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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) $-13x$

A) -13
B) 1
C) 13
D) x

Answer: A

2) $5y$

A) y
B) 1
C) -5
D) 5

Answer: D

3) $-z$

A) -1
B) z
C) 0
D) 1

Answer: A

4) $-9x^2$

A) 9
B) 2
C) -9
D) x^2

Answer: C

5) $-\frac{3}{8}z$

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

Answer: C

6) $-\frac{7y}{11}$

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

Answer: C

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Indicate whether the list of terms are like or unlike.

7) 4z, –15z
A) like
B) unlike
Answer: A

8) –11xy, $12x^2y$
A) like
B) unlike
Answer: B

9) $-12z^2$, 2z
A) like
B) unlike
Answer: B

10) $20xy^2z$, $-4xy^2$
A) like
B) unlike
Answer: B

11) a^2b, $10ba^2$
A) like
B) unlike
Answer: A

Simplify the expression by combining any like terms.

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

13) 4b – 7b
A) –11b
B) 3b
C) $-3b^2$
D) –3b
Answer: D

14) 4y + y – 9y
A) –5y
B) –5y + y
C) –6y
D) –4y
Answer: D

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15) $4z - 12z + z$

A) $-9z$
B) $-8z$
C) $-7z$
D) $-8z + z$

Answer: C

16) $7a - 2a + 5$

A) $5a + 5$
B) $9a + 5$
C) $10a$
D) $-5a + 5$

Answer: A

17) $8x + x - 2x + x$

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

Answer: A

18) $7x + 2 + 2x + 3$

A) $9x + 5$
B) 14
C) $14x$
D) $5x + 5$

Answer: A

19) $8a - 3a - a - 10$

A) $4a - 10$
B) $5a - 10$
C) $5a - a - 10$
D) $5a - 11$

Answer: A

20) $6z + 5 - 3z + 10$

A) $3z - 5$
B) $9z + 15$
C) $18z$
D) $3z + 15$

Answer: D

21) $8x + 1 + 2x + x - 4$

A) $11x - 3$
B) $10x - 3$
C) $10x + 3$
D) $9x - 3$

Answer: A

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22) –4m + 4 – 1 + 4 + m – 7
A) –5m
B) –3m – 1
C) –3m
D) –5m + 1
Answer: C

23) –1.1c + 4 – 3c – 2.8
A) –4.1c + 1.2
B) 3.3c – 11.2
C) –1.1c – 3c + 4 – 2.8
D) –2.9
Answer: A

24) 5.8w – 1.9 – 3.7w + 6 + 2.3w
A) 11.8w + 4.1
B) 4.4w – 4.1
C) 4.4w + 4.1
D) 4.4w + 7.9
Answer: C

25) $9x^2 - 4x + 7 + 2x - 5 + 9x^2$
A) $16x^2 + 11x - 9$
B) $18x^2 - 2x + 2$
C) $18x^3$
D) $18x^4 - 2x^2 + 2$
Answer: B

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

26) 9(y + 9)
A) 9y + 18
B) y + 81
C) 9y + 81
D) 9y + 9
Answer: C

27) 6(x – 8)
A) 6x – 8
B) 6x + 48
C) 6x – 48
D) 6x – 14
Answer: C

28) –10(r + 2)
A) r – 20
B) –10r – 2
C) –10r + 20
D) –10r – 20
Answer: D

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29) –5(z – 5)
A) –5z – 25
B) 5z + 25
C) –5z + 25
D) –5z + 5
Answer: C

30) 9(7d + 8)
A) 135d
B) 63d + 8
C) 16d + 17
D) 63d + 72
Answer: D

31) 8(4n – 4)
A) 32n – 4
B) 32n + 32
C) 32n – 32
D) 12n – 12
Answer: C

32) –3(6x + 5)
A) 3x + 2
B) –18x – 15
C) –18x + 5
D) –33x
Answer: B

33) –6(4y – 5)
A) –24y – 30
B) –24y – 5
C) –24y + 30
D) –2y + 1
Answer: C

34) –4(10r + 10) + 2(7r + 7)
A) –80r
B) –26r + 10
C) –26r – 26
D) 6r + 6
Answer: C

35) 6(4x + 7 + y)
A) 24x + 42 + 6y
B) 24x + 7 + 6y
C) 24x + 42 + y
D) 24x + 7 + y
Answer: A

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36) 6(4x + 6y + 8)
A) 24x + 6y + 8
B) 24x + 6y + 48
C) 24x + 36y + 48
D) 24x + 36y + 8
Answer: C

37) –(–8m + 9n – 4)
A) –8m + 9n + 4
B) 8m – 9n – 4
C) –8m + 9n – 4
D) 8m – 9n + 4
Answer: D

38) –(8y – 6z + 7)
A) –8y – 6z – 7
B) –8y + 6z – 7
C) –8y + 6z + 7
D) –8y – 6z + 7
Answer: B

39) (12z + 10) – (3z – 5)
A) 15z + 15
B) 9z + 15
C) 9z + 5
D) 9z – 15
Answer: B

40) 4(y + 10) – 5
A) 4y + 35
B) 4y + 20
C) 14y – 5
D) 4y + 5
Answer: A

41) 5x + 2(x + 5)
A) 10x + 7
B) 6x + 10
C) 7x + 10
D) 7x – 10
Answer: C

42) –6(2x – 7) – 4x + 6
A) 8x + 48
B) 16x + 48
C) –16x + 48
D) –16x – 36
Answer: C

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43) $5(x + 3) + 7x + 6$

A) $12x - 9$
B) $2x + 21$
C) $12x + 9$
D) $12x + 21$

Answer: D

44) $10m + 2n - 2m + 10(m - 5n)$

A) $22m + 52n$
B) $18m - 3n$
C) $18m - 48n$
D) $-2m + 52n$

Answer: C

45) $-\frac{4}{7}(z - 14) - \frac{1}{14}z$

A) $-\frac{9}{14}z + 8$

B) $\frac{9}{14}z - 8$

C) $\frac{1}{2}z + 14$

D) $\frac{9}{14}z + 8$

Answer: A

46) $\frac{1}{5}(15x + 8) - \frac{3}{10}(10x - 1)$

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

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

C) $\frac{19}{5}$

D) $\frac{13}{10}$

Answer: A

47) $-5.8(8r + 9) + 3.1(5r + 6)$

A) $-30.9r - 33.6$
B) $2.2r + 3.2$
C) $-98.6r$
D) $-30.9r + 9$

Answer: A

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

48) Add 9x – 4 to 4x – 12.

A) 13x + 16
B) 5x – 16
C) 13x – 16
D) 13x – 8

Answer: C

49) Add 8x + 9 to 4x – 2.

A) 12x – 11
B) 12x + 7
C) 4x + 7
D) 12x + 11

Answer: B

50) Subtract 9x + 14 from 4x – 8.

A) –5x – 6
B) 13x + 6
C) 5x + 22
D) –5x – 22

Answer: D

51) Subtract 4x – 8 from 8x + 13.

A) 12x + 5
B) –4x – 21
C) 4x – 21
D) 4x + 21

Answer: D

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

52) Five times a number, increased by ten

A) 5x – 10
B) 5x + 10
C) 5 + 10x
D) 5x + 50

Answer: B

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

A) $\frac{15 - x}{5}$

B) $\frac{x}{5} - 15$

C) $15 - \frac{x}{5}$

D) $\frac{x - 15}{5}$

Answer: A

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54) One–half a number, minus ten, plus five times the number

A) $\frac{1}{2}x - 5$

B) $\frac{11}{2}x - 10$

C) $\frac{11}{2}x - 5$

D) $\frac{1}{2}x - 10 + 5x$

Answer: B

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

A) 10x + 4
B) 10x + 14
C) 10x + 2
D) 4x + 8

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 – 9 meters, and another piece of string has a length of 8x + 7 centimeters, express their total length in centimeters as an algebraic expression.

A) (900x – 200) cm
B) (801x + 691) cm
C) (9x – 2) cm
D) (108x – 893) cm

Answer: D

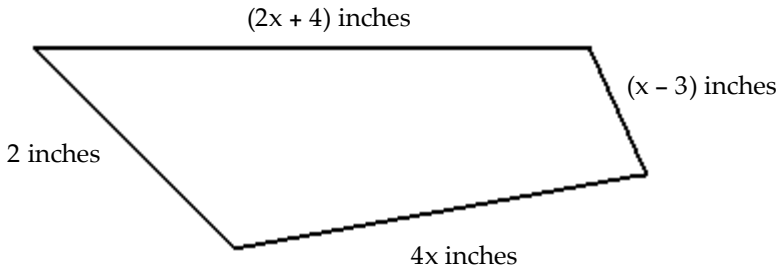
57) The value of 8 dimes is $10 \cdot 8 = 80$ cents. Likewise, the value of x dimes is 10x. If George finds 4x – 2 nickels, 6x dimes, and x quarters in his change jar, express the total value of change in cents as an algebraic expression.

A) (105x – 2) cents
B) (105x – 10) cents
C) (80x – 10) cents
D) (105x + 10) 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) (6x + 9) in.
B) (7x + 3) in.
C) (6x + 3) in.
D) (7x + 9) in.

Answer: B

Solve the equation.

