Exam

Name_____

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

Determine whether it is true or false that the given number is a solution of the equation.

1) 3; $3x = 9$.
A) True B) False
Answer: A

2) 8; $9x = 76$.
A) True B) False
Answer: B

3) 2; $5x - 7 = 3$.
A) True B) False
Answer: A

4) 2; $-3x + 6 = 4$.
A) True B) False
Answer: B

5) -9; $-2x + 5x = -27$.
A) True B) False
Answer: A

6) 1; $8x - 5x = 12$.
A) True B) False
Answer: B

7) 18; $\frac{-x}{6} = -3$
A) True B) False
Answer: A

8) 48; $\frac{-x}{6} = -4$
A) True B) False
Answer: B

9) 27; $7(y - 12) = 105$
A) True B) False
Answer: A

10) -7; $3(y - 4) = 33$
A) True B) False
Answer: B

Solve using the addition principle.

11) $b + 3 = 7$

A) 10 B) 4 C) -4 D) -10

Answer: B

12) $b - 1 = 12$

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

Answer: B

13) $28 = -17 + m$

A) -11 B) 45 C) -45 D) 11

Answer: B

14) $-29 + z = -62$

A) 33 B) -33 C) 91 D) -91

Answer: B

15) $-26 = y - 52$

A) 78 B) -78 C) -26 D) 26

Answer: D

16) $z - 4.34 = -9.2$

A) -13.54 B) -4.86 C) 4.86 D) 13.54

Answer: B

17) $-12.0 - s = 29.4$

A) 41.4 B) 17.4 C) -41.4 D) -17.4

Answer: C

18) $x + \frac{2}{3} = -\frac{1}{6}$

A) $-\frac{1}{2}$ B) $-\frac{5}{6}$ C) $-\frac{1}{3}$ D) $-\frac{8}{9}$

Answer: B

19) $-\frac{3}{4} + y = -\frac{1}{12}$

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

Answer: A

Solve using the multiplication principle.

20) $2x = 16$

A) 14 B) $\frac{1}{8}$ C) 32 D) 8

Answer: D

21) $9b = -153$

A) -162 B) 1 C) -17 D) 162

Answer: C

22) $-52 = -4n$

A) -48 B) 13 C) -13 D) 48

Answer: B

23) $-\frac{y}{3} = 12$

A) -36 B) -15 C) 36 D) -33

Answer: A

24) $\frac{1}{3}x = -6$

A) -18 B) -2 C) -4 D) -3

Answer: A

25) $-13.2 = 2.2z$

A) -7.2 B) -6 C) -11 D) $-\frac{1}{6}$

Answer: B

26) $-24.84 = -6.21w$

A) 4 B) 18.63 C) -18.63 D) -4

Answer: A

27) $-\frac{5}{4}x = \frac{5}{20}$

A) $\frac{1}{5}$ B) $-\frac{5}{16}$ C) -1 D) $-\frac{1}{5}$

Answer: D

Solve using the addition and multiplication principles together.

28) $2r + 8 = 28$

A) 22 B) 6 C) 10 D) 18

Answer: C

29) $6n - 9 = 21$

A) 5 B) 28 C) 24 D) 12

Answer: A

30) $14 = 4x - 6$

A) 16 B) 9 C) 5 D) 20

Answer: C

31) $-83 = -10x - 3$

A) -66 B) 11 C) -70 D) 8

Answer: D

32) $138 = 12x + 18$

A) 10 B) 112 C) 6 D) 108

Answer: A

33) $-7y - 2 = -8 + 9y$

A) $\frac{8}{3}$ B) $-\frac{1}{5}$ C) $-\frac{8}{3}$ D) $\frac{3}{8}$

Answer: D

34) $-2b - 1 = 3 + 3b$

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

Answer: A

35) $8x + 3 = 83 + 8x$

A) All real numbers B) 72 C) 76 D) No Solution

Answer: D

36) $\frac{1}{4}a - \frac{1}{4} = -5$

A) 21 B) -19 C) -21 D) 19

Answer: B

37) $\frac{1}{3}f - 5 = 1$

A) -12 B) 12 C) -18 D) 18

Answer: D

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

A) 60 B) -60 C) 30 D) -30

Answer: C

39) $\frac{1}{4}p - \frac{3}{8}p = 2$

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

Answer: D

40) $42(x - 168) = 84$

A) 168 B) 166 C) 170 D) 84

Answer: C

41) $9x - (6x - 1) = 2$

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

Answer: B

42) $4(2x - 1) = 16$

A) $\frac{3}{2}$ B) $\frac{17}{8}$ C) $\frac{15}{8}$ D) $\frac{5}{2}$

Answer: D

43) $3(x + 2) - (3x + 6) = 0$

A) 0 B) 2 C) All real numbers D) No solution

Answer: C

44) $15(3c - 5) = 7c - 3$

A) $\frac{9}{13}$ B) $-\frac{36}{19}$ C) $\frac{36}{19}$ D) $\frac{78}{19}$

Answer: C

45) $5(y + 3) = 6(y - 6)$

A) 51 B) -21 C) 21 D) -51

Answer: A

46) $3(2z - 5) = 5(z + 2)$

A) -5 B) -2 C) 25 D) 5

Answer: C

47) $-9x + 4(-3x - 2) = -23 - 6x$

A) $\frac{31}{27}$ B) - 1 C) 1 D) $\frac{31}{15}$

Answer: C

48) $\frac{1}{5}(15x - 20) = \frac{1}{3}(12x - 9)$

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

Answer: D

49) $-[8x + (8x + 7)] = 5 - (9x + 6)$

A) $-\frac{4}{7}$ B) $\frac{2}{3}$ C) $\frac{4}{9}$ D) $-\frac{6}{7}$

Answer: D

Solve for the given letter.

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

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

Answer: B

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

A) $h = \frac{S}{2\pi r} - 1$ B) $h = \frac{S - 2\pi r^2}{2\pi r}$ C) $h = S - r$ D) $h = 2\pi(S - r)$

Answer: B

52) $V = \frac{1}{3}Bh$ for h

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

Answer: A

53) $I = \frac{nE}{nr + R}$ for n

A) $n = \frac{IR}{Ir + E}$ B) $n = \frac{-IR}{Ir - E}$ C) $n = IR(Ir - E)$ D) $n = \frac{-R}{Ir - E}$

Answer: B

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

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

Answer: C

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

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

Answer: B

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

A) $b_1 = \frac{(b_2)2A - h}{h}$ B) $b_1 = \frac{h(b_2) - 2A}{h}$ C) $b_1 = \frac{A - h(b_2)}{2h}$ D) $b_1 = \frac{2A - (h)(b_2)}{h}$

Answer: D

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

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

Answer: A

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

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

Answer: C

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

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

Answer: C

60) $I = prt$ for r

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

Answer: D

61) $\frac{PV}{T} = \frac{pv}{t}$ for P

A) $P = \frac{tvT}{pV}$ B) $P = \frac{pv}{tTV}$ C) $P = \frac{pvT}{tV}$ D) $P = \frac{pvV}{tT}$

Answer: C

62) $-5k + ar = r - 6y$ for r

A) $r = \frac{a - 1}{5k - 6y}$ B) $r = \frac{5k - 6y}{a - 1}$ C) $r = \frac{-5k + 6y}{a - 1}$ D) $r = \frac{-5k + a}{1 - 6y}$

Answer: B

63) $w = \frac{7y - x}{y}$ for y

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

Answer: D

Solve the problem.

64) The perimeter of a rectangle, P, is given by $P = 2L + 2W$, where L is its length and W is its width. What is the perimeter of a rectangle of length 20 ft and width 14 ft?

A) 136 ft B) 68 ft C) 34 ft D) 54 ft

Answer: B

65) The area of a square is given by $A = S^2$, where S is the length of a side. What is the area of a square with side 2.8 cm?

