

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

1) Which of the following is a linear equation?

A) $\sqrt{x} + 14 = 15x$

B) $3x^2 + 10x = 5$

C) $\frac{10}{3x} - 3 = \frac{7}{x} + 15x$

D) $\frac{10}{3}x - 3 = 7x + 15$

Answer: D

2) Use substitution to determine which value is the solution to $5x + 3 = 18$.

A) $x = 2$

B) $x = 9$

C) $x = 3$

D) $x = 1$

Answer: C

3) Use substitution to determine which value is the solution to $-9y - 8 = 19$.

A) $x = -5$

B) $x = -3$

C) $x = -4$

D) $x = -19$

Answer: B

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

4) Solve the equation: $y + 5 = 7$.

Answer: $y = 2$

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

5) Solve the equation: $\frac{1}{3}x = -10$.

A) $x = -\frac{3}{10}$

B) $x = -30$

C) $x = -\frac{10}{3}$

D) $x = -13$

Answer: B

6) Solve the equation: $-2 = \frac{t}{1.9}$

A) $t = -1.1$

B) $t = -3.8$

C) $t = 3.8$

D) $t = -3.9$

Answer: B

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

7) Solve the equation: $-3x + 8 = 7$.

Answer: $x = \frac{1}{3}$

8) Solve the equation: $2(-3 - 3x) = 24$.

Answer: $x = -5$

9) Solve the equation: $-5(2y + 3) + 5 = 40$.

Answer: $y = -5$

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

10) Solve the equation: $6 - 3(-2 - 4x) = 2(3(x - 4) + 7)$.

A) $x = -\frac{11}{3}$

B) $x = 4$

C) $x = \frac{11}{3}$

D) $x = -\frac{29}{6}$

Answer: A

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

11) Solve the equation: $\frac{8}{3}(3x + 4) + 96 = \frac{32}{3}$

Answer: $x = -12$

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

12) Solve the equation: $\frac{5}{4}y - \frac{1}{3} = \frac{1}{2}(3y - 1)$.

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

B) $y = -10$

C) $y = 0$

D) $y = \frac{68}{201}$

Answer: A

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

13) Solve the equation: $-\frac{1}{5}(t + 6) - 2 = 3t + \frac{2}{3}$.

Answer: $t = -\frac{29}{24}$

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

14) Solve the equation: $\frac{3x + 4}{2} + \frac{5x + 4}{3} = \frac{52 + 7x}{5}$

A) $x = -4$

B) $x = 4$

C) $x = 0$

D) No solution

Answer: B

15) Solve the equation: $0.7(x - 10) + 0.5 = 1 - 0.6(20 - 2x) - 0.5$.

A) $x = 0.10$

B) No solution

C) $x = 10$

D) $x = 0$

Answer: C

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

16) Solve the equation: $0.12 + 0.03(y - 5) = -0.01(y - 4) + 0.02$.

Answer: $y = \frac{9}{4}$ or 2.25

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

17) Is the equation conditional, an identity, or a contradiction?

$$3(z + 2) - 2z = -2\left(-\frac{1}{2}z + 1\right) + 8$$

A) Conditional

B) Contradiction

C) Identity

Answer: C

18) Is the equation conditional, an identity, or a contradiction?

$$y - 5 + 3y = 7y + 4$$

A) Identity

B) Contradiction

C) Conditional

Answer: C

19) Is the equation conditional, an identity, or a contradiction?

$$22y + 2(3 - y) = 5 + 20y + 2$$

A) Contradiction

B) Conditional

C) Identity

Answer: A

20) Two numbers that differ by 19 have a sum of 53. Find the smaller of the two numbers.

A) 0

B) $\frac{53}{2}$

C) 17

D) 19

Answer: C

21) If t represents a number, write an expression for 7 less than twice the number.

A) $2t - 7$

B) $2t + 7$

C) $7 - 2t$

D) $2(t - 7)$

Answer: A

22) The sum of two numbers is 72. The larger number is 3 less than 3 times the smaller number. Find the smaller number.

A) $\frac{75}{2}$

B) 213

C) $\frac{213}{4}$

D) $\frac{75}{4}$

Answer: D

23) The sum of two consecutive integers is -75. Find the least of the two integers.

A) -76

B) 38

C) -37

D) -38

Answer: D

24) The sum of two consecutive even integers is 158. Find the least of the two integers.

- A) 156 B) -78 C) 80 D) 78

Answer: D

25) Two times the sum of three consecutive odd integers is the same as 25 more than 5 times the largest integer. Find the integers.

- A) 37, 39, and 41 B) 25, 27, and 29 C) 33, 35, and 37 D) 29, 31, and 33

Answer: C

26) The tax rate on a used car in Overshoe County is 7%. What is the sales tax on a sport utility with a selling price of \$15,000?

- A) \$1050.00 B) \$10,500.00 C) \$13,950.00 D) \$525.00

Answer: A

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

27) If \$15,000 is borrowed at 5.4% simple interest for 10 years, how much interest will be paid for the loan?

Answer: \$8100.00

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

28) A salesperson earns \$60 a day plus 12% commission on sales over \$200. If her daily earnings are \$95.88, how much money in merchandise did she sell?

- A) \$559.00 B) \$499.00 C) \$680.91 D) \$999.00

Answer: B

29) After his annual review, Miguel's salary was increased from \$32,000 per year to \$35,000. What percent increase does this represent? Round your answer to the nearest tenth of a percent.

- A) 9.4% B) 91.4% C) 8.6% D) 3000%

Answer: A

30) What is the sale price of a stereo that normally sells for \$210.00 and is on sale for 25% off?

- A) \$157.50 B) \$185.00 C) \$262.50 D) \$52.50

Answer: A

31) A car dealership marks up all new automobiles by 15%. What was the original wholesale cost of a car with a sticker price at this dealership of \$22,500? Round your answer to the nearest cent.

- A) \$19,565.22 B) \$25,875.00 C) \$3,375.00 D) \$18,700.00

Answer: A

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

- 32) For the fiscal year 2000, stock in giveusmoney.com gained 23%, while stock in Milton Steel increased by 8%. An investor bought a combined total of \$6000 of stock in these companies at the beginning of the year, and made a profit of \$600. How much was invested in each company? Round your answers to the nearest cent.

Answer: giveusmoney.com: \$800.00; Milton Steel: \$5200.00

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

- 33) Donna invested money in two accounts: one paying 4% simple interest and the other paying 3% simple interest. She invested \$3000 more in the 4% account than in the 3% account. If she received \$960 in interest at the end of 1 yr how much did she invest in each account?

