Equations for a Line

- Slope-Intercept Form $y = mx + b$
- Standard Form $Ax + By = C$
- Point-Slope Form $y - y_1 = m(x - x_1)$
- Horizontal Lines $y = \#$
- Vertical Lines $x = \#$

1. Change each equation into Slope-Intercept Form.

a) $y - 9 = -\frac{5}{6}(x - 24)$

$y - 9 = -\frac{5}{6}x + 20$

$y = -\frac{5}{6}x + 29$

b) $24x - 18y = 90$

$-24x \quad -24x$

$-18y = -24x + 90$

$y = \frac{4}{3}x - 5$

2. Miguel bought some basketballs and soccer balls for the gym class. Basketballs cost $24 each and soccer balls cost $30 each. He spent a total of $360.

a) Model this situation with an equation. Define your variables.

EQ: $24B + 30S = 360$

Variables: B = basket

S = soccer

b) If he bought zero soccer balls find the number of basketballs purchased.

$24B = 360$

$B = 15$ basketballs

3. Write the equation of the line that passes through the points $(1,-2)\&(4,-2)$. Give your answer in any form you wish.

$m = 0$

$y + 2 = 0(x - 1)$

$y + 2 = 0$

$y = -2$

4. A line passes through the points $(5,9)\&(5,-1)$. Why can't you write the equation of this line in Slope-Intercept Form?

NO

$x = 5$

Graphing in Standard Form

The three forms of representing linear equations are:

(1) Standard

(2) point slope

(3) slope int

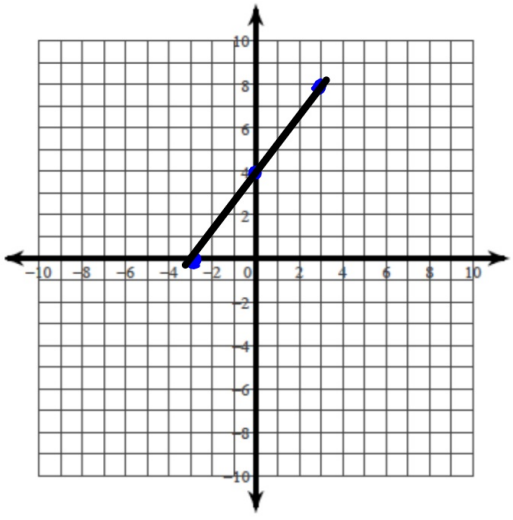
We've learned that, no matter the original form, that we can rewrite the equation in slope-intercept form with a bit of work. Standard form is quicker, but can sometimes just be an estimate. If numbers don't come out "nicely", just use decimals to estimate.

Intercept: x & y int.

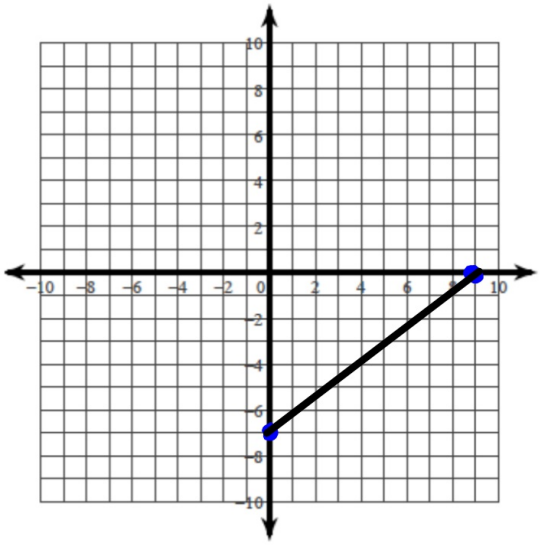
Examples

Graph use the intercepts.

