7.3 Practice

Go to **BigIdeasMath.com** to get HELP with solving the exercises.

Review & Refresh

Write a function rule for the statement. Then graph the function.

1. The output is ten less than the input.

2. The output is one-third of the input.

Solve the system.

3. $y = x + 5$
$y = -3x + 1$

4. $x + y = -4$
$6x + 2y = 4$

5. $-4x + 3y = 14$
$y = 2x + 8$

Concepts, Skills, & Problem Solving

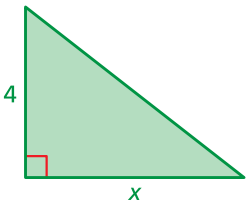
WRITING AND GRAPHING FUNCTIONS **The table shows a familiar pattern from geometry. (a) Determine what the variables x and y represent. Then write a function rule that relates y to x. (b) Is the function a *linear function*? Explain your reasoning.** (See Exploration 1, p. 289.)

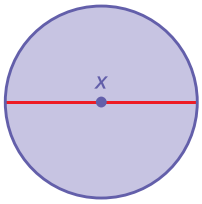
6.

x	1	2	3	4	5
y	2	4	6	8	10

7.

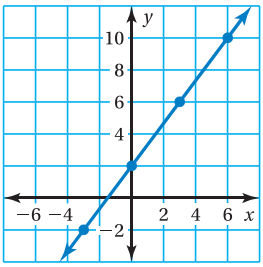
x	1	2	3	4	5
y	π	2π	3π	4π	5π





WRITING LINEAR FUNCTIONS **Use the graph or table to write a linear function that relates y to x.**

8.



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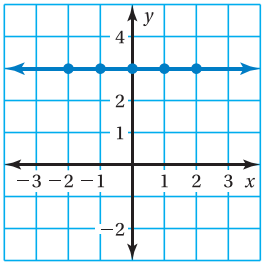


10.

x	−8	−4	0	4
y	2	1	0	−1

11.

x	−3	0	3	6
y	3	5	7	9

12. **INTERPRETING A LINEAR FUNCTION** The table shows the length y (in inches) of a person's hair after x months.

a. Write and graph a linear function that relates y to x.

b. Interpret the slope and the y-intercept.

Months, x	Hair Length, y
0	11.0
3	12.5
6	14.0

13. INTERPRETING A LINEAR FUNCTION The table shows the percent y (in decimal form) of battery power remaining x hours after you turn on a laptop computer.

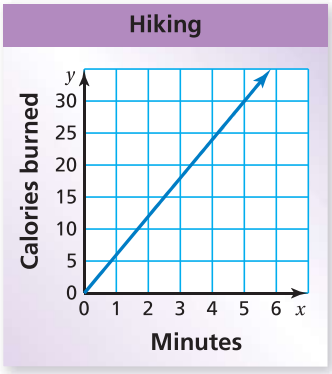
Hours, x	0	2	4
Power Remaining, y	1.0	0.6	0.2

a. Write and graph a linear function that relates y to x.

b. Interpret the slope, the x-intercept, and the y-intercept.

c. After how many hours is the battery power at 75%?

14. MODELING REAL LIFE The number y of calories burned after x minutes of kayaking is represented by the linear function $y = 4.5x$. The graph shows the number of calories burned by hiking.

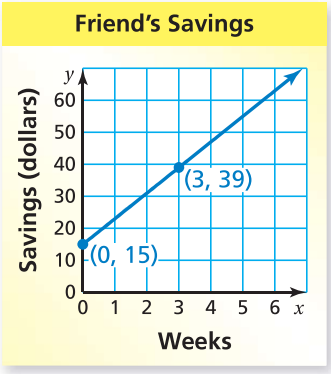


a. Which activity burns more calories per minute?

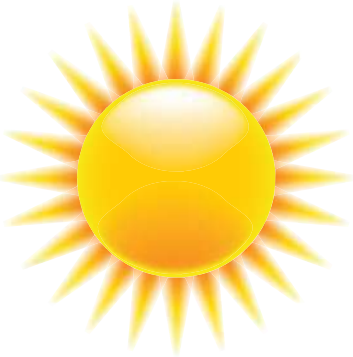
b. You perform each activity for 45 minutes. How many total calories do you burn? Justify your answer.

15. DIG DEEPER! You and a friend race each other. You give your friend a 50-foot head start. The distance y (in feet) your friend runs after x seconds is represented by the linear function $y = 14x + 50$. A 10-second race ends in a tie. Write an equation for the distance y (in feet) you run after x seconds. When do you win the race? Explain your reasoning.

16. REASONING You and your friend are saving money to buy bicycles that cost \$175 each. You have \$45 to start and save an additional \$5 each week. The graph shows the amount y (in dollars) that your friend has after x weeks. Who can buy a bicycle first? Justify your answer.



17. CRITICAL THINKING Is every linear equation a linear function? Explain your reasoning.



18. PROBLEM SOLVING The heat index is calculated using the relative humidity and the temperature. For every 1 degree increase in the temperature from 94°F to 97°F at 75% relative humidity, the heat index rises 4°F. On a summer day, the relative humidity is 75%, the temperature is 94°F, and the heat index is 124°F. Estimate the heat index when the relative humidity is 75% and the temperature is 100°F. Use a function to justify your answer.