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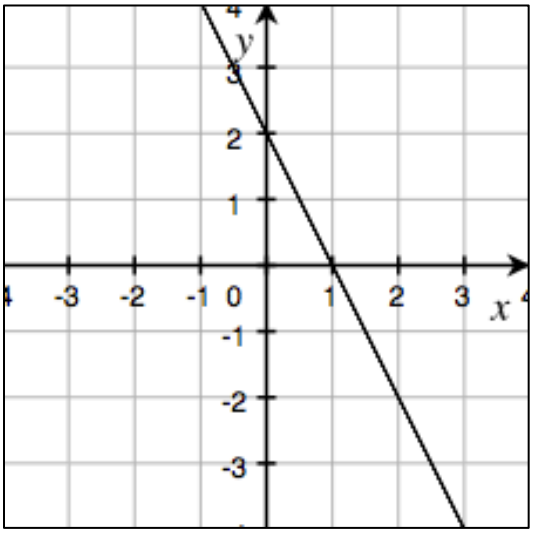
LEARNING OBJECTIVE: We will graph lines by determining intercepts. (G8M4L17)

CONCEPT DEVELOPMENT:

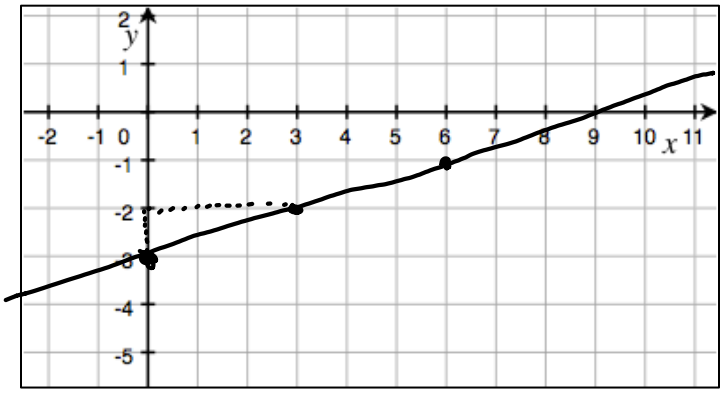
***y*-intercept:** The point where a line crosses the y-axis. The coordinate point will be $(0, y)$

