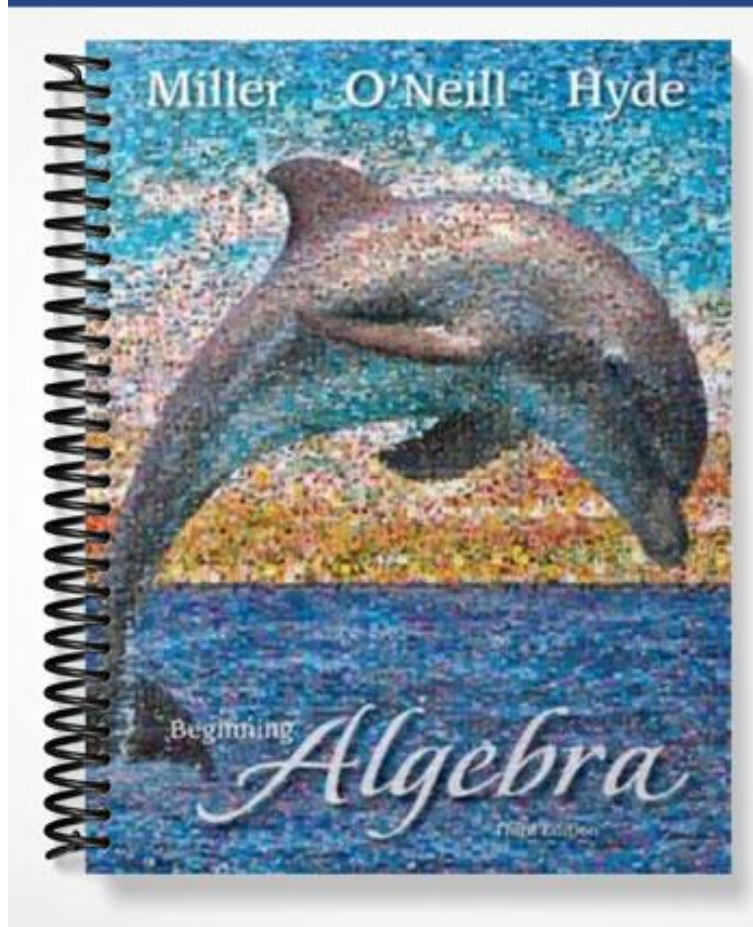


TEST BANK



Chapter 2 - Linear Equations and Inequalities

1. Identify the following as either an expression or an equation.

$$\frac{8}{7} + y = -4$$

A) expression B) equation

Ans: B Concept: Definition of a Linear Equation in One Variable Difficulty: Easy

Section: 2.1

2. Identify the following as either an expression or an equation.

$$8x^2 + 5x - 3$$

A) expression B) equation

Ans: A Concept: Definition of a Linear Equation in One Variable Difficulty: Easy

Section: 2.1

3. Determine whether the given number is a solution to the equation.

$$6t + 4 = 28; \quad 4$$

A) yes B) no

Ans: A Concept: Definition of a Linear Equation in One Variable Difficulty: Easy

Section: 2.1

4. Which of the following is a solution to the equation?

$$12t + 4 = 76$$

A) $t = -6$ B) $t = 0$ C) $t = 6$ D) $t = 7$

Ans: C Concept: Definition of a Linear Equation in One Variable Difficulty: Easy

Section: 2.1

5. Solve the equation using the addition or subtraction property of equality.

$$x + 6 = 16$$

Ans: $x = 10$

Concept: Addition and Subtraction Properties of Equality Difficulty: Easy

Section: 2.1

6. Solve the equation using the addition or subtraction property of equality.

$$z - 40 = -45$$

Ans: $z = -5$

Concept: Addition and Subtraction Properties of Equality Difficulty: Moderate

Section: 2.1

7. Solve the equation using the addition or subtraction property of equality.

$$4.7 = -9.7 + y$$

A) $y = -5$ B) $y = 5$ C) $y = -14.4$ D) $y = 14.4$

Ans: D Concept: Addition and Subtraction Properties of Equality Difficulty: Easy

Section: 2.1

8. Solve the equation using the addition or subtraction property of equality.

$$-\frac{3}{8} + m = \frac{1}{4}$$

A) $m = -\frac{1}{8}$ B) $m = \frac{5}{8}$ C) $m = -\frac{2}{3}$ D) $m = 7$

Ans: B Concept: Addition and Subtraction Properties of Equality

Difficulty: Moderate Section: 2.1

9. Solve the equation using the multiplication or division property of equality.

$$26 = 40p$$

Ans: $p = \frac{13}{20}$

Concept: Multiplication and Division Properties of Equality Difficulty: Easy

Section: 2.1

10. Solve the equation using the multiplication or division property of equality.

$$10x = -20$$

Ans: $x = -2$

Concept: Multiplication and Division Properties of Equality Difficulty: Easy

Section: 2.1

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

$$\frac{y}{5} = 12$$

A) $y = 60$ B) $y = 17$ C) $y = \frac{12}{5}$ D) $y = 7$

Ans: A Concept: Multiplication and Division Properties of Equality

Difficulty: Easy Section: 2.1

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

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

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

Ans: C Concept: Multiplication and Division Properties of Equality

Difficulty: Moderate Section: 2.1

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

$$-x = 150.7$$

Ans: $x = -150.7$

Concept: Multiplication and Division Properties of Equality Difficulty: Easy

Section: 2.1

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

$$-4.1 = -12.3k$$

Ans: $k = \frac{1}{3}$

Concept: Multiplication and Division Properties of Equality Difficulty: Moderate
Section: 2.1

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

The sum of twelve and a number is negative nineteen.

