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

Choose the word or statement that answers the question.

1) What word means to find all of the solutions of an equation?

A) Equivalent B) Eliminate C) Solution D) Solve

Answer: D

2) What does the equation a = b mean?

A) a and b sometimes stand for the same number.
B) a and b never stand for the same number.
C) a and b stand for the same number in certain circumstances.
D) a and b stand for the same number.

Answer: D

3) When you use the addition principle to solve an equation, what is true?

A) You subtract the same number from both sides of the equation.
B) You add or subtract the same number to both sides of the equation.
C) You add the same number to both sides of the equation.
D) You add and subtract the same number to both sides of the equation.

Answer: B

4) What is the principle used to solve $\frac{7}{2}x = -4$?

A) Opposite principle B) Addition principle
C) Multiplication principle D) Solution principle

Answer: C

5) What is the principle used to solve $\frac{7}{2} + x = -4$?

A) Additive identity principle B) Addition principle
C) Multiplicative inverse principle D) Multiplication principle

Answer: B

Solve using the addition principle.

6) $b - 4 = 5$

A) 1 B) −1 C) 9 D) −9

Answer: C

7) $z + 4 = 6$

A) −10 B) −2 C) 2 D) 10

Answer: C

8) $z - \frac{2}{13} = 0$

A) $\frac{2}{13}$ B) $-\frac{13}{2}$ C) $\frac{13}{2}$ D) $-\frac{2}{13}$

Answer: A

9) $6 = b + 2$

A) −4 B) −8 C) 4 D) 8

Answer: C

10) $29 = x - 5$

A) -24 B) 24 C) 34 D) -34

Answer: C

11) $b - 7.17 = 0$

A) -7.17 B) 7.17 C) -6.17 D) 6.17

Answer: B

12) $a - 4 = 13$

A) -17 B) 17 C) -9 D) 9

Answer: B

13) $-13.5 - x = 13.6$

A) -0.1 B) 27.1 C) 0.1 D) -27.1

Answer: D

14) $x + \frac{1}{11} = \frac{10}{11}$

A) $-\frac{9}{11}$ B) $\frac{9}{11}$ C) $\frac{9}{22}$ D) 1

Answer: B

15) $x - \frac{1}{9} = \frac{7}{27}$

A) $\frac{4}{27}$ B) $\frac{8}{27}$ C) $\frac{10}{27}$ D) $\frac{5}{18}$

Answer: C

Solve using the multiplication principle.

16) $\frac{x}{-9} = -7$

A) -16 B) -17 C) 63 D) 0

Answer: C

17) $-5 = \frac{a}{9}$

A) -1 B) -45 C) 3 D) 4

Answer: B

18) $\frac{n}{5} = 11$

A) 15 B) 16 C) 55 D) 2

Answer: C

19) $-7a = 28$

A) -35 B) -4 C) 1 D) 35

Answer: B

20) $-15 = 3k$

A) -5 B) 1 C) 18 D) -18

Answer: A

21) $-36.9 = -4.1c$

A) 2.0 B) 32.8 C) -32.8 D) 9.0

Answer: D

22) $-2x = -8$

A) 6 B) -6 C) 4 D) 2

Answer: C

23) $4b = -48$

A) 52 B) 1 C) -52 D) -12

Answer: D

24) $\frac{3}{4}x = 27$

A) 36 B) $\frac{111}{4}$ C) $\frac{81}{4}$ D) $\frac{105}{4}$

Answer: A

25) $\frac{9x}{10} = \frac{6}{5}$

A) $\frac{3}{10}$ B) $\frac{4}{3}$ C) $\frac{27}{25}$ D) $\frac{3}{4}$

Answer: B

Solve the equation.

26) $x - 116.221 = -528.93$

A) 4.551 B) -412.709 C) 0.22 D) -645.151

Answer: B

27) $-527.602 = 49.718 + x$

A) -10.612 B) -577.32 C) -0.094 D) -477.884

Answer: B

28) $214.812x = 851.457$

A) 3.964 B) 182,903.181 C) 0.252 D) 636.645

Answer: A

29) $\frac{x}{432.142} = 17.761$

A) 449.903 B) 0.041 C) 24.331 D) 7675.274

Answer: D

Select the equivalent equation that could be the next step in finding a solution to the equation.

30) $6x + 5 = 8$

A) $6x = 13$ B) $6x = 3$ C) $x = \frac{1}{2}$ D) $x = \frac{13}{6}$

Answer: B

31) $7x = 9$

A) $x = \frac{7}{9}$ B) $x = -\frac{9}{7}$ C) $x = \frac{9}{7}$ D) $x = -\frac{7}{9}$

Answer: C

32) $8(x - 2) = 8$

A) $8x - 2 = 8$ B) $8(x - 2) - 8 = 0$ C) $8x - 16 = 8$ D) $8(x - 2) + 8 = 0$

Answer: C

33) $7x = 3 + 6x$

A) $13x = 3$ B) $7x - 6x = 3$ C) $\frac{7x}{6x} = 3$ D) $\frac{7}{6}x = 3$

Answer: B

Solve the equation.