A) 5.6 cm^2 B) 21 cm^2 C) 7.84 cm^2 D) 31.36 cm^2

Answer: C

66) The area of a triangle is given by $A = \frac{1}{2}bh$, where b is the length of its base and h is its height. Find the area of a triangle with height 16 m and base 17 m.

A) 544 m^2 B) 16.5 m^2 C) 272 m^2 D) 136 m^2

Answer: D

67) The surface area of a cylinder with height, h, and base radius, r, is given by $A = 2\pi rh + 2\pi r^2$. Using 3.14 for π, find the surface area of a cylinder with a radius of 5 cm and a height of 40 cm.

A) 1287.4 cm^2 B) 7536 cm^2 C) 1413 cm^2 D) 1256 cm^2

Answer: C

68) The circumference of a circle is given by $C = 2\pi r$, where r is the radius. Find the circumference if $\pi = 3.14$ and r = 3 feet.

A) 6 feet B) 21.98 feet C) 118.32 feet D) 18.84 feet

Answer: D

69) The amount of simple interest I generated by principal P, annual interest rate r, and time t in years is given by I = Prt. Find the interest if t = 1 years, P = \$130, and r = 0.09.

A) \$1.37 B) \$136.89 C) \$0.10 D) \$11.70

Answer: D

70) The area of a trapezoid of height h, small base b, and large base B is given by $A = \frac{1}{2}(b + B)h$. Find the area of a trapezoid whose height is 2 m, small base is 10 m, and large base is 11 m.

A) 10.5 m^2 B) 0 m^2 C) 110 m^2 D) 21 m^2

Answer: D

71) The area of a trapezoid is 77 square feet. If its two bases are 7 and 15 feet, find its height. $\left(A = \frac{1}{2}(b + B)h\right)$

A) 14 ft B) 4 ft C) 1.5 ft D) 7 ft

Answer: D

72) A circle has a circumference of 46π meters. Find the radius, r, of the circle. ($C = 2\pi r$)

A) 23 m B) 46 m C) 7 m D) 12 m

Answer: A

73) The number of daily calories K needed by a moderately active man who weighs w pounds, is h inches tall, and is y years old, can be estimated by the formula $K = 19.18w + 7h - 9.52y + 92.4$. Find the daily caloric need of a moderately active man weighing 207 lbs, who is 79 inches tall and 43 years old.

A) 4206.3 B) 3611.58 C) 4021.5 D) 3426.78

Answer: A

Solve.

74) One-half of a number is 3 more than one-sixth the same number. What is the number?

A) 18 B) 8 C) 9 D) 12

Answer: C

75) The difference between two positive integers is 20. One integer is three times as great as the other. Find the integers.

A) 30 and 50 B) 10 and 30 C) 20 and 30 D) 10 and 20

Answer: B

76) The sum of two consecutive integers is -373. Find the larger integer.

A) -186 B) -187 C) -185 D) -188

Answer: A

77) The sum of three consecutive integers is 327. Find the integers.
A) 107, 108, 109 B) 109, 110, 111 C) 107, 109, 111 D) 108, 109, 110
Answer: D

78) The sum of three consecutive even integers is 168. Find the integers.
A) 58, 60, 62 B) 54, 56, 58 C) 56, 58, 60 D) 49, 50, 51
Answer: B

79) Two pages that face each other in a book have 405 as the sum of their page numbers. What is the number of the page that comes first?
A) 202 B) 203 C) 200 D) 201
Answer: A

80) If three times the smaller of two consecutive integers is added to four times the larger, the result is 60. Find the smaller integer.
A) 24 B) 8 C) 9 D) 7
Answer: B

81) If the first and third of three consecutive odd integers are added, the result is 69 less than five times the second integer. Find the third integer.
A) 21 B) 25 C) 23 D) 46
Answer: B

82) If Gloria received a 3 percent raise and is now making $20,600 a year, what was her salary before the raise?
A) $20,000 B) $19,600 C) $18,600 D) $21,000
Answer: A

83) Stevie bought a stereo for $250 and put it on sale at his store at a 55% markup rate. What was the retail price of the stereo?
A) $500.00 B) $387.50 C) $350.00 D) $287.50
Answer: B

84) 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 $1260?
A) $1200 B) $1210 C) $1250 D) $1323
Answer: A

85) At the end of the day, a storekeeper had $1177 in the cash register, counting both the sale of goods and the sales tax of 7%. Find the amount that is the tax.
A) $72 B) $67 C) $77 D) $82
Answer: C

86) After receiving a discount of 11.5% on its bulk order of toner cartridges, John's Office Supply pays $4956. What was the price of the order before the discount?
A) $4386 B) $5600 C) $4634 D) $5526
Answer: B

87) Midtown Antiques collects 6% sales tax on all sales. If total sales including tax are $1948.84, find the portion that is the tax. Round your answer to the nearest cent.

A) $100.31 B) $116.93 C) $110.31 D) $1838.53

Answer: C

88) In a local election, 39,600 people voted. This was an increase of 11% over the last election. How many people voted in the last election? Round your answer to the nearest whole number of people.

A) 35,676 people B) 43,956 people C) 35,244 people D) 44,494 people

Answer: A

89) In a local election, 48,800 people voted. This was a decrease of 9% less than the last election. How many people voted in the last election? Round your answer to the nearest whole number of people.

A) 53,626 people B) 44,408 people C) 53,192 people D) 44,771 people

Answer: A

90) The following is a real estate commission on the selling price of a house.

10% for the first $100,000, and
3% for the amount which exceeds $100,000

A realtor receives $16,060.00 for selling a house. What was the selling price?

A) $202,000 B) $302,000 C) $402,000 D) $6060

Answer: B

91) In a triangular cross-section of a lean-to for water fowl in an aviary, the second angle is 4 times as large as the first angle. The measure of the third angle is 60° greater than that of the first angle. How large are the angles?

A) 20°, 160°, 160° B) 58°, 224°, 116° C) 58°, 62°, 32° D) 20°, 80°, 80°

Answer: D

92) A rectangular Persian carpet has a perimeter of 196 inches. The length of the carpet is 18 inches more than the width. What are the dimensions of the carpet?

A) 80 in., 98 in. B) 89 in., 107 in. C) 58 in., 76 in. D) 40 in., 58 in.

Answer: D

93) A pie-shaped (triangular) lake-front lot has a perimeter of 1500 feet. One side is 100 feet longer than the shortest side, while the third side is 200 feet longer than the shortest side. Find the lengths of all three sides.

A) 400 ft, 500 ft, 600 ft B) 500 ft, 500 ft, 500 ft C) 100 ft, 200 ft, 300 ft D) 500 ft, 600 ft, 700 ft

Answer: A

94) A salesperson earned $350 a week plus a bonus of $19 for each service contract sold. If the pay one week was $502 how many service contracts were sold?

A) 2 contracts B) 8 contracts C) 18 contracts D) 5 contracts

Answer: B

95) Suppose the sales of a particular brand of appliance satisfy the relationship $S = 150x + 4500$, where S represents the number of appliances sold in year x, with $x = 0$ corresponding to 1982. Find the number of appliances sold in 1993.

A) 12,300 appliances B) 12,150 appliances C) 6000 appliances D) 6150 appliances

Answer: D

96) Bill swims at a speed of 6.3 mph in still water. The river he's in flows at a speed of 5.9 mph. How long will it take Bill to swim 1.4 mi upstream? Round your answer to the nearest tenth of an hour, if necessary.
A) 0.3 hr B) 3.5 hr C) 0.6 hr D) 0.1 hr
Answer: B

97) Jan swims at a speed of 5.2 mph in still water. The river she's in flows at a speed of 3.1 mph. How long will it take Jan to swim 2.5 mi downstream? Round your answer to the nearest tenth of an hour, if necessary.
A) 3.3 hr B) 20.8 hr C) 1.2 hr D) 0.3 hr
Answer: D

98) A plane traveling 410 mph in still air encounters a 60-mph headwind. How long will it take the plane to travel 770 mi into the wind? Round your answer to the nearest tenth of an hour, if necessary.
A) 269,500 hr B) 1.6 hr C) 0.5 hr D) 2.2 hr
Answer: D

99) A speedboat moves at a rate of 11 km/hr in still water. How long will it take someone to ride the boat 40 km downstream if the river's current moves at a rate of 9 km/hr?
A) 0.5 hr B) 20 hr C) 800 hr D) 2 hr
Answer: D

100) A speedboat moves at a rate of 15 km/hr in still water. How long will it take someone to ride the boat 48 km upstream if the river's current moves at a rate of 7 km/hr?
A) 384 hr B) 0.2 hr C) 6 hr D) 2 hr
Answer: C

101) A plane climbs from an altitude of 12,000 ft to a cruising altitude of 38,000 ft. The plane ascends at a rate of 5200 ft/min. How long will it take to reach cruising altitude?
A) 135,200,000 min B) 0.2 min C) 9 min D) 5 min
Answer: D

Choose the number that is a solution of the inequality.

