Test Bank for Elementary Algebra Concepts and Applications 10th Bittinger

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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) Solution C) Solve D) Eliminate

Answer: C

2) What does the equation a = b mean?

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

Answer: B

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

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

4) What is the principle used to solve $\frac{3}{2}x = -5$?

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

Answer: C

5) What is the principle used to solve $\frac{9}{2} + x = -6$?

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

Answer: A

Solve using the addition principle.

6) $m - 4 = -1$

A) −5 B) 3 C) 5 D) −3

Answer: B

7) $b + 7 = 9$

A) −16 B) −2 C) 2 D) 16

Answer: C

8) $x - \frac{7}{38} = 0$

A) $-\frac{7}{38}$ B) $-\frac{38}{7}$ C) $\frac{38}{7}$ D) $\frac{7}{38}$

Answer: D

9) $9 = m + 7$

A) 16 B) 2 C) −2 D) −16

Answer: B

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10) $8 = s - 16$

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

Answer: B

11) $s - 9.32 = 0$

A) -9.32 B) -8.32 C) 8.32 D) 9.32

Answer: D

12) $b - 1 = 15$

A) 14 B) -16 C) 16 D) -14

Answer: C

13) $-23.5 - s = 21.5$

A) 2 B) -45 C) -2 D) 45

Answer: B

14) $x + \frac{3}{11} = \frac{6}{11}$

A) $\frac{3}{11}$ B) $-\frac{3}{11}$ C) $\frac{3}{22}$ D) $\frac{9}{11}$

Answer: A

15) $x - \frac{8}{9} = \frac{10}{27}$

A) $\frac{2}{3}$ B) $\frac{34}{27}$ C) $\frac{17}{18}$ D) $-\frac{14}{27}$

Answer: B

Solve using the multiplication principle.

16) $\frac{x}{9} = -2$

A) 7 B) -18 C) 6 D) -1

Answer: B

17) $2 = \frac{a}{-6}$

A) -12 B) -1 C) -4 D) -5

Answer: A

18) $\frac{n}{3} = 6$

A) 8 B) 2 C) 18 D) 9

Answer: C

19) $8a = -72$

A) -80 B) 1 C) -9 D) 80

Answer: C

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20) $6 = -2k$

A) -8 B) -3 C) 8 D) 1

Answer: B

21) $-30.8 = -4.4c$

A) 7.0 B) 2.0 C) 26.4 D) -26.4

Answer: A

22) $-3x = -15$

A) -12 B) 2 C) 5 D) 12

Answer: C

23) $-8b = 144$

A) -152 B) -18 C) 1 D) 152

Answer: B

24) $\frac{6}{7}x = 24$

A) $\frac{174}{7}$ B) $\frac{144}{7}$ C) $\frac{162}{7}$ D) 28

Answer: D

25) $\frac{3x}{4} = \frac{2}{3}$

A) $\frac{1}{2}$ B) $\frac{9}{8}$ C) $-\frac{1}{12}$ D) $\frac{8}{9}$

Answer: D

Solve the equation.

26) $x + 944.31 = -952.445$

A) -8.135 B) -1896.755 C) -0.991 D) -1.009

Answer: B

27) $38.864 = 857.971 + x$

A) -819.107 B) 896.835 C) 22.076 D) 0.045

Answer: A

28) $-753.539x = -192.419$

A) 144,995.221 B) 0.255 C) 561.12 D) 3.916

Answer: B

29) $\frac{x}{-52.394} = -549.193$

A) 28,774.418 B) 0.095 C) -601.587 D) 10.482

Answer: A

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

30) $3x + 9 = 6$

A) $x = -1$ B) $x = 5$ C) $3x = -3$ D) $3x = 15$

Answer: C

31) $5x = 3$

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

Answer: D

32) $5(x - 2) = 8$

A) $5(x - 2) - 8 = 0$ B) $5(x - 2) + 8 = 0$ C) $5x - 10 = 8$ D) $5x - 2 = 8$

Answer: C

33) $9x = 7 + 4x$

A) $13x = 7$ B) $9x - 4x = 7$ C) $\frac{9x}{4x} = 7$ D) $\frac{9}{4}x = 7$

Answer: B

Solve the equation.

34) $6r + 10 = 46$

A) 2 B) 34 C) 30 D) 6

Answer: D

35) $4n - 3 = 33$

A) 32 B) 36 C) 9 D) 11

Answer: C

36) $93 = 10x - 7$

A) 94 B) 16 C) 10 D) 90

Answer: C

37) $8 = 2x - 2$

A) 8 B) 5 C) 6 D) 12

Answer: B

38) $195 = 12x + 15$

A) 172 B) 168 C) 1 D) 15

Answer: D

39) $36 = 13x + 5x$

A) 2 B) 54 C) 18 D) $\frac{1}{2}$

Answer: A

40) $17x - 9x = 56$

A) $\frac{1}{7}$ B) 64 C) 7 D) 48

Answer: C

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41) $8y - 10 = -8 + 9y$

A) -2 B) $\frac{1}{2}$ C) $-\frac{1}{2}$ D) $-\frac{17}{18}$

Answer: A

42) $-10r - 2 = 7 - 2r$

A) $-\frac{12}{5}$ B) $\frac{8}{9}$ C) $-\frac{9}{8}$ D) $-\frac{8}{9}$

Answer: C

43) $-9b + 7 + 7b = -3b + 12$

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

Answer: D

44) $-4y + 5 = -9 + 9y$

A) $\frac{14}{13}$ B) $-\frac{13}{14}$ C) $\frac{13}{14}$ D) $-\frac{5}{4}$

Answer: A

45) $-4t + 3 = 4 - 10t$

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

Answer: D

46) $-9w + 9 = 2 + 7w + 10w$

A) $\frac{26}{7}$ B) $-\frac{2}{21}$ C) $\frac{7}{26}$ D) $-\frac{26}{7}$

Answer: C

47) $3y - 4 + y = 5 + 4y - 3y$

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

Answer: C

48) $\frac{f}{3} - 3 = 1$

A) -8 B) -12 C) 12 D) 8

Answer: C

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

A) -150 B) -75 C) 75 D) 150

Answer: C

50) $\frac{p}{3} - \frac{3p}{8} = 5$

A) 115 B) -120 C) -115 D) 120

Answer: B

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51) $\frac{a}{5} - \frac{1}{5} = -5$

