1. Find the slope and the y-intercept of this line: $12x - 15y = 75$

slope: m = 4/5

y-int: b = −5

$12x - 15y = 75$

-12x -12x

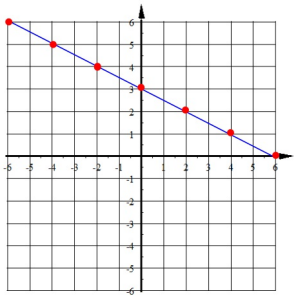
$\frac{-15y}{-15} = \frac{75 - 12x}{-15}$ $\quad y = -5 + \frac{4}{5}x$

2. Use this equation: $4x + 8y = 24$

a) Rewrite this equation into Slope-Intercept Form

$y = 3 - \frac{1}{2}x$

b) Use your answer to part a) to graph this line.



c) Use the graph to identify the two intercepts:

$x - int =$ 6 $\qquad y - int =$ 3

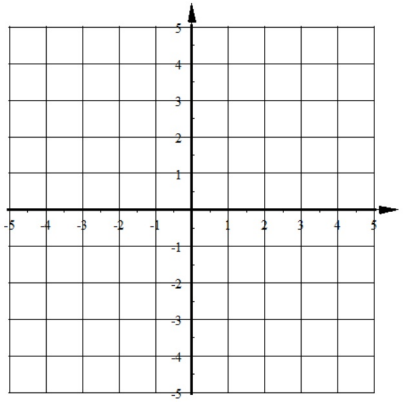
d) How could you find these intercepts from the original equation $4x + 8y = 24$ without changing the equation into Slope-Intercept Form or without graphing it?

x-int = 6 $\qquad$ y-int = 3

Section 6-3: Standard Form of a Linear Equation

$Ax + By = C$

A, B, and C are real numbers
and A and B are both not zero.



What is true about EVERY point on the y-axis?

the x-coordinate is zero

What is true about EVERY point on the x-axis?

the y-coordinate is zero

The y-intercept of a line is where the line intersects the y-axis.
It is the value of y when x = 0.

Given this equation: $4x + 6y = 24$

Find the y-intercept.

Replace x with zero and solve for y.

$4(0) + 6y = 24$

$\frac{6y}{6} = \frac{24}{6}$

$y = 4$

The x-intercept of a line is where the line intersects the x-axis.
It is the value of x when y = 0.

Given this equation: $4x + 6y = 24$

Find the x-intercept.

Replace y with zero and solve for x.

$4x + 6(0) = 24$

$\frac{4x}{4} = \frac{24}{4}$

$x = 6$

Find the x and y intercepts of each line.

1. $10x - 4y = 20$

x-int: $10x - 4(0) = 20$

$10x = 20$

$\frac{10x}{10} = \frac{20}{10}$

x-int = 2

(2, 0)

y-int: $10(0) - 4y = 20$

$-4y = 20$

$\frac{-4x}{-4} = \frac{20}{-4}$

y-int = -5

(0, -5)

2. $-12x + 8y = -28$

x - int = -28/-12 = 7/3

y - int = -28/8 = -7/2

3. $x + y = 9$

x - int = 9/1 = 9

y - int = 9/1 = 9

In general: Given the equation $Ax + By = C$

x-int = $\frac{C}{A}$ y - int = $\frac{C}{B}$

Write the equation of the line that passes through this pair of points. Give your answer in Slope-Intercept Form

(4, 1) and (-7, 1)

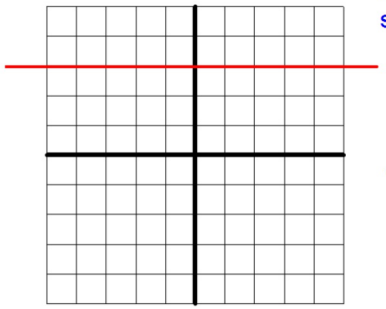
$m = \frac{1-1}{} = \frac{0}{} = 0$

HORIZONTAL LINE

EQ: $y = 1$ This is $Ax + By = C$ when $A = 0$

Whenever $A = 0$ the line is Horizontal

What is true about every point on this line?



They all have the same y-coordinate → 3

What is the slope? 0

What is the y-intercept? 3

$y = 0x + 3$

What is the equation?

y = 3

The equation of every horizontal line:

y = #

This number is the y-intercept or the y-coordinate of any point on the line.

Write the equation of the line that passes through this pair of points.

(3, 5) and (3, -2)

$m = \frac{}{3-3} = \frac{}{0}$ undefined

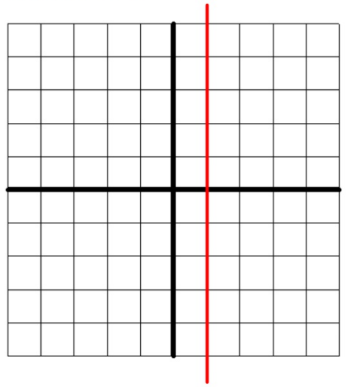
Vertical line

EQ: x = 3 This is Ax + By = C when B = 0

Whenever B = 0 the line is Vertical

A vertical line is the only line that can't be written in Slope-Intercept Form

What is true about every point on this line?



They all have the same x-coordinate → 1

What is the slope? undefined

What is the y-intercept? NONE

What is the equation?

x = 1

The equation of every vertical line:

x = #

This number is the x-intercept or the x-coordinate of any point on the line.

What is the equation of each line?

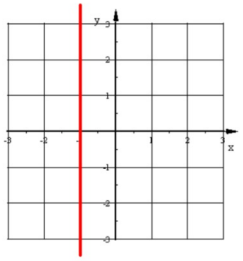
Take a small white board, a dry-erase marker, and a rag

1. Passes through (-8, -4) and (11, -4)

y = -4

2. Slope is zero and the line passes through the point (-4, 1) y = 1

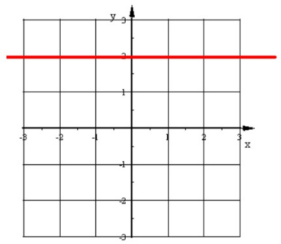
3.



x = -1

4. Slope is undefined and the line passes through the point (-9, 0)

x = -9

5. 

y = 2

6. Passes through (32, -9) and (32, 47)

x = 32