

Chapter 5: Linear Equations

Homework

5-1: Slope: pg. 296: 8 – 38; 42-46; and 50-58, the evens; 59-69, all

5-2: Direct Variation: pg. 302: 1-8 all; 10-34, evens; 44-46, all; 48-55 all

5-3: Slope-Intercept Form: pg. 310: 8-26 evens; 28-48 alternate evens; 52-58 evens; 59, 61; 62-66 evens; 72, 74, 75; 76-86 all

5-4: Point-Slope Form: pg. 316: 1-7 all; 8-26 evens; 34-40 all

5-5: Standard Form: pg. 323: 1-7 all; 8-60 alternate evens; 62, 63, 66-76 all

5-6: Parallel & Perpendicular Lines: pg. 330: 1-4 all; 8, 12, 13-18 all; 20, 24, 27-31 all; 34, 38-43 all

5-7: Scatter Plots & Trend Lines: pg. 337: 1-3 all; 7-15 all; 19-22 all; 23-29 all

5-8: Absolute Value Functions: pg. 244: 1-8, 15-20, 27-32, 37-40, 45-47, 50-55, all

Bonus: due day of test: Chapter Test: pg. 353

Chapter Overview

Slope: rise = for any two ordered pairs (x_1, y_1) and (x_2, y_2) on a line : slope = $\frac{y_2 - y_1}{x_2 - x_1}$; rate of change
run

Slope-Intercept Equation Form of a Line: $y = mx + b$ where m = slope and b = y-intercept

Standard Equation Form of a Line: $Ax + By = C$ where A , B and C are integers; A & B are not both zero

x-intercept: $(x, 0)$; the point at which a line crosses the x-axis

y-intercept: $(0, y)$; the point at which a line crosses the y-axis

Point-Slope Equation Form of a Line: $y - y_1 = m(x - x_1)$ where (x_1, y_1) is a point on the line and m is the slope

Parallel Lines: lines with the same slope

Perpendicular Lines: lines with slopes that are negative reciprocals of each other; product of their slopes is -1 .

Line of Best Fit: given a set of ordered pairs (i.e. scatter plot), the line of best fit is the line that most closely aligns with / passes through the points on the graph

Correlation Coefficient: a value that ranges from -1 to 1 that determines how well the line of best fit fits. The closer the value is to -1 or $+1$ the better the fit or correlation; the closer the value is to zero the less correlation there is between the line and the points; a positive correlation means the line of best fit has a positive slope (as x increases so does y); a negative correlation means the line of best fit has a negative slope (as x increase, y decreases); no correlation means the line of best fit is NOT a good fit and the data does not follow a pattern with predictability.

Absolute Value Equation Form: $y = a | x - b | + c$ where a determines the direction the graph opens (pos = up; neg = down); the point (b,c) is the vertex (turning point); b shifts the graph left or right; c shifts the graph up or down

Translation: the shifting of a graph caused by changing numeric values in the equation of the graph (i.e. the affect a , b & c have on linear, absolute value and quadratic equations in standard form)

Answers

5-1:

Answers

Practice and Problem-Solving Exercises

8. no
9. Yes; 1; there is one bun per hot dog.
10. Yes; -500 ; the plane is descending at a rate of 500 ft/min.
11. -2
12. -2
13. 4
14. 4
15. 4
16. 4
17. 1
18. -1
19. -1
20. 2
21. $\frac{7}{10}$
22. $-\frac{1}{3}$
23. 0
24. undefined
25. 0

60. 1

61. [4] a. $30 > 2(x + 2 + 6) > 20$ (OR equivalent inequality)

b.

c.

[3] appropriate methods, but with one computational error

[2] correct inequality but incorrect graphs OR graphs with correct upper bounds but missing or incorrect lower bounds

[1] correct inequality and graphs, without work shown

62. 5, 9, 21

63. 1, 13, 49

64. 15, 21, 39

65. {2, 4}

66. {3}

67. {8}

68. {2, 3, 4, 5, 6, 7, 8, 10}

69. {1, 2, 3, 4, 5, 7, 8}

70. 7.5

71. 20

72. 5

73. -10

74. 81

49. a. 5

b.

c. The slope is equal to the common difference.

