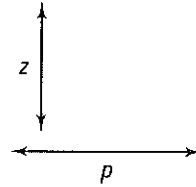## Vocabulary

Review

Underline the correct word to complete each sentence.

1. Line *z* is a *horizontal / vertical* line.

2. Line *p* is a *horizontal / vertical* line.

3. A line with a slope of 0 is *horizontal / vertical*.

4. A line with an undefined slope is *horizontal / vertical*.

Vocabulary Builder

standard (adjective) STAN durd

Other Word Forms: standards (plural noun), standardized (adjective)

Main Idea: Something that is **standard** is well known and widely used.

Example: The **standard** measure of weight used in the U.S. is the pound.

Math Usage: The **standard form** of a linear equation is $Ax + By = C$, where A, B, and C are real numbers, and A and B are not both zero.

Opposites: different, irregular

$$Ax + By = C$$
no fractions allowed.
A has to be positive

Use Your Vocabulary

Underline the correct word(s) to complete each sentence.

5. In gymnastics, judges use a set of *standards / standardized* to award a score.

6. Most English words have a *standard / standardized* pronunciation.

7. Many states use *standard / standardized* tests to assess their students' performance.

8. **Multiple Choice** Which linear equation is in *standard* form?

    Ⓐ $y = -6x + 4$ Ⓒ $3x - 7y = 42$

    Ⓑ $y = -7x - 3$ Ⓓ $y - 6 = 2(x + 7)$
    point-slope

slope/intercept

$$\underset{(x, 0)}{\underline{x\text{-int}}} \qquad \underset{(0, y)}{\underline{y\text{-int}}}$$

✓ Problem 1 Finding x- and y-Intercepts

Got It? What are the x- and y-intercepts of the graph of $5x - 6y = 60$?

Complete each sentence.

9. To find the x-intercept, let $y = \bigcirc$.

10. To find the y-intercept, let $x = \bigcirc$.

11. Find the x-intercept.

$5x - 6 \cdot \bigcirc(0) = 60$

$5x - \bigcirc = 60$

$5x = 60$

$\dfrac{5x}{5} = \dfrac{60}{5}$

$x = 12$

$\boxed{(12, 0)}$

12. Find the y-intercept.

$5 \cdot \bigcirc - 6y = 60$

$\bigcirc - 6y = 60$

$-6y = 60$

$\dfrac{-6y}{-6} = \dfrac{60}{-6}$

$y = -10$

$\boxed{(0, -10)}$

Got It? What are the x- and y-intercepts of the graph of $3x + 8y = 12$?

13. Find the x-intercept.

$3x + 8 \cdot \bigcirc = 12$

$3x + 0 = 12$

$\dfrac{3x}{3} = \dfrac{12}{3}$

$x = \boxed{x = 4}$

14. Find the y-intercept.

$3 \cdot \bigcirc + 8y = 12$

$0 + 8y = 12$

$\dfrac{8y}{8} = \dfrac{12}{8}$

$y = \dfrac{12}{8} = \boxed{\dfrac{3}{2}}$

✓ Problem 2 Graphing a Line Using Intercepts

Got It? What is the graph of $2x + 5y = 20$?

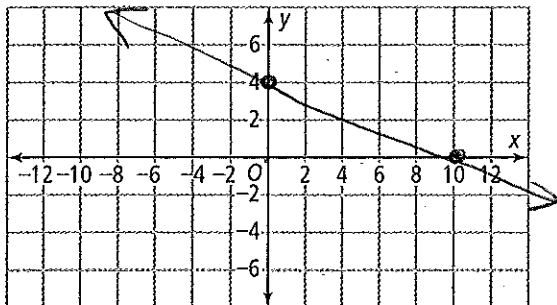**15.** Circle the x-intercept of $2x + 5y = 20$.