A) −26 B) 26 C) −24 D) 24

Answer: C

52) $-9.1q = -45.6 - 1.5q$

A) 6 B) 5.2 C) 5.0 D) −53

Answer: A

53) $-5.3q + 1.5 = -25.7 - 1.9q$

A) −31 B) 8 C) 5.1 D) 5.5

Answer: B

54) $-5.5 = y + 2.7$

A) 8.2 B) 2.8 C) −8.2 D) −2.8

Answer: C

55) $-9.6 = z - 1.4$

A) −8.2 B) 11 C) 8.2 D) −11

Answer: A

56) $\frac{15}{14}x + \frac{1}{14}x = 6x + \frac{1}{7} + \frac{13}{14}x$

A) $\frac{1}{81}$ B) $\frac{2}{87}$ C) $-\frac{1}{81}$ D) $-\frac{2}{81}$

Answer: D

57) $\frac{5}{6} + \frac{1}{7}x = 7$

A) $\frac{12}{7}$ B) $\frac{7}{3}$ C) $\frac{259}{6}$ D) $\frac{245}{6}$

Answer: C

58) $5(2z - 4) = 9(z + 4)$

A) 16 B) 21 C) −16 D) 56

Answer: D

59) $4x + 5(-3x - 7) = -42 - 4x$

A) 11 B) $\frac{77}{15}$ C) − 1 D) 1

Answer: D

60) $39(x - 156) = 78$

A) 154 B) 158 C) 156 D) 78

Answer: B

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61) $9x - (4x - 1) = 2$

A) $\frac{1}{13}$ B) $-\frac{1}{13}$ C) $\frac{1}{5}$ D) $-\frac{1}{5}$

Answer: C

62) $4(6x - 1) = 16$

A) $\frac{1}{2}$ B) $\frac{5}{8}$ C) $\frac{17}{24}$ D) $\frac{5}{6}$

Answer: D

63) $(y - 6) - (y + 7) = 8y$

A) $-\frac{13}{6}$ B) $-\frac{1}{8}$ C) $-\frac{13}{8}$ D) $-\frac{13}{4}$

Answer: C

64) $\frac{1}{2}(8x - 10) = \frac{1}{5}(25x - 20)$

A) –20 B) $\frac{1}{20}$ C) 1 D) –1

Answer: D

65) $(y - 9) - (y + 8) = 6y$

A) $-\frac{1}{6}$ B) $-\frac{17}{4}$ C) $-\frac{17}{6}$ D) $-\frac{1}{4}$

Answer: C

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

A) $\frac{7}{16}$ B) $\frac{9}{32}$ C) $\frac{1}{12}$ D) $\frac{5}{12}$

Answer: D

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

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

Answer: B

Solve the problem.

68) 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 23,535 credits.

A) 23,550 B) 1569 C) 353,025 D) 23,520

Answer: B

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69) 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 29 cycles per second? Round to the nearest tenth of a meter per cycle.

A) 11.9 meters per cycle
B) 9976.0 meters per cycle
C) 0.1 meters per cycle
D) 315.0 meters per cycle

Answer: A

70) 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 5 meters and width 3 meters.

A) 13 meters
B) 30 meters
C) 8 meters
D) 16 meters

Answer: D

71) 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) 33.49 m^3
C) 10.67 m^3
D) 100.47 m^3

Answer: B

72) 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 12 meters and height 7 meters.

A) 42 m^2
B) 19.5 m^2
C) 19 m^2
D) 84 m^2

Answer: A

73) 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 4 centimeters. Use 3.14 for π.

A) 50.24 cm^2
B) 12.56 cm^2
C) 7.14 cm^2
D) 39.44 cm^2

Answer: A

74) When a ball is thrown upward at a speed of 16 m/s, its height s above the ground (in meters) after t seconds is given by the formula $s = 16t - 4.9t^2$. Find the height of the ball after 3 seconds.

A) 43.1 meters
B) 3.9 meters
C) 18.6 meters
D) 33.3 meters

Answer: B

Solve the formula for the indicated letter.

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

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

Answer: C

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

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

Answer: C

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

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

Answer: C

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

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

Answer: D

79) $x = \frac{w + y + z}{9}$ for y

A) $y = 9x + w + z$ B) $y = 9x - w - z$ C) $y = x - w - z - 9$ D) $y = 9x - 9w - 9z$

Answer: B

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

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

Answer: D

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

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

Answer: B

82) $d = rt$ for r

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

Answer: A

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

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

Answer: C

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

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

Answer: D

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

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

Answer: A

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

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

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

Answer: A

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

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

Answer: D

Choose the most appropriate translation of the question.

89) What percent of 22 is 55?

A) $n = (0.55)22$ B) $n = (0.22)55$ C) $n \cdot 55 = 22$ D) $n \cdot 22 = 55$

Answer: D

90) 67 is 28% of what number?

A) $p = 0.67p$ B) $p \cdot 67 = 28$ C) $67 = 0.28p$ D) $p = 0.28 \cdot 67$

Answer: C

91) 58 is what percent of 61?

A) $q = 58 \cdot 0.61$ B) $q = 61 \cdot 0.58$ C) $q \cdot 61 = 58$ D) $q \cdot 58 = 61$

Answer: C

92) What is 68% of 54?

A) $t = 0.54 \cdot 68$ B) $t = 0.68 \cdot 54$ C) $0.68t = 54$ D) $t = 68 \cdot 54$

Answer: B

93) 82% of what number is 33?

A) $33 = 0.82y$ B) $0.82 = 33y$ C) $0.33 = 82y$ D) $82 = 0.33y$

Answer: A

Convert the percent notation in the sentence to decimal notation.

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

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

Answer: C

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

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

Answer: B

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96) The unemployment rate was 6.7% for the month.
A) 6.7 B) 0.67 C) 0.067 D) 0.0067
Answer: C

97) 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) 0.15 B) 0.015 C) 15 D) 1.5
Answer: A

98) 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) 30.0 C) 0.03 D) 0.30
Answer: D

Convert to decimal notation.

99) 7%
A) 0.07 B) –0.04 C) 0.007 D) 0.7
Answer: A

100) 40%
A) 0.29 B) 0.4 C) 0.04 D) 4
Answer: B

101) 20.8%
A) 0.208 B) 0.098 C) 0.0208 D) 2.08
Answer: A

102) 100%
A) 10 B) 1.01 C) 0.1 D) 1
Answer: D

103) 770%
A) 77 B) 7.71 C) 7.7 D) 0.77
Answer: C

104) 245%
A) 24.5 B) 2.46 C) 0.245 D) 2.45
Answer: D

105) 0.2%
A) 0.002 B) 0.003 C) 0.02 D) 0.2
Answer: A

106) 97.70%
A) 0.0977 B) 0.977 C) 0.967 D) 9.77
Answer: B

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107) 0.35%

A) 0.035 B) 0.35 C) 0.0035 D) 0.0045

Answer: C

Convert the decimal notation in the sentence to percent notation.

108) The amount of selenium in an egg is 0.20 of the Daily Value.
Source: http://ods.od.nih.gov/factsheets/selenium.asp

A) 200% B) 20% C) 0.20% D) 2.0%

Answer: B

109) 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) 119% B) 11.9% C) 1.19% D) 0.119%

Answer: B

110) 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) 77% B) 0.77% C) 7.7% D) 770%

Answer: A

111) 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) 7.5% B) 75% C) 0.75% D) 0.075%

Answer: B

112) Property is assessed at 0.15 of market value.

A) 15% B) 150% C) 1.5% D) 0.15%

Answer: A

Convert to percent notation.