59) $x - 18 = 3$

A) –15
B) 21
C) 15
D) –21

Answer: B

60) $-7 = r + 18$

A) –11
B) –25
C) 25
D) 11

Answer: B

61) $t - 8 = 14$

A) –22
B) 6
C) –6
D) 22

Answer: D

62) $\frac{1}{5} + f = 9$

A) $\frac{46}{5}$
B) $\frac{44}{5}$
C) 44
D) $\frac{8}{5}$

Answer: B

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63) $2 + 8y = 9y$
A) -15
B) 2
C) -2
D) 8
Answer: B

64) $-4.7 + x = 24.9$
A) 19.7
B) 29.6
C) 20.2
D) 29.1
Answer: B

65) $6y = 5y - 4.3$
A) -15.3
B) 4.3
C) 6
D) -4.3
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) -1
C) -29
D) 29
Answer: D

67) $2(2z - 3) = 3(z + 3)$
A) 3
B) -3
C) 5
D) 15
Answer: D

68) $4(x - 5) - (3x + 9) = 4$
A) -33
B) -25
C) -18
D) 33
Answer: D

69) $10n = 6n + 3 + 3n$
A) 30
B) 3
C) -3
D) -30
Answer: B

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70) $-6k + 4 + 7k = 12 - 24$

A) -16
B) 16
C) 40
D) -40

Answer: A

71) $-6c + 6 + 4c = -3c + 11$

A) 11
B) 5
C) -11
D) -6

Answer: B

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

A) $\frac{25}{18}$

B) $-\frac{25}{18}$

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

D) $-\frac{5}{18}$

Answer: B

73) $8(8x - 5) = 65x$

A) -40
B) 40
C) 5
D) -5

Answer: A

74) $4n - 3n + 6 = 6$

A) 0
B) 12
C) 6
D) -6

Answer: A

75) $-4w - 12 + 5w = 1$

A) -11
B) 13
C) -13
D) 11

Answer: B

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76) $-26 + 10 = 3x + 4 - 2x$

A) -20
B) 40
C) -40
D) 20

Answer: A

77) $-8.8 + 4x - 6.9 + 3x - 2.8 = 5.8 + 8x + 1.5$

A) -25.8
B) 11.2
C) -11.2
D) 25.8

Answer: A

Solve the equation.

78) $-4x = 16$

A) -4
B) 1
C) 20
D) -20

Answer: A

79) $-9n = -81$

A) 72
B) 2
C) -72
D) 9

Answer: D

80) $-10x = 0$

A) 10
B) 1
C) -10
D) 0

Answer: D

81) $-z = -10$

A) 0
B) -1
C) 10
D) -10

Answer: C

82) $\frac{1}{2}y = 6$

A) 7
B) 12
C) 8
D) 3

Answer: B

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83) $\frac{1}{7}a = 0$

A) –7
B) 1
C) 0
D) 7

Answer: C

84) $\frac{1}{2}k = -\frac{5}{2}$

A) 8
B) –5
C) 9
D) 2

Answer: B

85) $-\frac{6}{7}m = -\frac{1}{9}$

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

B) $\frac{54}{7}$

C) $\frac{7}{54}$

D) $-\frac{7}{54}$

Answer: C

86) $\frac{n}{3} = 10$

A) 12
B) 13
C) 3
D) 30

Answer: D

87) $\frac{v}{-2} = 8$

A) 10
B) 16
C) –16
D) –10

Answer: C

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88) $-32.2 = -4.6c$

A) 7
B) -27.6
C) 2
D) 27.6

Answer: A

89) $\frac{x}{6} + 8 = 17$

A) 15
B) 54
C) 150
D) 152

Answer: B

90) $-3x + 4x - 5 = -2x$

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

Answer: C

91) $3r + 6 = 24$

A) 15
B) 6
C) 2
D) 19

Answer: B

92) $10n - 3 = 87$

A) 9
B) 80
C) 11
D) 84

Answer: A

93) $16 = 9x + 7$

A) 5
B) 0
C) 1
D) 4

Answer: C

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94) $\frac{1}{3}a - \frac{1}{3} = -5$

A) 14
B) 16
C) –16
D) –14

Answer: D

95) $\frac{1}{6}f - 5 = 1$

A) 24
B) –36
C) 36
D) –24

Answer: C

96) $9x - 12x = 33 - 12$

A) –7
B) 3
C) 7
D) –3

Answer: A

97) $6x + x = 6 - 34$

A) 4
B) –7
C) 7
D) –4

Answer: D

98) $8x - 6 - 9x - 1 = 3$

A) – 10
B) $\frac{10}{17}$
C) 10
D) 2

Answer: A

99) $7m - 3 - 3(m + 1) = -(7m - 4)$

A) $\frac{2}{11}$
B) $\frac{10}{11}$
C) $\frac{2}{7}$
D) $\frac{10}{7}$

Answer: B

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100) $-2(2x + 1) - 2 = -3(x + 2) + 5x$

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

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

C) 1

D) $\frac{1}{3}$

Answer: D

101) $0.4x - 0.6x - 5 = 3$

A) 40

B) −35

C) 35

D) −40

Answer: D

102) $-10.4z + 1.6 = -42.9 - 1.5z$

A) 5

B) 4.3

C) −53

D) 4.4

Answer: A

103) $\frac{1}{5}(x + 6) = \frac{1}{7}(x + 8)$

A) −12

B) −1

C) {3}

D) 1

Answer: B

104) $\frac{1}{4}(x + 12) + \frac{1}{6}(x + 6) = x + 8$

A) $-\frac{72}{7}$

B) $-\frac{144}{7}$

C) $-\frac{120}{7}$

D) $-\frac{48}{7}$

Answer: D

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Write the algebraic expression described. Simplify if possible.

105) Two numbers have a sum of 60. If one number is q, express the other number in terms of q.

A) 60 – 2q
B) q + 60
C) 60 – q
D) q – 60

Answer: C

106) A 21–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 + 21) cm
B) (21 – z) cm
C) (z – 21) cm
D) (21 – 2z) cm

Answer: B

107) In the race for Student Body President, Jose received 157 more votes than Angela. If Angela received x votes, how many votes did Jose receive?

A) (x + 157) votes
B) (157 – x) votes
C) 157x votes
D) (x – 157) votes

Answer: A

108) During a walk–a–thon, Rosilyn walked 18 fewer laps than June walked. If June walked b laps, how many laps did Rosilyn walk?

A) (b + 18) laps
B) (18 – b) laps
C) (b – 18) laps
D) $\frac{b}{18}$ laps

Answer: C

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

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

Answer: B

110) If x represents the first of four consecutive even integers, express the sum of the first integer and the fourth integer in terms of x.

A) 4x + 12
B) 2x + 6
C) 4x + 6
D) 2x + 4

Answer: B

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111) If x is the first of three consecutive integers, express the sum of 22 and the third integer as an algebraic expression in terms of x.

A) x + 22
B) 2x + 24
C) x + 23
D) x + 24

Answer: D

112) The sum of the angles of a triangle is 180°. If one angle of a triangle measures x° and a second angle measures (9x + 18)°, express the measure of the third angle in terms of x.

A) (198 – 10x)°
B) (162 + 10x)°
C) (162 – 10x)°
D) (162 – 9x)°

Answer: C

113) A quadrilateral is a four–sided figure whose angle sum is 360°. If one angle measures x°, a second angle measures 2x°, and a third angle measures 9x°, express the measure of the fourth angle in terms of x.

A) (360 – 11x)°
B) (360 – 12x)°
C) (360 + 12x)°
D) (12x – 360)°

Answer: B

Solve.

114) A pharmacist is asked to give a customer 7.5 milliliters of an antibiotic over a period of 8 hours. If the antibiotic is to be given every 4 hours starting immediately, how much antibiotic should be given in each dose?

A) 4.27 ml
B) 0.94 ml
C) 0.23 ml
D) 3.75 ml

Answer: D

Solve the equation.

115) $7x - (3x - 1) = 2$

A) $-\frac{1}{4}$

B) $\frac{1}{10}$

C) $\frac{1}{4}$

D) $-\frac{1}{10}$

Answer: C

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116) $6(3x - 1) = 24$

A) 1

B) $\frac{25}{18}$

C) $\frac{23}{18}$

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

Answer: D

117) $(y - 8) - (y + 2) = 5y$

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

B) -2

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

D) $-\frac{5}{4}$

Answer: B

118) $3n = 5(5n + 8)$

A) $\frac{40}{3}$

B) $\frac{20}{11}$

C) $\frac{11}{20}$

D) $-\frac{20}{11}$

Answer: D

119) $9y = 8(4y - 3)$

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

B) $\frac{23}{24}$

C) $\frac{24}{23}$

D) $-\frac{24}{23}$

Answer: C

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120) $13(5x - 7) = 3x - 5$

A) $-\frac{43}{31}$

B) $\frac{43}{31}$

C) $\frac{48}{31}$

D) $\frac{43}{34}$

Answer: B

121) $4(y + 2) = 5(y - 6)$

A) −22
B) 22
C) −38
D) 38

Answer: D

122) $4(2z - 4) = 7(z + 3)$

A) 37
B) −5
C) 9
D) 5

Answer: A

123) $2(2z - 3) = 3(z - 4)$

A) −6
B) 6
C) 18
D) 8

Answer: A

124) $9x + 7(-2x - 3) = -24 - 2x$

A) 15
B) − 1
C) 1
D) $\frac{45}{7}$

Answer: C

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

A) −9
B) 15
C) −15
D) 9

Answer: B

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126) $\frac{1}{2}x - \frac{1}{2} = -2$

A) −5
B) −3
C) 5
D) 3

Answer: B

127) $\frac{x}{13} - 9 = -3$

A) 80
B) 78
C) −78
D) −80

Answer: B

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

A) 90
B) −90
C) −45
D) 45

Answer: D

129) $\frac{11}{14}x + \frac{1}{7} = \frac{5}{7}x$

A) −12
B) 2
C) 12
D) −2

Answer: D

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

A) −4
B) 4
C) 3
D) −12

Answer: A

131) $\frac{2(7 - x)}{3} = -x$

A) 2
B) −2
C) −14
D) 14

Answer: C

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132) $\frac{5(9 - x)}{4} = x$