A) $12 + x = 19; x = -7$

C) $12 - x = -19; x = 31$

B) $12x = -19; x = -19/12$

D) $x + 12 = -19; x = -31$

Ans: D Concept: Translations Difficulty: Moderate Section: 2.1

16. 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 eighteen is twenty.

Ans: $x - 18 = 20; x = 38$

Concept: Translations Difficulty: Moderate Section: 2.1

17. 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.

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

C) $-\frac{1}{2} - x = 12; x = -\frac{25}{2}$

B) $-\frac{1}{2}x = 12; x = -24$

D) $-\frac{1}{2}x = 12; x = -6$

Ans: B Concept: Translations Difficulty: Moderate Section: 2.1

18. 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 five is negative nine.

A) $\frac{x}{5} = -9; x = -45$

C) $\frac{x}{5} = -9; x = 45$

B) $x - 5 = -9; x = -4$

D) $\frac{5}{x} = -9; x = -\frac{5}{9}$

Ans: A Concept: Translations Difficulty: Moderate Section: 2.1

19. Which of the following is not a linear equation?

A) $2z - 3 = 4z + 2$ B) $2(y + 5) = y$ C) $\frac{y}{8} + 3 = -\frac{1}{4} - \frac{y}{5}$ D) $2x + 3 = 4 - x^2$

Ans: D Concept: Definition of a Linear Equation in One Variable Difficulty: Easy
Section: 2.1

20. Simplify by collecting the *like* terms. Then solve the equation.

$$4x - 3x + 5 = 6 - 2$$

- A) -1 B) 4 C) $\frac{2}{3}$ D) $-\frac{1}{6}$

Ans: A Concept: Addition and Subtraction Properties of Equality

Difficulty: Moderate Section: 2.1

21. Solve the equation.

$$3 = 3y + 21$$

- A) $y = 6$ B) $y = -8$ C) $y = -6$ D) $y = 7$

Ans: C Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate

Section: 2.2

22. Solve the equation.

$$2x - 20 = -38$$

Ans: $x = -9$

Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate

Section: 2.2

23. Solve the equation.

$$20 - 6t = 40$$

Ans: $t = -\frac{10}{3}$

Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate

Section: 2.2

24. Solve the equation.

$$6.3x + 17 = 1 + 6.8x$$

Ans: $x = 32$

Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate

Section: 2.2

25. Solve the equation.

$$5n - 8 = 11n + 5$$

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

Ans: D Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate

Section: 2.2

26. Solve the equation.

$$9z = 11z + 38$$

A) $z = \frac{11}{9}z + 38$ B) $z = -19$ C) $z = 19$ D) $z = -21$

Ans: B Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate
Section: 2.2

27. Solve the equation.

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

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

Ans: A Concept: Linear Equations Involving Multiple Steps Difficulty: Moderate
Section: 2.2

28. Solve the equation.

$$2(5 - 2x) = -6$$

Ans: $x = 4$

Concept: Procedure for Solving a Linear Equation in One Variable
Difficulty: Moderate Section: 2.2

29. Solve the equation.

$$-3(2y + 3) + 3 = -6$$

Ans: $y = 0$

Concept: Procedure for Solving a Linear Equation in One Variable
Difficulty: Moderate Section: 2.2

30. Solve the equation.

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

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

Ans: B Concept: Procedure for Solving a Linear Equation in One Variable
Difficulty: Moderate Section: 2.2

31. Solve the equation.

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

Ans: $y = -\frac{19}{3}$

Concept: Procedure for Solving a Linear Equation in One Variable
Difficulty: Moderate Section: 2.2

32. Solve the equation.

$$\frac{8}{3}(3x+8)+56=\frac{64}{3}$$

Ans: $x = -7$

Concept: Procedure for Solving a Linear Equation in One Variable

Difficulty: Difficult Section: 2.2

33. Solve the equation.

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

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

Ans: D Concept: Procedure for Solving a Linear Equation in One Variable

Difficulty: Difficult Section: 2.2

34. Solve the equation.

$$0.8(x-5)+0.5=1-0.2(10-2x)-0.5$$

A) $x = 0.5$ B) $x = 5$ C) $x = 0$ D) no solution

Ans: B Concept: Procedure for Solving a Linear Equation in One Variable

Difficulty: Difficult Section: 2.2

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

$$12y+2(3-y)=5+10y+2$$

A) conditional B) identity C) contradiction D) cannot be determined

Ans: C Concept: Conditional Equations, Identities, and Contradictions

Difficulty: Moderate Section: 2.2

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

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

A) conditional B) identity C) contradiction D) cannot be determined

Ans: B Concept: Conditional Equations, Identities, and Contradictions

Difficulty: Moderate Section: 2.2

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

$$5(z+2)-3z=-4\left(-\frac{1}{2}z+1\right)+14$$

A) conditional; $z = -3$

C) contradiction; no solution

B) identity; all real numbers

D) identity; no solution

Ans: B Concept: Conditional Equations, Identities, and Contradictions

Difficulty: Difficult Section: 2.2

38. Identify the equation as a conditional equation, a contradiction or an identity.

$$y - 9 + 3y = -2y + 4$$

A) conditional B) identity C) contradiction D) cannot be determined

Ans: A Concept: Conditional Equations, Identities, and Contradictions

Difficulty: Moderate Section: 2.2

39. Identify the equation as a conditional equation, a contradiction or an identity. Then describe the solution.

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

Ans: conditional; $n = -1$

Concept: Conditional Equations, Identities, and Contradictions Difficulty: Moderate

