PTHS Keystone Algebra I Review

A1.1.1.1

Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents.

1.) Order the following numbers from greatest to least.

$$8.\overline{4}, \frac{25}{3}, \sqrt{72}, \frac{35}{4}$$

A.) $\sqrt{72}, \frac{25}{3}, \frac{35}{4}, 8.\overline{4}$

C.) $\frac{35}{4}, \sqrt{72}, 8.\overline{4}, \frac{25}{3}$

B.) $\frac{25}{3}, \sqrt{72}, \frac{35}{4}, 8.\overline{4}$

D.) $\frac{35}{4}, \frac{25}{3}, 8.\overline{4}, \sqrt{72}$

2.) Complete the comparison below.

$$-0.75 \underline{\hspace{1cm}} -\frac{3}{4}$$

A.) $<$

C.) $=$

B.) $>$

D.) $\neq$

3.) Choose the correct comparison for the numbers below.

$$0.46, 104\%, \frac{5}{14}$$

A.) $0.46 < \frac{5}{14} < 104\%$

C.) $104\% > 0.46 > \frac{5}{14}$

B.) $104\% > \frac{5}{14} > 0.46$

D.) $\frac{5}{14} > 104\% > 0.46$

4.) Which list of numbers is in order from least to greatest?

A.) $2, \sqrt{5}, \sqrt{32}, 3$

C.) $2, \sqrt{5}, 3, \sqrt{32}$

B.) $\sqrt{32}, 3, \sqrt{5}, 2$

D.) $2, 3, \sqrt{5}, \sqrt{32}$

5.) Complete the comparison below.

$$\frac{16}{17} \underline{\hspace{1cm}} 99.8\%$$

A.) $>$

C.) $<$

B.) $=$

D.) $\geq$

6.) Simplify: $\sqrt{243}$

A.) 9   C.) 81
B.) $81\sqrt{2}$ D.) $9\sqrt{3}$

7.) Simplify: $\sqrt{162}$

A. 54   C.) $9\sqrt{2}$
B. $81\sqrt{2}$ D.) 6

8.) Simplify: $\sqrt{640}$

A.) $8\sqrt{10}$ C.) $20\sqrt{2}$
B.) $160\sqrt{2}$ D.) $64\sqrt{10}$
C.)

9.) Which value of x makes the expression $3\sqrt{53x}$ equivalent to $21\sqrt{53}$?

A.) 147   C.) 7
B.) 441   D.) 49

10.) The expression $\sqrt{85x}$ should be further simplified for which value of x?

A.) 59   C.) 3
B.) 94   D.) 235

A1.1.1.2

Apply number theory concepts to show relationships between real numbers in problem-solving settings.

11.) What is the greatest common factor of the monomial: $78x^2y^2z^4$, $12x^2yz^2$

A.) $156x^4y^3z^6$ C.) $6x^2y^2z^4$
B.) $156x^2y^2z^4$ D.) $6x^2yz^2$

12.) What is the greatest common factor of the monomials: $21xy^4z^2$, $77x^3y^2$

A.) $231x^4y^6z^2$ C.) $7xy^2$
B.) $7x^3y^4z^2$ D.) $231x^3y^4z^2$

13.) What is the least common multiple of the monomials: $9xy^4$, $5x^2y^2$

A.) $45x^3y^6$ C.) x^3y^6
B.) xy^2 D.) $45x^2y^4$

14.) What is the least common multiple of the monomials: $18u^4vw^4$, $30u^4v^3w^3$

A.) $90u^4v^3w^4$ C.) $6u^8v^4w^7$
B.) $90u^8v^4w^7$ D.) $6u^4vw^3$

15.) What is the least common multiple of the monomials:
$$9x^3y^3z^4 , 15x^3y^4z^4 , 5x^2y^3z^3$$

A.) $3x^3y^3$ C.) $3x^3y^3z^4$
B.) $45x^6y^7z^8$ D.) $45x^3y^4z^4$

A1.1.1.3
Use exponents, roots, and/or absolute values to solve problems.

16.) Evaluate $-2|n+5|$ when n = -11.

A.) -8   C.) 0
B.) 12   D.) -12

17.) Simplify: $2(13 - |-11 + 2|) - |10 - 7|^2$

A.) -10   C.) -1
B.) 8   D.) -9

18.) Simplify: $\dfrac{7\sqrt{12}+6\sqrt{108}}{\sqrt{2}}$

A.) $25\sqrt{3}$ C.) $50\sqrt{3}$
B.) $25\sqrt{6}$ D.) $10\sqrt{6}$

A1.1.1.4

Use estimation strategies in problem-solving situations.

19. George's car can travel about 28 miles per gallon of gas. If the car has used 10 gallons of gas, approximately how far has George driven?

A.) 2.8   C.) 18
B.) 38   D.) 280

20.   It costs a shoe company $20.67 to produce one pair of running shoes. The company sells each pair of shoes for $75.07 in stores. If the company sells 145 pairs of running shoes in the month of March, what is the company's approximate profit from running shoes in March?

A.) $7,830.00   C.) $10,875.00
B.) $13,920.00   D.) &7,975.00

21. A fast food restaurant sells between 164 and 328 hamburgers per day. If the company profits $82.00 per 82 hamburgers sold, approximately how much does the company profit in one year from hamburgers?

A.) &89,790.00   C.) $7,362,780.00
B.) $179,580.00   D.) $29,930.00

A1.1.1.5

Simplify expressions involving polynomials.

22. Simplify: $(8x^2 - 4x - 8) + (3x^2 - 7x - 3)$

A.) $11x^2 - 11x - 11$ C.) $5x^2 - 11x - 5$
B.) $11x^2 - 3x + 11$ D.) $11x^2 - 3x - 11$

23. Simplify: $(6x^3 + 3x^2 - 5) + (4x^3 - 4x - 3)$

A.) $10x^3 + 3x^2 - 4x - 8$ C.) $10x^3 - 4x + 8$
B.) $2x^3 + 3x^2 - 4x - 2$ D.) $10x^3 + 3x^2 - 4x + 8$

24. Simplify: $(9x^2 + 6x + 4) - (3x^2 + 2x + 6)$

A.) $6x^2 + 4x - 2$ C.) $6x^2 + 8x - 2$
B.) $12x^2 + 4x - 10$ D.) $12x^2 + 4x - 2$

25. Factor the following expression completely: $x^4 - 1$

A.) $(x^2 - 1)(x^2 + 1)$　　　　　　　　　C.) $(x - 1)(x^3 + 1)$
B.) $(x - 1)(x + 1)(x^2 + 1)$　　　　　D.) $(x - 1)(x + 1)(x - 1)(x + 1)$

26. Factor the following expression completely: $4x^2 - 4$

A.) $4(x - 1)^2$　　　　　　　　　　C.) $(4x + 1)(x - 1)$
B.) $4(x + 1)(x - 1)$　　　　　　　D.) $4(x^2 - 1)$

27. Factor the polynomial expression: $x^2 - 10x + 25$

A.) $2x^2 - 25$　　　　　　　　　C.) $(x - 10)^2$
B.) $x^2 - 25$　　　　　　　　　D.) $(x - 5)^2$

28. Simplify the following expression: $\dfrac{3x^3 + 18x^2 - 15x}{3x}$

A.) $3x^3 + 18x^2 - 5$　　　　　　C.) $x^2 + 6x - 5$
B.) $19x^2 + 5x$　　　　　　　　D.) $x^2 + 15x - 12$

29. Simplify the following expression: $\dfrac{x^{14} - 16}{x^7 + 4}$

A.) $x^7 - 12$　　　　　　　　　C.) $x^7 - 4$
B.) $x^{14} - 12$　　　　　　　　D.) $x^7 + 4$

30. Simplify the following expression: $\dfrac{-x - 6}{x^2 - x - 42}$

A.) $\dfrac{1}{x - 7}$　　　　　　　　　C.) $\dfrac{-1}{x - 6}$

B.) $\dfrac{1}{x + 6}$　　　　　　　　D.) $\dfrac{-1}{x - 7}$

Write, solve, and/or graph linear equations using various methods.

31.   Erica went shopping for new clothes for school. She bought a pair of jeans for $70.19 and several shirts for $8.63 each. If x represents the number of shirts she bought, which of the following equations should be used to find y, the total cost of Erica's shopping trip?

A.) $x = \$8.63y + \$70.19$ C.) $y = \$8.63x + \$70.19$

B.) $y = \$70.19x + \$8.63$ D.) $x = \$70.19y + \$8.63$

32.   LeAnne leaves town traveling at an average speed of 49 mph. After 4 hours, Bart leaves town traveling in the same direction at an average speed of 67 mph. Which of the following equations could be used to represent the distance between LeAnne and Bart after x hours?
(Let x represent the time in hours that Bart has been traveling and y represent the distance between LeAnne and Bart.)

