

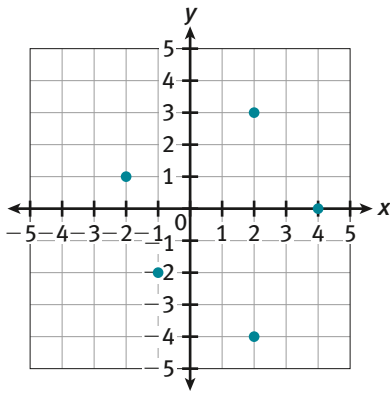
Course 3 Unit 4 Practice

LESSON 27-1

1. a. Write a relation from the table of values.

x	y
-5	-10
10	20
-12	-24
15	30

- b. Write a relation from the graph.



2. What is the value of the function $y = 3x + 5$ for $x = -2$?
- A. -11
B. -1
C. 2
D. 11
3. **Model with mathematics.** Make a table of values for the given function and given input values.
- a. $y = 6x - 1$ for $x = -2, 8, 0$ and 0.5
- b. $y = 2.1x$ for $x = 2, 2.1, -4$ and 10

4. **Critique the reasoning of others.** Tabitha used the function $y = 3x$ to complete the table below.

x	1	3	5	7
y	3	9	15	21

Then she wrote these ordered pairs: $(3, 1)$, $(3, 9)$, $(5, 15)$, $(21, 7)$. Do you agree with Tabitha's work? Justify your reasoning.

5. What is the value of the function $y = -4x - 1$ for $x = 3$?
- A. -13
B. -8
C. -1
D. 11

LESSON 27-2

6. Use mappings to determine if each relation represents a function.
- a. $\{(-3, 3), (-4, 5), (-5, 6), (-1, 7), (-3, 8)\}$

b.

x	2	4	6	8
y	4	4	5	5

- c. $y = x + 6$ for $x = 2, 3, 4, 5$ and 6

7. Which relation is NOT a function?

A.

x	5	6	7	8
y	9	4	5	4

B.

x	1	2	3	4
y	2	3	4	5

C.

x	10	12	14	16
y	-2	-4	-6	-8

D.

x	5	5	6	6
y	4	-1	2	-3

8. **Make use of structure.** Create two tables of values to represent two different relations, one that is a function and one that is *not* a function.

9. **Model with mathematics.** Draw a mapping to prove the following relation is a function. Explain your reasoning. $\{(2, 3), (4, 6), (5, 7), (9, 12)\}$

10. Which relation represents a function?

A. $\{(12, 13), (14, 15), (16, 17), (18, 19)\}$

B. $\{10, -2), (12, -2), (15, 4), (20, 5)\}$

C. $\{(5, 1), (6, 2), (7, 3), (8, 4)\}$

D. $\{(5, 2), (6, 4), (6, 3), (7, 9)\}$

LESSON 27-3

11. Identify the domain and range of each relation.

a. $\{(-3, 3), (-4, 5), (-5, 6), (-1, 7), (-3, 8)\}$

b.

x	2	4	6	8
y	4	4	5	5

c. $y = x + 6$ for $x = 2, 3, 4, 5$ and 6

12. **Reason abstractly.** Debra copied the table below.

x	4	5	9	11	2	?
y	3	4	8	10	1	5

She forgot to copy one of the x -values into the table. If she knows the table represents a function, what are the possible values for the x -value that is missing in the table? Explain your reasoning.

13. What is the domain of the function $\{(-2, 1), (-4, 3), (5, 7), (8, 12)\}$?
- A. $\{-2, -4, 5, 8\}$
- B. $\{1, 3, 7, 12\}$
- C. $\{-2, -4, 5, 8, 1, 3, 7, 12\}$
- D. $\{1, 3, 7, 12, -2\}$

14. **Model with mathematics.** Use a mapping to determine if the relation is a function. Explain your reasoning.

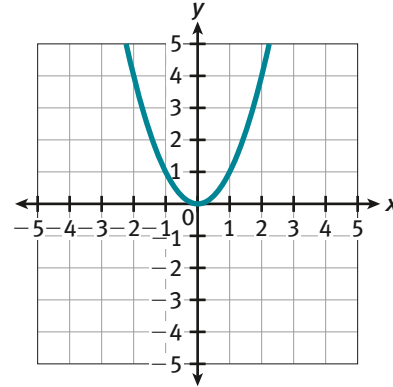
x	-2	0	1	3	4	6
y	-7	-3	-1	3	5	9

15. What is the range of the function $\{(-2, 1), (-4, 3), (5, 7), (8, 12)\}$?
- A. $\{-2, -4, 5, 8\}$
- B. $\{1, 3, 7, 12\}$
- C. $\{-2, -4, 5, 8, 1, 3, 7, 12\}$
- D. $\{1, 3, 7, 12, -2\}$

