

## Lesson 14: The Graph of a Linear Equation—Horizontal and Vertical Lines

### Classwork

#### Exercises

1. Find at least four solutions to graph the linear equation  $1x + 2y = 5$ .
2. Find at least four solutions to graph the linear equation  $1x + 0y = 5$ .
3. What was different about the equations in Exercises 1 and 2? What effect did this change have on the graph?
4. Graph the linear equation  $x = -2$ .
5. Graph the linear equation  $x = 3$ .
6. What will the graph of  $x = 0$  look like?
7. Find at least four solutions to graph the linear equation  $2x + 1y = 2$ .
8. Find at least four solutions to graph the linear equation  $0x + 1y = 2$ .
9. What was different about the equations in Exercises 7 and 8? What effect did this change have on the graph?
10. Graph the linear equation  $y = -2$ .
11. Graph the linear equation  $y = 3$ .
12. What will the graph of  $y = 0$  look like?

**Lesson Summary**

A linear equation in standard form,  $ax + by = c$ , where  $a = 1$  and  $b = 0$ , is the graph of the equation  $x = c$ . The graph of  $x = c$  is the vertical line passing through the point  $(c, 0)$ .

A linear equation in standard form,  $ax + by = c$ , where  $a = 0$  and  $b = 1$ , is the graph of the equation  $y = c$ . The graph of  $y = c$  is the horizontal line passing through the point  $(0, c)$ .

**Problem Set**

1. Graph the two-variable linear equation  $ax + by = c$ , where  $a = 0$ ,  $y = 1$ , and  $c = -4$ .
2. Graph the two-variable linear equation  $ax + by = c$ , where  $a = 1$ ,  $y = 0$ , and  $c = 9$ .
3. Graph the linear equation  $y = 7$ .
4. Graph the linear equation  $x = 1$ .
5. Explain why the graph of a linear equation in the form of  $y = c$  is the horizontal line, parallel to the  $x$ -axis passing through the point  $(0, c)$ .
6. Explain why there is only one line with the equation  $y = c$  that passes through the point  $(0, c)$ .