

Name: _____

Date: _____

Algebra 1: Point-Slope Form of Linear Equations
Reference Sheet

The Math Dude website, see Unit 3.5 Point-Slope Form:

http://www.montgomeryschoolsmd.org/departments/itv/mathdude/MD_Downloads.shtm

Point-slope form of a linear equation: $y - y_1 = m(x - x_1)$,
where m = slope and (x_1, y_1) is a single point

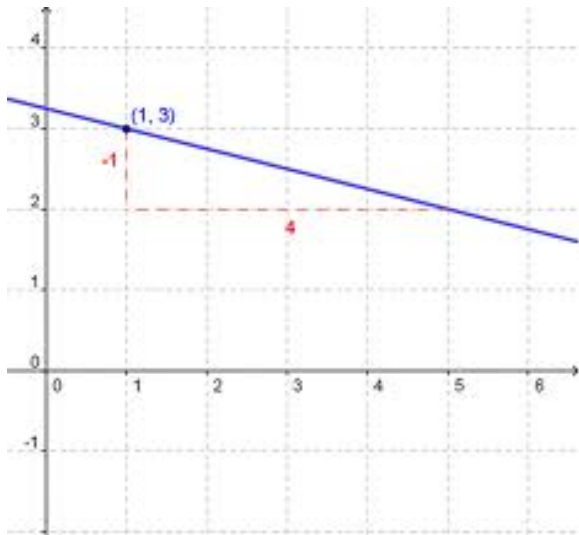
Example

Write the point-slope form of a linear equation given the slope and a single point (x_1, y_1) .

Given the slope = -4 and the point (1, 3)

$$m = -4, x_1 = 1, \text{ and } y_1 = 3$$

Point-slope form of a linear equation: $y - 3 = -4(x - 1)$



Assignment

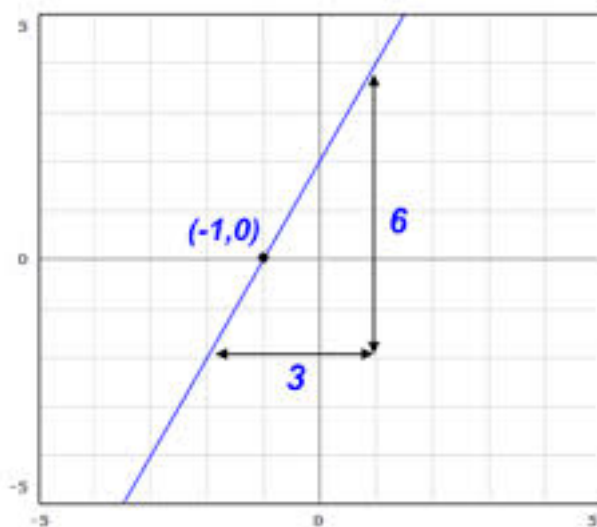
Complete any **10** out of the 15 problems.

1. Name the following form of a linear equation: $y - y_1 = m(x - x_1)$

2. What are the values of m , x_1 , and y_1 in the following linear equation:
 $y - (-1) = 3(x - 2)$?

$m =$ _____ $x_1 =$ _____ $y_1 =$ _____

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



$m =$ _____ $x_1 =$ _____ $y_1 =$ _____

4. Graph the following linear equation **using graph paper**:

$$y + 3 = 2(x - 1)$$

Write an equation in point-slope form for the line that passes through the given point and has the given slope. **Then, graph the line using graph paper.**

5. Slope = 4, Point = (2, 1)

6. Slope = 3, Point = (-3, 3)

7. Slope = 4, Point = (2, -5)

8. Slope = -2, Point = (-5, 8)

9. $m = \frac{1}{2}$, $(x_1, y_1) = (4, 5)$

10. $m = 1$, $(x_1, y_1) = (\frac{1}{4}, 2)$

11. $m = 5$, $(x_1, y_1) = (-10, 0)$

12. $m = 0$, $(x_1, y_1) = (8, -1)$

Write an equation in point-slope form for a line that passes through the given points. **Then, graph the line using graph paper.**

Hint: you will need to calculate the slope first.

13. (3, 4), (5, 1)

$m =$ _____

14. (3, 1), (-2, 4)

$m =$ _____

15. If your coach asks you to run 5 miles in 25 minutes, how many miles should you run every 5 minutes to maintain a steady pace?

Hint: this is the rate of change or the slope.

$m =$ _____ miles/minute

Assuming your speed remains constant, please complete the following table:

Miles (x_1 values)	Minutes (y_1 values)
	10
	15
	20
5	25

Using the data in the table, choose a point and write the equation in point-slope form for the line. **Then, graph the line using graph paper.**
