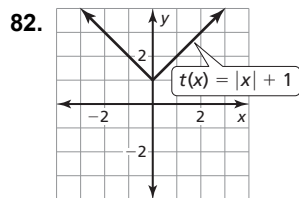
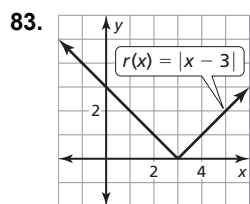


Answers

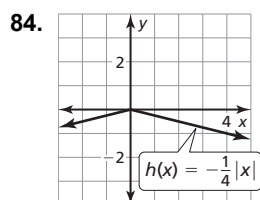
81. $g(x) = f(x - 4)$



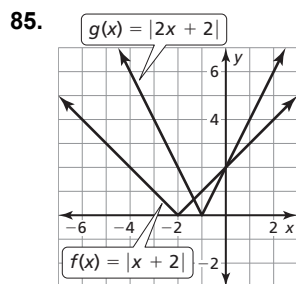
The function t is of the form $y = f(x) + k$, where $k = 1$. So, the graph of t is a vertical translation 1 unit up of the graph of f ; domain: all real numbers, range: $y \geq 1$



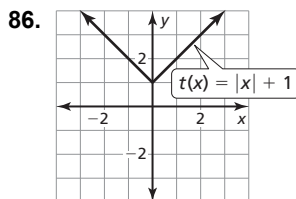
The function r is of the form $y = f(x - h)$, where $h = 3$. So, the graph of r is a horizontal translation 3 units right of the graph of f ; domain: all real numbers, range: $y \geq 0$



The function h is of the form $y = -af(x)$ where $a = \frac{1}{4}$. So, the graph of h is a vertical shrink of the graph of f by a factor of $\frac{1}{4}$ and a reflection in the x -axis; domain: all real numbers, range: $y \leq 0$



The graph of g is a horizontal shrink of the graph of f by a factor of $\frac{1}{2}$. The y -intercepts are the same for both graphs and the points on the graph of f move halfway closer to the y -axis.



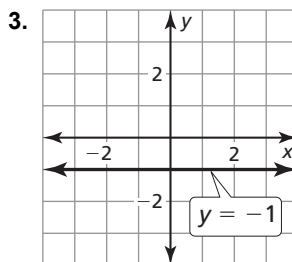
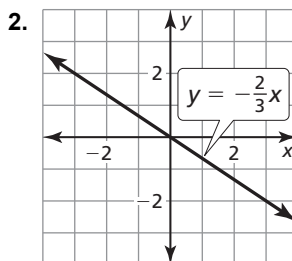
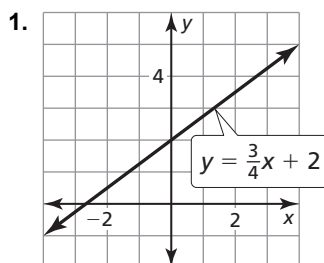
The graph of t is a horizontal shrink of the graph of h by a factor of $\frac{1}{3}$. The y -intercepts are the same for both graphs and the points on the graph of t move one-third of the way closer to the y -axis.

Chapter 4

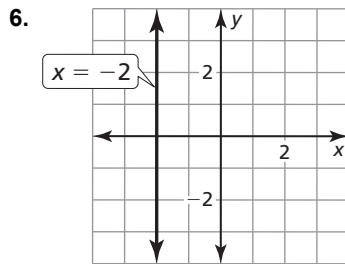
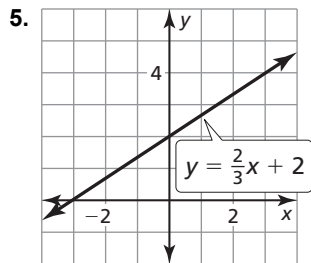
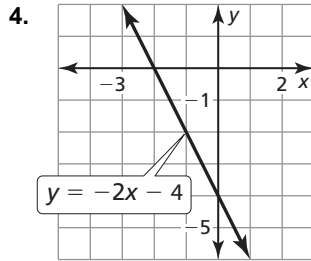
4.1 Start Thinking

The slope and y -intercept of the equation; The graph passes through the origin; The graph shows that $y = x$ for all values of x .

4.1 Warm Up



Answers



4.1 Cumulative Review Warm Up

- linear; The rate of change is constant.
- nonlinear; The rate of change is not constant.
- nonlinear; The rate of change is not constant.

4.1 Practice A

- $y = 3x + 8$
- $y = -4x$
- $y = -2$
- $y = -\frac{1}{2}x + 3$
- $y = \frac{4}{3}x + 1$
- $y = -3x + 9$
- $y = -2$
- $y = -6x - 2$
- $f(x) = 2x + 3$
- $f(x) = -\frac{5}{2}x + 9$
- $f(x) = -x + 1$
- $f(x) = 0.175x + 1.75$
 - $f(20) = \$5.25$

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

4.1 Practice B

- $y = 3x - 9$
- $y = \frac{1}{3}$
- $y = -\frac{2}{5}x + 7$
- $y = \frac{3}{2}x$
- $y = -\frac{4}{3}x + 2$
- $y = \frac{7}{4}x - 7$
- $y = -2x - 3$
- $y = \frac{5}{12}x + 4$
- $f(x) = \frac{1}{2}x - 5$
- $f(x) = -1$
- $f(x) = -\frac{5}{4}x - 2$
- $f(x) = 25 + 8x$
 - $f(35) = \$305$
- $y = -2$

4.1 Enrichment and Extension

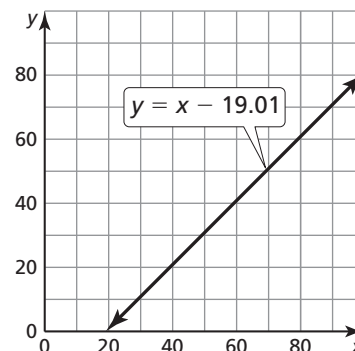
- 8 square units
- 11.5 square units
- 49 square units
- 23 square units
- 23 square units

4.1 Puzzle Time

A NERVOUS WRECK

4.2 Start Thinking

The y -intercept is the point where $x = 0$. So, you can find the slope of the line and backtrack to where $x = 0$; *Sample answer:* The cost of making 50 puzzles is \$30.99, and the cost of making 75 puzzles is \$55.99.