A) \$14,000 at 4% and \$11,000 at 3% B) \$11,000 at 4% and \$14,000 at 3%
C) \$12,000 at 4% and \$15,000 at 3% D) \$15,000 at 4% and \$12,000 at 3%

Answer: D

- 34) One fruit punch has 45% fruit juice and another is 90% fruit juice. How much of the 45% punch should be mixed with 10 gal of the 90% punch to create a fruit punch that is 50% fruit juice?

A) 85 gal B) 75 gal C) 70 gal D) 80 gal

Answer: D

- 35) How many gallons of gasoline that is 6% ethanol must be added to 2,000 gallons of gasoline with no ethanol to get a mixture that is 4% ethanol?

A) 8000 gallons B) 1,800 gallons C) 5115 gallons D) 4000 gallons

Answer: D

- 36) Two cars are 270 miles apart and travel toward each other on the same road. They meet in 3 hours. One car travels 2 mph faster than the other. What is the average speed of each car?

A) 41 mph; 43 mph B) 43 mph; 45 mph C) 44 mph; 46 mph D) 42 mph; 44 mph

Answer: C

- 37) A freight train and a passenger train leave a rail yard at the same time and travel on parallel tracks. The passenger train travels 6 mph faster than the freight train. The combined distance traveled after 2 hours is 100 miles. What is the average speed of each train?

A) 22 mph; 28 mph B) 24 mph; 30 mph C) 21 mph; 27 mph D) 19 mph; 25 mph

Answer: A

- 38) The length of a rectangular plot of land is 3 times the width. If the perimeter is 1500 feet, find the dimensions of the plot. Round your answer to the nearest tenth, if necessary.

A) 750 ft $\times$ 2250 ft B) 187.5 ft $\times$ 562.5 ft
C) 375 ft $\times$ 1125 ft D) 100 ft $\times$ 300 ft

Answer: B

- 39) The plans for a rectangular deck call for the width to be 10 feet less than the length. Sam wants the deck to have an overall perimeter of 60 feet. What should the length of the deck be?
- A) 20 feet B) 10 feet C) 35 feet D) 30 feet

Answer: A

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

- 40) A plot of land in the shape of an isosceles triangle will be used for an outdoor concert venue. The sides that are equal in length will be twice as long as the third side; the perimeter will be 450 yards. Find the dimensions.

Answer: 180 yds. $\times$ 180 yds. $\times$ 90 yds.

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

- 41) Angles A, B, and C are the angles in a triangle. Angle B is 2 times as big as angle A, and angle C is 48° more than angle A. Find the measure of angle A in degrees.

A) 81° B) 10.5° C) 33° D) 66°

Answer: C

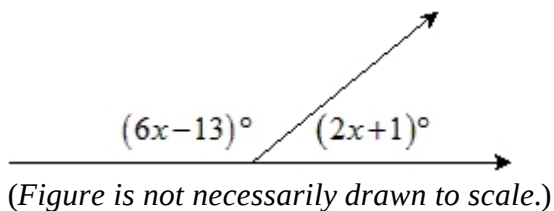
- 42) Two angles are complementary. The larger of the two is 3° more than twice the smaller. Find the 2 angles.

A) 29° and 61° B) 87° and 3° C) 31° and 59° D) 59° and 121°

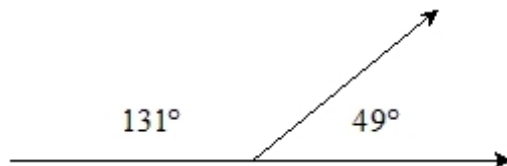
Answer: A

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

- 43) Solve for x , and then find the measures of the two angles.

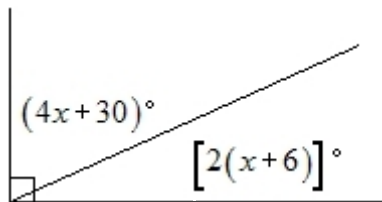


Answer: $x = 24$



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

44) Solve for x and then use its value to find the measure of each angle.



(Figure is not necessarily drawn to scale.)

A) $63^\circ, 27^\circ$

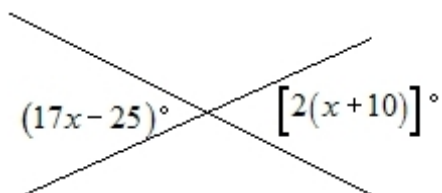
B) $65^\circ, 25^\circ$

C) $62^\circ, 28^\circ$

D) $67^\circ, 23^\circ$

Answer: C

45) Solve for x and then use its value to find the measure of each angle.



(Figure is not necessarily drawn to scale.)

A) 29°

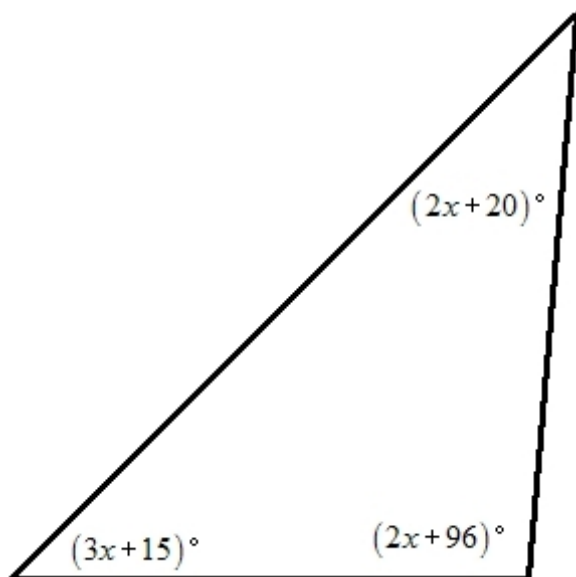
B) 28°

C) 26°

D) 24°

Answer: C

46) Solve for x and then use its value to find the measure of each angle.



(Figure is not necessarily drawn to scale.)

A) $38^\circ, 110^\circ, 32^\circ$

B) $38^\circ, 112^\circ, 30^\circ$

C) $36^\circ, 107^\circ, 37^\circ$

D) $36^\circ, 110^\circ, 34^\circ$

Answer: D

- 47) The mass of an object is equal to its density times its volume, or $m = DV$.
- Solve this equation for D .
 - The mass of a sample of iron ore is 9.92 grams and its volume is 3.1cm^3 . Find the density of the ore. Round to one decimal place.