102) $a + 2 < -9$
A) -7 B) -9 C) 12 D) -12
Answer: D

103) $f + 12 < 21$
A) 9 B) 11 C) 8 D) 12
Answer: C

104) $4n + 6 > 3n + 4$
A) -5 B) -4 C) -3 D) -1
Answer: D

105) $-5n + 9 \leq -6n + 15$
A) 7 B) 8 C) 9 D) 6
Answer: D

106) $-11t - 8 \geq -12t - 10$
A) -5 B) -3 C) -2 D) -4
Answer: C

Write interval notation.

107) $\{x \mid x > 1\}$

A) $(1, \infty)$ B) $(-\infty, 1]$ C) $(-\infty, 1)$ D) $[1, \infty)$

Answer: A

108) $\{x \mid x < -2\}$

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

Answer: A

109) $\{x \mid x \geq \ \}$

A) $(-\infty, 3]$ B) $[3, \infty)$ C) $(3, \infty)$ D) $(-\infty, 3)$

Answer: B

110) $\{x \mid x \leq \ \}$

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

Answer: D

111) $\{x \mid -2 \leq x \leq \ \}$

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

Answer: B

112) $\{x \mid \ < x < \ \}$

A) $(0, 4]$ B) $(0, 4)$ C) $[0, 4)$ D) $[0, 4]$

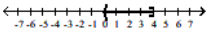
Answer: B

113) $\{x \mid -3 \leq x < \ \}$

A) $(-3, 1)$ B) $[-3, 1)$ C) $[-3, 1]$ D) $(-3, 1]$

Answer: B

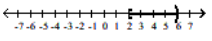
Write interval notation for the graph.



114)

A) $[0, 4)$ B) $(0, 4)$ C) $(0, 4]$ D) $[0, 4]$

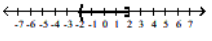
Answer: C



115)

A) $[-6, -2)$ B) $[2, 6)$ C) $(2, 6]$ D) $(-6, -2]$

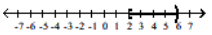
Answer: B



116)

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

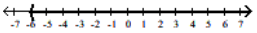
Answer: C



117)

A) [2, 6) B) (2, 6] C) (-6, -2] D) [-6, -2)

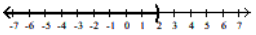
Answer: A



118)

A) [-6, ∞) B) (-6, ∞) C) (-∞, -6) D) (-∞, -6]

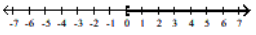
Answer: B



119)

A) (-∞, 2] B) (-∞, 2) C) (2, -∞) D) [2, ∞)

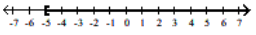
Answer: B



120)

A) (0, ∞) B) [0, ∞) C) (-∞, 0) D) (-∞, 0]

Answer: B



121)

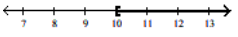
A) (-∞, -5] B) (-∞, -5) C) (-5, ∞) D) [-5, ∞)

Answer: D

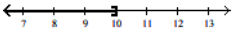
Solve and graph. Write the result in interval notation.

122) a - 4 < 6

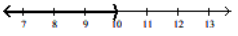
A) [10, ∞)



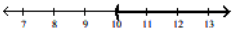
B) (-∞, 10]



C) (-∞, 10)



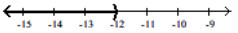
D) (10, ∞)



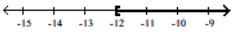
Answer: C

123) a + 5 > -7

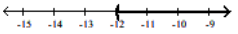
A) (-∞, -12)



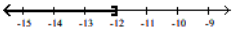
B) [-12, ∞)



C) (-12, ∞)



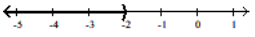
D) (-∞, -12]



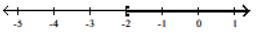
Answer: C

124) f - 6 ≤ -8

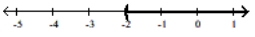
A) (-∞, -2)



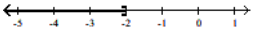
B) [-2, ∞)



C) (-2, ∞)



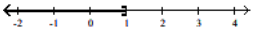
D) (-∞, -2]



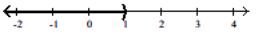
Answer: D

125) f + 12 < 13

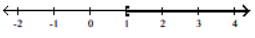
A) (-∞, 1]



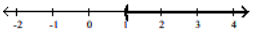
B) (-∞, 1)



C) [1, ∞)



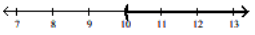
D) (1, ∞)



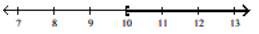
Answer: B

126) 0.2k > 2

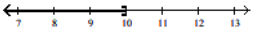
A) (10, ∞)



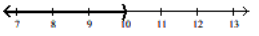
B) [10, ∞)



C) (-∞, 10]



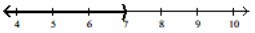
D) (-∞, 10)



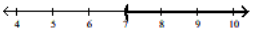
Answer: A

127) $8x \leq 56$

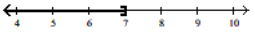
A) $(-\infty, 7)$



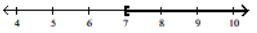
B) $(7, \infty)$



C) $(-\infty, 7]$



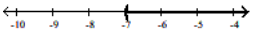
D) $[7, \infty)$



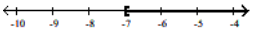
Answer: C

128) $5x < -35$

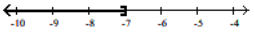
A) $(-7, \infty)$



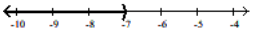
B) $[-7, \infty)$



C) $(-\infty, -7]$



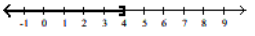
D) $(-\infty, -7)$



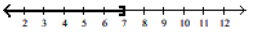
Answer: D

129) $\frac{4}{7}x \geq 4$

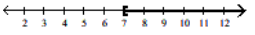
A) $(\infty, 4]$



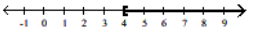
B) $(\infty, 7]$



C) $[7, \infty)$



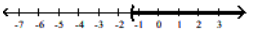
D) $[4, \infty)$



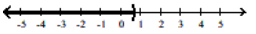
Answer: C

130) $\frac{1}{5}x < -7$

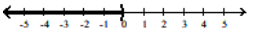
A) $\left(-\frac{7}{5}, \infty\right)$



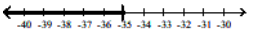
B) $\left(-\infty, \frac{5}{7}\right)$



C) $\left(-\infty, -\frac{1}{35}\right)$



D) $(-\infty, -35)$



Answer: D

Solve.