A.) $y = 18x$ C.) $y = 196 - 67x$

B.) $y = 196 + 18x$ D.) $y = 196 - 18x$

33.   A company has fixed operating costs of $2,137.00 per month with a production cost of $15.15 per unit. If each unit brings $33.09 in revenue, which of the following equations represents the profit for the month?
(Let x represent the number of units made per month and y represent the total profit for the month.)

A.) $y = 48.24x - 2{,}137$ C.) $y = 33.09x - 2{,}137$

B.) $y = 15.15x - 2{,}137$ D.) $y = 17.94x - 2{,}137$

34.   Ann is moving from Houston to McKinney and rented a truck from U-Move truck rentals. The cost of a one-day truck rental is given by

$$C(m) = 0.5m + 50,$$

where m is the number of miles driven. If Ann drives 280 miles, what is the cost of the truck rental?

A.) $195   C.) $218

B.) $190   D.) $140

35. Solve for x: 7(2x – 8) = 77x

A.) $x = \frac{19}{2}$

B.) $x = \frac{8}{9}$

C.) $x = -\frac{8}{9}$

D.) $x = \frac{3}{2}$

36.   Juan scored 24 points in the first half of the basketball game, and he scored p points in the second half of the game. Write an expression to determine the number of points he scored in all. Then, find the number of points he scored in all if he scored 11 points in the second half of the game.

A.) $24 + p$; 35 points

B.) $24 – p$; 13 points

C.) $24p$; 35 points

D.) $\frac{24}{p}$; 13 points

37. Write the equation that describes the line with slope = 2 and y-intercept = $\frac{3}{2}$ in slope-intercept form.

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

B.) $y = \frac{3}{2}x + 2$

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

D.) $x = 2y + \frac{3}{2}$

38. Write the equation that describes the line in slope-intercept form.
        slope = 4, point (3, –2) is on the line

A.) $y = 4x + 14$

B.) $y = 4x – 14$

C.) $y = 4x + 10$

D.) $y = 4x – 2$

39. The water level of a river is 34 feet and it is receding at a rate of 0.5 foot per day. Write an equation that represents the water level, w, after d days. In how many days will the water level be 26 feet?

A.) $w = 34d – 0.5$ In 120 days, the water level will be 26 feet.

B.) $w = -0.5d + 34$ In 16 days, the water level will be 26 feet.

C.) $w = 34d + 0.5$ In 16 days, the water level will be 26 feet.

D.) $w = -0.5d – 34$ In 120 days, the water level will be 26 feet.

Write, solve, and/or graph systems of linear equations using various methods.

40.　　Solve the system $\begin{cases} 3x + 4y = -36 \\ -2x + 4y = -16 \end{cases}$ by graphing.

A.) $(4, -6)$
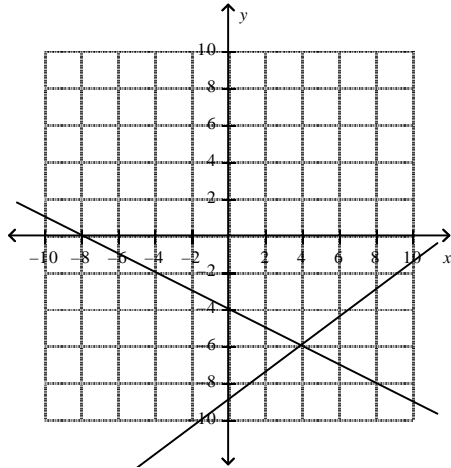
C.) $(4, 6)$
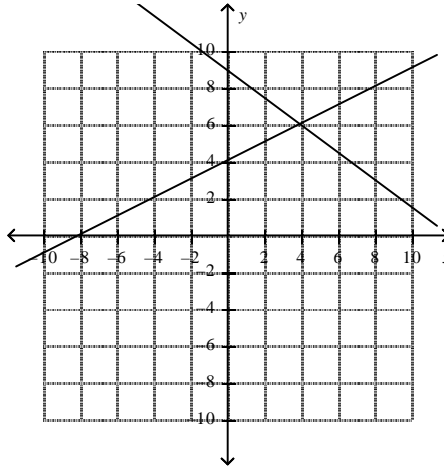
B.) $(-4, -6)$
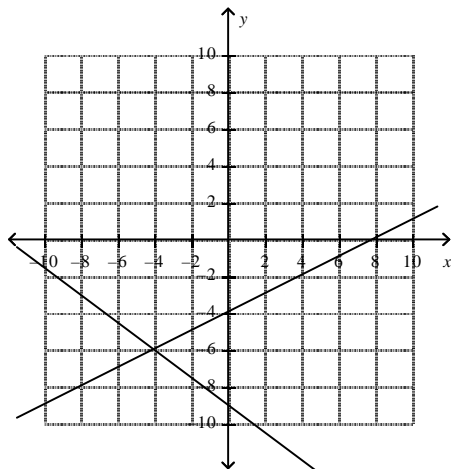
D.) $(-4, 6)$
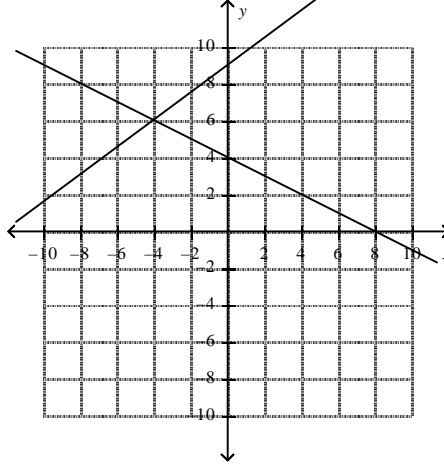
41.　Solve $\begin{cases} 4x - 4y = -16 \\ x - 2y = -12 \end{cases}$ by using substitution. Express as an ordered pair.

A.) $(8, -4)$ 　　　　　　　　　　C.) $(-2, 4)$

B.) $(4, -8)$ 　　　　　　　　　　D.) $(4, 8)$

42. Solve $\begin{cases} 3x - 6y = 12 \\ 2x + 6y = -12 \end{cases}$ by using elimination. Express as an ordered pair.

A.) (–2, –3)   C.) (0, –2)

B.) (–2, 0)   D.) (–8, –6)

43. The Fun Guys game rental store charges a fee of $5 plus $5.50 per game rented. The Game Bank charges a fee of $17 plus $2.50 per game. For how many game rentals will the cost be the same at both stores? What is that cost?

A.) 3 games; $22   C.) 4 games; $27

B.) 2 games; $16   D.) 6 games; $38

44. Janice is going on vacation and needs to leave her dog at a kennel. Nguyen's Kennel charges $15 per day plus $20 for a processing fee. The Pup Palace Kennel charges $12 per day, and has a $35 processing fee. After how many days is the Pup Palace Kennel cheaper than Nguyen's Kennel?

A.) The Pup Palace Kennel is always cheaper than Nguyen's Kennel.

B.) The Pup Palace Kennel is never cheaper than Nguyen's Kennel.

C.) The Pup Palace Kennel is cheaper than Nguyen's Kennel after 15 days.

D.) The Pup Palace Kennel is cheaper than Nguyen's Kennel after 5 days.

45. At the local pet store, zebra fish cost $2.10 each and neon tetras cost $1.85 each. If Marsha bought 13 fish for a total cost of $25.80, not including tax, how many of each type of fish did she buy?

A.) 7 zebra fish, 6 neon tetras   C.) 6 zebra fish, 7 neon tetras

B.) 8 zebra fish, 5 neon tetras   D.) 5 zebra fish, 8 neon tetras

A1.1.3.1
Write, solve, and/or graph linear inequalities using various methods.