$x = 1$ $\qquad$ $\boxed{x = 10}$ $\qquad$ $x = 20$

16. Circle the y-intercept of $2x + 5y = 20$.

$y = -5$ $\qquad$ $y = -4$ $\qquad$ $\boxed{y = 4}$

17. Use the intercepts to graph the line $2x + 5y = 20$.

$2x + 5(0) = 20$

$\dfrac{2x = 20}{2 \quad 2}$

$\boxed{x = 10}$

$2(0) + 5y = 20$

$\dfrac{5y = 20}{5 \quad 5}$

$\boxed{y = 4}$

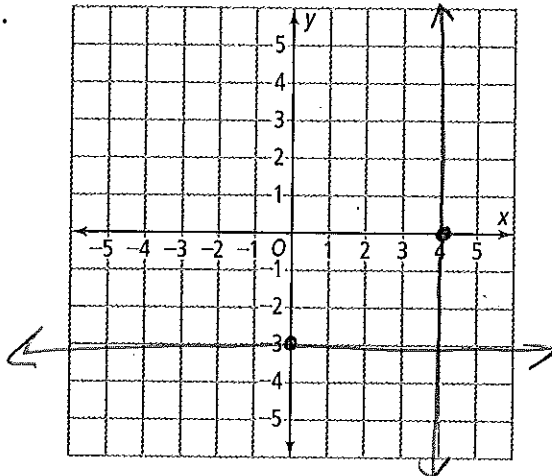## Problem 3 Graphing Horizontal and Vertical Lines

Got It? What is the graph of the equation $x = 4$?

18. The equation $x = 4$ means that for all values of y, the value of x is _4_.

19. For the reason given above, the graph of $x = 4$ is a horizontal /(vertical) line.

20. Graph the equation $x = 4$.

$Y = -3$
↑
horizontal

$X = 4$

Problem 4 Transforming to Standard Form

Got It? Write $y - 2 = -\frac{1}{3}(x + 6)$ in standard form using integers.

21. Circle the first step to put $y - 2 = -\frac{1}{3}(x + 6)$ in standard form.

| Solve for y. | Multiply both sides by -3. | Add x to both sides. |

22. Now find the standard form of the equation using integers.

23. The standard form of the equation is ☐ $\cdot x +$ ☐ $\cdot y = 0$.

Problem 5 Using Standard Form as a Model

Got It? A media download store sells songs for $1 each and movies for $15 each. You have $60 to spend. Write and graph an equation that describes the numbers of songs and movies you can purchase for $60.

24. You cannot buy a fraction of a song or movie. Describe how you will use the graph of the equation to find solutions that make sense.

25. Use the model to help you complete the equation.

Relate

| cost of a song | · | number of songs | + | cost of a movie | · | number of movies | is | $60 |

Define   Let $x =$ the number of songs purchased.

Let $y =$ _____ .

Write

$$\boxed{} \cdot \boxed{x} + \boxed{} \cdot \boxed{y} = \boxed{60}$$

26. Find the intercepts of the equation.
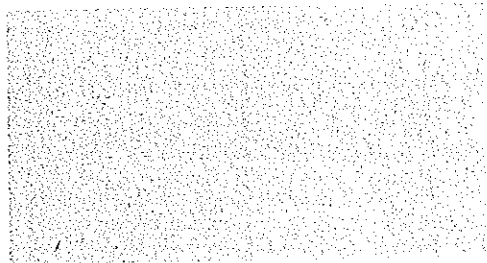
27. Use the intercepts to graph the equation.

Number of Movies (y-axis), Number of Songs (x-axis)
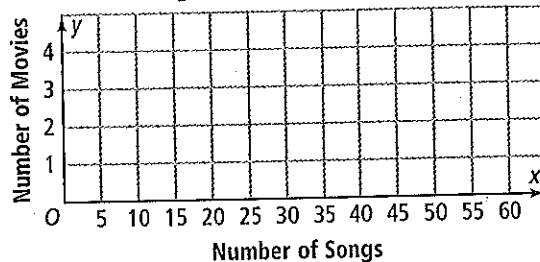
Lesson Check • Do you UNDERSTAND?

Vocabulary Tell whether each linear equation is in *slope-intercept form*, *point-slope form*, or *standard form*.

$$y + 5 = -(x - 2) \qquad y = -2x + 5 \qquad y - 10 = -2(x - 1) \qquad 2x + 4y = 12$$

28. Draw a line from each equation in Column A to the form of the equation in Column B.

Column A

$y + 5 = -(x - 2)$

$y = -2x + 5$

$y - 10 = -2(x - 1)$

$2x + 4y = 12$

Column B

$y = mx + b$ (Slope-Intercept Form)

$y - y_1 = m(x - x_1)$ (Point-Slope Form)

$Ax + By = C$ (Standard Form)

Math Success

Check off the vocabulary words that you understand.

☐ linear equation   ☐ *x*-intercept   ☐ standard form

Rate how well you can *graph a linear equation using intercepts.*

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

Lesson 5-5