34) $8r + 6 = 86$

A) 10 B) 76 C) 72 D) 4

Answer: A

35) $4n - 5 = 11$

A) 4 B) 16 C) 12 D) 7

Answer: A

36) $27 = 7x - 8$

A) 11 B) 32 C) 5 D) 28

Answer: C

37) $-9 = -9x + 9$

A) 2 B) -5 C) -9 D) 8

Answer: A

38) $182 = 17x + 12$

A) 1 B) 157 C) 153 D) 10

Answer: D

39) $154 = 11x + 11x$

A) $\frac{1}{7}$ B) 132 C) 176 D) 7

Answer: D

40) $19x - 9x = -30$

A) -20 B) -40 C) -3 D) $-\frac{1}{3}$

Answer: C

41) $7y + 9 = -6 + 2y$

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

Answer: A

42) $-3w + 10 = -9 + 3w$

A) $\frac{6}{19}$ B) 0 C) $\frac{19}{6}$ D) $-\frac{6}{19}$

Answer: C

43) $-9b + 9 + 7b = -3b + 14$

A) -14 B) 14 C) 5 D) -9

Answer: C

44) $10y - 2 = 9 - 9y$

A) $-\frac{19}{11}$ B) $\frac{11}{19}$ C) $\frac{1}{7}$ D) $\frac{19}{11}$

Answer: B

45) $10m - 8 = 9 + 8m$

A) $\frac{17}{2}$ B) 18 C) $-\frac{2}{17}$ D) $\frac{2}{17}$

Answer: A

46) $-6p + 3 = -8 + 7p - 10p$

A) $-\frac{1}{15}$ B) $\frac{3}{11}$ C) $\frac{11}{3}$ D) $-\frac{3}{11}$

Answer: C

47) $3y - 6 + y = 9 + 4y - 3y$

A) 1 B) 5 C) $\frac{3}{2}$ D) 3

Answer: B

48) $\frac{f}{5} - 5 = 1$

A) 30 B) -30 C) -16 D) 16

Answer: A

49) $\frac{2x}{5} - \frac{x}{3} = 4$

A) -120 B) -60 C) 60 D) 120

Answer: C

50) $\frac{p}{3} - \frac{3p}{8} = 2$

A) 46 B) –48 C) 48 D) –46

Answer: B

51) $\frac{a}{3} - \frac{1}{3} = -6$

A) 17 B) –19 C) 19 D) –17

Answer: D

52) $-4.9q = -19.8 - 1.6q$

A) –23 B) 6 C) 4.0 D) 4.4

Answer: B

53) $-8.8q + 1.9 = -20.6 - 1.3q$

A) 3 B) 2.6 C) 2.7 D) –30

Answer: A

54) $-6.1 = y + 3.4$

A) –9.5 B) 2.7 C) 9.5 D) –2.7

Answer: A

55) $-6.5 = z - 6.4$

A) 12.9 B) –12.9 C) 0.1 D) –0.1

Answer: D

56) $\frac{21}{20}x + \frac{1}{20}x = 5x + \frac{1}{10} + \frac{19}{20}x$

A) $\frac{2}{103}$ B) $-\frac{1}{97}$ C) $-\frac{2}{97}$ D) $\frac{1}{97}$

Answer: C

57) $\frac{4}{5} + \frac{1}{6}x = 5$

A) $\frac{126}{5}$ B) $\frac{6}{5}$ C) $\frac{114}{5}$ D) $\frac{5}{6}$

Answer: A

58) $3(2z - 2) = 5(z + 3)$

A) –9 B) 12 C) 9 D) 21

Answer: D

59) $-6x + 4(-2x - 4) = -23 - 7x$

A) $\frac{39}{7}$ B) 1 C) – 1 D) $\frac{13}{7}$

Answer: B

60) $4(x - 16) = 8$

A) 8 B) 18 C) 16 D) 14

Answer: B

61) $6x - (3x - 1) = 2$

A) $-\frac{1}{3}$ B) $\frac{1}{3}$ C) $-\frac{1}{9}$ D) $\frac{1}{9}$

Answer: B

62) $4(5x - 1) = 16$

A) 1 B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{17}{20}$

Answer: A

63) $(y - 8) - (y + 7) = 9y$

A) $-\frac{5}{3}$ B) $-\frac{5}{2}$ C) $-\frac{15}{8}$ D) $-\frac{2}{9}$

Answer: A

64) $\frac{1}{3}(6x - 9) = \frac{1}{2}(6x - 4)$

A) 1 B) $\frac{1}{6}$ C) –6 D) –1

Answer: D

65) $(y - 5) - (y + 4) = 6y$

A) $-\frac{1}{4}$ B) $-\frac{1}{6}$ C) $-\frac{3}{2}$ D) $-\frac{9}{4}$

Answer: C

66) $\frac{2}{3}\left(11x - \frac{1}{6}\right) - \frac{3}{4} = \frac{1}{4}$

A) $\frac{5}{33}$ B) $\frac{9}{88}$ C) $\frac{7}{44}$ D) $\frac{1}{33}$

Answer: A

67) $0.9(5x + 15) = 2.3 - (x + 3)$

A) $-\frac{142}{55}$ B) $-\frac{62}{23}$ C) $-\frac{23}{62}$ D) $-\frac{55}{142}$

Answer: A

Solve. Label any contradictions or identities.

68) $4(x + 2) = 4x + 8$

A) 2 B) no solution; contradiction

C) all real numbers; identity D) 0

Answer: C

69) $12x - 44 = 3(4x - 12)$

A) all real numbers; identity
B) 4
C) no solution; contradiction
D) 1

Answer: C

70) $6m + 30 = 3(2m + 10)$

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

Answer: A

71) $6x + 6 = 6(x + 8) + 3$

A) 3
B) –12
C) all real numbers; identity
D) no solution; contradiction

Answer: D

72) $5(x + 2) - 2x - 5 = 5 + 3x$

A) all real numbers; identity
B) no solution; contradiction
C) 4
D) 0

Answer: A

73) $18(x - 1) = 2(9x + 5) - 28$

A) no solution; contradiction
B) all real numbers; identity
C) 0
D) 9

Answer: B

74) $-7(x - 9) + 2x = -5(x + 5) - 2$

A) 0
B) no solution; contradiction
C) –16
D) all real numbers; identity

Answer: B

Solve the problem.

75) At many colleges, the number of "full–time–equivalent" students f is given by $f = \frac{n}{15}$, where n is the total number of credits for which students enroll in a given semester. Determine the number of full–time–equivalent students on a campus in which students registered for a total of 23,625 credits.

A) 1575
B) 354,375
C) 23,610
D) 23,640

Answer: A

76) The wavelength w, in meters per cycle, of a musical note is given by $w = \frac{r}{f}$, where r is the speed of the sound in meters per second and f is the frequency in cycles per second. The speed of sound in air is 344 m/sec. What is the wavelength of a note whose frequency in air is 26 cycles per second? Round to the nearest tenth of a meter per cycle.

A) 8944.0 meters per cycle
B) 13.2 meters per cycle
C) 0.1 meters per cycle
D) 318.0 meters per cycle

Answer: B

77) The perimeter of a rectangle with length L and width W is given by the formula P = 2L + 2W. Find the perimeter of a rectangle with length 6 meters and width 8 meters.

A) 28 meters B) 20 meters C) 96 meters D) 14 meters

Answer: A

78) 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 m^3 B) 10.67 m^3 C) 33.49 m^3 D) 100.47 m^3

Answer: C

79) The area of a triangle with base b and height h is given by the formula $A = \frac{1}{2}bh$. Find the area of a triangle with base 2 meters and height 17 meters.

A) 34 m^2 B) 19 m^2 C) 19.5 m^2 D) 17 m^2

Answer: D

80) The area of a circle with radius r is given by the formula $A = \pi r^2$. Find the area of a circle with radius 9 centimeters. Use 3.14 for π.

A) 254.34 cm^2 B) 28.26 cm^2 C) 88.74 cm^2 D) 12.14 cm^2

Answer: A

81) When a ball is thrown upward at a speed of 20 m/s, its height s above the ground (in meters) after t seconds is given by the formula $s = 20t - 4.9t^2$. Find the height of the ball after 3 seconds.

A) 15.9 meters B) 45.3 meters C) 55.1 meters D) 30.6 meters

Answer: A

Solve the formula for the indicated letter.

82) $A = \frac{1}{2}bh$, for h

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

Answer: A

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

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

Answer: C

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

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

Answer: C

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

A) $s = r(a + b)$ B) $s = a + b - r$ C) $s = \frac{a + b}{r}$ D) $s = \frac{a}{r} + b$

Answer: B

86) $x = \frac{w + y + z}{6}$ for y

A) $y = 6x - 6w - 6z$ B) $y = x - w - z - 6$ C) $y = 6x - w - z$ D) $y = 6x + w + z$

Answer: C

87) $P = s_1 + s_2 + s_3$ for s_3

A) $s_3 = P - s_1 - s_2$ B) $s_3 = s_1 + P - s_2$ C) $s_3 = P + s_1 + s_2$ D) $s_3 = s_1 + s_2 - P$

Answer: A

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

A) $b_1 = \frac{hb_2 - 2A}{h}$ B) $b_1 = \frac{2A - hb_2}{h}$ C) $b_1 = \frac{A - hb_2}{2h}$ D) $b_1 = \frac{2Ab_2 - h}{h}$

Answer: B

89) $d = rt$ for r

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

Answer: D

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

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

Answer: D

91) $A = P(1 + nr)$ for r

A) $r = \frac{Pn}{A - P}$ B) $r = \frac{A - P}{Pn}$ C) $r = \frac{A}{n}$ D) $r = \frac{P - A}{Pn}$

Answer: B

92) $\frac{1}{a} + \frac{1}{b} = c$ for b

A) $b = \frac{1}{c} - a$ B) $b = \frac{a}{ac - 1}$ C) $b = \frac{1}{ac}$ D) $b = ac - \frac{1}{a}$

Answer: B

93) $\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$ for c

A) $c = a + b$ B) $c = \frac{a + b}{ab}$ C) $c = \frac{ab}{a + b}$ D) $c = ab(a + b)$

Answer: C

94) $I = Prt$ for r (simple interest)

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

Answer: B

95) $S = 4\pi r^2$, for r^2
(surface area of a sphere with radius r)

A) $r^2 = S - 4\pi$ B) $r^2 = \frac{S}{8\pi}$ C) $r^2 = \frac{S}{4\pi}$ D) $r^2 = \frac{S}{\pi} - 4$

Answer: C

Choose the most appropriate translation of the question.

96) What percent of 59 is 22?

A) $n = (0.22)59$ B) $n = (0.59)22$ C) $n \cdot 59 = 22$ D) $n \cdot 22 = 59$

Answer: C

97) 99 is 46% of what number?

A) $p = 0.46 \cdot 99$ B) $p = 0.99p$ C) $99 = 0.46p$ D) $p \cdot 99 = 46$

Answer: C

98) 48 is what percent of 69?

A) $q = 48 \cdot 0.69$ B) $q \cdot 69 = 48$ C) $q = 69 \cdot 0.48$ D) $q \cdot 48 = 69$

Answer: B

99) What is 41% of 54?

A) $t = 0.41 \cdot 54$ B) $t = 41 \cdot 54$ C) $0.41t = 54$ D) $t = 0.54 \cdot 41$

Answer: A

100) 57% of what number is 36?

A) $36 = 0.57y$ B) $0.36 = 57y$ C) $57 = 0.36y$ D) $0.57 = 36y$

Answer: A

Convert the percent notation in the sentence to decimal notation.

101) The amount of argon in the atmosphere of Mars is 1.6%.
Source: http://www.nineplanets.org/mars.html

A) 0.0016 B) 0.16 C) 1.6 D) 0.016

Answer: D

102) Jupiter emits 67% more heat than it absorbs from the Sun.
Source: http://www.infoplease.com/ipa/A0004456.html

A) 0.67 B) 67 C) 0.067 D) 6.7

Answer: A

103) The unemployment rate was 5.5% for the month.

A) 0.055 B) 0.0055 C) 0.55 D) 5.5

Answer: A

104) People who work at home at least once per week, accounted for 15 percent of total employment.
Source: Bureau of Labor Statistics http://www.bls.gov/news.release/homey.nr0.htm

A) 15 B) 1.5 C) 0.015 D) 0.15

Answer: D

105) Dietary Guidelines of the U.S Department of Agriculture recommend that Americans limit fat intake to no more than 35% of calories.
Source: http://www.health.gov/dietaryguidelines/dga2005/recommendations.htm

A) 3.0 B) 0.30 C) 0.03 D) 30.0

Answer: B

Convert to decimal notation.

