5$ B) $z = -0.8$ C) $z = -9$ D) $z = -8$

50) Solve the equation. 50) _____
$$-0.7y + 1.3 = 3.3 - 0.2y$$
   A) $y = -2$ B) $y = -6$ C) $y = -0.4$ D) $y = -4$

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

51) Solve the equation. 51) _____
$$0.03 - 0.01(x + 12) + 0.07x = 0.02(2x - 4)$$

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

52) Marcus made $26 more than three times Joel's weekly salary. If x represents Joel's 52) _____
   weekly salary, write an expression for Marcus' weekly salary.
   A) $3x + 26$ B) $3(x + 26)$ C) $26x + 3$ D) $26(3 + x)$

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

53) The sum of a number and 112 is negative 138. Find the number. 53) _____

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

54) The sum of three times a number and 30 is 28. Find the number. 54) _____
   A) $-\dfrac{2}{3}$ B) $-\dfrac{58}{3}$ C) 58   D) $\dfrac{58}{3}$

55) The product of ten and the sum of two and a number is five times the number. Find the 55) _____
   number.
   A) -5 B) -4 C) 5   D) 12

56) The sum of two consecutive integers is -91. Find the least of the two integers. 56) _____
   A) -45   B) -46   C) -92   D) 46

57) The sum of two consecutive even integers is 102. Find the least of the two integers. 57) _____
   A) 52   B) 50   C) 48   D) 51

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

58) The perimeter of a rectangle is 52 feet. The length and width are represented by 58) _____
   two consecutive even integers. Find the dimensions of the rectangle.

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

59) The perimeter of a triangle is 135 cm. The lengths of the three sides are represented by three consecutive odd integers. Find the length of the longest side.

   A) 43 cm   B) 45 cm   C) 47 cm   D) 41 cm

59) _____

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

60) Five times the sum of two consecutive odd integers is twelve times the larger of the two. Find the two odd integers.

60) _____

61) Sarah and Michelle have 20 feet of shelf space in their dorm room. Sarah has tons of stuff, and insists that she needs twice as much shelf space as Michelle. If she gets her wish, how much shelf space will Michelle be stuck with?

61) _____

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

62) The length of a rectangular plot of land is 3 times the width. If the perimeter is 2000 feet, find the dimensions of the plot.

   A) 500 feet × 1500 feet   B) 100 feet × 300 feet
   C) 250 feet × 750 feet   D) 1000 feet × 3000 feet

62) _____

63) The plans for a rectangular deck call for the width to be 2 feet less than the length. Sam wants the deck to have an overall perimeter of 60 feet. What should the length of the deck be?

   A) 18 feet   B) 2 feet   C) 16 feet   D) 31 feet

63) _____

64) At an evening showing of the movie "Divine Secrets of the Ya-Ya Sisterhood", there were 42 more women than men in attendance. If there were 86 people in the theater, how many were women?

   A) 64   B) 82   C) 44   D) 22

64) _____

65) What percent of 75 is 30?

   A) 32%   B) 60%   C) 40%   D) 250%

65) _____

66) Twelve is what percent of sixty?

   A) 30%   B) 20%   C) 60%   D) 15%

66) _____

67) What is 20% of 125?

   A) 30   B) 25   C) 23   D) 32

67) _____

68) 190 is 20% of what number?

   A) 228   B) 950   C) 38   D) 152

68) _____

69) The tax rate on a used car in Overshoe County is 4.5%. What is the total price including sales tax on a sport utility with a selling price of $15,000?   69) _____
   A) $15,675.00   B) $21,750.00   C) $29,325.00   D) $15,337.50

70) Suppose you make purchases with a total retail price of $150, and the amount you have to pay is $162.00. What is the sales tax rate?   70) _____
   A) 8%   B) 12%   C) 0.12%   D) 10%

71) A pair of jeans is on sale for 20% off. With a sales tax rate of 6%, the tax comes to $2.16. What was the original price of the jeans?   71) _____
   A) $36   B) $45   C) $51   D) $15.43

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

72) The total cost, including 5.5% sales tax, of a set of golf clubs was $443.10. What was the retail price of the clubs?   72) _____

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

73) The tax rate in Hamilton County, Ohio, is 6%. If $12.20 is the tax on a purchase, what is the price of the purchase?   73) _____
   A) $203.33   B) $202.03   C) $205.73   D) $2.03