1. *x*-intercept= (-3, 0)
   y-intercept= (0, 4)



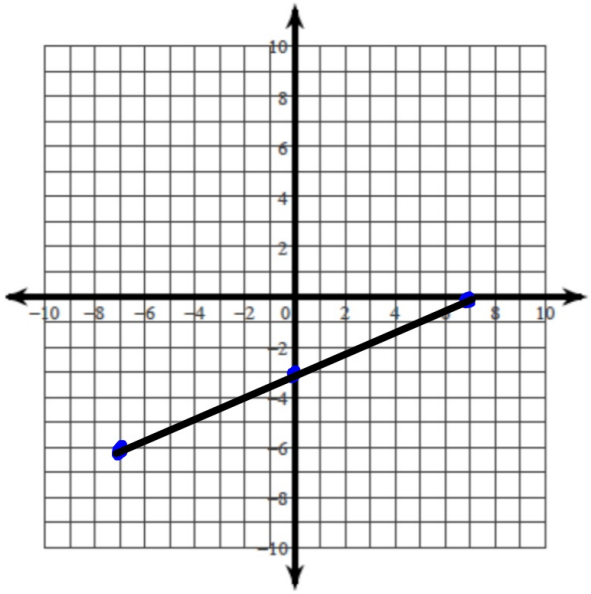
2. *x*-intercept= (9, 0)
   y-intercept= (0, -7)



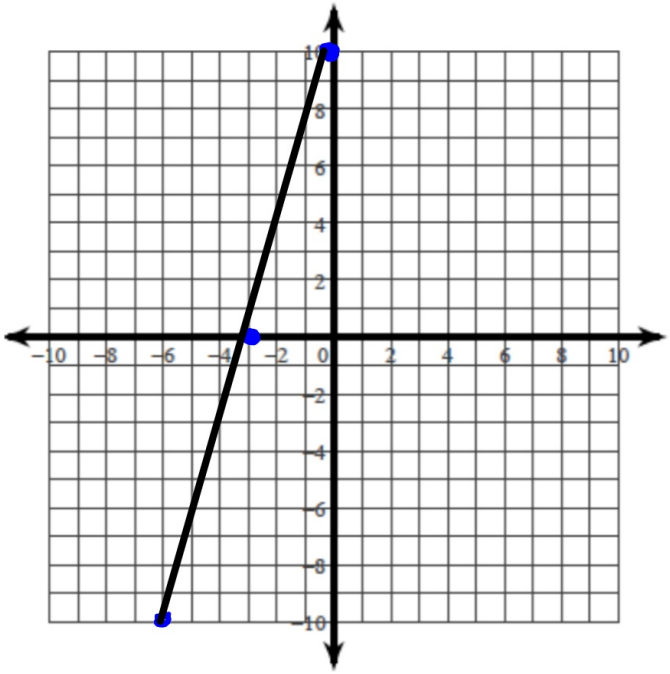
You try!

Graph using the intercepts.

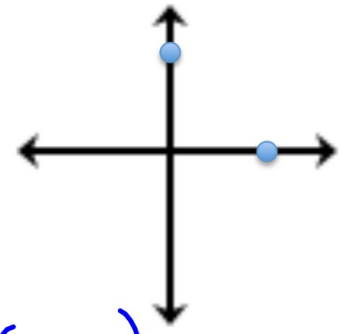
1. *x*-intercept= (7, 0)
   y-intercept= (0, -3)



2. x-intercept= (-3, 0)
   y-intercept= (0, 10)



Find the Intercepts



The format of an x-intercept is: (x, 0) To solve, plug in 0 for → y

The format of an y-intercept is: (0, y) To solve, plug in 0 for → x

Example

Find the x and y intercept. Write each as a coordinate.

1. $x - 3y = 15$

x int: $x = 15$ $(15, 0)$

y int: $-3y = 15$ $(0, -5)$

$y = -5$

2. $7x + 3y = -21$ $(-3, 0)$

x int: $7x = -21$

$x = -3$

y int:

$3y = -21$

$(0, -7)$

$y = -7$

You Try!

Find the x and y intercept. Write it as a coordinate.

1. $4x - y = 4$

x int: $4x = 4$ $x = 1$ $(1, 0)$

y int: $-y = 4$ $(0, -4)$

$y = -4$

2. $-x + y = 8$ $(-8, 0)$

x int: $-x = 8$

$x = -8$

y int:

$y = 8$

$(0, 8)$

Classwork:

Sect. 6-3

Pages: 301-302

Problems: 1-4, 27-35, 57

IXL #17 - S.11 & S.15 due Friday at 4pm!

(LAST PAIR OF IXLs FOR THE SEMESTER!)