***x*-intercept**: the point where a line crosses the x-axis. The coordinate point will be $(x, 0)$

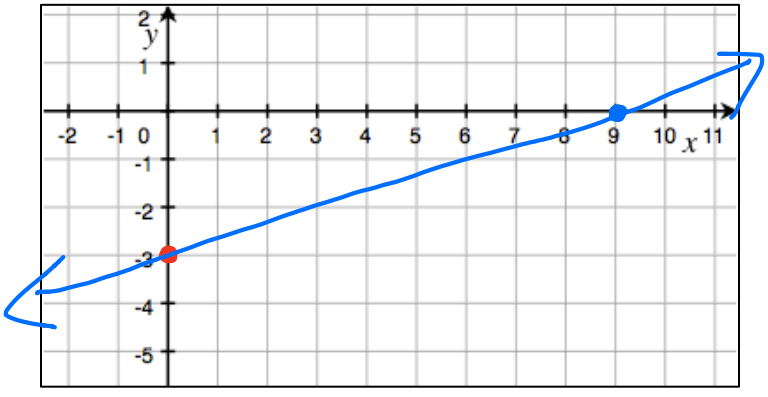


Using slope intercept form to graph a line: graph $y = \frac{1}{3}x - 3$

SLOPE → $\frac{1}{3}$ Y-INT. → -3



Using the standard form to graph a line: graph $x - 3y = 9$



Y-int. → X=0

$x - 3y = 9$

$0 - 3y = 9$

$\frac{-3y}{-3} = \frac{9}{-3}$

$y = -3$

X-int. → Y=0

$x - 3y = 9$

$x - 3(0) = 9$

$x = 9$

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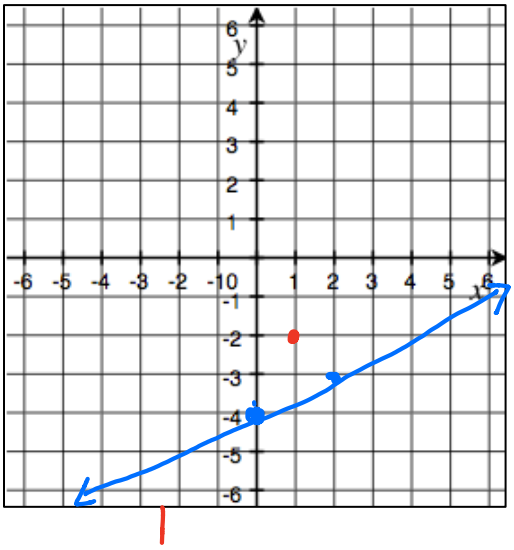
Guided Practice:

Steps for Graphing Lines Based on Slope Intercept Form ($y = mx + b$)

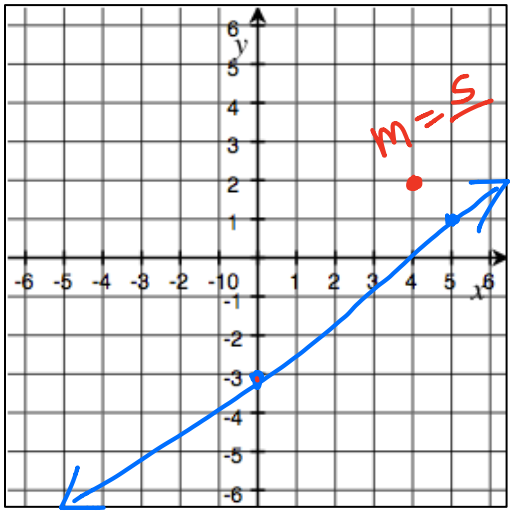
1. Study the equation, and identify the slope and y-intercept.
2. Graph the y-intercept point on the coordinate plane.
3. Use your knowledge of the slope to graph another point on the plane and connect the dots.

slope

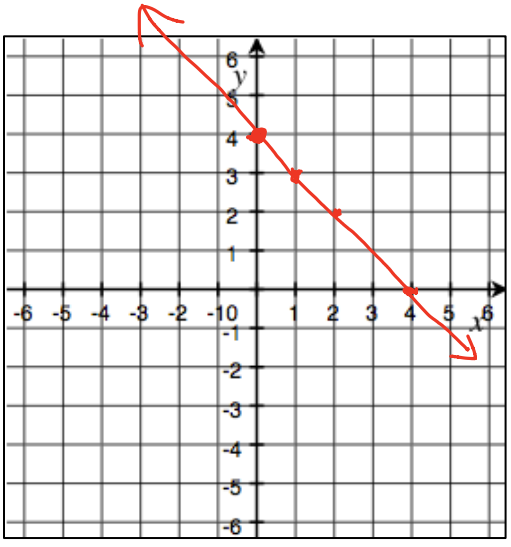
$y = \frac{1}{2}x - 4$ y-int.



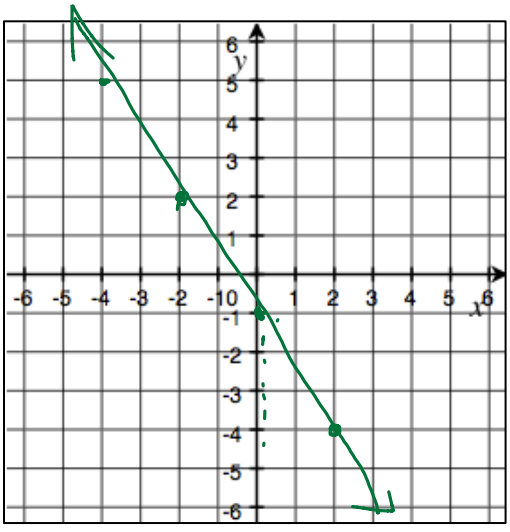
$y = \frac{4}{5}x - 3$



$y = -x + 4$ y-int.