A) a. $D = m - V$
b. 6.8 g/cm^3

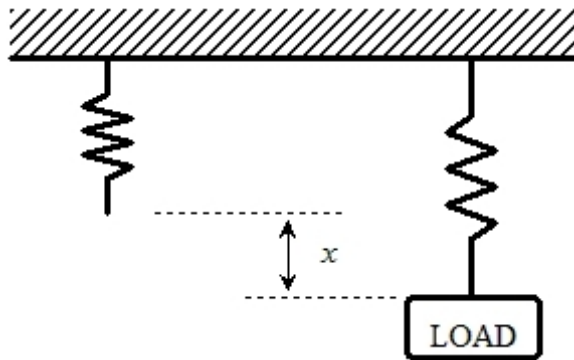
B) a. $D = \frac{V}{m}$
b. 0.3 g/cm^3

C) a. $D = \frac{m}{V}$
b. 3.2 g/cm^3

D) a. $D = mV$
b. 30.8 g/cm^3

Answer: C

- 48) One end of a stiff spring is attached firmly to the ceiling of a workshop (see figure). The load F (in pounds) required to stretch the spring by x inches is given by $F = kx$, where k is the stiffness constant of the spring.



- Solve $F = kx$ for x .
- How far will the spring stretch if its stiffness constant is 5 lb/in and it is loaded with a weight of 25.5 lb? Round to the nearest tenth of an inch.

A) a. $x = \frac{F}{k}$
b. 5.1 in.

B) a. $x = \frac{k}{F}$
b. 0.2 in.

C) a. $x = kF$
b. 127.5 in.

D) a. $x = F - k$
b. 20.4 in.

Answer: A

- 49) Solve for the indicated variable.

$C = 2\pi r$ for r

A) $r = \frac{2C}{\pi}$

B) $r = \frac{C}{2\pi}$

C) $r = \frac{\pi}{2C}$

D) $r = \frac{2\pi}{C}$

Answer: B

- 50) Solve for the indicated variable.

$F = kx - kx_0$ for x

A) $x = \frac{F + kx_0}{k}$

B) $x = \frac{F + kx_0}{x_0}$

C) $x = \frac{F - kx_0}{x_0}$

D) $x = \frac{F - kx_0}{k}$

Answer: A

51) Solve for F .

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

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

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

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

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

Answer: A

52) Solve for the indicated variable.

$$R = kAB^3 \text{ for } B^3$$

A) $B^3 = kAR$

B) $B^3 = \frac{R}{kA}$

C) $B^3 = \frac{kA}{R}$

D) $B^3 = \frac{kR}{A}$

Answer: B

53) Solve for the indicated variable.

$$L = \alpha(T - T_0) + L_0 \text{ for } T$$

A) $T = \frac{1}{\alpha}(L - L_0 + T_0)$

B) $T = \frac{1}{\alpha}(L - L_0) + T_0$

C) $T = \alpha(L - L_0) + T_0$

D) $T = \frac{L}{\alpha} - L_0 + T_0$

Answer: B

54) Solve for the indicated variable.

$$9x + 6y = -3 \text{ for } y$$

A) $y = \frac{3}{2}x - 3$

B) $y = \frac{3}{2}x - \frac{1}{2}$

C) $y = -\frac{3}{2}x - 3$

D) $y = -\frac{3}{2}x - \frac{1}{2}$

Answer: D

55) Solve for the indicated variable.

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

A) $b = 2Ah$

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

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

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

Answer: B

56) Express the equation in the form $y = mx + b$ by solving for y .

$$-2x - y = 10$$

A) $y = 2x - 10$

B) $y = 2x + 10$

C) $y = -2x + 10$

D) $y = -2x - 10$

Answer: D

57) Express the equation in the form $y = mx + b$ by solving for y .

$$-2x - 7y = -6$$

A) $y = -\frac{2}{7}x + \frac{6}{7}$

B) $y = -\frac{2}{7}x - 6$

C) $y = -\frac{2}{7}x - \frac{6}{7}$

D) $y = \frac{2}{7}x - \frac{6}{7}$

Answer: A

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

58) In statistics, the z-score formula $z = \frac{x - \mu}{\sigma}$ is used in studying probability.

a. Solve $z = \frac{x - \mu}{\sigma}$ for x .

b. Find x when $z = 2.5$, $\mu = 80$, and $\sigma = 20$

Answer: a. $x = z\sigma + \mu$

b. $x = 130$

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

59) Which expression is equivalent to $-13/(x - 10)$?

A) $\frac{-13}{10 + x}$

B) $\frac{-13}{10 - x}$

C) $\frac{13}{10 - x}$

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

Answer: C

60) Which expression is equivalent to $(-y - 8)/x$?

A) $-\frac{y + 8}{-x}$

B) $-\frac{y - 8}{x}$

C) $-\frac{-y - 8}{x}$

D) $-\frac{y + 8}{x}$

Answer: D

61) Solve for t .

$$6t - rt = 24$$

A) $t = \frac{24}{6 - r}$

B) $t = \frac{4}{1 - r}$

C) $t = 4 + r$

D) $t = 4 - r$

Answer: A

62) Solve for r .

$$T = rb - rn$$

A) $r = T(b + n)$

B) $r = \frac{T}{b + n}$

C) $r = \frac{T}{b - n}$

D) $r = T(b - n)$

Answer: C

63) Solve the inequality. Write the solution set in interval notation.

$$y - 11 > 4$$

A) $(-11, 4)$

B) $(15, \infty)$

C) $(-7, \infty)$

D) $[15, \infty)$

Answer: B

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

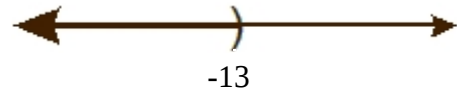
$$20 + t \leq 7$$

A)



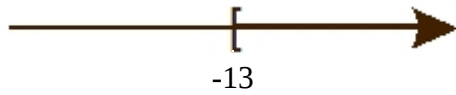
$[20, 7]$

B)



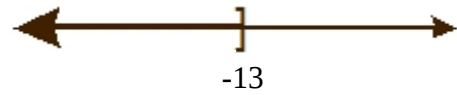
$(-\infty, -13)$

C)



$[-13, \infty)$

D)



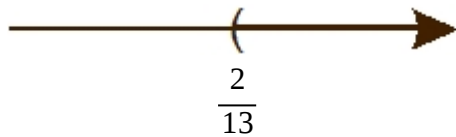
$(-\infty, -13]$

Answer: D

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

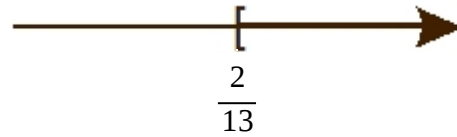
$$13y + 6 > 8$$

A)