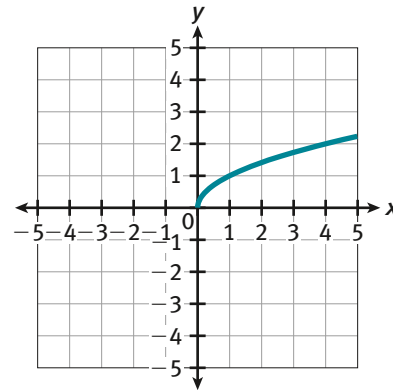
LESSON 27-4

16. Determine if each relation is a function. Explain your reasoning.

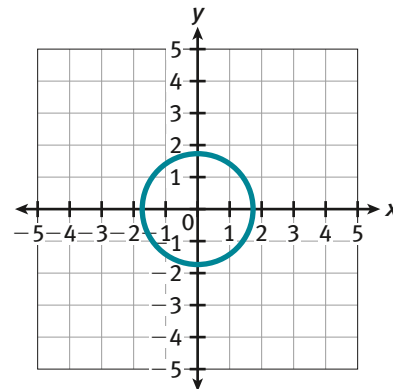
a.



b.

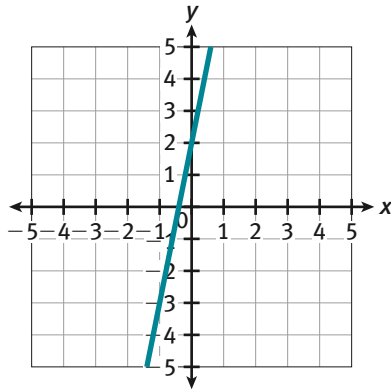


c.

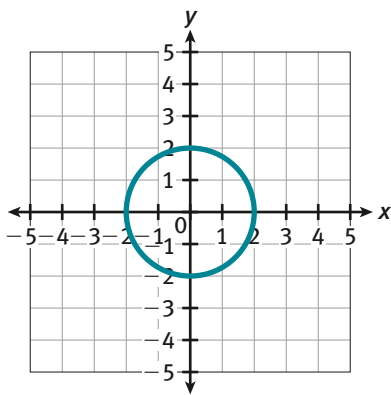


17. **Make sense of problems.** Which relation is a function?

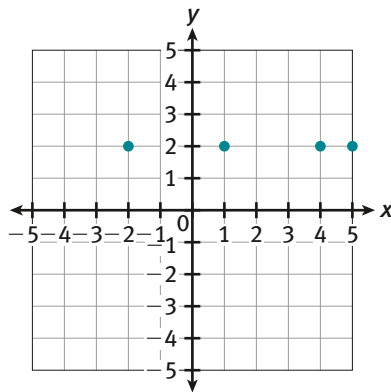
A.



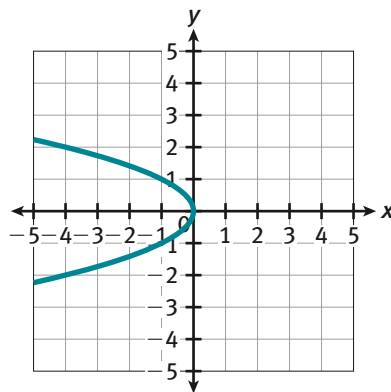
B.



C.

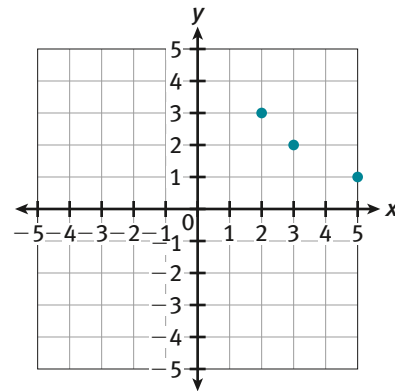


D.

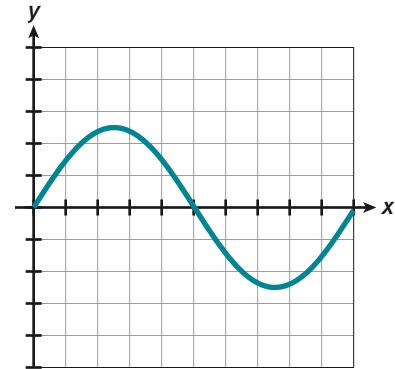


18. Determine if the relations are discrete or continuous.

a.



b.