131) $-0.125x \geq -1.25$

A) $[10, \infty)$ B) $[1.125, \infty)$ C) $(-\infty, -1.125]$ D) $(-\infty, 10]$

Answer: D

132) $-\frac{3}{4}x \leq -\frac{10}{11}$

A) $\left[\frac{40}{33}, \infty\right)$ B) $\left(-\infty, \frac{40}{33}\right]$ C) $\left(-\infty, \frac{15}{22}\right]$ D) $\left[\frac{15}{22}, \infty\right)$

Answer: A

133) $4x + 2 < 22$

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

Answer: B

134) $5x - 6 \geq 2x - 24$

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

Answer: A

135) $20x - 20 > 4(4x + 4)$

A) $(20, \infty)$ B) $(-\infty, 20)$ C) $(9, \infty)$ D) $(-\infty, 9)$

Answer: C

136) $4(3x + 4) \geq 2(4x + 24)$

A) $[8, \infty)$ B) $(-\infty, 8]$ C) $[16, \infty)$ D) $(-\infty, 16]$

Answer: A

137) $1.2x + 4.4 > 0.5x + 2.72$

A) $(-\infty, -2.5)$ B) $(-2.4, \infty)$ C) $(-2.5, \infty)$ D) $(-\infty, -2.4)$

Answer: B

138) $1.4x - 3 \geq 0.9x + 14.5$

A) $[35, \infty)$ B) $(-\infty, 35)$ C) $(-\infty, 35]$ D) $(3.5, \infty)$

Answer: A

139) $3(4x + 2) - 20 \leq 9x + 1$

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

Answer: C

140) $-3(k + 9) < -6 + (-4k + 8)$

A) $(\infty, 7)$ B) $(\infty, 29)$ C) $(\infty, -29)$ D) $(\infty, -41)$

Answer: B

141) $-3x - (5x + 5) > 5 - (6x + 2)$

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

Answer: D

142) $3(2x + 1) < 9 - 5(2x - 3)$

A) $\left(-\frac{9}{16}, \infty\right)$ B) $\left(\infty, \frac{21}{16}\right)$ C) $\left(\frac{21}{16}, \infty\right)$ D) $\left(\infty, \frac{9}{16}\right)$

Answer: B

143) $-3(2x + 3) \geq 2[3x - 2(x - 2)]$

A) $\left(-\infty, -\frac{1}{4}\right]$ B) $\left(-\infty, \frac{17}{8}\right]$ C) $\left(-\infty, -\frac{17}{8}\right]$ D) $\left[-\frac{17}{8}, \infty\right)$

Answer: C

144) $\frac{1}{2}(x - 4) > \frac{1}{6}(5x + 4)$

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

Answer: C

145) $\frac{1}{16}(3x + 4) \leq -\frac{1}{2} + \frac{1}{8}(3x + 1)$

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

Answer: B

146) $\frac{6}{5}(3x + 5) > 24$

A) $\left(\frac{25}{3}, \infty\right)$ B) $(\infty, 5)$ C) $\left(\infty, \frac{25}{3}\right)$ D) $(5, \infty)$

Answer: D

147) $27 - (2x + 1) \le 2(x - 2) + 2x$

A) $[5, \infty)$ B) $(-\infty, 5]$ C) $\left(-\infty, \frac{16}{3}\right]$ D) $\left[\frac{16}{3}, \infty\right)$

Answer: A

148) $\frac{1}{2}(8x + 14) - 46 > -\frac{1}{4}(12x - 40)$

A) $\left[\frac{29}{7}, \infty\right)$ B) $\left(-\infty, \frac{29}{7}\right]$ C) $(-\infty, 7]$ D) $[7, \infty)$

Answer: D

149) $0.5(4x - 3) < 1.1 - (x + 5)$

A) $\left(-\infty, \frac{38}{15}\right)$ B) $\left(\frac{38}{15}, \infty\right)$ C) $\left(-\infty, -\frac{4}{5}\right)$ D) $\left(-\frac{4}{5}, \infty\right)$

Answer: C

150) In order for a chemical reaction to take place, the Fahrenheit temperature F of the reagents must be at least 103.08° F. At what Celsius temperatures C will the reaction occur? $\left(F = \frac{9}{5}C + 32\right)$

A) $\{C \mid C \ge 39.49°\}$ B) $\{C \mid C \le 39.49°\}$ C) $\{C \mid C < 217.54°\}$ D) $\{C \mid C \ge 217.54°\}$

Answer: A

151) In order for a chemical reaction to remain stable, its Celsius temperature C must be no more than 135.2° C. At what Fahrenheit temperatures F will the reaction remain stable. $\left(F = \frac{9}{5}C + 32\right)$

A) $\{F \mid F \ge 275.36°\}$ B) $\{F \mid F \le 57.33°\}$ C) $\{F \mid F \ge 57.33°\}$ D) $\{F \mid F \le 275.36°\}$

Answer: D

152) The equation $y = 0.003x - 0.20$ can be used to determine the profit y, in dollars, of producing x items. How many items x must be produced so the profit will be at least $1012?

A) $\{x \mid x \ge 336{,}400\}$ B) $\{x \mid x \ge 337{,}267\}$ C) $\{x \mid 0 < x \le 337{,}399\}$ D) $\{x \mid x \ge 337{,}400\}$

Answer: D

153) A salesperson has two job offers. Company A offers a weekly salary of $450 plus commission of 10% of sales. Company B offers a weekly salary of $900 plus commission of 5% of sales. What is the amount of sales above which Company A's offer is the better of the two?

A) $4500 B) $18,000 C) $9100 D) $9000

Answer: D

154) Company A rents copiers for a monthly charge of $200 plus 8 cents per copy. Company B rents copiers for a monthly charge of $400 plus 4 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) 2500 copies C) 5100 copies D) 5000 copies

Answer: D

155) Jon has 892 points in his math class. He must have 76% 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) 172 points B) 1064 points C) 678 points D) 508 points

Answer: A

156) Photography reprints cost $0.52 each at a local photo shop. Through the mail, they cost $0.44 each plus $1.20 postage and handling. How many reprints must a customer purchase to make it less expensive to use mail order?

A) {n|n > 16 reprints} B) {n|n > 19 reprints} C) {n|n > 18 reprints} D) {n|n > 15 reprints}

Answer: D

Find the indicated intersection or union.

157) {4, 7, 11, 18, 24} ∩ {7, 18, 24, 27}

A) {4, 7, 18, 24} B) {7, 18, 24, 27} C) {7, 18, 24} D) {4, 7, 11, 18, 24, 27}

Answer: C

158) {4, 9, 13, 15} ∪ {9, 15, 20, 28}

A) {4, 9, 13, 15, 20, 28} B) {4, 9, 15, 20} C) {9, 15} D) {9, 15, 20}

Answer: A

159) {q, s, u, v, w, x, y, z} ∩ {q, s, y, z}

A) {v, x} B) {q, s, y, z} C) {q, s, u, v, w, y} D) {s, u, v, w, x, z}

Answer: B

160) {q, s, u, v, w, x, y, z} ∪ {q, s, y, z}

A) {q, s, u, v, w, x, y, z} B) {s, u, v, w, x, z}
C) {s, u, w} D) {v, x}

Answer: A

161) {q, s, u, v, w, x, y, z} ∩ {s}

A) {s, u, w} B) {v, x} C) {s} D) {q, s, u, v, w, x, y}

Answer: C

162) {v, w, x, y, z} ∪ {q, s, y, z}

A) {q, s, v, w, x, y, z} B) {s, u, v, w, x, z} C) {s, u, w} D) {q, s, u, v, w, x, y}

Answer: A

163) {q, s, u, v, w, x} ∩ ∅

A) {q, s, u, v, w, x} B) {q, s, u, v, w} C) ∅ D) {q}

Answer: C

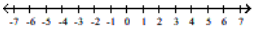
164) {q, s, u, v, w, x} ∪ ∅

A) {q, s, u, v, w, x} B) {q, s, u, v, w} C) {q} D) ∅

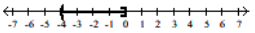
Answer: A

Graph and write interval notation.