50. Yes; the slopes from A to B, from B to C, and from A to C all equal $-\frac{1}{3}$.

51. Yes; the slopes from G to H, from H to I, and from G to I all equal $\frac{1}{2}$.

52. No; the slopes between all pairs of points are not the same.

53. No; the slopes between all pairs of points are not the same.

54. Yes; the slopes from G to H, from H to I, and from G to I all equal $\frac{3}{2}$.

55. No; the slopes between all pairs of points are not the same.

56. 0

57. $-\frac{n}{2m}$

58. $\frac{2d-b}{c-2a}$ or $\frac{b-2d}{2a-c}$

59. C

60. 1

61. [4] a. $30 > 2(x + 2 + 6) > 20$ (OR equivalent inequality)

b.

c.

c.

[3] appropriate methods, but with one computational error

[2] correct inequality but incorrect graphs OR graphs with correct upper bounds but missing or incorrect lower bounds

[1] correct inequality and graphs, without work shown

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67. {8}

68. {2, 3, 4, 5, 6, 7, 8, 10}

69. {1, 2, 3, 4, 5, 7, 8}

70. 7.5

71. 20

72. 5

73. -10

74. 81

26. zero
27. positive; 9
28. negative; -2
29. positive; 12
30. independent: time; dependent: depth of snow; 0.02 m/h
31. independent: number of people; dependent: cost; \$12/person
32. independent: time; dependent: distance from destination; -60 km/h
33. 0
34. -4
35. 0
36. undefined
37. -0.048352
38. undefined
39. horse; mouse
40. Check students' work.
41. \$2050 per month
42. 0
43. 6
44. -6
45. 4
46. 12
47. 3
48. No; the line could intercept the y -axis at any point and still have a slope of 1.

5-2:

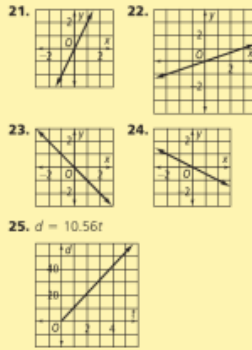
Answers

Lesson Check

- yes; 3
- $y = 10x$
- 30 muffins
- yes; $y = -\frac{1}{2}x$
- always
- never
- sometimes
- Yes; if $q = kp$, then $p = \frac{1}{k}q$, which is a direct variation with constant of variation $\frac{1}{k}$.

Practice and Problem-Solving Exercises

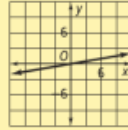
- no
- no
- yes; -2
- no
- yes; $\frac{2}{3}$
- yes; $\frac{1}{5}$
- $y = -5x; -60$
- $y = \frac{3}{2}x; 30$
- $y = \frac{5}{2}x; 30$
- $y = -25x; -300$
- $y = 2.6x; 31.2$
- $y = -\frac{56}{3}x; -224$



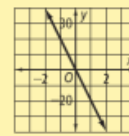
26. $p = 6t$



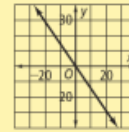
- yes; $y = -1.5x$
- yes; $y = 1.8x$
- no
- $y = \frac{1}{6}x$



31. $y = -20x$

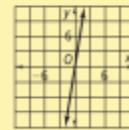


32. $y = -\frac{36}{25}x$

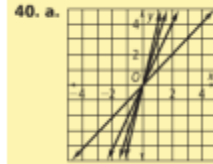


33-42. See next page.

33. $y = 6x$



- about 5 qt
- 48 volts
0.75 ohm
- Yes; as the number of ounces increases, the number of Calories increases. When the number of ounces is 0, the number of Calories is 0.
- No; as the rate increases, the time decreases.
- Yes; as the side length increases, the perimeter increases. When the side length is 0, the perimeter is 0.
- No; as the number of items you purchase increases, the amount of money you have left decreases.



- The graphs get steeper.
less steep than $y = x$
 - y does not vary directly with x because $y \neq 0$ when $x = 0$.