106) 54%

A) 0.54 B) 0.054 C) 5.4 D) 0.43

Answer: A

107) 40%

A) 4 B) 0.04 C) 0.29 D) 0.4

Answer: D

108) 35.2%

A) 0.242 B) 0.352 C) 0.0352 D) 3.52

Answer: B

109) 100%

A) 1 B) 1.01 C) 10 D) 0.1

Answer: A

110) 300%

A) 30 B) 3.01 C) 0.3 D) 3.0

Answer: D

111) 224%

A) 2.25 B) 2.24 C) 0.224 D) 22.4

Answer: B

112) 0.2%

A) 0.2 B) 0.02 C) 0.003 D) 0.002

Answer: D

113) 7.53%

A) 0.753 B) 0.0753 C) 0.00753 D) 0.0653

Answer: B

114) 0.34%

A) 0.034 B) 0.0034 C) 0.34 D) 0.0044

Answer: B

Convert the decimal notation in the sentence to percent notation.

115) The amount of selenium in an egg is 0.20 of the Daily Value.
Source: http://ods.od.nih.gov/factsheets/selenium.asp
A) 0.20% B) 2.0% C) 20% D) 200%
Answer: C

116) The average amount of water in wheat flour is 0.119 of the weight.
Source: http://www.usaid.gov/our_work/humanitarian_assistance/ffp/crg/downloads/fswheatflour.pdf
A) 1.19% B) 11.9% C) 119% D) 0.119%
Answer: B

117) About 0.77 of all cancers are diagnosed in people 55 or older.
Source: http://www.cancer.org/docroot/CRI/content/CRI_2_2_1x_Who_gets_cancer_.asp?sitearea=
A) 7.7% B) 77% C) 0.77% D) 770%
Answer: B

118) At least one episode of otitis media by the third birthday is experienced by 0.75 of all children.
Source: http://www.nidcd.nih.gov/health/hearing/otitism.asp
A) 0.75% B) 7.5% C) 0.075% D) 75%
Answer: D

119) Property is assessed at 0.15 of market value.
A) 0.15% B) 15% C) 1.5% D) 150%
Answer: B

Convert to percent notation.

120) 0.53
A) 5.3% B) 53% C) 0.053% D) 530%
Answer: B

121) 0.1
A) 0.01% B) 100% C) 10% D) 0.1%
Answer: C

122) 0.576
A) 576% B) 0.576% C) 0.0576% D) 57.6%
Answer: D

123) 0.057
A) 5.7% B) 57% C) 0.0057% D) 0.057%
Answer: A

124) 1.5
A) 0.15% B) 0.0015% C) 150% D) 15%
Answer: C

125) 0.0032
A) 0.032% B) 0.32% C) 0.16% D) 0.00032%
Answer: B

126) 7

A) 350% B) 0.7% C) 0.07% D) 700%

Answer: D

127) 87.415

A) 8741.5% B) 87.415% C) 0.87415% D) 8.7415%

Answer: A

128) 5.704

A) 5.704% B) 0.05704% C) 570.4% D) 0.5704%

Answer: C

129) $\frac{35}{100}$

A) 350% B) 3.5% C) 35% D) 0.35%

Answer: C

130) $\frac{3}{10}$

A) 30% B) 3% C) 300% D) 0.3%

Answer: A

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

A) 0.25% B) 250% C) 25% D) 2.5%

Answer: C

132) $\frac{1}{20}$

A) 50% B) 0.05% C) 0.5% D) 5%

Answer: D

133) $\frac{2}{50}$

A) 0.4% B) 4% C) 0.04% D) 40%

Answer: B

Solve.

134) What is 10% of 600

A) 600 B) 0.6 C) 6 D) 60

Answer: D

135) What is 5% of 400

A) 0.2 B) 20 C) 2 D) 200

Answer: B

136) What is 33% of 1467

A) 48.41 B) 484.11 C) 48,411 D) 4841.1

Answer: B

137) What is 82% of 459
A) 37.64 B) 376.38 C) 37,638 D) 3763.8
Answer: B

138) What number is 8.4% of 29
A) 244 B) 0.24 C) 24.4 D) 2.44
Answer: D

139) What number is 6000% of 225
A) 13,500 B) 1350 C) 1,350,000 D) 135,000
Answer: A

140) What number is 190% of 324
A) 615.6 B) 61.56 C) 6156 D) 61,560
Answer: A

141) 50 is 90% of what number?
A) 45 B) 555.6 C) 55.56 D) 5.56
Answer: C

142) 22 is 7% of what number?
A) 3142.9 B) 314.29 C) 154 D) 31.43
Answer: B

143) 49% of what number is 74?
A) 0.66 B) 151.02 C) 66 D) 1510.2
Answer: B

144) 40% of what number is 68?
A) 170 B) 27.2 C) 17 D) 1700
Answer: A

145) 128 is 35% of what number?
A) 0.27 B) 365.71 C) 27 D) 3657.1
Answer: B

146) 43 is 0.75% of what number?
A) 57,333.3 B) 5733.33 C) 174 D) 1.74
Answer: B

147) 564 is 13.3% of what number?
A) 42,406 B) 0.18 C) 4240.6 D) 18
Answer: C

148) 53 is 128% of what number?
A) 41.41 B) 16,384 C) 163.84 D) 414.1
Answer: A

149) 983 is what percent of 1844?
A) 0.1% B) 187.6% C) 0.5% D) 53.3%
Answer: D

150) 964 is what percent of 707?
A) 136.4% B) 73.3% C) 0.1% D) 1.4%
Answer: A

151) 3.2 is what percent of 21.4?
A) 6.7% B) 0.1% C) 15.0% D) 668.8%
Answer: C

152) What percent of 2651 is 16?
A) 6.0% B) 16.0% C) 16,568.8% D) 0.6%
Answer: D

153) What percent of 9 is 0.04?
A) 225.0% B) 4.4% C) 0.4% D) 44.4%
Answer: C

154) What percent of 178 is 10.7?
A) 0.1% B) 6.0% C) 1663.6% D) 0.2%
Answer: B

155) What percent of 51 is 554?
A) 0.1% B) 1086.3% C) 0.9% D) 108.6%
Answer: B

156) 51.6 is what percent of 6?
A) 860.0% B) 1.2% C) 8600.0% D) 11.6%
Answer: A

157) What percent of 21 is 21?
A) 1% B) 0% C) 200% D) 100%
Answer: D

158) What percent of 82 is 41?
A) 50% B) 0% C) 200% D) 2%
Answer: A

159) The parking lot at a grocery store has 68 cars in it. 25% of the cars are blue. How many cars are blue?
A) 170 cars B) 27 cars C) 17 cars D) 272 cars
Answer: C

160) During one year, the Larson's real estate bill included $419 for local schools. Of this amount, $85 went to the high school district. What percent did the Larsons pay to the high school district? (Round answer to two decimal places.)
A) 20.05% B) 20.29% C) 3561.50% D) 79.71%
Answer: B

161) During one year, the Green's real estate bill included $348 for city services. The fire department received 30% of that amount. How much money went to the fire department?
A) $24.36 B) $84.40 C) $70.00 D) $104.40
Answer: D

162) During one year, the Cheung's real estate bill included $252 for county services. Of this amount, $59 went to the highway department. What percent did the county highway department receive? (Round answer to two decimal places.)
A) 19.30% B) 23.02% C) 23.41% D) 76.59%
Answer: C

163) During one year, the Schmidt's real estate bill included $272 for miscellaneous services. Of this amount, 25% went to the library fund. How much money did the library receive?
A) $40.80 B) $90.81 C) $68.00 D) $48.00
Answer: C

164) To finance her community college education, Marguerite takes out a Stafford loan for $2100. After a year, Marguerite decides to pay off the interest, which is 9% of $2100. How much will she pay?
A) $1890 B) $189 C) $18.90 D) $209
Answer: B

165) A tax–exempt school group received a bill of $255.73 for educational software. The bill incorrectly included sales tax of 7%. How much should the school group pay?
A) $167.30 B) $34.14 C) $239.00 D) $16.73
Answer: C

Solve the problem.