A) 45
B) −45
C) −5
D) 5

Answer: D

133) $\frac{9(y - 5)}{5} = 2y - 3$

A) −30
B) −60
C) 60
D) 30

Answer: A

134) $0.09y + 0.09(500 - y) = 0.50y$

A) 90
B) 225
C) 22.5
D) 180

Answer: A

135) $0.25(80) + 0.60x = 0.40(80 + x)$

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

Answer: A

136) $0.50x - 0.20(50 + x) = -0.02(50)$

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

Answer: C

137) $1.3x + 3.9 = 0.5x - 2.66$

A) −9.02
B) −8.2
C) 0.122
D) −8.3

Answer: B

138) $9x - 8 + 9x + 1 = 4x + 14x - 10$

A) no solution
B) all real numbers
C) 0
D) 288

Answer: A

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139) $4(x + 5) = (4x + 20)$

A) all real numbers
B) 40
C) no solution
D) 0

Answer: A

140) $5(x + 3) - (5x + 15) = 0$

A) 0
B) 3
C) all real numbers
D) no solution

Answer: C

141) $-2(x - 5) - 62 = 7x - 9(x - 2)$

A) -44
B) no solution
C) all real numbers
D) -80

Answer: B

142) $\frac{x}{7} - 2 = \frac{x}{7}$

A) all real numbers
B) no solution
C) 0
D) 7

Answer: B

143) $\frac{1}{4}(8x - 12) = 6(\frac{1}{3}x - \frac{1}{2}) + 6$

A) all real numbers
B) no solution
C) $\frac{3}{2}$
D) 0

Answer: B

144) $8.4m - 8.5 - 5.7m = -2.2 + 2.7m - 6.3$

A) no solution
B) all real numbers
C) 0.2
D) 0

Answer: B

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145) $0.03(4x - 3) = 0.12(x + 7) - 0.93$

A) –0.09
B) no solution
C) –0.93
D) all real numbers

Answer: D

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

146) A number subtracted from 13

A) $13 + x$
B) $x - 13$
C) $x + 13$
D) $13 - x$

Answer: D

147) Three times a number

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

Answer: C

148) The sum of –14 and twice a number

A) $2(-14 + x)$
B) $-14 + 2x$
C) $-14 - 2x$
D) $-14 + x$

Answer: B

149) The difference of 3 and twice a number

A) $3 + 2x$
B) $3 - 2x$
C) $2x - 3$
D) $2(3 - x)$

Answer: B

150) The product of –19 and the sum of a number and 32

A) $-19 + 32x$
B) $-19(x + 32)$
C) $-608x$
D) $-19x + 32$

Answer: B

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151) The quotient of –22 and the difference of a number and 6

A) $\frac{6}{x + 22}$

B) $\frac{-22}{x - 6}$

C) $\frac{-22}{x + 6}$

D) $\frac{-22}{6 - x}$

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

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

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

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

Answer: C

153) When 3 times a number is subtracted from 7 times the number, the result is 28. Find the number.

A) $3x(7 - x) = 28;\ -7$

B) $3(x - 7) = 28x;\ 1.2$

C) $3x + 7x = 28;\ 4$

D) $7x - 3x = 28;\ 7$

Answer: D

154) If 3 times a number is added to –9, the result is equal to 12 times the number. Find the number.

A) $12(3x - 9) = -9;\ -1$

B) $4x + (-9) = 12x;\ 1$

C) $3x + (-9) = 12x;\ -1$

D) $15x - 12x = 9;\ 1$

Answer: C

155) Three–fourths of a number is $\frac{1}{2}$. Find the number in lowest terms.

A) $\frac{3}{4}x = \frac{1}{2};\ \frac{4}{6}$

B) $\frac{3}{4} + x = \frac{1}{2};\ -\frac{1}{2}$

C) $\frac{3}{4}x = \frac{1}{2};\ \frac{3}{8}$

D) $\frac{3}{4}x = \frac{1}{2};\ \frac{2}{3}$

Answer: D

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156) The sum of four times a number and 5 is equal to the difference of twice the number and 6. Find the number.

A) $4x + 5 = 2x - 6;\ \frac{11}{2}$

B) $4x + 5 = 2x + 6;\ \frac{1}{2}$

C) $4(x + 5) = 2x - 6;\ -13$

D) $4x + 5 = 2x - 6;\ -\frac{11}{2}$

Answer: D

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) –17
B) 4
C) –7
D) 7

Answer: C

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) $\frac{7}{12}$

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

Answer: C

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) $\frac{2}{5}$

B) 22
C) 5
D) 10

Answer: D

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) –7
C) –2
D) 11

Answer: A

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161) Nine times a number, added to 5, is –31. Find the number.

A) –324
B) –4
C) –36
D) 4

Answer: B

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

A) –6
B) 6
C) 150
D) 30

Answer: B

163) Four times the sum of some number plus 2 is equal to 8 times the number minus 16.

A) 6
B) –24
C) –6
D) 24

Answer: A

164) The difference of a number and 3 is the same as 49 less the number. Find the number.

A) 23
B) –26
C) –23
D) 26

Answer: D

165) Seven times some number added to 4 amounts to –12 added to the product of 3 and the number.

A) –4
B) 16
C) 4
D) –16

Answer: A

166) Nine times the sum of a number and –45 amounts to 108. Find the number.

A) 17
B) 57
C) –33
D) 7

Answer: B

167) A number subtracted from 12 amounts to the quotient of 20 and –2. Find the number.

A) 21
B) 52
C) 2
D) 22

Answer: D

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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 = $67,500; department head's salary = $202,500
B) president's salary = $20,250; department head's salary = $6750
C) president's salary = $202,500; department head's salary = $67,500
D) president's salary = $135,000; department head's salary = $67,500

Answer: C

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 = 18 marbles; 3rd bag = 12 marbles
B) 1st bag = 5 marbles; 2nd bag = 15 marbles; 3rd bag = 10 marbles
C) 1st bag = 5 marbles; 2nd bag = 10 marbles; 3rd bag = 15 marbles
D) 1st bag = 6 marbles; 2nd bag = 14 marbles; 3rd bag = 10 marbles

Answer: B

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 $50 under this promotional deal, how many minutes of phone calls did he make? Round to the nearest integer, if necessary.
A) 700
B) 7
C) 2
D) 1300

Answer: A

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 = 22°; 2nd angle = 64°
B) 1st angle = 31°; 2nd angle = 59°
C) 1st angle = 22°; 2nd angle = 68°
D) 1st angle = 23°; 2nd angle = 67°

Answer: D

172) A car rental agency advertised renting a luxury, full–size car for $29.95 per day and $0.19 per mile. If you rent this car for 2 days, how many whole miles can you drive if you only have $200 to spend.
A) 884
B) 3
C) 737
D) 100

Answer: C

173) A 10–ft. board is cut into 2 pieces so that one piece is 2 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: 28 ft; longer piece: 30 ft
B) shorter piece: 2 ft; longer piece: 8 ft
C) shorter piece: 5 ft; longer piece: 30 ft
D) shorter piece: 6 ft; longer piece: 32 ft

Answer: B

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174) Mary and her brother John collect foreign coins. Mary has twice the number of coins that John has. Together they have 105 foreign coins. Find how many coins Mary has.

A) 70 coins
B) 14 coins
C) 35 coins
D) 63 coins

Answer: A

175) Center City East Parking Garage has a capacity of 257 cars more than Center City West Parking Garage. If the combined capacity for the two garages is 1221 cars, find the capacity for each garage.

A) Center City East: 739 cars
Center City West: 482 cars
B) Center City East: 749 cars
Center City West: 472 cars
C) Center City East: 472 cars
Center City West: 749 cars
D) Center City East: 482 cars
Center City West: 739 cars

Answer: A

176) During an intramural basketball game, Team A scored 14 fewer points than Team B. Together, both teams scored a total of 146 points. How many points did Team A score during the game?

A) 80 points
B) 66 points
C) 67 points
D) 73 points

Answer: B

177) To trim the edges of a rectangular table cloth, 30 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: 5 ft; width: 10 ft
C) length: 10 ft; width: 5 ft
D) length: $2\frac{1}{2}$ ft; width: 5 ft

Answer: B

178) The length of a rectangular room is 3 feet longer than twice the width. If the room's perimeter is 126 feet, what are the room's dimensions?