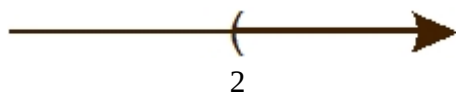
$\left(\frac{2}{13}, \infty\right)$

B)



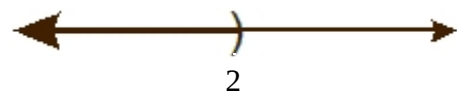
$\left[\frac{2}{13}, \infty\right)$

C)



$(2, \infty)$

D)



$\left(-\infty, \frac{2}{13}\right)$

Answer: A

66) Solve the inequality. Write the solution set in interval notation.

$$-8 - 8z \leq -3$$

A) $\left[-\infty, -\frac{5}{8}\right)$

B) $\left[-\infty, -\frac{5}{8}\right]$

C) $\left[-\frac{5}{8}, \infty\right)$

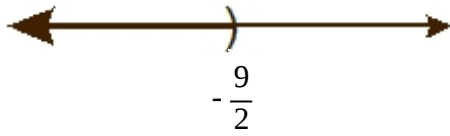
D) $\left[-\frac{5}{8}, \infty\right)$

Answer: C

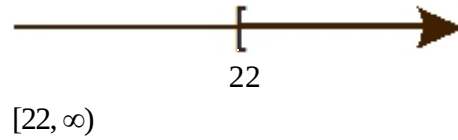
67) Solve the inequality. Graph the solution set and write the solution set in interval notation.

$$-4y > 18$$

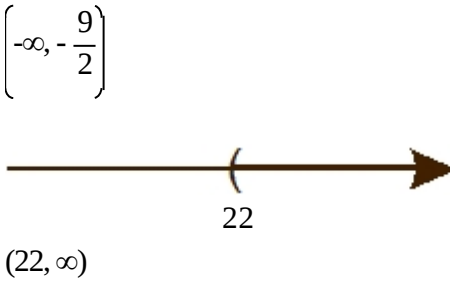
A)



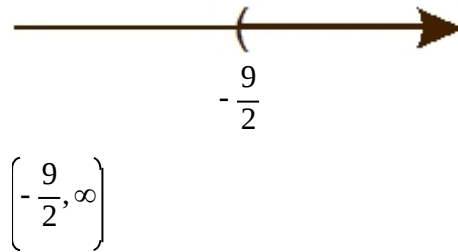
B)



C)



D)



Answer: A

68) Solve the inequality. Write the solution set in interval notation.

$$11 \leq 6(n + 4) - 4n$$

A) $\left[-\infty, -\frac{13}{2}\right]$

B) $\left[-\frac{13}{2}, \infty\right)$

C) $\left[-\frac{13}{2}, \infty\right)$

D) $[4, 11]$

Answer: C

69) Solve the inequality. Write the solution set in interval notation.

$$2 + 7z < 6z + -14$$

A) $(-16, \infty)$

B) $(-\infty, -16)$

C) $(-\infty, -12)$

D) $(-\infty, -16]$

Answer: B

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

70) Solve the inequality. Write the solution set in interval notation using fractions.

$$0.21n - 3 \leq -0.1(-5 - n)$$

Answer: $\left[-\infty, \frac{350}{11}\right]$

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

71) Solve the inequality. Write the solution set in interval notation.

$$\frac{7z + 1}{-3} \geq z - 5$$

A) $\left[\frac{14}{5}, \infty\right)$

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

C) $\left[\frac{7}{5}, \infty\right)$

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

Answer: D

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

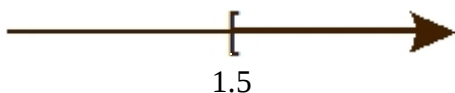
$$6.8k - 5.9 \geq 4.3$$

A)



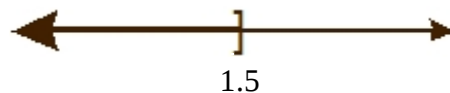
$(\infty, 1.5]$

C)



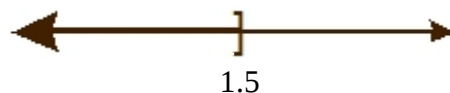
$[1.5, \infty)$

B)



$(\infty, 1.5]$

D)



$[1.5, \infty)$

Answer: C

73) Solve the inequality. Write the solution set in interval notation.

$$7(x - 3) - 6x \geq -7$$

A) $(-\infty, 14]$

B) $[14, \infty)$

C) $(14, \infty)$

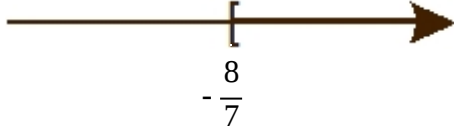
D) $[-4, \infty)$

Answer: B

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

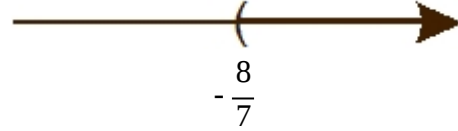
$$-5 - 6(2x + 1) < x - (-5 - x)$$

A)



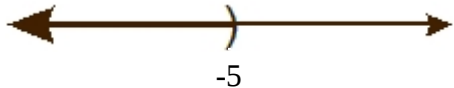
$$\left[-\frac{8}{7}, \infty\right)$$

B)



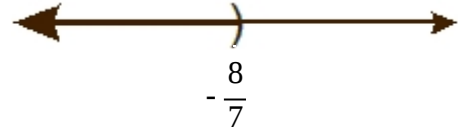
$$\left(-\frac{8}{7}, \infty\right)$$

C)



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

D)



$$\left(-\infty, -\frac{8}{7}\right)$$

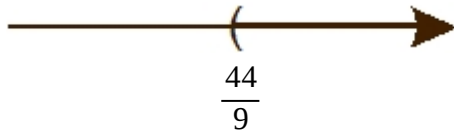
Answer: B

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

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

$$\frac{t}{4} - 2 > \frac{5}{3} - \frac{t}{2}$$

Answer:



$$\left(\frac{44}{9}, \infty\right)$$

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

76) Solve the inequality. Write the solution set in interval notation.

$$-2(4y - 7) + y \geq 2y - (-9 + y)$$

A) $\left[-\frac{1}{2}, \infty\right)$

B) $\left[\frac{5}{8}, \infty\right)$

C) $\left[-\infty, \frac{5}{8}\right]$

D) $\left(-\infty, \frac{5}{8}\right)$

Answer: C

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

- 77) Sparky has scores of 70, 67, and 73 on his first three Sociology tests. If he needs to keep an average of 70 to stay eligible for lacrosse, what scores on the fourth exam will accomplish this?

