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

Identify the numerical coefficient of the term.

1) $-9x$

A) 9
B) 1
C) x
D) –9

Answer: D

2) $9y$

A) y
B) 9
C) –9
D) 1

Answer: B

3) m

A) 1
B) –1
C) 0
D) m

Answer: A

4) $-5x^2$

A) 5
B) –5
C) x^2
D) 2

Answer: B

5) $-\frac{7}{11}z$

A) –7
B) $\frac{7}{11}$
C) z
D) $-\frac{7}{11}$

Answer: D

6) $-\frac{3y}{5}$

A) $\frac{3}{5}$
B) $-\frac{3}{5}$
C) 3
D) –3

Answer: B

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Indicate whether the list of terms are like or unlike.

7) 12z, –8z
A) like
B) unlike
Answer: A

8) –15xy, $12x^2y$
A) like
B) unlike
Answer: B

9) $-8z^2$, 3z
A) like
B) unlike
Answer: B

10) $23xy^2z$, $-19xy^2$
A) like
B) unlike
Answer: B

11) a^2b, $20ba^2$
A) like
B) unlike
Answer: A

Simplify the expression by combining any like terms.

12) 2x – 6x
A) –4 + x
B) –12x
C) –4x
D) 8x
Answer: C

13) 2b – 8b
A) 6b
B) –10b
C) –6b
D) $-6b^2$
Answer: C

14) 2y + y – 6y
A) –3y
B) –5y
C) –4y + y
D) –4y
Answer: A

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15) $7z - 10z + z$

A) $-2z$
B) $-3z$
C) $-4z$
D) $-3z + z$

Answer: A

16) $6a - 2a + 4$

A) $-4a + 4$
B) $4a + 4$
C) $8a$
D) $8a + 4$

Answer: B

17) $12x - x - 4x - x$

A) $x^2 + 8x$
B) $-x^2 + 8x$
C) $6x$
D) $8x$

Answer: C

18) $7x + 2 + 4x - 7$

A) $11x - 5$
B) $6x$
C) 6
D) $3x - 5$

Answer: A

19) $5a - 2a - a - 13$

A) $2a - 13$
B) $3a - 14$
C) $3a - 13$
D) $3a - a - 13$

Answer: A

20) $9y + 3 - 4y + 6$

A) $13y + 9$
B) $5y + 9$
C) $14y$
D) $5y - 3$

Answer: B

21) $10x - 6 + 2x + x + 1$

A) $12x - 5$
B) $13x - 5$
C) $12x + 5$
D) $11x - 5$

Answer: B

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22) –5m + 2 – 1 + 6 + m – 7
A) –6m + 1
B) –6m
C) –4m
D) –4m – 1
Answer: C

23) 2.7c + 9 + 3c + 1.2
A) 2.7c + 3c + 9 + 1.2
B) 5.7c + 10.2
C) 8.1c + 10.8
D) 15.9
Answer: B

24) 5.2w – 1.4 – 3.8w + 4 + 2.6w
A) 4w + 2.6
B) 11.6w + 2.6
C) 4w – 2.6
D) 4w + 5.4
Answer: A

25) $2x^2 - 4x - 7 + 6x - 6 + 4x^2$
A) $6x^2 + 2x - 13$
B) $-5x^3$
C) $6x^4 + 2x^2 - 13$
D) $-3x^2 + 8x - 10$
Answer: A

Simplify the expression. First use the distributive property to remove any parentheses.

26) 7(y + 10)
A) 7y + 17
B) 7y + 70
C) 7y + 10
D) y + 70
Answer: B

27) 5(x – 8)
A) 5x – 13
B) 5x – 40
C) 5x + 40
D) 5x – 8
Answer: B

28) –8(r + 8)
A) –8r – 8
B) –8r + 64
C) r – 64
D) –8r – 64
Answer: D

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29) –6(z – 9)
A) 6z + 54
B) –6z – 54
C) –6z + 9
D) –6z + 54
Answer: D

30) 5(2d + 5)
A) 10d + 25
B) 10d + 5
C) 7d + 10
D) 35d
Answer: A

31) 4(9n – 5)
A) 36n + 20
B) 36n – 20
C) 13n – 9
D) 36n – 5
Answer: B

32) –10(2x + 3)
A) –20x – 30
B) –20x + 3
C) –8x – 7
D) –50x
Answer: A

33) –6(10y – 2)
A) –60y – 2
B) 4y + 4
C) –60y – 12
D) –60y + 12
Answer: D

34) –3(6r + 8) + 3(5r + 2)
A) 3r + 5
B) –3r – 18
C) –42r
D) –3r + 8
Answer: B

35) 7(3x + 8 + y)
A) 21x + 56 + y
B) 21x + 8 + y
C) 21x + 8 + 7y
D) 21x + 56 + 7y
Answer: D

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36) 9(8x + 2y + 5)
A) 72x + 2y + 45
B) 72x + 18y + 45
C) 72x + 2y + 5
D) 72x + 18y + 5

Answer: B

37) –(–4m + 8n – 8)
A) 4m – 8n – 8
B) 4m – 8n + 8
C) –4m + 8n – 8
D) –4m + 8n + 8

Answer: B

38) –(3y – 4z + 6)
A) –3y + 4z + 6
B) –3y – 4z + 6
C) –3y + 4z – 6
D) –3y – 4z – 6

Answer: C

39) (11z + 4) – (3z – 1)
A) 8z – 5
B) 8z + 5
C) 14z + 5
D) 8z + 3

Answer: B

40) 4(y + 5) – 3
A) 4y + 17
B) 4y + 2
C) 4y + 8
D) 9y – 3

Answer: A

41) 9x + 2(x + 9)
A) 11x + 18
B) 18x + 11
C) 11x – 18
D) 10x + 18

Answer: A

42) –6(2x – 6) – 4x + 9
A) –16x – 27
B) 16x + 45
C) 8x + 45
D) –16x + 45

Answer: D

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43) $6(x + 2) + 9x - 7$

A) $15x + 5$
B) $3x + 5$
C) $15x - 19$
D) $15x + 19$

Answer: A

44) $6m + 2n - 8m + 9(m - 10n)$

A) $23m + 92n$
B) $7m - 88n$
C) $7m - 8n$
D) $-11m + 92n$

Answer: B

45) $-\frac{2}{7}(z - 9) - \frac{1}{14}z$

A) $-\frac{5}{14}z + \frac{18}{7}$

B) $\frac{5}{14}z - \frac{18}{7}$

C) $\frac{3}{14}z + 9$

D) $\frac{5}{14}z + \frac{18}{7}$

Answer: A

46) $\frac{1}{3}(9x + 8) - \frac{1}{2}(6x - 9)$

A) $\frac{43}{6}$

B) $-\frac{11}{3}$

C) $-\frac{11}{6}$

D) $\frac{43}{3}$

Answer: A

47) $-9.3(4r + 10) + 5.3(7r + 8)$

A) $-0.1r - 50.6$
B) $-0.1r + 10$
C) $-130.2r$
D) $-5.3r + 0.7$

Answer: A

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Write the following as an algebraic expression. Simplify if possible.

48) Add 9x – 4 to 2x – 14.

A) 11x + 18
B) 11x – 10
C) 11x – 18
D) 7x – 18

Answer: C

49) Add 6x + 11 to 3x – 7.

A) 9x + 4
B) 9x – 18
C) 3x + 4
D) 9x + 18

Answer: A

50) Subtract 9x + 6 from 3x – 8.

A) –6x – 14
B) –6x + 2
C) 12x – 2
D) 6x + 14

Answer: A

51) Subtract 3x – 4 from 7x + 14.

A) 10x + 10
B) –4x – 18
C) 4x – 18
D) 4x + 18

Answer: D

Write the following phrase as an algebraic expression and simplify if possible. Let x represent the unknown number.

52) Three times a number, increased by thirteen

A) 3 + 13x
B) 3x + 13
C) 3x – 13
D) 3x + 39

Answer: B

53) The difference of thirteen and a number, divided by five

A) $13 - \frac{x}{5}$

B) $\frac{x}{5} - 13$

C) $\frac{13 - x}{5}$

D) $\frac{x - 13}{5}$

Answer: C

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54) One–half a number, minus nine, plus three times the number

A) $\frac{1}{2}x - 6$

B) $\frac{7}{2}x - 9$

C) $\frac{1}{2}x - 9 + 3x$

D) $\frac{7}{2}x - \frac{9}{2}$

Answer: B

55) The sum of four times a number, 1, six times a number, and 3

A) 4x + 10
B) 10x + 22
C) 10x + 4
D) 10x + 2

Answer: C

Write the algebraic expression described.

56) To convert from meters to centimeters, we multiply by 100. For example, the number of centimeters in 3 meters is $100 \cdot 3 = 300$. If one piece of string has a length of x – 4 meters, and another piece of string has a length of 9x + 7 centimeters, express their total length in centimeters as an algebraic expression.

A) (901x + 696) cm
B) (109x – 393) cm
C) (10x + 3) cm
D) (1000x + 300) cm

Answer: B

57) The value of 8 dimes is $10 \cdot 8 = 80$ cents. Likewise, the value of x dimes is 10x. If George finds 3x – 2 nickels, 5x dimes, and x quarters in his change jar, express the total value of change in cents as an algebraic expression.

A) (65x – 10) cents
B) (90x – 10) cents
C) (90x + 10) cents
D) (90x – 2) cents

Answer: B

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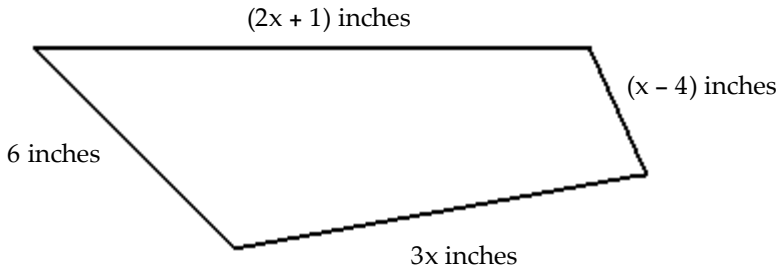
58) Given the following quadrilateral, express the perimeter, or total distance around the figure, as an algebraic expression containing the variable x.



A) (5x + 3) in.
B) (6x + 3) in.
C) (5x + 11) in.
D) (6x + 11) in.

Answer: B

Solve the equation.

59) $x + 10 = 12$

A) 22
B) –22
C) –2
D) 2

Answer: D

60) $11 = r - 19$

A) –30
B) 30
C) 8
D) –8

Answer: B

61) $t - 2 = 17$

A) –15
B) 15
C) 19
D) –19

Answer: C

62) $\frac{1}{2} + f = 12$

A) $\frac{23}{2}$

B) $\frac{25}{2}$

C) $\frac{11}{2}$

D) 23

Answer: A

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63) $2 + 5y = 6y$

A) -9
B) -2
C) 2
D) 5

Answer: C

64) $-5.4 + x = 14.3$

A) 8.9
B) 19.2
C) 8.4
D) 19.7

Answer: D

65) $4y = 3y - 5.2$

A) 4
B) -12.2
C) 5.2
D) -5.2

Answer: D

Solve the equation. Don't forget to first simplify each side of the equation, if possible.