- The value of y is doubled.
 - The value of y is halved.
- $y = \frac{2}{5}x; 52$ lb
- 12
- 6
- 8
- $c = 3.85$; yes; the constant of variation is 3.85.
 - $c = 0.12m$
 - about \$28.80
- 0.17
- 165.6
- 280.50
- 6
- 1
- 0
- 6
- $-0.01x$
- 15
- 11
- 6
- 7

5-3:

Answers

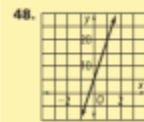
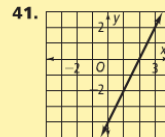
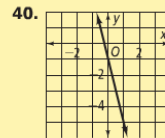
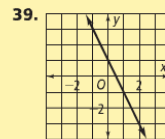
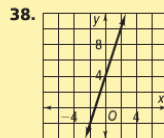
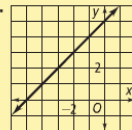
Lesson Check (continued)

- Yes; it is a horizontal line with a y -intercept of 5.
- Sometimes; answers may vary. Sample: $y = 3x$ represents direct variation, but $y = 3x + 1$ does not.
- Answers may vary. Sample: You can plot points or you can use the slope-intercept form to plot the y -intercept and then use the slope to find a second point; check students' work.

Practice and Problem-Solving Exercises

- 3, 1
- 1, 4
- 2, -5
- 3, 2
- 5, -3
- 6, 0
- 0, 4
- 0.2, 3
- $\frac{1}{4}, -\frac{1}{3}$
- $y = x - 1$
- $y = 3x + 2$
- $y = \frac{1}{2}x - \frac{1}{2}$
- $y = 0.7x - 2$
- $y = -0.5x + 1.5$
- $y = -2x + \frac{8}{5}$
- $y = -\frac{1}{2}x + 3$

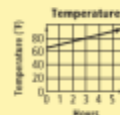
- $y = 2x - 3$
- $y = -x$
- $y = -2x + 4$
- $y = 1.5x - 2$
- $y = \frac{5}{2}x - \frac{1}{2}$
- $y = x + 3$
- $y = -x + 2$
- $y = -\frac{1}{4}x + \frac{9}{4}$
- $y = \frac{1}{2}x$
- $y = -1.6x - 14.2$
- $y = -\frac{5}{7}x + \frac{5}{7}$
- $y = -0.1x + 0.8$
- $y = 1.15x + 9.2$
- $y = -1.8x + 0.3$



49. $y = 7.5x - 5$



50. $y = 5x + 65$

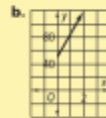


- 3, 2
- $-\frac{1}{2}, 0$
- $9, \frac{1}{2}$
- $\frac{4}{2}, 3$
- 9, -15
- c, d
- $2 - a, a$
- 3, -2n
- 2030

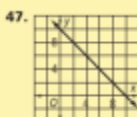
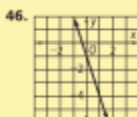
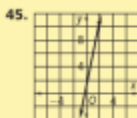
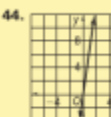
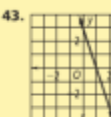
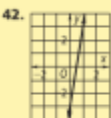
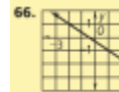
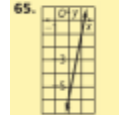
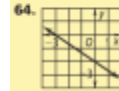
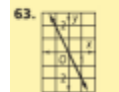
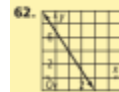
60. The student used the slope as the y -intercept and the y -intercept as the slope.



61. a. $y = 35x + 50$



c. The amount of time the repair takes and the cost must be positive.



5-4:

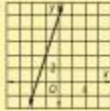
Answers

Got It? (continued)

4. a. Answers may vary. Sample:
 $y - 3320 = 1250(x - 2)$; the rate at which water is being added to the tank, in gallons per hour
 b. $y = 1250x + 820$; the initial number of gallons of water in the tank

Lesson Check

1. $\frac{4}{3}$; $(-7, 12)$
 2. $y + 8 = -2(x - 3)$
 3.

