4.7 Exercises

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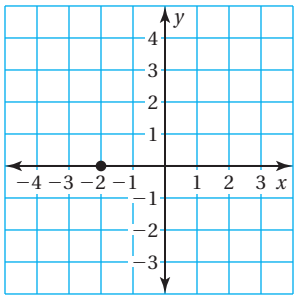
Vocabulary and Concept Check

1. **VOCABULARY** From the equation $y - 3 = -2(x + 1)$, identify the slope and a point on the line.
2. **WRITING** Describe how to write an equation of a line using (a) its slope and a point on the line and (b) two points on the line.

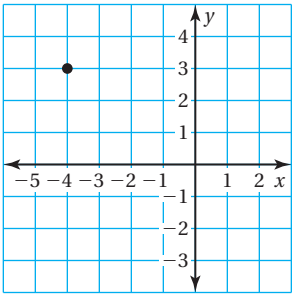
Practice and Problem Solving

Use the point-slope form to write an equation of the line with the given slope that passes through the given point.

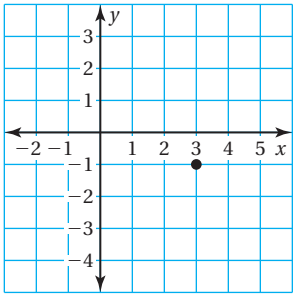
3. $m = \frac{1}{2}$



4. $m = -\frac{3}{4}$



5. $m = -3$



Write in point-slope form an equation of the line that passes through the given point and has the given slope.

6. $(3, 0)$; $m = -\frac{2}{3}$
7. $(4, 8)$; $m = \frac{3}{4}$
8. $(1, -3)$; $m = 4$
9. $(7, -5)$; $m = -\frac{1}{7}$
10. $(3, 3)$; $m = \frac{5}{3}$
11. $(-1, -4)$; $m = -2$

Write in slope-intercept form an equation of the line that passes through the given points.

12. $(-1, -1), (1, 5)$
13. $(2, 4), (3, 6)$
14. $(-2, 3), (2, 7)$
15. $(4, 1), (8, 2)$
16. $(-9, 5), (-3, 3)$
17. $(1, 2), (-2, -1)$

18. **CHEMISTRY** At 0°C, the volume of a gas is 22 liters. For each degree the temperature T (in degrees Celsius) increases, the volume V (in liters) of the gas increases by $\frac{2}{25}$. Write an equation that represents the volume of the gas in terms of the temperature.

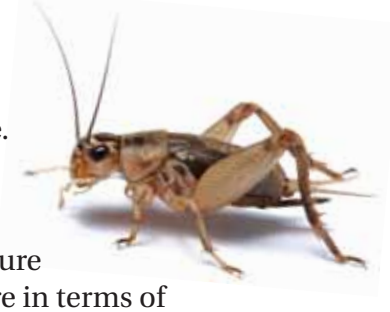
19. CARS After it is purchased, the value of a new car decreases $4000 each year. After 3 years, the car is worth $18,000.

a. Write an equation that represents the value V (in dollars) of the car x years after it is purchased.

b. What was the original value of the car?

20. REASONING Write an equation of a line that passes through the point (8, 2) that is (a) parallel and (b) perpendicular to the graph of the equation $y = 4x - 3$.

21. CRICKETS According to Dolbear's law, you can predict the temperature T (in degrees Fahrenheit) by counting the number x of chirps made by a snowy tree cricket in 1 minute. For each rise in temperature of 0.25°F, the cricket makes an additional chirp each minute.



a. A cricket chirps 40 times in 1 minute when the temperature is 50°F. Write an equation that represents the temperature in terms of the number of chirps in 1 minute.

b. You count 100 chirps in 1 minute. What is the temperature?

c. The temperature is 96°F. How many chirps would you expect the cricket to make?

Leaning Tower of Pisa

22. WATERING CAN You water the plants in your classroom at a constant rate. After 5 seconds, your watering can contains 58 ounces of water. Fifteen seconds later, the can contains 28 ounces of water.

a. Write an equation that represents the amount y (in ounces) of water in the can after x seconds.

b. How much water was in the can when you started watering the plants?

c. When is the watering can empty?

23. Problem Solving The Leaning Tower of Pisa in Italy was built between 1173 and 1350.

a. Write an equation for the yellow line.

b. The tower is 56 meters tall. How far off center is the top of the tower?

Fair Game Review What you learned in previous grades & lessons

Graph the linear equation. *(Section 4.4)*

24. $y = 4x$ **25.** $y = -2x + 1$ **26.** $y = 3x - 5$

27. MULTIPLE CHOICE What is the x-intercept of the equation $3x + 5y = 30$? *(Section 4.5)*

Ⓐ -10 Ⓑ -6 Ⓒ 6 Ⓓ 10