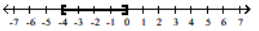
165) $-4 \le x \le 0$



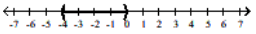
A) $(-4, 0]$



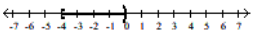
B) $[-4, 0]$



C) $(-4, 0)$

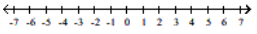


D) $[-4, 0)$

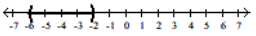


Answer: B

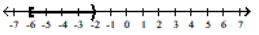
166) $-6 < x < -2$



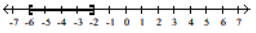
A) $(-6, -2)$



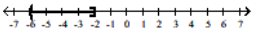
B) $[-6, -2)$



C) $[-6, -2]$

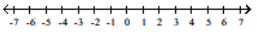


D) $(-6, -2]$

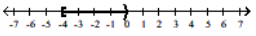


Answer: A

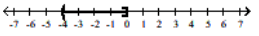
167) $-4 \le x < 0$



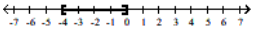
A) $[-4, 0)$



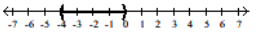
B) $(-4, 0]$



C) $[-4, 0]$

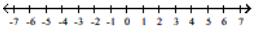


D) $(-4, 0)$

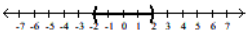


Answer: A

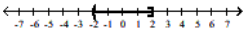
168) $x \le 2$ and $x \ge -2$



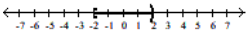
A) $(-2, 2)$



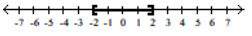
B) $(-2, 2]$



C) $[-2, 2)$

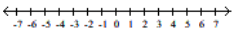


D) $[-2, 2]$

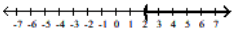


Answer: D

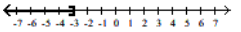
169) $x \geq 2$ and $x \geq -3$



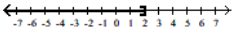
A) $(2, \infty)$



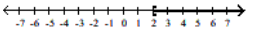
B) $(-\infty, -3]$



C) $(-\infty, 2]$

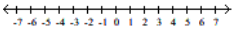


D) $[2, \infty)$

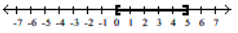


Answer: D

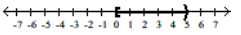
170) $x > 0$ and $x < 5$



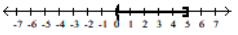
A) [0, 5]



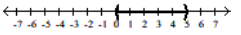
B) [0, 5)



C) (0, 5]

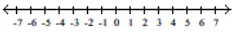


D) (0, 5)

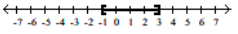


Answer: D

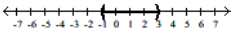
171) $x < 3$ and $x > -1$



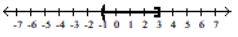
A) [-1, 3]



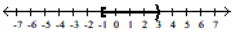
B) (-1, 3)



C) (-1, 3]



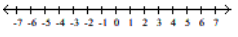
D) [-1, 3)



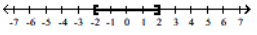
Answer: B

Solve and graph.

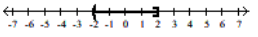
172) $8x + 6 \geq -10$ and $8x + 6 \leq 22$



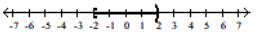
A) [-2, 2]



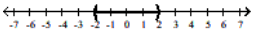
B) (-2, 2]



C) [-2, 2)

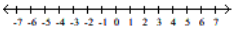


D) (-2, 2)

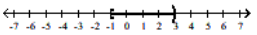


Answer: A

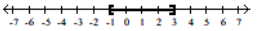
173) $-15 < 8x - 7$ and $2x - 1 < 5$



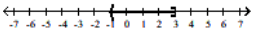
A) $[-1, 3)$



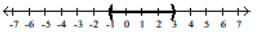
B) $[-1, 3]$



C) $(-1, 3]$

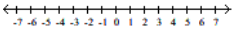


D) $(-1, 3)$

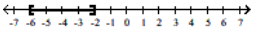


Answer: D

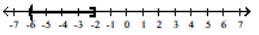
174) $-38 \leq 7x + 4$ and $4x - 1 < -9$



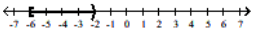
A) $[-6, -2]$



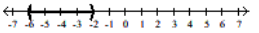
B) $(-6, -2]$



C) $[-6, -2)$

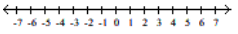


D) $(-6, -2)$

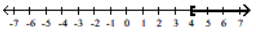


Answer: C

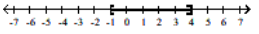
175) $9x + 7 \geq -2$ and $9x - 2 \geq 34$



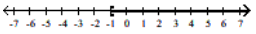
A) $[4, \infty)$



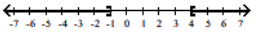
B) $[-1,4]$



C) $[-1, \infty)$

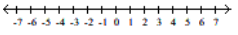


D) $(-\infty, -1] \cup [4, \infty)$

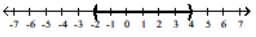


Answer: A

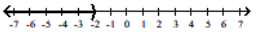
176) $2x + 8 < 4$ and $-9 - 2x > -17$



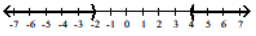
A) $(-2, 4)$



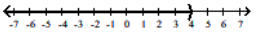
B) $(-\infty, -2)$



C) $(-\infty, -2) \cup (4, \infty)$

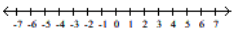


D) $(-\infty, 4)$

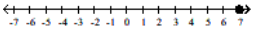


Answer: B

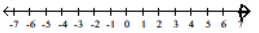
177) $4x - 10 \leq 18$ and $2x - 1 \geq 13$



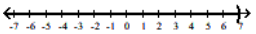
A) {7}



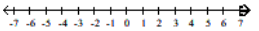
B) (7, ∞)



C) (- ∞, 7)

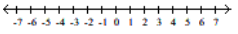


D) [7, ∞)

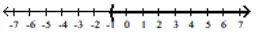


Answer: A

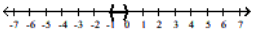
178) $4x > 4$ and $x + 5 < 5$



A) (-1, ∞)

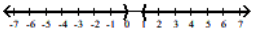


B) (-1, 0)



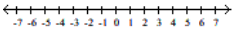
C) ∅

D) (0, 1)

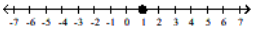


Answer: C

179) $5x - 1 < 4$ and $x - 2 > -1$

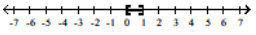


A) {1}

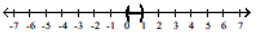


B) ∅

C) [0, 1]



D) (0, 1)



Answer: B

Solve.

180) $-5 < x + 9 < 7$

A) (-14, -2) B) (-16, -4) C) (4, 16) D) (-14, 16)

Answer: A

181) $8 < 2x \leq 12$

A) (-4, -6] B) [-4, -6) C) (4, 6] D) [4, 6)

Answer: C

182) $6 \geq -x > -7$

A) [-6, 7) B) (-7, 6] C) [6, 7) D) (-6, 7]

Answer: A

183) $9 \le 5t - 1 \le 39$

A) $[-8, -2]$ B) $[2, 8]$ C) $(-8, -2)$ D) $(2, 8)$

Answer: B

184) $-9 \le -2c + 1 < -7$

A) $(-5, -4]$ B) $[-5, -4)$ C) $(4, 5]$ D) $[4, 5)$

Answer: C

185) $-13 \le -3z + 5 \le -1$

A) $[-6, -2]$ B) $(-6, -2)$ C) $[2, 6]$ D) $(2, 6)$

Answer: C

186) $-5 < \frac{6 - 5x}{7} \le 2$

A) $\left[-\frac{8}{5}, \frac{41}{5}\right]$ B) $\left[-\frac{8}{5}, \frac{41}{5}\right)$ C) $\left(\frac{8}{5}, \frac{41}{5}\right)$ D) $\left[\frac{8}{5}, \frac{41}{5}\right)$