Section: 2.2

40. Determine which of the values below could be used to clear fractions in the equation.

$$\frac{11}{28}x - \frac{7}{12} = -2$$

A) 4 B) 12 C) 84 D) 308

Ans: C Concept: Linear Equations with Fractions Difficulty: Moderate

Section: 2.3

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

$$0.5x + 2.25 = 4.25x + 3.5$$

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

Ans: D Concept: Linear Equations with Fractions Difficulty: Moderate

Section: 2.3

42. Determine which of the values below could be used to clear fractions in the equation.

$$\frac{7}{3}x - \frac{1}{4} = 5$$

A) 3 B) 7 C) 6 D) 12

Ans: D Concept: Linear Equations with Fractions Difficulty: Moderate

Section: 2.3

43. Solve the equation.

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

Ans: $z = -3$

Concept: Linear Equations with Fractions Difficulty: Moderate Section: 2.3

44. Solve the equation.

$$\frac{13}{2}y + 5 = -1$$

Ans: $y = -\frac{12}{13}$

Concept: Linear Equations with Fractions Difficulty: Moderate Section: 2.3

45. Solve the equation.

$$\frac{9}{2}z - 2 = 1 + \frac{3}{2}z$$

Ans: $z = 1$

Concept: Linear Equations with Fractions Difficulty: Moderate Section: 2.3

46. Solve the equation.

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

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

Ans: D Concept: Linear Equations with Fractions Difficulty: Difficult
Section: 2.3

47. Solve the equation.

$$\frac{2}{3}(-2t - 4) + \frac{2}{3}t = -\frac{10}{3} - t$$

Ans: $t = -2$

Concept: Linear Equations with Fractions Difficulty: Moderate Section: 2.3

48. Solve the equation.

$$-2.5 = 0.1t - 3$$

Ans: $t = 5$

Concept: Linear Equations with Decimals Difficulty: Moderate Section: 2.3

49. Solve the equation.

$$0.05z + 0.26 = -0.19$$

A) $z = -0.9$ B) $z = -6$ C) $z = -9$ D) $z = -10$

Ans: C Concept: Linear Equations with Decimals Difficulty: Moderate
Section: 2.3

50. Solve the equation.

$$-0.4y + 1.3 = 2.9 - 0.2y$$

A) $y = -8$ B) $y = -0.8$ C) $y = -6$ D) $y = -10$

Ans: A Concept: Linear Equations with Decimals Difficulty: Moderate
Section: 2.3

51. Solve the equation.

$$0.03 - 0.01(x + 12) + 0.07x = 0.02(2x - 4)$$

Ans: $x = \frac{1}{2}$

Concept: Linear Equations with Decimals Difficulty: Difficult Section: 2.3

52. Marcus made \$21 more than three times Joel's weekly salary. If x represents Joel's weekly salary, write an expression for Marcus' weekly salary.

A) $21x + 3$ B) $3x + 21$ C) $3(x + 21)$ D) $21(3 + x)$

Ans: B Concept: Translations Involving Linear Equations Difficulty: Easy
Section: 2.4

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

Ans: -250

Concept: Translations Involving Linear Equations Difficulty: Easy Section: 2.4

54. The product of ten and the sum of two and a number is five times the number. Find the number.

A) -4 B) 5 C) -5 D) 12

Ans: A Concept: Translations Involving Linear Equations Difficulty: Moderate
Section: 2.4

55. The difference of 13 and 3 times a number is 15. Find the number.

A) 28 B) $\frac{28}{3}$ C) $-\frac{28}{3}$ D) $-\frac{2}{3}$

Ans: D Concept: Translations Involving Linear Equations Difficulty: Moderate
Section: 2.4