66) $2(y + 7) = 3(y - 5)$

A) 1
B) -29
C) -1
D) 29

Answer: D

67) $5(2z - 4) = 9(z + 3)$

A) 12
B) -7
C) 7
D) 47

Answer: D

68) $7(x - 3) - (6x - 5) = -8$

A) 8
B) -24
C) -8
D) 10

Answer: A

69) $10n = 6n + 4 + 3n$

A) -4
B) 4
C) 40
D) -40

Answer: B

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70) $-7k + 3 + 8k = 15 - 26$

A) 14
B) −44
C) 44
D) −14

Answer: D

71) $-7c + 8 + 5c = -3c + 13$

A) −13
B) −8
C) 5
D) 13

Answer: C

72) $\frac{4}{9}y + \frac{1}{8} = -\frac{5}{9}y - \frac{1}{6}$

A) $-\frac{1}{24}$

B) $\frac{7}{24}$

C) $-\frac{7}{24}$

D) $-\frac{1}{7}$

Answer: C

73) $2(5x - 5) = 11x$

A) 10
B) 5
C) −5
D) −10

Answer: D

74) $6n - 5n + 1 = 1$

A) 2
B) 0
C) 1
D) −1

Answer: B

75) $-4w - 18 + 5w = -1$

A) 19
B) −19
C) −17
D) 17

Answer: D

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76) $-25 + 10 = 3x + 3 - 2x$

A) 38
B) −18
C) −38
D) 18

Answer: B

77) $-8.7 + 4x - 6.3 + 2x - 2.7 = 5.6 + 7x + 1.4$

A) 10.7
B) −24.7
C) −10.7
D) 24.7

Answer: B

Write the algebraic expression described. Simplify if possible.

78) Two numbers have a sum of 34. If one number is q, express the other number in terms of q.

A) $q - 34$
B) $q + 34$
C) $34 - 2q$
D) $34 - q$

Answer: D

79) A 38–centimeter piece of rope is cut into two pieces. If one piece is z centimeters long, express the other length as an algebraic expression in z.

A) $(z - 38)$ cm
B) $(38 - 2z)$ cm
C) $(z + 38)$ cm
D) $(38 - z)$ cm

Answer: D

80) In the race for Student Body President, Jose received 222 more votes than Angela. If Angela received x votes, how many votes did Jose receive?

A) $(x - 222)$ votes
B) $(222 - x)$ votes
C) $222x$ votes
D) $(x + 222)$ votes

Answer: D

81) During a walk–a–thon, Rosilyn walked 10 fewer laps than June walked. If June walked b laps, how many laps did Rosilyn walk?

A) $(b - 10)$ laps
B) $\frac{b}{10}$ laps
C) $(10 - b)$ laps
D) $(b + 10)$ laps

Answer: A

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82) The sum of the angles of a triangle is 180°. If one angle of a triangle measures x° and a second angle measures (6x + 23)°, express the measure of the third angle in terms of x.
A) (203 – 7x)°
B) (157 + 7x)°
C) (157 – 7x)°
D) (157 – 6x)°

Answer: C

83) A quadrilateral is a four–sided figure whose angle sum is 360°. If one angle measures x°, a second angle measures 4x°, and a third angle measures 6x°, express the measure of the fourth angle in terms of x.
A) (360 + 11x)°
B) (11x – 360)°
C) (360 – 11x)°
D) (360 – 10x)°

Answer: C

Solve the equation.

84) 8x = –64
A) 72
B) –72
C) 1
D) –8

Answer: D

85) –3n = –24
A) 2
B) 21
C) –21
D) 8

Answer: D

86) 21x = 0
A) –21
B) 0
C) 21
D) 1

Answer: B

87) –z = 5
A) 5
B) –5
C) –1
D) 0

Answer: B

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88) $-\frac{1}{9}y = -8$

A) 0
B) 72
C) −18
D) −17

Answer: B

89) $\frac{1}{3}a = 0$

A) 1
B) 0
C) 3
D) −3

Answer: B

90) $-\frac{4}{15}k = -\frac{16}{15}$

A) 4
B) 11
C) 10
D) −4

Answer: A

91) $\frac{8}{9}s = \frac{1}{3}$

A) 3
B) $-\frac{3}{8}$
C) $\frac{3}{8}$
D) $\frac{8}{3}$

Answer: C

92) $\frac{n}{3} = 7$

A) 10
B) 9
C) 21
D) 2

Answer: C

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93) $\frac{v}{-2} = 12$

A) −14
B) 24
C) 14
D) −24

Answer: D

94) $-15.4 = -2.2c$

A) 13.2
B) 2
C) 7
D) −13.2

Answer: C

95) $\frac{x}{6} + 9 = 17$

A) 156
B) 48
C) 158
D) 14

Answer: B

96) $-9x - 5x + 6 = -6x$

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

B) $-\frac{3}{10}$

C) $-\frac{3}{4}$

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

Answer: A

97) $6r + 9 = 21$

A) 6
B) 2
C) 5
D) 10

Answer: B

98) $9n - 10 = 80$

A) 81
B) 18
C) 85
D) 10

Answer: D

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99) $-37 = 9x + 8$

A) -54
B) 12
C) -50
D) -5

Answer: D

100) $\frac{1}{2}a - \frac{1}{2} = -3$

A) 7
B) -7
C) 5
D) -5

Answer: D

101) $\frac{1}{3}f - 4 = 1$

A) -15
B) -9
C) 15
D) 9

Answer: C

102) $4x - 9x = 6 - 16$

A) -2
B) 5
C) -5
D) 2

Answer: D

103) $4x + x = 49 - 9$

A) 8
B) 5
C) -8
D) -5

Answer: A

104) $-4x + 4 - 5x - 6 = 13$

A) $\frac{5}{3}$

B) $-\frac{23}{9}$

C) $-\frac{5}{3}$

D) 15

Answer: C

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105) $3x - 5 - 7(x + 1) = -(2x - 7)$

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

B) $-\frac{19}{2}$

C) $\frac{19}{3}$

D) $\frac{5}{3}$

Answer: B

106) $-4(4x + 3) - 5 = -5(x + 2) + 2x$

A) $\frac{8}{13}$

B) $-\frac{7}{19}$

C) $-\frac{4}{13}$

D) $-\frac{7}{13}$

Answer: D

107) $0.4x - 0.7x - 9 = 15$

A) 80
B) −74
C) 74
D) −80

Answer: D

108) $-4.3z + 1 = -9 - 1.8z$

A) −12
B) 2.7
C) 2.3
D) 4

Answer: D

109) $\frac{1}{5}(x + 6) = \frac{1}{6}(x + 8)$

A) −4
B) 4
C) −12
D) {3}

Answer: B

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110) $\frac{1}{7}(x - 21) + \frac{1}{4}(x + 4) = x - 9$

A) $\frac{140}{17}$

B) $\frac{196}{17}$

C) $\frac{308}{17}$

D) $\frac{364}{17}$

Answer: B

Write the algebraic expression described. Simplify if possible.

111) If x represents the first of three consecutive odd integers, express the sum of the three integers in terms of x.

A) 3x + 3
B) 3x + 6
C) 3x + 12
D) x + 6

Answer: B

112) If x represents the first of three consecutive odd integers, express the sum of the second integer and the third integer in terms of x.

A) 2x + 2
B) 3x + 4
C) 2x + 6
D) 3x + 6

Answer: C

113) If x is the first of three consecutive integers, express the sum of 33 and the third integer as an algebraic expression in terms of x.

A) x + 34
B) x + 35
C) 2x + 35
D) x + 33

Answer: B

Solve.

114) A pharmacist is asked to give a customer 4.5 milliliters of an antibiotic over a period of 16 hours. If the antibiotic is to be given every 8 hours starting immediately, how much antibiotic should be given in each dose?

A) 28.44 ml
B) 0.28 ml
C) 0.04 ml
D) 2.25 ml

Answer: D

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Solve the equation.

115) $7x - (2x - 1) = 2$

A) $-\frac{1}{5}$

B) $\frac{1}{5}$

C) $\frac{1}{9}$

D) $-\frac{1}{9}$

Answer: B

116) $5(2x - 1) = 20$

A) $\frac{21}{10}$

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

C) $\frac{19}{10}$

D) $\frac{3}{2}$

Answer: B

117) $(y - 6) - (y + 2) = 9y$

A) $-\frac{7}{9}$

B) -2

C) $-\frac{4}{3}$

D) $-\frac{8}{9}$

Answer: D

118) $6n = 8(4n + 7)$

A) $\frac{28}{3}$

B) $\frac{28}{13}$

C) $-\frac{28}{13}$

D) $\frac{13}{28}$

Answer: C

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119) $2y = 5(9y - 7)$

A) $-\frac{35}{43}$

B) $\frac{43}{35}$

C) $\frac{35}{2}$

D) $\frac{35}{43}$

Answer: D

120) $15(6x - 5) = 2x - 9$

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

B) $\frac{33}{46}$

C) $\frac{21}{22}$

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

Answer: D

121) $2(y + 2) = 3(y - 6)$

A) 14
B) 22
C) –22
D) –14

Answer: B

122) $3(2z - 4) = 5(z + 4)$

A) 11
B) 32
C) 8
D) –8

Answer: B

123) $3(2z - 2) = 5(z - 5)$

A) 22
B) 31
C) –19
D) 19

Answer: C

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124) $-7x + 3(-3x - 2) = -17 - 5x$

A) $\frac{23}{21}$

B) -1

C) 1

D) $\frac{23}{11}$

Answer: C

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

A) -10

B) 10

C) 20

D) -20

Answer: C

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

A) 14

B) 16

C) -14

D) -16

Answer: C

127) $\frac{x}{19} - 10 = -6$

A) -78

B) 78

C) -76

D) 76

Answer: D

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

A) -60

B) -30

C) 30

D) 60

Answer: C

129) $\frac{7}{16}x + \frac{3}{8} = \frac{3}{8}x$

A) 6

B) 12

C) -12

D) -6

Answer: D

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130) $\frac{1}{3}x + 2 = \frac{1}{6}x + \frac{4}{3}$

A) −12
B) 4
C) −4
D) 3

Answer: C

131) $\frac{4(5 - x)}{3} = -x$

A) 4
B) −4
C) −20
D) 20

Answer: D

132) $\frac{2(7 - x)}{5} = x$

A) −2
B) 14
C) 2
D) −14

Answer: C

133) $\frac{3(y - 5)}{2} = 2y - 3$

A) 21
B) −9
C) 9
D) −21

Answer: B

134) $0.06y + 0.08(5000 - y) = 0.48y$

A) 2400
B) 200
C) 800
D) 2000

Answer: C

135) $0.15(40) + 0.70x = 0.50(40 + x)$

A) 35
B) 70
C) 60
D) 80

Answer: B

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136) $0.50x - 0.20(50 + x) = 0.16(50)$

A) 70
B) 60
C) 30
D) 50

Answer: B

137) $1.3x - 2.7 = 0.8x - 0.65$

A) 4.51
B) –0.244
C) 4.1
D) 4.2

Answer: C

138) $8x - 2 + 7x + 4 = 8x + 7x - 1$

A) 224
B) all real numbers
C) no solution
D) 0

Answer: C

139) $7(x + 7) = (7x + 49)$

A) all real numbers
B) 0
C) no solution
D) 98

Answer: A

140) $6(x + 2) - (6x + 12) = 0$

A) no solution
B) 0
C) all real numbers
D) 2

Answer: C

141) $2(x + 7) + 77 = 9x - 7(x + 5)$

A) no solution
B) all real numbers
C) 42
D) 112

Answer: A

142) $\frac{x}{8} - 7 = \frac{x}{8}$

A) 0
B) all real numbers
C) 28
D) no solution

Answer: D

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143) $\frac{1}{2}(4x - 6) = 6(\frac{1}{3}x - \frac{1}{2}) + 8$

A) all real numbers
B) 0
C) no solution
D) 2

Answer: C

144) $-0.6m + 9.3 - 8.9m = 8.8 - 9.5m + 0.5$

A) 0
B) no solution
C) -6.9
D) all real numbers

Answer: D

145) $0.08(9x - 6) = 0.72(x + 7) - 5.52$

A) -5.52
B) no solution
C) -0.48
D) all real numbers

Answer: D

Write the phrase as a variable expression. Use x for the unknown number.