Answer: B

187) $16 \le \frac{7}{2}x + 9 < 37$

A) $[2, 3)$ B) $(2, 3]$ C) $(2, 8]$ D) $[2, 8)$

Answer: D

188) $-9 < \frac{7x - 12}{4} \le -2$

A) $\left(-\frac{24}{7}, \frac{20}{7}\right]$ B) $\left[-\frac{24}{7}, \frac{20}{7}\right)$ C) $\left[-\frac{24}{7}, \frac{4}{7}\right)$ D) $\left(-\frac{24}{7}, \frac{4}{7}\right]$

Answer: D

189) $-\frac{1}{3} \le \frac{5x - 1}{9} < \frac{1}{3}$

A) $\left(-\frac{2}{5}, \frac{4}{5}\right]$ B) $\left(-\frac{2}{5}, \frac{4}{5}\right)$ C) $\left[-\frac{8}{15}, \frac{2}{3}\right)$ D) $\left[-\frac{2}{5}, \frac{4}{5}\right)$

Answer: D

190) $-\frac{1}{5} < \frac{1}{25}x - 4 \le \frac{1}{5}$

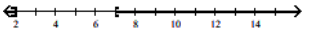
A) $(95, 105]$ B) $(-105, -95]$ C) $(-1, 9]$ D) $[-1, 1)$

Answer: A

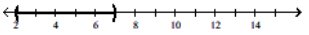
Solve the compound inequality. Express the solution using interval notation. Graph the solution set.

191) $x \leq 2$ or $x \geq 7$

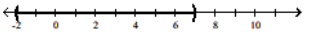
A) $(-\infty, 2] \cup [7, \infty)$



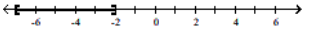
B) $(2, 7)$



C) $(-2, 7)$



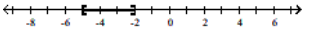
D) $[-7, -2]$



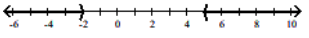
Answer: A

192) $x < -2$ or $x > 5$

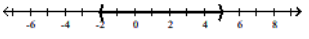
A) $[-5, -2]$



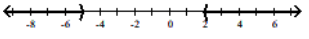
B) $(-\infty, -2) \cup (5, \infty)$



C) $(-2, 5)$



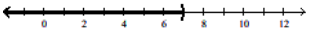
D) $(-\infty, -5) \cup (2, \infty)$



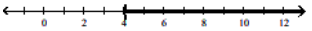
Answer: B

193) $x < 4$ or $x < 7$

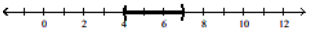
A) $(-\infty, 7)$



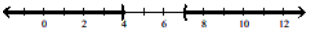
B) $(4, \infty)$



C) $(4, 7)$



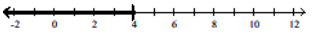
D) $(-\infty, 4) \cup (7, \infty)$



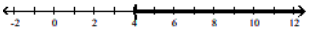
Answer: A

194) $x > 4$ or $x < 4$

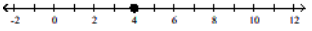
A) $(-\infty, 4)$



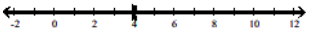
B) $(4, \infty)$



C) $(4, 4)$



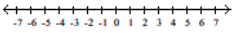
D) $(-\infty, 4) \cup (4, \infty)$



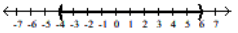
Answer: D

Solve and graph.

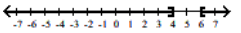
195) $x \leq 4$ or $x \geq 6$



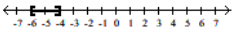
A) $(-4, 6)$



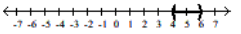
B) $(-\infty, 4] \cup [6, \infty)$



C) $[-6, -4]$

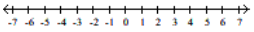


D) $(4, 6)$

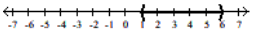


Answer: B

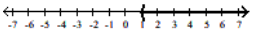
196) $x < 1$ or $x < 6$



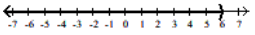
A) $(1, 6)$



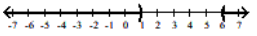
B) $(1, \infty)$



C) $(-\infty, 6)$

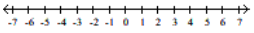


D) $(-\infty, 1) \cup (6, \infty)$

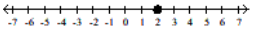


Answer: C

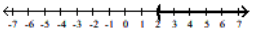
197) $x > 2$ or $x < 2$



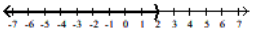
A) $\{2\}$



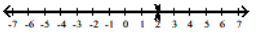
B) $(2, \infty)$



C) $(-\infty, 2)$

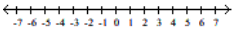


D) $(-\infty, 2) \cup (2, \infty)$

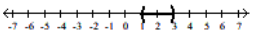


Answer: D

198) $6x - 4 < 2x$ or $-2x \leq -6$

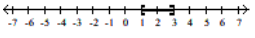


A) $(1, 3)$

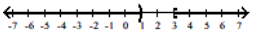


B) $\varnothing$

C) $[1, 3]$

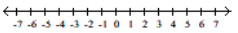


D) $(-\infty, 1) \cup [3, \infty)$

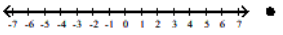


Answer: D

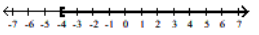
199) $-4x + 1 \geq 9$ or $5x + 3 \geq -17$



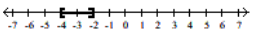
A) $(-\infty, \infty)$



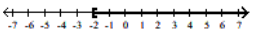
B) $[-4, \infty)$



C) $[-4, -2]$



D) $[-2, \infty)$



Answer: A

Solve.

200) $1 - 4x \geq 9$ or $6x + 3 \geq -21$

A) $[-4, \infty)$ B) $[-4, -2]$ C) $[-2, \infty)$ D) $(-\infty, \infty)$

Answer: D

201) $8x + 5 \leq 13$ or $6x - 1 \geq 23$

A) $[4, \infty)$ B) $[1, \infty)$ C) $(-\infty, 1] \cup [4, \infty)$ D) $[1, 4]$

Answer: C

202) $4 \leq 2t - 2$ or $12 \geq 2t - 2$

A) $(-\infty, \infty)$ B) $[-7, -3]$ C) $(\infty, 3] \cup [7, \infty)$ D) $[3, 7]$

Answer: A

203) $-4c + 3 \leq -17$ or $-4c + 3 > -5$

A) $(-\infty, \infty)$ B) $(\infty, 2) \cup [5, \infty)$ C) $(2, 5]$ D) $(\infty, -5] \cup (-2, \infty)$

Answer: B

204) $1 - 4x \geq 8$ or $1 - 4x < 2$

A) $\left(\infty, -\frac{7}{4}\right] \cup \left(-\frac{1}{4}, \infty\right)$ B) $\left(-\frac{7}{4}, -\frac{1}{4}\right]$ C) $\left(\infty, -\frac{1}{4}\right] \cup \left(\frac{7}{4}, \infty\right)$ D) $\left(-\frac{7}{4}, \frac{1}{4}\right]$

Answer: A

205) $\frac{3 - 4x}{10} < -8$ or $\frac{3 - 4x}{10} \geq 6$

A) $\left(\infty, -\frac{57}{4}\right) \cup \left(\frac{83}{4}, \infty\right)$ B) $\left(\infty, -\frac{57}{4}\right] \cup \left(\frac{83}{4}, \infty\right)$

C) $\left[-\frac{57}{4}, \frac{83}{4}\right)$ D) $(-\infty, \infty)$

Answer: B

206) $\frac{3x - 1}{15} < -\frac{1}{3}$ or $\frac{3x - 1}{15} \geq \frac{1}{3}$

A) $\left[-\frac{14}{9}, \frac{16}{9}\right)$ B) $(-\infty, \infty)$ C) $\left(-\infty, -\frac{4}{3}\right) \cup [2, \infty)$ D) $\left(-\frac{4}{3}, 2\right]$

Answer: C

207) $\frac{7}{2}x - 3 \leq 4$ or $\frac{7}{2}x - 3 > 18$

A) $(-\infty, \infty)$ B) $(-\infty, -2] \cup (6, \infty)$ C) $(-\infty, 2] \cup (6, \infty)$ D) $[2, 6)$

Answer: C

208) $\frac{3x - 20}{4} < -14$ or $\frac{3x - 20}{4} \geq -4$

A) $(-\infty, \infty)$ B) $\left[-12, \frac{4}{3}\right)$ C) $(-\infty, -12) \cup [12, \infty)$ D) $(-\infty, -12) \cup \left[\frac{4}{3}, \infty\right)$

Answer: D

209) Using the formula to find Fahrenheit (F) in terms of Celsius (C), $F = \left(\frac{9}{5}\right)C + 32$, find the range (to the nearest tenth) of the Fahrenheit temperature when the range of the Celsius temperature is between 3°C and 10°C, inclusive.