Answers

4.2 Warm Up

1. $y = -3x + 6$

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

3. $y = 2x - 2$

4. $y = -\frac{1}{2}x + 4$

5. $y = x + 5$

6. $y = -2x + 9$

4.2 Cumulative Review Warm Up

1. $R = P + C$

2. $r = \sqrt{\frac{V}{\pi h}}$

3. $h = \frac{2A}{b_1 + b_2}$

4. $t = \frac{v_1 - v_0}{a}$

4.2 Practice A

1. $y - 1 = 4(x - 3)$

2. $y - 7 = -3(x - 2)$

3. $y - (-3) = -5(x - 4)$

4. $y = -\frac{3}{2}x + 5$

5. $y = -\frac{1}{4}x + \frac{5}{4}$

6. $y = -\frac{7}{3}x + 17$

7. $y = \frac{3}{5}x - 7$

8. $y = 3x - 15$

9. $f(x) = \frac{1}{2}x + \frac{5}{2}$

10. $f(x) = \frac{9}{11}x + \frac{45}{11}$

11. $f(x) = 5$

12. no; The rate of change is not constant.

13. yes; The rate of change is constant; $y = \frac{3}{2}x$

14. a. $y = 20x + 50$ b. \$190

4.2 Practice B

1. $y - 5 = 1(x - (-4))$

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

3. $y - (-6) = -\frac{1}{4}(x - 2)$

4. $y = -x - 2$

5. $y = x - 4$

6. $y = 6x + 24$

7. $y = -4$

8. $y = -\frac{2}{7}x + 16$

9. $f(x) = -\frac{1}{2}x - \frac{1}{2}$

10. $f(x) = \frac{3}{7}x + \frac{13}{7}$

11. $f(x) = -3x - 12$

12. yes; The rate of change is constant;
 $y = -0.5x + 3.5$

13. no; The rate of change is not constant.

14. a. $\frac{5}{4}$; \$5 for 4 fl oz of juice

b. $f(x) = \frac{5}{4}x + 12$

c. \$12

4.2 Enrichment and Extension

1. Sample answer: $y - 4 = 2(x + 14)$

2. Sample answer: $y = -2(x + 15)$

3. Sample answer: $y - 2 = 4(x - 1)$

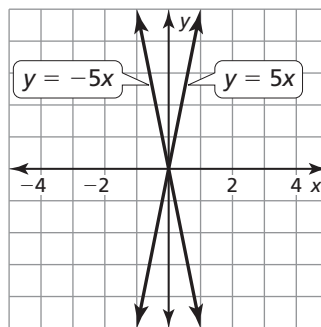
4. Sample answer: $y = \frac{3}{2}(x + 3)$

4.2 Puzzle Time

HELP YOURSELF

4.3 Start Thinking

If two lines have the same slope, they are parallel.



no; disprove

4.3 Warm Up

1. $y + 7 = -3(x + 5)$

2. $y + 3 = \frac{8}{3}(x - 9)$

3. $y + 1 = 3x$

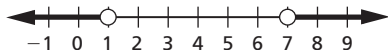
4. $y = -(x - 2)$

Answers

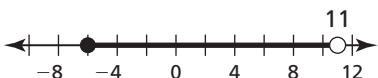
5. $y - 2 = -\frac{4}{7}(x + 4)$ 6. $y + 3 = \frac{1}{2}(x + 5)$

4.3 Cumulative Review Warm Up

1. $q > 7$ or $q < 1$



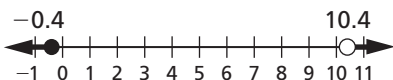
2. $-6 \leq p < 11$



3. $-11 \leq n < -6\frac{1}{4}$



4. $s \leq -0.4$ or $s > 10.4$



4.3 Practice A

1. b and c ; The slopes of lines a , b , and c are 1, $\frac{2}{3}$, and $\frac{2}{3}$, respectively.

2. a and b ; The slopes of lines a , b , and c are $\frac{1}{2}$, $\frac{1}{2}$, and $-\frac{1}{2}$, respectively.

3. $y = 2x + 1$

4. $y = -4x - 7$

5. parallel: a and c , perpendicular: a and b , and also b and c ; The slopes of lines a , b , and c are $-\frac{4}{3}$, $\frac{3}{4}$, and $-\frac{4}{3}$, respectively.

6. parallel: b and c , perpendicular: a and b , and also a and c ; The slopes of lines a , b , and c are -4 , $\frac{1}{4}$, and $\frac{1}{4}$, respectively.

7. $y = -3x + 3$

8. $y = \frac{5}{3}x - 9$

9. a. $y = -3x + 14$ b. $y = \frac{1}{3}x + \frac{2}{3}$

10. a. $y = 4x - 10$ b. $y = -\frac{1}{4}x - \frac{3}{2}$

11. never; Parallel lines have the same slope, and a positive slope can never be equal to a negative slope.

12. always; The x -axis is the horizontal axis, which is perpendicular to all vertical lines.

13. sometimes; If two lines cross the x -axis at the same point, it is possible for them to be parallel, perpendicular, or neither.

4.3 Practice B

1. a and c ; The slopes of lines a , b , and c are $\frac{1}{2}$, $-\frac{3}{2}$, and $\frac{1}{2}$, respectively.

2. b and c ; The slopes of lines a , b , and c are $-\frac{1}{6}$, $\frac{1}{6}$, and $\frac{1}{6}$, respectively.

3. $y = \frac{1}{2}x - 4$ 4. $y = \frac{2}{3}x - 7$

5. parallel: a and b , perpendicular: b and c , and also a and c ; The slopes of lines a , b , and c are $\frac{1}{6}$, $\frac{1}{6}$, and -6 , respectively.

6. parallel: a and c , perpendicular: a and b , and also b and c ; The slopes of lines a , b , and c are $\frac{1}{2}$, -2 and $\frac{1}{2}$, respectively.