113) 0.42

A) 42% B) 4.2% C) 420% D) 0.042%

Answer: A

114) 0.3

A) 30% B) 300% C) 0.3% D) 0.03%

Answer: A

115) 0.257

A) 257% B) 0.0257% C) 25.7% D) 0.257%

Answer: C

116) 0.081

A) 81% B) 0.0081% C) 0.081% D) 8.1%

Answer: D

117) 1.5

A) 0.15% B) 0.0015% C) 15% D) 150%

Answer: D

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118) 0.00105

A) 0.0525% B) 0.105% C) 0.000105% D) 0.0105%

Answer: B

119) 7

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

Answer: A

120) 45.771

A) 45.771% B) 0.45771% C) 4.5771% D) 4577.1%

Answer: D

121) 7.145

A) 0.7145% B) 714.5% C) 0.07145% D) 7.145%

Answer: B

122) $\frac{36}{100}$

A) 0.36% B) 3.6% C) 360% D) 36%

Answer: D

123) $\frac{7}{10}$

A) 7% B) 70% C) 700% D) 0.7%

Answer: B

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

A) 75% B) 0.75% C) 750% D) 7.5%

Answer: A

125) $\frac{5}{20}$

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

Answer: D

126) $\frac{34}{50}$

A) 0.68% B) 68% C) 680% D) 6.8%

Answer: B

Solve.

127) What is 10% of 400

A) 4 B) 40 C) 400 D) 0.4

Answer: B

128) What is 5% of 300

A) 0.15 B) 1.5 C) 15 D) 150

Answer: C

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129) What is 38% of 1510
A) 57.38 B) 5738 C) 57,380 D) 573.8
Answer: D

130) What is 81% of 344
A) 27.86 B) 278.64 C) 2786.4 D) 27,864
Answer: B

131) What number is 8.3% of 18
A) 1.49 B) 149 C) 0.15 D) 14.9
Answer: A

132) What number is 5000% of 176
A) 880,000 B) 8800 C) 880 D) 88,000
Answer: B

133) What number is 150% of 441
A) 6615 B) 661.5 C) 66.15 D) 66,150
Answer: B

134) 61 is 30% of what number?
A) 203.33 B) 2033.3 C) 18.3 D) 20.33
Answer: A

135) 16 is 1% of what number?
A) 16 B) 1600 C) 16,000 D) 160
Answer: B

136) 45% of what number is 71?
A) 0.63 B) 157.78 C) 1577.8 D) 63
Answer: B

137) 60% of what number is 58?
A) 9.67 B) 966.7 C) 34.8 D) 96.67
Answer: D

138) 108 is 46% of what number?
A) 0.43 B) 2347.8 C) 43 D) 234.78
Answer: D

139) 13 is 0.72% of what number?
A) 1805.56 B) 5.54 C) 554 D) 18,055.6
Answer: A

140) 567 is 13.1% of what number?
A) 17 B) 43,282.4 C) 0.17 D) 4328.24
Answer: D

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141) 79 is 134% of what number?
A) 58.96 B) 589.6 C) 17,956 D) 179.56
Answer: A

142) 943 is what percent of 1896?
A) 0.5% B) 201.1% C) 49.7% D) 0.1%
Answer: C

143) 917 is what percent of 783?
A) 85.4% B) 1.2% C) 0.1% D) 117.1%
Answer: D

144) 4.7 is what percent of 21.6?
A) 459.6% B) 4.6% C) 21.8% D) 0.2%
Answer: C

145) What percent of 1589 is 20?
A) 22.6% B) 7945.0% C) 1.3% D) 12.6%
Answer: C

146) What percent of 7 is 0.03?
A) 4.3% B) 233.3% C) 0.4% D) 42.9%
Answer: C

147) What percent of 194 is 12.9?
A) 1503.9% B) 0.2% C) 6.6% D) 0.1%
Answer: C

148) What percent of 55 is 760?
A) 0.7% B) 138.2% C) 0.1% D) 1381.8%
Answer: D

149) 68.6 is what percent of 7?
A) 980.0% B) 9800.0% C) 1.0% D) 10.2%
Answer: A

150) What percent of 31 is 31?
A) 200% B) 0% C) 1% D) 100%
Answer: D

151) What percent of 86 is 43?
A) 0% B) 2% C) 50% D) 200%
Answer: C

152) The parking lot at a grocery store has 50 cars in it. 18% of the cars are blue. How many cars are blue?
A) 90 cars B) 9 cars C) 278 cars D) 28 cars
Answer: B

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153) During one year, the Larson's real estate bill included $524 for local schools. Of this amount, $160 went to the high school district. What percent did the Larsons pay to the high school district? (Round answer to two decimal places.)

A) 30.34% B) 8384.00% C) 30.53% D) 69.47%

Answer: C

154) During one year, the Green's real estate bill included $320 for city services. The fire department received 23% of that amount. How much money went to the fire department?

A) $53.60 B) $73.60 C) $24.64 D) $77.00

Answer: B

155) During one year, the Cheung's real estate bill included $280 for county services. Of this amount, $116 went to the highway department. What percent did the county highway department receive? (Round answer to two decimal places.)

A) 58.57% B) 41.43% C) 16.40% D) 41.07%

Answer: B

156) During one year, the Schmidt's real estate bill included $272 for miscellaneous services. Of this amount, 61% went to the library fund. How much money did the library receive?

A) $165.92 B) $138.72 C) $145.92 D) $77.57

Answer: A

157) To finance her community college education, Marguerite takes out a Stafford loan for $2900. After a year, Marguerite decides to pay off the interest, which is 9% of $2900. How much will she pay?

A) $26.10 B) $261 C) $289 D) $2610

Answer: B

158) A tax–exempt school group received a bill of $231.12 for educational software. The bill incorrectly included sales tax of 7%. How much should the school group pay?

A) $216.00 B) $151.20 C) $30.86 D) $15.12

Answer: A

Solve the problem.

159) If Gloria received a 4 percent raise and is now making $21,840 a year, what was her salary before the raise? Round to the nearest dollar if necessary.

A) $22,000 B) $21,000 C) $19,840 D) $20,966

Answer: B

160) Stevie bought a stereo for $215 and put it on sale at his store at a 70% markup rate. What was the retail price of the stereo? Round to the nearest cent if necessary.

A) $315.00 B) $265.50 C) $365.50 D) $430.00

Answer: C

161) On Monday, an investor bought 100 shares of stock. On Tuesday, the value of the shares went up 5%. How much did the investor pay for the 100 shares if he sold them Wednesday morning for $1575? Round to the nearest dollar if necessary.

A) $1496 B) $1500 C) $1550 D) $1525

Answer: B

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162) At the end of the day, a storekeeper had $1260 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) $60 B) $63 C) $51 D) $65
Answer: A

163) Brand X copier advertises that its copiers run 25% longer between service calls than its competitor. If Brand X copiers run 66,000 copies between service calls, how many copies would the competitor run (to the nearest copy)?
A) 52,800 copies B) 37,714 copies C) 82,500 copies D) 49,500 copies
Answer: A

164) After receiving a discount of 7.5% on its bulk order of typewriter ribbons, John's Office Supply pays $6845. What was the price of the order before the discount? Round to the nearest dollar if necessary."
A) $7358 B) $6674 C) $6332 D) $7400
Answer: D

165) After spending $2050 for tables and $3250 for chairs, a convention center manager finds that 25% of his original budget remains. Find the amount that remains. Round to the nearest dollar if necessary."
A) $4333 B) $1325 C) $7067 D) $1767
Answer: D

166) Midtown Antiques collects 2% sales tax on all sales. If total sales including tax are $1599.42, find the portion that is the tax. Round to the nearest cent if necessary.
A) $1568.06 B) $31.36 C) $21.36 D) $31.99
Answer: B

167) In a local election, 22,600 people voted. This was an increase of 15% over the last election. How many people voted in the last election? Round to the nearest whole person if necessary.
A) 25,990 people B) 19,210 people C) 19,652 people D) 26,588 people
Answer: C

168) In a local election, 39,500 people voted. This was a decrease of 5% over the last election. How many people voted in the last election? Round to the nearest whole person if necessary.
A) 37,525 people B) 41,475 people C) 41,579 people D) 37,619 people
Answer: C

Solve using the five–step problem–solving process.