Answer: He must score 70 or higher.

- 78) A rental company charges a flat fee of \$7 to rent a power washer, plus \$4 per day. How many days could you keep the power washer if you plan to spend no more than \$34?

Answer: You can keep it 6 days or less.

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

- 79) The revenue R for selling x fleece jackets is given by the equation $R = 49.95x$. The cost C (in dollars) to produce x jackets is $C = 2600 + 15.50x$. Find the number of jackets that the company needs to sell to produce a profit. (Hint: A profit occurs when revenue exceeds cost.)

A) More than 75 B) More than 76 C) At least 74 D) At least 75

Answer: A

- 80) Given $A = \{-3, -26, 10, 30, -14, 9\}$ and $B = \{-9, 6, 10, -14\}$, list the elements of $A \cap B$.

A) $\{10, -14\}$ B) $\{ \}$
C) $\{-3, -26, 10, 30, -14, 9, -9, 6\}$ D) $\{10\}$

Answer: A

- 81) Let $X = \{x|x \geq 8\}$ and $Y = \{x|x < 17\}$. Determine the given intersection. Express the answer in interval notation.

$X \cap Y$

A) $(8, 17]$ B) $(-\infty, 8] \cup (17, \infty)$ C) $\{ \}$ D) $[8, 17)$

Answer: D

- 82) Let $X = \{x|x > 7\}$ and $Y = \{x|x \leq -8\}$. Determine the given union. Express the answer in interval notation.

$X \cup Y$

A) $(-\infty, -8] \cup (7, \infty)$ B) $[-8, 7)$ C) $(-8, 7]$ D) $\{ \}$

Answer: A

- 83) Let $X = \{x|x \geq 16\}$ and $Y = \{x|x < -14\}$. Determine the given intersection. Express the answer in interval notation.

$X \cap Y$

A) $[-14, 16)$ B) $(-14, 16]$
C) $(-\infty, -14] \cup (16, \infty)$ D) $\{ \}$

Answer: D

84) Let $X = \{x|x < -1\}$ and $Y = \{x|x \geq -6\}$. Determine the given union. Express the answer in interval notation.

$$X \cup Y$$

A) $[-6, -1)$

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

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

D) $\{ \}$

Answer: B

85) Find the intersection of the sets. Write the answer in interval notation.

$$(-\infty, -9] \cap (-7, \infty)$$

A) $(-9, -7)$

B) $[-9, -7]$

C) $\{ \}$

D) $(-9, -7]$

Answer: C

86) Find the intersection of the sets. Write the answer in interval notation.

$$(-3, 3] \cap (0, 5]$$

A) $(0, 3]$

B) $\{ \}$

C) $(-3, 5]$

D) $[0, 3)$

Answer: A

87) Find the intersection of the sets. Write the answer in interval notation.

$$[-1, 4) \cap (1, 6]$$

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

B) $[-1, 6]$

C) $(1, 4)$

D) $\{ \}$

Answer: C

88) Solve the inequality. Write your answer in interval notation.

$$26 > 3x \quad \text{and} \quad -1 + 2x \geq -8$$

A) $\{ \}$

B) $\left(-\infty, -\frac{7}{2}\right) \cup \left[\frac{26}{3}, \infty\right)$

C) $\left[-\frac{7}{2}, \frac{26}{3}\right)$

D) $\left[-\frac{26}{3}, \frac{7}{2}\right)$

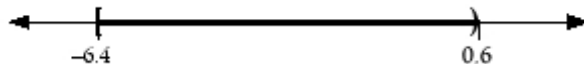
Answer: C

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

89) Solve the inequality and graph the solution. Write the answer in interval notation. Round to the nearest tenth.

$$0.2t - 7 \leq 1.3t \quad \text{and} \quad 4.2 - 6t > 0.6$$

Answer: $[-6.4, 0.6)$



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

90) Solve the inequality. Write the answer in interval notation.

$$9x \geq 9 \quad \text{and} \quad 7 - x > 0$$

A) $[1, 7)$

B) $(1, 7]$

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

D) $(7, \infty)$

Answer: A

91) Solve the inequality.

$$\frac{5}{4} - 2y < \frac{3}{2} \text{ and } \frac{3}{5}y + 3 < \frac{13}{10}$$

A) $\left(-\infty, -\frac{17}{6}\right)$

B) $\{ \}$

C) $\left(-\frac{5}{3}, -\frac{1}{8}\right)$

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

Answer: B

92) Solve the inequality. Write the answer in interval notation.

$$-1 < x + 3 \leq 15$$

A) $(-4, 15]$

B) $[12, -4)$

C) $(-4, \infty)$

D) $(-4, 12]$

Answer: D

93) Solve the inequality. Write the answer in interval notation.

$$-2 \leq 2x - 1 < 4$$

A) $\left[-\frac{1}{2}, 4\right)$

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

C) $\left[-2, \frac{5}{2}\right)$

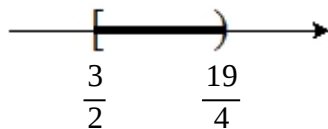
D) $\left[-\frac{1}{2}, \frac{5}{2}\right)$

Answer: D

94) Solve the inequality and graph the solution. Write the answer in interval notation.

$$14 \leq 8x - 2 < 30$$

A)

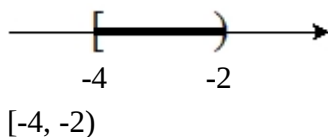


$$\left[\frac{3}{2}, \frac{19}{4}\right)$$

B)

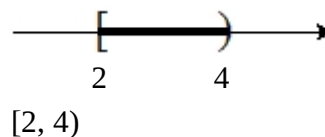


C)



$$[-4, -2)$$

D)



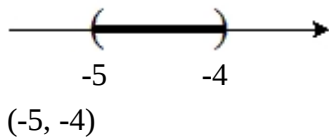
$$[2, 4)$$

Answer: D

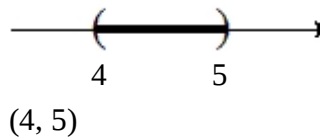
95) Solve the inequality and graph the solution. Write the answer in interval notation.

$$35 < 9x - 1 < 44$$

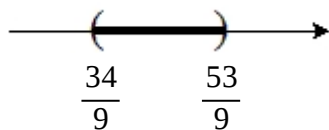
A)