7. $y = \frac{1}{5}x + \frac{8}{5}$ 8. $y = -\frac{1}{2}x - 1$

9. a. $y = \frac{1}{2}x - 4$ b. $y = -2x + 11$

10. a. $y = -\frac{3}{2}x - 8$ b. $y = \frac{2}{3}x + \frac{2}{3}$

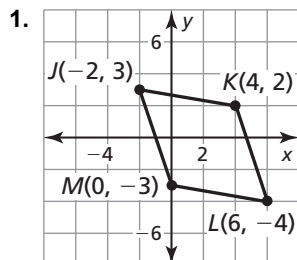
11. sometimes; It is possible for the two lines to be perpendicular because the signs of the slopes of perpendicular lines are opposite, but not all lines with slopes of opposite signs are perpendicular.

Answers

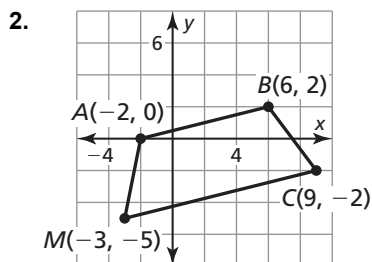
12. always; The x -axis and y -axis are perpendicular, all horizontal lines are parallel to the x -axis, and all vertical lines are parallel to the y -axis.

13. never; All horizontal lines are parallel to the x -axis, so they cannot be perpendicular.

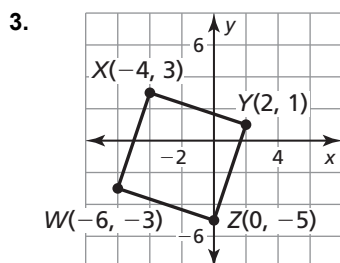
4.3 Enrichment and Extension



parallelogram; Opposite sides $\overline{JK}$ and $\overline{LM}$ both have slope $-\frac{1}{6}$, and opposite sides $\overline{KL}$ and $\overline{MJ}$ both have slope -3 .

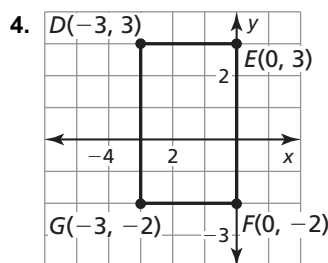


trapezoid; Opposite sides $\overline{AB}$ and $\overline{CD}$ both have slope $\frac{1}{4}$; but the other two sides have unequal slopes of 5 and $-\frac{4}{3}$.



square; Opposite sides $\overline{WX}$ and $\overline{YZ}$ both have slope 3, and opposite sides $\overline{XY}$ and $\overline{ZW}$ have slope $-\frac{1}{3}$.

Because these slopes are negative reciprocals, adjacent sides will be perpendicular. Finally, the length of each side is equal to $2\sqrt{10}$.

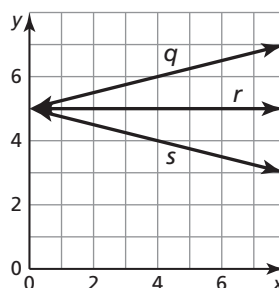


rectangle; Opposite sides $\overline{DE}$ and $\overline{FG}$ are both horizontal (slope equals 0) and opposite sides $\overline{EF}$ and $\overline{GD}$ are both vertical (undefined slope). Not all side lengths are the same.

4.3 Puzzle Time

ICE CAPS

4.4 Start Thinking

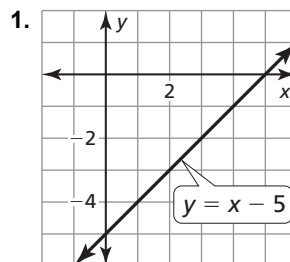


In line q , as the x -values increase, the y -values increase. In line r , as the x -values increase, the y -values remain the same. In line s , as the x -values increase, the y -values decrease; *Sample answer*: positive slope: The cost to fill a tank of gasoline increases with the number of gallons purchased; no slope: The speed of a car remains constant over time when cruise control is engaged; negative slope: The fuel efficiency of a car (in miles per gallon) decreases as the weight of the car increases.

4.4 Warm Up

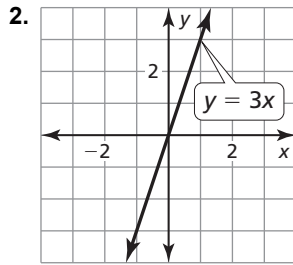
1. $y = -3x + 10$
2. $y = -3$
3. $y = \frac{8}{3}x + 5$
4. $y = 6x - 5$

4.4 Cumulative Review Warm Up

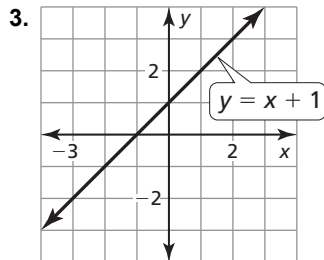


(5, 0)

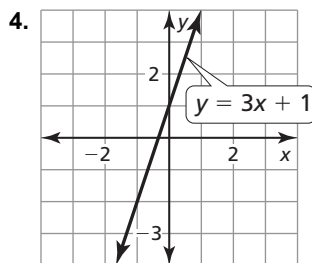
Answers



(0, 0)



(-1, 0)



$\left(-\frac{1}{3}, 0\right)$

4.4 Practice A

1. a. 19
b. yes; The point (15, 15) shows that one student earned a score of 15 on both quizzes.
c. yes; Quiz 1 scores tend to be higher.
2. positive correlation 3. negative correlation
4. a. $y = 2x + 1$
b. slope = 2; Each year there are two new plants; y-intercept = 1; initially 1 plant

4.4 Practice B

1. a. 3
b. yes; The point (215, 215) shows that one bowler bowled their average as their highest score.
c. (240, 199)

2. no correlation 3. positive correlation
4. a. $y = 4.1x + 1.7$
b. slope = 4.1; Each week there are about 4 more rolls of wrapping paper sold; y-intercept = 2; Two rolls of wrapping paper were sold during the first week.

4.4 Enrichment and Extension

1. 0.98704 2. 0.6744

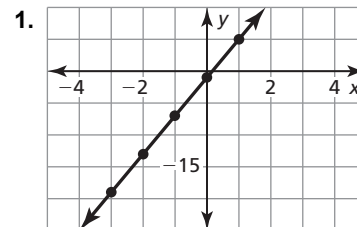
4.4 Puzzle Time

FLYDAY

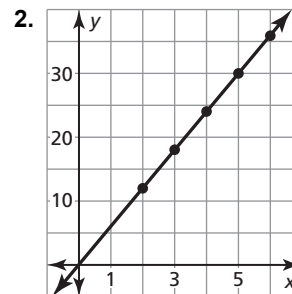
4.5 Start Thinking

Sample answer: The first line fits the data best; A line of fit is meant to approximate the data in a fair way. In the second scatter plot, the line of fit runs below most of the data, so it is not a fair representation of the majority of data.

