

## GUIDED PRACTICE

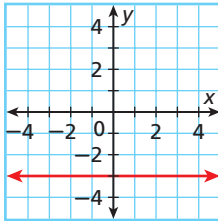
1. **Vocabulary** Is the *linear equation*  $3x - 2 = y$  in standard form? Explain.

## SEE EXAMPLE 1

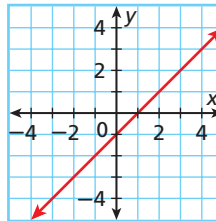
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Identify whether each graph represents a function. Explain. If the graph does represent a function, is the function linear?

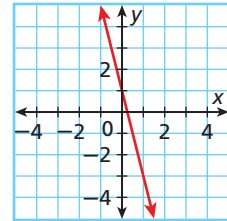
2.



3.



4.



## SEE EXAMPLE 2

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Tell whether the given ordered pairs satisfy a linear function. Explain.

5.

x	5	4	3	2	1
y	0	2	4	6	8

6.

x	1	4	9	16	25
y	1	2	3	4	5

7.  $\{(0, 5), (-2, 3), (-4, 1), (-6, -1), (-8, -3)\}$

8.  $\{(2, -2), (-1, 0), (-4, 1), (-7, 3), (-10, 6)\}$

## SEE EXAMPLE 3

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Tell whether each function is linear. If so, graph the function.

9.  $2x + 3y = 5$

10.  $2y = 8$

11.  $\frac{x^2 + 3}{5} = y$

12.  $\frac{x}{5} = \frac{y}{3}$

## SEE EXAMPLE 4

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13. **Transportation** A train travels at a constant speed of 75 mi/h. The function  $f(x) = 75x$  gives the distance that the train travels in  $x$  hours. Graph this function and give its domain and range.

14. **Entertainment** A movie rental store charges a \$6.00 membership fee plus \$2.50 for each movie rented. The function  $f(x) = 2.50x + 6$  gives the cost of renting  $x$  movies. Graph this function and give its domain and range.

## PRACTICE AND PROBLEM SOLVING

## Independent Practice

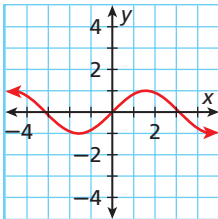
For Exercises	See Example
15–17	1
18–20	2
21–24	3
25	4

## Extra Practice

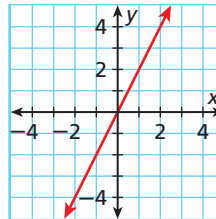
Skills Practice p. S12  
 Application Practice p. S32

Identify whether each graph represents a function. Explain. If the graph does represent a function, is the function linear?

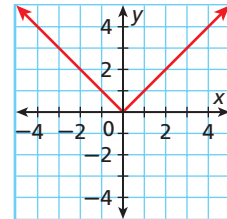
15.



16.



17.



Tell whether the given ordered pairs satisfy a linear function. Explain.

18.

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

19.

x	-1	0	1	2	3
y	-3	-2	-1	0	1

20.  $\{(3, 4), (0, 2), (-3, 0), (-6, -2), (-9, -4)\}$

Tell whether each function is linear. If so, graph the function.

21.  $y = 5$                       22.  $4y - 2x = 0$                       23.  $\frac{3}{x} + 4y = 10$                       24.  $5 + 3y = 8$

25. **Transportation** The gas tank in Tony's car holds 15 gallons, and the car can travel 25 miles for each gallon of gas. When Tony begins with a full tank of gas, the function  $f(x) = -\frac{1}{25}x + 15$  gives the amount of gas  $f(x)$  that will be left in the tank after traveling  $x$  miles (if he does not buy more gas). Graph this function and give its domain and range.

Tell whether the given ordered pairs satisfy a function. If so, is it a linear function?

26.  $\{(2, 5), (2, 4), (2, 3), (2, 2), (2, 1)\}$                       27.  $\{(-8, 2), (-6, 0), (-4, -2), (-2, -4), (0, -6)\}$

28.

$x$	-10	-6	-2	2	4
$y$	0	0.25	0.50	0.75	1

29.

$x$	-5	-1	3	7	11
$y$	1	1	1	1	1

Tell whether each equation is linear. If so, write the equation in standard form and give the values of  $A$ ,  $B$ , and  $C$ .

30.  $2x - 8y = 16$                       31.  $y = 4x + 2$                       32.  $2x = \frac{y}{3} - 4$                       33.  $\frac{4}{x} = y$   
 34.  $\frac{x+4}{2} = \frac{y-4}{3}$                       35.  $x = 7$                       36.  $xy = 6$                       37.  $3x - 5 + y = 2y - 4$   
 38.  $y = -x + 2$                       39.  $5x = 2y - 3$                       40.  $2y = -6$                       41.  $y = \sqrt{x}$

Graph each linear function.

42.  $y = 3x + 7$                       43.  $y = x + 25$                       44.  $y = 8 - x$                       45.  $y = 2x$   
 46.  $-2y = -3x + 6$                       47.  $y - x = 4$                       48.  $y - 2x = -3$                       49.  $x = 5 + y$

50. **Measurement** One inch is equal to approximately 2.5 centimeters. Let  $x$  represent inches and  $y$  represent centimeters. Write an equation in standard form relating  $x$  and  $y$ . Give the values of  $A$ ,  $B$ , and  $C$ .

51. **Wages** Molly earns \$8.00 an hour at her job.

- Let  $x$  represent the number of hours that Molly works. Write a function using  $x$  and  $f(x)$  that describes Molly's pay for working  $x$  hours.
- Graph this function and give its domain and range.



52. **Write About It** For  $y = 2x - 1$ , make a table of ordered pairs and a graph. Describe the relationships between the equation, the table, and the graph.

53. **Critical Thinking** Describe a real-world situation that can be represented by a linear function whose domain and range must be limited. Give your function and its domain and range.

**MULTI-STEP  
TEST PREP**



54. This problem will prepare you for the Multi-Step Test Prep on page 332.

- Juan is running on a treadmill. The table shows the number of Calories Juan burns as a function of time. Explain how you can tell that this relationship is linear by using the table.
- Create a graph of the data.
- How can you tell from the graph that the relationship is linear?

Time (min)	Calories
3	27
6	54
9	81
12	108
15	135
18	162
21	189