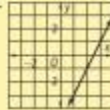


4. Answers may vary. Sample:
 $y + 2 = 26(x + 1)$

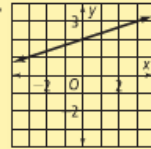
5. the slope m of the line and a point (x_1, y_1) on the line
 6. yes; $1 - 4 = 3(-2 + 1)$
 7. Yes; answers may vary. Sample:
 $y - a = m(x - b)$; $y = mx - mb + a$,
 $y = mx + (a - mb)$

Practice and Problem-Solving Exercises

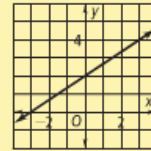
8. $y + 4 = 6(x - 3)$
 9. $y - 2 = -\frac{5}{3}(x - 4)$
 10. $y + 7 = \frac{2}{3}(x + 2)$
 11. $y = -1(x - 4)$
 12.



26.



27. The student graphed the point $(2, 0)$ instead of $(0, 2)$.



28. Answers may vary. Sample:

$C - 10 = \frac{5}{9}(F - 50)$; 15°C

29. a. Answers may vary. Sample: $y - 5 = x + 2$

b. Infinitely many; you can use any value for the slope.

30. a. Answers may vary. Samples:

\overleftrightarrow{AB} : $y - 1 = \frac{1}{3}(x + 3)$,

\overleftrightarrow{BC} : $y - 3 = -3(x - 3)$,

\overleftrightarrow{CD} : $y = \frac{1}{3}(x - 4)$,

\overleftrightarrow{AD} : $y - 1 = -3(x + 3)$

b. The slopes of parallel lines are equal.

c. $y + 4 = -7x$

31. $b = -0.0018a + 212$; 207.5°F

32. Using the point-slope form, the equation would be $y - b = m(x - 0)$, which simplifies to $y = mx + b$.

33. a. The slope between every pair of points is a constant, 2; $y = 2x$.

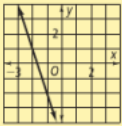
b. 20 in.

c. No; the rate of change is not constant.

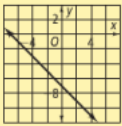
Answers

Practice and Problem-Solving Exercises (continued)

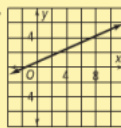
13.



14.



15.



16–18. Answers may vary. Samples are given.

16. $y - 3 = \frac{4}{3}(x - 1)$

17. $y - 1 = -\frac{3}{4}(x - 1)$

18. $y - 2 = \frac{3}{4}(x - 1)$

19–21. Point-slope forms may vary. Samples are given.

19. $y - 4 = \frac{3}{2}(x - 1)$; $y = \frac{3}{2}x + \frac{5}{2}$

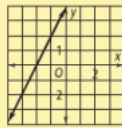
20. $y - 4 = 2(x - 2)$; $y = 2x$

21. $y - 6 = -\frac{1}{3}(x + 6)$; $y = -\frac{1}{3}x + 4$

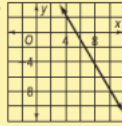
22. $y = -12x + 80$; the slope -12 represents the change in the amount of paint in gallons per day; the y -intercept 80 represents the initial number of gallons of paint.

23. $y = 8.5x$; the slope 8.5 represents the hourly wage in dollars; the y -intercept 0 represents the amount earned for working 0 h.

24.



25.



26–32. See next page.

b. 20 in.

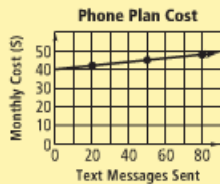
c. No; the rate of change is not constant.

34. A

35. H

36. D

37. [2] a.



b. $c = 0.1n + 39.99$ OR equivalent

38. 1, 4

39. 6, 0

40. $-1, -13$

41. $y = \frac{7}{x}$

42. $y = \frac{7b + 3}{a}$

43. $y = \frac{6x - c}{6}$

5-5:

Answers

Got It? (continued)

4. $x + 3y = 0$

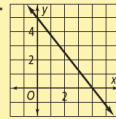
5. a. $x + 15y = 60$

b. domain: nonnegative integers less than or equal to 60; range: $\{0, 1, 2, 3, 4\}$

Lesson Check

1. $3, -\frac{9}{4}$

2.