A) Between 5.4°F and 18°F, inclusive
B) Between 37.4°F and 50°F, inclusive
C) Between 33.7°F and 32.8°F, inclusive
D) Between 21.4°F and 34°F, inclusive

Answer: B

210) Assume that the mathematical model C(x) = 15x + 140 represents the cost C, in hundreds of dollars, for a certain manufacturer to produce x items. How many items x can be manufactured while keeping costs between between $464,000 and $689,000?

A) {x | 480 < x < 640} B) {x | 450 < x < 600} C) {x | 320 < x < 480} D) {x | 300 < x < 450}

Answer: D

211) Suppose that the sales of a particular brand of appliance satisfy the relationship S(x) = 190x + 1200, where S(x) represents the number of sales in year x, with x = 0 corresponding to 1990. For what years will sales be between 1580 and 2720?

A) Between 1992 and 1997
B) Between 3 and 9
C) Between 1991 and 1997
D) Between 1992 and 1998

Answer: D

212) Body mass index is given by the formula $I = \frac{704.5W}{H^2}$. Mary's height is 77 in. What weights W will allow Mary to keep her body mass index I between 18.5 and 25?

A) {W | 183.8 lb < W < 219.4 lb}
B) {W | 155.7 lb < W < 210.4 lb}
C) {W | 2 lb < W < 2.7 lb}
D) {W | 142.3 lb < W < 189.7 lb}

Answer: B

Simplify.

213) $|8.9z|$

A) $-8.9z$ B) $-8.9|z|$ C) $8.9z$ D) $8.9|z|$

Answer: D

214) $|5x^2|$

A) $|5|x^2$ B) $5|x^2|$ C) $5x$ D) $5x^2$

Answer: D

215) $|-12x^2|$

A) $12x$ B) $12x^2$ C) $12|x^2|$ D) $-12x^2$

Answer: B

216) $|-9x|$

A) $-9x$ B) $9|x|$ C) $9x$ D) $|9|x$

Answer: B

217) $\left|\frac{-10}{x}\right|$

A) $\frac{10}{x}$ B) $\frac{-10}{x}$ C) $\frac{|-10|}{x}$ D) $\frac{10}{|x|}$

Answer: D

218) $\left|\frac{x}{7}\right|$

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

Answer: C

219) $\left|\frac{x^6}{-y}\right|$

A) $\frac{x^6}{|-y|}$ B) $\left|\frac{x^6}{-y}\right|$ C) $\frac{x^6}{|y|}$ D) $\frac{x^6}{y}$

Answer: C

220) $\left|\frac{-24x^2}{8x}\right|$

A) $-3x$ B) $3x$ C) $3|x|$ D) $|3x|$

Answer: C

221) $\left|\frac{16y}{8y^2}\right|$

A) $\frac{2|y|}{y^2}$ B) $\frac{2}{|y|}$ C) $\frac{2|y|}{|y^2|}$ D) $\frac{2}{y}$

Answer: B

Find the distance between the points on a number line.

222) 15, -6

A) 9 B) 21 C) -21 D) -9

Answer: B

223) $-6, 7$

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

Answer: C

224) $-13, -14$

A) -1 B) 1 C) -27 D) 27

Answer: B

225) $-2, 18$

A) 16 B) -16 C) 20 D) -20

Answer: C

226) $-2.6, 0.4$

A) 1.5 B) 3 C) 1.1 D) 2.2

Answer: B

227) $\frac{1}{4}, -\frac{2}{3}$

A) $\frac{11}{12}$ B) $\frac{12}{5}$ C) $\frac{12}{11}$ D) $\frac{5}{12}$

Answer: A

Solve.

228) $|x| = 10$

A) {100} B) {10, -10} C) {10} D) {-10}

Answer: B

229) $|x| = -11$

A) {11, -11} B) {-11} C) {11} D) $\varnothing$

Answer: D

230) $|x| = 2.1$

A) {441} B) {2.1} C) {2.1, -2.1} D) {-2.1}

Answer: C

231) $|x - 8| = 7$

A) $\varnothing$ B) {$-15, -1$} C) {15, 1} D) {15}

Answer: C

232) $|t + 4| = 0$

A) $\varnothing$ B) {4} C) {$-4, 4$} D) {-4}

Answer: D

233) $|8x - 9| = 4$

A) $\left\{-\frac{4}{3}, -\frac{4}{9}\right\}$ B) $\left\{\frac{4}{9}, \frac{4}{3}\right\}$ C) $\left\{-\frac{13}{8}, -\frac{5}{8}\right\}$ D) $\left\{\frac{5}{8}, \frac{13}{8}\right\}$

Answer: D

234) $|2x - 4| = 18$

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

Answer: D

235) $|3x + 4| = 8$

A) $\left\{-\frac{4}{3}, 4\right\}$ B) $\left\{\frac{4}{3}, -4\right\}$ C) $\{1, -3\}$ D) $\varnothing$

Answer: B

236) $|x| + 4 = 15$

A) $\{-11, 11\}$ B) $\{11\}$ C) $\{-15, 15\}$ D) $\{-15\}$

Answer: A

237) $|5x| = 40$

A) $\{35\}$ B) $\{-8, 8\}$ C) $\{200\}$ D) $\{8\}$

Answer: B

238) $|8x| = 5$

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

Answer: D

239) $|5x| = 0$

A) $\{0\}$ B) $\{-5, 0\}$ C) $\{0, 5\}$ D) $\{-5, 5\}$

Answer: A

240) $|5x| + 9 = 12$

A) $\varnothing$ B) $\left\{\frac{5}{3}, -\frac{5}{3}\right\}$ C) $\{3, -3\}$ D) $\left\{\frac{3}{5}, -\frac{3}{5}\right\}$

Answer: D

241) $|x + 5| - 2 = 12$

A) $\{-19, 9\}$ B) $\{-5, 9\}$ C) $\{-9, 9\}$ D) $\{15, 9\}$

Answer: A

242) $|6x - 5| - 7 = -1$

A) $\left\{-\frac{1}{6}, \frac{11}{6}\right\}$ B) $\left\{-\frac{1}{6}, -\frac{11}{6}\right\}$ C) $\left\{--\frac{1}{6}, \frac{11}{6}\right\}$ D) $\left\{\frac{11}{6}\right\}$

Answer: A

243) $5|x| + 10 = 18$

A) $\left\{\frac{28}{5}, -\frac{28}{5}\right\}$ B) $\left\{\frac{28}{5}\right\}$ C) $\left\{\frac{8}{5}, -\frac{8}{5}\right\}$ D) $\left\{\frac{8}{5}\right\}$

Answer: C

244) $4|x + 9| - 9 = 3$

A) $\{-12\}$ B) $\{-6, -12\}$ C) $\{-6\}$ D) $\left\{-6, \frac{21}{2}\right\}$

Answer: B

245) $\left|\frac{5x - 5}{9}\right| = 3$

A) $\varnothing$ B) $\left\{\frac{32}{5}, -\frac{22}{5}\right\}$ C) $\left\{-\frac{32}{5}\right\}$ D) $\left\{\frac{22}{5}\right\}$