146) A number subtracted from -5

A) $-5 + x$
B) $x + 5$
C) $x - 5$
D) $-5 - x$

Answer: D

147) Four times a number

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

Answer: D

148) The sum of 18 and twice a number

A) $18 + x$
B) $2(18 + x)$
C) $18 - 2x$
D) $18 + 2x$

Answer: D

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149) The difference of 4 and twice a number

A) $4 + 2x$

B) $2x - 4$

C) $4 - 2x$

D) $2(4 - x)$

Answer: C

150) The product of –4 and the sum of a number and 21

A) $-4x + 21$

B) $-4(x + 21)$

C) $-4 + 21x$

D) $-84x$

Answer: B

151) The quotient of –17 and the difference of a number and 2

A) $\frac{-17}{2 - x}$

B) $\frac{-17}{x - 2}$

C) $\frac{-17}{x + 2}$

D) $\frac{2}{x + 17}$

Answer: B

Write the following as an equation, using x for the unknown number. Then solve.

152) Four times a number added to 9 times the number equals 52. Find the number.

A) $4(x + 9) = 52x;\ 0.8$

B) $4x(9 + x) = 52;\ 5.8$

C) $4x + 9x = 52;\ 4$

D) $4x - 9x = 52;\ -5.8$

Answer: C

153) When 3 times a number is subtracted from 7 times the number, the result is 44. Find the number.

A) $3x(7 - x) = 44;\ -11$

B) $7x - 3x = 44;\ 11$

C) $3x + 11x = 44;\ 4$

D) $3(x - 7) = 44x;\ 2$

Answer: B

154) If 4 times a number is added to –7, the result is equal to 11 times the number. Find the number.

A) $4x + (-7) = 11x;\ -1$

B) $11(4x - 7) = -7;\ -1$

C) $15x - 11x = 7;\ 1$

D) $4x + (-7) = 11x;\ 1$

Answer: A

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155) Three–fourths of a number is $\frac{7}{8}$. Find the number in lowest terms.

A) $\frac{3}{4} + x = \frac{7}{8}$; $\frac{1}{7}$

B) $\frac{3}{4}x = \frac{7}{8}$; $\frac{7}{6}$

C) $\frac{3}{4}x = \frac{7}{8}$; $\frac{21}{32}$

D) $\frac{3}{4}x = \frac{7}{8}$; $\frac{28}{24}$

Answer: B

156) The sum of four times a number and 1 is equal to the difference of twice the number and 3. Find the number.

A) $4x + 1 = 2x - 3$; 2

B) $4x + 1 = 2x - 3$; -2

C) $4(x + 1) = 2x - 3$; $-\frac{7}{2}$

D) $4x + 1 = 2x + 3$; 1

Answer: B

Solve.

157) The sum of four times a number and three is the same as the difference of twice the number and eleven. Find the number.

A) 7

B) –7

C) –17

D) 4

Answer: B

158) The difference of triple a number and $\frac{1}{2}$ is equal to the sum of the number and $\frac{2}{3}$. Find the number.

A) $\frac{13}{12}$

B) $\frac{7}{12}$

C) $\frac{1}{12}$

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

Answer: B

159) If the sum of a number and two is doubled, the result is six less than three times the number. Find the number.

A) 5

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

C) 10

D) 22

Answer: C

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160) Four times the difference of a number and one is equal to six times the sum of the number and three. Find the number.

A) 11
B) –11
C) –2
D) –7

Answer: B

161) Eight times a number, added to –3, is 29. Find the number.

A) –4
B) 32
C) 256
D) 4

Answer: D

162) Five times a number, added to –54, is –24. Find the number.

A) 150
B) 30
C) –6
D) 6

Answer: D

163) Four times the sum of some number plus 2 is equal to 7 times the number minus 16.

A) –24
B) 8
C) 24
D) –8

Answer: B

164) The difference of a number and 9 is the same as 47 less the number. Find the number.

A) –28
B) –19
C) 19
D) 28

Answer: D

165) Seven times some number added to 7 amounts to 10 added to the product of 4 and the number.

A) –3
B) –1
C) 1
D) 3

Answer: C

166) Six times the sum of a number and –60 equals –18. Find the number.

A) 7
B) –63
C) –13
D) 57

Answer: D

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167) A number subtracted from 12 equals the quotient of 84 and –6. Find the number.
A) 516
B) 25
C) 26
D) –2

Answer: C

168) The president of a certain university makes three times as much money as one of the department heads. If the total of their salaries is $270,000, find each worker's salary.
A) president's salary = $20,250; department head's salary = $6750
B) president's salary = $67,500; department head's salary = $202,500
C) president's salary = $135,000; department head's salary = $67,500
D) president's salary = $202,500; department head's salary = $67,500

Answer: D

169) 30 marbles are to be divided into three bags so that the second bag has three times as many marbles as the first bag and the third bag has twice as many as the first bag. If x is the number of marbles in the first bag, find the number of marbles in each bag.
A) 1st bag = 6 marbles; 2nd bag = 14 marbles; 3rd bag = 10 marbles
B) 1st bag = 6 marbles; 2nd bag = 18 marbles; 3rd bag = 12 marbles
C) 1st bag = 5 marbles; 2nd bag = 15 marbles; 3rd bag = 10 marbles
D) 1st bag = 5 marbles; 2nd bag = 10 marbles; 3rd bag = 15 marbles

Answer: C

170) A promotional deal for long distance phone service charges a $15 basic fee plus $0.05 per minute for all calls. If Joe's phone bill was $59 under this promotional deal, how many minutes of phone calls did he make? Round to the nearest integer, if necessary.
A) 1480
B) 2
C) 9
D) 880

Answer: D

171) Two angles are complementary if their sum is 90°. If the measure of the first angle is x°, and the measure of the second angle is (3x – 2)°, find the measure of each angle.
A) 1st angle = 23°; 2nd angle = 67°
B) 1st angle = 31°; 2nd angle = 59°
C) 1st angle = 22°; 2nd angle = 68°
D) 1st angle = 22°; 2nd angle = 64°

Answer: A

172) A car rental agency advertised renting a luxury, full–size car for $34.95 per day and $0.19 per mile. If you rent this car for 5 days, how many whole miles can you drive if you only have $200 to spend.
A) 842
B) 40
C) 29
D) 132

Answer: D

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173) A 7–ft. board is cut into 2 pieces so that one piece is 3 feet longer than 3 times the shorter piece. If the shorter piece is x feet long, find the lengths of both pieces.
A) shorter piece: 3.5 ft; longer piece: 21 ft
B) shorter piece: 9 ft; longer piece: 24 ft
C) shorter piece: 18 ft; longer piece: 21 ft
D) shorter piece: 1 ft; longer piece: 6 ft

Answer: D

174) Mary and her brother John collect foreign coins. Mary has four times the number of coins that John has. Together they have 175 foreign coins. Find how many coins Mary has.
A) 140 coins
B) 35 coins
C) 133 coins
D) 28 coins

Answer: A

175) Center City East Parking Garage has a capacity of 251 cars more than Center City West Parking Garage. If the combined capacity for the two garages is 1219 cars, find the capacity for each garage.
A) Center City East: 484 cars
Center City West: 735 cars
B) Center City East: 745 cars
Center City West: 474 cars
C) Center City East: 474 cars
Center City West: 745 cars
D) Center City East: 735 cars
Center City West: 484 cars

Answer: D

176) During an intramural basketball game, Team A scored 19 fewer points than Team B. Together, both teams scored a total of 151 points. How many points did Team A score during the game?
A) 67 points
B) 75 points
C) 85 points
D) 66 points

Answer: D

177) To trim the edges of a rectangular table cloth, 60 feet of lace are needed. The length of the table cloth is exactly one–half its width. What are the dimensions of the table cloth?
A) length: 10 ft; width: 20 ft
B) length: 20 ft; width: 40 ft
C) length: 5 ft; width: 10 ft
D) length: 20 ft; width: 10 ft

Answer: A

178) The length of a rectangular room is 4 feet longer than twice the width. If the room's perimeter is 188 feet, what are the room's dimensions?
A) Width = 45 ft; length = 49 ft
B) Width = 30 ft; length = 64 ft
C) Width = 35 ft; length = 74 ft
D) Width = 60 ft; length = 128 ft

Answer: B

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179) The perimeter of a triangle is 48 centimeters. Find the lengths of its sides, if the longest side is 6 centimeters longer than the shortest side, and the remaining side is 3 centimeters longer than the shortest side.
A) 13 cm, 16 cm, 22 cm
B) 16 cm, 19 cm, 22 cm
C) 13 cm, 16 cm, 19 cm
D) 7 cm, 10 cm, 13 cm

Answer: C

180) Mario's front patio is in the shape of a trapezoid with a height of 58 feet. The longer base is 8 feet longer than the shorter base, and the area of the patio is 5800 square feet. Find the length of each base of the trapezoidal patio.
A) 96 ft; 104 ft
B) 46 ft; 54 ft
C) 96 ft; 96 ft
D) 192 ft; 208 ft

Answer: A

181) In a recent International Gymnastics competition, the U.S., China, and Romania were the big winners. If the total number of medals won by each team are three consecutive integers whose sum is 54 and the U.S. won more than China who won more than Romania, how many medals did each team win?
A) U.S.: 17 medals; China: 16 medals; Romania: 15 medals
B) U.S.: 19 medals; China: 18 medals; Romania: 17 medals
C) U.S.: 56 medals; China: 55 medals; Romania: 54 medals
D) U.S.: 20 medals; China: 19 medals; Romania: 18 medals

Answer: B

182) The sum of three consecutive integers is 579. Find the numbers.
A) 193, 194, 195
B) 191, 193, 195
C) 191, 192, 193
D) 192, 193, 194

Answer: D

183) The house numbers of two adjacent homes are two consecutive even numbers. If their sum is 326, find the house numbers.
A) 163, 165
B) 162, 324
C) 162, 164
D) 161, 163

Answer: C

184) The code to unlock a safety deposit box is three consecutive odd integers whose sum is 93. Find the integers.
A) 30, 32, 34
B) 31, 32, 33
C) 29, 31, 33
D) 31, 33, 35

Answer: C

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

185) $d = rt$; $t = 6$, $d = 48$

A) 8
B) 0.1
C) 54
D) 42

Answer: A

186) $P = 2L + 2W$; $P = 34$, $W = 9$

A) 25
B) 12.5
C) 8
D) 17

Answer: C

187) $V = \frac{1}{3}Ah$; $V = 12$, $h = 3$

A) 36
B) 4
C) 15
D) 12

Answer: D

188) $I = prt$; $I = 76$, $p = 190$, $r = 0.08$

A) 5
B) 11.552
C) 0.5
D) 1155.2

Answer: A

189) $A = \frac{1}{2}(B + b)h$; $A = 93$, $b = 19$, $B = 12$

A) 228
B) $77\frac{1}{2}$
C) $15\frac{1}{2}$
D) 6

Answer: D

190) Use the formula $F = \frac{9}{5}C + 32$ to convert 45°C to degrees Fahrenheit.