46. Write the compound inequality shown by the graph.

A.) $x \le -5$ AND $x > 3$ C.) $x \le -5$ OR $x > 3$

B.) $x \le 3$ AND $x > -5$ D.) $x < -5$ OR $x > 3$

47. Solve and graph the solutions of the compound inequality: $1 < 3x - 2 \leq 10$.

A.) $1 < x$ AND $x < 4$

$$\xleftarrow{\hspace{1cm}} \begin{array}{ccccccc} | & \circ\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!\circ & | \\ 0 & 1 & 2 & 3 & 4 & 5 \end{array} \xrightarrow{\hspace{1cm}}$$

B.) $1 \leq x$ AND $x \leq 4$

$$\xleftarrow{\hspace{1cm}} \begin{array}{ccccccc} | & \bullet\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!\bullet & | \\ 0 & 1 & 2 & 3 & 4 & 5 \end{array} \xrightarrow{\hspace{1cm}}$$

C.) $1 < x$ AND $x \leq 4$

$$\xleftarrow{\hspace{1cm}} \begin{array}{ccccccc} | & \circ\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!-\!\!\bullet & | \\ 0 & 1 & 2 & 3 & 4 & 5 \end{array} \xrightarrow{\hspace{1cm}}$$

D.) $1 > x$ AND $x \geq 4$

$$\xleftarrow{\hspace{1cm}} \begin{array}{ccccccc} | & \circ & | & | & \bullet\!\!-\!\!-\!\!-\!\! & \\ 0 & 1 & 2 & 3 & 4 & 5 \end{array} \xrightarrow{\hspace{1cm}}$$
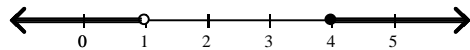
48. Solve and graph the compound inequality: $s + 4 < 1.5$ OR $3 + s \geq 7$

A.) $s < -2.5$ OR $s \geq 4$
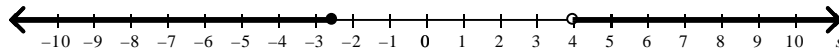
B.) $s < -2.5$ OR $s < 4$
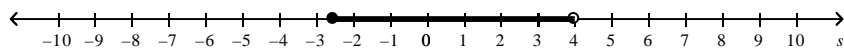
C.) $s < -2.5$ OR $s < 4$
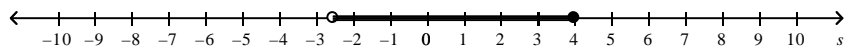
D.) $s < -2.5$ OR $s \geq 4$
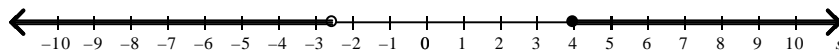
49. Write the inequality shown by the graph.
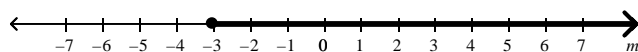
A.) $m \leq -3$ C.) $m \geq -3$
B.) $m > -3$ D.) $m < -3$

50. Write the inequality shown by the graph.
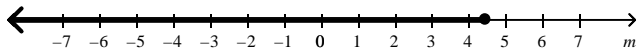
A.) $m < 4.5$ C.) $m > 4.5$

B.) $m \leq 4.5$ D.) $m \geq 4.5$

51. To join the school swim team, swimmers must be able to swim at least 500 yards without stopping. Let n represent the number of yards a swimmer can swim without stopping. Write an inequality describing which values of n will result in a swimmer making the team. Graph the solution.

A.) $n < 500$
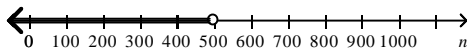
B.) $n \leq 500$
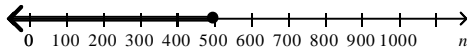
C.) $n > 500$
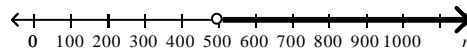
D.) $n \geq 500$
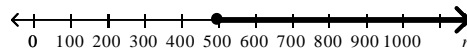

52. Denise has $365 in her saving account. She wants to save at least $635. Write and solve an inequality to determine how much more money Denise must save to reach her goal. Let d represent the amount of money in dollars Denise must save to reach her goal.

A.) $365 + d \geq 635;\ d \geq 270$ C.) $365 + d \geq 635;\ d > 635$

B.) $365 + d = 635;\ d = 270$ D.) $365 + d > 635;\ d > 270$

53. Marco's Drama class is performing a play. He wants to buy as many tickets as he can afford. If tickets cost $2.50 each and he has $14.75 to spend, how many tickets can he buy?

A.) 0 tickets   C.) 6 tickets

B.) 5 tickets   D.) 4 tickets

54. Mrs. Williams is deciding between two field trips for her class. The Science Center charges $135 plus $3 per student. The Dino Discovery Museum simply charges $6 per student. For how many students will the Science Center charge less than the Dino Discovery Museum?

A.) 132 or more students   C.) More than 45 students
B.) 132 or fewer students   D.) Fewer than 45 students

A1.1.3.2

Write, solve, and/or graph systems of linear inequalities using various methods.

55. Choose the system of inequalities that best matches the graph below.

A.) $y \geq x - 2$ C.) $y < -2x$
     $y \leq -2x - 1$ $y \leq x + 2$
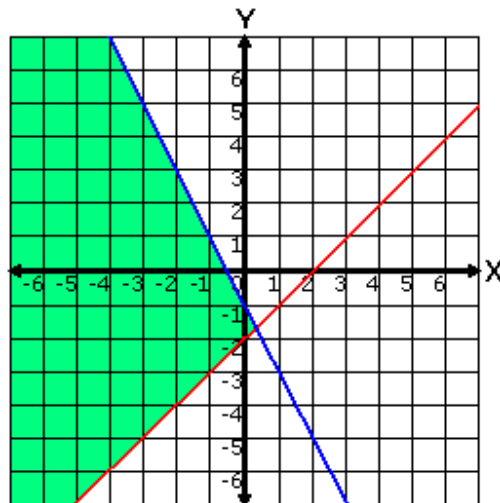
B.) $y \geq -x + 2$ D.) $y \leq 2x + 2$
     $y < 2x - 1$ $y \geq -x$

56. Graph the system of linear inequalities $\begin{cases} y < -3x + 2 \\ y \geq 4x - 1 \end{cases}$. Give two ordered pairs that are solutions and two that are not solutions.

A.) (0, 0) and (−4, −5) are solutions. (2, 2) and (10, 1) are not solutions.

C.) (2, 2) and (0, 10) are solutions. (0, 0) and (−5, −1) are not solutions.
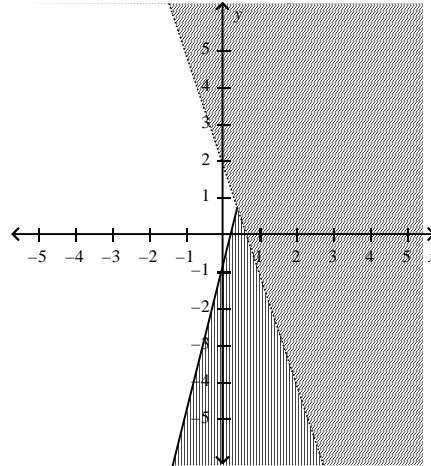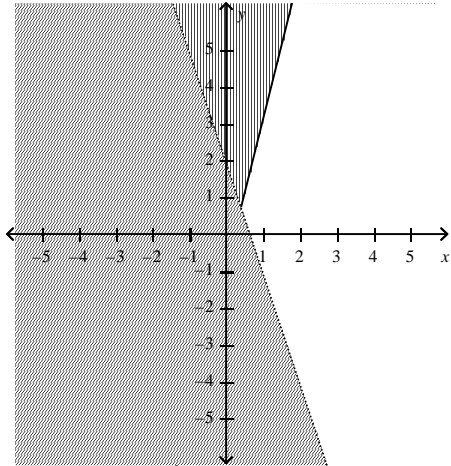
B.) (5, −6) and (0, 0) are solutions. (1, 1) and (2, 0) are not solutions.

D.) (1, −2) and (−6, 0) are solutions. (1, 5) and (0, 0) are not solutions.
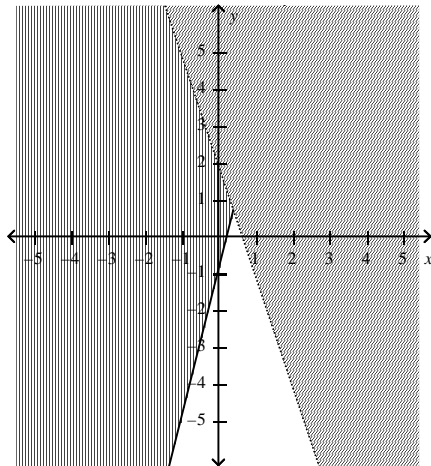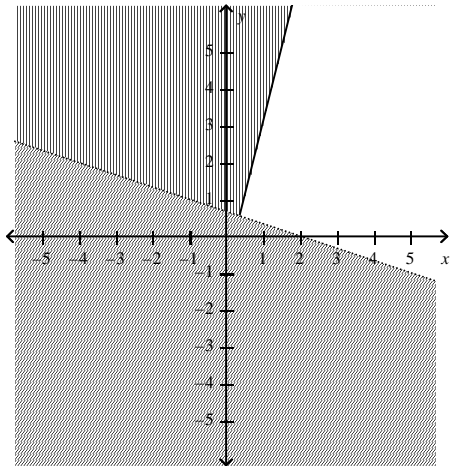
57. Graph the system of linear inequalities $\begin{cases} y \geq 2x + 4 \\ y \leq 2x - 2 \end{cases}$.

A.)

C.)

B.)

