# Chapter 2

2.1 Tell whether the relation is a function. *Explain.* **1–4. See margin.**

1.

Input	Output
1	−1
2	2
3	3
4	5

2.

Input	Output
−1	
0	−1
1	
2	

3.

Input	Output
	3
−2	6
	9
	12

4.

Input	Output
−7	14
4	8
	−8
6	4
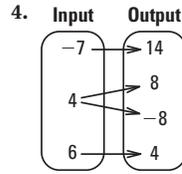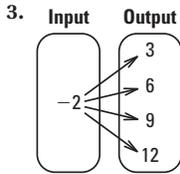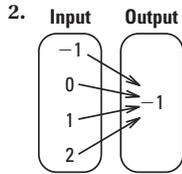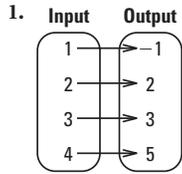
2.2 Find the slope of the line passing through the given points. Then tell whether the line *rises, falls, is horizontal,* or *is vertical.*

5. $(-3, 0)$, $(5, -4)$ $-\frac{1}{2}$; falls

6. $(2, -1)$, $(8, -1)$ 0; is horizontal

7. $(3, 5)$, $(3, -12)$ undefined; is vertical

8. $(1, 8)$, $(-1, -4)$ **6; rises**

2.2 Tell whether the lines are *parallel, perpendicular,* or *neither.*

9. Line 1: through $(5, -4)$ and $(-4, 2)$
Line 2: through $(-5, -4)$ and $(-2, -2)$ **neither**

10. Line 1: through $(0, -4)$ and $(-2, 2)$
Line 2: through $(4, -3)$ and $(5, -6)$ **parallel**

2.3 Graph the equation using any method. **11–18. See margin.**

11. $y = 2x - 2$

12. $y = -x + 2$

13. $f(x) = \frac{2}{3}x - 1$

14. $x + 2y = -6$

15. $-4x + 5y = 10$

16. $y - 2 = 0$

17. $-2x = 6y + 5$

18. $2y + 10 = -2.5x$

2.4 Write an equation of the line that satisfies the given conditions.

19. $m = 7$, $b = -3$ $y = 7x - 3$

20. $m = \frac{1}{3}$, $b = 4$ $y = \frac{1}{3}x + 4$

21. $m = 0$, passes through $(7, -2)$ $y = -2$

22. $m = -\frac{1}{4}$, passes through $(3, 6)$ $y = -\frac{1}{4}x + 6\frac{3}{4}$

23. passes through $(-1, -3)$ and $(2, 7)$ $y = \frac{10}{3}x + \frac{1}{3}$

24. passes through $(4, -2)$ and $(0, 4)$ $y = -\frac{3}{2}x + 4$

2.5 The variables x and y vary directly. Write an equation that relates x and y. Then find y when $x = -2$.

25. $x = 2$, $y = 4$ $y = 2x$; -4

26. $x = -1$, $y = 3$ $y = -3x$; 6

27. $x = -28$, $y = -7$ $y = \frac{1}{4}x$; $-\frac{1}{2}$

28. $x = 6$, $y = -4$ $y = -\frac{2}{3}x$; $\frac{4}{3}$

2.6 In Exercises 29 and 30, (a) draw a scatter plot of the data, (b) approximate the best-fitting line, and (c) estimate y when $x = 12$. **29, 30. See margin for art.**

29.

x	1	2	3	4	5
y	8	11	13	16	18

c. about 36

30.

| x	1	2	3	4	5
y	50	41	37	22	20

c. about −37

2.7 Graph the function. *Compare* the graph with the graph of $y = |x|$. **31–34. See margin.**

31. $y = |x + 3|$

32. $y = -2|x - 5|$

33. $y = 3|x + 1| - 2$

34. $y = -\frac{1}{2}|x + 2| + 3$

2.8 Graph the inequality in a coordinate plane. **35–42. See margin.**

35. $x < 4$

36. $y \geq -2$

37. $y \leq -x - 1$

38. $x + 2y > 8$

39. $-x - 4y \leq 6$

40. $3x + 4y > 12$

41. $y < |x + 1|$

42. $y \geq 3|x - 2| - 1$

Extra Practice   **1011**

11.

12.

13.

14.

15.

16.

17.

18.
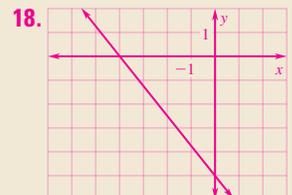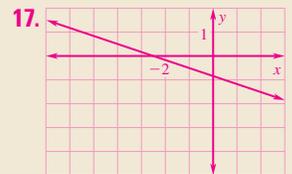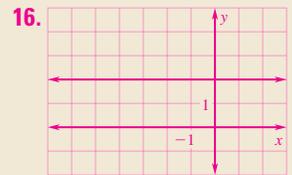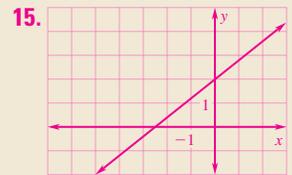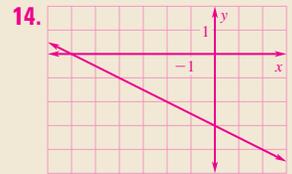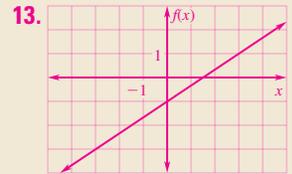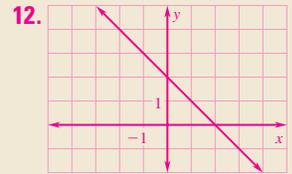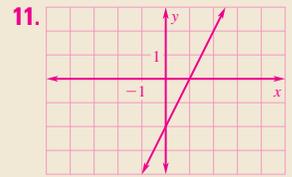
29a–b, 30a–b, 31–42. See Additional Answers beginning on p. AA1.

1. Function; for each input there is exactly one output.
2. Function; for each input there is exactly one output.
3. Not a function; there is more than one output for the input −2.
4. Not a function; there is more than one output for the input 4.