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

74) If $15,000 is invested in an account that earns 7.2% simple interest, how much money is in the account after 10 years?   74) _____

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

75) An investment gains an average of 10% simple interest for 8 years, at which time its value is $36,000. How much was originally invested?   75) _____
   A) $22,100   B) $20,000   C) $19,700   D) $28,800

76) If a $7,000 original investment earns simple interest for 5 years, and is worth $11,200, what is the interest rate?   76) _____
   A) 37.5%   B) 62.5%   C) 12%   D) 21%

77) What is the sale price of a stereo that normally sells for $220.00 and is on sale for 15% off?   77) _____
   A) $205.00   B) $253.00   C) $187.00   D) $33.00

78) A car dealership marks up all new automobiles by 15%. What was the original wholesale cost of a car with a sticker price at this dealership of $22,500?   78) _____
   A) $19,565.22   B) $25,875.00   C) $18,700.00   D) $3,375.00

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

79) Solve the formula for *y*.　　　　　　　　　　　　　　　　　　　　　79) _____

$$-2x + 7y = 5$$

80) Solve the formula for *y*.　　　　　　　　　　　　　　　　　　　　　80) _____

$$ax + by = c$$

81) Solve the formula for *l*.　　　　　　　　　　　　　　　　　　　　　81) _____

$$P = 2l + 2w$$

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

82) Solve the formula for *z*.　　　　　　　　　　　　　　　　　　　　　82) _____

$$8w + 3z - 2 = w$$

A) $3z = -7w - 7$　　　　B) $z = -\frac{7}{3}w + \frac{2}{3}$　　　　C) $z = \frac{w + 2}{3 - 8w}$　　　　D) $z = 9w - 2$

83) Solve the formula for *m*.　　　　　　　　　　　　　　　　　　　　　83) _____

$$3n - \frac{m}{2} + 5 = 8n$$

A) $m = 10n - 10$　　　　B) $m = 10 - 10n$　　　　C) $m = 22n - 10$　　　　D) $m = \frac{16n - 10}{5}$

84) Solve the formula $M = \frac{1}{3}(h + i + j)$ for *i*.　　　　　　　　　　　84) _____

A) $i = 3M - h - j$　　　　　　　　　　　B) $i = \frac{1}{3}M - h - j$

C) $i = 3(M - h - j)$　　　　　　　　　　D) $i = 3M + h + j$

85) The local zoning code for a rectangular billboard requires that the width is 8 feet less than　　85) _____
the length. An advertiser wants a billboard to have an overall perimeter of 48 feet. What
should the length of the billboard be?
　　A) 28 feet　　　　　　B) 24 feet　　　　　　C) 16 feet　　　　　　D) 8 feet

86) The length of a rectangular plot of land is 2 times the width. If the perimeter is 2000 feet,　　86) _____
find the dimensions of the plot. Round to one decimal place if necessary.
　　A) 333.3 feet × 666.6 feet　　　　　　　　B) 666.7 feet × 1333.4 feet
　　C) 100 feet × 200 feet　　　　　　　　　　D) 1000 feet × 2000 feet

87) A large concert venue is to be constructed in the shape of a triangle. The east and west   87) _____

sides will be the same length, and the back will be $\frac{3}{2}$ times that length. If the contractor

determines that 1,575 feet of fence is necessary to enclose the perimeter of the venue to
keep out fans with no ticket, what are the dimensions?
   A) 375 feet × 375 feet × 825 feet   B) 450 feet × 450 feet × 675 feet
   C) 470 feet × 470 feet × 1,035 feet   D) 400 feet × 400 feet × 600 feet

88) Two angles are complementary. The larger of the two is 36° more than twice the   88) _____
smaller. Find the 2 angles.
   A) 48° and 132°   B) 54° and 36°   C) 42° and 48°   D) 18° and 72°

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

89) Find the measures of the 2 angles pictured below.   89) _____
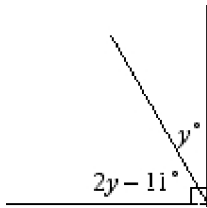
90) Two angles are supplementary. The measure of the smaller angle is 3 degrees   90) _____
more than one-third the measure of the larger one. Find the measure of the larger
angle.