B)



C)



$$\left(\frac{34}{9}, \frac{53}{9} \right)$$

D)



Answer: B

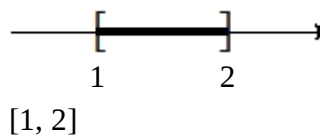
96) Solve the inequality and graph the solution. Write the answer in interval notation.

$$-5 \leq 3x - 8 \leq -2$$

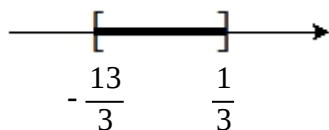
A)



B)

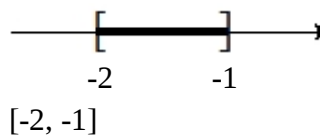


C)



$$\left[-\frac{13}{3}, \frac{1}{3} \right]$$

D)

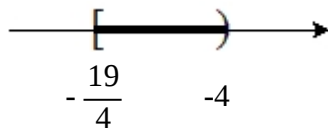


Answer: B

97) Solve the inequality and graph the solution. Write the answer in interval notation.

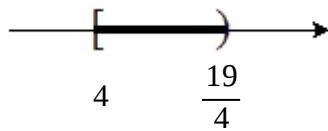
$$2 \geq \frac{4x - 22}{-3} > 1$$

A)



$$\left[-\frac{19}{4}, -4\right)$$

C)



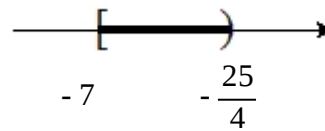
$$\left[4, \frac{19}{4}\right)$$

Answer: C

B)



D)



$$\left[-7, -\frac{25}{4}\right)$$

98) Solve the inequality. Write the answer in interval notation.

$$-2 < -2y + 19 < 10$$

A) $\left[\frac{9}{2}, \frac{21}{2}\right]$

B) $\left(\frac{9}{2}, \frac{21}{2}\right)$

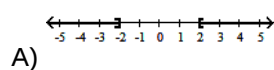
C) $\left(\frac{21}{2}, 10\right)$

D) $\left(\frac{21}{2}, \frac{9}{2}\right)$

Answer: B

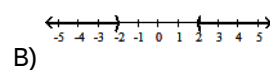
99) Solve the inequality and graph the solution. Write the answer in interval notation.

$$8m - 4 \geq 12 \text{ or } 4m < -8$$

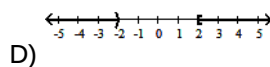


$(-\infty, -2] \cup [2, \infty)$

C) None of these



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



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

Answer: D

100) Solve the inequality. Write the answer in interval notation.

$$5x \leq 10 \text{ or } 15 - x < 7$$

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

B) $(-\infty, 2] \cup (8, \infty)$

C) $\{ \}$

D) $(-\infty, 8)$

Answer: B

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

101) Solve the inequality and graph the solution set. Write your answer in interval notation.

$$4(n - 3) > 2n \text{ or } 5 - 3n \geq 8$$

Answer: $(-\infty, -1) \cup (6, \infty)$



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

102) Solve the inequality. Write the answer in interval notation.

$$5 < 3x \text{ or } -6 + 2x \leq -15$$

A) $\left[-\frac{5}{3}, \frac{9}{2}\right]$

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

C) $\left(-\infty, -\frac{9}{2}\right] \cup \left[\frac{5}{3}, \infty\right)$

D) $\left[-\frac{9}{2}, \frac{5}{3}\right]$

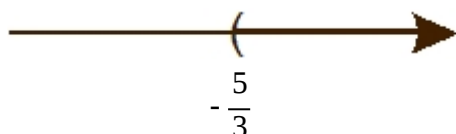
Answer: C

103) Solve the inequality and graph the solution set. Write your answer in interval notation.

$$\frac{3}{5}u + 1 > 0 \text{ or } -4u \geq -12$$

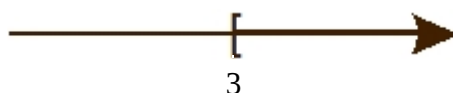
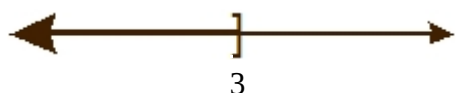
A) $\left(-\frac{5}{3}, \infty\right)$

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



C) $(-\infty, 3]$

D) $[3, \infty)$



Answer: B

104) Solve the inequality.

$$-\frac{7}{5} > -4 - \frac{1}{2}y \text{ or } \frac{7}{6} > 2y + \frac{4}{3}$$

A) $\{ \}$

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

C) $\left(-\infty, -\frac{1}{12}\right)$

D) $\left(-\frac{26}{5}, -\frac{1}{12}\right)$

Answer: B

105) In order to ride certain amusement park rides, riders must be at least 44" tall, but no more than 83" tall. Let h represent the height of a prospective rider. Write an inequality that represents the allowable heights.

A) $h \leq 44$ or $h \geq 83$

B) $h \leq 83$ or $h \geq 44$

C) $h \leq 44$ and $h \geq 83$

D) $h \leq 83$ and $h \geq 44$

Answer: D

106) In order to qualify for an age-based discount, visitors to a state park must be younger than 9 or older than 62. Let x represent the age of a visitor to the park. Write an inequality that represents the ages of visitors qualifying for the discount.

A) $x < 9$ or $x > 62$

B) $9 \leq x \leq 62$

C) $x \leq 9$ or $x \leq 62$

D) $x > 9$ and $x < 62$

Answer: A

107) In order to qualify for an age-based discount, visitors to a state park must be younger than 4 or older than 67. Let x represent the age of a visitor to the park. Write an inequality that represents the ages of visitors that have to pay full price.

A) $x < 4$ or $x > 67$

B) $x \leq 4$ or $x \leq 67$

C) $4 \leq x \leq 67$

D) $x > 4$ and $x < 67$

Answer: C

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

108) A skydiving company insists that its customers weigh at least 125 pounds, but no more than 285 pounds, including parachute and other gear. If the total weight of all gear is 30 pounds, write and solve a compound inequality that represents the weight range without gear that is acceptable.

Answer: $95 \leq w \leq 255$; Customers have to weigh at least 95 pounds, but no more than 255 pounds.

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

109) The difference of 9 and a number is between -8 and 10. Find all such numbers.