A) 113°F
B) 49°F
C) 43°F
D) 7.4°F

Answer: A

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191) Use the formula $C = \frac{5}{9}(F - 32)$ to convert 158°F to degrees Celsius.

A) 55.8°C
B) 105.6°C
C) 70°C
D) 316.4°C

Answer: C

Solve the formula for the specified variable.

192) $d = rt$ for r

A) $r = d - t$
B) $r = dt$
C) $r = \frac{t}{d}$
D) $r = \frac{d}{t}$

Answer: D

193) $I = Prt$ for t

A) $t = \frac{P - 1}{Ir}$
B) $t = \frac{I}{Pr}$
C) $t = \frac{P - I}{1 + r}$
D) $t = P - Ir$

Answer: B

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

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

Answer: B

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195) $V = \frac{1}{3}Ah$ for A

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

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

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

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

Answer: B

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

A) $a = P - b - c$

B) $a = P + b - c$

C) $a = b + c - P$

D) $a = P + b + c$

Answer: A

197) $P = 2L + 2W$ for L

A) $L = P - W$

B) $L = \frac{P - W}{2}$

C) $L = \frac{P - 2W}{2}$

D) $L = P - 2W$

Answer: C

198) $A = P + PRT$ for T

A) $T = \frac{PR}{A - P}$

B) $T = \frac{P - A}{PR}$

C) $T = \frac{A - P}{PR}$

D) $T = \frac{A}{R}$

Answer: C

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199) $A = \frac{1}{2}h(B + b)$ for B

A) $B = \frac{2A - bh}{h}$

B) $B = \frac{2A + bh}{h}$

C) $B = 2A - bh$

D) $B = \frac{A - bh}{h}$

Answer: A

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

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

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

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

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

Answer: C

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

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

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

C) $h = S - r$

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

Answer: D

Solve.

202) You have taken up gardening for relaxation and have decided to fence in your new rectangular shaped masterpiece. The length of the garden is 6 meters and 60 meters of fencing is required to completely enclose it. What is the width of the garden?

A) 48 m

B) 10 m

C) 360 m

D) 24 m

Answer: D

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203) Ted drove to his grandparents' house for a holiday weekend. The total distance (one–way) was 287 miles and it took him 6 hours. How fast was Ted driving? (Round answer to the nearest whole number)

A) 21 mph
B) 172 mph
C) 48 mph
D) 17 mph

Answer: C

204) Sally is making a cover for a round table. When finished, the cover will fit exactly with no excess hanging off. Sally has to cut the fabric circle with a 4 inch larger diameter than the table to allow for hemming. If the table has a diameter of 36 inches, how much fabric does Sally need? (Use 3.14 for π. Round to 2 decimal places.)

A) 1519.76 sq in.
B) 1256 sq in.
C) 5024 sq in.
D) 4534.16 sq in.

Answer: B

205) How much would an initial bank deposit need to be in order to earn $1900 at 16% for 2 years? (Round to the nearest dollar.)

A) $59
B) $60,800
C) $5938
D) $608

Answer: C

206) How long would it take to drive 200 kilometers if your average rate of speed was 40 kilometers per hour?

A) 24 hr
B) 5 hr
C) 80 hr
D) 6 hr

Answer: B

207) Nathan invested his $2000 poker winnings in a 2 year Certificate of Deposit at a rate of 0.05. Use the formula I = Prt to find the amount of interest Nathan's investment will earn.

A) $2,100
B) $100
C) $200
D) $2,200

Answer: C

208) You have a cylindrical cooking pot whose radius is 6 inches and whose height is 7 inches. How many full cans of soup will fit into the pot if each can has holds 10 cubic inches of soup? Use 3.14 as an approximation for π.

A) 80 cans of soup
B) 25 cans of soup
C) 26 cans of soup
D) 79 cans of soup

Answer: D

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209) The volume of a sphere with radius r is given by the formula $V = \frac{4}{3}\pi r^3$. Find the volume of a sphere with radius 3 meters. Use 3.14 for the value of π .

A) 37.68 sq m
B) 339.12 sq m
C) 36 sq m
D) 113.04 sq m

Answer: D

210) Find the height of a right circular cylinder whose volume is 500π cubic feet and whose radius is 10 feet.

A) 5 ft
B) 25 ft
C) 50 ft
D) 10 ft

Answer: A

Solve. Round all amounts to one decimal place.

211) What number is 88% of 291?

A) 2561
B) 256.1
C) 25.6
D) 25,610

Answer: B

212) 64 is 30% of what number?

A) 213.3
B) 19.2
C) 21.3
D) 2133

Answer: A

213) 80% of what number is 95?

A) 1188
B) 118.8
C) 76
D) 11.9

Answer: B

214) 1.8 is what percent of 32?

A) 1777.8%
B) 0.6%
C) 0.1%
D) 5.6%

Answer: D

215) 30% of what number is 56?

A) 1867
B) 186.7
C) 16.8
D) 18.7

Answer: B

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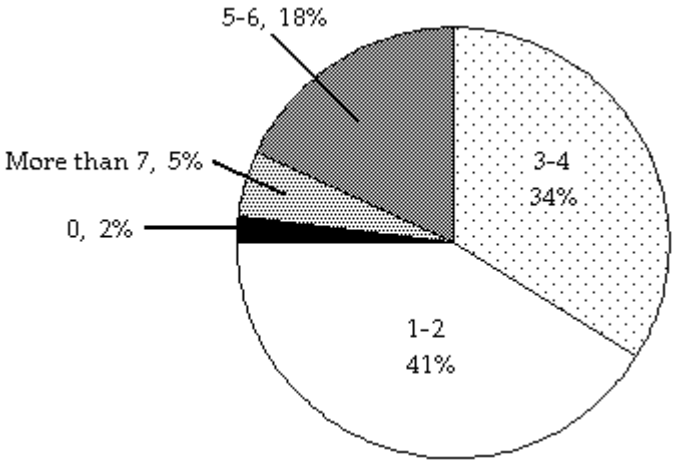
The circle graph below shows the number of pizzas consumed by college students in a typical month. Use the graph to answer the question.



216) What percent of college students consume more than 7 pizzas in a typical month?
A) 34%
B) 18%
C) 5%
D) 2%

Answer: C

217) If State University has approximately 40,000 students, about how many would you expect to consume 5–6 pizzas in a typical month?
A) 13,600 students
B) 7200 students
C) 720 students
D) 1360 students

Answer: B

Solve. If needed, round money amounts to two decimal places and all other amounts to one decimal place.

218) Sales at a local ice cream shop went up 60% in 5 years. If 15,000 ice cream cones were sold in the current year, find the number of ice cream cones sold 5 years ago. (Round to the nearest integer, if necessary.)
A) 9000 ice cream cones
B) 6000 ice cream cones
C) 9375 ice cream cones
D) 25,000 ice cream cones

Answer: C

219) Attendance this year at the homecoming football game is 164% of what it was last year. If last year's homecoming football game attendance was 46,000, what is this year's attendance? (Round to the nearest integer, if necessary.)
A) 3565 people
B) 754,400 people
C) 280 people
D) 75,440 people

Answer: D

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220) Of the 120 students in an algebra class, 3 of them received an F on the mid–term exam. What percent of the algebra students received an F on the exam? (Round to the nearest tenth of a percent, if necessary.)
A) 2.5%
B) 40%
C) 25%
D) 400%

Answer: A

221) 13% of students at a university attended a lecture. If 2000 students are enrolled at the university, about how many students attended the lecture?
A) 26 students
B) 2600 students
C) 26,000 students
D) 260 students

Answer: D

222) The population of a town is currently 18,000. This represents an increase of 60% from the population 5 years ago. Find the population of the town 5 years ago. Round to the nearest whole number if necessary.
A) 30,000
B) 7200
C) 10,800
D) 11,250

Answer: D

223) Students at Maple School earned $204 selling candles. They want to accumulate $2000 for a club trip. What percent of their goal has been reached?
A) 10%
B) 10.2%
C) 0.102%
D) 100%

Answer: B

224) Jeans are on sale at the local department store for 15% off. If the jeans originally cost $41, find the sale price.
A) $40.39
B) $34.85
C) $6.15
D) $47.15

Answer: B

225) The local clothing store marks up the price that it pays to the clothing manufacturer by 48%. If the selling price of a pair of jeans is $89, how much did the clothing store pay for the jeans?
A) $15.34
B) $60.14
C) $131.72
D) $171.15

Answer: B

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226) A store is advertising 30% off sale on everything in the store. Find the discount of a coat that regularly sells for $280.
A) $196.00
B) $84.00
C) $271.60
D) $8.40
Answer: B

227) A store is advertising 5% off sale on everything in the store. Find the discount of a diamond ring that regularly sells for $2300.
A) $2185.00
B) $11.50
C) $115.00
D) $2288.50
Answer: C

228) A store is advertising a 35% off sale on all new DVD releases. Find the sale price of a newly released DVD collectors set that regularly sells for $71.00.
A) $24.85
B) $2.49
C) $46.15
D) $68.52
Answer: C

229) An automobile dealership recently reduced the price of a used sports car by 42%. If the price of the car was $ 51,300.00, find the sale price.
A) $49,145.40
B) $29,754.00
C) $2154.60
D) $21,546.00
Answer: B

230) A store is advertising 35% off sale on everything in the store. Find the sale price of a fax machine that regularly sells for $210.
A) $136.50
B) $2026.50
C) $73.50
D) $7.35
Answer: A

231) Due to a lack of funding, the number of students enrolled at City College went from 7000 last year to 4000 this year. Find the percent of decrease in enrollment.
A) 75%
B) 57.1%
C) 42.9%
D) 175%
Answer: C

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232) A company increased the number of its employees from 440 to 470. What was the percent of increase in employees?
A) 6.4%
B) 6.8%
C) 51.6%
D) 93.6%

Answer: B

233) The number of video stores in a region recently decreased from 113 to 69. Find the percent of decrease.
A) 61.1%
B) 63.8%
C) 38.9%
D) 156.8%

Answer: C

234) Ming got a 19% raise in her salary from last year. This year she is earning $135,660. How much did she make last year?
A) $7140
B) $114,000
C) $21,660
D) $2,577,540

Answer: B

235) Because of budget cutbacks, MaryAnn was required to take a 6% pay cut. If she earned $27,000 before the pay cut, find her salary after the pay cut.
A) $25,380
B) $26,838
C) $26,983.80
D) $2538

Answer: A

236) How much pure acid should be mixed with 2 gallons of a 50% acid solution in order to get an 80% acid solution?
A) 1 gal
B) 8 gal
C) 5 gal
D) 3 gal

Answer: D

237) The owners of a candy store want to sell, for $6 per pound, a mixture of chocolate–covered raisins, which usually sells for $3 per pound, and chocolate–covered macadamia nuts, which usually sells for $8 per pound. They have a 60–pound barrel of the raisins. How many pounds of the nuts should they mix with the barrel of raisins so that they hit their target value of $6 per pound for the mixture?
A) 96 lb
B) 78 lb
C) 90 lb
D) 84 lb

Answer: C

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238) A chemist needs 60 milliliters of a 72% solution but has only 64% and 88% solutions available. Find how many milliliters of each that should be mixed to get the desired solution.