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

91) Find the measures of the two labeled angles in the picture.   91) _____
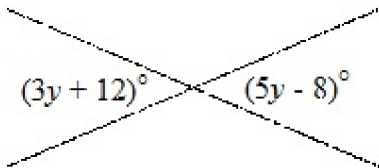
   A) 10° and 10°   B) 78° and 102°

   C) $44\frac{1}{4}^\circ$ and $45\frac{3}{4}^\circ$ D) 42° and 42°

11

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

92) In order to reach a sixth story window of a burning building, a fire ladder is leaned against the building so that the angle it forms with the ground is 37° more than the angle it makes with the building. Find both angles.

92) _____

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

93) Angles *A*, *B*, and *C* are the angles in a triangle. Angle *B* is 2 times as big as angle *A*, and angle *C* is 24 degrees more than angle *A*. Find the measure of angle *A* in degrees.

93) _____

   A) 63   B) 39   C) 16.5   D) 78

94) The measure of the larger of the acute angles in a right triangle is 4 degrees less than 5 times the measure of the smaller. Find the measure of the smaller angle.

94) _____

   A) $\frac{56}{3}$ degrees   B) $\frac{68}{3}$ degrees   C) $\frac{47}{3}$ degrees   D) $\frac{35}{3}$ degrees

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

95) Write the formula for the circumference (*C*) of a circle of radius (*r*), the solve it for *r*.

95) _____

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

96) Find the radius of a circle with circumference 250 inches. Round to two decimal places

96) _____

   A) 1570.00 inches   B) 79.62 inches

   C) 36.21 inches   D) 39.81 inches

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

97) The Barrington Crater in Arizona was the site of a meteor impact about 50,000 years ago. It is circular in shape, with a circumference of 2.36 miles. How wide is the crater? Round your answer to two decimal places.

97) _____

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

98) Pat needs to bring 144 cookies to her friend's party. She has already baked *x* cookies. Write an algebraic expression for the number of cookies Pat still needs to bake.

98) _____

   A) *x* - 144   B) 144 - *x*   C) $\frac{144}{x}$ D) 144 + *x*

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

99) A teacher takes her class and some of the children's parents on a field trip to a museum. She purchased a total of 39 tickets for a total cost of $162. If children's tickets each cost $2 and adult tickets each cost $6, how many children and how many adults went on the field trip?

99) _____

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

100) A student purchases bottled drinks and canned drinks for a party. She purchased a total   100) _____
of 45 drinks for the party at a total cost of $69.60. If bottled drinks each cost $1.70 and
canned drinks each cost $1.40, how many of each type of drink did she purchase?
   A) 24 bottled drinks and 21 canned drinks
   B) 23 bottled drinks and 22 canned drinks
   C) 21 bottled drinks and 24 canned drinks
   D) 22 bottled drinks and 23 canned drinks

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

101) At a small-town hardware store, it costs $4 to rent a chain saw, plus $2.30 for   101) _____
each day. If Joe rented the saw and the rental fee was $17.80, how many days did
he keep the saw?

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

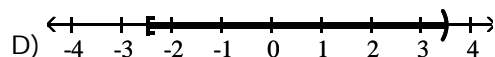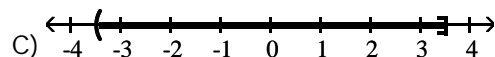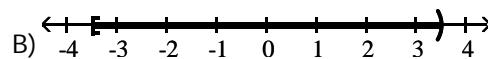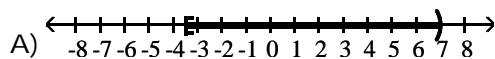102) If Lydia invests $4200 in a certificate of deposit and d dollars in a stock, write an   102) _____
expression for the total amount she invested.
   A) d - 4200   B) 4200 - d C) $4200 + d$ D) $4200d$

103) How many gallons of gasoline that is 7% ethanol must be added to 2,000 gallons of   103) _____
gasoline with 4% ethanol to get a mixture that is 5% ethanol?
   A) 1,800   B) 2000   C) 2115   D) 1000

104) Victor biked from his hometown to a neighboring city in 6 hours. He biked back to his   104) _____
hometown in 4 hours. His speed on the return trip was 8 mph faster than his speed on
the first trip. How far apart are the two cities?
   A) 16 miles   B) 91 miles   C) 96 miles   D) 192 miles