A) Width = 30 ft; length = 33 ft
B) Width = 40 ft; length = 86 ft
C) Width = 20 ft; length = 43 ft
D) Width = 25 ft; length = 53 ft

Answer: C

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179) The perimeter of a triangle is 50 centimeters. Find the lengths of its sides, if the longest side is 8 centimeters longer than the shortest side, and the remaining side is 3 centimeters longer than the shortest side.
A) 13 cm, 16 cm, 24 cm
B) 16 cm, 19 cm, 24 cm
C) 13 cm, 16 cm, 21 cm
D) 5 cm, 10 cm, 13 cm

Answer: C

180) Mario's front patio is in the shape of a trapezoid with a height of 50 feet. The longer base is 11 feet longer than the shorter base, and the area of the patio is 10,000 square feet. Find the length of each base of the trapezoidal patio.
A) 194.5 ft; 205.5 ft
B) 389 ft; 411 ft
C) 194.5 ft; 194.5 ft
D) 94.5 ft; 105.5 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 57 and the U.S. won more than China who won more than Romania, how many medals did each team win?
A) U.S.: 21 medals; China: 20 medals; Romania: 19 medals
B) U.S.: 18 medals; China: 17 medals; Romania: 16 medals
C) U.S.: 20 medals; China: 19 medals; Romania: 18 medals
D) U.S.: 59 medals; China: 58 medals; Romania: 57 medals

Answer: C

182) The sum of three consecutive integers is 396. Find the numbers.
A) 131, 132, 133
B) 130, 131, 132
C) 130, 132, 134
D) 132, 133, 134

Answer: A

183) The house numbers of two adjacent homes are two consecutive even numbers. If their sum is 418, find the house numbers.
A) 208, 210
B) 209, 211
C) 208, 416
D) 207, 209

Answer: A

184) The code to unlock a safety deposit box is three consecutive odd integers whose sum is 105. Find the integers.
A) 35, 37, 39
B) 34, 36, 38
C) 35, 36, 37
D) 33, 35, 37

Answer: D

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

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

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

Answer: C

186) $P = 2L + 2W$; $P = 14$, $W = 3$

A) 5.5
B) 4
C) 7
D) 11

Answer: B

187) $V = \frac{1}{3}Ah$; $V = 15$, $h = 3$

A) 45
B) 18
C) 15
D) 5

Answer: C

188) $I = prt$; $I = 8.4$, $p = 140$, $r = 0.02$

A) 23.52
B) 3
C) 0.2352
D) 0.3

Answer: B

189) $A = \frac{1}{2}(B + b)h$; $A = 166.5$, $b = 18$, $B = 19$

A) 148
B) 342
C) $18\frac{1}{2}$
D) 9

Answer: D

190) Use the formula $F = \frac{9}{5}C + 32$ to convert 125°C to degrees Fahrenheit.

A) 193°F
B) 87.8°F
C) 52.2°F
D) 257°F

Answer: D

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191) Use the formula $C = \frac{5}{9}(F - 32)$ to convert 14°F to degrees Celsius.

A) 25.6°C
B) 57.2°C
C) –24.2°C
D) –10°C

Answer: D

Solve the formula for the specified variable.

192) $d = rt$ for r

A) $r = \frac{d}{t}$

B) $r = \frac{t}{d}$

C) $r = dt$
D) $r = d - t$

Answer: A

193) $I = Prt$ for P

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

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

C) $P = r - It$
D) $P = \frac{r - I}{1 + t}$

Answer: A

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

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

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

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

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

Answer: C

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

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

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

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

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

Answer: B

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

A) $b = P + a - c$

B) $b = P - a - c$

C) $b = a + c - P$

D) $b = P + a + c$

Answer: B

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

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

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

C) $L = P - 2W$

D) $L = P - W$

Answer: A

198) $A = P + PRT$ for T

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

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

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

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

Answer: D

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

D) $B = 2A - bh$

Answer: B

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

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

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

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

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

Answer: C

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

D) $h = S - r$

Answer: C

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 12 meters and 30 meters of fencing is required to completely enclose it. What is the width of the garden?

A) 360 m

B) 3 m

C) 2.5 m

D) 6 m

Answer: B

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203) Ted drove to his grandparents' house for a holiday weekend. The total distance (one–way) was 343 miles and it took him 11 hours. How fast was Ted driving? (Round answer to the nearest whole number)

A) 38 mph
B) 31 mph
C) 377 mph
D) 32 mph

Answer: B

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 54 inches, how much fabric does Sally need? (Use 3.14 for π. Round to 2 decimal places.)

A) 10,562.96 sq in.
B) 2640.74 sq in.
C) 3017.54 sq in.
D) 9847.04 sq in.

Answer: B

205) How much would an initial bank deposit need to be in order to earn $2300 at 10% for 8 years? (Round to the nearest dollar.)

A) $2875
B) $1840
C) $184,000
D) $29

Answer: A

206) How long would it take to drive 500 kilometers if your average rate of speed was 50 kilometers per hour?

A) 11 hr
B) 55 hr
C) 10 hr
D) 250 hr

Answer: C

207) Nathan invested his $5000 poker winnings in a 4 year Certificate of Deposit at a rate of 0.04. Use the formula I = Prt to find the amount of interest Nathan's investment will earn.

A) $200
B) $5,800
C) $5,200
D) $800

Answer: D

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

Answer: C

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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 2 meters. Use 3.14 for the value of π.

A) 16.75 sq m
B) 100.47 sq m
C) 10.67 sq m
D) 33.49 sq m

Answer: D

210) Find the height of a right circular cylinder whose volume is 100π cubic feet and whose radius is 5 feet.

A) 20 ft
B) 5 ft
C) 16 ft
D) 4 ft

Answer: D

Solve. Round all amounts to one decimal place.

211) What number is 83% of 200?

A) 16,600
B) 16.6
C) 166
D) 1660

Answer: C

212) 57 is 20% of what number?

A) 285
B) 2850
C) 11.4
D) 28.5

Answer: A

213) 40% of what number is 63?

A) 1575
B) 25.2
C) 15.8
D) 157.5

Answer: D

214) 1.5 is what percent of 12?

A) 0.1%
B) 800%
C) 12.5%
D) 1.3%

Answer: C

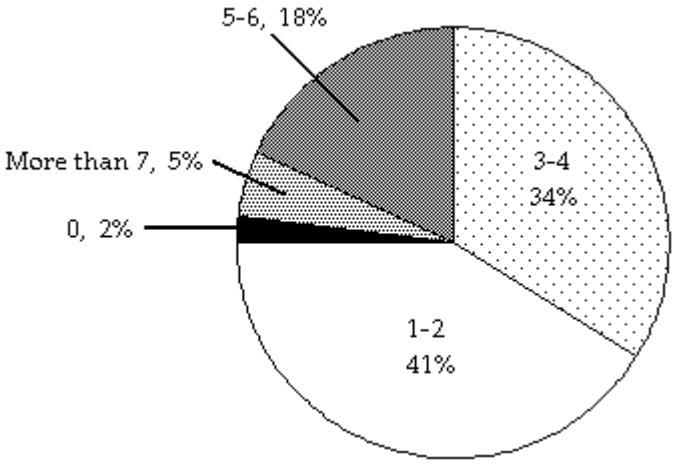
215) 80% of what number is 62?

A) 49.6
B) 77.5
C) 775
D) 7.8

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 5–6 pizzas in a typical month?
A) 5%
B) 34%
C) 18%
D) 41%

Answer: C

217) If State University has approximately 28,000 students, about how many would you expect to consume 5–6 pizzas in a typical month?
A) 9520 students
B) 952 students
C) 5040 students
D) 504 students

Answer: C

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 80% in 5 years. If 12,000 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) 2400 ice cream cones
B) 15,000 ice cream cones
C) 6667 ice cream cones
D) 9600 ice cream cones

Answer: C

219) Attendance this year at the homecoming football game is 139% of what it was last year. If last year's homecoming football game attendance was 33,000, what is this year's attendance? (Round to the nearest integer, if necessary.)
A) 4212 people
B) 458,700 people
C) 45,870 people
D) 237 people

Answer: C

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220) Of the 120 students in an algebra class, 2 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) 60%
B) 1.7%
C) 600%
D) 16.7%

Answer: B

221) 5% of students at a university attended a lecture. If 6000 students are enrolled at the university, about how many students attended the lecture?
A) 300 students
B) 30 students
C) 30,000 students
D) 3000 students

Answer: A

222) The population of a town is currently 45,000. 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) 18,000
B) 75,000
C) 27,000
D) 28,125

Answer: D

223) Students at Maple School earned $636 selling candles. They want to accumulate $2000 for a club trip. What percent of their goal has been reached?
A) 30%
B) 0.318%
C) 31.8%
D) 3%

Answer: C

224) Jeans are on sale at the local department store for 25% off. If the jeans originally cost $59, find the sale price.
A) $14.75
B) $44.25
C) $73.75
D) $57.53

Answer: B

225) The local clothing store marks up the price that it pays to the clothing manufacturer by 36%. If the selling price of a pair of jeans is $113, how much did the clothing store pay for the jeans?
A) $153.68
B) $24.57
C) $176.56
D) $83.09

Answer: D

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226) A store is advertising 15% off sale on everything in the store. Find the discount of a fax machine that regularly sells for $150.
A) $127.50
B) $22.50
C) $147.75
D) $2.25
Answer: B

227) A store is advertising 35% off sale on everything in the store. Find the discount of a painting that regularly sells for $2900.
A) $1885.00
B) $101.50
C) $1015.00
D) $2798.50
Answer: C

228) A store is advertising a 41% off sale on all new DVD releases. Find the sale price of a newly released DVD collectors set that regularly sells for $92.00.
A) $3.77
B) $37.72
C) $54.28
D) $88.23
Answer: C

229) An automobile dealership recently reduced the price of a used sports car by 14%. If the price of the car was $ 25,600.00, find the sale price.
A) $3584.00
B) $25,241.60
C) $358.40
D) $22,016.00
Answer: D

230) A store is advertising 35% off sale on everything in the store. Find the sale price of a watch that regularly sells for $260.
A) $91.00
B) $169.00
C) $2509.00
D) $9.10
Answer: B

231) Due to a lack of funding, the number of students enrolled at City College went from 6000 last year to 2000 this year. Find the percent of decrease in enrollment.
A) 200%
B) 300%
C) 33.3%
D) 66.7%
Answer: D

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232) A company increased the number of its employees from 540 to 565. What was the percent of increase in employees?
A) 95.6%
B) 4.6%
C) 51.1%
D) 4.4%

Answer: B

233) The number of video stores in a region recently decreased from 88 to 57. Find the percent of decrease.
A) 54.4%
B) 35.2%
C) 64.8%
D) 183.9%

Answer: B

234) Ming got a 17% raise in her salary from last year. This year she is earning $119,340. How much did she make last year?
A) $17,340
B) $102,000
C) $2,028,780
D) $7020

Answer: B

235) Because of budget cutbacks, MaryAnn was required to take a 7% pay cut. If she earned $63,000 before the pay cut, find her salary after the pay cut.
A) $62,559
B) $58,590
C) $62,955.90
D) $5859

Answer: B

236) How much pure acid should be mixed with 3 gallons of a 50% acid solution in order to get an 80% acid solution?
A) 12 gal
B) 4.5 gal
C) 7.5 gal
D) 1.5 gal

Answer: B

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 40–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) 64 lb
B) 60 lb
C) 52 lb
D) 56 lb

Answer: B

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238) A chemist needs 170 milliliters of a 71% solution but has only 47% and 98% solutions available. Find how many milliliters of each that should be mixed to get the desired solution.