Answer: B

246) $|x + 1| = -6$

A) {5, -7} B) {5} C) $\varnothing$ D) {-5, 7}

Answer: C

247) $|5x - 6| = -3$

A) $\left\{\frac{3}{5}, \frac{9}{5}\right\}$ B) $\left\{\frac{1}{3}, \frac{4}{3}\right\}$ C) $\left\{-\frac{9}{5}, -\frac{3}{5}\right\}$ D) $\varnothing$

Answer: D

248) $\left|\frac{4}{5} - 4x\right| = \frac{2}{7}$

A) $\left\{-\frac{9}{70}, -\frac{19}{70}\right\}$ B) $\left\{-\frac{19}{70}\right\}$ C) $\left\{\frac{9}{70}\right\}$ D) $\left\{\frac{19}{70}, \frac{9}{70}\right\}$

Answer: D

249) $|a - 5| = |a - 1|$

A) $\varnothing$ B) {6} C) $\{3\}$ D) $\left\{-\frac{1}{3}\right\}$

Answer: C

250) $|3s - 2| = |s + 1|$

A) $\left\{-\frac{3}{2}, -\frac{1}{4}\right\}$ B) $\varnothing$ C) $\left\{\frac{3}{2}, \frac{1}{4}\right\}$ D) $\left\{\frac{3}{2}\right\}$

Answer: C

251) $|7x - 10| = |6x - 3|$

A) $\{7, 1\}$ B) $\{13, 1\}$ C) $\left\{\frac{7}{13}, 13\right\}$ D) $\{-13, 1\}$

Answer: A

252) $|9x + 2| = |3 - 10x|$

A) $\left\{-1, -\frac{5}{19}\right\}$ B) $\left\{\frac{1}{19}, 5\right\}$ C) $\left\{\frac{5}{19}, 1\right\}$ D) $\left\{-\frac{5}{19}, 1\right\}$

Answer: B

253) $|m + 4| = |5 - m|$

A) $\emptyset$ B) $\left\{\frac{1}{2}\right\}$ C) $\{1\}$ D) $\{-2\}$

Answer: B

254) $|y - 9| = |9 - y|$

A) all real numbers B) $\{0\}$ C) $\emptyset$ D) $\{9\}$

Answer: A

255) $|-3x + 7| = |9 - 8x|$

A) $\left\{\frac{2}{5}, \frac{16}{11}\right\}$ B) $\emptyset$ C) $\left\{\frac{2}{5}\right\}$ D) $\left\{\frac{2}{5}, -\frac{16}{11}\right\}$

Answer: A

256) $\left|\frac{5 - 3x}{6}\right| = \left|\frac{5x - 7}{4}\right|$

A) $\left\{\frac{31}{21}, \frac{11}{9}\right\}$ B) $\left\{\frac{9}{11}\right\}$ C) $\left\{\frac{31}{21}\right\}$ D) $\left\{\frac{9}{11}, 11\right\}$

Answer: A

257) $\left|\frac{1}{2}x - 3\right| = \left|\frac{2}{3}x + 4\right|$

A) $\{-7\}$ B) $\{-42\}$ C) $\left\{-42, -\frac{6}{7}\right\}$ D) $\left\{-7, -\frac{1}{7}\right\}$

Answer: C

Solve the absolute value inequality. Write the solution set using interval notation.

258) $|x| > 10$

A) $(-\infty, -10) \cup (10, \infty)$ B) $(-10, 10)$ C) $(10, \infty)$ D) $(-10, \infty)$

Answer: A

259) $|x| \leq 16$

A) $[-16, 16]$ B) $(-\infty, -16] \cup [16, \infty)$ C) $(-\infty, 16]$ D) $(-\infty, -16]$

Answer: A

260) $|9x - 2| \geq 3$

A) $\left[-\frac{1}{9}, \frac{5}{9}\right]$ B) $\left[\frac{5}{9}, \infty\right)$ C) $\left(-\infty, -\frac{5}{9}\right] \cup [3, \infty)$ D) $\left(-\infty, -\frac{1}{9}\right] \cup \left[\frac{5}{9}, \infty\right)$

Answer: D

261) $|8x + 3| < 6$

A) $\left(-\frac{9}{8}, \frac{3}{8}\right)$ B) $\left(-\infty, -\frac{9}{8}\right)$ C) $(-\infty, 8)$ D) $\left(-\infty, -\frac{9}{8}\right) \cup \left(\frac{3}{8}, \infty\right)$

Answer: A

262) $|r - 4.5| < 7$

A) $(-11.5, 2.5)$ B) $(-\infty, -2.5) \cup (11.5, \infty)$

C) $(-\infty, -11.5) \cup (2.5, \infty)$ D) $(-2.5, 11.5)$

Answer: D

263) $|b - 1| + 2 > 5$

A) $(-\infty, -2) \cup (4, \infty)$ B) $(-\infty, -2) \cup (8, \infty)$ C) $(-2, 4)$ D) $(-\infty, -8) \cup (2, \infty)$

Answer: A

264) $8|x - 1| < 6$

A) $\left(-\infty, -\frac{7}{4}\right) \cup \left(-\frac{1}{4}, \infty\right)$ B) $\left(-\infty, \frac{1}{4}\right) \cup \left(\frac{7}{4}, \infty\right)$ C) $\left(\frac{1}{4}, \frac{7}{4}\right)$ D) $\left(-\frac{7}{4}, -\frac{1}{4}\right)$

Answer: C

265) $8|x + 7| \geq 9$

A) $\left(-\infty, -\frac{47}{8}\right] \cup \left[-\frac{65}{8}, \infty\right)$ B) $\left(-\frac{47}{8}, -\frac{65}{8}\right)$

C) $\left(-\infty, -\frac{65}{8}\right] \cup \left[-\frac{47}{8}, \infty\right)$ D) $\left(-\infty, \frac{65}{8}\right] \cup \left[\frac{47}{8}, \infty\right)$

Answer: C

266) $\left|\frac{x - 7}{8}\right| \geq 3$

A) $(-\infty, -17] \cup [31, \infty)$ B) $(-\infty, -17] \cap [31, \infty)$ C) $[-17, 31]$ D) $(-17, 31)$

Answer: A

267) $\left|\frac{5 - 4x}{7}\right| \leq 3$

A) $\left(-\infty, -4\right] \cup \left[\frac{13}{2}, \infty\right)$ B) $\left[-4, \frac{13}{2}\right]$ C) $\left(-\infty, -4\right) \cap \left(\frac{13}{2}, \infty\right)$ D) $\emptyset$

Answer: B

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

Provide an appropriate response..

268) Which one of these is not a linear equation?

a) $6y^2 - 3y + 1 = 0$ b) $0.07x - 0.09x = 0.57$

c) $5t - 11t = -6t$ d) $7x + 9(x - 2) = -5x$

Answer: (a) is not a linear equation.

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

Answer: False. It has no solution.

270) True or False: This pair of equations is equivalent.

$2x - 3 = 1$ and $9x + 4 = 22$

Answer: True. Each has solution 2.

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

271) Which two of the following equations do not correctly state the relationship between distance, rate and time?

(a) $\frac{d}{t} = r$ (b) $dr = t$

(c) $\frac{r}{t} = d$ (d) $\frac{d}{r} = t$

A) (a) & (c) B) (a) & (d) C) (b) & (c) D) (b) & (d)

Answer: C

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

272) 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 inequal not satisfied by any real number x?

(a) $-5 < x \leq -11$

(b) $-8 < x \leq -7$

(c) $0 < x \leq 4$

(d) $-2 < x \leq 6$

Answer: Choice (a).

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

Answer: When multiplying or dividing by a negative number.

274) Give a definition or an example of the word or phrase. Intersection of sets

Answer: Written as $A \cap B$, means the set of numbers in both A and B

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

275) Give an equation or inequality that states that the distance between 2x and 1 is equal to 6.

A) $|2x - 1| = 6$ B) $2x + 1 < 6$ C) $2x - 1 = 6$ D) $|2x - 1| < 6$

Answer: A