56. The sum of two consecutive integers is -163 . Find the least of the two integers.

A) -82 B) -164 C) -81 D) 82

Ans: A Concept: Consecutive Integer Problems Difficulty: Moderate
Section: 2.4

57. The sum of two consecutive even integers is 154. Find the least of the two integers.

A) 74 B) 78 C) 77 D) 76

Ans: D Concept: Consecutive Integer Problems Difficulty: Moderate
Section: 2.4

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

Ans: $12 \text{ feet} \times 14 \text{ feet}$

Concept: Consecutive Integer Problems Difficulty: Moderate Section: 2.4

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) 41 cm D) 47 cm
 Ans: D Concept: Consecutive Integer Problems Difficulty: Moderate
 Section: 2.4
60. Five times the sum of two consecutive odd integers is twelve times the larger of the two. Find the two odd integers.
 Ans: -7 and -5
 Concept: Consecutive Integer Problems Difficulty: Difficult Section: 2.4
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?
 Ans: 6'8", or $6\frac{2}{3}$ feet
 Concept: Applications of Linear Equations Difficulty: Moderate Section: 2.4
62. The length of a rectangular plot of land is 3 times the width. If the perimeter is 2,000 feet, find the dimensions of the plot.
 A) 1,000 feet \times 3,000 feet C) 500 feet \times 1,500 feet
 B) 250 feet \times 750 feet D) 100 feet \times 300 feet
 Ans: B Concept: Applications of Linear Equations Difficulty: Moderate
 Section: 2.4
63. The plans for a rectangular deck call for the width to be 8 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) 8 feet B) 34 feet C) 27 feet D) 19 feet
 Ans: D Concept: Applications of Linear Equations Difficulty: Moderate
 Section: 2.4
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 134 people in the theater, how many were women?
 A) 46 B) 68 C) 88 D) 106
 Ans: C Concept: Applications of Linear Equations Difficulty: Moderate
 Section: 2.4
65. What percent of 30 is 12?
 A) 250% B) 32% C) 40% D) 60%
 Ans: C Concept: Basic Percent Equations Difficulty: Easy Section: 2.5

66. Twelve is what percent of sixty?

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

Ans: D Concept: Basic Percent Equations Difficulty: Moderate Section: 2.5

67. What is 25% of 52?

A) 18 B) 13 C) 11 D) 20

Ans: B Concept: Basic Percent Equations Difficulty: Easy Section: 2.5

68. 135 is 20% of what number?

A) 108 B) 27 C) 675 D) 162

Ans: C Concept: Basic Percent Equations Difficulty: Moderate Section: 2.5

69. The tax rate on a used car in Overshoe County is 6.5%. What is the total price including sales tax on a sport utility with a selling price of \$15,000?

A) \$24,750.00 B) \$15,975.00 C) \$29,025.00 D) \$15,487.50

Ans: B Concept: Basic Percent Equations Difficulty: Easy Section: 2.5

70. If \$8,000 is invested in an account that earns 6.5% simple interest, how much money is in the account after 10 years?

Ans: \$13,200

Concept: Applications Involving Simple Interest Difficulty: Moderate Section: 2.5

71. An investment gains an average of 10% simple interest for 10 years, at which time its value is \$38,000. How much was originally invested?

A) \$19,000 B) \$38,000 C) \$18,700 D) \$21,100

Ans: A Concept: Applications Involving Simple Interest Difficulty: Difficult
Section: 2.5

72. If a \$7,000 original investment earns simple interest for 5 years, and is worth \$11,200, what is the interest rate?

A) 62.5% B) 37.5% C) 21% D) 12%

Ans: D Concept: Applications Involving Simple Interest Difficulty: Moderate
Section: 2.5

73. What is the sale price of a stereo that normally sells for \$200.00 and is on sale for 15% off?

A) \$30.00 B) \$185.00 C) \$170.00 D) \$230.00

Ans: C Concept: Applications Involving Discount and Markup
Difficulty: Moderate Section: 2.5

74. 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?

A) \$18,700.00 B) \$3,375.00 C) \$25,875.00 D) \$19,565.22

Ans: D Concept: Applications Involving Discount and Markup
Difficulty: Difficult Section: 2.5

75. Suppose you make purchases with a total retail price of \$160, and the amount you have to pay is \$164.80. What is the sales tax rate?

A) 3% B) 4.8% C) 0.048% D) 5%

Ans: A Concept: Applications Involving Sales Tax Difficulty: Moderate

Section: 2.5

76. 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?

Ans: \$420

Concept: Applications Involving Sales Tax Difficulty: Difficult Section: 2.5

77. The tax rate in Hamilton County, Ohio, is 6%. If \$7.20 is the tax on a purchase, what is the price of the purchase?

A) \$120.00 B) \$1.20 C) \$122.40 D) \$118.70

Ans: A Concept: Applications Involving Sales Tax Difficulty: Moderate

Section: 2.5

78. 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?

A) \$15.43 B) \$36 C) \$45 D) \$51

Ans: C Concept: Applications Involving Sales Tax Difficulty: Difficult

Section: 2.5

79. Solve the formula for y.

$$-3x + 10y = 4$$

$$\text{Ans: } y = \frac{3}{10}x + \frac{2}{5}$$

Concept: Literal Equations Difficulty: Moderate Section: 2.6

80. Solve the formula for z.

$$2z + 4y^2 = nz$$

$$\text{A) } z = \frac{nz - 4y^2}{2} \quad \text{B) } z = \frac{nz}{8y^2} \quad \text{C) } z = \frac{4y^2}{2 - n} \quad \text{D) } z = \frac{4y^2}{n - 2}$$

Ans: D Concept: Literal Equations Difficulty: Difficult Section: 2.6

81. Solve the formula for y.

$$ax + by = c$$

$$\text{Ans: } y = \frac{c - ax}{b}$$

Concept: Literal Equations Difficulty: Moderate Section: 2.6

82. Solve the formula for l .

$$P = 2l + 2w$$

Ans: $l = \frac{P - 2w}{2}$

Concept: Literal Equations Difficulty: Moderate Section: 2.6

83. Solve the formula for z .

$$5w + 3z - 4 = w$$

A) $z = \frac{1}{3}(-4w + 4)$ B) $3z = -4w + 4$ C) $z = 6w - 4$ D) $z = \frac{w + 4}{3 - 5w}$

Ans: A Concept: Literal Equations Difficulty: Moderate Section: 2.6

84. Solve the formula for m .

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

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

Ans: B Concept: Literal Equations Difficulty: Moderate Section: 2.6

85. The local zoning code for a rectangular billboard requires that the width is 10 feet less than the length. An advertiser wants a billboard to have an overall perimeter of 60 feet. What should the length of the billboard be?