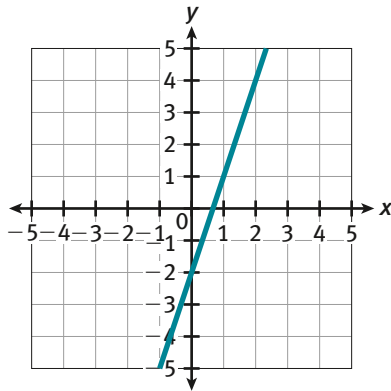


c. $y = 3x + 1$

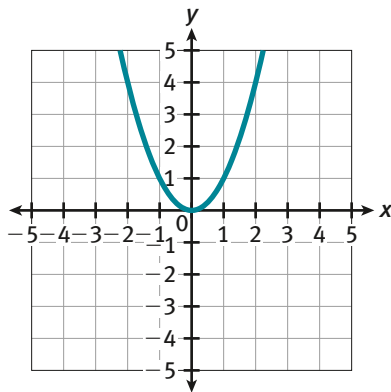
19. **Use appropriate tools strategically.** Use a graphing calculator to plot the relation $\{(5, -1), (2, -4), (5, -8), (9, -4)\}$. Determine if it is a function. Explain your reasoning.

20. Which relation is a discrete function?

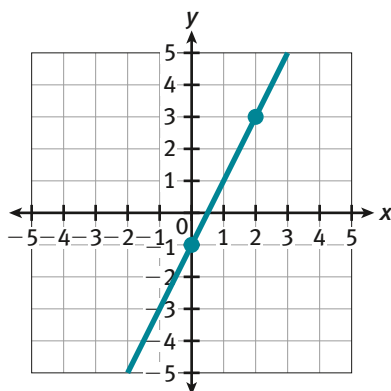
A.



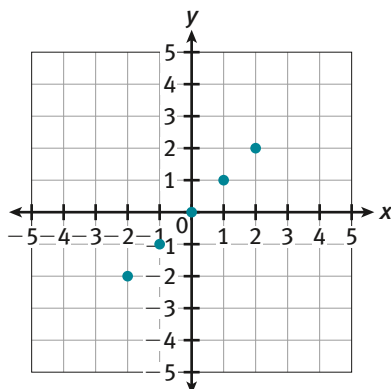
B.



C.



D.



LESSON 28-1

21. Which table of values matches the verbal description?

Kennedy starts at the park entrance and rides his bicycle at 20 miles per hour.

A.

x	y
0	20
1	40
2	60
3	80

B.

x	y
0	0
1	20
2	40
3	60

C.

x	y
0	0
1	10
2	20
3	30

D.

x	y
0	10
1	20
2	30
3	40

22. Model with mathematics. Match each graph of a function with its corresponding equation, verbal description, and table of values.

- a. $y = 15x$
- b. $y = 20 + 5x$
- c. $y = 20$
- d. Candice has \$20 in her savings account and saves \$5 per week.
- e. Martin has 20 in his savings account and does not spend or save any money.
- f. Diego saves \$15 per week

g.

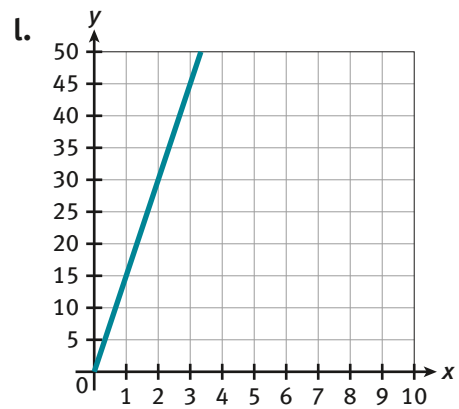
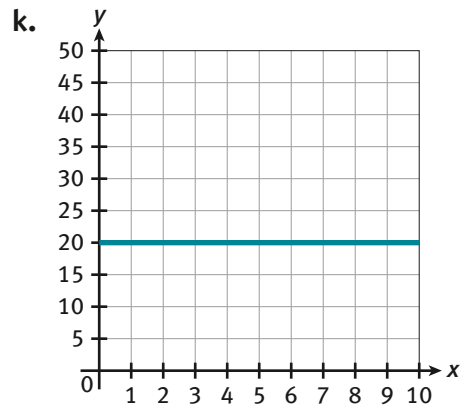
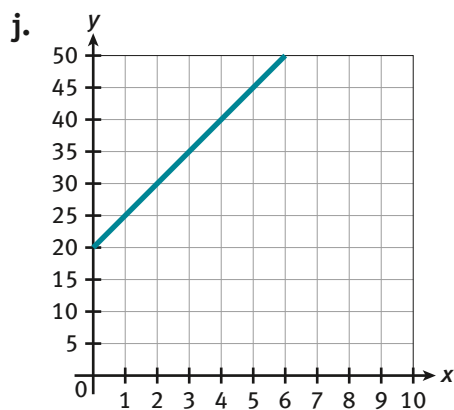
x	y
0	0
1	15
2	30
3	45

h.