A) All real numbers between 1 and 19

B) All real numbers between -1 and 17

C) All real numbers between -1 and 17, inclusive

D) All real numbers between 1 and 19, inclusive

Answer: B

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

- 110) Amy knows from reading her syllabus in intermediate algebra that the average of her chapter tests accounts for 80% (0.8) of her overall course grade. She also knows that the final exam counts as 20% (0.2) of her grade.

a. Suppose that the average of Amy's chapter tests is 97%. Determine the range of grades that she would need on her final exam to get an "A" in the class. (Assume that a grade of "A" is obtained if Amy's overall average is 90% or better.)

b. Determine the range of grades that Amy would need on her final exam to get a "B" in the class. (Assume that a grade of "B" is obtained if Amy's overall average is at least 80% but less than 90%.)

Answer: **a.** Amy would need 62% or better on her final exam.

b. If Amy scores at least 12% and less than 62% on her final exam she will receive a "B" in the class.

- 111) Solve the absolute value equation.

$$|y| = 19$$

Answer: $\{-19, 19\}$

- 112) Solve the absolute value equation.

$$18 - |x| = -20$$

Answer: $\{-38, 38\}$

- 113) Solve the absolute value equation.

$$|z| + 5 = -17$$

Answer: $\{ \}$

- 114) Solve the absolute value equation.

$$|8n| = 0$$

Answer: $\{0\}$

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

- 115) Solve the absolute value equation.

$$|6z - 3| = 5$$

A) $\left\{\frac{4}{3}, -\frac{1}{3}\right\}$

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

C) $\{5, -6\}$

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

Answer: A

116) Solve the absolute value equation.

$$-\frac{11}{4} + \frac{2}{3}|3y - 6| = -2$$

- A) $\{ \}$ B) $\left\{ \frac{1}{3}, -\frac{11}{2} \right\}$ C) $\left\{ 2, -\frac{5}{2} \right\}$ D) $\left\{ \frac{13}{8}, \frac{19}{8} \right\}$

Answer: D

117) Solve the absolute value equation.

$$4 = -1 + \left| 2 - \frac{1}{4}w \right|$$

- A) $\{-28\}$ B) $\{-28, 12\}$ C) $\{-12\}$ D) $\{-12, 28\}$

Answer: D

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

118) Solve the absolute value equation.

$$\frac{7}{10} + \left| x + \frac{7}{10} \right| = \frac{4}{5}$$

Answer: $\left\{ -\frac{4}{5}, -\frac{3}{5} \right\}$

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

119) Solve the absolute value equation.

$$|-5x + 4| - 12 = -4$$

- A) $\left\{ -\frac{4}{5}, \frac{12}{5} \right\}$ B) $\left\{ -\frac{4}{5}, -\frac{12}{5} \right\}$ C) $\left\{ -\frac{4}{5} \right\}$ D) $\{ \}$

Answer: A

120) Solve the absolute value equation.

$$|8x - 4| - 4 = -4$$

- A) $\left\{ \frac{1}{2}, -\frac{1}{2} \right\}$ B) $\left\{ \frac{1}{2} \right\}$ C) $\{8, -4\}$ D) $\{ \}$

Answer: B

121) Solve the absolute value equation.

$$2 - |3w - 18| = 8$$

- A) $\{4\}$ B) $\{ \}$ C) $\{8, 4\}$ D) $\{6, 2\}$

Answer: B

122) Solve the absolute value equation.

$$|2v| = |-6 - 8v|$$

A) $\left\{\frac{5}{3}, 0\right\}$

B) $\{0, 14\}$

C) $\left\{-1, -\frac{3}{5}\right\}$

D) $\{-1\}$

Answer: C

123) Solve the absolute value equation.

$$|12 + 2x| = |x - 6|$$

A) $\{ \}$

B) $\{-18, -2\}$

C) $\{-18\}$

D) $\{-18, -6\}$

Answer: B

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

124) Solve the absolute value equation.

$$|-3 - 8p| = |-8p + 15|$$

Answer: $\left\{\frac{3}{4}\right\}$

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

125) Solve the absolute value equation.

$$\left|\frac{3y + 4}{2}\right| = \left|\frac{1}{4}y + 1\right|$$

A) $\left\{-\frac{5}{12}, \frac{11}{7}\right\}$

B) $\left\{-\frac{4}{5}, -\frac{12}{7}\right\}$

C) $\left\{\frac{2}{3}, -\frac{7}{8}\right\}$

D) $\left\{\frac{1}{4}, -\frac{7}{2}\right\}$

Answer: B

126) Solve the absolute value equation.

$$|x + 1| = |-x - 1|$$

A) $\{0\}$

B) $\{x|x \text{ is a real number}\}$

C) $\{ \}$

D) $\{-1, 1\}$

Answer: B

127) Solve the absolute value equation.

$$|4x - 7| = |-4x + 7|$$

A) $\{x|x \text{ is a real number}\}$

B) $\left\{-\frac{7}{4}, \frac{7}{4}\right\}$

C) $\{ \}$

D) $\{0\}$

Answer: A

128) Write an absolute value equation whose solution is the set of real numbers 7 units from zero on the number line.

A) $x - 7 = 0$

B) $x + 7 = 0$

C) $|x - 7| = 0$

D) $|x| = 7$

Answer: D

129) Solve the absolute value inequality. Write the solution in interval notation.

$|y| > 17$

A) $(-\infty, -17) \cup (17, \infty)$

B) $(-17, 17)$

C) $(17, \infty)$

D) $(-\infty, -17)$

Answer: A

130) Solve the absolute value inequality. Graph the solution set and write the solution in interval notation

$|n| \leq 4$

A)



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

B)



$\{ \}$

C)



$[-4, 4]$

D)



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

Answer: C

131) Solve the absolute value inequality. Write the solution in interval notation.

$|x + 3| < 11$

A) $(-8, 14)$

B) $(-8, 8)$

C) $(-\infty, -14) \cup (8, \infty)$

D) $(-14, 8)$

Answer: D

132) Solve the absolute value inequality. Write the solution in interval notation.