D.)
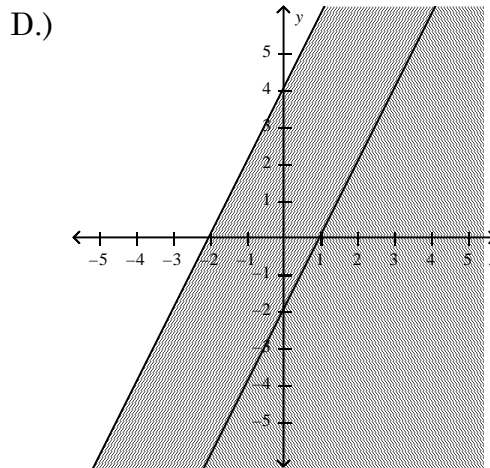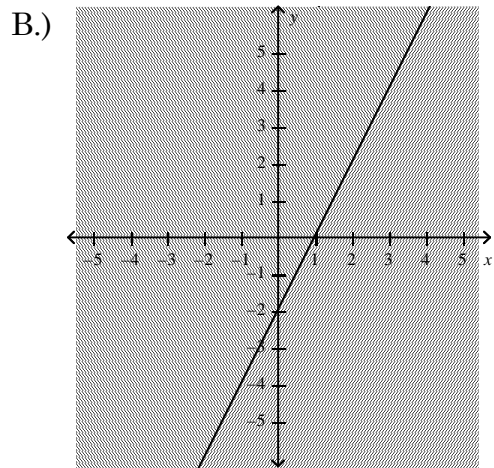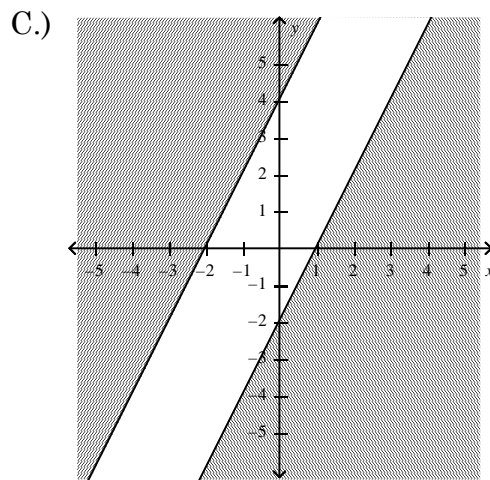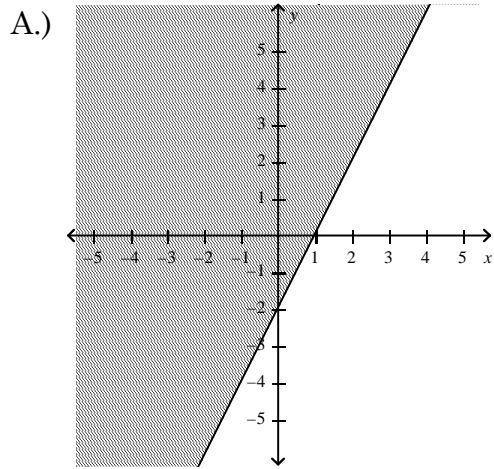
58. To join the school swim team, swimmers must be able to swim at least 500 yards without stopping. Let n represent the number of yards a swimmer can swim without stopping. Write an inequality describing which values of n will result in a swimmer making the team. Graph the solution.

A.) $n < 500$
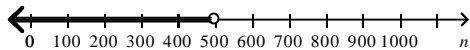
B.) $n \leq 500$
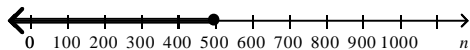
C.) $n > 500$
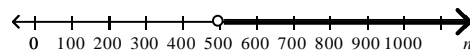
D.) $n \geq 500$
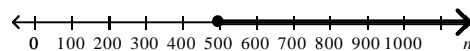
59. Fly with Us owns a D.C.10 airplane that has seats for 240 people. The company flies this airplane only if there are at least 100 people on the plane. Write a compound inequality to show the possible number of people in a flight on a D.C.10 with Fly with Us. Let n represent the possible number of people in the flight. Graph the solutions.

A.) $100 \le n \le 240$
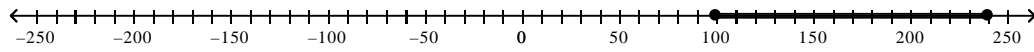
B.) $100 < n < 240$
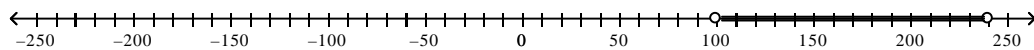
C.) $100 \ge n \ge 240$
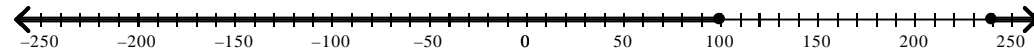
D.) $n \le 240$
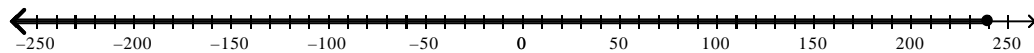
60. Sam earned $450 during winter vacation. He needs to save $180 for a camping trip over spring break. He can spend the remainder of the money on music. Write an inequality to show how much he can spend on music. Then, graph the inequality.

A.) $450 + s > 180;\ s > 270$
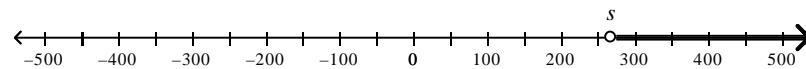
B.) $180 + s \ge 450;\ s \ge 270$
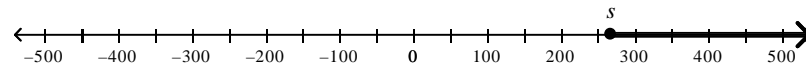
C.) $180 + s \le 450;\ s \le 270$
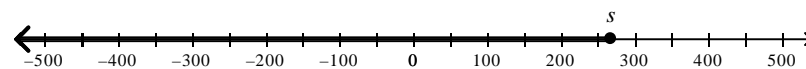
D.) $450 + s < 180;\ s < 270$
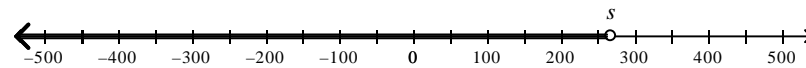
A1.2.1.1

Analyze and/or use patterns or relations.

61. Find the 20th term in the arithmetic sequence –4, 1, 6, 11, 16,...

A.) 95   C.) 96

B.) 72   D.) 91

62. Determine whether the sequence appears to be an arithmetic sequence. If so, find the common difference and the next three terms in the sequence.

–5, –11, –17, –23, –29, . . .

A.) Yes; common difference 6; next three terms are –23, –17, –11
B.) Not an arithmetic sequence
C.) Yes; common difference –7; next three terms are –36, –43, –50
D.) Yes; common difference –6; next 3 terms are –35, –41, –47

63. Sylvie is going on vacation. She has already driven 60 miles in one hour. Her average speed for the rest of the trip is 57 miles per hour. How far will Sylvie have driven 7 hours later?

A.) 402 miles   C.) 459 miles
B.) 420 miles   D.) 399 miles

64. Do the ordered pairs below represent a relation, a function, both a relation and a function, or neither a relation nor a function?

(-3,5) , (3,-7) , (7,-15) , (9,-19)

A.) function only
B.) neither a relation nor a function
C.) both a relation and a function
D.) relation only

65. Which of the following tables represents a function?

A.

X	-12	-8	0	-8
Y	22	20	22	21

C.

X	-12	-8	-12	3
Y	22	22	28	21

B.

X	-12	-8	0	3
Y	22	20	28	22

D.

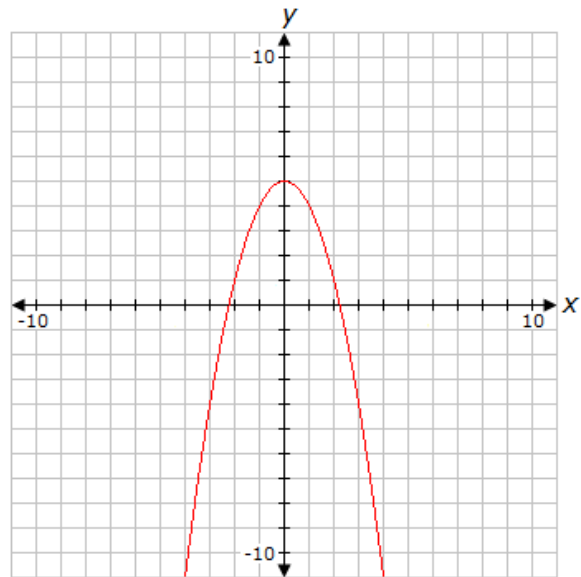| X	-12	-8	0	0
Y	22	20	22	21

66. Which of the following relations describes a function?

A.) { (2, 3), (3, 3), (4, 3), (5, 3) }

B.) { (-2, 0), (0, -2), (0, 2), (2, 0) }

C.) { (0, 0), (2, -2), (2, 2), (3, 3) }

D.) { (3, 3), (3, 4), (3, 5), (3, 6) }

67. Find the domain of the function: $y = -x^2 + 5$

A.) {all real numbers}

B.) {all real numbers greater than
      or equal to five}

C.) {all real numbers less than five}

D.) {all real numbers between negative
      three and three}

68. The elements of a function of x are (7, 8), (70, 17), and (700, 107). What is the domain of the function?

A. {693}   C. {7, 8, 70}

B. {7, 8, 17, 70, 107, 700}   D. {7, 70, 70}

69. According to the table below, what is the range of the data?

input	output
3	9
4	16
5	25
6	36
7	49

A.) 12, 20, 30, 42, 56

B.) 3, 4, 5, 6, 7

C.) 9, 16, 25, 36, 49

D.) 6, 8, 10, 12, 14

Interpret and/or use linear functions and their equations, graphs, or tables.