166) If Gloria received a 9 percent raise and is now making $21,800 a year, what was her salary before the raise? Round to the nearest dollar if necessary.
A) $21,000 B) $20,000 C) $19,838 D) $19,800
Answer: B

167) Stevie bought a stereo for $255 and put it on sale at his store at a 65% markup rate. What was the retail price of the stereo? Round to the nearest cent if necessary.
A) $510.00 B) $420.75 C) $355.00 D) $320.75
Answer: B

168) On Monday, an investor bought 100 shares of stock. On Tuesday, the value of the shares went up 7%. How much did the investor pay for the 100 shares if he sold them Wednesday morning for $1391? Round to the nearest dollar if necessary.
A) $1300 B) $1294 C) $1350 D) $1341
Answer: A

169) At the end of the day, a storekeeper had $1470 in the cash register, counting both the sale of goods and the sales tax of 5%. Find the amount that is the tax. Round to the nearest dollar if necessary.
A) $61 B) $74 C) $70 D) $75
Answer: C

170) Brand X copier advertises that its copiers run 20% longer between service calls than its competitor. If Brand X copiers run 64,700 copies between service calls, how many copies would the competitor run (to the nearest copy)?
A) 53,917 copies B) 77,640 copies C) 51,760 copies D) 35,944 copies
Answer: A

171) After receiving a discount of 9.5% on its bulk order of typewriter ribbons, John's Office Supply pays $5792. What was the price of the order before the discount? Round to the nearest dollar if necessary."
A) $5531 B) $5242 C) $6342 D) $6400
Answer: D

172) After spending $2650 for tables and $2050 for chairs, a convention center manager finds that 35% of his original budget remains. Find the amount that remains. Round to the nearest dollar if necessary."
A) $3154 B) $2531 C) $7231 D) $1645
Answer: B

173) Midtown Antiques collects 6% sales tax on all sales. If total sales including tax are $1205.68, find the portion that is the tax. Round to the nearest cent if necessary.
A) $72.34 B) $58.25 C) $68.25 D) $1137.43
Answer: C

174) In a local election, 42,700 people voted. This was an increase of 12% over the last election. How many people voted in the last election? Round to the nearest whole person if necessary.
A) 48,523 people B) 47,824 people C) 37,576 people D) 38,125 people
Answer: D

175) In a local election, 25,300 people voted. This was a decrease of 9% over the last election. How many people voted in the last election? Round to the nearest whole person if necessary.
A) 23,023 people B) 23,211 people C) 27,802 people D) 27,577 people
Answer: C

Solve using the five–step problem–solving process.

176) The sum of two consecutive even integers is 62. Find the larger number.
A) 26 B) 28 C) 32 D) 40
Answer: C

177) The sum of the page numbers on the facing pages of a book is 263. Find the larger page number.
A) 130 B) 127 C) 132 D) 142
Answer: C

178) The difference between two positive integers is 60. One integer is three times as great as the other. Find the integers.
A) 30 and 90 B) 90 and 150 C) 30 and 60 D) 60 and 90
Answer: A

179) If 9 is added to a number and the sum is doubled, the result is 15 less than the number. Find the number.
A) 6 B) 3 C) –3 D) –33
Answer: D

180) The sum of twice a number and 17 less than the number is the same as the difference between –37 and the number. What is the number?

A) –10 B) –6 C) –4 D) –5

Answer: D

181) The sum of two consecutive integers is –327. Find the larger integer.

A) –165 B) –162 C) –164 D) –163

Answer: D

182) The sum of three consecutive integers is 570. Find the integers.

A) 188, 190, 192 B) 189, 190, 191 C) 190, 191, 192 D) 188, 189, 190

Answer: B

183) The sum of three consecutive even integers is 270. Find the integers.

A) 92, 94, 96 B) 83, 84, 85 C) 90, 92, 94 D) 88, 90, 92

Answer: D

184) If three times the smaller of two consecutive integers is added to four times the larger, the result is 109. Find the smaller integer.

A) 14 B) 16 C) 15 D) 45

Answer: C

185) If the first and third of three consecutive odd integers are added, the result is 87 less than five times the second integer. Find the third integer.

A) 27 B) 58 C) 31 D) 29

Answer: C

186) The second angle of a triangle is 3 times as large as the first. The third angle is 60° more than the first. Find the measure of the smallest angle.

A) 60° B) 120° C) 30° D) 24°

Answer: D

187) The second angle of a triangle is 4 times as large as the first. The third angle is 90° more than the sum of the other two angles. Find the measure of the second angle.

A) 45° B) 9° C) $2\frac{1}{4}°$ D) 36°

Answer: D

188) Two angles of a triangle are 40° and 110°. What is the measure of the third angle?

A) 150° B) 30° C) –60° D) 210°

Answer: B

189) The complement of an angle measures 32° less than the angle. Find the measure of the angle.

A) 151° B) 61° C) 148° D) 39°

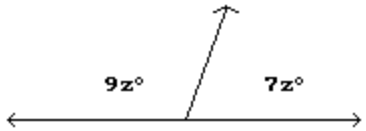
Answer: B

190) Two angles are supplementary. If one angle measures 78° less than twice the measure of its supplement, find the measure of each angle.

A) 43°, 47° B) 43°, 137° C) 86°, 94° D) 4°, 86°

Answer: C

191) Find the measures of the supplementary angles.



A) 202.5° and 157.5° B) 50.63° and 39.38° C) 101.25° and 78.75° D) 96.25° and 83.75°

Answer: C

192) Find the length of a rectangular lot with a perimeter of 138 meters if the length is 7 meters more than the width. (P = 2L + 2W)

A) 38 m B) 69 m C) 31 m D) 76 m

Answer: A

193) A square plywood platform has a perimeter which is 6 times the length of a side, decreased by 14. Find the length of a side.

A) 1 B) 2 C) 9 D) 7

Answer: D

194) A rectangular Persian carpet has a perimeter of 260 inches. The length of the carpet is 30 inches more than the width. What are the dimensions of the carpet?

A) 80 in., 110 in. B) 115 in., 145 in. C) 100 in., 130 in. D) 50 in., 80 in.

Answer: D

195) A triangular lake–front lot has a perimeter of 2100 feet. One side is 100 feet longer than the shortest side, while the third side is 500 feet longer than the shortest side. Find the lengths of all three sides.

A) 600 ft, 700 ft, 1100 ft B) 100 ft, 200 ft, 300 ft
C) 500 ft, 600 ft, 1000 ft D) 600 ft, 600 ft, 600 ft

Answer: C

196) You are traveling to your aunt's house that is 225 miles away. If you are currently twice as far from home as you are from your aunt's, how far have you traveled?

A) 112.5 miles B) 75 miles C) 150 miles D) 37.5 miles

Answer: C

197) Kevin invested money in a savings account at a rate of 5% simple interest. After one year, he has $4893.00 in the account. How much did Kevin originally invest?

A) $4888.00 B) $5150.53 C) $4660.00 D) $51.51

Answer: C

198) Eric paid $560.77, including 6% tax, for an LCD computer monitor. How much did the computer monitor itself cost?

A) $596.56 B) $33.65 C) $528.03 D) $529.03

Answer: D

199) The houses on the north side of Perry Street are consecutive odd numbers. Tom and Voula are next–door neighbors and the sum of their house numbers is 570. Find their house numbers.

A) 286, 287 B) 284, 286 C) 285, 287 D) 284, 285

Answer: B

Insert the symbol <, >, ≥, or ≤ to make the pair of inequalities equivalent.

200) $-8y \geq 16;\ y \quad -2$

A) < B) > C) ≥ D) ≤

Answer: D

201) $-9t \leq -27;\ t \quad 3$

A) > B) ≤ C) ≥ D) <

Answer: C

202) $-3p > -27;\ p \quad 9$

A) > B) ≥ C) ≤ D) <

Answer: D

203) $-6z < 24;\ z \quad -4$

A) ≤ B) ≥ C) < D) >

Answer: D

Classify the pair of inequalities as "equivalent" or "not equivalent."

204) $v \geq -7;\ -7 \leq v$

A) Not equivalent B) Equivalent

Answer: B

205) $w \leq -3;\ -3 \leq w$

A) Not equivalent B) Equivalent

Answer: A

206) $-3s - 8 < 1;\ -3s < 9$

A) Not equivalent B) Equivalent

Answer: B

207) $-8f + 7 > 6;\ -8f > 13$

A) Equivalent B) Not equivalent

Answer: B

Determine whether the given number is a solution of the inequality.

208) $x > -7, 14$

A) Yes B) No

Answer: A

209) $x > 10,\ -13.82$

A) No B) Yes

Answer: A

210) $x < 15, 14$

A) No B) Yes

Answer: B

211) $x > 4, 2.93$

A) Yes B) No

Answer: B

212) $x \geq 2$, 2.4

A) No B) Yes

Answer: B

213) $x \geq 2$, –5

A) Yes B) No

Answer: B

214) $x \leq 9$, –13

A) No B) Yes

Answer: B

215) $x \leq 4$, 6.9

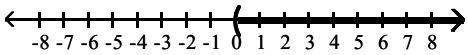
A) Yes B) No

Answer: B

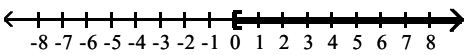
Graph on a number line.

