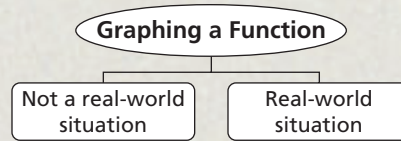


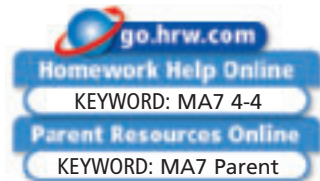
THINK AND DISCUSS

- How do you find the range of a function if the domain is all real numbers?
- Explain how to use a graph to find the value of a function for a given value of x .
- GET ORGANIZED** Copy and complete the graphic organizer. Explain how to graph a function for each situation.



4-4

Exercises



GUIDED PRACTICE

SEE EXAMPLE 1 Graph each function for the given domain.

p. 252

- $3x - y = 1$; D: $\{-3, -1, 0, 4\}$
- $f(x) = -|x|$; D: $\{-5, -3, 0, 3, 5\}$
- $f(x) = x + 4$; D: $\{-5, -3, 0, 4\}$
- $y = x^2 - 1$; D: $\{-3, -1, 0, 1, 3\}$

SEE EXAMPLE 2 Graph each function.

p. 253

- $f(x) = 6x + 4$
- $y = \frac{1}{2}x + 4$
- $x + y = 0$
- $y = |x| - 4$
- $f(x) = 2x^2 - 7$
- $y = -x^2 + 5$

SEE EXAMPLE 3 Use a graph of the function $f(x) = \frac{1}{2}x - 2$ to find the value of y when $x = 2$. Check your answer.

p. 254

SEE EXAMPLE 4 **Oceanography** The floor of the Atlantic Ocean is spreading at an average rate of 1 inch per year. The function $y = x$ describes the number of inches y the ocean floor spreads in x years. Graph the function. Use the graph to estimate the number of inches the ocean floor will spread in $10\frac{1}{2}$ years.

p. 255

PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
13–16	1
17–24	2
25–26	3
27	4

Graph each function for the given domain.

- $2x + y = 4$; D: $\{-3, -1, 4, 7\}$
- $y = |x| - 1$; D: $\{-4, -2, 0, 2, 4\}$
- $f(x) = -7x$; D: $\{-2, -1, 0, 1\}$
- $y = (x + 1)^2$; D: $\{-2, -1, 0, 1, 2\}$

Graph each function.

- $y = -3x + 5$
- $f(x) = 3x$
- $x + y = 8$
- $f(x) = 2x + 2$
- $y = -|x| + 10$
- $f(x) = -5 + x^2$
- $y = |x + 1| + 1$
- $y = (x - 2)^2 - 1$

Extra Practice

Skills Practice p. S12
Application Practice p. S31

- Use a graph of the function $f(x) = -2x - 3$ to find the value of y when $x = -4$. Check your answer.
- Use a graph of the function $f(x) = \frac{1}{3}x + 1$ to find the value of y when $x = 6$. Check your answer.

27. **Transportation** An electric motor scooter can travel at 0.25 miles per minute. The function $y = 0.25x$ describes the number of miles y the scooter can travel in x minutes. Graph the function. Use the graph to estimate the number of miles an electric motor scooter travels in 15 minutes.

Graph each function.

28. $f(x) = x - 1$ 29. $12 - x - 2y = 0$ 30. $3x - y = 13$
 31. $y = x^2 - 2$ 32. $x^2 - y = -4$ 33. $2x^2 = f(x)$
 34. $f(x) = |2x| - 2$ 35. $y = |-x|$ 36. $-|2x + 1| = y$

37. Find the value of x so that $(x, 12)$ satisfies $y = 4x + 8$.

38. Find the value of x so that $(x, 6)$ satisfies $y = -x - 4$.

39. Find the value of y so that $(-2, y)$ satisfies $y = -2x^2$.

For each function, determine whether the given points are on the graph.

40. $y = 7x - 2$; $(1, 5)$ and $(2, 10)$ 41. $y = |x| + 2$; $(3, 5)$ and $(-1, 3)$
 42. $y = x^2$; $(1, 1)$ and $(-3, -9)$ 43. $y = \frac{1}{4}x - 2$; $(1, -\frac{3}{4})$ and $(4, -1)$
 44. **/// ERROR ANALYSIS ///** Student A says that $(3, 2)$ is on the graph of $y = 4x - 5$, but student B says that it is not. Who is incorrect? Explain the error.

A

y	$4x - 5$
3	$4(2) - 5$
3	$8 - 5$
3	3 ✓

B

y	$4x - 5$
2	$4(3) - 5$
2	$12 - 5$
2	7 ✗

Determine whether $(0, -7)$, $(-6, -\frac{5}{3})$, and $(-2, -3)$ lie on the graph of each function.

45. $x + 3y = -11$ 46. $y + |x| = -1$ 47. $x^2 - y = 7$

For each function, find three ordered pairs that lie on the graph of the function.

48. $-6 = 3x + 2y$ 49. $y = 1.1x + 2$
 50. $y = \frac{4}{5}x$ 51. $y = 3x - 1$
 52. $y = |x| + 6$ 53. $y = x^2 - 5$

54. **Critical Thinking** Graph the functions $y = |x|$ and $y = -|x|$. Describe how they are alike. How are they different?

**MULTI-STEP
TEST PREP**



55. This problem will prepare you for the Multi-Step Test Prep on page 260.

A pool containing 10,000 gallons of water is being drained. Every hour, the volume of the water in the pool decreases by 1500 gallons.

- Write an equation to describe the volume v of water in the pool after h hours.
- How much water is in the pool after 1 hour?
- Create a table of values showing the volume of the water in gallons in the pool as a function of the time in hours and graph the function.