Name _____ Date _____

LESSON 4.3

Investigating Algebra Activity: Point-Slope Form

For use before the lesson "Write Linear Equations in Point-Slope Form"

Materials: paper and pencil

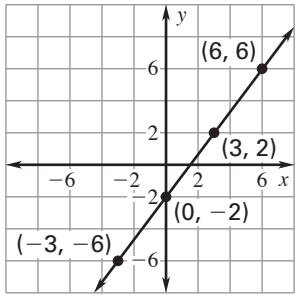
QUESTION **How can you write the equation of a line in point-slope form?**

When you know the slope of a line and a point on the line, you can write the equation of the line in *point-slope form*.

EXPLORE **Write the equation of a line**

STEP 1 Choose points

Work in a group of 4–6 students. Each person in your group should choose a different pair of points to write the equation of the line at the right.



STEP 2 Find slope

Use the points from Step 1 to find the slope of the line.

STEP 3 Use slope formula

Substitute the slope m and the coordinates of one of your points (x_1, y_1) into the slope formula, $m = \frac{y_2 - y_1}{x_2 - x_1}$.

STEP 4 Simplify equation

Multiply each side of your equation by $x_2 - x_1$. The equation is now in point-slope form, $y - y_1 = m(x - x_1)$.

DRAW CONCLUSIONS **Use your observations to complete these exercises.**

1. Compare the equations from Step 4 with the students in your group. Do the equations appear to be the same?
2. Solve the equations for y and compare. Are the equations the same?
3. Is the following statement *always*, *sometimes,* or *never* true?

   Any two points on a line can be used to find an equation of the line.