$|x + 7| < 13$

A) $(-20, 6)$

B) $(-6, 20)$

C) $(-\infty, -20) \cup (6, \infty)$

D) $(-6, 6)$

Answer: A

133) Solve the absolute value inequality. Graph the solution set and write the solution in interval notation

$$|2b - 12| \geq -20$$

A)



$$[-4, 16]$$

B)



$$\{ \}$$

C)



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

D)



$$(-\infty, -4] \cup [16, \infty)$$

Answer: C

134) Solve the absolute value inequality. Graph the solution set and write the solution in interval notation

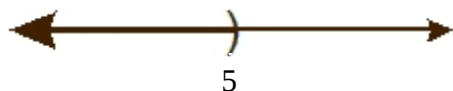
$$-16 + |2m - 10| < -16$$

A)



$$\{ \}$$

B)



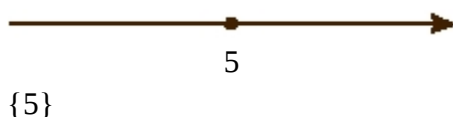
$$(-\infty, 5)$$

C)



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

D)



$$\{5\}$$

Answer: A

135) Solve the absolute value inequality. Write the solution in interval notation.

$$2 + |2m - 8| < 2$$

A) $(-\infty, 4)$

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

C) $\{ \}$

D) $\{4\}$

Answer: C

136) Solve the absolute value inequality. Write the solution in interval notation.

$$|4w - 7| \geq 5$$

A) $(-\infty, 3] \cup \left[-\frac{1}{2}, \infty\right)$

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

C) $\left[-\infty, \frac{1}{2}\right] \cup [3, \infty)$

D) $\left[\frac{1}{2}, 3\right]$

Answer: C

137) Solve the absolute value inequality. Write the solution in interval notation.

$$|-4z + 32| \leq 32$$

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

B) $(-\infty, -8]$

C) $\{ \}$

D) $[0, 16]$

Answer: D

138) Solve the absolute value inequality. Write the solution in interval notation.

$$5 \leq |4t - 7|$$

- A) $\left(-\infty, \frac{1}{2}\right] \cup [3, \infty)$ B) $(-\infty, -3] \cup \left[-\frac{1}{2}, \infty\right)$ C) $\left[-3, -\frac{1}{2}\right]$ D) $\left[\frac{1}{2}, 3\right]$

Answer: A

139) Solve the absolute value inequality. Write the solution in interval notation.

$$-6 \geq |2b - 12|$$

- A) $[3, 9]$ B) $(-\infty, \infty)$ C) $(-\infty, 3] \cup [9, \infty)$ D) $\{ \}$

Answer: D

140) Solve the absolute value inequality. Write the solution in interval notation.

$$24 \geq 32 + |y + 14|$$

- A) $\{ \}$ B) $(-\infty, \infty)$ C) $(-\infty, -22]$ D) $[-22, -6]$

Answer: A

141) Solve the absolute value inequality. Write the solution in interval notation.

$$|4t| - 7 < 7$$

- A) $\left(-\infty, \frac{7}{2}\right)$ B) $\left(-\frac{7}{2}, \frac{7}{2}\right)$ C) $\left(-\infty, -\frac{7}{2}\right) \cup \left(\frac{7}{2}, \infty\right)$ D) $\{0\}$

Answer: B

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

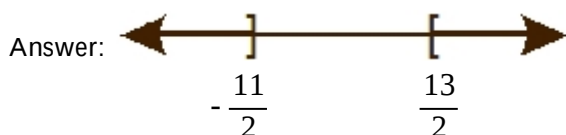
142) Solve the absolute value inequality. Write the solution in interval notation.

$$24 \leq 12 + |-4t + 1|$$

Answer: $\left(-\infty, -\frac{11}{4}\right] \cup \left[\frac{13}{4}, \infty\right)$

143) Solve the absolute value inequality. Graph the solution set and write the solution in interval notation

$$12 + |-2t + 1| \geq 24$$

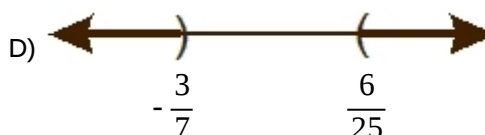
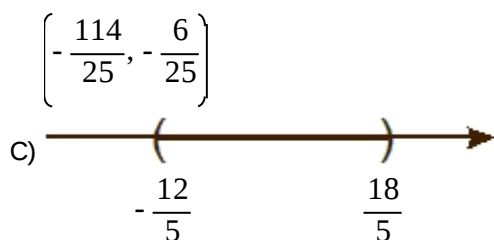
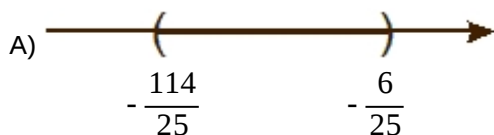


$$\left(-\infty, -\frac{11}{2}\right] \cup \left[\frac{13}{2}, \infty\right)$$

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

144) Solve the absolute value inequality. Graph the solution set and write the solution in interval notation

$$4 - \left| \frac{5}{3}y + 4 \right| > \frac{2}{5}$$



$$\left[-\frac{12}{5}, \frac{18}{5} \right)$$

$$\left(-\infty, -\frac{3}{7} \right) \cup \left(\frac{6}{25}, \infty \right)$$

Answer: A

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

145) Solve the absolute value inequality. Write the solution in interval notation.

$$4 \leq \frac{|y + 3|}{3} + 3$$

Answer: $(-\infty, -6] \cup [0, \infty)$

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

146) Solve the absolute value inequality. Write the solution in interval notation.

$$8 + |2x - 11| \geq 2$$

A) $\left[\frac{5}{2}, \frac{17}{2} \right]$

B) $\{ \}$

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

D) $\left[-\infty, \frac{5}{2} \right] \cup \left[\frac{17}{2}, \infty \right)$

Answer: C

147) Solve the absolute value inequality. Write the solution in interval notation.

$$4 - |x - 12| < 4$$

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

B) $\{12\}$

C) $\{ \}$

D) $(-\infty, 12) \cup (12, \infty)$

Answer: D

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

148) Write an absolute value inequality equivalent to the expression:

"All real numbers whose distance from 0 is more than 20."

Answer: $|x| > 20$

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

149) Write an absolute value inequality equivalent to the expression:

"All real numbers whose distance from 13 is at most 3."

A) $|y - 13| > 3$

B) $|y - 3| \leq 13$

C) $|y - 13| < 3$

D) $|y - 13| \leq 3$

Answer: D

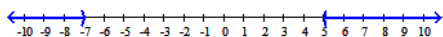
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

150) A thermometer used to measure the temperature of a solution in a chemistry experiment has 5 tick marks for each degree, so that each tick mark corresponds to 0.2 degrees. If a solution is measured at between 33.0 and 33.2 degrees, write an absolute value inequality that describes the true temperature t .

Answer: $|t - 33.1| \leq 0.1$

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

151) Identify the inequality that matches the graph below.



A) $|x + 1| > 3$

B) $|x - 1| > 3$

C) $|x + 1| > 6$

D) $|x - 1| > 6$

Answer: C