A) 10 feet B) 35 feet C) 30 feet D) 20 feet

Ans: C Concept: Geometry Applications Difficulty: Moderate Section: 2.6

86. The length of a rectangular plot of land is 4 times the width. If the perimeter is 2,000 feet, find the dimensions of the plot. Round to one decimal place if necessary.

A) 1,000 feet \times 4,000 feet C) 400.0 feet \times 1,600.0 feet
B) 200.0 feet \times 800.0 feet D) 100 feet \times 400 feet

Ans: B Concept: Geometry Applications Difficulty: Moderate Section: 2.6

87. A large concert venue is to be constructed in the shape of a triangle. The east and west 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) 400 feet \times 400 feet \times 600 feet C) 450 feet \times 450 feet \times 675 feet
B) 375 feet \times 375 feet \times 825 feet D) 470 feet \times 470 feet \times 1,035 feet

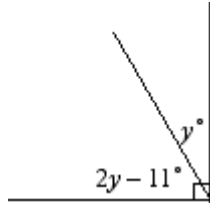
Ans: C Concept: Geometry Applications Difficulty: Moderate Section: 2.6

88. Two angles are complementary. The larger of the two is 9° more than twice the smaller. Find the 2 angles.

A) 57° and 123° B) 33° and 57° C) 27° and 63° D) 81° and 9°

Ans: C Concept: Geometry Applications Difficulty: Moderate Section: 2.6

89. Find the measures of the 2 angles pictured below.



Ans: $33\frac{2}{3}^\circ$ and $56\frac{1}{3}^\circ$

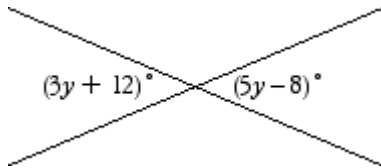
Concept: Geometry Applications Difficulty: Moderate Section: 2.6

90. Two angles are supplementary. The measure of the smaller angle is 11 degrees more than one-third the measure of the larger one. Find the measure of the larger angle.

Ans: $\frac{507}{4}$ degrees

Concept: Geometry Applications Difficulty: Moderate Section: 2.6

91. Find the measures of the two labeled angles in the picture.



A) 10° and 10° B) 42° and 42° C) $44\frac{1}{4}^\circ$ and $45\frac{3}{4}^\circ$ D) 78° and 102°

Ans: B Concept: Geometry Applications Difficulty: Moderate Section: 2.6

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.

Ans: 26.5° and 63.5°

Concept: Geometry Applications Difficulty: Moderate Section: 2.6

93. Angles A , B , and C are the angles in a triangle. Angle B is 4 times as big as angle A , and angle C is 48 degrees more than angle A . Find the measure of angle A in degrees.

A) 22 B) 7 C) 88 D) 70

Ans: A Concept: Geometry Applications Difficulty: Difficult Section: 2.6

94. The measure of the larger of the acute angles in a right triangle is 13 degrees less than 4 times the measure of the smaller. Find the measure of the smaller angle.

A) $\frac{83}{5}$ degrees B) $\frac{103}{5}$ degrees C) $\frac{118}{5}$ degrees D) $\frac{138}{5}$ degrees

Ans: B Concept: Geometry Applications Difficulty: Moderate Section: 2.6

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

Ans: $C = 2\pi r$; $r = \frac{C}{2\pi}$

Concept: Geometry Applications Difficulty: Easy Section: 2.6

96. Find the radius of a circle with circumference 290 inches. Round to two decimal places.

A) 1,821.20 inches B) 92.36 inches C) 42.58 inches D) 46.18 inches

Ans: D Concept: Geometry Applications Difficulty: Easy Section: 2.6

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.

Ans: 0.75 mile

Concept: Geometry Applications Difficulty: Difficult Section: 2.6

98. Pat needs to bring 96 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.

A) $\frac{96}{x}$ B) $x - 96$ C) $96 + x$ D) $96 - x$

Ans: D Concept: Applications Involving Cost Difficulty: Easy Section: 2.7

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 \$210. If children's tickets each cost \$2 and adult tickets each cost \$8, how many children and how many adults went on the field trip?

Ans: 17 children and 22 adults went on the trip.

Concept: Applications Involving Cost Difficulty: Moderate Section: 2.7

100. A student purchases bottled drinks and canned drinks for a party. She purchased a total of 41 drinks for the party at a total cost of \$46.30. If bottled drinks each cost \$1.30 and canned drinks each cost \$0.95, how many of each type of drink did she purchase?

A) 21 bottled drinks and 20 canned drinks

B) 23 bottled drinks and 18 canned drinks

C) 20 bottled drinks and 21 canned drinks

D) 18 bottled drinks and 23 canned drinks

Ans: A Concept: Applications Involving Cost Difficulty: Moderate Section: 2.7

101. If Lydia invests \$4000 in a certificate of deposit and d dollars in a stock, write an expression for the total amount she invested.