216) $x > 0$

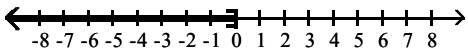
A)



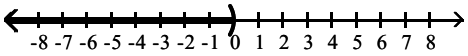
B)



C)

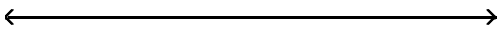


D)

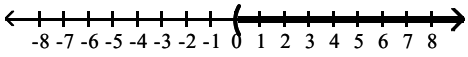


Answer: A

217) $x < 0$



A)



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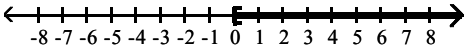
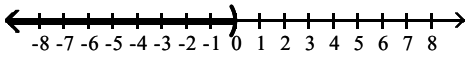
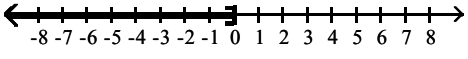


C)



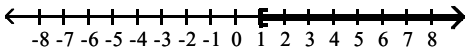
D)



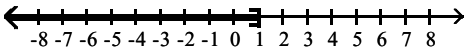
Answer: C

218) $x \geq 1$

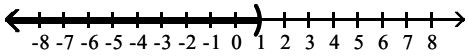
A)



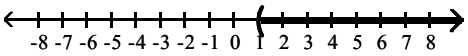
B)



C)



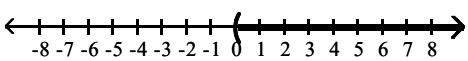
D)



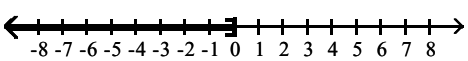
Answer: A

219) $x \leq 0$

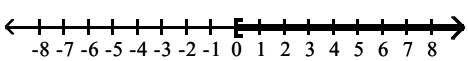
A)



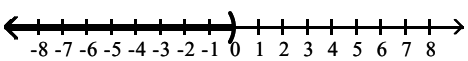
B)



C)

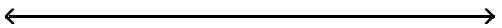


D)

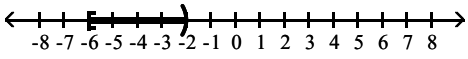


Answer: B

220) $-6 \leq x \leq -2$



A)



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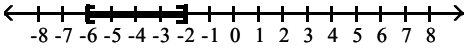
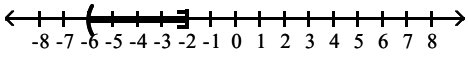


C)



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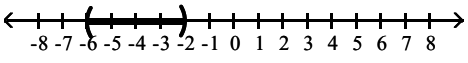
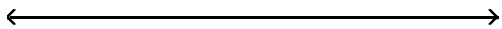
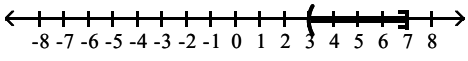


Answer: B

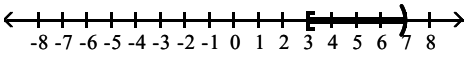
221) $3 < x < 7$



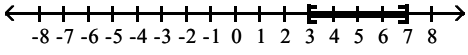
A)



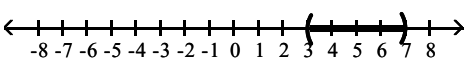
B)



C)

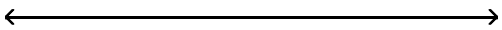


D)

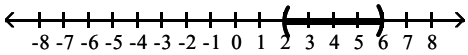


Answer: D

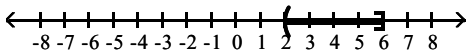
222) $2 \le x < 6$



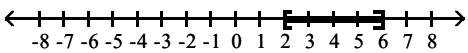
A)



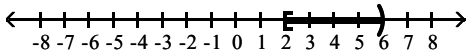
B)



C)



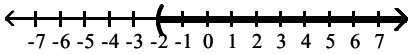
D)



Answer: D

Describe the graph using both set–builder notation and interval notation.

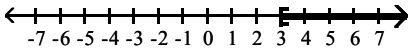
223)



A) $\{x|x < -2\}, (-\infty, -2)$ B) $\{x|x > -2\}, (-2, \infty)$ C) $\{x|x \le -2\}, (-\infty, -2]$ D) $\{x|x \ge -2\}, [-2, \infty)$

Answer: B

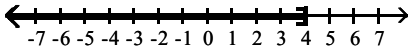
224)



A) $\{x|x \le 3\}, (-\infty, 3]$ B) $\{x|x \ge 3\}, [3, \infty)$ C) $\{x|x < 3\}, (-\infty, 3)$ D) $\{x|x > 3\}, (3, \infty)$

Answer: B

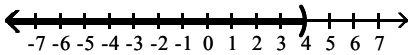
225)



A) $\{x|x \ge 4\}, [4, \infty)$ B) $\{x|x > 4\}, (4, \infty)$ C) $\{x|x \le 4\}, (-\infty, 4]$ D) $\{x|x < 4\}, (-\infty, 4)$

Answer: C

226)



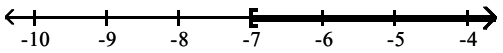
A) $\{x|x \le 4\}, (-\infty, 4]$ B) $\{x|x < 4\}, (-\infty, 4)$ C) $\{x|x > 4\}, (4, \infty)$ D) $\{x|x \ge 4\}, [4, \infty)$

Answer: B

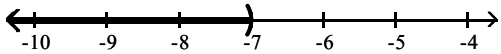
Solve using the addition principle. Graph and write both set–builder notation and interval notation for the answer.

227) $a + 8 < 1$

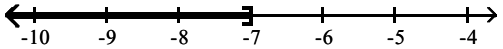
A) $\{a \mid a \geq -7\}, [-7, \infty)$



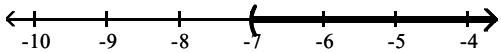
B) $\{a \mid a < -7\}, (-\infty, -7)$



C) $\{a \mid a \leq -7\}, (-\infty, -7]$

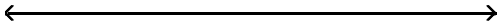


D) $\{a \mid a > -7\}, (-7, \infty)$

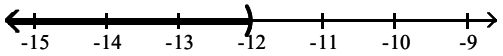


Answer: B

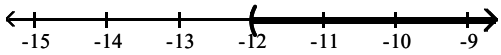
228) $9n + 10 > 8n - 2$



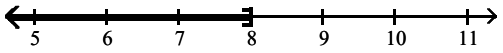
A) $\{n \mid n < -12\}, (-\infty, -12)$



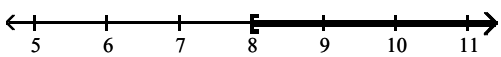
B) $\{n \mid n > -12\}, (-12, \infty)$



C) $\{n \mid n \leq 8\}, (-\infty, 8]$

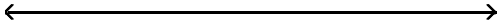


D) $\{n \mid n \geq 8\}, [8, \infty)$

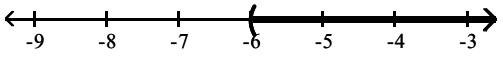


Answer: B

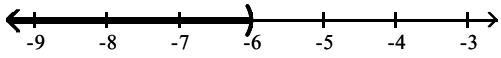
229) $-6t - 11 \geq -7t - 15$



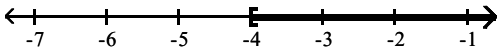
A) $\{t \mid t > -6\}, (-6, \infty)$



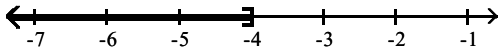
B) $\{t \mid t < -6\}, (-\infty, -6)$



C) $\{t \mid t \geq -4\}, [-4, \infty)$

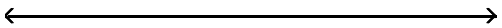


D) $\{t \mid t \leq -4\}\ (-\infty, -4]$

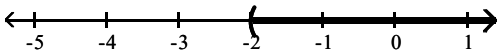


Answer: C

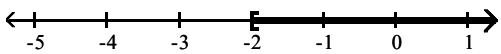
230) $f - 12 < -14$



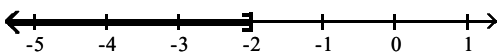
A) $\{f \mid f > -2\}, (-2, \infty)$



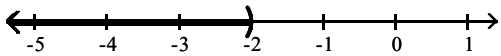
B) $\{f \mid f \geq -2\}, [-2, \infty)$



C) $\{f \mid f \leq -2\}, (-\infty, -2]$



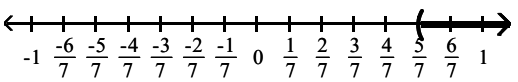
D) $\{f \mid f < -2\}, (-\infty, -2)$



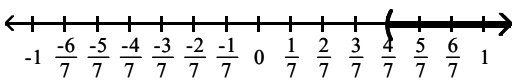
Answer: D

231) $x + \frac{4}{21} > \frac{16}{21}$

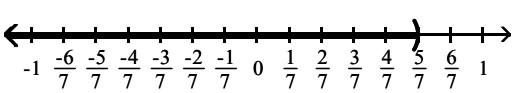
A) $\left\{x \mid x > \frac{5}{7}\right\}, \left(\frac{5}{7}, \infty\right)$