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



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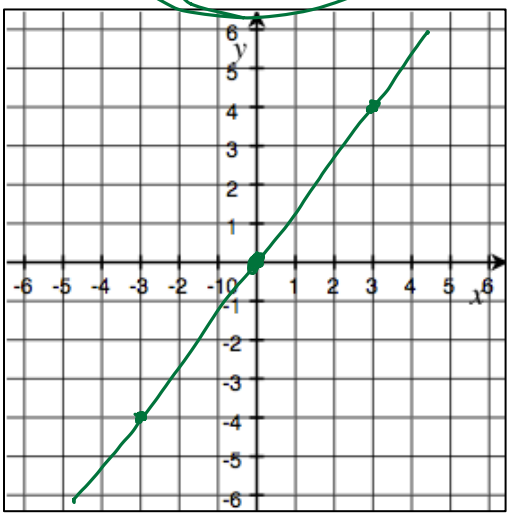
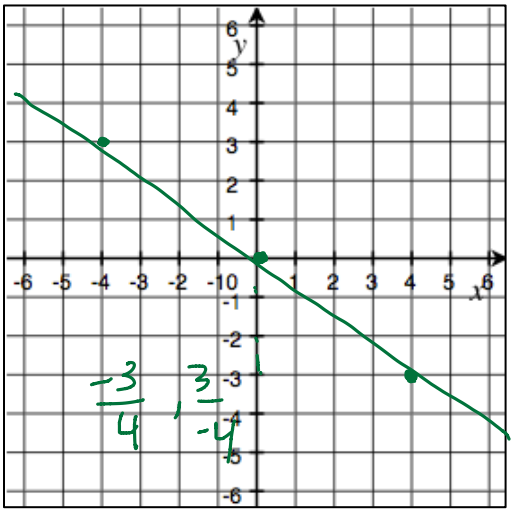
$y = \frac{4}{3}x$



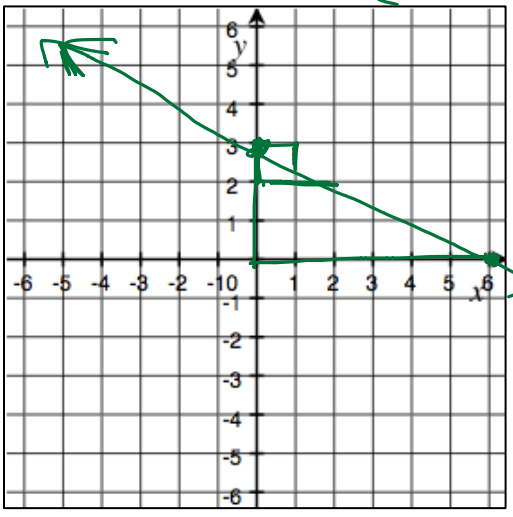
$y = -\frac{3}{4}x$



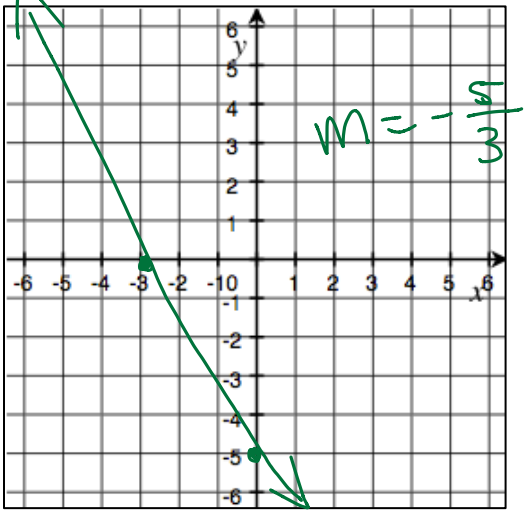
Steps for Graphing Lines Based on Standard Form ($ax + by = c$)

1. Find the *y*-intercept by substituting 0 for *x* and solving for *y*. Plot the point.
2. Find the x-intercept by substituting 0 for *y* and solving for *x*. Plot the point.
3. Connect the dots on the coordinate plane to form your line.