x	y
0	20
1	20
2	20
3	20

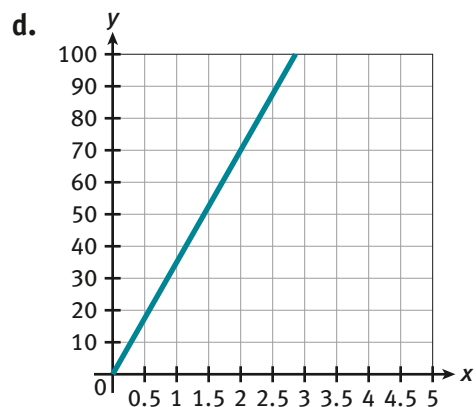
i.

x	y
0	20
1	25
2	30
3	35



23. Match the verbal description with its corresponding function representation.

- a. Alicia rents a truck for \$35 per day.
- b. Carmen is allowed 20 text messages per day.
- c. Simon starts out with 15 seashells and finds 3 more every hour that he is going to keep.

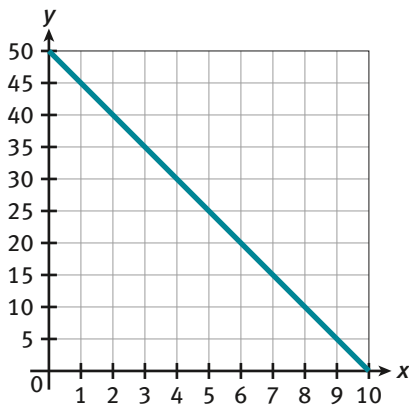


e. $y = 15 + 3x$

f.

x	y
1	20
2	40
3	60
4	80

24. **Make sense of problems.** Write a verbal description to match the given equation.

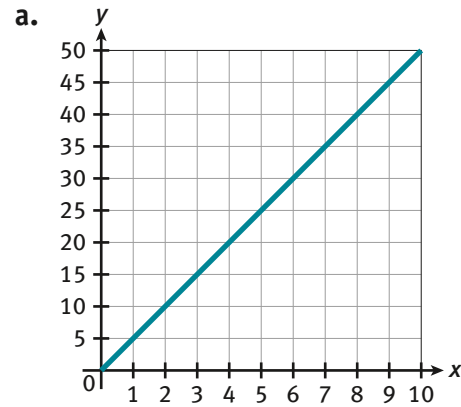


25. Which equation matches the verbal description “Janis has \$40 in her savings account. She spends \$5 per week”?

- A. $y = -5x - 40$
 B. $y = -5x$
 C. $y = 40 + 5x$
 D. $y = 40 - 5x$

LESSON 28-2

26. **Make sense of problems.** Determine if each function is or is not directly proportional. Justify your responses.



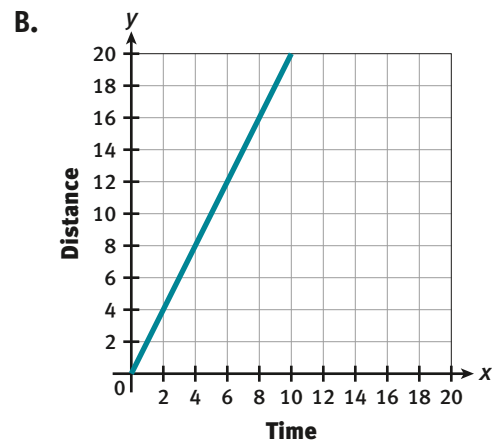
b.

x	y
0	5
1	10
2	15
3	20

c. $y = -4x - 1$

27. The pair of functions each describes a vehicle. Which vehicle in each pair is traveling faster? Justify your choices. In each case, consider the time and distance units to be the same.

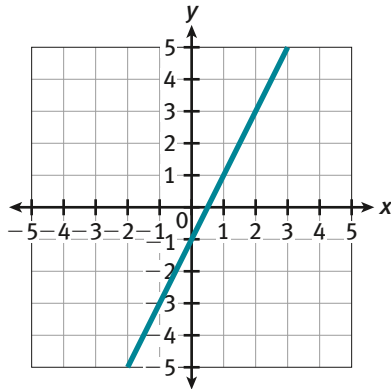
A. $y = 4x + 3$



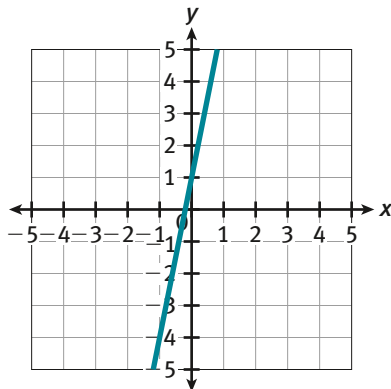
28. Which function is directly proportional?