3. horizontal line

4. $x - 2y = -6$

5. $10x + 25y = 285$; answers may vary. Sample: 1 \$10 card and 11 \$25 cards, 6 \$10 cards and 9 \$25 cards, 11 \$10 cards and 7 \$25 cards

6. a. point-slope form

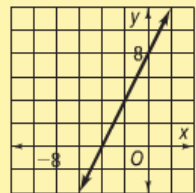
b. slope-intercept form

c. point-slope form

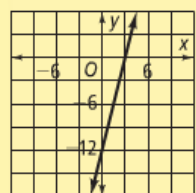
d. standard form

7. Answers may vary. Sample: slope-intercept form; it is easy to find the y -intercept and calculate the slope from the graph.

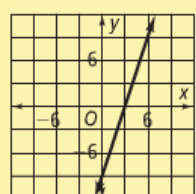
20.



21.



22.



Answers

Practice and Problem-Solving Exercises

8. 9, 9

9. 2, -1

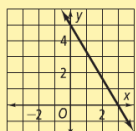
10. $-\frac{7}{3}, \frac{7}{3}$

11. $-\frac{20}{3}, 4$

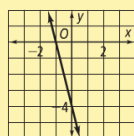
12. 3, -21

13. 1.5, -2.5

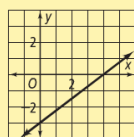
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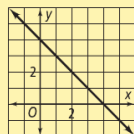
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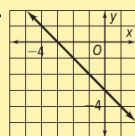
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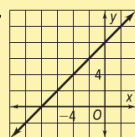
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18.

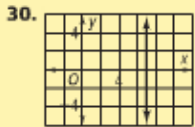
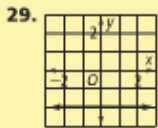
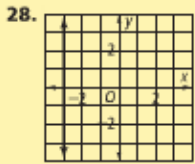
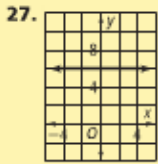


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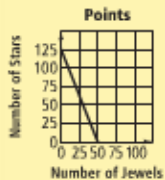


20–40. See back of book.

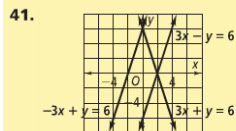
23. horizontal 24. vertical
 25. horizontal 26. vertical



31. $2x - y = -5$ 32. $4x - y = 7$
 33. $2x + y = 10$ 34. $x - 4y = 8$
 35. $2x + 3y = -3$ 36. $2x - 3y = -2$
 37. $5j + 2s = 250$



Answers may vary. Sample: 50 jewels and 0 stars, 48 jewels and 5 stars, 42 jewels and 20 stars

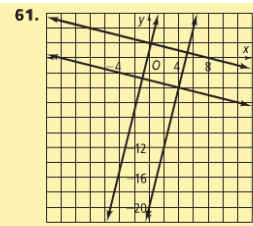
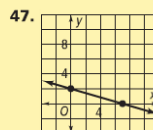
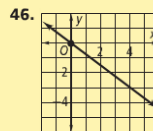
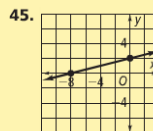


Two lines have the same slope but different y-intercepts. Two lines have the same y-intercept but different slopes.

42. $-\frac{A}{B}, \frac{C}{B}$

43. Answers may vary. Sample: The student did not subtract 1 from each side of the equation. The correct equation is $4x - y = -1$.

44. If both values are 0, then the equation becomes $0 = C$, which does not represent a line.



square

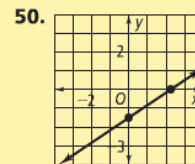
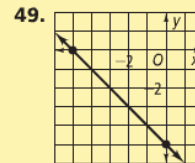
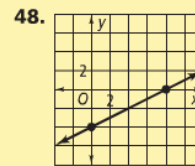
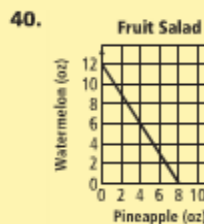
62. $5x - y = -13$ 63. $4x - y = -2$

38. $12t + 15s = 120$

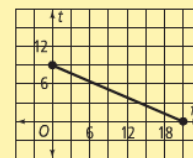


Answers may vary. Sample: 10 T-shirts and 0 sweatshirts, 0 T-shirts and 8 sweatshirts, 5 T-shirts and 4 sweatshirts

39. When you have a slope and the y-intercept, use the slope-intercept form. When you have two points or a slope and a point, use the point-slope form. When you have the standard form, it is easy to graph.