105) Two boys in a boat with a small motor are able to travel 4 mph faster with the current   105) _____
than in still water. If they travel with the current from a dock to their campground in 1.5
hours and make the return trip against the current in 2.5 hours, how fast are the boys able
to travel in still water?
   A) 10 mph   B) 2 mph   C) 6 mph   D) 16 mph

106) Two cars are 174 miles apart and travel toward each other on the same road. They meet   106) _____
in 2 hours. One car travels 1 mph faster than the other. What is the average speed of each
car?
   A) 42 mph; 43 mph   B) 40 mph; 41 mph
   C) 41 mph; 42 mph   D) 43 mph; 44 mph

107) A freight train and a passenger train leave a rail yard at the same time and travel on parallel tracks. The passenger train travels 8 mph faster than the freight train. The combined distance traveled after 2 hours is 76 miles. What is the average speed of each train?

    A) 14 mph; 22 mph   B) 17 mph; 25 mph

    C) 12 mph; 20 mph   D) 15 mph; 23 mph

107) _____

108) If you average 53 miles per hour on a road trip covering 318 miles, how long will the trip take?

    A) 6 hours   B) 10 hours   C) 7 hours   D) 5 hours

108) _____

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

109) Ricardo and his friend Mona are 10 miles apart, and agree to meet for a picnic. Ricardo has a mountain bike, while Mona is on roller blades. Ricardo can ride at an average speed of 18 miles per hour, and Mona can average 10 miles per hour on blades. How long will it take them to meet?

109) _____

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

110) As a promotional stunt at a professional track meet, a sprinter will race a horse. The sprinter gets a 10 second head start because he's not a horse. If the sprinter's speed is 36 feet per second and the horse's speed is 75 feet per second, how long will it take the horse to overtake the sprinter?

    A) 22.5 seconds   B) 9.2 seconds

    C) He never overtakes the sprinter.   D) 5 seconds

110) _____

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

111) Graph the solution set.

$x \geq -\dfrac{3}{2}$

111) _____

112) Graph the solution set.

$x < 4$

112) _____

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

113) Which is the correct graph of the solution set of $-3.5 \leq t < \dfrac{7}{2}$?

113) _____

A)
   -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

B)
   -4 -3 -2 -1 0 1 2 3 4

C)
   -4 -3 -2 -1 0 1 2 3 4

D)
   -4 -3 -2 -1 0 1 2 3 4

114) A set is given in set-builder notation. Write the set in interval notation.   114) _____

   $\{x \mid x \geq 1\}$

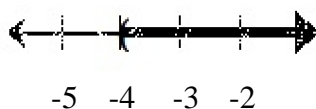   A) $[1, \infty)$ B) $(-\infty, 1]$ C) $(1, \infty)$ D) $(-\infty, 1)$

115) A set is given in set-builder notation. Graph the set.   115) _____
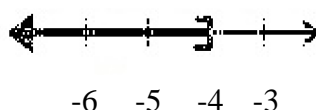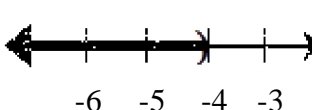
   $\{x \mid x \geq -4\}$

   A)

      -5   -4   -3   -2
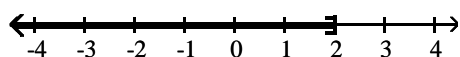
   B)

      -5   -4   -3   -2

   C)

      -6   -5   -4   -3

   D)

      -6   -5   -4   -3

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

116) Below is the graph of an interval. Write the interval in interval notation.   116) _____

      -4   -3   -2   -1   0   1   2   3   4

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

117) Write the interval described below in interval notation.   117) _____

   All real numbers that are at most -9

   A) $[-9, \infty)$ B) $(-\infty, -9]$ C) $(-\infty, -9)$ D) $(-9, \infty)$

118) If each tick mark on the number line below corresponds to 9.5 units, what set is graphed   118) _____
   below? Write the set in set-builder notation.
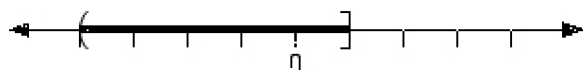
   A) $\{x \mid -38 < x \geq 9.5\}$ B) $\{x \mid -4 < x \leq 1\}$
   C) $\{x \mid -38 \leq x < 9.5\}$ D) $\{x \mid -38 < x \leq 9.5\}$

15

119) A set is given in interval notation. Graph the set.