$x + 2y = 6$



$5x + 3y = -15$



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$ax+by=c$ $a>0$

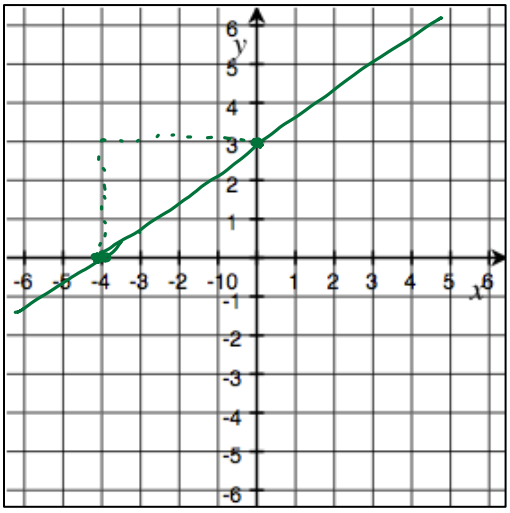
$3x-4y=-12$

$3(0)-4y=-12$

$-4y=-12$

$3x-4(0)=-12$

$\frac{3x}{3}=\frac{-12}{3}$



$4x-2y=8$

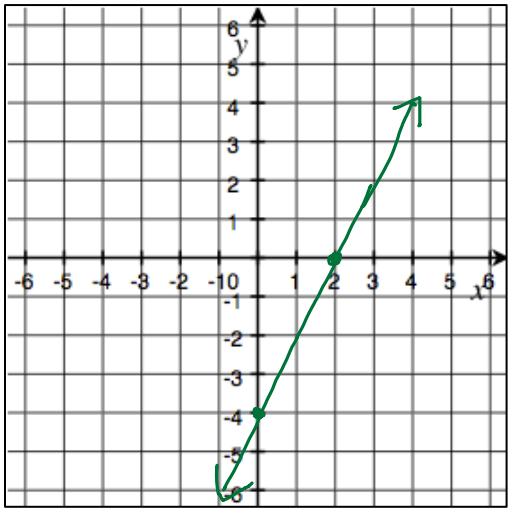
$4(0)-2y=8$

$\frac{-2y}{-2}=\frac{8}{-2}$

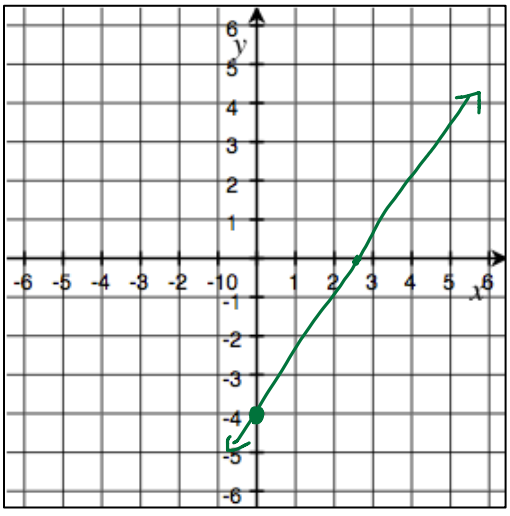
$y=-4$

$\frac{4x}{4}=\frac{8}{4}$

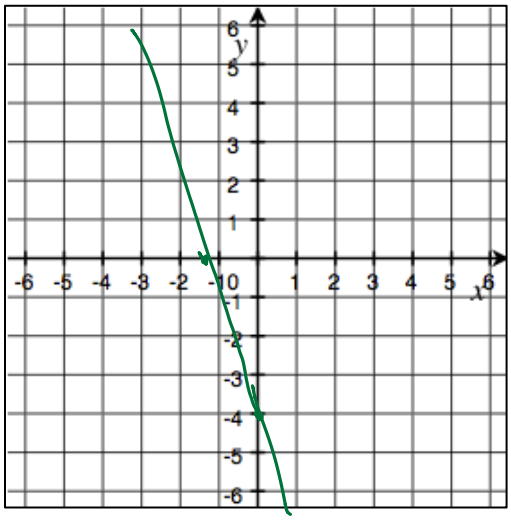
$x=2$



$3x-2y=8$



$3x+y=-4$



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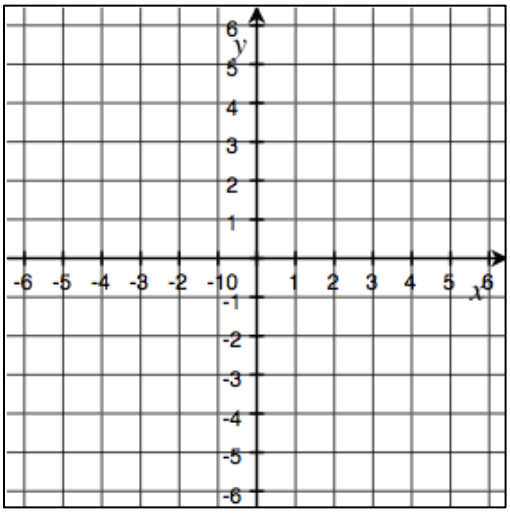
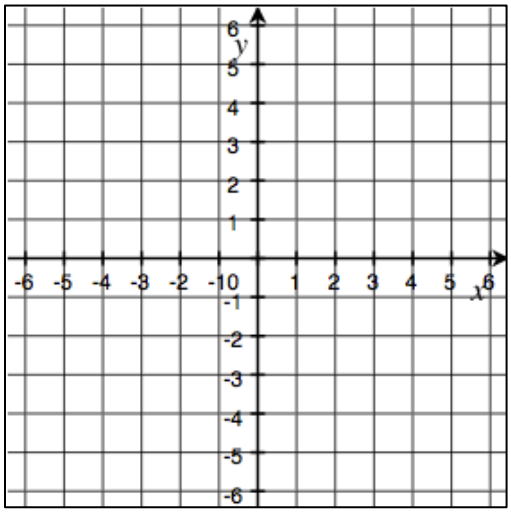
Independent Practice:

Graph the lines for each of the following equations

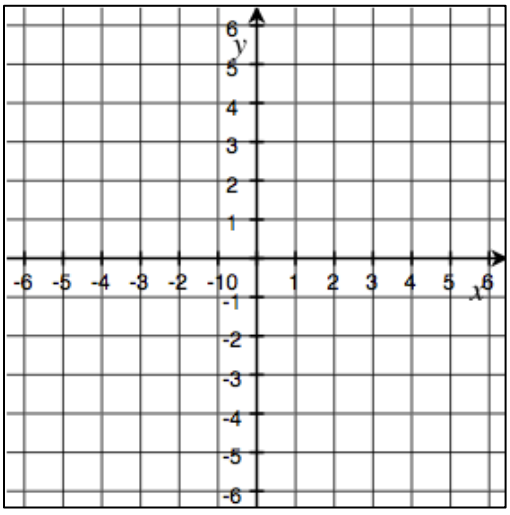
$y = \frac{2}{3}x - 5$



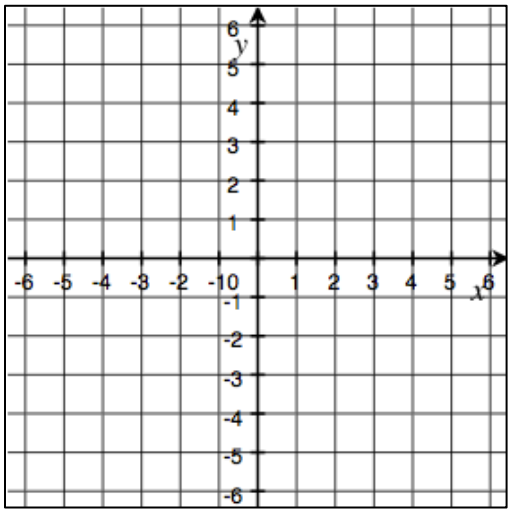
$5x + 6y = -30$



$3x - 4y = -9$



$2x - 4y = 10$



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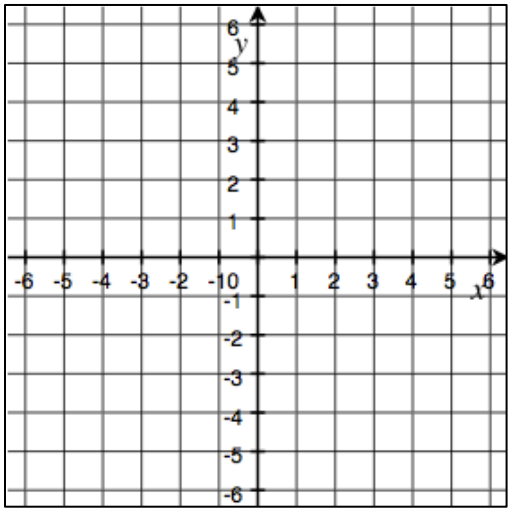
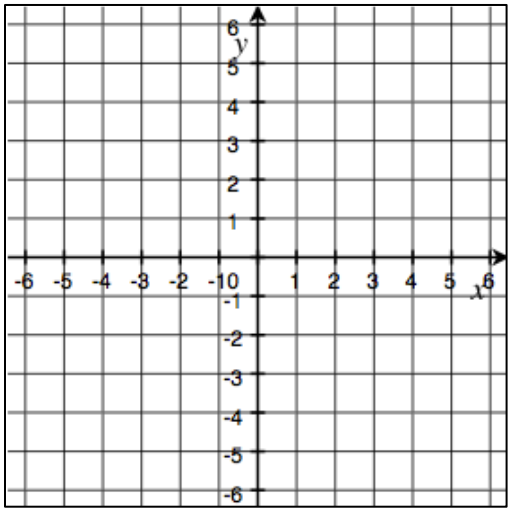
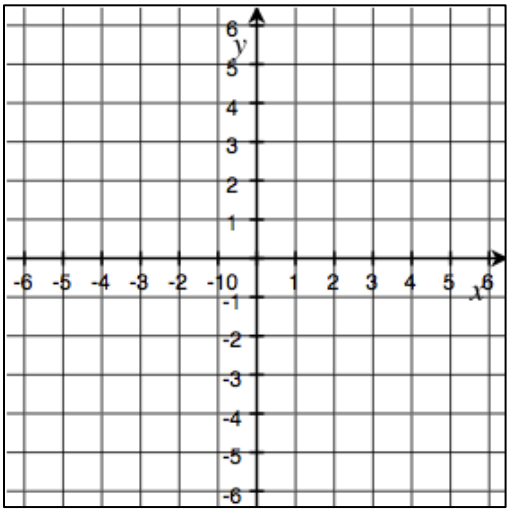
$y = -x + 2$



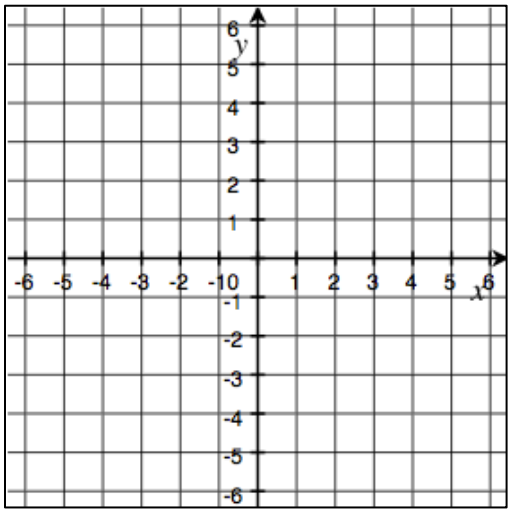
$y = -\frac{3}{5}x + 3$



$y = 5x - 4$



$2x - 2y = -7$



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Activating Prior Knowledge:

We can rewrite from standard form to slope intercept form

$3x - 4y = 8$	$5x + 2y = -3$
$-3x \quad -3x$ $\frac{-4y}{-4} = \frac{-3x}{-4} + \frac{8}{-4}$ $y = \frac{3}{4}x - 2$	$-5x \quad -5x$ $\frac{2y}{2} = \frac{-5x-3}{2}$ $y = -\frac{5}{2}x - \frac{3}{2}$

Closure:

A bank put $10 into your savings account when you opened the account. Eight weeks later, you have a total of $24. Assume you saved the same amount every week. Write a linear equation in slope intercept form that shows the total amount of money *(y)* saved in *x* weeks.

Or give exit ticket from lesson 19 ENY Grade 8 Module 4.

Teacher Notes:

Lesson 18 (graphing with b as intercept) Lesson 19 (graphing with x and y intercept) Look at add'l questions for exercises for lesson 19.