4.5 Warm Up



$$y = 6x - 1$$



$$y = 6x$$

4.5 Cumulative Review Warm Up

1. no solution 2. $h = -2$; one solution
3. no solution 4. $g = 4$; one solution
5. infinitely many solutions
6. $t = -25$; one solution

Answers

4.5 Practice A

- yes; The residual points are evenly dispersed about the horizontal axis.
- no; The residual points are not evenly dispersed about the horizontal axis.
- $y = 1.8x - 8$; $r = 0.976$, strong positive correlation
- $y = -1.125x + 14.6$; $r = -0.997$, strong negative correlation
- $f(x) = 0.7x + 75.42$
 - $r = 0.965$, strong positive correlation
 - slope = 0.7; The temperature rises 0.7 degree Fahrenheit for each person entering the room; y-intercept = 75.42; The temperature when no one is in the room is 75.42 degrees Fahrenheit.
 - $f(15) = 85.92^\circ\text{F}$

4.5 Practice B

- yes; The residual points are evenly dispersed about the horizontal axis.
- no; The residual points are not evenly dispersed about the horizontal axis.
- $y = -1.2x + 32.7$; $r = -0.997$, strong negative correlation
- $y = -0.73x + 27.4$; $r = -0.24$, weak negative correlation
- $f(x) = 0.054x + 5.2$
 - $r = 0.98$, strong positive correlation
 - slope = 0.054; Each 1-kilometer increase in distance adds 0.054 to the average time in minutes per kilometer for the run.
y-intercept = 75.42; Interpretation of the y-intercept is not applicable to the nature of the data, as a total running distance of 0 kilometers would not have an average number of minutes of 5.2 minutes per kilometer.
 - $f(31) = 6.874$ min/km

4.5 Enrichment and Extension

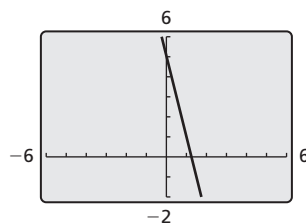
- | | | |
|-------|-------|-------|
| 1. 65 | 2. 70 | 3. 80 |
| 4. 75 | 5. 90 | 6. 65 |

- | | |
|--------------------|--------------------|
| 7. 2nd percentile | 8. 72nd percentile |
| 9. 58th percentile | |

4.5 Puzzle Time

BISON

4.6 Start Thinking



$y = 5, 1, -3, -7, -11, -15$; This difference is because of the slope. In the Slope Formula, the numerator is the difference of y-values.

4.6 Warm Up

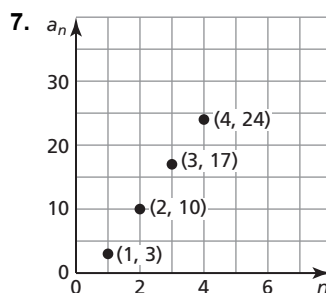
- | | |
|------------|-----------------------|
| 1. $m = 7$ | 2. $m = \frac{3}{14}$ |
| 3. $m = 1$ | 4. $m = 1$ |

4.6 Cumulative Review Warm Up

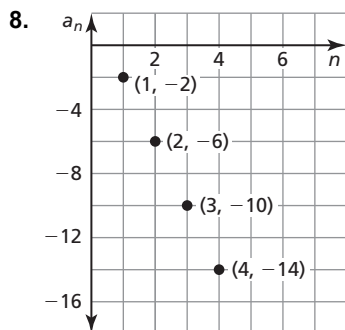
- Add 12 to each side.
- Subtract 8 from each side.
- Subtract 5 from each side.
- Subtract 2 from each side.
- Add 2 to each side.
- Subtract 8 from each side.

4.6 Practice A

- | | | |
|---------------|-------------|----------------------|
| 1. 14, 25, 36 | 2. 11, 7, 3 | 3. $d = 6$ |
| 4. $d = -30$ | 5. $d = 5$ | 6. $d = \frac{1}{4}$ |



Answers



9. no 10. yes; $d = 7$

11. $a_n = 2n - 5$; $a_{10} = 15$

12. $a_n = -5n + 7$; $a_{10} = -43$

13. $a_n = \frac{3}{2}n + 3$; $a_{10} = 18$

14. $a_n = \frac{2}{5}n$; $a_{10} = 4$ 15. 10, 14, 18

16. a. $a_n = -3n + 21$

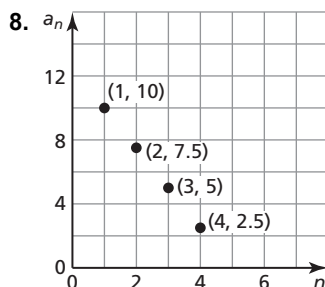
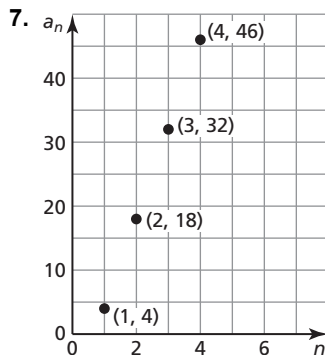
b. $a_7 = 0$; The tank is empty after 7 hours.

c. no

4.6 Practice B

1. 13, 18, 23 2. 28, 16, 4 3. $d = 3$

4. $d = \frac{2}{7}$ 5. $d = -0.2$ 6. $d = -2\pi$



9. yes, $d = -15$ 10. no

11. $a_n = 8n - 17$; $a_{10} = 63$

12. $a_n = \frac{1}{3}n$; $a_{10} = \frac{10}{3}$

13. $a_n = -20n - 140$; $a_{10} = -340$

14. $a_n = \frac{2}{3}n - 3$; $a_{10} = \frac{11}{3}$

15. -1, -5, -9

16. a. $a_n = 3n + 9$

b. $a_9 = 36$; The volume of the box is 36 cubic feet and $a_9 = 36$.

