Algebra 1 Unit 4, Lesson 5 Point Slope Form

Name Key Block _____ Date _____

Review: Use slope-intercept form to find the equation of the line that satisfies the given information.

1) (3,2); m=4

$2 = 4(3) + b$
$2 = 12 + b$
$-10 = b$
$y = 4x - 10$

2) (0,3); m= 5

$y = 5x + 3$

3) (-1,2); m= 6

$2 = 6(-1) + b$
$2 = -6 + b$
$8 = b$
$y = 6x + 8$

Essential Question: How do I write & graph linear equations in point-slope form?

Point – Slope Form

I. Use Point-Slope to Write the Equation of a Line

$y - y_1 = m(x - x_1)$

* Don't Substitute #'s into x & y... just x_1, y_1, m.

What is y_1? ← (x, y) → **What is x_1?**

Any y-value on the line

The corresponding x-value on the line

What is m?

Slope

Watch your Signs!

$y - [y_1] = m(x - [x_1])$

Writing an Equation in Point-Slope Form:

Find an equation whose slope and one point is given:

1) $(\overset{x}{-3}, \overset{y}{5})$, $m = \overset{m}{-2}$

$y - 5 = -2(x + 3)$

2) (-2, -4), m = 3

$y + 4 = 3(x + 2)$

3) (1, -2), m = -1

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

Now re-write each answer in 1-3 in slope-intercept form (y = mx +b)

1)

$y - 5 = -2x - 6$
$y = -2x - 1$

2)

$y + 4 = 3x + 6$
$y = 3x + 2$

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

$y = -x - 1$

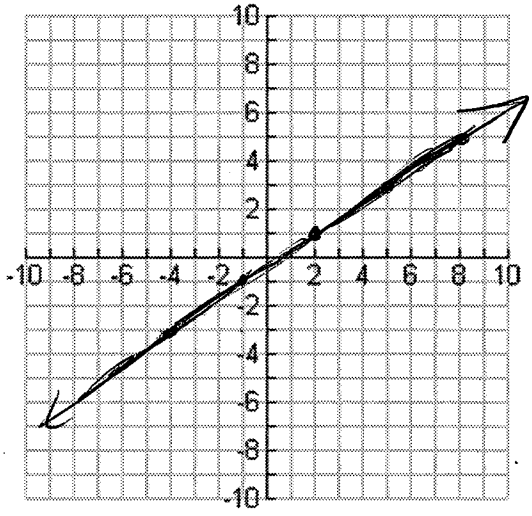
Graphing Using Point-Slope Form

1. What is the graph of: $y - 1 = \frac{2}{3}(x - 2)$?

$m = \frac{2}{3}$

Ordered pair = (2, 1)

* watch your signs!

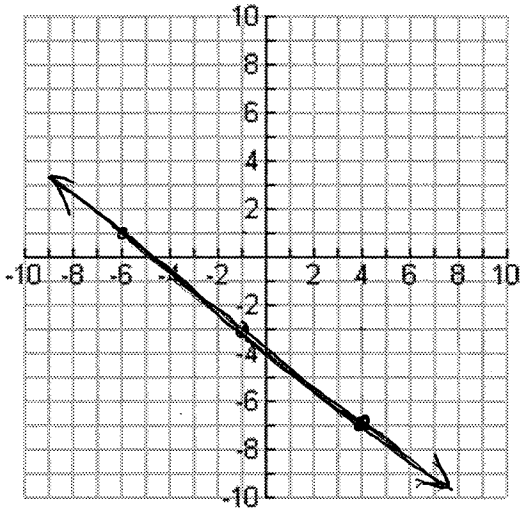


2. What is the graph of: $y + 7 = -\frac{4}{5}(x - 4)$?

$m = \frac{-4}{5}$

Ordered pair = (4, -7)

* watch your signs!



if you can't go ↓4, →5 then go ↑4, ←5 instead!

3. What is the graph of: $y + 3 = 2(x + 3)$?

$m = 2$

Ordered pair (-3, -3)

* watch your signs!