A) 70 ml of 47%; 100 ml of 98%
B) 100 ml of 47%; 70 ml of 98%
C) 80 ml of 47%; 90 ml of 98%
D) 90 ml of 47%; 80 ml of 98%

Answer: D

239) The manager of a coffee shop has one type of coffee that sells for $7 per pound and another type that sells for $14 per pound. The manager wishes to mix 60 pounds of the $14 coffee to get a mixture that will sell for $13 per pound. How many pounds of the $7 coffee should be used?

A) 10 pounds
B) 35 pounds
C) 70 pounds
D) 5 pounds

Answer: A

240) At a gourmet nut shop, nuts are sold in bulk. Cashews sell for $1.50 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) $18.00
B) $3.60
C) $6.40
D) $32.00

Answer: B

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

A) 6.7 L
B) 8 L
C) 5.0 L
D) 10 L

Answer: C

Solve.

242) A motorcycle traveling at 50 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) 225 mi
B) $7\frac{1}{2}$ mi
C) $56\frac{1}{4}$ mi
D) $4\frac{1}{2}$ mi

Answer: A

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243) Linda and Dave leave simultaneously from the same starting point biking in opposite directions. Linda bikes at 5 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) $7\frac{1}{2}$ hr

B) $2\frac{1}{7}$ hr

C) $\frac{7}{15}$ hr

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

Answer: B

244) Jeff starts driving at 65 miles per hour from the same point that Lauren starts driving at 40 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 330–mile range?

A) $3\frac{1}{3}$ hr

B) $3\frac{1}{7}$ hr

C) $3\frac{29}{210}$ hr

D) $2\frac{20}{21}$ 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) $1\frac{7}{10}$ hr

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

D) 19 hr

Answer: C

246) On a road trip, five friends drove at 50 miles per hour to California. On the way home, they took the same route but drove 75 miles per hour. How many miles did they drive on the way to California if the round trip took 10 hours?

A) 600 mi
B) 1500 mi
C) 6 mi
D) 300 mi

Answer: D

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

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

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

Answer: B

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 $45.35. How many dimes did she deposit?

A) 304 dimes
B) 603 dimes
C) 309 dimes
D) 299 dimes

Answer: A

249) A convenience store employee is counting $10 and $20 bills. If there are six times as many $10 bills as $20 bills and the total amount is $1920, find the number of each type of bill.

A) 24 $20 bills; 6 $10 bills
B) 144 $20 bills; 24 $10 bills
C) 144 $20 bills; 6 $10 bills
D) 24 $20 bills; 144 $10 bills

Answer: D

250) Devon purchased tickets to an air show for 6 adults and 2 children. The total cost was $114. The cost of a child's ticket was $7 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: $15; child's ticket: $8
B) adult's ticket: $17; child's ticket: $10
C) adult's ticket: $16; child's ticket: $9
D) adult's ticket: $18; child's ticket: $11

Answer: C

251) On a buying trip in Los Angeles, Rosaria Perez ordered 120 pieces of jewelry: a number of bracelets at $4 each and a number of necklaces at $13 each. She wrote a check for $930 to pay for the order. How many bracelets and how many necklaces did Rosaria purchase?

A) 80 bracelets and 40 necklaces
B) 75 bracelets and 45 necklaces
C) 70 bracelets and 50 necklaces
D) 65 bracelets and 55 necklaces

Answer: C

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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 $37.45. If there were five times as many nickels as dimes, how many of each coin does he have?
A) 535 dimes; 107 nickels
B) 107 dimes; 535 nickels
C) 535 dimes; 530 nickels
D) 107 dimes; 5 nickels

Answer: B

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 $900, how much did Kevin invest in the mutual fund?
A) $6000
B) $5000
C) $4000
D) $7000

Answer: A

254) How can $42,000 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) $22,000 invested at 4%; $20,000 invested at 10%
B) $20,000 invested at 4%; $22,000 invested at 10%
C) $30,000 invested at 4%; $12,000 invested at 10%
D) $12,000 invested at 4%; $30,000 invested at 10%

Answer: C

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 $3600, how much was invested at 3%?
A) $135,000
B) $20,000
C) $45,000
D) $15,000

Answer: B

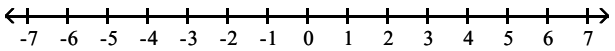
256) If $26,000 is invested at 10% simple annual interest, how much should be invested at 12% annual simple interest so that the total yearly income from both investments is $5000?
A) $2000
B) $18,800
C) $1880
D) $20,000

Answer: D

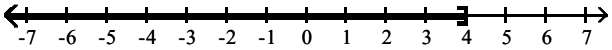
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Graph the set of numbers given in interval notation. Then write an inequality statement in x describing the numbers graphed.

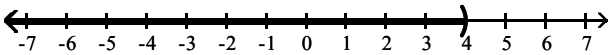
257) $(4, \infty)$



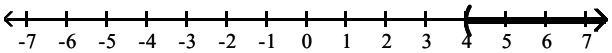
A) $x \leq 4$



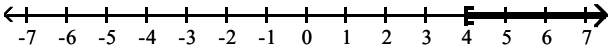
B) $x < 4$



C) $x > 4$

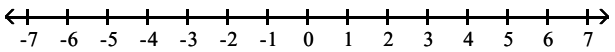


D) $x \geq 4$

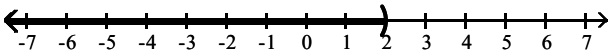


Answer: C

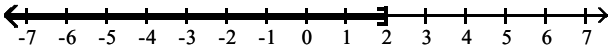
258) $[2, \infty)$



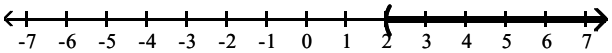
A) $x < 2$



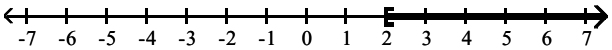
B) $x \leq 2$



C) $x > 2$



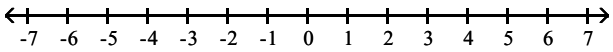
D) $x \geq 2$



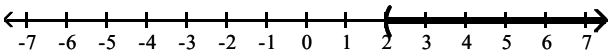
Answer: D

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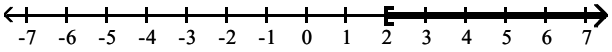
259) $(-\infty, 2)$



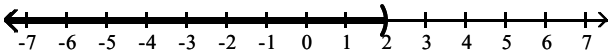
A) $x > 2$



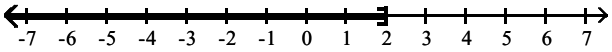
B) $x \geq 2$



C) $x < 2$

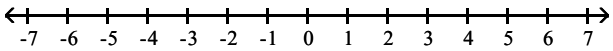


D) $x \leq 2$

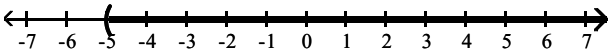


Answer: C

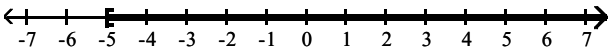
260) $(-\infty, -5]$



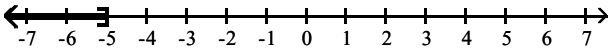
A) $x > -5$



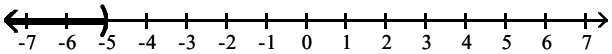
B) $x \geq -5$



C) $x \leq -5$



D) $x < -5$

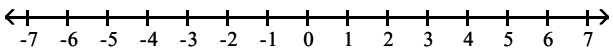


Answer: C

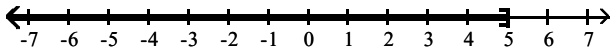
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Graph the inequality on a number line. Then write the solution in interval notation.