4.6 Enrichment and Extension

1. 55 2. 63 3. 972 4. 35
5. 95 6. $15x + 35$ 7. 2500 8. 650

4.6 Puzzle Time

A WALKIE-TALKIE

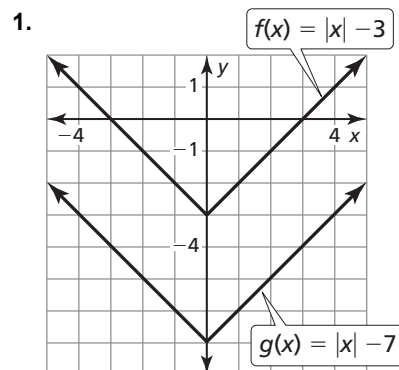
4.7 Start Thinking

$y = 0.35x$, domain: $0 \leq x \leq 50$; $y = 0.29x + 18$, domain: $x > 50$

4.7 Warm Up

1. $f(-3) = -16$ 2. $g(3) = 13$ 3. $y = 8$
4. $y = 6$ 5. $f(-3) = -9$ 6. $g(5) = 28$

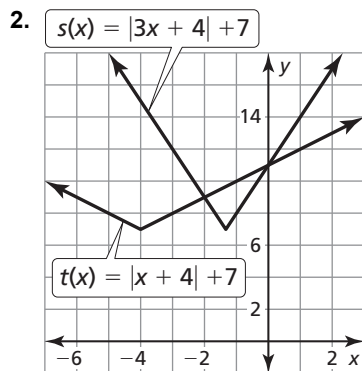
4.7 Cumulative Review Warm Up



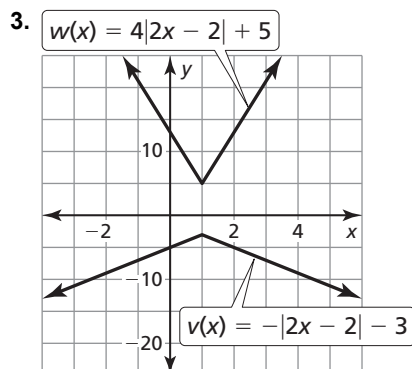
$f(x) = |x| - 3$ is a translation 3 units down of the graph of the parent absolute value function.

$g(x) = |x| - 7$ is a translation 7 units down of the graph of the parent absolute value function.

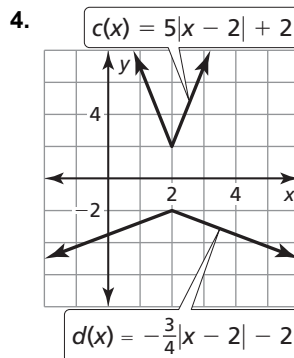
Answers



$s(x) = |3x + 4| + 7$ is a horizontal shrink by a factor of $\frac{1}{3}$ followed by a translation 7 units up and $\frac{4}{3}$ units left of the graph of the parent absolute value function. $t(x) = |x + 4| + 7$ is a translation 4 units left and 7 units up of the graph of the parent absolute value function.



$v(x) = -|x - 2| - 3$ is a reflection in the x -axis followed by a horizontal shrink by a factor of $\frac{1}{2}$ and a translation 1 unit right and 3 units down of the graph of the parent absolute function. $w(x) = 4|2x - 2| + 5$ is a vertical stretch by a factor of 4 followed by a horizontal shrink by a factor of $\frac{1}{2}$ and a translation 1 unit right and 5 units up of the graph of the parent absolute value function.



$c(x) = 5|x - 2| + 2$ is a vertical stretch by a factor of 5 followed by a translation 2 units right and 2 units up of the graph of the parent absolute value function. $d(x) = -\frac{3}{4}|x - 2| - 2$ is a reflection in the x -axis followed by a vertical shrink by a factor of $\frac{3}{4}$ and a translation 2 units right and 2 units down of the graph of the parent absolute value function.

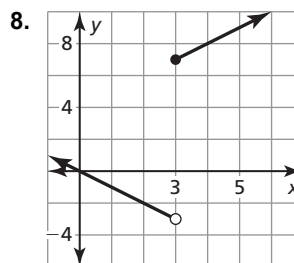
4.7 Practice A

1. -1 2. -1 3. -4

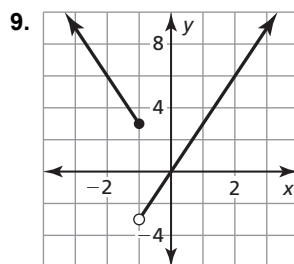
4. -5 5. 2 6. 5

7. a. 82.5 mi; 82.5 mi; 242.5 mi

b. *Sample answer:* a car ride that was 1.5 h; waiting at the airport for 2.5 h; finishing the trip on an airplane.

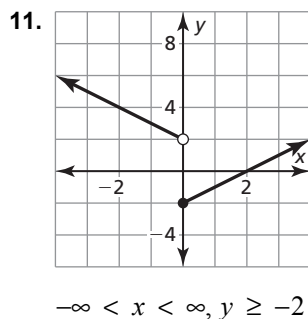
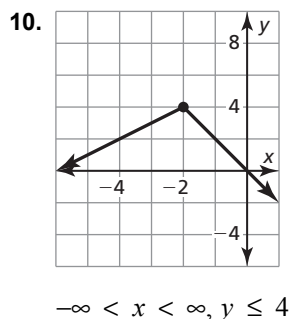


$$-\infty < x < \infty, y > -3$$



$$-\infty < x < \infty, y > -3$$

Answers



12. $f(x) = \begin{cases} -x + 3, & \text{if } x < 3 \\ x - 3, & \text{if } x \geq 3 \end{cases}$

13. $f(x) = \begin{cases} 2x - 1, & \text{if } x \leq 2 \\ 4, & \text{if } x > 2 \end{cases}$

14. $f(x) = \begin{cases} -x + 3, & \text{if } x < 0 \\ x + 3, & \text{if } x \geq 0 \end{cases}$

15. $f(x) = \begin{cases} -x - 2, & \text{if } x < 0 \\ x - 2, & \text{if } x \geq 0 \end{cases}$

16. $f(x) = \begin{cases} -x - 1, & \text{if } x < -1 \\ x + 1, & \text{if } x \geq -1 \end{cases}$