$[10, \infty)$
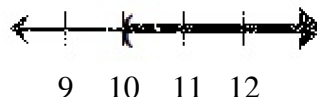
A)

    9 10 11 12

B)

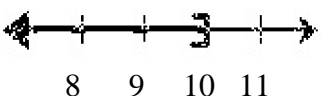   9 10 11 12

C)

  8   9 10 11

D)

  8   9 10 11

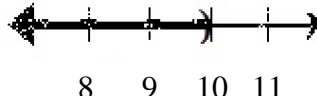119) _____
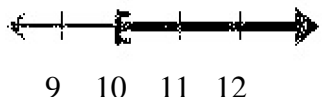
120) A set is given in interval notation. Write the set in set-builder notation.

$[8, \infty)$

A) $\{x \mid x < 8\}$ B) $\{x \mid x \le 8\}$ C) $\{x \mid x > 8\}$ D) $\{x \mid x \ge 8\}$

120) _____

121) Solve the inequality. Write your answer in interval notation.

$y - 18 > 5$

A) (-18, 5)   B) $(23, \infty)$ C) $(5, \infty)$ D) $(-13, \infty)$

121) _____

122) Solve the inequality. Write your answer in interval notation.

$11 + t \le 16$

A) $(-\infty, 5]$ B) $(-\infty, 16]$ C) $(-\infty, 27]$ D) $[11, 16]$
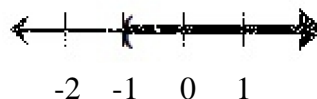
122) _____

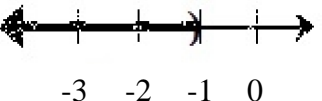123) Graph the solution set to the inequality.

$x + 11 \le 10$

A)

  -2 -1   0   1

B)

  -2 -1   0   1

C)

  -3 -2 -1   0
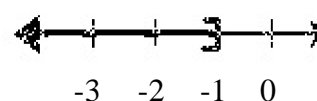
D)

  -3 -2 -1   0

123) _____
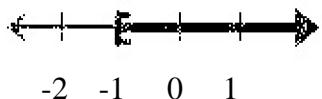
124) Solve the inequality. Write your answer in set-builder notation.

$5t > -15$

A) $\{t \mid t < -10\}$ B) $\{t \mid t > -10\}$ C) $\{t \mid t > -3\}$ D) $\{t \mid t < -3\}$

124) _____

125) Solve the inequality. Write your answer in set-builder notation.

$18 - t > 11$

A) $\{t \mid t > -7\}$ B) $\{t \mid t < 7\}$ C) $\{t \mid t > 7\}$ D) $\{t \mid -t > 7\}$

125) _____

126) Solve the inequality. Write your answer in interval notation. 126) _____

$12y + 6 > 9$

   A) $(3, \infty)$ B) $(-\infty, 9)$ C) $\left[\dfrac{1}{4}, \infty\right)$ D) $\left(-\infty, -\dfrac{1}{4}\right)$

127) Solve the inequality. Write your answer in interval notation. 127) _____

$-5 - 7z \leq -3$

   A) $\left(-\infty, -\dfrac{2}{7}\right)$ B) $\left(-\infty, -\dfrac{2}{7}\right]$ C) $\left(-\dfrac{2}{7}, \infty\right)$ D) $\left[-\dfrac{2}{7}, \infty\right)$

128) Solve the inequality. Write your answer in interval notation. 128) _____

$7(x - 3) - 6x \geq 11$

   A) $(-\infty, 14]$ B) $[14, \infty)$ C) $[32, \infty)$ D) $(-\infty, 32]$

129) Solve the inequality. Write your answer in interval notation. 129) _____

$11 \leq 6(n + 4) - 4n$

   A) $\left[-\dfrac{13}{2}, \infty\right)$ B) $\left(-\infty, -\dfrac{13}{2}\right)$ C) $\left(-\infty, -\dfrac{13}{2}\right]$ D) $\left(-\dfrac{13}{2}, \infty\right)$