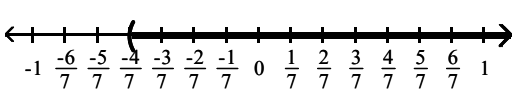
B) $\left\{x \mid x > \frac{4}{7}\right\}, \left(\frac{4}{7}, \infty\right)$



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

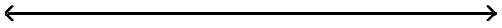


D) $\left\{x \mid x > -\frac{4}{7}\right\}, \left(-\frac{4}{7}, \infty\right)$

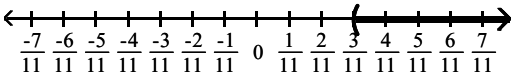


Answer: B

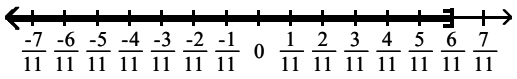
232) $x + \frac{2}{11} \geq \frac{8}{11}$



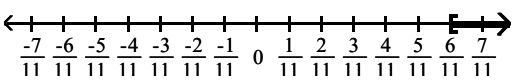
A) $\left\{x \mid x > \frac{3}{11}\right\}, \left(\frac{3}{11}, \infty\right)$



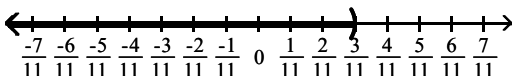
B) $\left\{x \mid x \leq \frac{6}{11}\right\}, \left(-\infty, \frac{6}{11}\right]$



C) $\left\{x \mid x \geq \frac{6}{11}\right\}, \left[\frac{6}{11}, \infty\right)$



D) $\left\{x \mid x < \frac{3}{11}\right\}, \left(-\infty, \frac{3}{11}\right)$

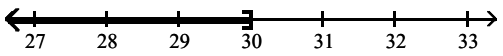


Answer: C

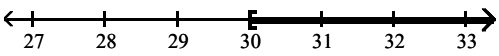
Solve using the multiplication principle. Graph and write both set–builder notation and interval notation for the answer.

233) $\frac{x}{6} \geq 5$

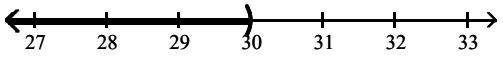
A) $\{x \mid x \leq 30\}, (-\infty, 30]$



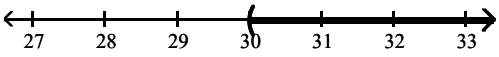
B) $\{x \mid x \geq 30\}, [30, \infty)$



C) $\{x \mid x < 30\}, (-\infty, 30)$

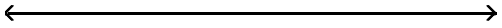


D) $\{x \mid x > 30\}, (30, \infty)$

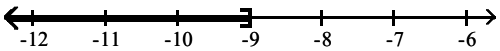


Answer: B

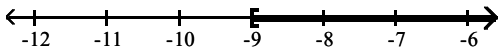
234) $-3 < \frac{k}{3}$



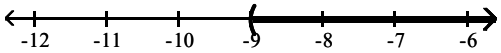
A) {k| k ≤ −9}, (-∞, −9]



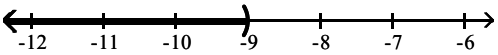
B) {k| k ≥ −9}, [−9, ∞)



C) {k| k > −9}, (−9, ∞)



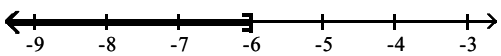
D) {k| k < −9}, (-∞, −9)



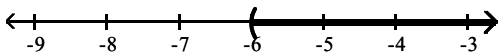
Answer: C

235) $-3 \geq \frac{b}{2}$

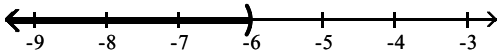
A) {b| b ≤ −6}, (-∞, −6]



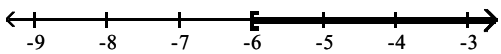
B) {b| b > −6}, (−6, ∞)



C) {b| b < −6}, (-∞, −6)



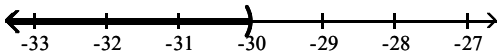
D) {b| b ≥ −6}, [−6, ∞)



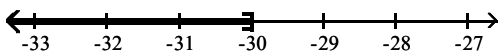
Answer: A

236) $10 > -\frac{k}{3}$

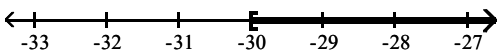
A) {k| k < −30}, (-∞, −30)



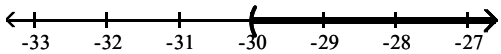
B) {k| k ≤ −30}, (-∞, −30]



C) {k| k ≥ −30}, [−30, ∞)



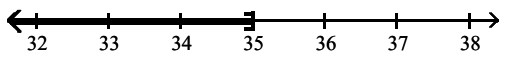
D) {k| k > −30}, (−30, ∞)



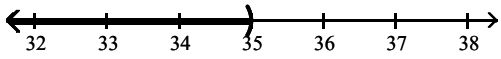
Answer: D

237) $\frac{x}{7} > 5$

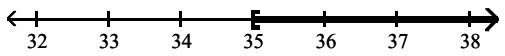
A) {x| x ≤ 35}, (-∞, 35]



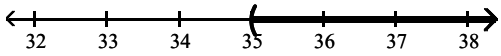
B) {x| x < 35}, (-∞, 35)



C) {x| x ≥ 35}, [35, ∞)



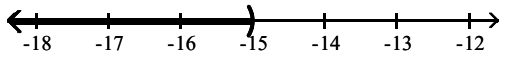
D) {x| x > 35}, (35, ∞)



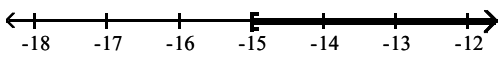
Answer: D

238) $-\frac{a}{5} < 3$

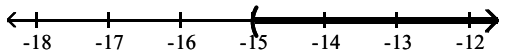
A) {a| a < –15}, (-∞, –15)



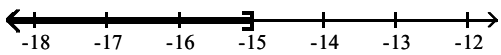
B) {a| a ≥ –15}, [–15, ∞)



C) {a| a > –15}, (–15, ∞)



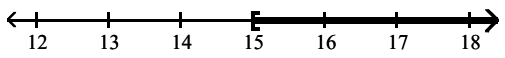
D) {a| a ≤ –15}, (-∞, –15]



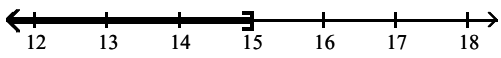
Answer: C

239) $-5 > -\frac{k}{3}$

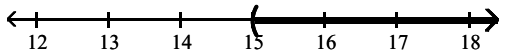
A) {k| k ≥ 15}, [15, ∞)



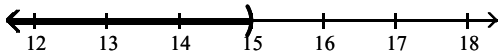
B) {k| k ≤ 15}, (-∞, 15]



C) {k| k > 15}, (15, ∞)



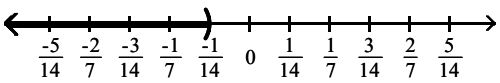
D) {k| k < 15}, (-∞, 15)



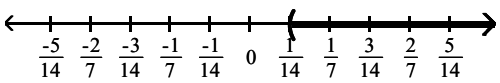
Answer: C

240) $-2x < -\frac{1}{7}$

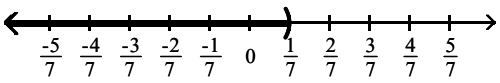
A) $\left\{x \mid x < -\frac{1}{14}\right\}, \left(-\infty, -\frac{1}{14}\right)$



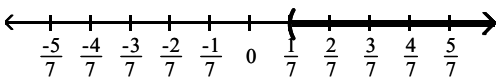
B) $\left\{x \mid x > \frac{1}{14}\right\}, \left(\frac{1}{14}, \infty\right)$



C) $\left\{x \mid x < \frac{1}{7}\right\}, \left(-\infty, \frac{1}{7}\right)$



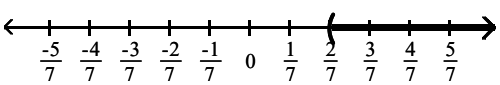
D) $\left\{x \mid x > \frac{1}{7}\right\}, \left(\frac{1}{7}, \infty\right)$



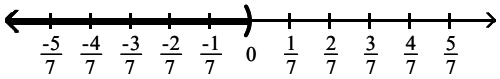
Answer: B

241) $-\frac{4}{7} > -2x$

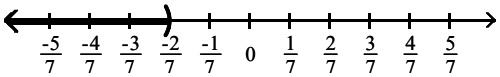
A) $\left\{x \mid x > \frac{2}{7}\right\}, \left(\frac{2}{7}, \infty\right)$



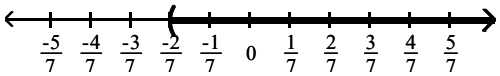
B) $\{x \mid x < 0\}, (-\infty, 0)$



C) $\left\{x \mid x < -\frac{2}{7}\right\}, \left(-\infty, -\frac{2}{7}\right)$



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



Answer: A

Solve.