70. At PTHS, t-shirts sell for $17.56 and cost $12.01 to produce. Which equation represents p, the profit, in terms of x, the number of t-shirts sold?

A.) $p = \$17.56 + \$12.01x$ C.) $p = \$17.56x - \$12.01$
B.) $p = x(\$17.56 - \$12.01)$ D.) $p = x(\$17.56 + \$12.01)$

71. The population of a small town, P, as a function of time, t, in years past 1940 is:
$$P = 2{,}111 + 375\,t$$
For which of the following years was the population of the town 16,736 .

A.) 1979   C.) 1939
B.) 1989   D.) 1949

72. Alex is flying 2,075 miles. The table below shows the number of miles left to go after each hour of travel time.

Hour (x)	Miles (y)
1	1,881
2	1,687
3	1,493
4	1,299

If Alex continues at the current rate, how many miles will he have remaining after traveling for 7 hours?

A.) 911 miles   C.) 523 miles
B.) 707 miles   D.) 717 miles

73. Which of the following functions matches the graph?

A.) $f(x) = -\frac{2}{3}x + 2$

B.) $f(x) = \frac{2}{3}x - 2$

C.) $f(x) = \frac{2}{3}x + 2$

D.) $f(x) = \frac{3}{2}x - 3$
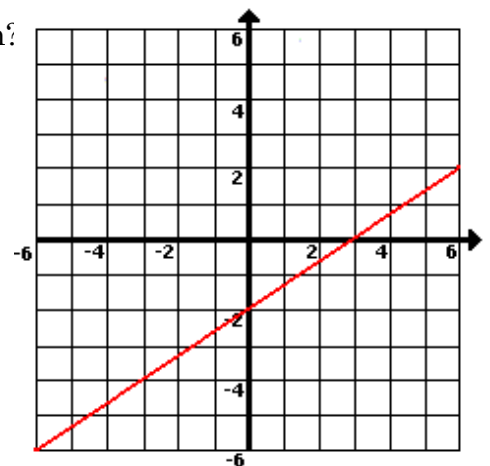
74. Which of the following tables corresponds to the graph below?
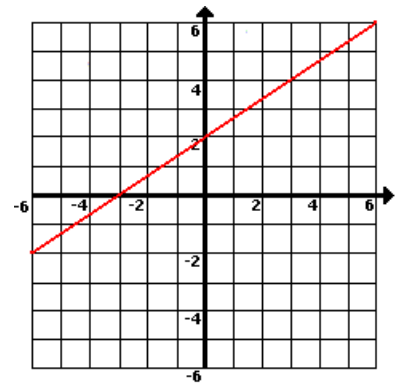
A.)

x	-3	-2	-1	0	1
y	-1	$-2/3$	$-1/3$	$-2/3$	-1

B.)

x	-3	-2	-1	0	1
y	-1	$-2/3$	$-1/3$	0	$1/3$

C.)

x	-3	-2	-1	0	1
y	-1	$-2/3$	$-1/3$	0	$-1/3$

D.)

x	-3	-2	-1	0	1
y	-1	$-2/3$	$1/3$	0	$1/3$
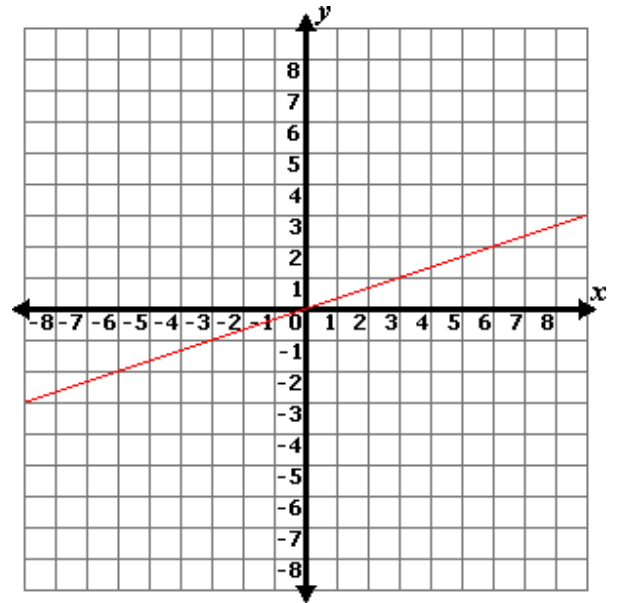
75. Which of the following functions matches the graph?

A.) $f(x) = -\frac{2}{3}x + 2$

B.) $f(x) = -\frac{3}{2}x + 3$

C.) $f(x) = \frac{3}{2}x + 3$

D.) $f(x) = \frac{2}{3}x + 2$

A1.2.2.1

Describe, compute, and/or use the rate of change (slope) of a line.

76. Which of the following situations represents a linear relationship?

A.) A radioactive substance loses half of its mass every 12 years.

B.) The cost of living increases in a certain area by 3 percent each year.

C.) The volume of a cubical gift box depends on the side length of the box.

D.) Someone is losing 5 pounds every month on her diet.

77. A pizza buffet has prepared 18 pizzas to place on the line at the beginning of lunch at 11:00 a.m. The equation $y = 14x + 18$ can be used to describe the total number of pizzas that have been placed out on the buffet line, where x represents every 9 minutes after 11:00 a.m. Which statement best describes the rate of change in the number of pizzas set out on the buffet?

A.) Every 18 minutes, 38 more pizzas were set out on the buffet.

B.) Every 18 minutes, 28 more pizzas were set out on the buffet.

C.) Every 9 minutes, 24 more pizzas were set out on the buffet.

D.) Every 18 minutes, 14 more pizzas were set out on the buffet.

78. Robert is making a map for Geography. In order to draw the map, he must create a scale converting the measured inches on the map to actual miles.

Length in Inches	1 $^1/_4$	1 $^1/_2$	1 $^3/_4$	2 $^1/_4$	2 $^1/_2$	2 $^3/_4$
Length in Miles	45	54	63	81	90	99

Use the table above to identify the scale he used for his map.

A.) 1 in. = 36 miles   C.) 1 in. = 9 miles

B.) 1 in. = 12 miles   D.) 1 in. = 18 miles

79. Write an equation in slope-intercept form for the line that passes through (3, 7) and (7, 4).

A.) $y = -\frac{3}{4}x + \frac{37}{4}$ C.) $y = -\frac{4}{3}x + \frac{37}{4}$

B.) $y = \frac{3}{4}x + \frac{37}{4}$ D.) $y = -\frac{3}{4}x + \frac{4}{37}$

80. Find the x- and y-intercepts of $-x + 2y = 8$.

A.) x-intercept: −11, y-intercept: 4   C.) x-intercept: −8, y-intercept: 3

B.) x-intercept: −11, y-intercept: 3   D.) x-intercept: −8, y-intercept: 4

81. Jim drove for several hours, recording the distance he had traveled in miles. Graph the data and show the rates of change.

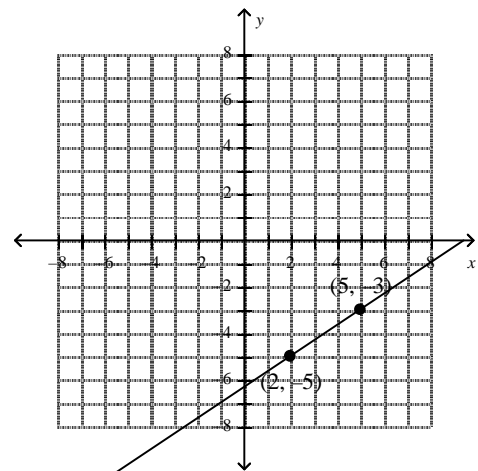| Hours	1	4	6	7	10
Miles	50	220	300	320	500

A.)

C.)

B.)

