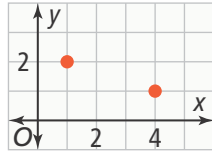




**UNDERSTAND**

9. **Use Structure** The two points on the graph are given by the function  $f$ .



- Use the two points to find the equation that represents the function  $f$ .
- What is  $f(6)$ ?

10. **Higher Order Thinking** Consider the functions  $g(x) = 2x + 1$  and  $h(x) = 2x + 2$  for the domain  $0 < x < 5$ .

- Without evaluating or graphing the functions, how do the ranges compare?
- Graph the two functions and describe each range over the given interval.

11. **Make Sense and Persevere** Customers at a deli can buy an unlimited amount of potato salad using a variety of containers. The customer is not charged for the weight of the container.

- The table shows the weight of the container with food and the cost. If 1 oz = 0.0625 lb, what is the price per pound of the potato salad? What is the weight of the container in pounds? What is the weight of the container and potato salad in pounds?

Weight (oz)	5	7	9	11	13
Cost (\$)	■	1	2	3	4

- If the store had not accounted for the weight of the container, how much would the customer be charged for the container? Is the cost of the container the same, or does it vary by how much potato salad is purchased? Explain.

12. **Error Analysis** Describe and correct the error a student made when finding the function rule for the data in the table.

$x$	1	2	3	4
$y$	10	19	28	37

When  $x$  increases by 1,  
 $y$  increases by 9 each time.  
When  $x = 1$ ,  $y = 10$ .  
So  $y = 9x + 10$ .



**PRACTICE**

Find the value of  $f(5)$  for each function.

EXAMPLE 1

- $f(x) = 6 + 3x$
- $f(x) = -2(x + 1)$
- $f(a) = 3(a + 2) - 1$
- $f(h) = -\frac{h}{10}$
- $f(m) = 1 - 4\left(\frac{m}{2}\right)$
- $f(m) = 2(m - 3)$

Write a linear function for the data in each table.

SEE EXAMPLE 2

19.

$x$	0	1	2	3	4
$y$	-1	4	9	14	19

20.

$x$	0	1	2	3	4
$y$	4	1.5	-1	-3.5	-6

21.

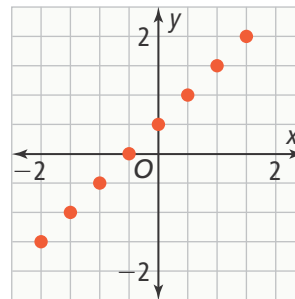
$x$	-2	-1	0	1	2
$y$	2	$\frac{1}{2}$	-1	$-2\frac{1}{2}$	-4

Sketch the graph of each linear function.

SEE EXAMPLE 3

- $g(x) = x - 3$
- $h(x) = 3 - x$
- $f(x) = \frac{1}{2}(x - 1)$
- $f(x) = 0.75(10 - x) + 1$

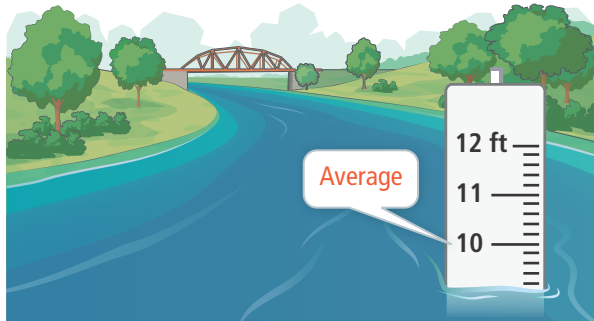
Use the graph for Exercises 26 and 27. SEE EXAMPLE 3



- Is the function shown a linear function? Explain.
- Describe the domain and range of the function.
- Katrina buys a 64-ft roll of fencing to make a rectangular play area for her dogs. Use  $2(l + w) = 64$  to write a function for the length, given the width. Graph the function. What is a reasonable domain for the situation? Explain. SEE EXAMPLE 4

**APPLY**

29. **Model With Mathematics** A staff gauge measures the height of the water level in a river compared to the average water level. At one gauge the river is 1 ft below its average water level of 10 ft. It begins to rise by a constant rate of 1.5 ft per hour.



- Graph the linear function to show the change in the water level over time.
  - Will the river reach a level of 7 ft above normal during that time? Explain.
30. **Use Structure** Ramona's Garage charges the following labor rates. All customers are charged for at least 0.5 hr.

Ramona's Garage					
Hours	0.5	1	1.5	2	2.5
Labor	\$60	\$90	\$120	\$150	\$180

- Write a linear function for the data in the table.
  - A repair job took 4 h and 15 min and required \$390 in parts. What is the total cost?
31. **Reason** A snack bar at an outdoor fair is open from 10 A.M. to 5:30 P.M. and has 465 bottles of water for sale. Sales average 1.3 bottles of water per minute.
- Graph the number of bottles remaining each hour as a function of time in hours. Find the domain and range.
  - At this rate, what time would they run out of water? How many bottles of water are needed at the start of the next day? Explain.

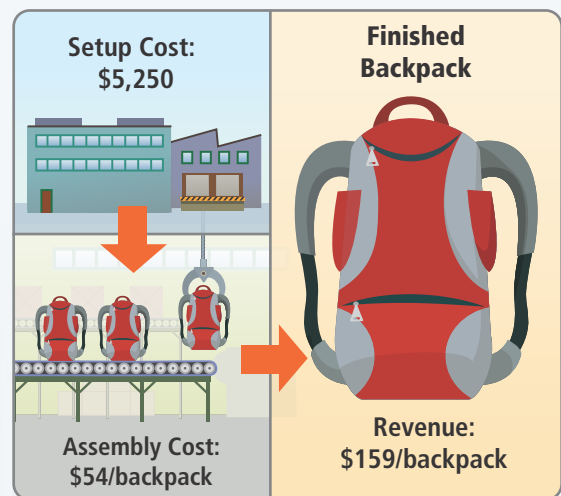
**ASSESSMENT PRACTICE**

32. Consider the function  $f(x) = 3(x - 1) - 0.4(9 - x)$ . Match each expression with its equivalent value.
- $f(2) + f(4)$
  - $f(5)$
  - $f(7) - f(6)$
  - $f(3)$
- 3.4
  - 3.6
  - 7.2
  - 10.4
33. **SAT/ACT** Determine a linear function from the data in the table. Which point is not part of the function?

$x$	$f(x)$
0	180
1	174
2	168
3	162
4	156

- (12, 108)
- (30, 0)
- (-15, 270)
- (21, 54)
- (9, 120)

34. **Performance Task** Manuel calculates the business costs and profits to produce  $n$  hiking backpacks. Manuel's profit is his revenue minus expenses.



- Part A** Write a function to represent the profit Manuel makes selling  $n$  backpacks.
- Part B** Graph the profit function. What is a reasonable domain for this function for one year if his revenue is between \$4,000 and \$30,000? Is the function discrete or continuous? Explain.
- Part C** How much is his profit if he sells 43 backpacks? Explain.