# Chapter 4 Review

## Vocabulary Review

**linear function** (p. 123)
**slope** (p. 117)
**slope of a line** (p. 117)
**slope-intercept form** (p. 123)
***y*-intercept** (p. 123)

**Choose the vocabulary term that completes the sentence.**

1. The ? describes the steepness of a line.
2. When an equation is written in the form $y = mx + b$ it is in ?.
3. The point where a graph crosses the $y$-axis is the ?.

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## Skills and Concepts

### Lesson 4-1

- To find the slope of a line from a graph or table

The **slope of a line** is the steepness of the line. You can find the slope of a line by subtracting the coordinates of any two points on the line.

**Find the slope of the line that passes through each pair of points.**

4. $(1,2)$ and $(-3,2)$
5. $(5,1)$ and $(0,-7)$
6. $(-4,9)$ and $(10,6)$
7. $(8,-2)$ and $(-2,8)$

**Graph the data in each table and connect the points with a line. Then find the slope of the line.**

8.

| $x$ | $-2$ | 0 | 2 | 4 |
|---|---|---|---|---|
| $y$ | $-6$ | 0 | 6 | 12 |

9.

| $x$ | 3 | 5 | 7 | 9 |
|---|---|---|---|---|
| $y$ | 11 | 19 | 27 | 35 |

### Lesson 4-2

- To use tables and equations to graph linear functions

When a linear function is written in the form $y = mx + b$, it is said to be in **slope-intercept form.** The graph is a line with slope $m$ and $y$-intercept $b$. The ***y*-intercept** is the point where the graph crosses the $y$-axis.

**Find the slope and *y*-intercept of the graph of each function.**

10. $y = 3x + 5$
11. $y = -\frac{1}{2}x - 4$
12. $y = x + 7$
13. $y = \frac{2}{3}x$

**Graph each linear function.**

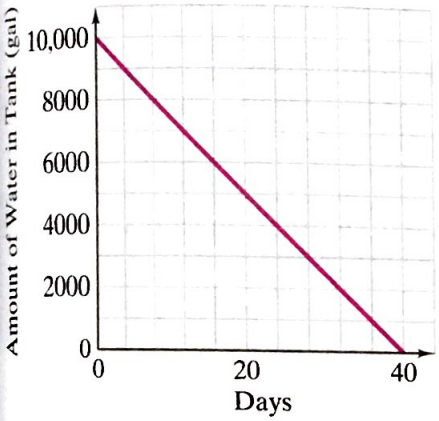
14. $y = -x + 4$
15. $y = \frac{3}{4}x + 6$
16. $y = x - 5$
17. $y = -3x$

## Lesson 4-3

- To write function rules from words, tables, and graphs

A function can be represented using words, a table, a graph, or an equation. If a function is linear, its $y$-intercept represents the initial value and its slope represents the rate of change.

**18.** Mandy has \$438 in her savings account. Each week she deposits \$50 into her account. Write a function rule that shows the balance in her savings account over time. What is the initial value and rate of change?




**Write a function rule for the data in the table. Find the initial value and rate of change.**

**19.**

| Hours, $x$ | 3 | 7 | 8 | 12 |
|---|---|---|---|---|
| Miles Traveled, $y$ | 171 | 399 | 456 | 684 |

**20.**

| Months, $x$ | 2 | 5 | 7 | 10 |
|---|---|---|---|---|
| Stamps in Collection, $y$ | 28 | 43 | 53 | 68 |

**21.** The graph shows the amount of water in a water tank. Write a function rule. What is the initial value and the rate of change?

## Lesson 4-4

- To compare properties of two functions represented in different ways

You can compare two linear functions by comparing their slopes or their $y$-intercepts. To compare two nonlinear functions, find where the functions increase or decrease; whether they are continuous; and the highest and lowest values.

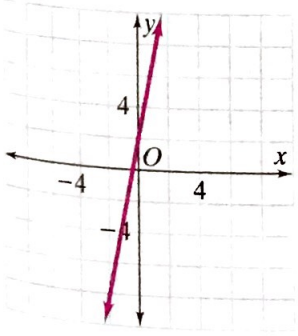
**Determine which function has the greater rate of change.**

**22.** $y = 7x + 9$

| $x$ | 0 | 5 | 7 |
|---|---|---|---|
| $y$ | 3 | 18 | 24 |

**23.** $y = 1.8x - 12$

| $x$ | 12 | 14 | 18 |
|---|---|---|---|
| $y$ | 7 | 11 | 19 |




**Compare the function described with the graph of the function at the left.**

**24.** When the value of $x$ is 0, the value of $y$ is 5. Each time the value of $x$ increases by 2, the value of $y$ increases by 5.