A. $y = 6x$

B.



C.



D.

x	y
0	3
1	6
2	9
3	12

29. A vehicle at a starting line travels at a constant speed of 0.8 miles per minute. Which function could describe this vehicle?

A. $y = 0.8$

B. $y = x + 0.8$

C. $y = 0.8x + 1$

D. $y = 0.8x$

30. **Model with mathematics.** Nicholas has a new job at the bowling alley that pays \$90 each week plus an additional \$9 for each hour worked. Give the rate of change for this situation and Nicholas's base pay. Write an equation to represent this situation.

LESSON 29-1

31. **Model with mathematics.** Ella works as a lifeguard after school and on weekends to earn extra money. She earns \$9 per hour and works 8 hours every week.

a. Write a function to represent Ella's situation. Be sure to define the variables you use.

b. What are the domain and range of the function?

c. Is the function directly proportional? Explain why or why not.

32. **Reason quantitatively.** Pablo works at the library on weekends. He earns \$8 per hour and works 5 hours per weekend. Pablo wants to buy a new tablet that costs \$325. How many weeks will Pablo need to work to earn enough money to buy the tablet?

33. Water flows from a faucet at a rate of 3.5 gallons per minute (gpm). What function could represent this situation?

A. $y = -3.5x$

B. $y = 3.5x$

C. $y = 3.5 + x$

D. $y = x - 3.5$

34. Grain flows from a grain bin at a rate of 12 bushels of grain per minute.

- a. Write a function to represent the problem context. Define your variables.
- b. Use the function you wrote in part a to complete the table.

Minutes	0	5	10	15	18
Bushels					

- c. Use the completed table in part b to graph the function you wrote in part a. Be sure to title the graph and write the scale on the axes.

- d. Suppose that low pressure causes the flow rate to run at 75% of the normal flow. Rewrite your function from part a to reflect the grain flow is only 75% of the normal flow rate.

35. A water sprinkler uses 1.5 gallons of water per minute. Which table shows the water sprinkler's water usage over a 5 minute period?

A.

Minutes	1	2	3	4	5
Water (gal)	1.5	4.5	7.5	10.5	13.5

B.

Minutes	1	2	3	4	5
Water (gal)	1.5	1.5	1.5	1.5	1.5

C.

Minutes	0	1	2	3	4
Water (gal)	0	1	2	3	4

D.

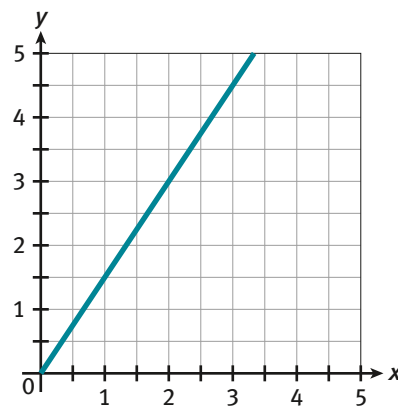
Minutes	1	2	3	4	5
Water (gal)	1.5	3	4.5	6	7.5

LESSON 29-2

36. What is the rate of change for the equation $y = 15 + 3x$?

- A. 0
B. 3
C. 5
D. 15

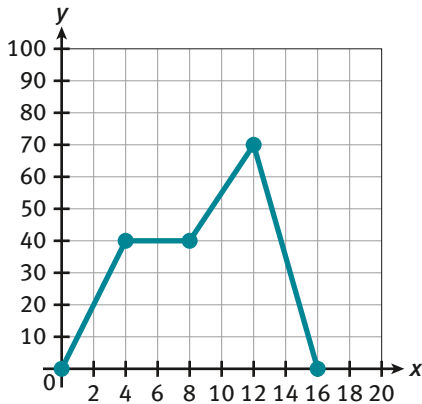
37. Use the graph to answer parts a–c.