130) Solve the inequality. Write your answer in interval notation. 130) _____

$-6 - 6(2x + 1) < x - (-6 - x)$

   A) $(-\infty, -6)$ B) $\left(-\infty, -\dfrac{9}{7}\right)$ C) $\left[-\dfrac{9}{7}, \infty\right)$ D) $\left(-\dfrac{9}{7}, \infty\right)$

131) Solve the inequality. Write your answer in interval notation. 131) _____

$-2(5y - 7) + y \geq 2y - (-7 + y)$

   A) $\left[\dfrac{7}{10}, \infty\right)$ B) $\left(-\infty, \dfrac{7}{10}\right)$ C) $\left(-\infty, \dfrac{7}{10}\right]$ D) $\left(0, \infty\right)$

132) Solve the inequality. Write your answer in interval notation. 132) _____

$\dfrac{2}{3}y - \dfrac{1}{2} \geq y + \dfrac{11}{3}$

   A) $\left[-\infty, \dfrac{25}{3}\right]$ B) $\left[-\infty, -\dfrac{25}{2}\right]$ C) $\left[\dfrac{25}{2}, \infty\right)$ D) $\left[-\infty, -\dfrac{25}{3}\right]$

133) Solve the inequality. Write your answer in interval notation. 133) _____

$0.12z + 0.08 < -0.02z - 0.2$

   A) $\left[\dfrac{5}{7}, \infty\right)$ B) $\left(-\infty, -\dfrac{5}{7}\right)$ C) $(-2, \infty)$ D) $(-\infty, -2)$

134) Solve the inequality. Write your answer in set-builder notation.   134) _____

$-3p + 7 < -2p + 8$

A) $\left\{ p \mid p < -\dfrac{1}{5} \right\}$ B) $\{ p \mid p > -1 \}$ C) $\{ p \mid p > 1 \}$ D) $\{ p \mid p < -1 \}$

135) Is $x = -4$ a solution to the inequality?   135) _____

$19x + 8 \geq 8x - 5$

A) No   B) Yes

136) Which of the following is a solution to the inequality?   136) _____

$8(y - 3) < y + 8$

A) $\dfrac{28}{3}$ B) -6   C) $\dfrac{21}{2}$ D) 9

137) Solve the inequality. Write your answer in interval notation.   137) _____

$-10 < x + 15 \leq 1$

A) [14, 25)   B) [-25, 14)   C) (-14, 25]   D) (-25, -14]

138) Solve the inequality. Write your answer in interval notation.   138) _____

$-18 \leq 2x < 20$

A) [-36, 40)   B) [-18, 10)   C) (-9, 10]   D) [-9, 10)

139) Solve the inequality. Write your answer in interval notation.   139) _____
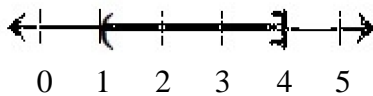
$-2 < -2y + 5 \leq 2$

A) $\left[\dfrac{3}{2}, \dfrac{7}{2} \right]$ B) $\left(\dfrac{3}{2}, \dfrac{7}{2} \right]$ C) $\left[-\dfrac{7}{2}, \dfrac{3}{2} \right]$ D) $\left(-\dfrac{7}{2}, 2 \right]$

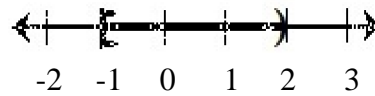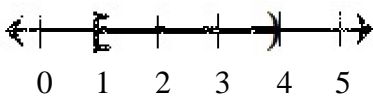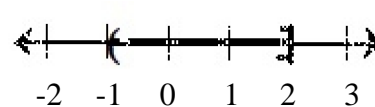140) Graph the solution set to the inequality.   140) _____

$-7 \leq 2x - 9 < -1$

A)

0   1   2   3   4   5

B)

-2   -1   0   1   2   3

C)

0   1   2   3   4   5

D)

-2   -1   0   1   2   3

141) Solve the inequality. Write your answer in interval notation.   141) _____

$-14 \leq 2x - 3 < 6$

A) $\left[3, \dfrac{9}{2} \right)$ B) $\left[-\dfrac{11}{2}, \dfrac{9}{2} \right]$ C) $\left[-\dfrac{11}{2}, \infty \right)$ D) $\left[-\dfrac{11}{2}, -\dfrac{9}{2} \right)$

142) Solve the inequality. Write your answer in interval notation.   142) _____

$$-1 \leq \frac{3}{4}y - 2 < \frac{7}{4}$$

A) $\left[\frac{4}{3}, \frac{13}{3}\right)$
B) $\left[-\frac{2}{3}, 3\right)$
C) $\left[\frac{2}{3}, \frac{13}{3}\right)$
D) $\left[\frac{4}{3}, 5\right)$

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

143) Translate the sentence into a mathematical inequality.   143) _____
     To qualify as a hurricane, the wind speed (w) of a tropical storm must exceed
74 miles per hour.