A) 40 ml of 64%; 20 ml of 88%
B) 10 ml of 64%; 50 ml of 88%
C) 20 ml of 64%; 40 ml of 88%
D) 50 ml of 64%; 10 ml of 88%

Answer: A

239) The manager of a coffee shop has one type of coffee that sells for $9 per pound and another type that sells for $15 per pound. The manager wishes to mix 80 pounds of the $15 coffee to get a mixture that will sell for $11 per pound. How many pounds of the $9 coffee should be used?

A) 160 pounds
B) 120 pounds
C) 240 pounds
D) 80 pounds

Answer: A

240) At a gourmet nut shop, nuts are sold in bulk. Cashews sell for $1.40 per pound and macadamia nuts sell for $8.50 per pound. Lee wishes to purchase 5 pounds of mixed nuts by mixing 3.5 pounds of cashews and 1.5 pounds of macadamia nuts. What will be the price per pound of the mixture?

A) $6.37
B) $17.65
C) $3.53
D) $31.85

Answer: C

241) The radiator in a certain make of car needs to contain 40 liters of 40% antifreeze. The radiator now contains 40 liters of 20% antifreeze. How many liters of this solution must be drained and replaced with 100% antifreeze to get the desired strength?

A) 13.3 L
B) 16 L
C) 10.0 L
D) 20 L

Answer: C

Solve.

242) A motorcycle traveling at 70 miles per hour overtakes a car traveling at 30 miles per hour that had a three–hour head start. How far from the starting point are the two vehicles?

A) $5\frac{1}{4}$ mi

B) 63 mi

C) $157\frac{1}{2}$ mi

D) $2\frac{1}{4}$ mi

Answer: C

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243) Linda and Dave leave simultaneously from the same starting point biking in opposite directions. Linda bikes at 6 miles per hour and Dave bikes at 9 miles per hour. How long will it be until they are 30 miles apart from each other?

A) $\frac{1}{2}$ hr

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

C) 2 hr

D) 10 hr

Answer: C

244) Jeff starts driving at 55 miles per hour from the same point that Lauren starts driving at 60 miles per hour. They drive in opposite directions, and Lauren has a half–hour head start. How long will they be able to talk on their cell phones that have a 500–mile range?

A) $4\frac{8}{23}$ hr

B) $4\frac{79}{230}$ hr

C) $4\frac{14}{23}$ hr

D) $4\frac{2}{23}$ hr

Answer: D

245) Alexander and Judy are 32 miles apart on a calm lake paddling toward each other. Alexander paddles at 5 miles per hour, while Judy paddles at 8 miles per hour. How long will it take them to meet?

A) $10\frac{2}{3}$ hr

B) 19 hr

C) $1\frac{7}{10}$ hr

D) $2\frac{6}{13}$ hr

Answer: D

246) On a road trip, five friends drove at 60 miles per hour to California. On the way home, they took the same route but drove 70 miles per hour. How many miles did they drive on the way to California if the round trip took 10 hours?

A) $646\frac{2}{13}$ mi

B) 4200 mi

C) $323\frac{1}{13}$ mi

D) $5\frac{5}{13}$ mi

Answer: C

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247) Dave can hike on level ground 3 miles an hour faster than he can on uphill terrain. Yesterday, he hiked 32 miles, spending 2 hours on level ground and 5 hours on uphill terrain. Find his average speed on level ground.

A) $3\frac{5}{7}$ mph

B) $4\frac{4}{7}$ mph

C) $7\frac{1}{7}$ mph

D) $6\frac{5}{7}$ mph

Answer: D

Solve the problem.

248) Sue took her collection of nickels and dimes to deposit in the bank. She has five fewer nickels than dimes. Her total deposit was $38.90. How many dimes did she deposit?

A) 261 dimes
B) 256 dimes
C) 517 dimes
D) 266 dimes

Answer: A

249) A convenience store employee is counting $10 and $20 bills. If there are four times as many $10 bills as $20 bills and the total amount is $1560, find the number of each type of bill.

A) 26 $20 bills; 4 $10 bills
B) 104 $20 bills; 26 $10 bills
C) 26 $20 bills; 104 $10 bills
D) 104 $20 bills; 4 $10 bills

Answer: C

250) Devon purchased tickets to an air show for 5 adults and 2 children. The total cost was $160. The cost of a child's ticket was $4 less than the cost of an adult's ticket. Find the price of an adult's ticket and a child's ticket.

A) adult's ticket: $26; child's ticket: $22
B) adult's ticket: $24; child's ticket: $20
C) adult's ticket: $23; child's ticket: $19
D) adult's ticket: $25; child's ticket: $21

Answer: B

251) On a buying trip in Los Angeles, Rosaria Perez ordered 120 pieces of jewelry: a number of bracelets at $6 each and a number of necklaces at $12 each. She wrote a check for $1320 to pay for the order. How many bracelets and how many necklaces did Rosaria purchase?

A) 25 bracelets and 95 necklaces
B) 15 bracelets and 105 necklaces
C) 30 bracelets and 90 necklaces
D) 20 bracelets and 100 necklaces

Answer: D

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252) Jon throws all his nickels and dimes in a jar at home each day. He counted all his coins one day and found that he had collected $42.70. If there were five times as many nickels as dimes, how many of each coin does he have?
A) 122 dimes; 610 nickels
B) 610 dimes; 122 nickels
C) 610 dimes; 605 nickels
D) 122 dimes; 5 nickels

Answer: A

Solve.

253) Kevin invested part of his $10,000 bonus in a certificate of deposit that paid 6% annual simple interest, and the remainder in a mutual fund that paid 11% annual simple interest. If his total interest for that year was $800, how much did Kevin invest in the mutual fund?
A) $5000
B) $3000
C) $6000
D) $4000

Answer: D

254) How can $70,000 be invested, part at 4% annual simple interest and the remainder at 10% annual simple interest, so that the interest earned by the two accounts is equal at the end of the year?
A) $40,000 invested at 4%; $30,000 invested at 10%
B) $50,000 invested at 4%; $20,000 invested at 10%
C) $20,000 invested at 4%; $50,000 invested at 10%
D) $30,000 invested at 4%; $40,000 invested at 10%

Answer: B

255) Melissa invested a sum of money at 3% annual simple interest. She invested three times that sum at 5% annual simple interest. If her total yearly interest from both investments was $5400, how much was invested at 3%?
A) $22,500
B) $30,000
C) $67,500
D) $202,500

Answer: B

256) If $14,000 is invested at 10% simple annual interest, how much should be invested at 12% annual simple interest so that the total yearly income from both investments is $5000?
A) $33,200
B) $3320
C) $3000
D) $30,000

Answer: D

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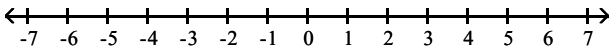
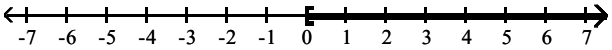
Graph the set of numbers given in interval notation. Then write an inequality statement in x describing the numbers graphed.

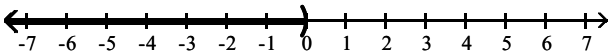
257) $(0, \infty)$



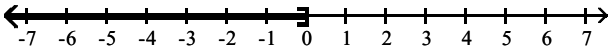
A) $x \geq 0$



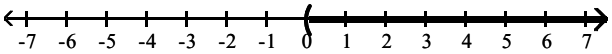
B) $x < 0$



C) $x \leq 0$

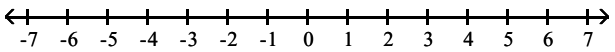


D) $x > 0$

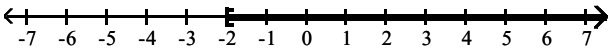


Answer: D

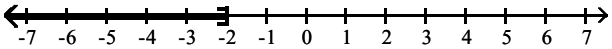
258) $[-2, \infty)$



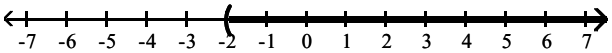
A) $x \geq -2$



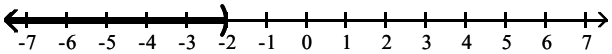
B) $x \leq -2$



C) $x > -2$



D) $x < -2$



Answer: A

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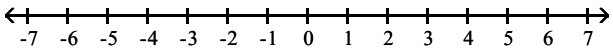
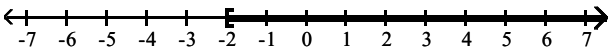
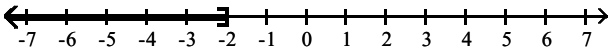
259) $(-\infty, -2)$



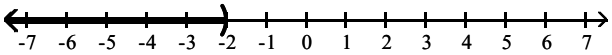
A) $x \geq -2$



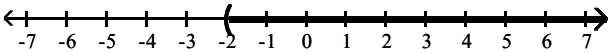
B) $x \leq -2$



C) $x < -2$

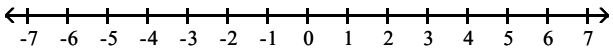


D) $x > -2$

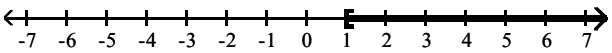


Answer: C

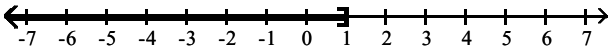
260) $(-\infty, 1]$



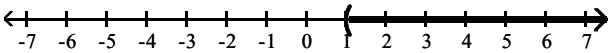
A) $x \geq 1$



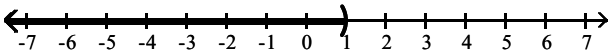
B) $x \leq 1$



C) $x > 1$



D) $x < 1$



Answer: B

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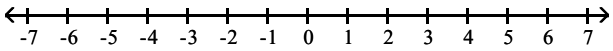
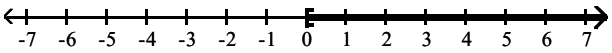
Graph the inequality on a number line. Then write the solution in interval notation.