A) $4000d$ B) $4000 + d$ C) $4000 - d$ D) $d - 4000$

Ans: B Concept: Applications Involving Mixtures Difficulty: Easy Section: 2.7

102. How many gallons of gasoline that is 9% ethanol must be added to 2,000 gallons of gasoline with no ethanol to get a mixture that is 7% ethanol?
A) 1,800 B) 14,000 C) 7,000 D) 8,115
Ans: C Concept: Applications Involving Mixtures Difficulty: Difficult
Section: 2.7
103. Victor biked from his hometown to a neighboring city in 4 hours. He biked back to his hometown in 2 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) 8 miles B) 32 miles C) 64 miles D) 35 miles
Ans: B Concept: Applications Involving Uniform Motion Difficulty: Moderate
Section: 2.7
104. Two boys in a boat with a small motor are able to travel 4 mph faster with the current than against the current. If they travel with the current from a dock to their campground in 2 hours and make the return trip against the current in 3 hours, how fast are the boys able to travel in still water?
A) 8 mph B) 20 mph C) 12 mph D) 2 mph
Ans: B Concept: Applications Involving Uniform Motion Difficulty: Moderate
Section: 2.7
105. Two cars are 285 miles apart and travel toward each other on the same road. They meet in 3 hours. One car travels 5 mph faster than the other. What is the average speed of each car?
A) 43 mph; 48 mph C) 44 mph; 49 mph
B) 42 mph; 47 mph D) 45 mph; 50 mph
Ans: D Concept: Applications Involving Uniform Motion Difficulty: Moderate
Section: 2.7
106. A freight train and a passenger train leave a rail yard at the same time and travel on parallel tracks. The passenger train travels 10 mph faster than the freight train. The combined distance traveled after 3 hours is 126 miles. What is the average speed of each train?
A) 18 mph; 28 mph C) 15 mph; 25 mph
B) 13 mph; 23 mph D) 16 mph; 26 mph
Ans: D Concept: Applications Involving Uniform Motion Difficulty: Moderate
Section: 2.7
107. If you average 64 miles per hour on a road trip covering 384 miles, how long will the trip take?
A) 5 hours B) 7 hours C) 6 hours D) 10 hours
Ans: C Concept: Applications Involving Uniform Motion Difficulty: Easy
Section: 2.7

108. 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 14 miles per hour, and Mona can average 6 miles per hour on blades. How long will it take them to meet?

Ans: $\frac{1}{2}$ hour

Concept: Applications Involving Uniform Motion Difficulty: Moderate

Section: 2.7

109. 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) 5 seconds

C) 22.5 seconds

B) 9.2 seconds

D) He never overtakes the sprinter.

Ans: B Concept: Applications Involving Uniform Motion Difficulty: Difficult

Section: 2.7

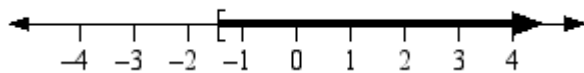
110. At a small-town hardware store, it costs \$4 to rent a chain saw, plus \$2.30 for each day. If Joe rented the saw and the rental fee was \$17.80, how many days did he keep the saw?

Ans: 6 days

Concept: Applications Involving Cost Difficulty: Moderate Section: 2.7

111. Graph the solution set.

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

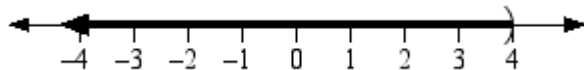


Ans:

Concept: Graphing Linear Inequalities Difficulty: Easy Section: 2.8

112. Graph the solution set.

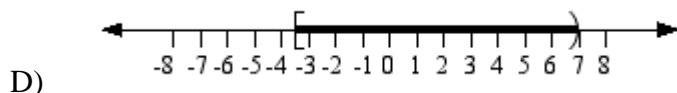
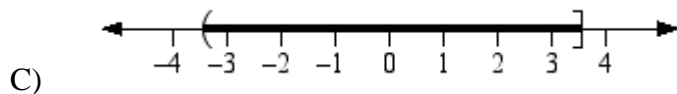
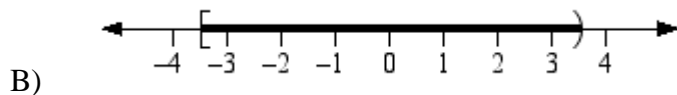
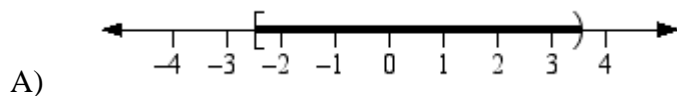
$x < 4$



Ans:

Concept: Graphing Linear Inequalities Difficulty: Easy Section: 2.8

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



Ans: B Concept: Graphing Linear Inequalities Difficulty: Easy Section: 2.8

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

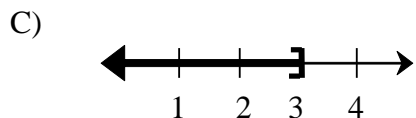
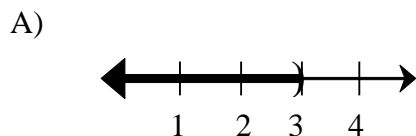
$$\{x \mid x \geq -2\}$$

