

3.4 NOTES - Graphing Lines in Standard Form

LESSON 3.4 **LEARNING GOALS:**

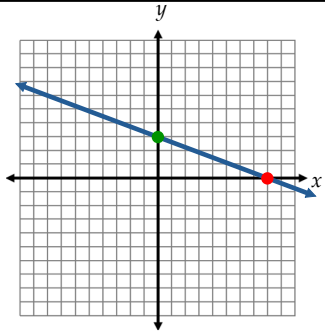
Graphing in Standard Form

1) Graph linear functions by finding the intercepts.

Common Core State Standards
HSF-IF.C.7a, HSA-CED.A.2

LESSON 3.4 - Graphing Lines in Standard Form

- An **x-INTERCEPT** is the point where a graph crosses the x-axis.
- A **y-INTERCEPT** is the point where a graph crosses the y-axis.



STANDARD FORM

When given a linear function in Standard Form:

$$Ax + By = C$$

STEP 1: Find the x-intercept by plugging in 0 for y, then solve.

STEP 2: Find the y-intercept by plugging in 0 for x, then solve.

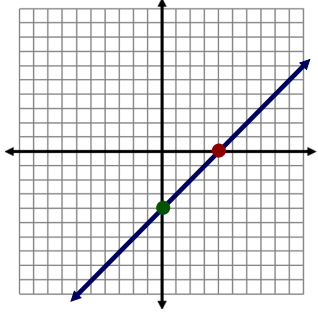
STEP 3: Plot the intercepts on a coordinate plane, and connect the points with a line.

Find the intercepts and graph the line.

$$x - y = 4$$

x-intercept:
 $x - 0 = 4$
 $x = 4$ (4, 0)

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

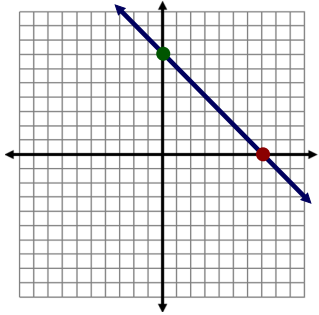


Find the intercepts and graph the line.

$$-x + y = -7$$

x-intercept:
 $-x + 0 = -7$
 $x = 7$ (7, 0)

y-intercept:
 $0 + y = -7$
 $y = -7$ (0, -7)

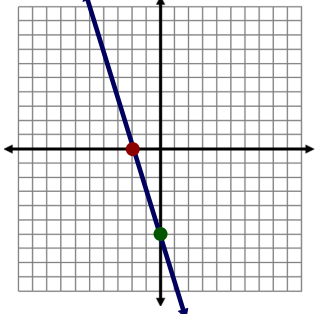


Find the intercepts and graph the line.

$$3x + y = -6$$

x-intercept:
 $3x + 0 = -6$
 $3x = -6$
 $x = -2$ (-2, 0)

y-intercept:
 $3(0) + y = -6$
 $y = -6$ (0, -6)



3.4 NOTES - Graphing Lines in Standard Form

Find the intercepts and graph the line.

$$x - 4y = 8$$

x-intercept:

$$x - 4(0) = 8$$

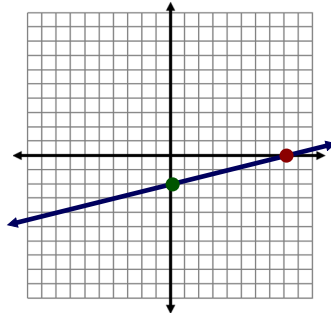
$$x = 8 \quad (8, 0)$$

y-intercept:

$$0 - 4y = 8$$

$$-4y = 8$$

$$y = -2 \quad (0, -2)$$



Find the intercepts and graph the line.

$$2x - 6y = -18$$

x-intercept:

$$2x - 6(0) = -18$$

$$2x = -18$$

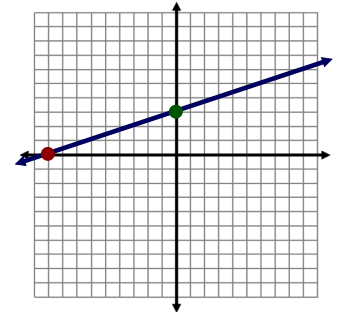
$$x = -9 \quad (-9, 0)$$

y-intercept:

$$2(0) - 6y = -18$$

$$-6y = -18$$

$$y = 3 \quad (0, 3)$$



Find the intercepts and graph the line.

$$-3x + 5y = 30$$

x-intercept:

$$-3x + 5(0) = 30$$

$$-3x = 30$$

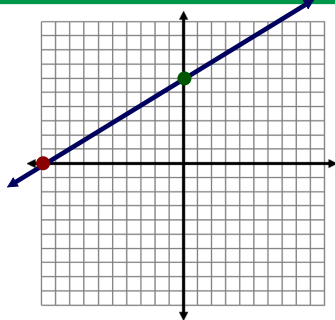
$$x = -10 \quad (-10, 0)$$

y-intercept:

$$-3(0) + 5y = 30$$

$$5y = 30$$

$$y = 6 \quad (0, 6)$$



Find the intercepts and graph the line.