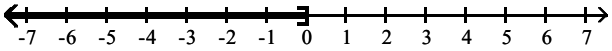
261) $x < 0$



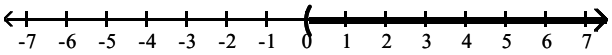
A) $[0, \infty)$



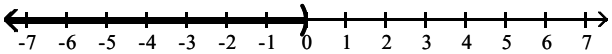
B) $(-\infty, 0]$



C) $(0, \infty)$

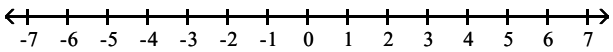


D) $(-\infty, 0)$

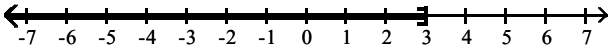


Answer: D

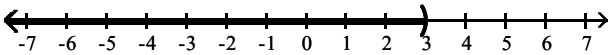
262) $x \leq 3$



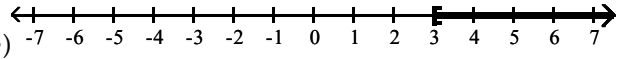
A) $(-\infty, 3]$



B) $(-\infty, 3)$

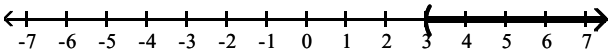


C)



$[3, \infty)$

D) $(3, \infty)$



Answer: A

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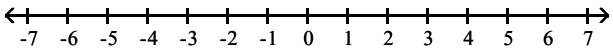
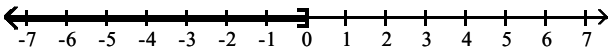
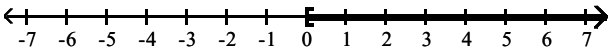
263) $x > 0$



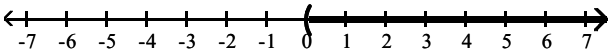
A) $(-\infty, 0]$



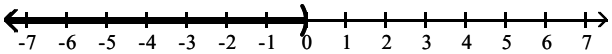
B) $[0, \infty)$



C) $(0, \infty)$

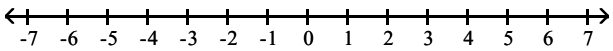


D) $(-\infty, 0)$

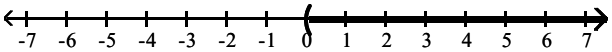


Answer: C

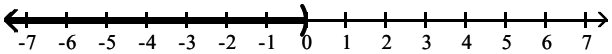
264) $x \geq 0$



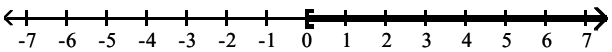
A) $(0, \infty)$



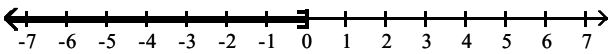
B) $(-\infty, 0)$



C) $[0, \infty)$



D) $(-\infty, 0]$



Answer: C

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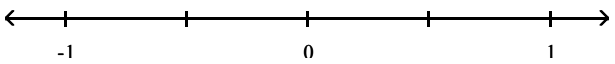
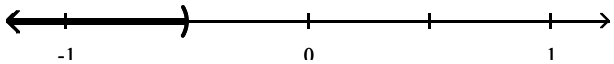
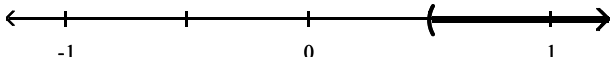
265) $x > -\frac{1}{2}$



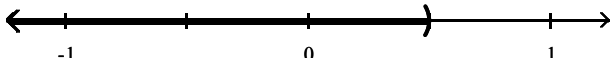
A) $(-\infty, -\frac{1}{2}]$



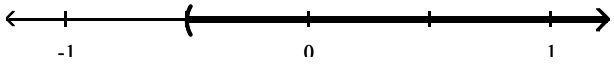
B) $[-\frac{1}{2}, \infty)$



C) $(-\infty, -\frac{1}{2})$



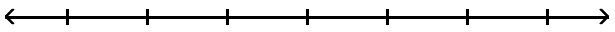
D) $(-\frac{1}{2}, \infty)$



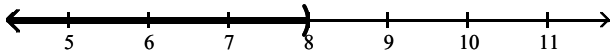
Answer: D

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

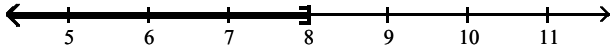
266) $x + 7 < 15$



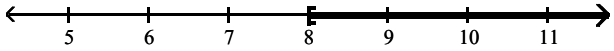
A) $(-\infty, 8)$



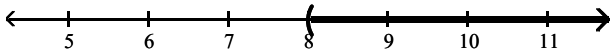
B) $(-\infty, 8]$



C) $[8, \infty)$



D) $(8, \infty)$



Answer: A

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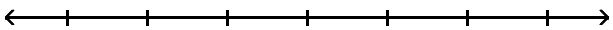
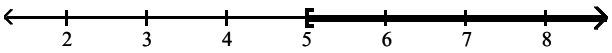
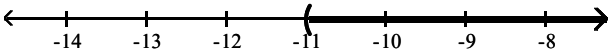
267) $-2x + 8 > -3x - 3$



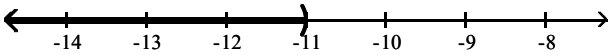
A) $[5, \infty)$



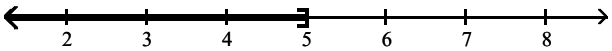
B) $(-11, \infty)$



C) $(-\infty, -11)$

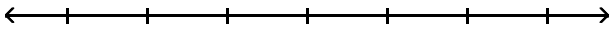


D) $(-\infty, 5]$

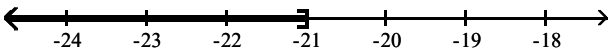


Answer: B

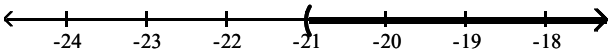
268) $-3 \geq \frac{1}{7}x$



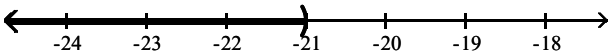
A) $(-\infty, -21]$



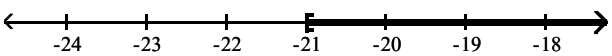
B) $(-21, \infty)$



C) $(-\infty, -21)$



D) $[-21, \infty)$



Answer: A

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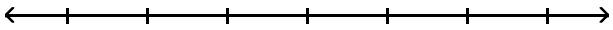
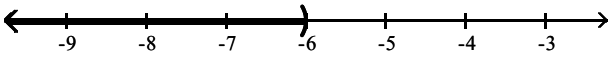
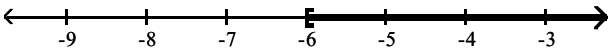
269) $-\frac{1}{3}x < 2$



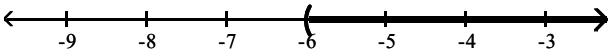
A) $(-\infty, -6)$



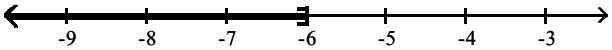
B) $[-6, \infty)$



C) $(-6, \infty)$

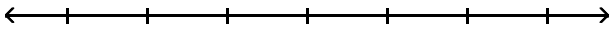


D) $(-\infty, -6]$

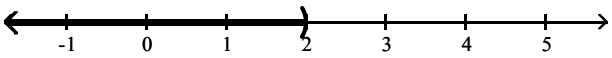


Answer: C

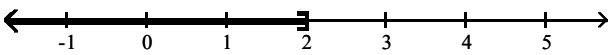
270) $20x - 12 > 4(4x - 1)$



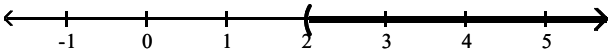
A) $(-\infty, 2)$



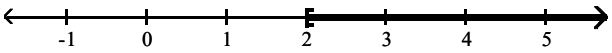
B) $(-\infty, 2]$



C) $(2, \infty)$



D) $[2, \infty)$



Answer: C

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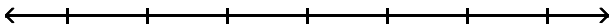
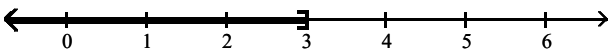
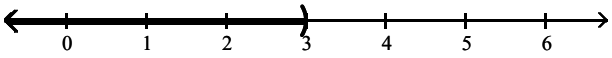
271) $-6(3x + 12) < -24x - 54$



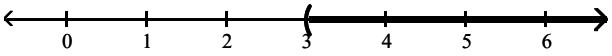
A) $(-\infty, 3]$



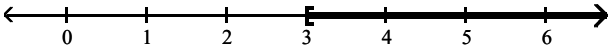
B) $(-\infty, 3)$



C) $(3, \infty)$

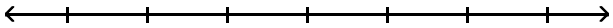


D) $[3, \infty)$

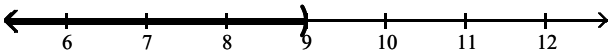


Answer: B

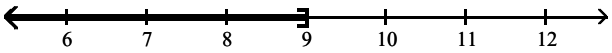
272) $-8x + 6 \leq -2(3x + 6)$



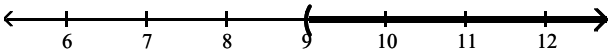
A) $(-\infty, 9)$



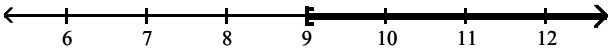
B) $(-\infty, 9]$



C) $(9, \infty)$



D) $[9, \infty)$



Answer: D

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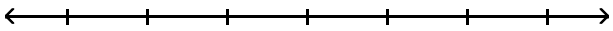
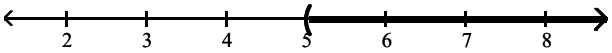
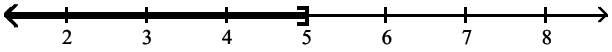
273) $12x - 28 \leq 4(2x - 2)$



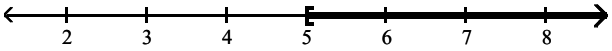
A) $(5, \infty)$



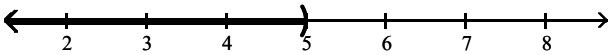
B) $(-\infty, 5]$



C) $[5, \infty)$

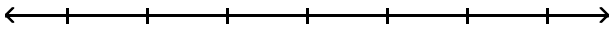


D) $(-\infty, 5)$

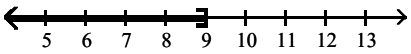


Answer: B

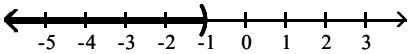
274) $-3x + 10 + 2x < 6 - 3x + 2$



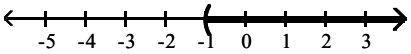
A) $(-\infty, 9]$



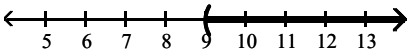
B) $(-\infty, -1)$



C) $(-1, \infty)$



D) $(9, \infty)$



Answer: B

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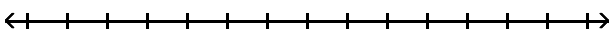
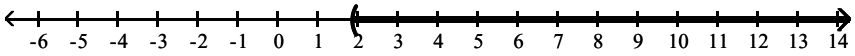
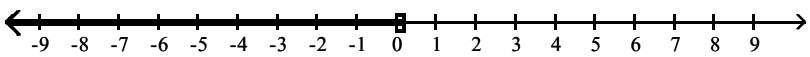
275) $\frac{5}{8}x \geq 3$



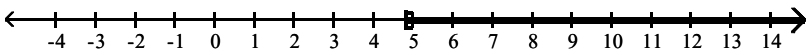
A) $\left[\frac{15}{8}, \infty\right)$



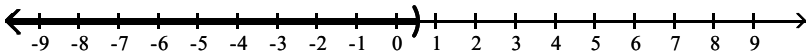
B) $(-\infty, \frac{5}{24}]$



C) $\left[\frac{24}{5}, \infty\right)$



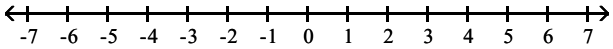
D) $(-\infty, \frac{8}{15}]$



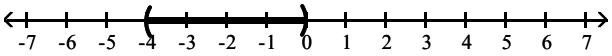
Answer: C

Graph the inequality on a number line. Then write the solution in interval notation.