D.)
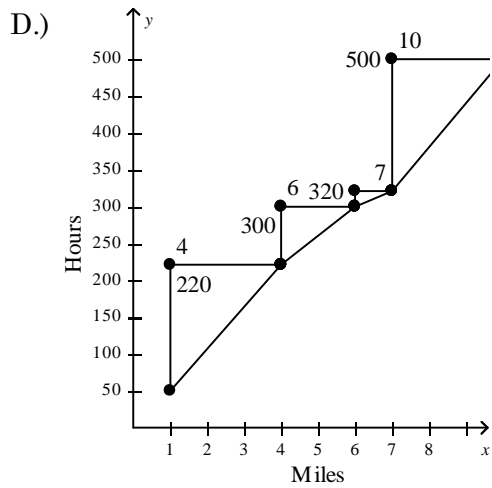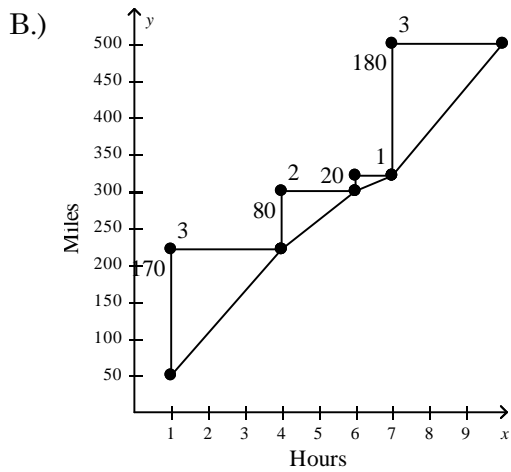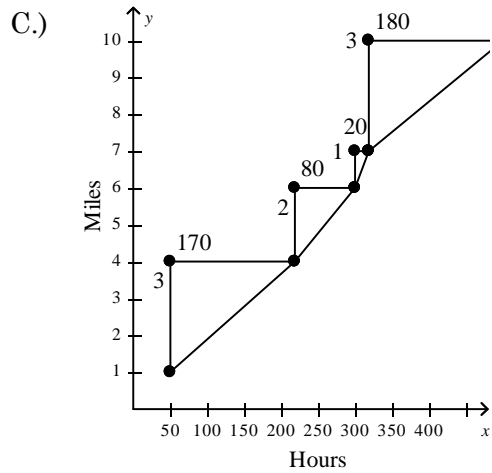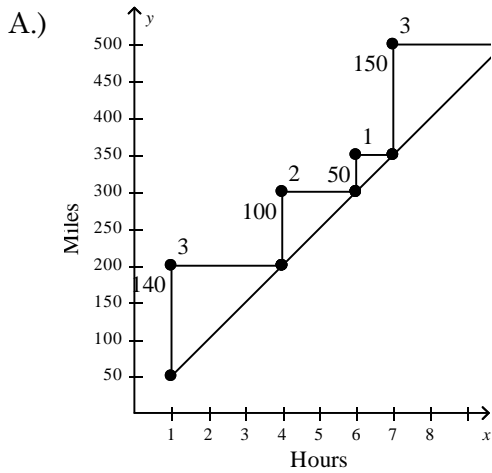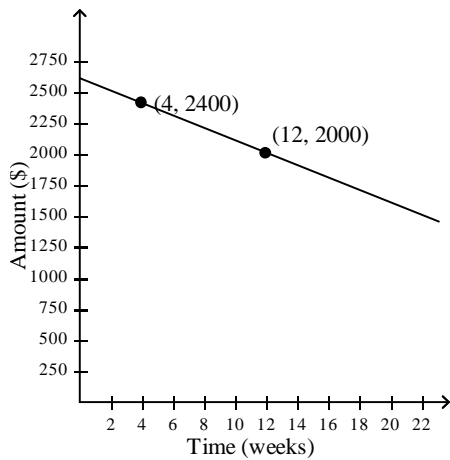
82. Find the slope of the line.

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

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

B.) $\frac{2}{3}$

D.) $-\frac{2}{3}$

83. Tara creates a budget for her weekly expenses. The graph shows how much money is in the account at different times. Find the slope of the line. Then tell what rate the slope represents.

A.) The slope is −50. The slope means that the amount of money in the account is decreasing at a rate of $50 every week.

B.) The slope is −50. The slope means that the amount of money in the account is decreasing at a rate of $50 every 2 weeks.

C.) The slope is −0.02. The slope means that the amount of money in the account is decreasing at a rate of $0.02 every week.

D.) The slope is 50. The slope means that the amount of money in the account is increasing at a rate of $50 every week.
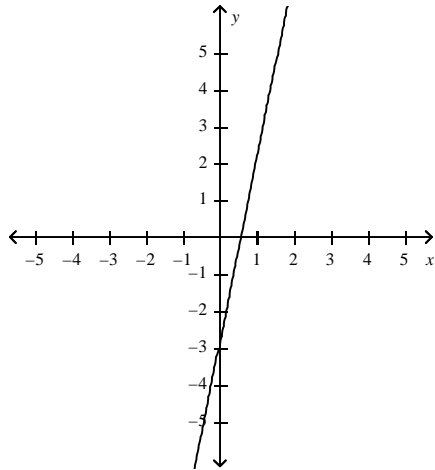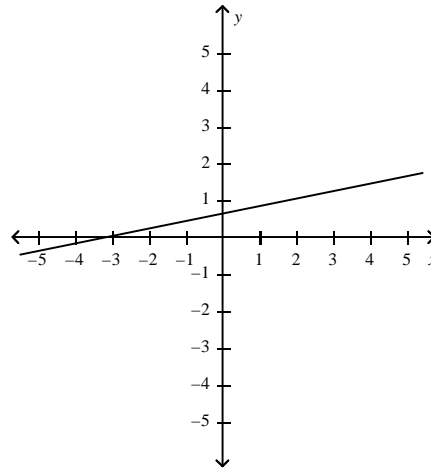
84. Find the x- and y-intercepts.
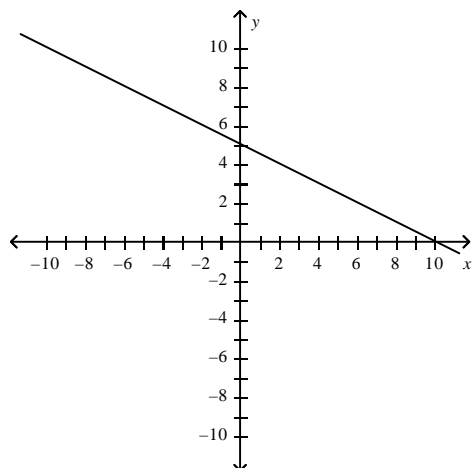
A.) x-intercept: −10, y-intercept: 5   C.) x-intercept: 10, y-intercept: −5

B.) x-intercept: 5, y-intercept: 10   D.) x-intercept: 10, y-intercept: 5

85. Tell whether the function $y = 5x - 3$ is linear. If so, graph the function.
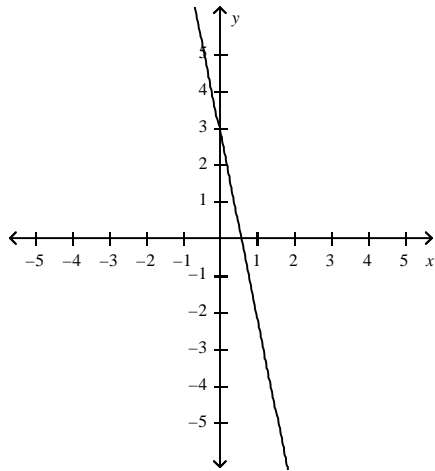
A.)

C.)

B.)

D.) Not a linear function.

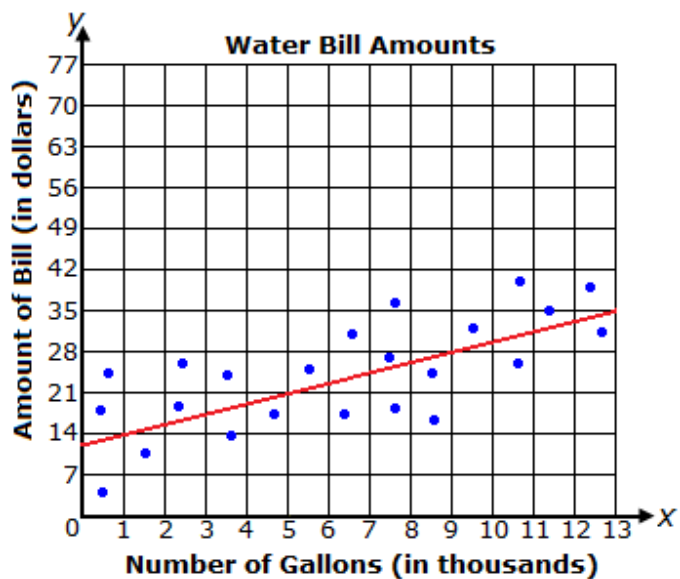Analyze and/or interpret data on a scatter plot.