169) The sum of two consecutive even integers is 70. Find the larger number.
A) 32 B) 30 C) 36 D) 44
Answer: C

170) The sum of the page numbers on the facing pages of a book is 361. Find the larger page number.
A) 191 B) 176 C) 179 D) 181
Answer: D

171) The difference between two positive integers is 48. One integer is three times as great as the other. Find the integers.
A) 24 and 48 B) 48 and 72 C) 24 and 72 D) 72 and 120
Answer: C

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172) If 9 is added to a number and the sum is doubled, the result is 2 less than the number. Find the number.
A) –7 B) 16 C) –16 D) –20

Answer: D

173) The sum of twice a number and 9 less than the number is the same as the difference between –41 and the number. What is the number?
A) –16 B) –9 C) –8 D) –7

Answer: C

174) The sum of two consecutive integers is –353. Find the larger integer.
A) –177 B) –176 C) –178 D) –175

Answer: B

175) The sum of three consecutive integers is 576. Find the integers.
A) 192, 193, 194 B) 190, 191, 192 C) 190, 192, 194 D) 191, 192, 193

Answer: D

176) The sum of three consecutive even integers is 174. Find the integers.
A) 58, 60, 62 B) 51, 52, 53 C) 56, 58, 60 D) 60, 62, 64

Answer: C

177) If three times the smaller of two consecutive integers is added to four times the larger, the result is 144. Find the smaller integer.
A) 60 B) 19 C) 21 D) 20

Answer: D

178) If the first and third of three consecutive odd integers are added, the result is 45 less than five times the second integer. Find the third integer.
A) 17 B) 30 C) 15 D) 13

Answer: A

179) The second angle of a triangle is 3 times as large as the first. The third angle is 55° more than the first. Find the measure of the smallest angle.
A) 35° B) 55° C) 125° D) 25°

Answer: D

180) The second angle of a triangle is 4 times as large as the first. The third angle is 130° more than the sum of the other two angles. Find the measure of the second angle.
A) 25° B) $1\frac{1}{4}°$ C) 5° D) 20°

Answer: D

181) Two angles of a triangle are 10° and 20°. What is the measure of the third angle?
A) 60° B) 150° C) 330° D) 30°

Answer: B

182) The complement of an angle measures 72° less than the angle. Find the measure of the angle.
A) 19° B) 108° C) 171° D) 81°

Answer: D

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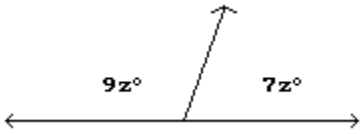
183) Two angles are supplementary. If one angle measures 18° less than twice the measure of its supplement, find the measure of each angle.

A) 66°, 114° B) 33°, 147° C) 24°, 66° D) 33°, 57°

Answer: A

184) Find the measures of the supplementary angles.



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

Answer: D

185) Find the length of a rectangular lot with a perimeter of 66 meters if the length is 7 meters more than the width. (P = 2L + 2W)

A) 33 m B) 13 m C) 40 m D) 20 m

Answer: D

186) A square plywood platform has a perimeter which is 6 times the length of a side, decreased by 8. Find the length of a side.

A) 6 B) 1 C) 2 D) 4

Answer: D

187) A rectangular Persian carpet has a perimeter of 188 inches. The length of the carpet is 28 inches more than the width. What are the dimensions of the carpet?

A) 80 in., 108 in. B) 61 in., 89 in. C) 33 in., 61 in. D) 66 in., 94 in.

Answer: C

188) A triangular lake–front lot has a perimeter of 1200 feet. One side is 400 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) 200 ft, 600 ft, 700 ft B) 200 ft, 200 ft, 200 ft C) 100 ft, 500 ft, 600 ft D) 100 ft, 200 ft, 300 ft

Answer: C

189) You are traveling to your aunt's house that is 213 miles away. If you are currently twice as far from home as you are from your aunt's, how far have you traveled?

A) 106.5 miles B) 142 miles C) 71 miles D) 35.5 miles

Answer: B

190) Kevin invested money in a savings account at a rate of 5% simple interest. After one year, he has $4830.00 in the account. How much did Kevin originally invest?

A) $4825.00 B) $4600.00 C) $5084.21 D) $50.84

Answer: B

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

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

Answer: A

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192) 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 592. Find their house numbers.

A) 295, 297 B) 296, 298 C) 297, 298 D) 295, 296

Answer: A

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

193) $-3y \geq 24$; $y \quad -8$

A) ≥ B) ≤ C) > D) <

Answer: B

194) $-5t \leq -35$; $t \quad 7$

A) ≥ B) ≤ C) > D) <

Answer: A

195) $-9p > -63$; $p \quad 7$

A) > B) < C) ≥ D) ≤

Answer: B

196) $-3z < 21$; $z \quad -7$

A) ≥ B) > C) < D) ≤

Answer: B

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

197) $v \geq -5$; $-5 \leq v$

A) Not equivalent B) Equivalent

Answer: B

198) $w \leq -2$; $-2 \leq w$

A) Equivalent B) Not equivalent

Answer: B

199) $-2s - 6 < 8$; $-2s < 14$

A) Not equivalent B) Equivalent

Answer: B

200) $-3f + 7 > 1$; $-3f > 8$

A) Equivalent B) Not equivalent

Answer: B

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

201) $x > -2, 11$

A) Yes B) No

Answer: A

202) $x > -4, \ -14.7$

A) No B) Yes

Answer: A

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203) $x < 11, 4$

A) Yes B) No

Answer: A

204) $x > 4, -4.23$

A) Yes B) No

Answer: B

205) $x \geq -5, -4.4$

A) No B) Yes

Answer: B

206) $x \geq 14, -5.9$

A) No B) Yes

Answer: A

207) $x \leq 1, 1$

A) No B) Yes

Answer: B

208) $x \leq -8, 14$

A) No B) Yes

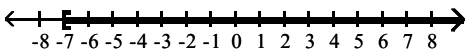
Answer: A

Graph on a number line.