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

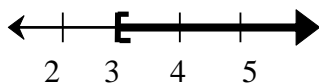
Ans: B Concept: Set-Builder Notation and Interval Notation Difficulty: Easy
Section: 2.8

115. A set is given in set-builder notation. Graph the set.

$$\{x \mid x \geq 3\}$$

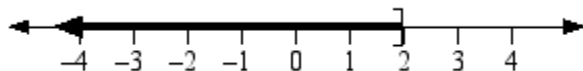


D)



Ans: D Concept: Set-Builder Notation and Interval Notation Difficulty: Easy
Section: 2.8

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



Ans: $(-\infty, 2]$

Concept: Set-Builder Notation and Interval Notation Difficulty: Easy Section: 2.8

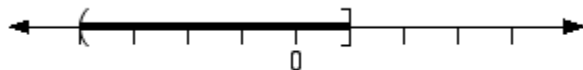
117. Write the interval described below in interval notation.

All real numbers that are not greater than -40

A) $(-\infty, -40)$ B) $[-40, \infty)$ C) $(-\infty, -40]$ D) $(-40, \infty)$

Ans: C Concept: Set-Builder Notation and Interval Notation Difficulty: Moderate
Section: 2.8

118. If each tick mark on the number line below corresponds to 4.5 units, what set is graphed below? Write the set in set-builder notation.



A) $\{x \mid -4 < x \leq 1\}$

C) $\{x \mid -18 < x \leq 4.5\}$

B) $\{x \mid -18 < x \geq 4.5\}$

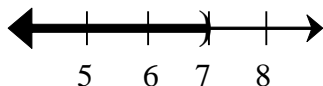
D) $\{x \mid -18 \leq x < 4.5\}$

Ans: C Concept: Set-Builder Notation and Interval Notation Difficulty: Moderate
Section: 2.8

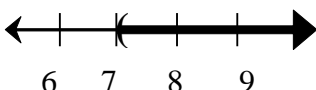
119. A set is given in interval notation. Graph the set.

$[7, \infty)$

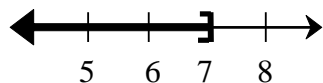
A)



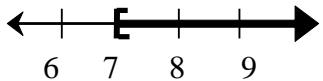
B)



C)



D)



Ans: D Concept: Set-Builder Notation and Interval Notation Difficulty: Easy
Section: 2.8

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

$$[6, \infty)$$

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

Ans: A Concept: Set-Builder Notation and Interval Notation Difficulty: Easy
Section: 2.8

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

$$y - 8 > 11$$

A) $(19, \infty)$ B) $(-8, 11)$ C) $(3, \infty)$ D) $(11, \infty)$

Ans: A Concept: Properties of Inequality Difficulty: Easy Section: 2.8

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

$$4 + t \leq 9$$

A) $(-\infty, 9]$ B) $[4, 9]$ C) $(-\infty, 5]$ D) $(-\infty, 13]$

Ans: C Concept: Properties of Inequality Difficulty: Easy Section: 2.8

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

$$5t > -15$$

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

Ans: C Concept: Properties of Inequality Difficulty: Easy Section: 2.8

124. Solve the inequality. Write your answer in interval notation.

$$-12 < x + 10 \leq -5$$

A) $(-22, 15]$ B) $(-22, -15]$ C) $(15, 22]$ D) $(-15, 22]$

Ans: B Concept: Inequalities of the form $a < x < b$ Difficulty: Moderate
Section: 2.8

125. Solve the inequality. Write your answer in interval notation.

$$-20 \leq 2x < 2$$

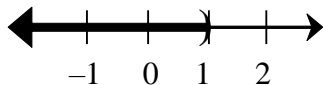
- A) $[-10, 2)$ B) $[-20, 1)$ C) $[-40, 4)$ D) $[-10, 1)$

Ans: D Concept: Inequalities of the form $a < x < b$ Difficulty: Moderate
Section: 2.8

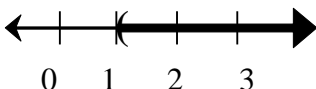
126. Graph the solution set to the inequality.

$$x + 4 \leq 5$$

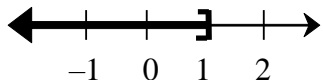
A)



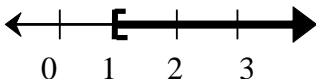
B)



C)



D)



Ans: C Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

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

$$18 - t > 11$$

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

Ans: C Concept: Properties of Inequality Difficulty: Easy Section: 2.8

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

$$-2 < -2y + 13 < 2$$

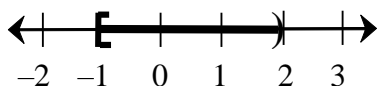
- A) $\left(\frac{11}{2}, \frac{15}{2}\right)$ B) $\left(-\frac{15}{2}, \frac{11}{2}\right)$ C) $\left(-\frac{15}{2}, 2\right)$ D) $\left(-2, \frac{11}{2}\right)$

Ans: A Concept: Inequalities of the form $a < x < b$ Difficulty: Moderate
Section: 2.8