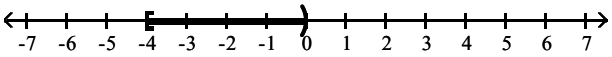
276) $-4 \leq x \leq 0$



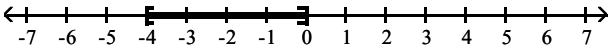
A) (–4, 0)



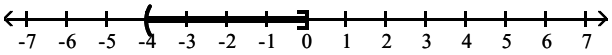
B) [–4, 0)



C) [–4, 0]



D) (–4, 0]



Answer: C

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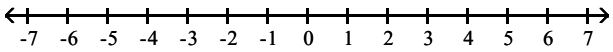
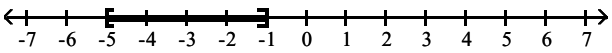
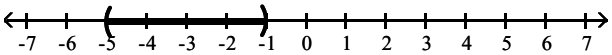
277) $-5 < x < -1$



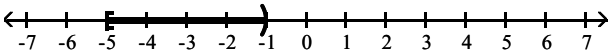
A) [–5, –1]



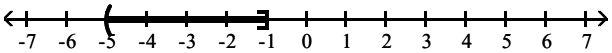
B) (–5, –1)



C) [–5, –1)

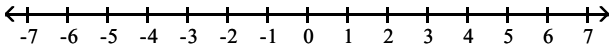


D) (–5, –1]

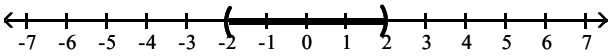


Answer: B

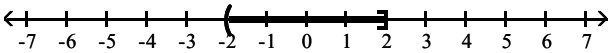
278) $-2 \leq x < 2$



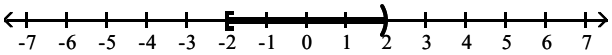
A) (–2, 2)



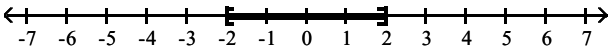
B) (–2, 2]



C) [–2, 2)



D) [–2, 2]



Answer: C

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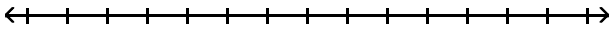
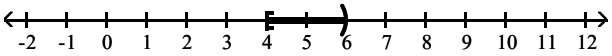
Solve the inequality. Graph the solution set and write it in interval notation.

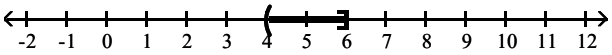
279) $12 < 3x \leq 18$



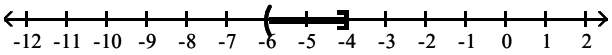
A) [4, 6)



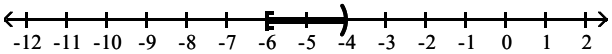
B) (4, 6]



C) (–6, –4]

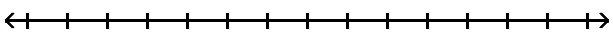


D) [–6, –4)

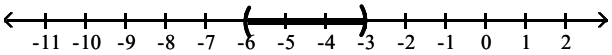


Answer: B

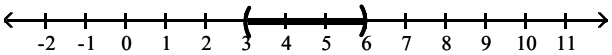
280) $13 \leq 4x + 1 \leq 25$



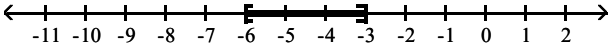
A) (–6, –3)



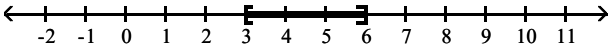
B) (3, 6)



C) [–6, –3]



D) [3, 6]



Answer: D

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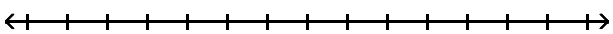
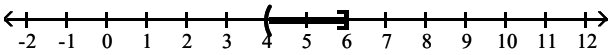
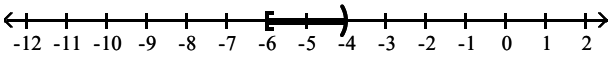
281) $-20 \le -4x + 4 < -12$



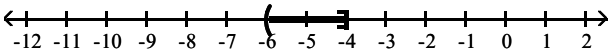
A) (4, 6]



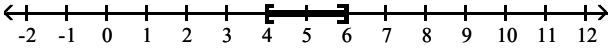
B) [−6, −4)



C) (−6, −4]

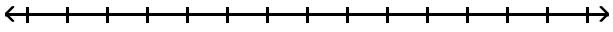


D) [4, 6]

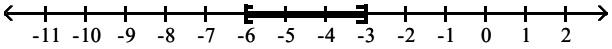


Answer: A

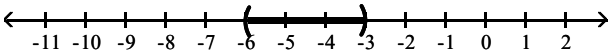
282) $-32 \le -5x - 2 \le -17$



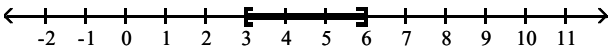
A) [−6, −3]



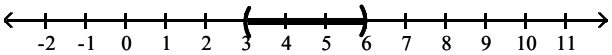
B) (−6, −3)



C) [3, 6]



D) (3, 6)



Answer: C

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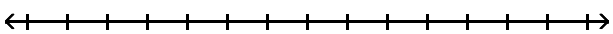
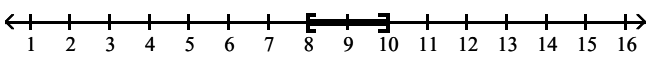
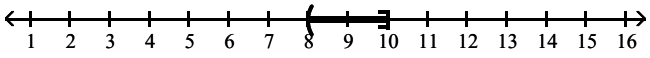
283) $6 \le 2(x - 5) \le 10$



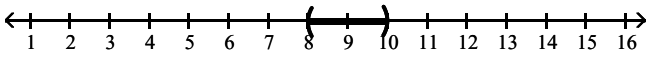
A) [8, 10]



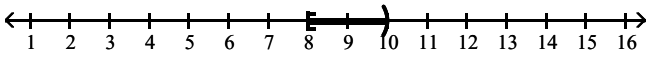
B) (8, 10]



C) (8, 10)



D) [8, 10)



Answer: A

Solve.

284) Eight less than three times a number is less than ten. Find all such numbers.

A) $x > -\frac{2}{3}$

B) $x < \frac{34}{3}$

C) $x < 6$

D) $x < \frac{2}{3}$

Answer: C

285) The area of a rectangle must be at least 119 square feet. If the length is 7 feet, find the minimum for the rectangle's width.

A) 18 ft

B) 17 ft

C) $52\frac{1}{2}$ ft

D) $\frac{1}{17}$ ft

Answer: B

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286) Claire has received scores of 85, 88, 87, and 75 on her algebra tests. What is the minimum score she must receive on the fifth test to have an overall test score average of at least 83? (Hint: The average of a list of numbers is their sum divided by the number of numbers in the list.)

A) 78
B) 79
C) 81
D) 80

Answer: D

287) David has $14,000 to invest. He invests $9000 in a mutual fund that pays 12% annual simple interest. If he wants to make at least $2200 in yearly interest, at what minimum rate does the remainder of the money need to be invested?

A) 20.4%
B) 24.4%
C) 22.4%
D) 21.4%

Answer: C

288) A certain store has a fax machine available for use by its customers. The store charges $1.85 to send the first page and $0.40 for each subsequent page. Use an inequality to find the maximum number of pages that can be faxed for $3.85

A) at most 42 pages
B) at most 10 pages
C) at most 2 pages
D) at most 6 pages

Answer: D

289) An archer has $124 to spend on a new archery set. A certain set containing a bow and three arrows costs $70. With the purchase of this set, he can purchase additional arrows for $3 per arrow. Use an inequality to find the maximum number of arrows he could obtain, including those with the set, for his $124.

A) at most $\frac{62}{35}$ arrows
B) at most $\frac{124}{3}$ arrows
C) at most 18 arrows
D) at most 21 arrows

Answer: D

290) A certain vehicle has a weight limit for all passengers and cargo of 1044 pounds. The four passengers in the vehicle weigh an average of 155 pounds. Use an inequality to find the maximum weight of the cargo that the vehicle can handle.

A) at most 889 lb
B) at most 522 lb
C) at most $\frac{1044}{155}$ lb
D) at most 424 lb

Answer: D

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291) Professor Chang will give a student in her algebra class an A if his or her final score is at least 93, a B if the score is between 84 and 92, inclusive, and a C if the score is between 75 and 83, inclusive. Any student with a score between 66 and 74, inclusive, will receive a D, and anyone with a score at or below 65 will fail with a grade of an F. Letting x represent a student's grade, write a series of five inequalities corresponding to the possible grades given in the class

A) $x \geq 93$ A
$84 \geq x \geq 92$ B
$75 \geq x \geq 83$ C
$66 \geq x \geq 74$ D
$x \leq 65$ F

B) $x \geq 93$ A
$84 \leq x \leq 92$ B
$75 \leq x \leq 83$ C
$66 \leq x \leq 74$ D
$x \leq 65$ F

C) $x \geq 93$ A
$84 \leq x < 92$ B
$75 \leq x < 83$ C
$66 \leq x < 74$ D
$x \leq 65$ F

D) $x > 93$ A
$84 \leq x \leq 92$ B
$75 \leq x \leq 83$ C
$66 \leq x \leq 74$ D
$x < 65$ F

Answer: B

292) Three–fourths a number decreased by one is between negative five and fifteen. Find all such numbers.

A) $8 < x < \frac{64}{3}$

B) $-3 < x < 12$

C) $-\frac{16}{3} < x < \frac{64}{3}$

D) $\frac{64}{3} < x < -\frac{16}{3}$

Answer: C

Fill in the blank with one of the words or phrases listed below.

like terms	**numerical coefficient**	**linear equation in one variable**
equivalent equations	**formula**	**linear inequality in one variable**
reversed	**unlike terms**	**compound inequalities**
the same	**no solution**	**all real numbers**

293) Terms with the same variables raised to exactly the same powers are called _____.