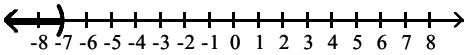
209) $x > -7$



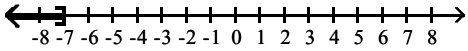
A)



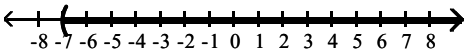
B)



C)

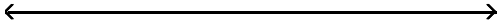


D)

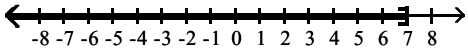


Answer: D

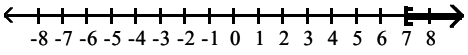
210) $x < 7$



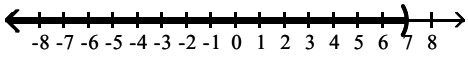
A)



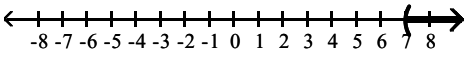
B)



C)



D)



Answer: C

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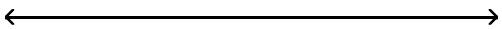
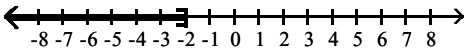
211) $x \geq -2$



A)



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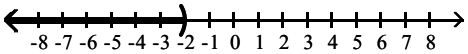
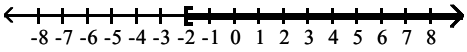
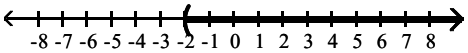


C)



D)

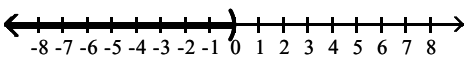


Answer: C

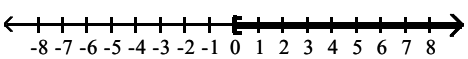
212) $x \leq 0$



A)



B)



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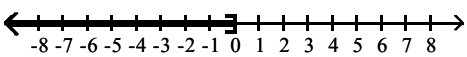

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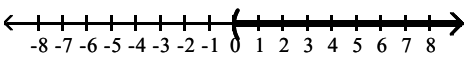
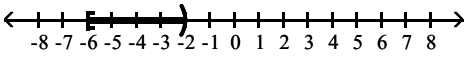


Answer: C

213) $-6 \leq x \leq -2$



A)



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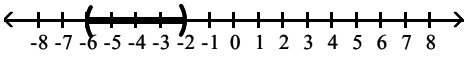

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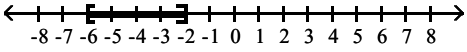

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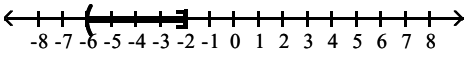
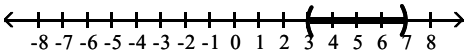


Answer: C

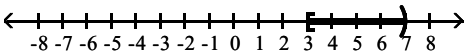
214) $3 < x < 7$



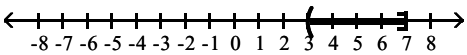
A)



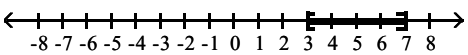
B)



C)



D)



Answer: A

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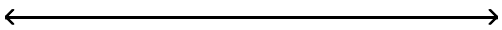
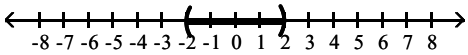
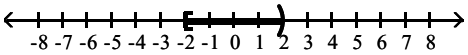
215) $-2 \le x < 2$



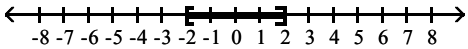
A)



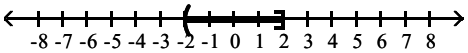
B)



C)



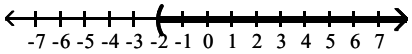
D)



Answer: B

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

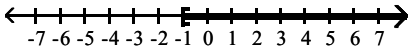
216)



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

Answer: B

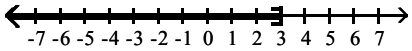
217)



A) $\{x \mid x \ge -1\}, [-1, \infty)$ B) $\{x \mid x \le -1\}, (-\infty, -1]$ C) $\{x \mid x < -1\}, (-\infty, -1)$ D) $\{x \mid x > -1\}, (-1, \infty)$

Answer: A

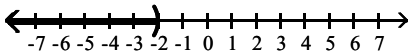
218)



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

Answer: A

219)



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

Answer: B

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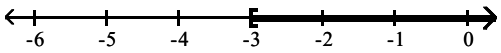
Solve using the addition principle. Graph and write both set–builder notation and interval notation for the answer.

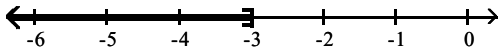
220) $a - 7 < -10$



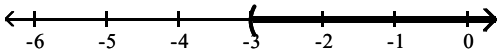
A) $\{a \mid a \geq -3\}, [-3, \infty)$



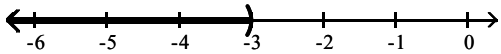
B) $\{a \mid a \leq -3\}, (-\infty, -3]$



C) $\{a \mid a > -3\}, (-3, \infty)$

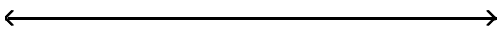


D) $\{a \mid a < -3\}, (-\infty, -3)$

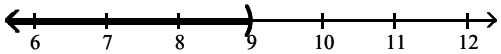


Answer: D

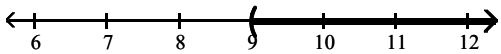
221) $-10n + 12 > -11n + 21$



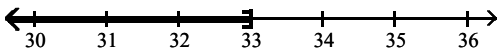
A) $\{n \mid n < 9\}, (-\infty, 9)$



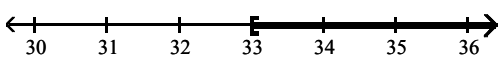
B) $\{n \mid n > 9\}, (9, \infty)$



C) $\{n \mid n \leq 33\}, (-\infty, 33]$



D) $\{n \mid n \geq 33\}, [33, \infty)$

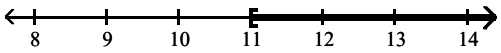


Answer: B

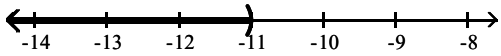
222) $-11t + 9 \geq -12t + 20$



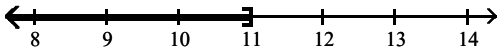
A) $\{t \mid t \geq 11\}, [11, \infty)$



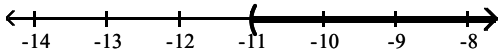
B) $\{t \mid t < -11\}, (-\infty, -11)$



C) $\{t \mid t \leq 11\}\ (-\infty, 11]$



D) $\{t \mid t > -11\}, (-11, \infty)$

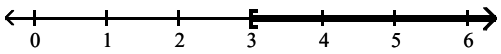


Answer: A

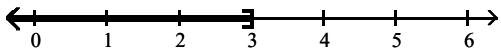
223) $f + 8 < 11$



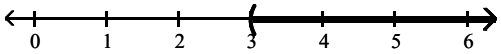
A) $\{f \mid f \geq 3\}, [3, \infty)$



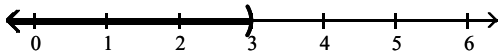
B) $\{f \mid f \leq 3\}, (-\infty, 3]$



C) $\{f \mid f > 3\}, (3, \infty)$



D) $\{f \mid f < 3\}, (-\infty, 3)$



Answer: D

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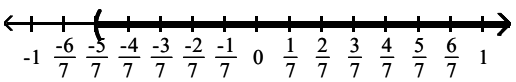
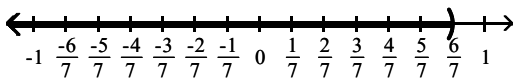
224) $x + \frac{5}{21} > \frac{20}{21}$