86. The graph shows a line of best fit for data collected on the amount of water bills in relation to the number of gallons of water used. What is the equation of the line of best fit?

A.) $y = \frac{1}{4}x + \frac{49}{4}$

B.) $y = \frac{7}{4,000}x + \frac{49}{4}$

C.) $y = -\frac{1}{4}x + \frac{49}{4}$

D.) $y = -\frac{7}{4,000}x + \frac{49}{4}$

Water Bill Amounts

Amount of Bill (in dollars)

Number of Gallons (in thousands)

87. The graph shows a line of best fit for data collected on the size of green bean harvests in relation to the amount of rainfall. What is the equation of the line of best fit?

A.) y = x + 1,000

B.) y = x + 1

C.) y = 1,000x + 1

D.) y = 1,000x + 1,000

Size of Green Bean Harvest

Bushels of Green Beans (in thousands) vs. Rainfall (in inches)
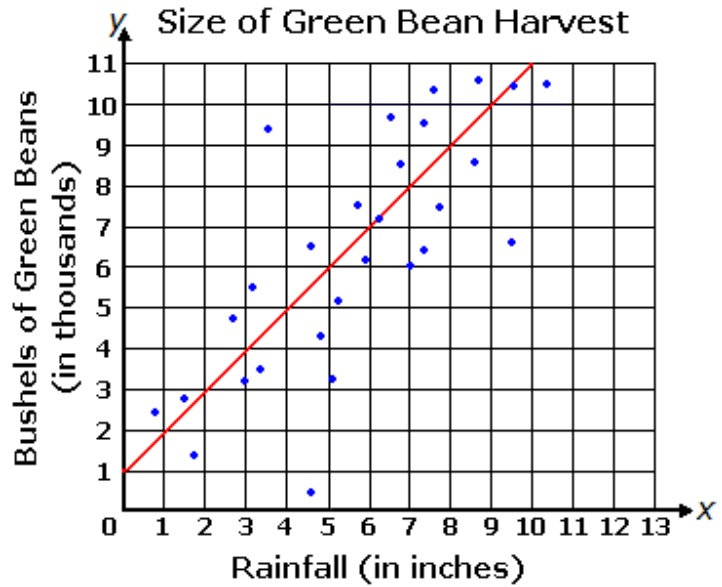
88. Which of the following equations represents the line that is drawn below?

A.) y = 0.72x + 1.4

B.) y = 0.72x - 1.4

C.) y = -0.72x - 1.4

D.) y = -0.72x + 1.4

Candy Consumed per Minute

Pieces of Candy vs. Minutes
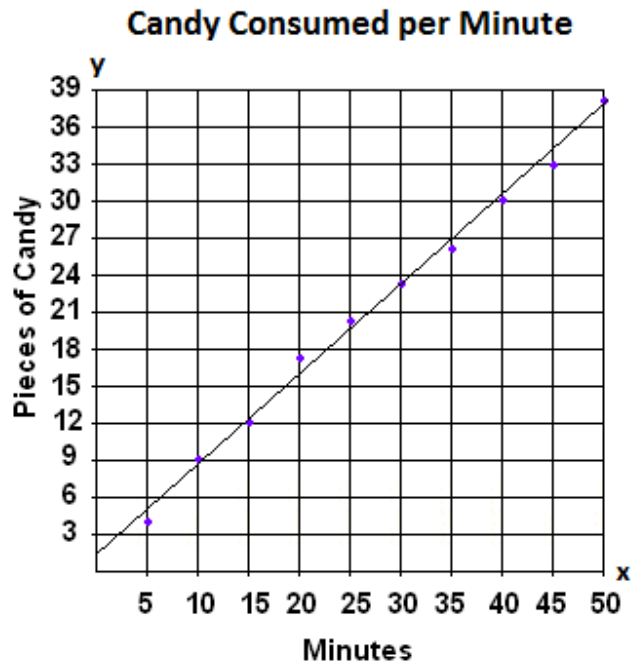
Use measure of dispersion to describe a set of data.

89. The daily high temperatures, in degrees Fahrenheit, of a town are recorded for one year. The median high temperature is 62 F. The interquartile range of high temperatures is 32. Which is **most likely** to be true?

A.) Approximately 25% of the days had a high temperature less than 30 F.

B.) Approximately 25% of the days had a high temperature less than 62 F.

C.) Approximately 50% of the days had a high temperature less than 62 F.

D.) Approximately 75% of the days had a high temperature less than 94 F.

90. What is the range of the following set of numbers?   {23,45,43,46,23}

A.) 0   C.) 23
B.) 13   D.) 1

91. What is the interquartile range of the following set of numbers?
                        {398,464,486,524,505,421,442}
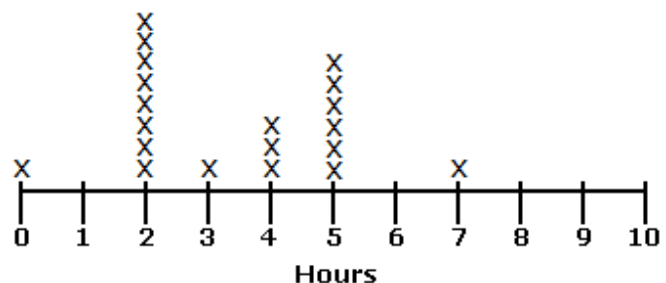
A.) 107   C.) 126
B.) 84   D.) 464

Use data displays in problem-solving settings and/or to make predictions.

92. The line plot below shows the number of hours each student in Ms. Smith's class exercise each week. What is the median of the data in the graph?

A.) 3.7 hours

B.) 3.4 hours

C.) 2.5 hours

D.) 3.5 hours

93. A company made a bar graph showing the amount of sales for each month in thousands of dollars. Which is the closest to the mean amount of sales for the 4-month period?

Summary Sales
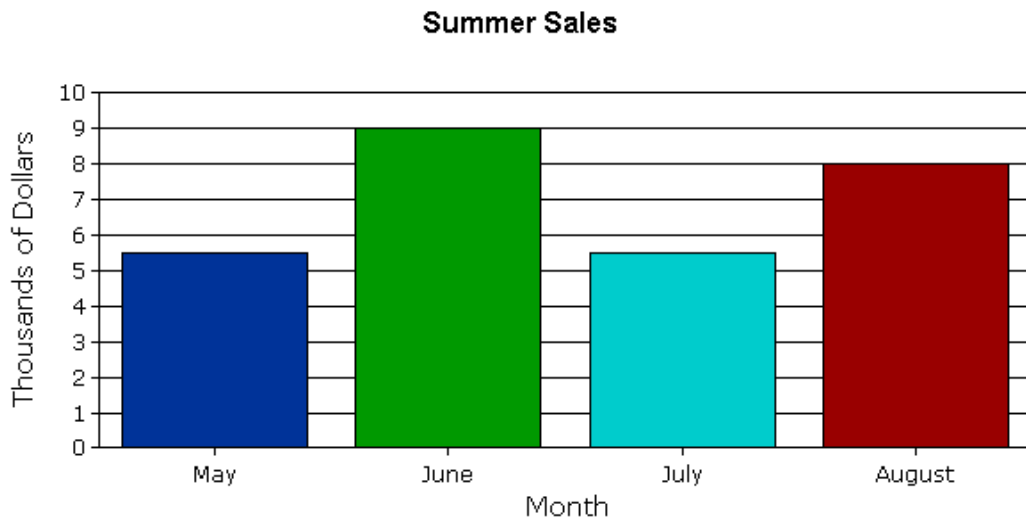
A.) $7500   C.) $7000

B.) $7625   D.) $6500

94. The graph below shows the results of an analysis of a group of eighteen male students. Height is measured in inches and self-esteem is measured by taking the average of the student's responses on a survey (where 1 means lowest self-esteem and 10 means highest self-esteem).
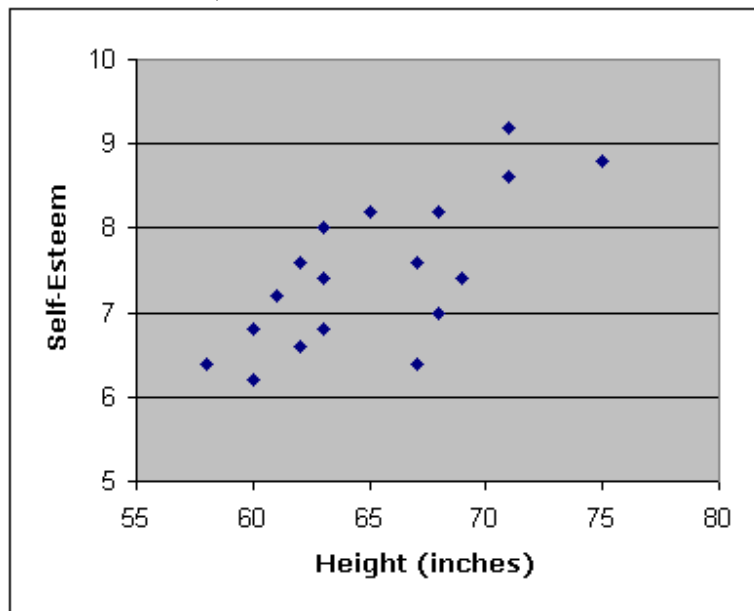
A.