51. 4, 3; $3x + 4y = 12$
 52. 2, -4; $2x - y = 4$
 53. -3, -3; $x + y = -3$
 54. -2, -2 55. 10, $-\frac{10}{3}$ 56. $-\frac{53}{5}, \frac{53}{3}$
 57. 6, 6 58. $\frac{1}{3}, 1$ 59. 4, $-\frac{8}{5}$
 60. $3f + 7t = 63$



21 field goals and 0 touchdowns, 14 field goals and 3 touchdowns, 7 field goals and 6 touchdowns, 0 field goals and 9 touchdowns

5-6:

Answers

Got It? (continued)

4. $y = -\frac{2}{3}x + 10$

Lesson Check

- $y = 6x$ and $y = 6x - 2$; $y = -\frac{1}{6}x$
and $y = 6x$, $y = -\frac{1}{6}x$ and $y = 6x - 2$
- $y = -4x + 11$
- $y = -x - 1$
- a. yes
b. no
c. no

5. Check students' work.

6. In both cases, you compare the slopes of the lines. If the slopes are equal, then the lines are parallel. If the slopes are opposite reciprocals, the lines are perpendicular.

Answers

Practice and Problem-Solving Exercises

7. $y = 3x$ 8. $y = -x$
 9. $y = 4x - 7$ 10. $y = -\frac{3}{2}x + 2$
 11. $y = \frac{2}{3}x$ 12. $x = 4$
 13. Perpendicular; the slopes are opposite reciprocals.
 14. Parallel; the slopes are equal.
 15. Parallel; the slopes are equal.
 16. Perpendicular; the slopes are opposite reciprocals.
 17. Perpendicular; one line is vertical and the other line is horizontal.
 18. Neither; the slopes are not equal or opposite reciprocals.
 19. $y = \frac{1}{3}x$
 20. $y = -2x - 1$
 21. $y = -\frac{1}{5}x - \frac{9}{5}$

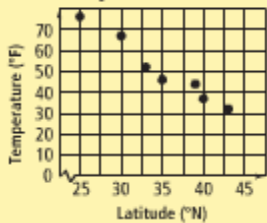
22. $y = -2x - 4$
 23. $y = -\frac{1}{2}x + \frac{5}{2}$
 24. $y = -2x - 4$
 25. $y = -\frac{1}{2}x + 4$
 26. $y = 2x + 4$
 27. a and f ; b and d , c and e
 28. Sometimes; a horizontal line has the same slope as the x -axis. If the horizontal line is not $y = 0$, then it is parallel to the x -axis.
 29. Sometimes; if the slopes are equal and the y -intercepts are not equal, then the lines are parallel.
 30. Never; two lines with the same slope are parallel.
 31. Answers may vary. Samples: $y = 1$; $x = 1$
 32. The slopes are not equal, so the lines cannot be parallel. The slopes are opposite reciprocals, so the lines are perpendicular.

33. $x = 3$
 34. $-\frac{3}{2}, 24$
 35. $y = -100x + 600$, $y = -100x + 1000$; parallel; the slopes are the same.
 36. \overline{AB} is parallel to \overline{CD} because they both have slope $-\frac{5}{2}$.
 \overline{BC} is parallel to \overline{AD} because they both have slope $\frac{2}{5}$.
 \overline{AB} is perpendicular to \overline{BC} because their slopes are opposite reciprocals.
 \overline{AD} is perpendicular to \overline{CD} because their slopes are opposite reciprocals.
 37. No; the slope of \overline{PQ} is 2, the slope of \overline{QR} is -1 , and the slope of \overline{PR} is $\frac{1}{2}$. No two slopes are opposite reciprocals, so no angle of the triangle is a right angle.
 38. D
 39. G
 40. [2] Sal's: $\$15.50/24 = \0.6458 per bottle
 Shopper's World: $\$8.15/12 = \0.679 per bottle
 Since $0.6458 < 0.679$, Sal's has the better price per bottle.
 [1] appropriate methods, but with one computational error

5-7:

Lesson Check

1. Average Maximum Daily Temperature in January for Northern Latitudes

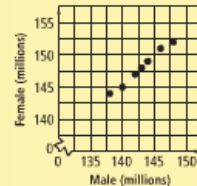


negative correlation

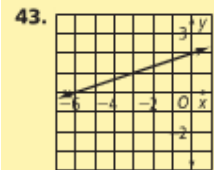
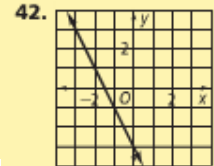
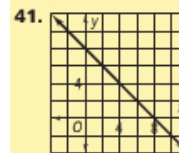
- 2-3. Answers may vary. Samples are given.
 2. $y = -2x + 120$
 3. about 20°F

11. $y = 21.4x - 41557$; 0.942; 1542.6 million tickets
 12. There is likely a correlation and a causal relationship, because the more you study, the better prepared you are for the test.
 13. no correlation likely
 14. no correlation likely
 15. There is likely a correlation and a possible causal relationship, because the higher the price of hamburger, the less people are likely to buy.
 16. Check students' work.
 17. Check students' work.
 18. negative correlation
 19. about 7 cm

20. a. Estimated Population of the United States



- b-c. Answers may vary. Samples are given.
 b. $y = 0.906x + 18173$
 c. about 154,179,000
 d. No; 2035 is too far in the future to predict. Growth rates may change by then.
 21. a. $y = 10.5x + 88.2$
 b. 10.5; the sales increase by about 10.5 million units each year.
 c. 88.2; the estimated number of units sold in the year 1990

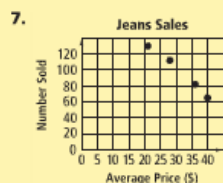


44. $y = 3x - 2$
 45. $y = -\frac{2}{5}x + \frac{29}{5}$
 46. $y = 0.25x + 1.875$
 47. $y = -\frac{40}{7}x + \frac{660}{7}$

Lesson Check (continued)

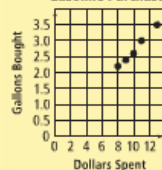
4. You use interpolation to estimate a value between two known values. You use extrapolation to predict a value outside the range of the known values.
 5. Both the trend line and the line of best fit show a correlation between two sets of data. The line of best fit is the most accurate trend line.
 6. If y decreases as x decreases, then there is a positive correlation because a trend line will have a positive slope.

Practice and Problem-Solving Exercises



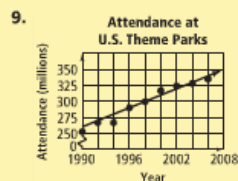
negative correlation

8. Gasoline Purchases



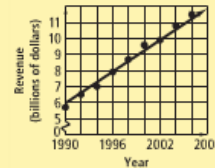
positive correlation

- 9-10. Answers may vary. Samples are given.



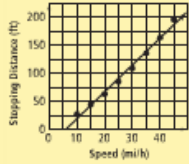
$y = 5x - 9690$; about 335 million

10. Revenue at U.S. Theme Parks



$y = 0.33x - 650.75$; about \$13.2 billion

22. a. Car Stopping Distances

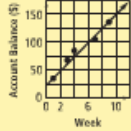


$y = 4.82x - 29.65$

- b. about 404 ft
- c. The relationship is not actually linear, so you cannot use the trend line to extrapolate the stopping distance for a speed of 90 mi/h.
- d. The slope would increase and the y-intercept would decrease.

- 23. A
- 24. G
- 25. D

26. [2] Weekly Account Balance

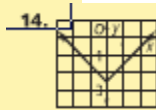
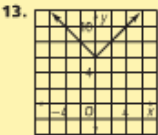
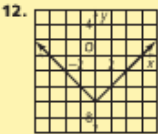
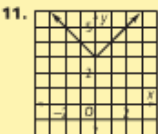
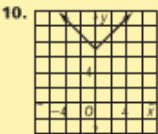
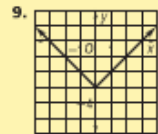


Using the points (1, 35) and (9, 136), the equation of the trend line is $y = 12.625x + 22.375$. So in week 6, the student has about \$98.13 in the account. OR equivalent process

[1] appropriate methods, but with one calculation error

- 27. $y = 5x - 13$
- 28. $y = -x + 5$
- 29. $y = -\frac{2}{3}x + \frac{10}{3}$
- 30. 5
- 31. 0
- 32. 18
- 33. 12

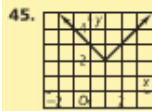
- 6. It is a translation of $y = |x|$ up 3 units.
- 7. It is a translation of $y = |x|$ left 4 units.
- 8. It is a translation of $y = |x|$ down 4 units.