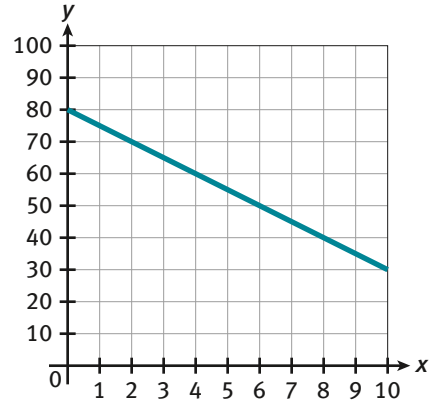
- a. What is the initial value?
- b. What is the rate of change?
- c. Is this function proportional or nonproportional? Explain your reasoning.

38. What is the initial value of the function $y = 20 - 4x$?
- A. (0, 0)
 B. (20, 0)
 C. (0, 20)
 D. (0, 4)

39. **Critique the reasoning of others.** Mackenzie looked at the graph shown below and determined that the function is proportional. Do you agree with Mackenzie? Explain your reasoning.



40. **Reason abstractly.** Describe a situation for the data modeled in the graph below.



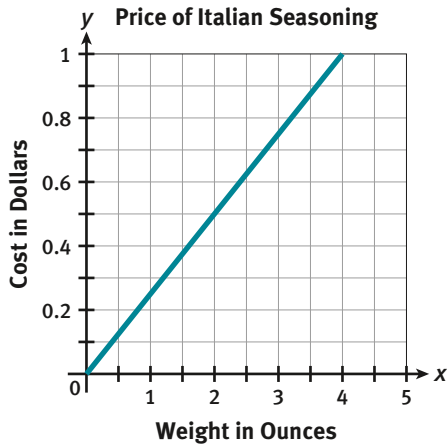
LESSON 30-1

41. A secretary types the following number of words per minute.

Minutes	Words
1	42
2	84
3	126
4	168

- a. What is the secretary's rate of change in the number of words she types each minute?
- b. At this rate, how many words will she have typed at the end of 12 minutes?

42. **Model with mathematics.** What is the rate of change represented by the following graph?



- A. $\frac{1}{4}$ B. $\frac{1}{2}$
 C. 2 D. 4
43. The following table shows the fees charged for the miles driven by a moving truck.

Miles	Fee
100	\$35.00
150	\$52.00
200	\$70.00
250	\$87.50

- a. What is the change in fees from 150 to 200?
 b. Determine the rate of change of fee over distance.
44. The following table shows the number of frames shown per seconds to create a movie.

Seconds	No. of Frames
1	36
2	72
3	108
4	144

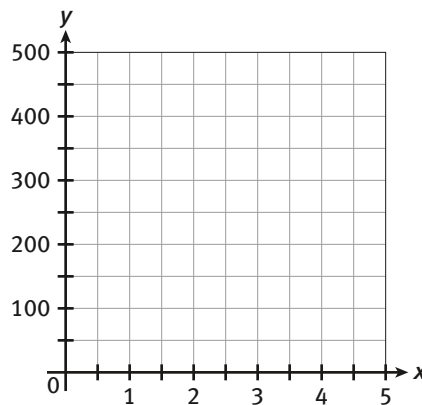
How many frames will be shown in 9 seconds?

- A. 288 B. 324
 C. 360 D. 396

45. **Make sense problems.** The cost of group tickets for a play is \$48 for four people and \$88 for twelve people. What is the rate of change?

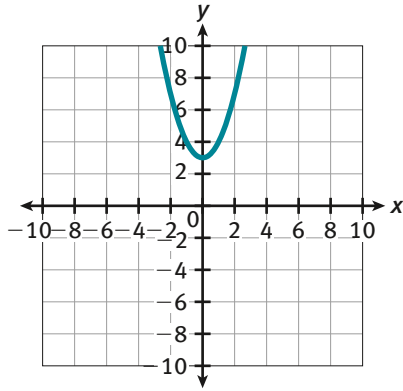
LESSON 30-2

46. The average weight of a package can be represented by a linear function. Which equation could represent this function?
- A. $y = x^2 - 2$
 B. $y = 5x - 1$
 C. $y = -x^2 + 4$
 D. $y = \frac{1}{2}x^3 + 6$
47. A gym membership has a flat month charge of \$250. Sketch the graph.

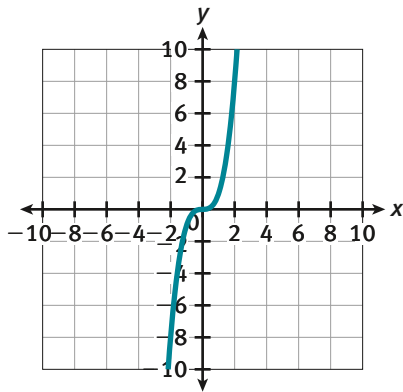


48. Which of the following graphs is linear?

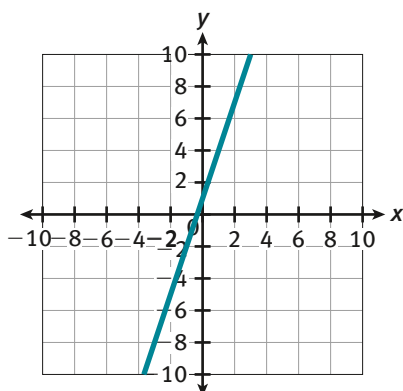
A.



