**Reteaching 6-5**

**Point-Slope Form and Writing Linear Equations**

**Objective:** Writing an equation given the graph of a line or two points on a line

**Materials:** Graph paper

**Example:**

Write an equation for the line shown in point-slope form.

a. Select any two points on the line. It is a good idea to select points whose coordinates are integers.
   
   \((0, 2)\) and \((1, 4)\) lie on the line.

b. Use slope \(m = \frac{y_2 - y_1}{x_2 - x_1}\) to find the slope.
   
   From \((0, 2)\), move up 2 units (rise = +2) and right 1 unit (run = +1) to get to \((1, 4)\). So, \(m = \frac{2}{1} = 2\).
   
   or
   
   Use \(m = \frac{y_2 - y_1}{x_2 - x_1}\) to find the slope.
   
   If \((x_1, y_1) = (0, 2)\) and \((x_2, y_2) = (1, 4)\), then \(m = \frac{4 - 2}{1} = \frac{2}{1} = 2\).

c. Use the point-slope form to write the equation.
   
   Substitute \(m = 2\) and \((x_1, y_1) = (0, 2)\).
   
   \[y - y_1 = m(x - x_1)\]
   
   \[y - 2 = 2(x - 0)\]
   
   \[y - 2 = 2x\]

   Note: If you rewrite \(y - 2 = 2x\) and \(y - 4 = 2(x - 1)\) in slope-intercept form, you get \(y = 2x + 2\). Although the two equations look different, they do represent the same line.

**Exercises**

Graph the line through the given points. Then follow steps a–c from the Example to write the equation of the line passing through the given points in point-slope form.

1. \((6, 4), (4, 3)\)
2. \((0, -18), (5, 2)\)
3. \((-2, -2), (-4, 2)\)
4. \((-4, 5), (2, 5)\)

Write an equation for the line through the given points in point-slope form.

5. \((2, -5), (0, -7)\)
6. \((4, 3), (3, -2)\)
7. \((2, -1), (-1, 8)\)
8. \((-3, 4), (3, 8)\)
9. \((4, -1), (-8, 2)\)
10. \((5, -2), (-4, -2)\)
11. \((-2, -6), (8, 4)\)
12. \((-4, 1), (-2, 2)\)
13. \((6, -6), (-3, -12)\)
14. \((0, 0), (8, 7)\)
15. \((0, -2), (8, -6)\)
16. \((2, 7), (-6, -5)\)
17. \((-1, -10), (5, 2)\)
18. \((0, 7), (-5, 12)\)
19. \((0, 1), (4, -7)\)

Lesson 6-5 Reteaching

Algebra 1 Chapter 6