129. Graph the solution set to the inequality.

$$-3 \leq 2x - 1 < 3$$

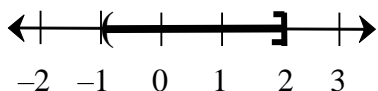
A)



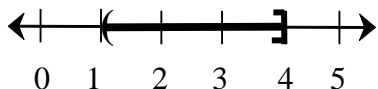
B)



C)



D)



Ans: A Concept: Inequalities of the form $a < x < b$ Difficulty: Moderate
Section: 2.8

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

$$-8 \leq 2x - 3 < 6$$

A) $\left[-\frac{5}{2}, 6\right)$ B) $\left[-\frac{5}{2}, \infty\right)$ C) $\left[-8, \frac{9}{2}\right)$ D) $\left[-\frac{5}{2}, \frac{9}{2}\right)$

Ans: D Concept: Inequalities of the form $a < x < b$ Difficulty: Moderate
Section: 2.8

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

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

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

Ans: C Concept: Inequalities of the form $a < x < b$ Difficulty: Moderate
Section: 2.8

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

$$-7 - 3z \leq -3$$

- A) $\left(-\infty, -\frac{4}{3}\right]$ B) $\left(-\infty, -\frac{4}{3}\right)$ C) $\left[-\frac{4}{3}, \infty\right)$ D) $\left(-\frac{4}{3}, \infty\right)$

Ans: C Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

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

$$6y + 6 > 9$$

- A) $\left(\frac{1}{2}, \infty\right)$ B) $\left(-\infty, -\frac{1}{2}\right)$ C) $(-\infty, 9)$ D) $(3, \infty)$

Ans: A Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

134. Solve the inequality. Write your answer in interval notation.

$$3(x - 3) - 2x \geq -15$$

- A) $(-\infty, -6]$ B) $(-\infty, -12]$ C) $[-12, \infty)$ D) $[-6, \infty)$

Ans: D Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

135. Solve the inequality. Write your answer in interval notation.

$$11 \leq 8(n + 4) - 4n$$

- A) $\left(-\infty, -\frac{21}{4}\right)$ B) $\left[-\frac{21}{4}, \infty\right)$ C) $\left(-\infty, -\frac{21}{4}\right]$ D) $\left(-\frac{21}{4}, \infty\right)$

Ans: B Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

136. Solve the inequality. Write your answer in interval notation.

$$-10 - 2(2x + 1) < x - (-10 - x)$$

- A) $\left(-\frac{11}{3}, \infty\right)$ B) $(-\infty, -10)$ C) $\left(-\infty, -\frac{11}{3}\right)$ D) $\left[-\frac{11}{3}, \infty\right)$

Ans: A Concept: Properties of Inequality Difficulty: Difficult Section: 2.8

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

$$-2(8y - 7) + y \geq 2y - (-12 + y)$$

- A) $\left(\frac{1}{8}, \infty\right)$ B) $\left(-\frac{5}{8}, \infty\right)$ C) $\left(-\infty, \frac{1}{8}\right)$ D) $\left(-\infty, \frac{1}{8}\right]$

Ans: D Concept: Properties of Inequality Difficulty: Difficult Section: 2.8

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

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

- A) $\left[\frac{25}{2}, \infty\right)$ B) $\left(-\infty, -\frac{5}{2}\right]$ C) $\left(-\infty, \frac{5}{2}\right]$ D) $\left(-\infty, -\frac{25}{2}\right]$

Ans: D Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

139. Solve the inequality. Write your answer in interval notation.

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

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

Ans: B Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

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

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

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

Ans: A Concept: Properties of Inequality Difficulty: Moderate Section: 2.8

141. Is $x = -6$ a solution to the inequality?

$$11x + 2 \geq 2x - 5$$

- A) Yes B) No

Ans: B Concept: Properties of Inequality Difficulty: Easy Section: 2.8

142. Which of the following is a solution to the inequality?

$$7(y - 3) < y + 7$$

- A) 10 B) $\frac{31}{3}$ C) $\frac{23}{2}$ D) -9

Ans: D Concept: Properties of Inequality Difficulty: Easy Section: 2.8

143. Translate the sentence into a mathematical inequality.

To qualify as a hurricane, the wind speed (w) of a tropical storm must exceed 74 miles per hour.

Ans: $w > 74$

Concept: Applications of Linear Inequalities Difficulty: Easy Section: 2.8

144. Translate the sentence into a mathematical inequality.

The number of people that can fit into a concert hall, p , is no more than 3,900.

- A) $p \leq 3,900$ B) $p > 3,900$ C) $p \geq 3,900$ D) $p < 3,900$

Ans: A Concept: Applications of Linear Inequalities Difficulty: Easy

Section: 2.8

145. Sparky has scores of 73, 68, and 73 on his first three Sociology tests. If he needs to keep an average of 70 to stay eligible for lacrosse, what scores on the fourth exam will accomplish this?

Ans: He must score 66 or higher.

Concept: Applications of Linear Inequalities Difficulty: Moderate Section: 2.8

146. A rental company charges a flat fee of \$10 to rent a power washer, plus \$5 per day. How many days could you keep the power washer if you plan to spend no more than \$27?

Ans: You can keep it 3 days or less.

Concept: Applications of Linear Inequalities Difficulty: Moderate Section: 2.8