242) $-8a + 4 > -9a - 5$

A) $\{a \mid a < -9\}$, or $(-\infty, -9)$
B) $\{a \mid a > -9\}$, or $(-9, \infty)$
C) $\{a \mid a < -1\}$, or $(-\infty, -1)$
D) $\{a \mid a > -1\}$, or $(-1, \infty)$

Answer: B

243) $11y + 4 \leq 10y + 13$

A) $\{y \mid y > 11\}$, or $(11, \infty)$
B) $\{y \mid y \geq 9\}$, or $[9, \infty)$
C) $\{y \mid y < 11\}$, or $(-\infty, 11)$
D) $\{y \mid y \leq 9\}$, or $(-\infty, 9]$

Answer: D

244) $-6z - 8 \geq -7z - 10$

A) $\{z \mid z \geq -2\}$, or $[-2, \infty)$
B) $\{z \mid z \leq -2\}$, or $(-\infty, -2]$
C) $\{z \mid z < -6\}$, or $(-\infty, -6)$
D) $\{z \mid z > -6\}$, or $(-6, \infty)$

Answer: A

245) $7x + 3 \geq 8x - 2$

A) $\{x \mid x \geq -5\}$, or $[-5, \infty)$
B) $\{x \mid x \leq 5\}$, or $(-\infty, 5]$
C) $\{x \mid x \leq 7\}$, or $(-\infty, 7]$
D) $\{x \mid x > 7\}$, or $(7, \infty)$

Answer: B

246) $-3 - 3y + 4 \geq -4y - 10$

A) $\{y \mid y \geq -11\}$, or $[-11, \infty)$
B) $\{y \mid y > -3\}$, or $(-3, \infty)$
C) $\{y \mid y < -3\}$, or $(-\infty, -3)$
D) $\{y \mid y \leq -11\}$, or $(-\infty, -11]$

Answer: A

247) $0.6x + 10 + x > 2x + 15 - 0.5x$

A) $\{x \mid x < -5\}$, or $(-\infty, -5)$
B) $\{x \mid x \geq -5\}$, or $[-5, \infty)$
C) $\{x \mid x > 50\}$, or $(50, \infty)$
D) $\{x \mid x < 50\}$, or $(-\infty, 50)$

Answer: C

248) $\frac{x}{2} + 16 \leq 10$

A) $\{x \mid x \leq 8\}$, or $(-\infty, 8]$
B) $\{x \mid x \leq -12\}$, or $(-\infty, -12]$
C) $\{x \mid x \geq -12\}$, or $[-12, \infty)$
D) $\{x \mid x < -10\}$, or $(-\infty, -10)$

Answer: B

249) $2 + 2x < 44$

A) $\{x \mid x < 21\}$, or $(-\infty, 21)$
B) $\{x \mid x > 23\}$, or $(23, \infty)$
C) $\{x \mid x > 21\}$, or $(21, \infty)$
D) $\{x \mid x < 23\}$, or $(-\infty, 23)$

Answer: A

250) $7 + 7y \geq 77$

A) $\{y \mid y \leq 12\}$, or $(-\infty, 12]$
B) $\{y \mid y \leq 10\}$, or $(-\infty, 10]$
C) $\{y \mid y \geq 12\}$, or $[12, \infty)$
D) $\{y \mid y \geq 10\}$, or $[10, \infty)$

Answer: D

251) $-9 < 9t + 3 - 8t$

A) $\{t \mid t < 6\}$, or $(-\infty, 6)$
B) $\{t \mid t < -6\}$, or $(-\infty, -6)$
C) $\{t \mid t > 12\}$, or $(12, \infty)$
D) $\{t \mid t > -12\}$, or $(-12, \infty)$

Answer: D

252) $9x + 12 > 3(2x + 1)$

A) $\{x \mid x < -3\}$, or $(-\infty, -3)$
B) $\{x \mid x \geq -3\}$, or $[-3, \infty)$
C) $\{x \mid x > -3\}$, or $(-3, \infty)$
D) $\{x \mid x \leq -3\}$, or $(-\infty, -3]$

Answer: C

253) $-4(6y + 2) < -28y - 16$

A) $\{y \mid y > -2\}$, or $(-2, \infty)$
B) $\{y \mid y \geq -2\}$, or $[-2, \infty)$
C) $\{y \mid y < -2\}$, or $(-\infty, -2)$
D) $\{y \mid y \leq -2\}$, or $(-\infty, -2]$

Answer: C

254) $-18r - 24 \leq -3(5r + 10)$

A) $\{r \mid r \leq 2\}$, or $(-\infty, 2]$
B) $\{r \mid r > 2\}$, or $(2, \infty)$
C) $\{r \mid r \geq 2\}$, or $[2, \infty)$
D) $\{r \mid r < 2\}$, or $(-\infty, 2)$

Answer: C

255) $12n + 21 \le 3(3n - 1)$

A) $\{n \mid n \ge -8\}$, or $[-8, \infty)$
B) $\{n \mid n \le -8\}$, or $(-\infty, -8]$
C) $\{n \mid n < -8\}$, or $(-\infty, -8)$
D) $\{n \mid n > -8\}$, or $(-8, \infty)$

Answer: B

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

A) $\{x \mid x \le 2\}$, or $(-\infty, 2]$
B) $\{x \mid x < 2\}$, or $(-\infty, 2)$
C) $\{x \mid x \ge -2\}$, or $[-2, \infty)$
D) $\{x \mid x < -2\}$, or $(-\infty, -2)$

Answer: B

257) $\frac{5}{6}\left(5x - \frac{2}{15}\right) - \frac{2}{5} < \frac{3}{5}$

A) $\left\{x \mid x \le \frac{4}{15}\right\}$, or $\left(-\infty, \frac{4}{15}\right]$
B) $\left\{x \mid x \ge -\frac{4}{15}\right\}$, or $\left[-\frac{4}{15}, \infty\right)$
C) $\left\{x \mid x < \frac{4}{15}\right\}$, or $\left(-\infty, \frac{4}{15}\right)$
D) $\left\{x \mid x < -\frac{4}{15}\right\}$, or $\left(-\infty, -\frac{4}{15}\right)$

Answer: C

Choose the inequality which describes the sentence.

258) x is more than y

A) $x \ge y$
B) $x > y$
C) $y > x$
D) $x \le y$

Answer: B

259) x is at most y

A) $x > y$
B) $x \le y$
C) $x < y$
D) $y \le x$

Answer: B

260) y is no more than x

A) $y \le x$
B) $y < x$
C) $x < y$
D) $x \le y$

Answer: A

261) y exceeds x

A) $x \le y$
B) $x > y$
C) $y \le x$
D) $y > x$

Answer: D

Translate the sentence to an algebraic inequality.

262) A number is greater than 4.

A) $x < 4$
B) $x \ge 4$
C) $x > 4$
D) $x \le 4$

Answer: C

263) A number is less than or equal to 8.

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

Answer: C

264) John weighs at least 123 pounds.

A) $x > 123$
B) $x < 123$
C) $x \ge 123$
D) $x \le 123$

Answer: C

265) The score on a test was between 79 and 62.
A) $62 < x < 79$ B) $x < 79$ C) $79 < x < 62$ D) $x > 62$
Answer: A

266) The cost is no more than $479.40.
A) $x < 479.40$ B) $x \leq 479.40$ C) $x \geq 479.40$ D) $x > 479.40$
Answer: B

267) The number of people at a concert is not to exceed 1555.
A) $x \geq 1555$ B) $x \leq 1555$ C) $x < 1555$ D) $x > 1555$
Answer: B

268) The height of a member of the basketball team is at least 78 inches.
A) $x > 78$ B) $x < 78$ C) $x \geq 78$ D) $x \leq 78$
Answer: C

Use an inequality and the five–step process to solve the problem.