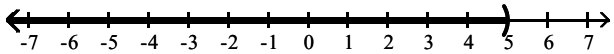
261) $x < 5$



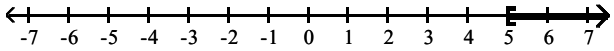
A) $(-\infty, 5]$



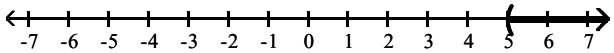
B) $(-\infty, 5)$



C) $[5, \infty)$

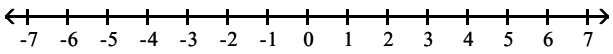


D) $(5, \infty)$

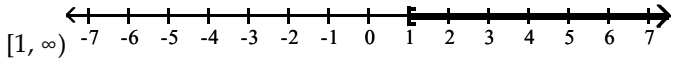


Answer: B

262) $x \leq 1$

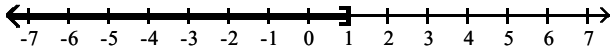


A)

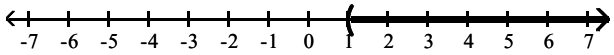


$[1, \infty)$

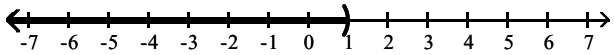
B) $(-\infty, 1]$



C) $(1, \infty)$



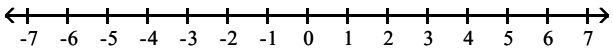
D) $(-\infty, 1)$



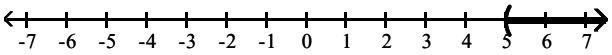
Answer: B

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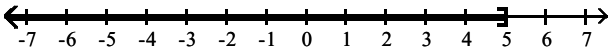
263) $x > 5$



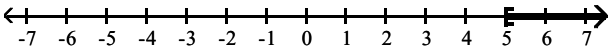
A) $(5, \infty)$



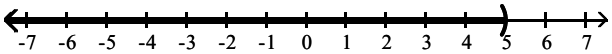
B) $(-\infty, 5]$



C) $[5, \infty)$

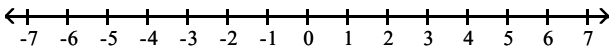


D) $(-\infty, 5)$

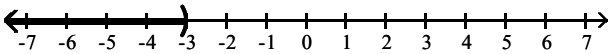


Answer: A

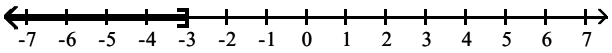
264) $x \geq -3$



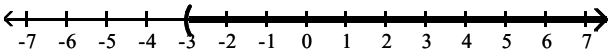
A) $(-\infty, -3)$



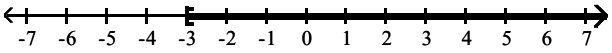
B) $(-\infty, -3]$



C) $(-3, \infty)$



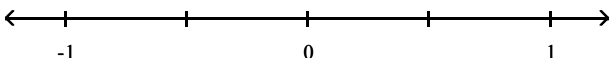
D) $[-3, \infty)$



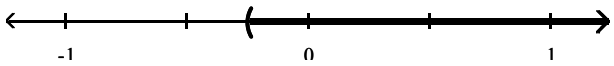
Answer: D

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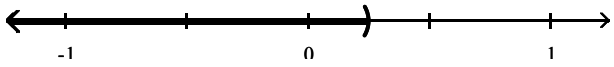
265) $x > -\frac{1}{4}$



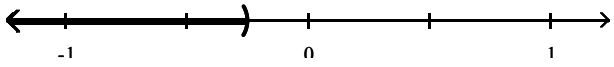
A) $\left(-\frac{1}{4}, \infty\right)$



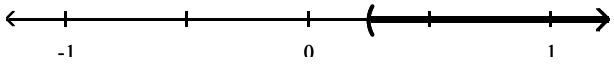
B) $(-\infty, -\frac{1}{4}]$



C) $(-\infty, -\frac{1}{4})$



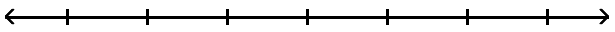
D) $\left[-\frac{1}{4}, \infty\right)$



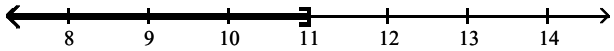
Answer: A

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

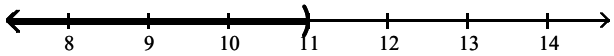
266) $x - 12 < -1$



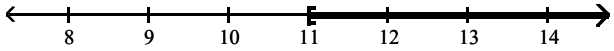
A) $(-\infty, 11]$



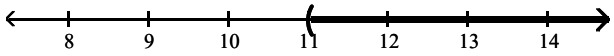
B) $(-\infty, 11)$



C) $[11, \infty)$



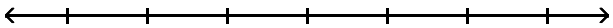
D) $(11, \infty)$



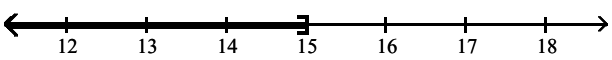
Answer: B

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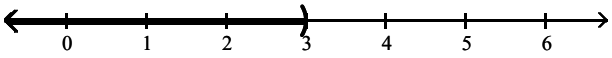
267) $-7x + 6 > -8x + 9$



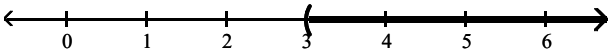
A) $(-\infty, 15]$



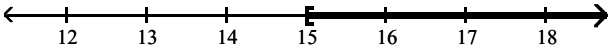
B) $(-\infty, 3)$



C) $(3, \infty)$

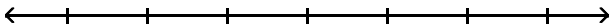


D) $[15, \infty)$

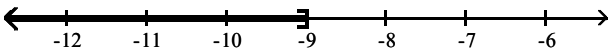


Answer: C

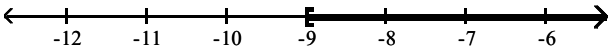
268) $-3 \geq \frac{1}{3}x$



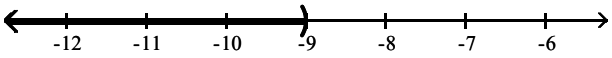
A) $(-\infty, -9]$



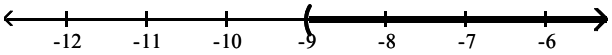
B) $[-9, \infty)$



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



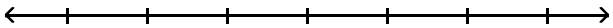
D) $(-9, \infty)$



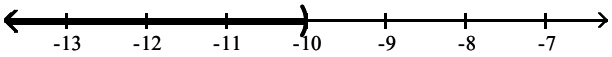
Answer: A

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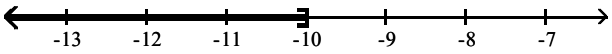
269) $-\frac{1}{5}x < 2$



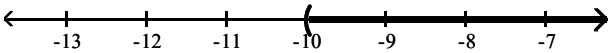
A) $(-\infty, -10)$



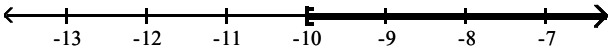
B) $(-\infty, -10]$



C) $(-10, \infty)$

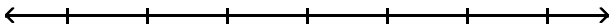


D) $[-10, \infty)$

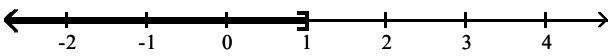


Answer: C

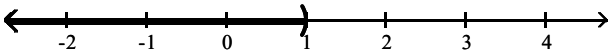
270) $42x + 12 > 6(6x + 3)$



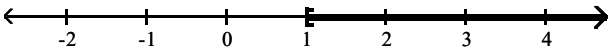
A) $(-\infty, 1]$



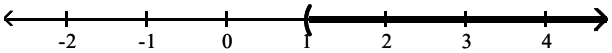
B) $(-\infty, 1)$



C) $[1, \infty)$



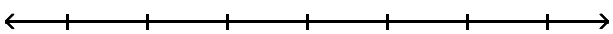
D) $(1, \infty)$



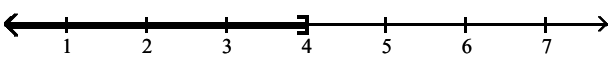
Answer: D

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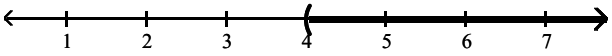
271) $-6(5x - 1) < -36x + 30$



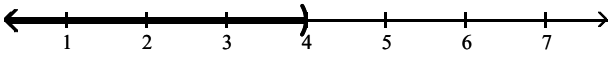
A) $(-\infty, 4]$



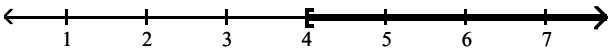
B) $(4, \infty)$



C) $(-\infty, 4)$

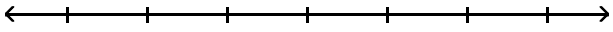


D) $[4, \infty)$

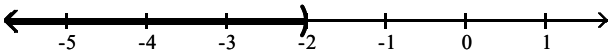


Answer: C

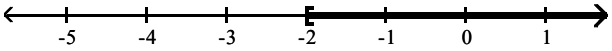
272) $-18x - 24 \leq -6(2x + 2)$



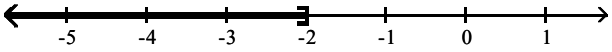
A) $(-\infty, -2)$



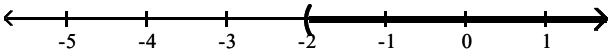
B) $[-2, \infty)$



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



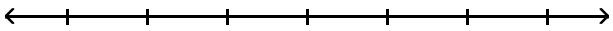
D) $(-2, \infty)$



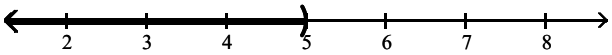
Answer: B

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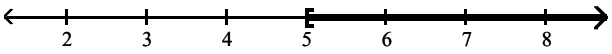
273) $24x - 8 \leq 4(5x + 3)$