A) unlike terms
B) like terms
C) compound inequalities
D) equivalent equations

Answer: B

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294) If terms are not like terms, they are _____.

A) equivalent equations
B) compound inequalities
C) unlike terms
D) like terms

Answer: C

295) A(n) _____ can be written in the form ax + b = c.

A) numerical coefficient
B) formula
C) linear equation in one variable
D) linear inequality in one variable

Answer: C

296) A(n) _____ can be written in the form ax + b < c, (or >, ≤, ≥).

A) linear inequality in one variable
B) numerical coefficient
C) linear equation in one variable
D) formula

Answer: A

297) Inequalities containing two inequality symbols are called _____.

A) like terms
B) linear inequality in one variable
C) compound inequalities
D) equivalent equations

Answer: C

298) An equation that describes a known relationship among quantities is called a _____.

A) numerical coefficient
B) linear inequality in one variable
C) formula
D) linear equation in one variable

Answer: C

299) The _____ of a term is its numerical factor.

A) formula
B) numerical coefficient
C) like terms
D) compound inequalities

Answer: B

300) Equations that have the same solution are called _____.

A) like terms
B) equivalent equations
C) numerical coefficient
D) compound inequalities

Answer: B

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301) The solution(s) to the equation x + 5 = x + 5 is/are _____.

A) the same
B) no solution
C) like terms
D) all real numbers

Answer: D

302) The solution(s) to the equation x + 5 = x + 4 is/are _____.

A) all real numbers
B) no solution
C) unlike terms
D) reversed

Answer: B

303) If both sides of an inequality are multiplied or divided by the same positive number, the direction of the inequality symbol is _____.

A) no solution
B) reversed
C) the same
D) all real numbers

Answer: C

304) If both sides of an inequality are multiplied by the same negative number, the direction of the inequality symbol is _____.

A) the same
B) all real numbers
C) reversed
D) no solution

Answer: C

Simplify the expression.

305) 6y + 10 – 2y + 7

A) 21y
B) 4y + 17
C) 4y + 3
D) 8y + 17

Answer: B

306) 1.5x + 4.7 + 5.3x – 7.5

A) 6.8x – 12.2
B) 6.8x + 2.8
C) 6.8x – 2.8
D) –5.4

Answer: C

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307) 2(x – 1) – 5(3x – 2)

A) –17x + 12
B) –13x + 8
C) –13x – 3
D) 13x + 8

Answer: B

308) 6 + 4(5y – 4)

A) 20y – 10
B) 20y – 22
C) 20y + 24
D) 20y + 10

Answer: A

Solve the equation.

309) $-\frac{1}{7}x = -7$

A) –15
B) 1
C) –14
D) 49

Answer: D

310) 4(2n – 4) = 7(n + 3)

A) 5
B) –5
C) 37
D) 9

Answer: C

311) 9y – 7 + y = –(y + 8y)

A) 0
B) no solution
C) $-\frac{7}{19}$
D) $\frac{7}{19}$

Answer: D

312) –9z + 3 + 7z = –3z + 8

A) 5
B) –8
C) –3
D) 8

Answer: A

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313) $\frac{3(x-6)}{4} = x - 7$

A) −11
B) 10
C) −10
D) 31

Answer: B

314) $\frac{1}{3} - x + \frac{11}{3} = x - 10$

A) 21
B) 7
C) −7
D) −3

Answer: B

315) $-0.3(x - 3) + x = 0.5(3 - x)$

A) 0.33
B) 0.5
C) 2
D) 3

Answer: B

316) $-5(4x + 1) - 3 = -5(x + 4) + 3x$

A) $\frac{2}{3}$

B) $-\frac{1}{3}$

C) $\frac{6}{11}$

D) 1

Answer: A

317) $-3(x - 5) = x + 5 - 4x$

A) 0
B) <a>
C) −<b>
D) no solution

Answer: D

318) Find the value of x if y = −20, m = 2 and b = −2 in the formula y = mx + b.

A) x = 9
B) x = −9
C) x = −36
D) x = 36

Answer: B

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Solve the equation for the indicated variable.

319) $I = Prt$ for P

A) $P = \frac{r - I}{1 + t}$

B) $P = r - It$

C) $P = \frac{I}{rt}$

D) $P = \frac{r - 1}{It}$

Answer: C

320) $5x - 6y = 12$ for y

A) $y = \frac{5x + 12}{-6}$

B) $y = \frac{5x + 12}{6}$

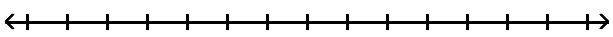
C) $y = \frac{5x - 12}{6}$

D) $y = \frac{5x - 12}{-6}$

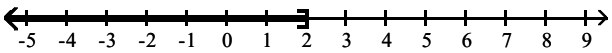
Answer: C

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

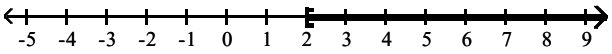
321) $3x - 6 \geq 2x - 4$



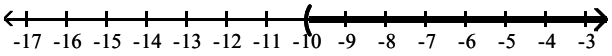
A) $(-\infty, 2]$



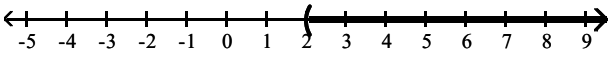
B) $[2, \infty)$



C) $(-10, \infty)$



D) $(2, \infty)$



Answer: B

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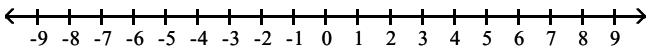
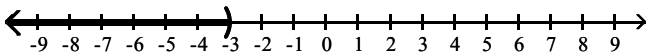
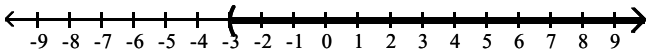
322) $x - 6 > 5x + 6$



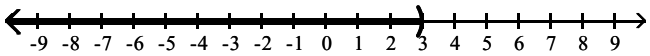
A) $(-\infty, -3)$



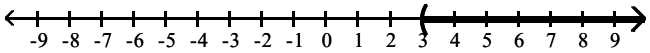
B) $(-3, \infty)$



C) $(-\infty, 3)$

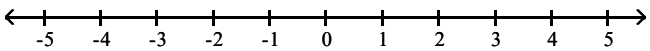


D) $(3, \infty)$

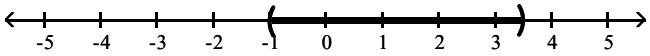


Answer: A

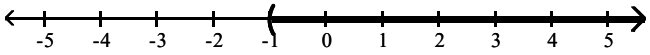
323) $-5 < 2x - 3 < 4$



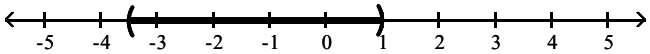
A) $\left(-1, \frac{7}{2}\right)$



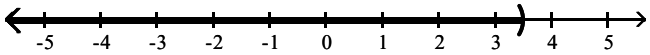
B) $(-1, \infty)$



C) $\left(-\frac{7}{2}, 1\right)$



D) $\left(-\infty, \frac{7}{2}\right)$



Answer: A

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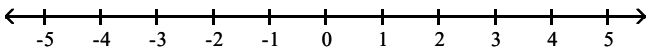
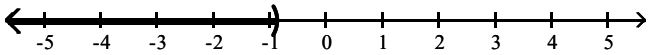
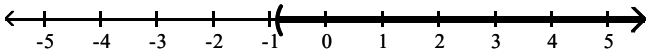
324) $\frac{2(7x - 1)}{5} > 2$



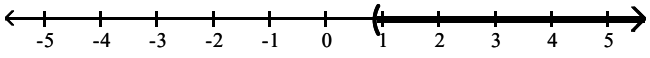
A) $\left(-\infty, -\frac{6}{7}\right)$



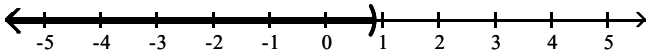
B) $\left(-\frac{6}{7}, \infty\right)$



C) $\left(\frac{6}{7}, \infty\right)$



D) $\left(-\infty, \frac{6}{7}\right)$



Answer: C

Solve.

325) A number increased by two–thirds of the number is 45. Find the number.

A) 27
B) 9
C) 3
D) $\frac{45}{2}$

Answer: A

326) The house numbers of two adjacent homes are two consecutive even numbers. If their sum is 378, find the house numbers.

A) 189, 191
B) 187, 189
C) 188, 376
D) 188, 190

Answer: D

327) The Discovery Museum is building a second parking garage. The second parking garage will have double the capacity, in parking spaces, of their original parking garage. If the sum of these integers is 1893, find the capacity for both parking garages.

A) 531 spaces, 1162 spaces
B) 531 spaces, 1362 spaces
C) 731 spaces, 1162 spaces
D) 631 spaces, 1262 spaces

Answer: D

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328) Melissa invested an amount of money in a stock that earned an annual 3% return. She invested three times the original amount in another stock that earned an annual 5% return. If her total yearly return from both investments was $3600, find out how much she invested at 3%?

A) $45,000
B) $135,000
C) $20,000
D) $15,000

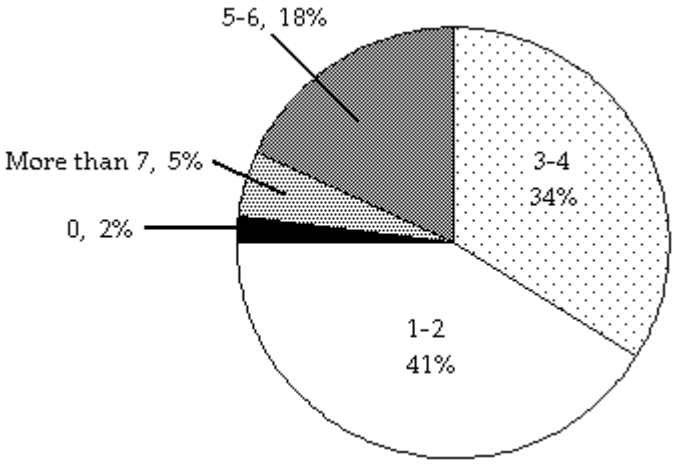
Answer: C

329) If two planes leave an airport at the same time with one flying west at 660 miles per hour and the other flying east at 340 miles per hour, how long will it take them to be 5000 miles apart?

A) 5 hr
B) 4.5 hr
C) 4 hr
D) 6 hr

Answer: A

The circle graph below shows the number of pizzas consumed by college students in a typical month. Use the graph to answer the question.



330) If State University has approximately 24,000 students, about how many would you expect to consume 5–6 pizzas in a typical month?

A) 432 students
B) 816 students
C) 4320 students
D) 8160 students

Answer: C

Solve. Round to one decimal place when necessary.

331) The number 18 is what percent of 96?

A) 1.9%
B) 0.2%
C) 18.8%
D) 533.3%

Answer: C

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332) Due to a lack of funding, the number of students enrolled at City College went from 9000 last year to 2000 this year. Find the percent decrease in enrollment.

A) 450%
B) 77.8%
C) 350%
D) 22.2%

Answer: B

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