Algebra 1 ECA Remediation **Lesson 10**

Determining slope (positive, negative, zero, undefined) and finding x and y-intercepts.

Slope Intercept Form

$y = mx + b$; m = slope, b= y-intercept

Zero Slope $y = 2$ ***(Horizontal Lines)***

No x-intercept. All ordered pairs on this line have a y value of 2. For example (1,2), (-5,2).

Undefined Slope $x = -4$ ***(Vertical Lines)***

No y-intercept. All ordered pairs on this line have x value of -4. For example (-4, 1), (-4,-8).

x- and y-intercepts

The x-intercept is the ordered pair (x, 0). The y-intercept is the ordered pair (0, y).
Steps to finding intercepts . . .

1. Substitute a zero "0" in for the x – variable.
2. Solving the remaining equation will give you the y - intercept.
3. Substitute a zero "0" in for the y – variable.
4. Solving the remaining equation will give you the x - intercept.

For example, given the equation $2x + 5y = 10$, to find the x-intercept substitute a "0" in for the y and solve the remaining equation for x.

x – intercept $2x + 5(0) = 10$, $2x = 10$, $x = 5$ *y – intercept* $2(0) + 5y = 10$, $5y = 10$, $y = 2$

So, the x-intercept for this equation is (5,0) and the y-intercept is (0, 2).

Example #1

What is the slope, x-intercept, and y-intercept of the graph $4x + 3y = 9$?

Slope = $-4/3$ x-intercept = $\frac{9}{4}$ y-intercept = 3

$4x+3y=9$
$-4x \quad -4x$
$\frac{3y}{3} = \frac{-4x}{3} + \frac{9}{3}$
$y = \frac{-4}{3}x + 3$

$4x+3(0)=9$
$\frac{4x}{4} = \frac{9}{4}$
$x = \frac{9}{4}$

$4(0)+3y=9$
$\frac{3y}{3} = \frac{9}{3}$
$y = 3$

Example #2

What is the y-intercept of the graph of $4y = 2x - 8$?

$x=0 \quad 4y = 2(0) - 8$

$\frac{4y}{4} = \frac{-8}{4}$

$y = -2$