Vocabulary

Review

1. Circle the equation that has a *y-intercept* of 3.

$y = 3x + 4$ $y = 4x - 3$ $y = 5x + 3$ $y = -3x + 2$

2. Circle the equation that is in *slope-intercept* form.

$2x - y = 10$ $x + 3y + 11 = 0$ $y - 4 = \frac{2}{3}(x + 7)$ $y = 2x + 6$

3. Circle the statement that is true about the *y-intercept* of any graph.

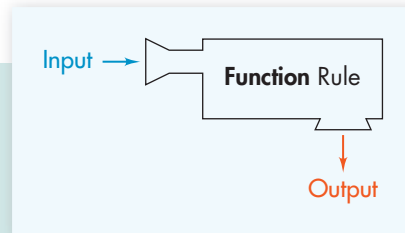| occurs where $y = 0$ on the graph | occurs where $x = 0$ on the graph | occurs where graph touches the x-axis |

Vocabulary Builder

function (noun) FUNGK **shun**

Related Words: input, output, function rule

Definition: A **function** is a relationship that assigns exactly one output value to each input value.

Main Idea: A **function** is used to describe how one value depends on another.

Example: The function machine above shows that the **function** assigns an output to every input according to a specified rule.

Use Your Vocabulary

Complete each sentence with the appropriate word from the list.

price   sun   time

4. The length of a shadow is a *function* of the angle of the __?__.

5. The amount of water that has leaked from a leaky faucet is a *function* of __?__.

6. The amount of sales tax you pay is a *function* of the item's __?__.

take note

Key Concept Point-Slope Form of a Linear Equation

The **point-slope form** of an equation of a nonvertical line with slope m and through point (x_1, y_1) is $y - y_1 = m(x - x_1)$.

7. In the above, what does (x_1, y_1) represent?

8. What does m represent?

Problem 1 Writing an Equation in Point-Slope Form

Got It? A line passes through $(8, -4)$ and has slope $\frac{2}{3}$. What is an equation in point-slope form of the line?

9. Use the point-slope form of an equation. For a line that passes through $(8, -4)$ and has slope $\frac{2}{3}$, circle x_1 and underline y_1.

| -4 | $\frac{2}{3}$ | 8 | 12 |

10. Now substitute into point-slope form.

$$y - y_1 = m \cdot (x - x_1)$$

$$y - \boxed{} = \boxed{} \cdot (x - \boxed{})$$

11. An equation of the line is $\boxed{}$.

Problem 2 Graphing Using Point-Slope Form

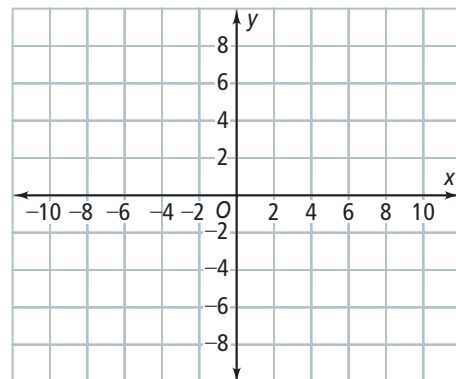**Got It?** What is the graph of the equation $y + 7 = -\frac{4}{5}(x - 4)$?

12. Circle the ordered pair of a point on the graph of $y + 7 = -\frac{4}{5}(x - 4)$.

| $(7, 4)$ | $(4, 7)$ | $(-4, -7)$ | $(4, -7)$ |

13. Circle the correct description of the slope.

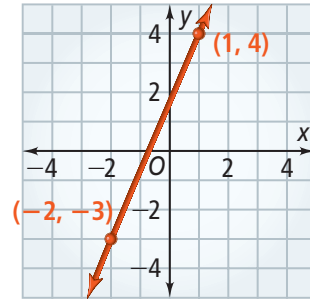| Go up 4 units and left 5 units | Go down 4 units and left 5 units | Go up 4 units and right 5 units |

14. Use your answers to Exercises 12 and 13 to graph the line.

Lesson 5-4

Problem 3 Using Two Points to Write an Equation

Got It? Use the point $(-2, -3)$ to write an equation of the line shown.

15. Follow the steps to write the equation of the line shown.

(1, 4)

(−2, −3)

1 Find the slope of the line. Use two points and the slope formula, $m = \dfrac{y_2 - y_1}{x_2 - x_1}$.

2 Use the slope and the point $(-2, -3)$ to write an equation of the line in point-slope form.

$$y - y_1 = m(x - x_1)$$

$$y - \boxed{} = \boxed{} \cdot (x - \boxed{})$$

An equation of the line is $\boxed{}$.

Problem 4 Using a Table to Write an Equation

Got It? The table shows the number of gallons of water y in a tank after x hours. The relationship is linear. What is an equation in point-slope form that models the data? What does the slope represent?

Volume of Water in Tank

Time, x (h)	Water, y (gal)
2	3320
3	4570
5	7070
8	10,820

16. Complete the reasoning model below.

Think	Write
I can use any two points from the table to find the slope.	$m = \dfrac{4570 - \boxed{}}{3 - \boxed{}} = \dfrac{\boxed{}}{\boxed{}}$
Then I can substitute one point and the slope into the point-slope equation.	$y - y_1 = m \cdot (x - x_1)$ $y - \boxed{} = \boxed{} \cdot (x - \boxed{})$
Finally, I can tell what the slope represents.	The slope represents a rate of _?_. $\boxed{}$

Got It? Reasoning Write the equation from Exercise 16 in slope-intercept form. What does the *y*-intercept represent?

17. Write the equation in point-slope form from Exercise 16. Use it to write the equation in slope-intercept form.

18. What does the *y*-intercept in your answer to Exercise 17 represent?

_____

_____

Lesson Check • Do you UNDERSTAND?

Reasoning Can any equation in point-slope form also be written in slope-intercept form? Give an example to explain.

19. Use point-slope form, $y - y_1 = m(x - x_1)$, and any point and slope to write an equation in point-slope form.

20. Now write your equation in slope-intercept form.

21. Can any equation in point-slope form also be written in slope-intercept form?   Yes / No

Math Success

Check off the vocabulary words that you understand.

☐ point-slope form   ☐ equation   ☐ graph

Rate how well you can *write equations in point-slope form*.

Need to review   0   2   4   6   8   10   Now I get it!