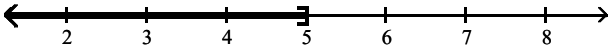
A) $(-\infty, 5)$



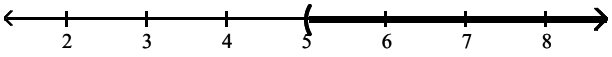
B) $[5, \infty)$



C) $(-\infty, 5]$

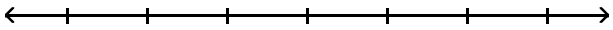


D) $(5, \infty)$

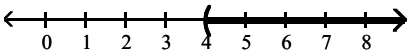


Answer: C

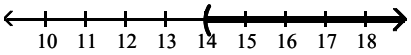
274) $-5x + 10 - 8x < 8 - 15x + 10$



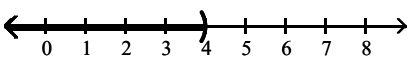
A) $(4, \infty)$



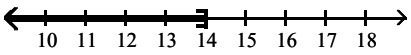
B) $(14, \infty)$



C) $(-\infty, 4)$



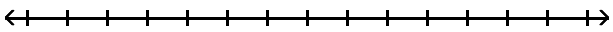
D) $(-\infty, 14]$



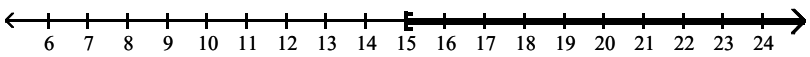
Answer: C

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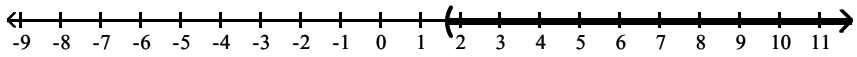
275) $\frac{1}{3}x \geq 5$



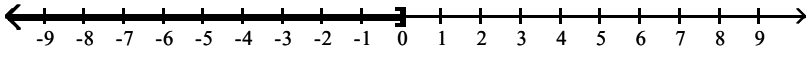
A) $[15, \infty)$



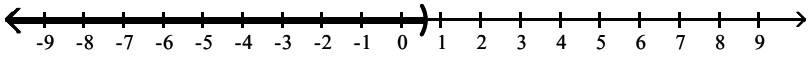
B) $\left(\frac{5}{3}, \infty\right)$



C) $(-\infty, \frac{1}{15}]$



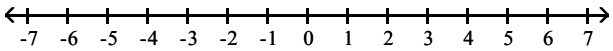
D) $(-\infty, \frac{3}{5})$



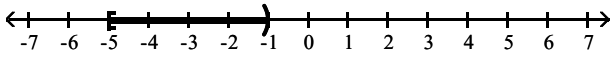
Answer: A

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

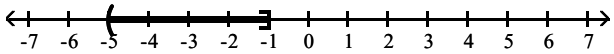
276) $-5 \leq x \leq -1$



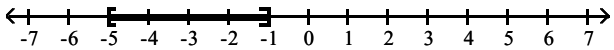
A) $[-5, -1)$



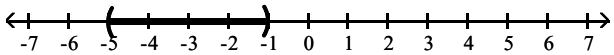
B) $(-5, -1]$



C) $[-5, -1]$



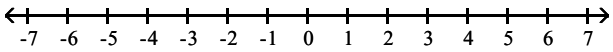
D) $(-5, -1)$



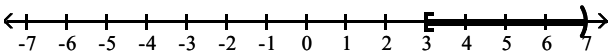
Answer: C

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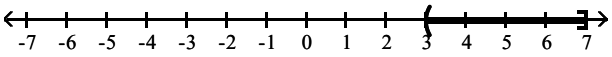
277) $3 < x < 7$



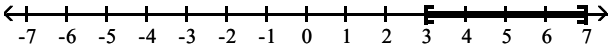
A) [3, 7)



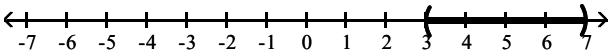
B) (3, 7]



C) [3, 7]

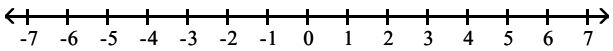


D) (3, 7)

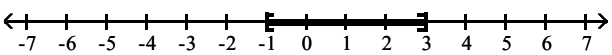


Answer: D

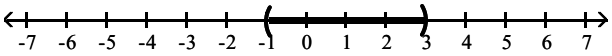
278) $-1 \leq x < 3$



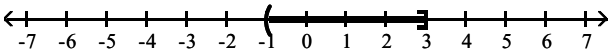
A) [−1, 3]



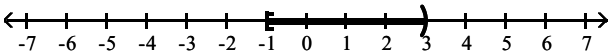
B) (−1, 3)



C) (−1, 3]



D) [−1, 3)

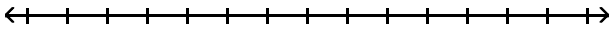


Answer: D

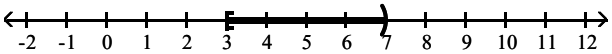
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Solve the inequality. Graph the solution set and write it in interval notation.

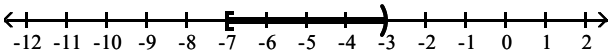
279) $6 < 2x \leq 14$



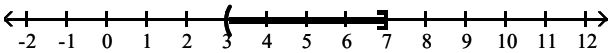
A) [3, 7)



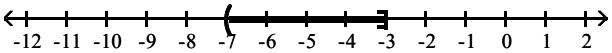
B) [–7, –3)



C) (3, 7]

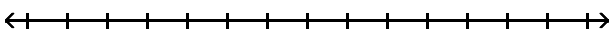


D) (–7, –3]

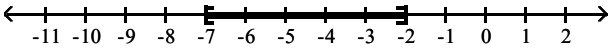


Answer: C

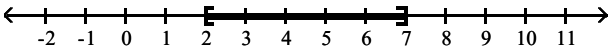
280) $4 \leq 4x - 4 \leq 24$



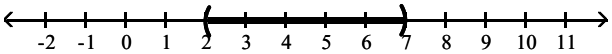
A) [–7, –2]



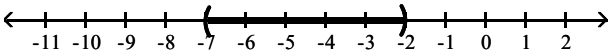
B) [2, 7]



C) (2, 7)



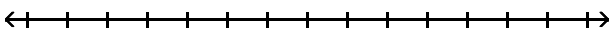
D) (–7, –2)



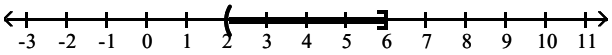
Answer: B

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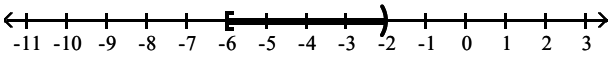
281) $-21 \le -3x - 3 < -9$



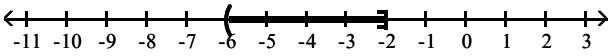
A) (2, 6]



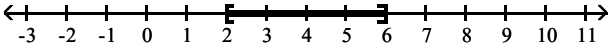
B) [−6, −2)



C) (−6, −2]

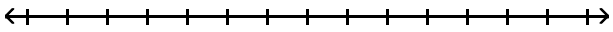


D) [2, 6]

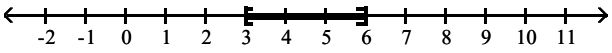


Answer: A

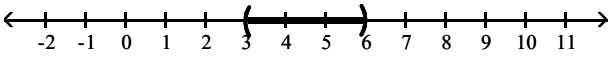
282) $-17 \le -2x - 5 \le -11$



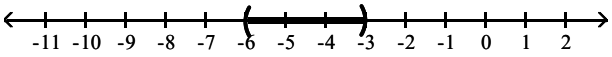
A) [3, 6]



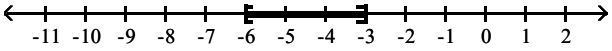
B) (3, 6)



C) (−6, −3)



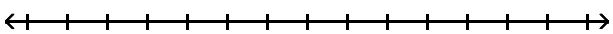
D) [−6, −3]



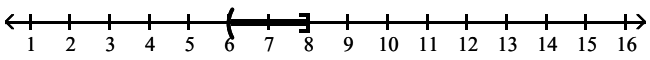
Answer: A

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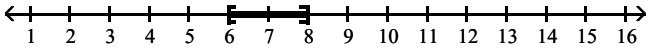
283) $2 \le 2(x - 5) \le 6$



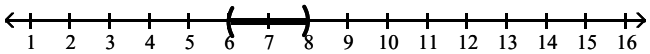
A) (6, 8]



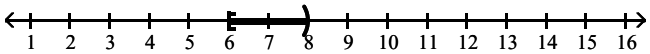
B) [6, 8]



C) (6, 8)



D) [6, 8)



Answer: B

Solve.

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

A) $x < \frac{19}{3}$

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

C) $x > -\frac{7}{3}$

D) $x < \frac{13}{3}$

Answer: D

285) The area of a rectangle must be at least 78 square feet. If the length is 6 feet, find the minimum for the rectangle's width.

A) 33 ft

B) 14 ft

C) $\frac{1}{13}$ ft

D) 13 ft

Answer: D

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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) 81
B) 80
C) 78
D) 79

Answer: B

287) David has $18,000 to invest. He invests $13,000 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) 10.8%
B) 12.8%
C) 11.8%
D) 14.8%

Answer: B

288) A certain store has a fax machine available for use by its customers. The store charges $2.45 to send the first page and $0.65 for each subsequent page. Use an inequality to find the maximum number of pages that can be faxed for $10.25

A) at most 4 pages
B) at most 13 pages
C) at most 61 pages
D) at most 16 pages

Answer: B

289) An archer has $149 to spend on a new archery set. A certain set containing a bow and three arrows costs $69. With the purchase of this set, he can purchase additional arrows for $4 per arrow. Use an inequality to find the maximum number of arrows he could obtain, including those with the set, for his $149.

A) at most $\frac{149}{4}$ arrows
B) at most 20 arrows
C) at most 23 arrows
D) at most $\frac{149}{69}$ arrows

Answer: C

290) A certain vehicle has a weight limit for all passengers and cargo of 1277 pounds. The four passengers in the vehicle weigh an average of 180 pounds. Use an inequality to find the maximum weight of the cargo that the vehicle can handle.