17. $f(x) = \begin{cases} -x + 4, & \text{if } x < 4 \\ x - 4, & \text{if } x \geq 4 \end{cases}$

4.7 Practice B

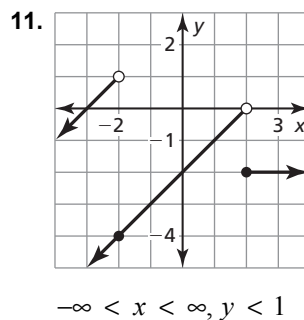
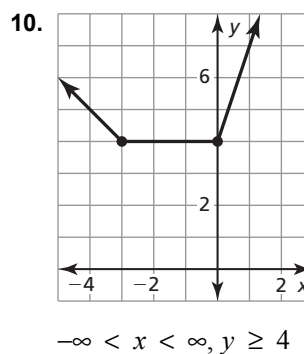
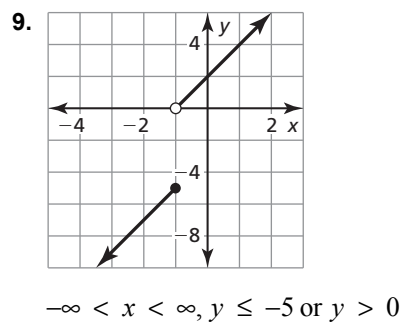
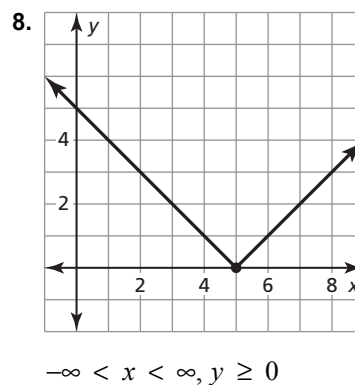
1. 7 2. 11 3. 2 4. -1

5. 7 6. 7

7. a. \$46.25; \$51

b. $21 \leq x < 25$

c. $33 \leq x < 40$



12. $f(x) = \begin{cases} -x + 3, & \text{if } x < 3 \\ x - 3, & \text{if } x \geq 3 \end{cases}$

13. $f(x) = \begin{cases} -2(-x - 4), & \text{if } x < -4 \\ -2(x + 4), & \text{if } x \geq -4 \end{cases}$

Answers

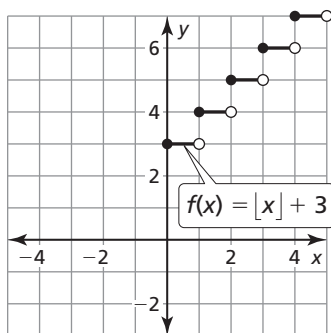
14. $f(x) = \begin{cases} -(-x - 1) + 3, & \text{if } x < -1 \\ -(x + 1) + 3, & \text{if } x \geq -1 \end{cases}$

15. $f(x) = \begin{cases} 5(-x + 2) + 1, & \text{if } x < 2 \\ 5(x - 2) + 1, & \text{if } x \geq 2 \end{cases}$

4.7 Enrichment and Extension

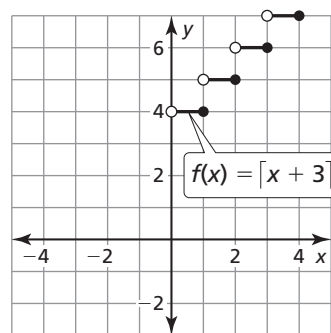
1. Sample answer:

$$f(x) = \lfloor x \rfloor + 3, f(x) = \begin{cases} 3, & \text{if } 0 \leq x < 1 \\ 4, & \text{if } 1 \leq x < 2 \dots \\ 5, & \text{if } 2 \leq x < 3 \end{cases}$$



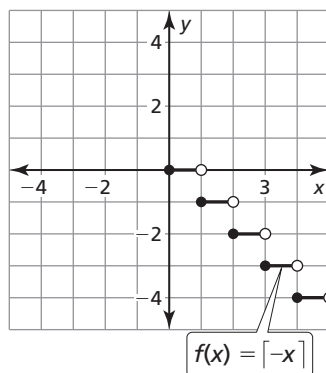
2. Sample answer:

$$f(x) = \lceil x + 3 \rceil, f(x) = \begin{cases} 4, & \text{if } 0 < x \leq 1 \\ 5, & \text{if } 1 < x \leq 2 \dots \\ 6, & \text{if } 2 < x \leq 3 \end{cases}$$



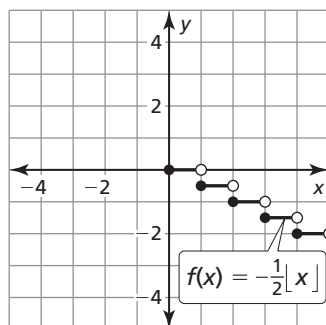
3. Sample answer:

$$f(x) = \lceil -x \rceil, f(x) = \begin{cases} 0, & \text{if } 0 \leq x < 1 \\ -1, & \text{if } 1 \leq x < 2 \dots \\ -2, & \text{if } 2 \leq x < 3 \end{cases}$$



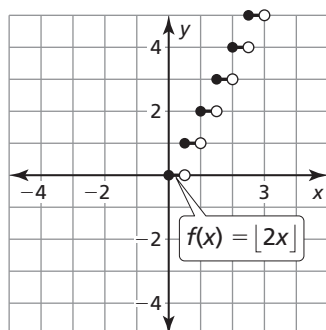
4. Sample answer:

$$f(x) = -\frac{1}{2} \lfloor x \rfloor, f(x) = \begin{cases} 0, & \text{if } 0 \leq x < 1 \\ -\frac{1}{2}, & \text{if } 1 \leq x < 2 \dots \\ -1, & \text{if } 2 \leq x < 3 \end{cases}$$



5. Sample answer:

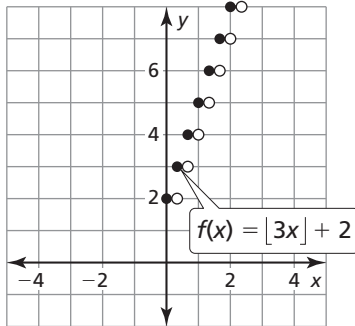
$$f(x) = \lfloor 2x \rfloor, f(x) = \begin{cases} 0, & \text{if } 0 \leq x < \frac{1}{2} \\ 1, & \text{if } \frac{1}{2} \leq x < 1 \dots \\ 2, & \text{if } 1 \leq x < \frac{3}{2} \end{cases}$$