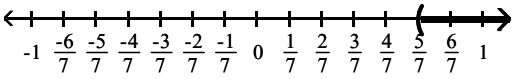
A) $\left\{x \mid x > -\frac{5}{7}\right\}, \left(-\frac{5}{7}, \infty\right)$



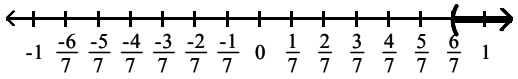
B) $\left\{x \mid x < \frac{6}{7}\right\}, \left(-\infty, \frac{6}{7}\right)$



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

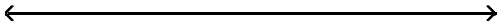


D) $\left\{x \mid x > \frac{6}{7}\right\}, \left(\frac{6}{7}, \infty\right)$

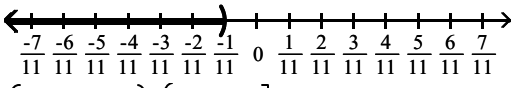


Answer: C

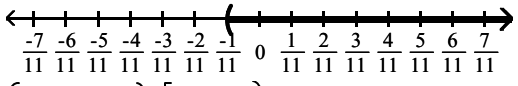
225) $x - \frac{2}{11} \geq -\frac{8}{11}$



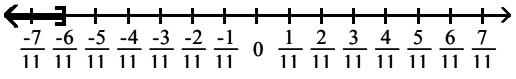
A) $\left\{x \mid x < -\frac{1}{11}\right\}, \left(-\infty, -\frac{1}{11}\right)$



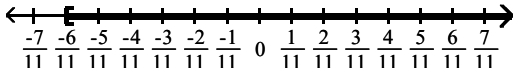
B) $\left\{x \mid x > -\frac{1}{11}\right\}, \left(-\frac{1}{11}, \infty\right)$



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



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



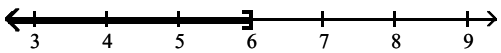
Answer: D

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

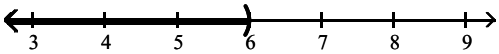
226) $\frac{x}{2} \geq 3$



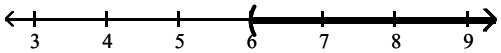
A) $\{x \mid x \leq 6\}, (-\infty, 6]$



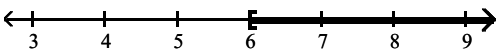
B) $\{x \mid x < 6\}, (-\infty, 6)$



C) $\{x \mid x > 6\}, (6, \infty)$



D) $\{x \mid x \geq 6\}, [6, \infty)$



Answer: D

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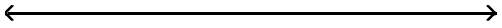
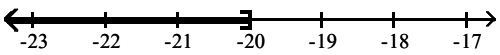
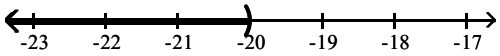
227) $-5 < \frac{n}{4}$



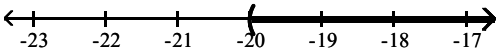
A) {n| n ≤ −20}, (-∞, −20]



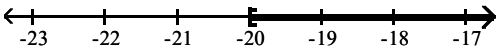
B) {n| n < −20}, (-∞, −20)



C) {n| n > −20}, (−20, ∞)

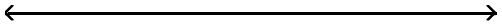


D) {n| n ≥ −20}, [−20, ∞)

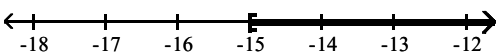


Answer: C

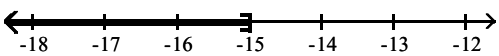
228) $-3 \geq \frac{k}{5}$



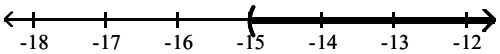
A) {k| k ≥ −15}, [−15, ∞)



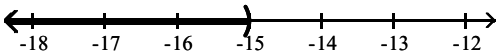
B) {k| k ≤ −15}, (-∞, −15]



C) {k| k > −15}, (−15, ∞)



D) {k| k < −15}, (-∞, −15)

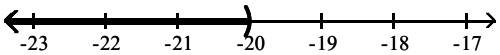


Answer: B

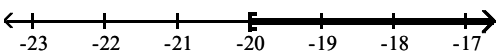
229) $10 > -\frac{n}{2}$



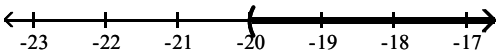
A) {n| n < −20}, (-∞, −20)



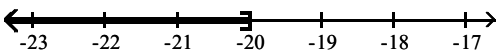
B) {n| n ≥ −20}, [−20, ∞)



C) {n| n > −20}, (−20, ∞)



D) {n| n ≤ −20}, (-∞, −20]



Answer: C

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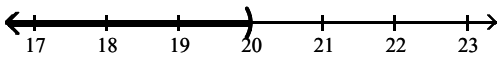
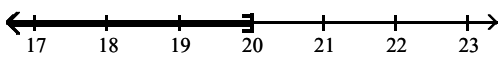
230) $\frac{b}{5} > 4$



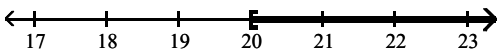
A) {b| b < 20}, (-∞, 20)



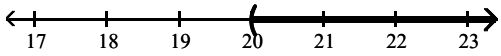
B) {b| b ≤ 20}, (-∞, 20]



C) {b| b ≥ 20}, [20, ∞)



D) {b| b > 20}, (20, ∞)

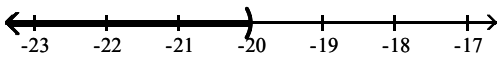


Answer: D

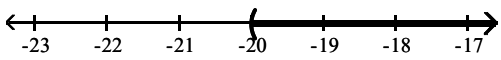
231) $-\frac{n}{4} < 5$



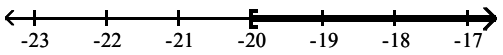
A) {n| n < –20}, (-∞, –20)



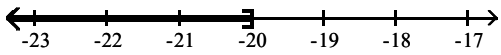
B) {n| n > –20}, (–20, ∞)



C) {n| n ≥ –20}, [–20, ∞)



D) {n| n ≤ –20}, (-∞, –20]

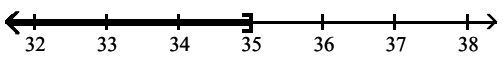


Answer: B

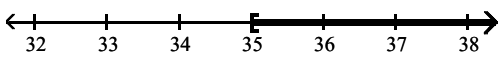
232) $-5 > -\frac{a}{7}$



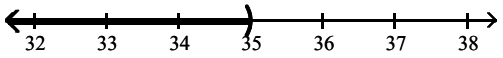
A) {a| a ≤ 35}, (-∞, 35]



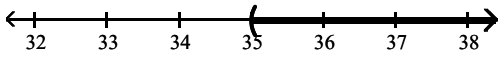
B) {a| a ≥ 35}, [35, ∞)



C) {a| a < 35}, (-∞, 35)



D) {a| a > 35}, (35, ∞)



Answer: D

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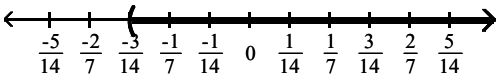
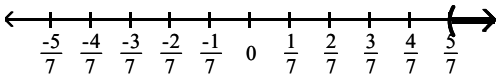
233) $-2x < \frac{3}{7}$