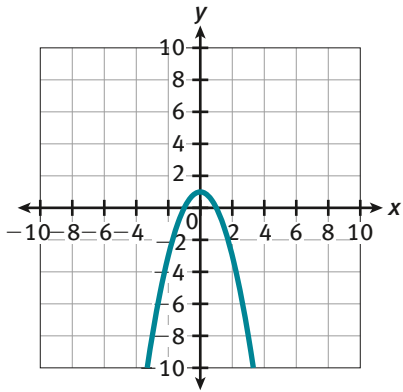
B.



C.



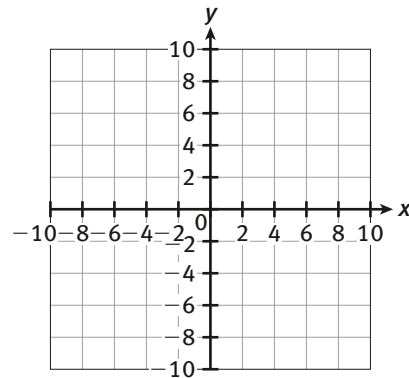
D.



49. **Construct viable arguments.** Does the table represent a linear function? Explain.

Number of Rides	1	2	3	4	5	6	7
Cost	\$2	\$4	\$6	\$8	\$10	\$10	\$10

50. **Model with mathematics.** Sketch the graph $y = -2x + 4$.



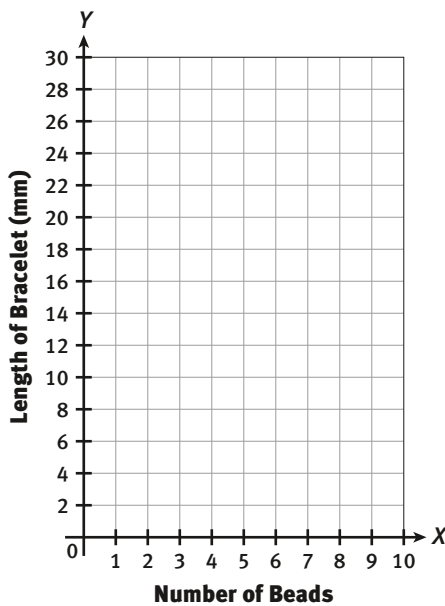
LESSON 31-1

51. Nicole is making a bracelet. Complete the table.

Number of Beads	Length of Bracelet in mm
1	3.5
2	7
3	10.5
4	13.5
5	
6	
7	

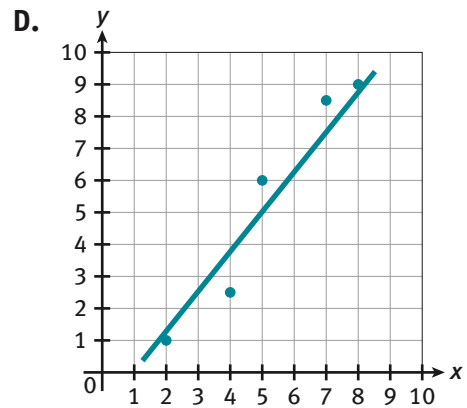
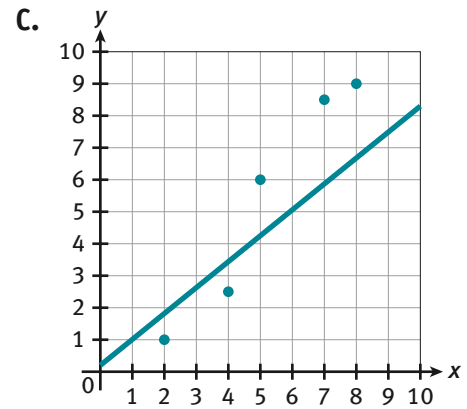
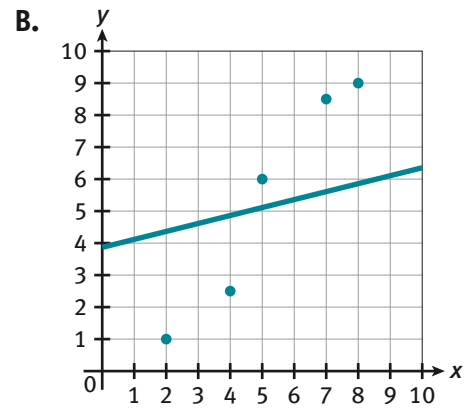
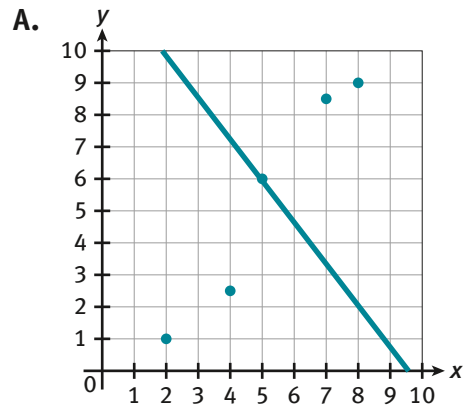
52. Model with mathematics.