Answers

6. Sample answer:

$$f(x) = \lfloor 3x \rfloor + 2, f(x) = \begin{cases} 2, & \text{if } 0 \leq x < \frac{1}{3} \\ 3, & \text{if } \frac{1}{3} \leq x < \frac{2}{3} \dots \\ 4, & \text{if } \frac{2}{3} \leq x < 1 \end{cases}$$



4.7 Puzzle Time

AN EDGY VEGGIE

Cumulative Review

1. $x = 19$ 2. $x = 6\pi$ 3. $z = 13$

4. $r = -5$ 5. $x = 1$

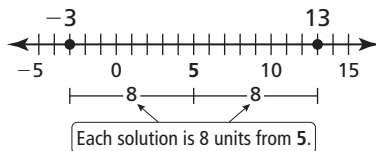
6. a. 7 months b. 8 months

7. infinitely many solutions

8. infinitely many solutions

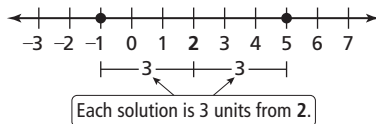
9. $x = -2$; one solution

10. $x = -3, 13$

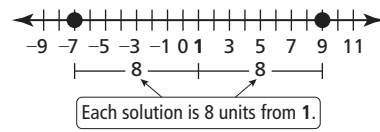


11. no solution

12. $r = -1, 5$



13. $y = -7, 9$



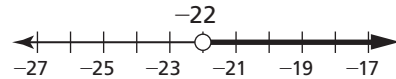
14. $n \geq 7$

15. $13 \leq 4h$

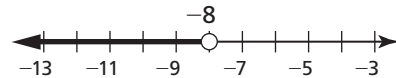
16. $x \leq -2$



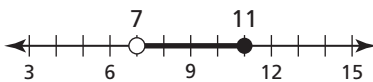
17. $t > -22$



18. $z < -8$



19. $7 < x \leq 11$

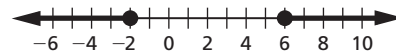


20. $t \geq 6$ or $t \leq -9$

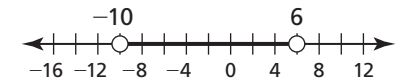


21. no solution

22. $w \leq -2$ or $w \geq 6$



23. $-10 < x < 6$



24. a. $|x - 37,000| \leq 2590$

b. $34,410 \leq x \leq 39,590$

25. function; Every input has exactly one output.

26. not a function; The input -1 has two outputs, 7 and 3 .

27. not a function; The input 0 has two outputs, -1 and 2 .

Answers

28. function; Every input has exactly one output.

29. domain: $-\infty \leq x \leq \infty$, range: $-1 \leq y \leq 1$; function

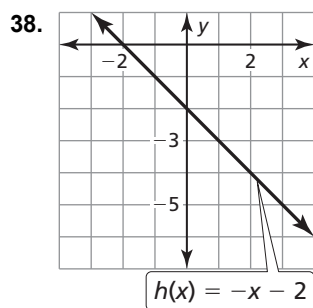
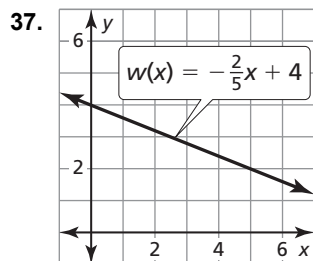
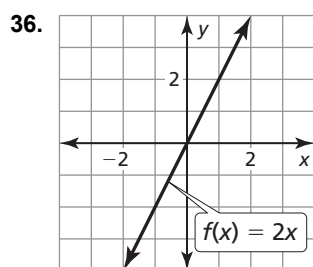
30. domain: $x = 7, 5, 3, 1$, range: $y = 2, 4, 6, -1, 3$; not a function

31. domain: $-\infty \leq x \leq \infty$, range: $y \geq 0$; function

32. a. x is the independent variable, and y is the dependent variable.

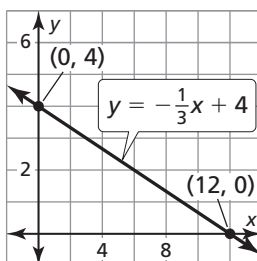
b. domain: $x \geq 0$, range: $y \geq 10$

33. $-5, 1, 9$ 34. $-2, -5, -9$ 35. $13, -2, -22$

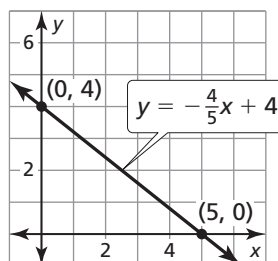


39. a. 7 ft b. 27 h

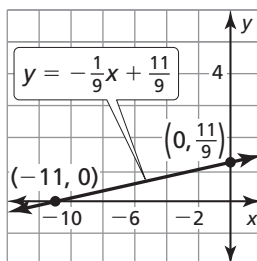
40. x-intercept: $(12, 0)$, y-intercept: $(0, 4)$



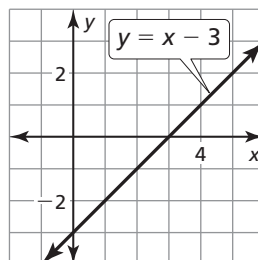
41. x-intercept: $(5, 0)$, y-intercept: $(0, 4)$



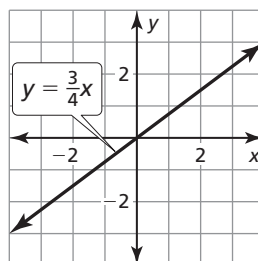
42. x-intercept: $(-11, 0)$, y-intercept: $(0, \frac{11}{9})$