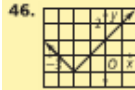
- 15. $y = |x| + 9$
- 16. $y = |x| - 7$
- 17. $y = |x| + 0.25$
- 18. $y = |x| - 3.25$
- 19. $y = |x| + 5.9$
- 20. $y = |x| - 1$

5-8:

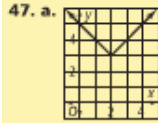
- 43. $(-1, 3)$
- 44. $(-2, 5)$ and $(5, 2)$



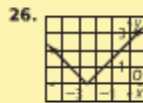
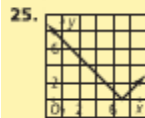
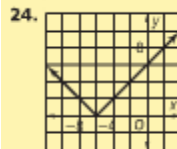
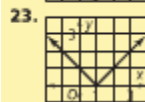
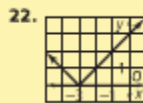
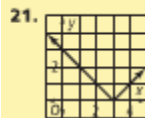
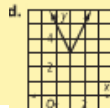
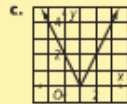
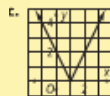
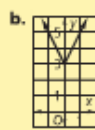
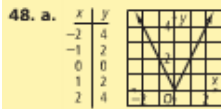
It is a translation of $y = |x|$ up 2 units and right 1 unit.



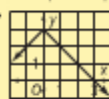
It is a translation of $y = |x|$ down 1 unit and left 2 units.



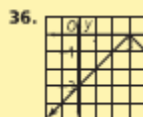
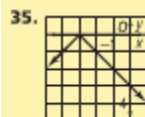
- b. $(2, 3)$
- c. The x-coordinate is the horizontal translation and the y-coordinate is the vertical translation; (h, k) .



- 27. $y = |x + 9|$
- 29. $y = |x - 0.5|$
- 31. $y = |x + \frac{5}{2}|$
- 33. $y = |x + 1|$

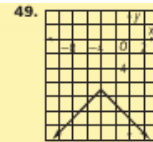


- 28. $y = |x - 9|$
- 30. $y = |x + \frac{1}{2}|$
- 32. $y = |x - 8.2|$
- 34. $y = |x + 2|$

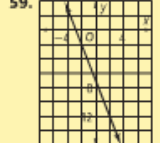
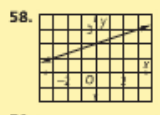
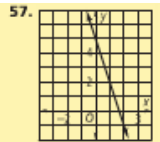
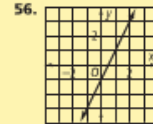


Lesson Check

- 1. $y = |x| - 8$ is $y = |x|$ translated 8 units down; the graphs have the same shape.
- 2. $y = |x| + 9$
- 3.
- 4. The graphs have the same shape; $y = |x| - 4$ is $y = |x|$ translated 4 units down and $y = |x - 4|$ is $y = |x|$ translated 4 units right.
- 5. The student should translate the graph 10 units to the right.



- 50. $\frac{4}{5}$
- 51. $-\frac{3}{8}$
- 52. 27
- 53. $\frac{1}{2}$
- 54-55. Answers may vary. Samples are given.
- 54. $y = 0.25x + 5.05$
- 55. $y = 12.5x$



- 37. $y = -|x| + 2$
- 38. $y = -|x + 2.25|$
- 39. $y = -|x| - 15$
- 40. $y = -|x - 4|$
- 41. $y = |x| + k$ is a translation of $y = |x|$ up k units. $y = mx + b$ is a translation of $y = mx$ up b units.

42.

x	$y = x $	$y = x + 5$
-3	3	8
-2	2	7
-1	1	6
0	0	5
1	1	6
2	2	7
3	3	8

Each y-value of $y = |x| + 5$ is 5 more than the corresponding y-value of $y = |x|$.