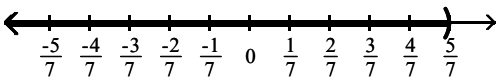
A) $\left\{x \mid x > -\frac{3}{14}\right\}, \left(-\frac{3}{14}, \infty\right)$



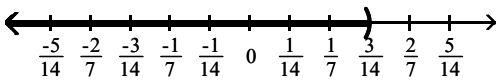
B) $\left\{x \mid x > \frac{5}{7}\right\}, \left(\frac{5}{7}, \infty\right)$



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



D) $\left\{x \mid x < \frac{3}{14}\right\}, \left(-\infty, \frac{3}{14}\right)$

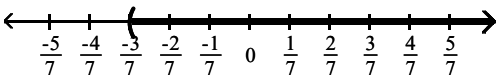


Answer: A

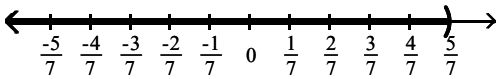
234) $\frac{6}{7} > -2x$



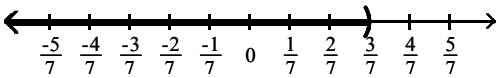
A) $\left\{x \mid x > -\frac{3}{7}\right\}, \left(-\frac{3}{7}, \infty\right)$



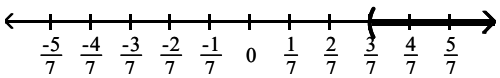
B) $\left\{x \mid x < \frac{5}{7}\right\}, \left(-\infty, \frac{5}{7}\right)$



C) $\left\{x \mid x < \frac{3}{7}\right\}, \left(-\infty, \frac{3}{7}\right)$



D) $\left\{x \mid x > \frac{3}{7}\right\}, \left(\frac{3}{7}, \infty\right)$



Answer: A

Solve.

235) $-6x + 1 > -7x + 12$

A) $\{x \mid x < 11\}$, or $(-\infty, 11)$
B) $\{x \mid x > 13\}$, or $(13, \infty)$
C) $\{x \mid x > 11\}$, or $(11, \infty)$
D) $\{x \mid x < 13\}$, or $(-\infty, 13)$

Answer: C

236) $7x + 10 \leq 6x + 9$

A) $\{x \mid x \geq -1\}$, or $[-1, \infty)$
B) $\{x \mid x \leq -1\}$, or $(-\infty, -1]$
C) $\{x \mid x < 7\}$, or $(-\infty, 7)$
D) $\{x \mid x > 7\}$, or $(7, \infty)$

Answer: B

237) $-6x - 1 \geq -7x - 10$

A) $\{x \mid x \geq -9\}$, or $[-9, \infty)$
B) $\{x \mid x \leq -9\}$, or $(-\infty, -9]$
C) $\{x \mid x < -6\}$, or $(-\infty, -6)$
D) $\{x \mid x > -6\}$, or $(-6, \infty)$

Answer: A

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238) $-9y + 6 \geq -8y - 6$

A) $\{y \mid y > -9\}$, or $(-9, \infty)$
B) $\{y \mid y \leq 12\}$, or $(-\infty, 12]$
C) $\{y \mid y \geq -12\}$, or $[-12, \infty)$
D) $\{y \mid y \leq -9\}$, or $(-\infty, -9]$

Answer: B

239) $11 + 12a + 7 \geq 11a + 21$

A) $\{a \mid a > 12\}$, or $(12, \infty)$
B) $\{a \mid a \leq 3\}$, or $(-\infty, 3]$
C) $\{a \mid a \geq 3\}$, or $[3, \infty)$
D) $\{a \mid a < 12\}$, or $(-\infty, 12)$

Answer: C

240) $0.6x + 12 + x > 2x + 9 - 0.5x$

A) $\{x \mid x < 3\}$, or $(-\infty, 3)$
B) $\{x \mid x \geq 3\}$, or $[3, \infty)$
C) $\{x \mid x > -30\}$, or $(-30, \infty)$
D) $\{x \mid x < -30\}$, or $(-\infty, -30)$

Answer: C

241) $\frac{x}{2} + 13 \leq 8$

A) $\{x \mid x \leq -10\}$, or $(-\infty, -10]$
B) $\{x \mid x \leq 7\}$, or $(-\infty, 7]$
C) $\{x \mid x < -8\}$, or $(-\infty, -8)$
D) $\{x \mid x \geq -10\}$, or $[-10, \infty)$

Answer: A

242) $9 + 2x < 45$

A) $\{x \mid x < 18\}$, or $(-\infty, 18)$
B) $\{x \mid x > 27\}$, or $(27, \infty)$
C) $\{x \mid x < 27\}$, or $(-\infty, 27)$
D) $\{x \mid x > 18\}$, or $(18, \infty)$

Answer: A

243) $9 + 9y \geq 72$

A) $\{y \mid y \geq 7\}$, or $[7, \infty)$
B) $\{y \mid y \leq 9\}$, or $(-\infty, 9]$
C) $\{y \mid y \geq 9\}$, or $[9, \infty)$
D) $\{y \mid y \leq 7\}$, or $(-\infty, 7]$

Answer: A

244) $-8 < 8t + 3 - 7t$

A) $\{t \mid t > -11\}$, or $(-11, \infty)$
B) $\{t \mid t < 5\}$, or $(-\infty, 5)$
C) $\{t \mid t < -5\}$, or $(-\infty, -5)$
D) $\{t \mid t > 11\}$, or $(11, \infty)$

Answer: A

245) $24x - 12 > 6(3x - 4)$

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

Answer: A

246) $-5(6y + 9) < -35y - 30$

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

Answer: B

247) $-12r - 8 \leq -4(2r + 8)$

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

Answer: D

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248) $21n - 27 \le 3(6n - 3)$

A) $\{n \mid n > 6\}$, or $(6, \infty)$ B) $\{n \mid n \ge 6\}$, or $[6, \infty)$ C) $\{n \mid n < 6\}$, or $(-\infty, 6)$ D) $\{n \mid n \le 6\}$, or $(-\infty, 6]$

Answer: D

249) $\frac{2}{3}(2x - 1) < 10$

A) $\{x \mid x \ge -8\}$, or $[-8, \infty)$ B) $\{x \mid x < -8\}$, or $(-\infty, -8)$

C) $\{x \mid x < 8\}$, or $(-\infty, 8)$ D) $\{x \mid x \le 8\}$, or $(-\infty, 8]$

Answer: C

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

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

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

Answer: C

Choose the inequality which describes the sentence.

251) x is more than y

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

Answer: A

252) x is at most y

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

Answer: A

253) y is no more than x

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

Answer: D

254) y exceeds x

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

Answer: B

Translate the sentence to an algebraic inequality.

255) A number is greater than –3.

A) $x \le -3$ B) $x < -3$ C) $x \ge -3$ D) $x > -3$

Answer: D

256) A number is less than or equal to 7.

A) $x < 7$ B) $x > 7$ C) $x \le 7$ D) $x \ge 7$

Answer: C

257) John weighs at least 83 pounds.

A) $x < 83$ B) $x > 83$ C) $x \ge 83$ D) $x \le 83$

Answer: C

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258) The score on a test was between 84 and 70.

A) $x < 84$ B) $70 < x < 84$ C) $x > 70$ D) $84 < x < 70$

Answer: B

259) The cost is no more than $540.06.