43. $m = 1, b = -3$

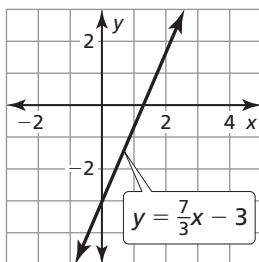


44. $m = \frac{3}{4}, b = 0$



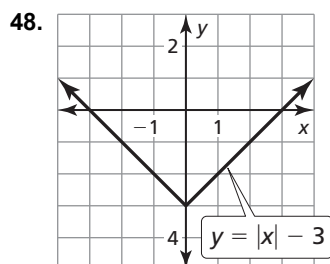
Answers

45. $m = \frac{7}{3}, b = -3$

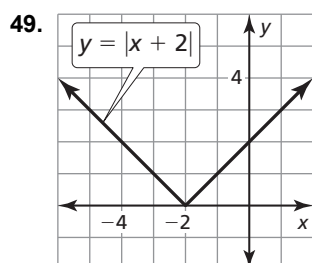


46. The graph g is a reflection in the y -axis of the graph of f .

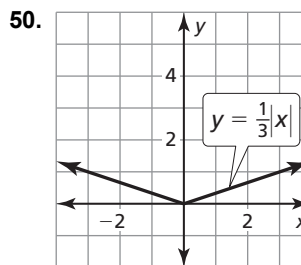
47. The graph g is a vertical translation 1 unit up of the graph of f .



The graph t is a vertical translation 3 units down of the graph of f ; domain: all real numbers, range: $y \geq -3$



The graph r is a horizontal translation two units to the left of the graph of f ; domain: all real numbers, range: $y \geq 0$



The graph h is a vertical shrink by a factor of $\frac{1}{3}$ of the graph of f ; domain: all real numbers, range: $y \geq 0$

51. $y = 4x + 12$

52. $y = -\frac{3}{4}x - 12$

53. $y = \frac{1}{2}x - \frac{2}{5}$

54. $y = -3x + \frac{1}{8}$

55. $y = \frac{1}{4}x + 2$

56. $y = -6x + 3$

57. $y = -\frac{1}{2}x + 2$

58. $y - 4 = 5(x - 3)$

59. $y = -(x - 7)$

60. $y + 9 = \frac{1}{2}(x - 3)$

61. $y + 2 = -\frac{2}{7}(x + 1)$

62. $y - 4 = x - 2$ or $y - 7 = x - 5$

63. $y - 4 = \frac{4}{9}(x + 2)$ or $y - 8 = \frac{4}{9}(x - 7)$

64. $y + 1 = 4(x + 5)$ or $y - 7 = 4(x + 3)$

65. $y - 2 = 0$

66. $y - 3 = 3(x - 2)$

67. $y = \frac{2}{3}(x + 4)$

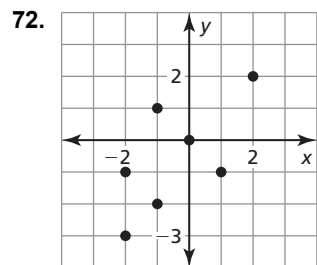
68. $y - 7 = -2(x + 2)$

69. $y - 2 = x$

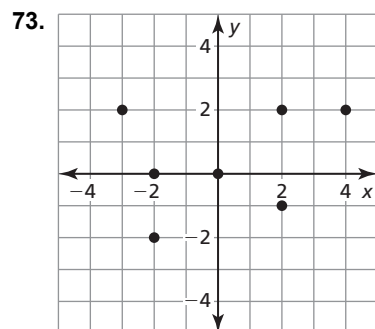
70. $y - 2 = \frac{4}{3}(x - 1)$

71. $y + 2 = -\frac{1}{2}(x + 4)$

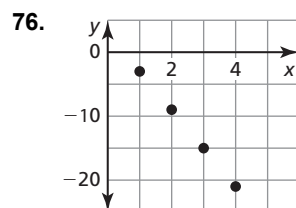
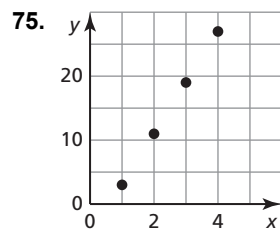
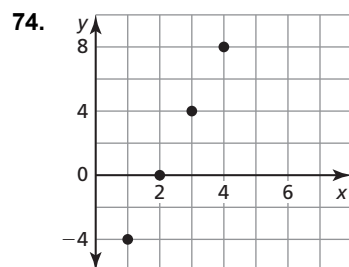
Answers



positive correlation



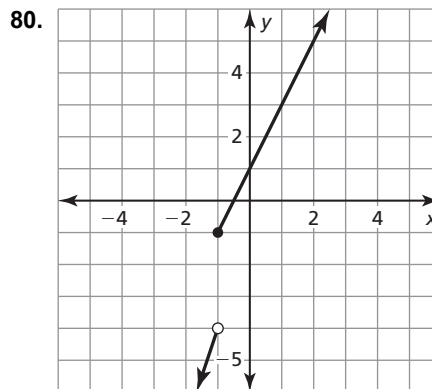
no correlation



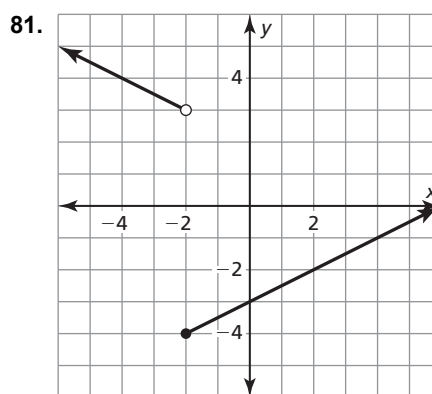
77. not arithmetic

78. not arithmetic

79. arithmetic; 6



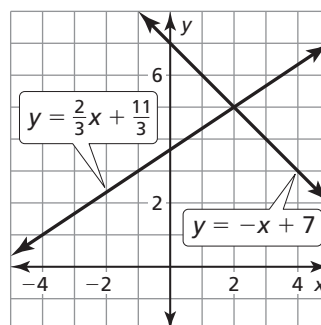
domain: all real numbers,
range: $y < -4$ or $y \geq -1$



domain: all real numbers, range: $y \geq -4$

Chapter 5

5.1 Start Thinking



The point of intersection represents an ordered pair that is a solution to both linear equations; yes; no; By definition, two non-parallel lines intersect at exactly one point.

5.1 Warm Up

- | | | | |
|--------|--------|--------|--------|
| 1. yes | 2. yes | 3. no | 4. yes |
| 5. no | 6. yes | 7. yes | 8. no |