$$9x + 6y = -36$$

x-intercept:

$$9x + 6(0) = -36$$

$$9x = -36$$

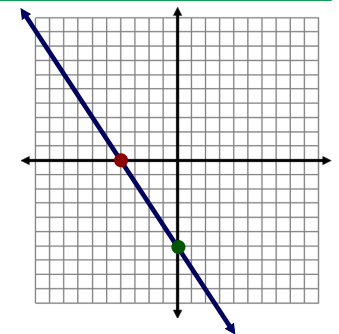
$$x = -4 \quad (-4, 0)$$

y-intercept:

$$9(0) + 6y = -36$$

$$6y = -36$$

$$y = -6 \quad (0, -6)$$



Find the intercepts and graph the line.

$$-7x + 4y = -10$$

x-intercept:

$$-7x + 4(0) = -10$$

$$-7x = -10$$

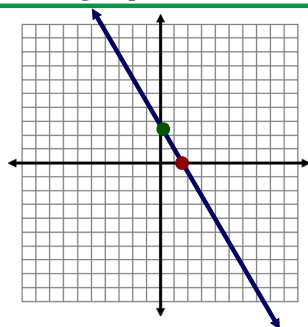
$$x \approx 1.4 \quad (1.4, 0)$$

y-intercept:

$$-7(0) + 4y = -10$$

$$4y = -10$$

$$y = 2.5 \quad (0, 2.5)$$



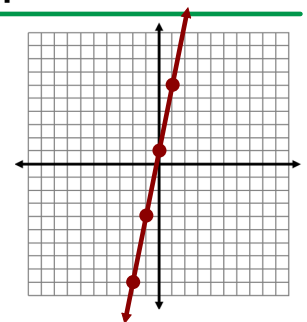
Sometimes dealing with equations that are in Standard Form isn't the best way to graph. It may be helpful to convert to Slope-Intercept Form instead.

Convert the Standard Form equation to Slope-Intercept Form, then graph the line.

$$-5x + y = 1$$

$$+5x \quad +5x$$

$$y = 5x + 1$$



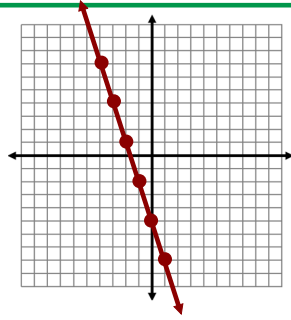
3.4 NOTES - Graphing Lines in Standard Form

Convert the Standard Form equation to Slope-Intercept Form, then graph the line.

$$3x + y = -5$$

-3x -3x

$$y = -3x - 5$$



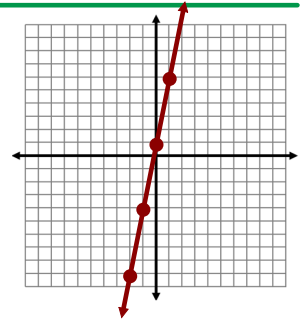
Convert the Standard Form equation to Slope-Intercept Form, then graph the line.

$$2x - 4y = -24$$

-2x -2x

$$\frac{-4y}{-4} = \frac{-2x}{-4} - \frac{24}{-4}$$

$$y = \frac{1}{2}x + 6$$



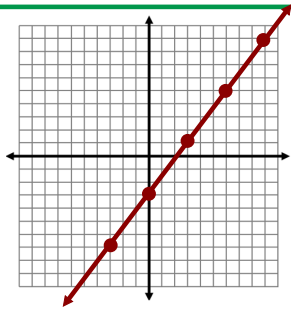
Convert the Standard Form equation to Slope-Intercept Form, then graph the line.

$$12x - 9y = 27$$

-12x -12x

$$\frac{-9y}{-9} = \frac{-12x}{-9} + \frac{27}{-9}$$

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



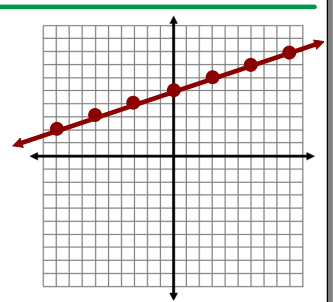
Convert the Standard Form equation to Slope-Intercept Form, then graph the line.

$$x + 3y = 15$$

-x -x

$$\frac{3y}{3} = \frac{-x}{3} + \frac{15}{3}$$

$$y = -\frac{1}{3}x + 5$$



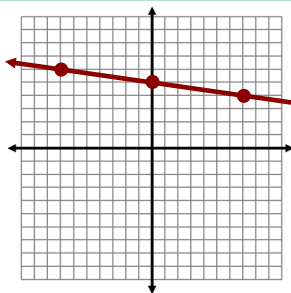
Convert the Standard Form equation to Slope-Intercept Form, then graph the line.

$$-x - 7y = -35$$

+x +x

$$\frac{-7y}{-7} = \frac{x}{-7} - \frac{35}{-7}$$

$$y = -\frac{1}{7}x + 5$$



HOMWORK:

3.4 Worksheet - Graphing Lines in Standard Form

3.4 NOTES - Graphing Lines in Standard Form