a. Use the table above to draw a scatter plot.



b. Is the data linear?

53. Which trend line is shown correctly?



54. Which of the following is true about the table of values?

Time	Temperature in °F
noon	52
1 pm	56
2 pm	58
3 pm	60

- A. The data is linear.
- B. The rate of change is 2 degrees per hour.
- C. The data represents a function.
- D. The rate of change is constant.

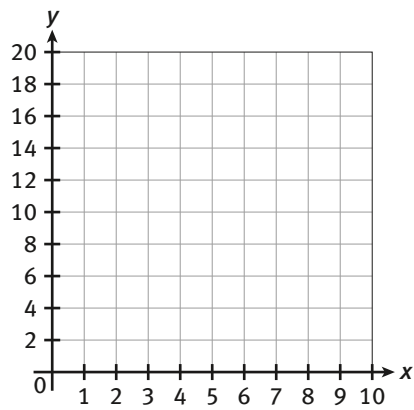
55. **Attend to precision.** Can a trend line be drawn from the data? Explain.

1	1.7
2	2.3
3	2.9
4	3.3
5	3.8
6	4.4
7	5.0

LESSON 31-2

56. Sketch a graph to represent the table of values.

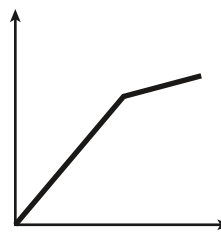
1	1
2	2
3	7
4	12
5	18
6	20

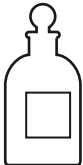

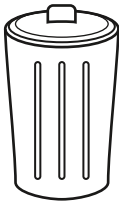



57. Which function would have the steepest line?

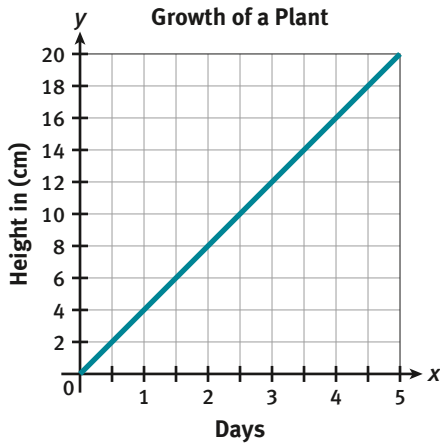
- A. $y = \frac{1}{5}x$
- B. $y = \frac{1}{3}x$
- C. $y = 5x$
- D. $y = 3x$

58. The graph below would represent which container when filling?



- A. 
- B. 
- C. 
- D. 

59. **Model with mathematics.** Write a function to represent the graph.

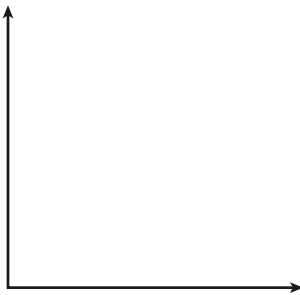


60. **Reason quantitatively.** Based on the graph above, predict the height of the plant on day 16.

LESSON 31-3

61. **Reason abstractly.** Sketch a graph that could represent each situation.

a. A car that accelerates to 50 mph then travels at that constant speed.



b. The barometric pressure drops then holds steady before rising again.



62. Which describes the graph of a faucet with a steady flow of water?

- A. A line increasing from left to right
- B. A horizontal line
- C. A vertical line
- D. A line decreasing from right to left

63. In the equation $d = 1.2f$, d represents the distance (in feet) of an object and f represents the force. What would the distance be if the force was 17?

64. Which describes the graph of the temperature of water as it comes to a boil?

- A. A line increasing from left to right
- B. A horizontal line
- C. A vertical line
- D. A line decreasing from left to right

65. **Model with mathematics.** Draw a trend line for the scatter plot.