A) $x \geq 540.06$ B) $x \leq 540.06$ C) $x > 540.06$ D) $x < 540.06$

Answer: B

260) The number of people at a concert is not to exceed 2047.

A) $x < 2047$ B) $x \leq 2047$ C) $x > 2047$ D) $x \geq 2047$

Answer: B

261) The height of a member of the basketball team is at least 82 inches.

A) $x < 82$ B) $x \leq 82$ C) $x > 82$ D) $x \geq 82$

Answer: D

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

262) 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 38?

A) $x < 5$ B) $0 < x \leq 5$ C) $x \geq 5$ D) $x \leq 5$

Answer: C

263) One side of a rectangle is 14 inches and the other side is x inches. What values of x will make the perimeter at most 54?

A) $x \geq 13$ B) $0 < x \leq 13$ C) $x \leq 13$ D) $x < 13$

Answer: B

264) One side of a rectangle is 2 times the other, and the perimeter is not to exceed 42. Find the possible values for x, the length of the shorter side.

A) $0 < x \leq 14$ B) $0 < x \leq 7$ C) $x \geq 14$ D) $x \leq 7$

Answer: B

265) One side of a triangle is 2 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 51 cm?

A) $x \geq 16$ B) $x \leq 21$ C) $x > 14$ D) $0 < x \leq 16$

Answer: A

266) One side of a rectangle is 16 inches and the other side is x inches. Find the value of x if the area must be at least 64 square inches.

A) $x \leq 4$ B) $0 < x \leq 4$ C) $x \geq 4$ D) $x = 4$

Answer: C

267) The area of a triangle must be at most 40 square inches, the base is 8 inches, and the height is x inches. Find the possible values for x.

A) $x < 10$ B) $0 < x \leq 5$ C) $0 < x \leq 10$ D) $0 < x \leq 20$

Answer: C

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268) 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 360 in.^{2} of cloth?

A) 80 in. B) 40 in. C) 42 in. D) 20 in.

Answer: B

269) 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 4 ft, what is the maximum height of the triangular sign?

A) 36 ft B) 10.0 ft C) 5.00 ft D) 2.500 ft

Answer: B

270) In order for a chemical reaction to take place, the Fahrenheit temperature of the reagents must be at least 196.2°F. Find the Celsius temperatures at which the reaction may occur. ($F = \frac{9}{5}C + 32$)

A) $C \leq 91.22°$ B) $C \geq 91.22°$ C) $C < 385.16°$ D) $C \geq 385.16°$

Answer: B

271) In order for a chemical reaction to remain stable, its Celsius temperature must be no more than 76.23°C. Find the Fahrenheit temperatures at which the reaction will remain stable. ($F = \frac{9}{5}C + 32$)

A) $F \leq 24.57°$ B) $F \geq 24.57°$ C) $F \geq 169.21°$ D) $F \leq 169.21°$

Answer: D

272) The equation $y = 0.004x + 0.40$ 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 $1990?

A) $x \leq 497{,}400$ B) $0 < x \leq 497{,}399$ C) $x \geq 497{,}400$ D) $x \geq 497{,}600$

Answer: C

273) 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 48.9 seconds or less?

A) 1933 or after B) 1958 or after C) 1959 or after D) 1957 or after

Answer: B

274) 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 47 dollars? (Y is the actual year.)

A) 2020 or after B) 2018 or after C) 2022 or after D) 2030 or after

Answer: A

275) A salesperson has two job offers. Company A offers a weekly salary of $490 plus commission of 14% of sales. Company B offers a weekly salary of $980 plus commission of 7% of sales. What is the amount of sales above which Company A's offer is the better of the two?

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

Answer: D

276) Company A rents copiers for a monthly charge of $300 plus 12 cents per copy. Company B rents copiers for a monthly charge of $600 plus 6 cents per copy. What is the number of copies above which Company A's charges are the higher of the two?

A) 10,000 copies B) 5100 copies C) 5000 copies D) 2500 copies

Answer: C

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277) A car rental company has two rental rates. Rate 1 is $30 per day plus $.10 per mile. Rate 2 is $60 per day plus $.05 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 14,700 miles
B) more than 30,100 miles
C) more than 58,800 miles
D) more than 4200 miles

Answer: D

278) Jim has gotten scores of 83 and 94 on his first two tests. What score must he get on his third test to keep an average of 90 or greater?

A) At least 92
B) At least 93
C) At least 88.5
D) At least 89.0

Answer: B

279) A bag of marbles has twice as many blue marbles as green marbles, and the bag has at least 36 marbles in it. At least how many green marbles does it have?

A) At least 18 green marbles
B) At least 13 green marbles
C) At least 12 green marbles
D) At least 24 green marbles

Answer: C

280) Jon has 809 points in his math class. He must have 71% of the 1400 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) 994 points
B) 591 points
C) 185 points
D) 574 points

Answer: C

281) DG's Plumbing and Heating charges $50 plus $70 per hour for emergency service. Bill remembers being billed just over $250 for an emergency call. How long to the nearest hour was the plumber at Bill's house?

A) 13 hours
B) 3 hours
C) 15 hours
D) 4 hours

Answer: B

282) A 5–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 $24\frac{2}{3}$ lb?

A) more than $30\frac{1}{2}$ weeks
B) more than $44\frac{1}{2}$ weeks
C) more than $37\frac{3}{4}$ weeks
D) more than $29\frac{1}{2}$ weeks

Answer: D

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

Provide an appropriate response.

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

Answer: False. It has no solution.

284) The solution for the equation $2(3s - 9) = 6s - 18$ is given as 0. Is this correct? Explain.

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

285) Write the steps you would use to solve this equation: $8(x - 1) + 2x = -9x$.

Answer: Answers will vary.

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286) What value of K makes this equation equivalent to x = 3?
$6x - 7 = K$

Answer: 11

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

Answer: 0

288) What value of K makes this equation equivalent to x = 2?
$5x + 17x - 9 = K + 7$

Answer: 28

289) Find all values of s that make this statement true: $4(3s - 6) = 12s - 24$.

Answer: s can be any value, including 0.

290) Find all values of x that make this statement true: $(x + 7) - 1 = (x - 1) + 7$.

Answer: x can be any value, including 0.

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

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

A) False B) True

Answer: B

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

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

Answer: $-x$

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

Answer: $-x$

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

Answer: rs

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

Answer: $90 - r$

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

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

297) 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 $s - r = 90$

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298) 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.

299) True or False? If $x < 3$ then $-6x < -18$.

A) True B) False

Answer: B

300) True or False? If $x > 10$ then $10x > 100$.

A) True B) False

Answer: A

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

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

Answer: When multiplying or dividing by a negative number.

302) In solving the inequality $5x \leq -45$, 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.

303) The three–part inequality $a < x \leq b$ 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) $-8 < x \leq -7$ B) $0 < x \leq 4$ C) $-2 < x \leq 6$ D) $-5 < x \leq -11$

Answer: D

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

304) 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.

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

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

306) If $a \leq b$, is it always true that $a + 8 \leq b + 8$? Explain.

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

307) If $a \leq b$, is it always true that $-4a \leq -4b$? Explain.

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

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

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

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