269) One side of a rectangle is 14 inches and the other side is x inches. What values of x will make the perimeter at least 58?
A) $0 < x \leq 15$ B) $x \geq 15$ C) $x \leq 15$ D) $x < 15$
Answer: B

270) One side of a rectangle is 8 inches and the other side is x inches. What values of x will make the perimeter at most 24?
A) $x \geq 4$ B) $0 < x \leq 4$ C) $x \leq 4$ D) $x < 4$
Answer: B

271) One side of a rectangle is 3 times the other, and the perimeter is not to exceed 64. Find the possible values for x, the length of the shorter side.
A) $0 < x \leq 8$ B) $0 < x \leq 24$ C) $x \leq 8$ D) $x \geq 24$
Answer: A

272) One side of a triangle is 3 cm shorter than the base, x. The other side is 5 cm longer than the base. What lengths of the base will allow the perimeter of the triangle to be at least 38 cm?
A) $x \geq 12$ B) $x > 9$ C) $x \leq 17$ D) $0 < x \leq 12$
Answer: A

273) One side of a rectangle is 9 inches and the other side is x inches. Find the value of x if the area must be at least 144 square inches.
A) $x \geq 16$ B) $x \leq 16$ C) $x = 16$ D) $0 < x \leq 16$
Answer: A

274) The area of a triangle must be at most 52.5 square inches, the base is 15 inches, and the height is x inches. Find the possible values for x.
A) $0 < x \leq 3.5$ B) $0 < x \leq 14$ C) $x < 7$ D) $0 < x \leq 7$
Answer: D

275) The color guard is making new triangular flags that must have a base of 18 inches to fit on their flagpoles. What is the maximum length of the triangular flags, if they want to use a maximum of 198 $in.^2$ of cloth?

A) 22 in. B) 44 in. C) 24 in. D) 11 in.

Answer: A

276) A shopkeeper is making a triangular sign for his store front, but he must keep the sign under 20 ft^2 to adhere to zoning laws. If the base of the sign is 20 ft, what is the maximum height of the triangular sign?

A) 0.500 ft B) 20 ft C) 1.00 ft D) 2.0 ft

Answer: D

277) In order for a chemical reaction to take place, the Fahrenheit temperature of the reagents must be at least 163.93°F. Find the Celsius temperatures at which the reaction may occur. ($F = \frac{9}{5}C + 32$)

A) $C \geq 327.07°$ B) $C < 327.07°$ C) $C \leq 73.29°$ D) $C \geq 73.29°$

Answer: D

278) In order for a chemical reaction to remain stable, its Celsius temperature must be no more than 141.85°C. Find the Fahrenheit temperatures at which the reaction will remain stable. ($F = \frac{9}{5}C + 32$)

A) $F \leq 287.33°$ B) $F \geq 287.33°$ C) $F \leq 61.03°$ D) $F \geq 61.03°$

Answer: A

279) The equation $y = 0.005x - 0.40$ can be used to determine the approximate profit, y in dollars, of producing x items. How many items must be produced so the profit will be at least $4113?

A) $0 < x \leq 822{,}679$ B) $x \geq 822{,}680$ C) $x \leq 822{,}680$ D) $x \geq 822{,}520$

Answer: B

280) If the formula $R = -0.037t + 50.1$ can be used to predict the world record in the 400–meter dash t years after 1925, for what years will the world records be 47.5 seconds or less?

A) 1995 or after B) 1971 or after C) 1997 or after D) 1996 or after

Answer: D

281) If the formula $P = 0.5643Y - 1092.57$ can be used to predict the average price of a theater ticket after 1945, for what years will the average theater ticket price be at least 46 dollars? (Y is the actual year.)

A) 2018 or after B) 2016 or after C) 2028 or after D) 2020 or after

Answer: A

282) A salesperson has two job offers. Company A offers a weekly salary of $210 plus commission of 6% of sales. Company B offers a weekly salary of $420 plus commission of 3% of sales. What is the amount of sales above which Company A's offer is the better of the two?

A) $7100 B) $7000 C) $3500 D) $14,000

Answer: B

283) Company A rents copiers for a monthly charge of $240 plus 12 cents per copy. Company B rents copiers for a monthly charge of $480 plus 6 cents per copy. What is the number of copies above which Company A's charges are the higher of the two?

A) 8000 copies B) 4100 copies C) 2000 copies D) 4000 copies

Answer: D

284) A car rental company has two rental rates. Rate 1 is $49 per day plus $.14 per mile. Rate 2 is $98 per day plus $.07 per mile. If you plan to rent for one week, how many miles would you need to drive to pay less by taking Rate 2?

A) more than 68,600 miles
B) more than 4900 miles
C) more than 35,000 miles
D) more than 17,150 miles

Answer: B

285) Jim has gotten scores of 100 and 95 on his first two tests. What score must he get on his third test to keep an average of 85 or greater?

A) At least 93.3
B) At least 59
C) At least 60
D) At least 97.5

Answer: C

286) A bag of marbles has twice as many blue marbles as green marbles, and the bag has at least 54 marbles in it. At least how many green marbles does it have?

A) At least 18 green marbles
B) At least 19 green marbles
C) At least 27 green marbles
D) At least 36 green marbles

Answer: A

287) Jon has 679 points in his math class. He must have 65% of the 1200 points possible by the end of the term to receive credit for the class. What is the minimum number of additional points he must earn by the end of the term to receive credit for the class?

A) 521 points
B) 441 points
C) 780 points
D) 101 points

Answer: D

288) DG's Plumbing and Heating charges $50 plus $70 per hour for emergency service. Bill remembers being billed just over $300 for an emergency call. How long to the nearest hour was the plumber at Bill's house?

A) 15 hours
B) 5 hours
C) 13 hours
D) 4 hours

Answer: D

289) A 12–pound puppy is gaining weight at a rate of $\frac{2}{3}$ lb per week. How much more time will it take for the puppy's weight to exceed $25\frac{2}{3}$ lb?

A) more than $20\frac{1}{2}$ weeks
B) more than $21\frac{1}{2}$ weeks
C) more than $175\frac{3}{4}$ weeks
D) more than $56\frac{1}{2}$ weeks

Answer: A

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

Provide an appropriate response.

290) True or false: The solution of the equation $7y - 6 = 7y + 3$ is zero.

Answer: False. It has no solution.

291) The solution for the equation $7(6s - 4) = 42s - 28$ is given as 0. Is this correct? Explain.

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

292) Write the steps you would use to solve this equation: $7(x - 1) + 4x = -4x$.

Answer: Answers will vary.

293) What value of K makes this equation equivalent to x = 3?
$4x - 4 = K$

Answer: 8

294) What value of K makes this equation equivalent to x = 3?
$\frac{9}{K + x} = 3$

Answer: 0

295) What value of K makes this equation equivalent to x = 2?
$4x + 15x - 6 = K + 6$

Answer: 26

296) Find all values of s that make this statement true: $8(4s - 7) = 32s - 56$.

Answer: s can be any value, including 0.

297) Find all values of x that make this statement true: $(x - 3) - 7 = (x - 7) - 3$.

Answer: x can be any value, including 0.

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

298) The following statement would be considered a step in solving an applied problem. True or false?
Solve the equation.

A) True B) False

Answer: A

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

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

Answer: $-x$

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

Answer: $-x$

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

Answer: rs

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

Answer: $90 - r$

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

Answer: $x - 2, x - 1, x$

304) Two angles, q and r, are complementary. The angle s is supplementary to q. Write an equation showing the relationship between r and s.

Answer: $s - 90 = r$ or $r + 90 = s$ or $s - r = 90$

305) One positive number is twice another. If the larger number is m, how do you express the other number in terms of m?

Answer: $\frac{m}{2}$ or $\frac{1}{2}$ m

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

306) True or False? If $x < 2$ then $-2x < -4$.

A) True B) False

Answer: B

307) True or False? If $x > 3$ then $10x > 30$.

A) True B) False

Answer: A

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

308) Under what conditions must the inequality symbol be reversed when solving an inequality?

Answer: When multiplying or dividing by a negative number.

309) In solving the inequality $9x \le -18$, would you have to reverse the inequality symbol? Explain why.

Answer: No. No dividing by a negative number is involved.

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

310) The three–part inequality $a < x \le b$ means "a is less than x and x is less than or equal to b". Which of these inequalities is not satisfied by any real number x?

A) $0 < x \le 4$ B) $-5 < x \le -11$ C) $-8 < x \le -7$ D) $-2 < x \le 6$

Answer: B

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

311) If $a < b$, is it always true that $\frac{1}{a} > \frac{1}{b}$? Explain.

Answer: No. If a or b is zero, then the second statement is undefined. Both a and b must also have the same sign.

312) If $b < 0$, is it true that $b^2 > b$? Explain.

Answer: Yes, since $b^2 \ge 0 > b$.

313) If $a \le b$, is it always true that $a + 2 \le b + 2$? Explain.

Answer: Yes, since adding the same number to both sides does not change the inequality.

314) If $a \le b$, is it always true that $-7a \le -7b$? Explain.

Answer: No, multiplying an inequality by a negative number reverses the inequality symbol.

315) If $a \le b$, is it always true that $a^2 \le b^2$? Explain.

Answer: No, not if a is a negative number.