A) at most $\frac{1277}{180}$ lb
B) at most 557 lb
C) at most $\frac{1277}{2}$ lb
D) at most 1097 lb

Answer: B

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

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

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

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

Answer: C

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

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

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

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

D) $-3 < x < 12$

Answer: B

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

Answer: C

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

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

Answer: A

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

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

Answer: B

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

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

Answer: B

297) Inequalities containing two inequality symbols are called _____.

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

Answer: A

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

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

Answer: A

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

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

Answer: A

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

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

Answer: C

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

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

Answer: C

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

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

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

Answer: B

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

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

Answer: A

Simplify the expression.

305) 6x + 10 – 4x + 9

A) 10x + 19
B) 2x + 1
C) 2x + 19
D) 21x

Answer: C

306) 1.1x + 4.2 + 5.3x – 6.6

A) –4.4
B) 6.4x + 2.4
C) 6.4x – 10.8
D) 6.4x – 2.4

Answer: D

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307) $5(x - 1) - 4(3x - 4)$

A) $7x + 11$
B) $-7x + 11$
C) $-17x + 21$
D) $-7x - 5$

Answer: B

308) $7 + 4(3y - 9)$

A) $12y + 29$
B) $12y - 29$
C) $12y - 43$
D) $12y + 63$

Answer: B

Solve the equation.

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

A) -6
B) -1
C) -16
D) -7

Answer: C

310) $3(2n - 3) = 5(n + 3)$

A) 6
B) 24
C) 9
D) -6

Answer: B

311) $3y - 7 + y = -(y + 7y)$

A) no solution
B) 0
C) $\frac{7}{12}$
D) $-\frac{7}{12}$

Answer: C

312) $-8z + 7 + 6z = -3z + 12$

A) 12
B) -12
C) -7
D) 5

Answer: D

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313) $\frac{2(x-5)}{3} = x - 2$

A) –8
B) –4
C) 4
D) 8

Answer: B

314) $\frac{1}{3} - x + \frac{5}{3} = x - 6$

A) 4
B) –4
C) –2
D) 12

Answer: A

315) $-0.3(x - 9) + x = 0.5(9 - x)$

A) 6
B) 1
C) 1.5
D) 9

Answer: C

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

A) $\frac{3}{13}$

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

C) $\frac{7}{13}$

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

Answer: A

317) $-4(x - 5) = x + 7 - 5x$

A) –<b>
B) 0
C) no solution
D) <a>

Answer: C

318) Find the value of x if y = –10, m = –3 and b = –1 in the formula y = mx + b.

A) x = 27
B) x = 3
C) x = –27
D) x = –3

Answer: B

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Solve the equation for the indicated variable.

319) $I = Prt$ for t

A) $t = P - Ir$

B) $t = \dfrac{P - 1}{Ir}$

C) $t = \dfrac{I}{Pr}$

D) $t = \dfrac{P - I}{1 + r}$

Answer: C

320) $4x - 7y = 15$ for y

A) $y = \dfrac{4x - 15}{-7}$

B) $y = \dfrac{4x - 15}{7}$

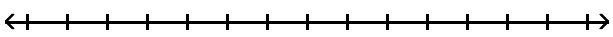
C) $y = \dfrac{4x + 15}{7}$

D) $y = \dfrac{4x + 15}{-7}$

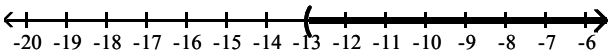
Answer: B

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

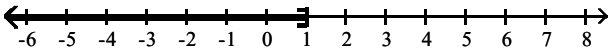
321) $4x - 7 \geq 3x - 6$



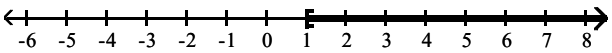
A) $(-13, \infty)$



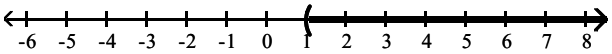
B) $(-\infty, 1]$



C) $[1, \infty)$



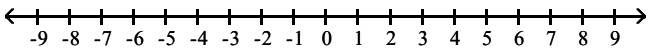
D) $(1, \infty)$



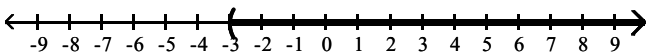
Answer: C

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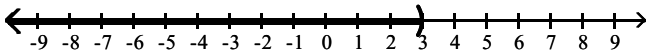
322) $x - 6 > 5x + 6$



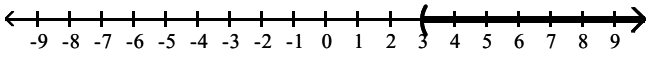
A) $(-3, \infty)$



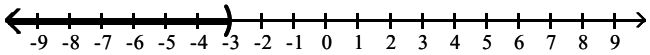
B) $(-\infty, 3)$



C) $(3, \infty)$

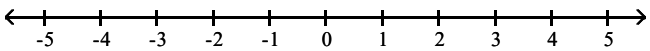


D) $(-\infty, -3)$

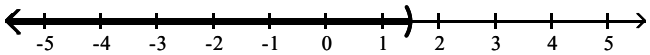


Answer: D

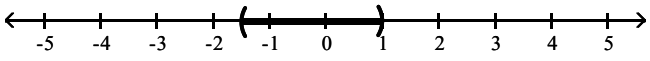
323) $-5 < 2x - 3 < 0$



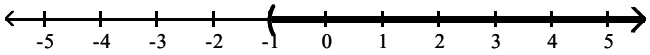
A) $\left(-\infty, \frac{3}{2}\right)$



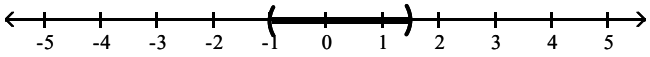
B) $\left(-\frac{3}{2}, 1\right)$



C) $(-1, \infty)$



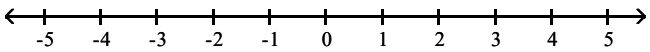
D) $\left(-1, \frac{3}{2}\right)$



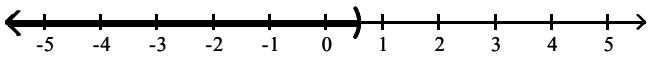
Answer: D

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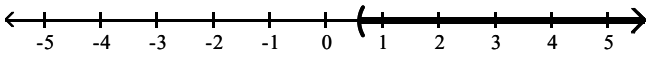
324) $\frac{2(5x + 1)}{4} > 2$



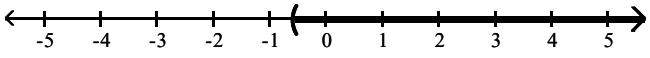
A) $\left(-\infty, \frac{3}{5}\right]$



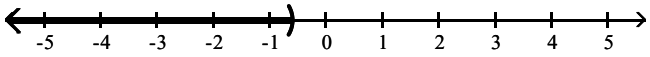
B) $\left(\frac{3}{5}, \infty\right)$



C) $\left(-\frac{3}{5}, \infty\right)$



D) $\left(-\infty, -\frac{3}{5}\right)$



Answer: B

Solve.

325) A number increased by three–fourths of the number is 14. Find the number.

A) 2

B) $\frac{14}{3}$

C) 8

D) 4

Answer: C

326) The house numbers of two adjacent homes are two consecutive even numbers. If their sum is 358, find the house numbers.

A) 178, 356

B) 178, 180

C) 177, 179

D) 179, 181

Answer: B

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 1503, find the capacity for both parking garages.

A) 401 spaces, 1102 spaces

B) 501 spaces, 1002 spaces

C) 601 spaces, 902 spaces

D) 401 spaces, 902 spaces

Answer: B

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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 $7200, find out how much she invested at 3%?

A) $40,000
B) $90,000
C) $30,000
D) $270,000

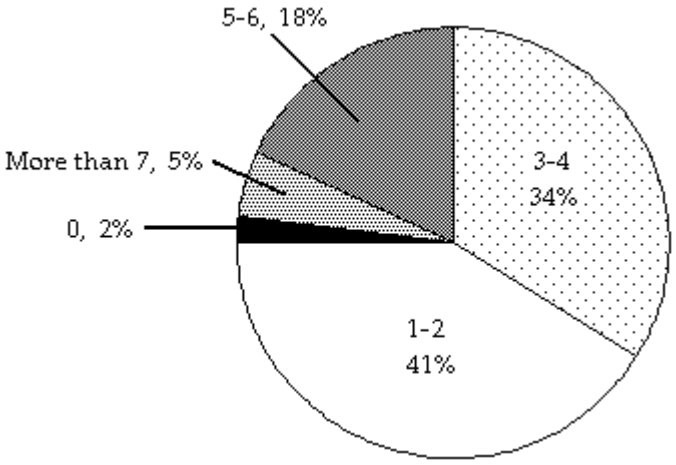
Answer: A

329) If two planes leave an airport at the same time with one flying west at 230 miles per hour and the other flying east at 550 miles per hour, how long will it take them to be 2340 miles apart?

A) 4 hr
B) 3 hr
C) 2.5 hr
D) 2 hr

Answer: B

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 29,000 students, about how many would you expect to consume 5–6 pizzas in a typical month?

A) 9860 students
B) 986 students
C) 5220 students
D) 522 students

Answer: C

Solve. Round to one decimal place when necessary.

331) The number 2.7 is what percent of 24?

A) 1.1%
B) 888.9%
C) 11.3%
D) 0.1%

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

Answer: A

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