A.) As an individual's height increases, self-esteem decreases.
B.) There is no relationship between an individual's height and self-esteem.
C.) As an individual's height decreases, self-esteem increases.
D.) As an individual's height increases, self-esteem increases.

95. The number of CD sales for a new musical group over a six-month period are represented by the box plot below

CD Sales (in thousands)
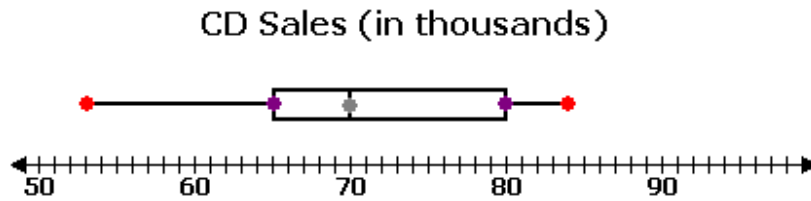
Which set of data below represents the median and the third quartile, in that order?

A.) 53, 65   C.) 70, 84

B.) 53, 80   D.) 70, 80

96. What is the range of the data shown in the stem-and-leaf plot above?

stem   leaf   A.) 45

 749 | 3 3 4 5 7 9
                                                    B.) 5
 750 | 1 1 1 2 4 5 6 7 8 8 8 9 9

 751 | 1 3 3 3 4 6 8 9 9
                                                    C.) 48

 752 | 1 2 2 3 3 3 4 7 8 9

 753 | 1 1 2 4 5 6 8 8   D.) 38

97. The following stem-and-leaf plot shows the scores on the most recent math exam. What is the mode of these values?

5 | 0 1 3 5 8 9   A.) 97

6 | 3 5 6 6 7
                                                    B.) 88
7 | 1 2 2 7 9

8 | 0 3 3 3 4 6 8 8   C.) 83

9 | 2 4 4 7 7 9

                                                    D.) 66

98. The graph above shows a line of best fit for data collected on the price of a unit in relation to the number of units sold. What is the equation of the line of best fit?

A.) $y = -\frac{1}{2}x + 40$

B.) $y = -\frac{1}{50}x + 10$

C.) $y = -\frac{1}{50}x + 40$

D.) None of the above

Price vs. Units Sold

Price (in dollars)

Units Sold (in hundreds)

99. Crystal's grandmother planted a tree on the farm in 1920. She measured the tree trunk's diameter every 10 years and recorded the measurements. The scatter plot below shows the progress of the diameter. (The year 1930 is equivalent to 10 on the graph.)
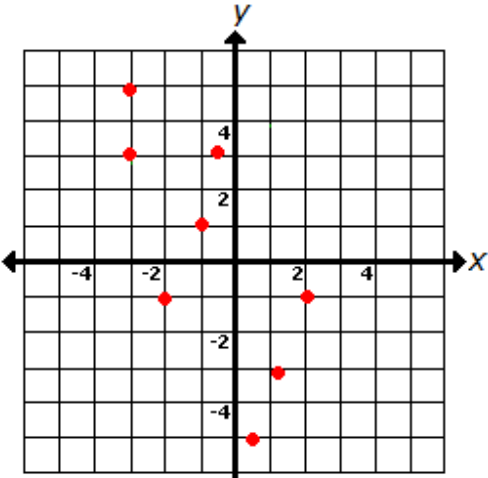
$$y = 0.507x + 5.543$$

Looking at the line of best fit equation shown below the graph, what will be the approximate diameter of the tree in 2010?

A.) 56.243 inches

B.) 46.103 inches

C.) 45.63 inches

D.) 51.173 inches

Change in Diameter over Time

Diameter of the Trunk (in)

Years Past 1920
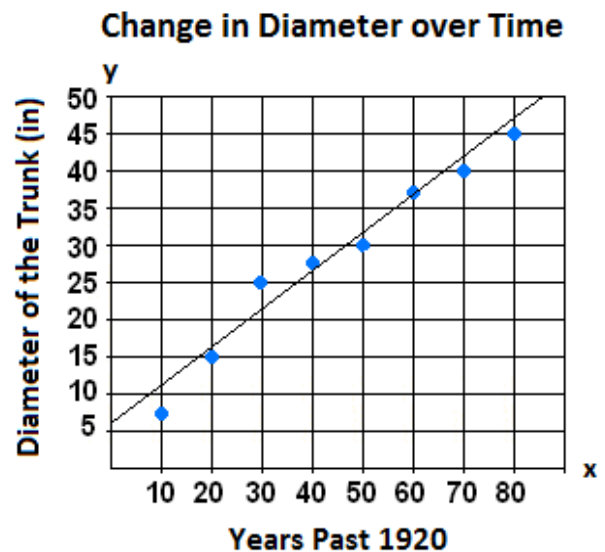
100. Which scatterplot most likely has a line of best fit represented by $y = 2x + 1$?

W.

X.

Y.

Z.

A.) W   C.) Y

B.) X   D.) Z

Apply probability to practical situations.

101. A number cube with sides labeled 1 through 6 is rolled two times, and the sum of the numbers that end face up is calculated. What is the probability that the sum of the numbers is 3?

A.) 1/18   C.) 1/9
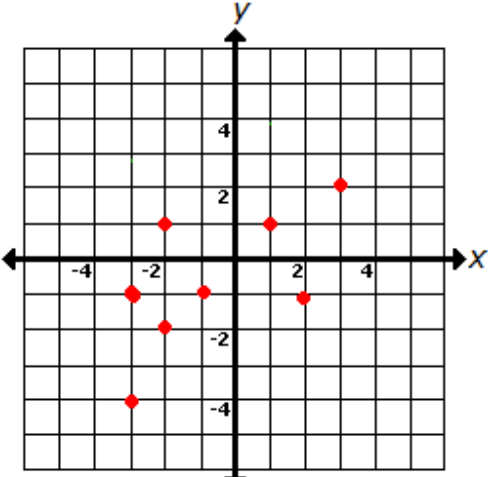
B.) 1/12   D.) 1/2

102. Bobby is taking a multiple-choice history test. He has decided to randomly guess on the first two questions. On each question there are 4 answer choices. What is the probability that he answers the first question correctly and the second question correctly?

A.) 9/16   C.) 1/16

B.) 3/16   D.) 1/4

103. Holly is flipping a coin and pulling a marble from a bag. There are 4 white marbles, 2 blue marbles, and 5 green marbles, all of the same size, in the bag. What is the probability that the coin lands on heads and she pulls a green marble from the bag?

A.) 5/22   C.) 1/4

B.) 6/13   D.) 3/11

104. Simplify: $6\sqrt{125}$. The steps are shown below.

$$\text{Step 1: } 6(\sqrt{100} + \sqrt{25})$$

$$\text{Step 2: } 6(10 + 25)$$

$$\text{Step 3: } 6(35)$$

$$\text{Step 4: } 210$$

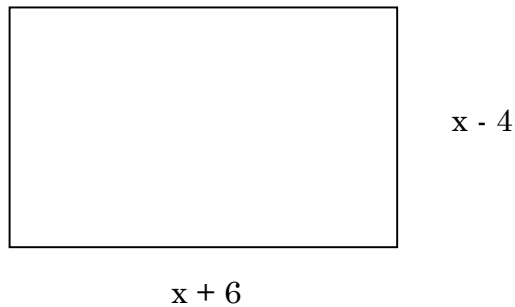One of the steps shown is **incorrect**.

A.) Rewrite the incorrect step so that it is correct.

Correction: _____

B.) Using the corrected step from #1, simplify $6\sqrt{125}$.

$6\sqrt{125}$ = _____

105. Express both the perimeter and the area of the rectangle shown in the diagram as polynomials in simplest form.

x - 4

x + 6

Answers: _____

106.
A.) Scott has $15.00, and he earns $6.00 an hour babysitting. The equation below can be used to determine how much money in dollars (m) Scott has after any number of hours babysitting (h).

$$m = 15 + 6h$$

After how many hours of babysitting will Scott have $51.00

hours: _____

B.) Josh has $9.00. He makes $8.00 an hour babysitting. Use the system of linear equations below to find the number of hours of babysitting at which Scott and Josh will have the same amount of money.

$$m = 6h + 15$$
$$m = 8h + 9$$

hours:_____