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

144) Translate the sentence into a mathematical inequality.   144) _____
The number of people that can fit into a concert hall, p, is no more than 7600.
  A) $p < 7600$
  B) $p > 7600$
  C) $p \leq 7600$
  D) $p \geq 7600$

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

145) Sparky has scores of 74, 69, and 77 on his first three Sociology tests. If he needs   145) _____
to keep an average of 70 to stay eligible for lacrosse, what scores on the fourth
exam will accomplish this?

146) A rental company charges a flat fee of $5 to rent a power washer, plus $3 per day.   146) _____
How many days could you keep the power washer if you plan to spend no more
than $30?

1) B
2) A
3) A
4) A
5) C
6) $x = -3$
7) $z = 10$
8) B
9) D
10) C
11) $p = \dfrac{19}{15}$
12) $x = -4$
13) D
14) B
15) $x = -209.7$
16) $k = \dfrac{1}{3}$
17) C
18) $x - 11 = 12;\ \ x = 23$
19) D
20) B
21) A
22) $x = 2$
23) $t = -\dfrac{1}{2}$
24) $x = 36$
25) A
26) A
27) A
28) $x = 3$
29) $y = 5$
30) B
31) $y = -\dfrac{19}{3}$
32) C
33) A
34) C
35) D
36) B
37) B
38) conditional; $n = -1$
39) A
40) B

41) B
42) $z = -3$
43) $y = -\dfrac{6}{11}$
44) $z = 10$
45) $x = -11$
46) B
47) $t = -8$
48) $t = 5$
49) D
50) D
51) $x = \dfrac{1}{2}$
52) A
53) -250
54) A
55) B
56) B
57) B
58) 12 feet $\times$ 14 feet
59) C
60) -7 and -5
61) 6'8", or $6\dfrac{2}{3}$ feet
62) C
63) C
64) A
65) C
66) B
67) B
68) B
69) A
70) A
71) B
72) $420
73) A
74) $25,800
75) B
76) C
77) C
78) A
79) $y = \dfrac{2}{7}x + \dfrac{5}{7}$

80) $y = \dfrac{c - ax}{b}$ or $y = \dfrac{c}{b} - \dfrac{ax}{b}$

81) $l = \dfrac{P - 2w}{2}$ or $l = \dfrac{P}{2} - w$

82) B
83) B
84) A
85) C
86) A
87) B
88) D

89) $33\dfrac{2}{3}°$ and $56\dfrac{1}{3}°$

90) $\dfrac{531}{4}$ degrees or $132.75°$

91) D
92) $26.5°$ and $63.5°$
93) B
94) C

95) $C = 2\pi r;\ r = \dfrac{C}{2\pi}$

96) D
97) 0.75 mile
98) B
99) 18 children and 21 adults went on the trip.
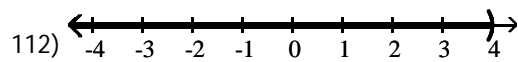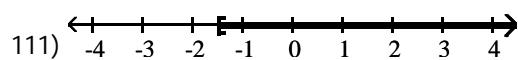100) D
101) 6 days
102) C
103) D
104) C
105) D
106) D
107) D
108) A

109) $\dfrac{5}{14}$ hour

110) B

111)

112)

113) B
114) A
115) B

Answer Key
Testname: UNTITLED12

116) $(-\infty, 2]$
117) B
118) D
119) A
120) D
121) B
122) A
123) D
124) C
125) B
126) C
127) D
128) C
129) A
130) D
131) C
132) B
133) D
134) B
135) A
136) B
137) D
138) D
139) A
140) C
141) B
142) D
143) $w > 74$
144) C
145) He must score 60 or higher.
146) You can keep it 8 days or less.