

Algebra 1

Chapter 5

Section 5-3

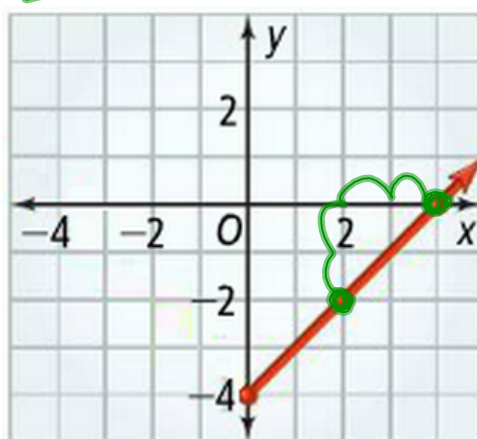
May 13-10:02 PM

Slope Review

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

(x_1, y_1)
 (x_2, y_2)

Find the slope:



$$\frac{2}{2} = 1$$

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Slope Review

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope of the line that contains points:

(7, -4) and (11, -2)

$$\frac{-4 - (-2)}{7 - 11} = \frac{-2}{-4} = \frac{1}{2}$$

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Slope Review

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope from the table three ways:

x	-1	0	2
y	10	12	16

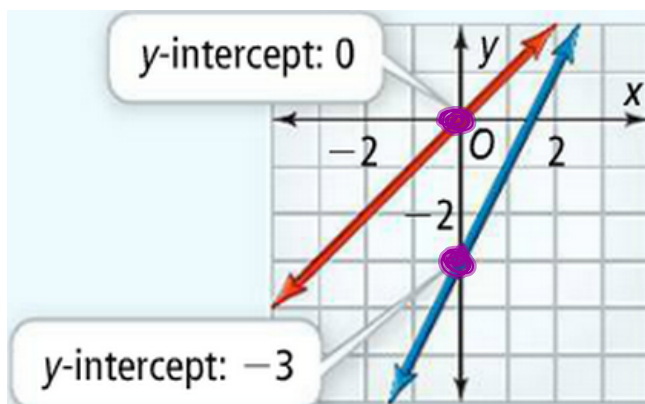
$$\frac{2}{1} \text{ or } \frac{4}{2} \text{ or } \frac{6}{3}$$

2 2 2

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Y-intercept

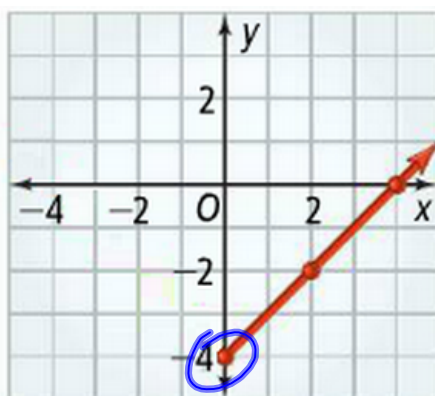
The y-intercept is the value at which a line crosses the y-axis.



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Y-intercept

What is the y-intercept of the line below?



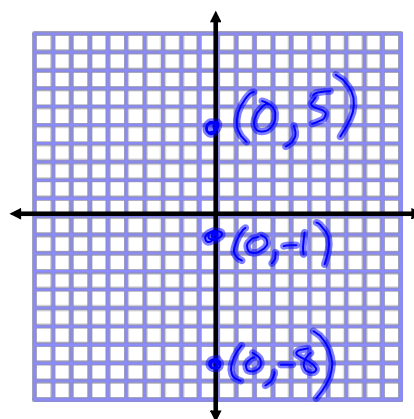
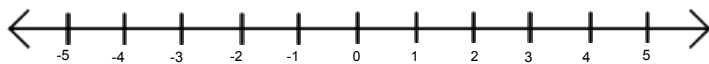
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Reasoning

- What is the value of x at the y-axis?

$x=0$ @ y-axis



- How can you find the y-intercept from an equation?

$y = f(0)$ gives y-intercept
plug in $x=0$

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Find the y-intercept of each equation:

$$y = 5x + 4$$

$$y = 5 \cdot 0 + 4$$

$$y = 4$$

$$y = 8x - 2$$

$$y = 8 \cdot 0 - 2$$

$$y = -2$$

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Equations in slope-intercept form

$$y = mx + b$$

x and y are the independent and dependent variables. (They can change). Each x goes with a certain y in an ordered pair: (x,y)

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Identify the slope and y-intercept of each equation:

$$y = -9x + 3$$

slope -9
y-intercept 3

$$y = \frac{10}{3}x - \frac{9}{19}$$

$\frac{10}{3} \rightarrow$ slope
 $-\frac{9}{19} \rightarrow$ y-intercept

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Write an equation for the line with the given slope and y-intercept: $y = mx + b$

Slope: 11 , y-intercept: 19

$$y = 11x + 19$$

Slope: -1 , y-intercept: 0

$$y = -1x + 0 \rightarrow y = -x$$

b = 10 , m = 4

$$y = 4x + 10$$

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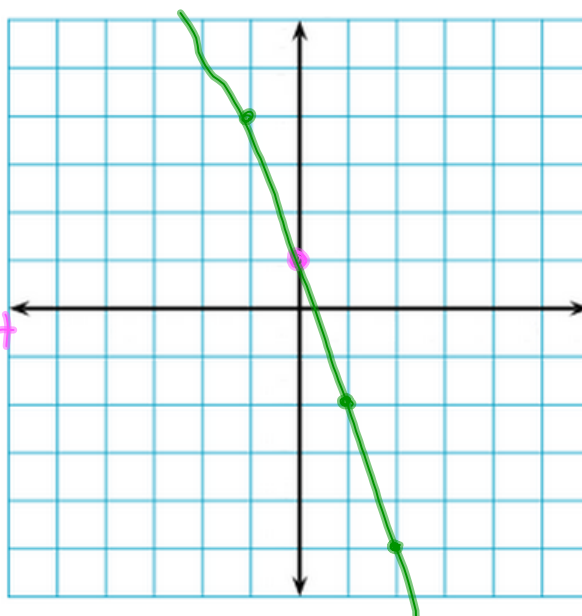
Graph the equation:

$$y = \underline{-3x} + \underline{1}$$

$$y = mx + b$$

y-intercept

$$\text{slope: } \underline{-\frac{3}{1}} \rightarrow \underline{\frac{3}{-1}}$$



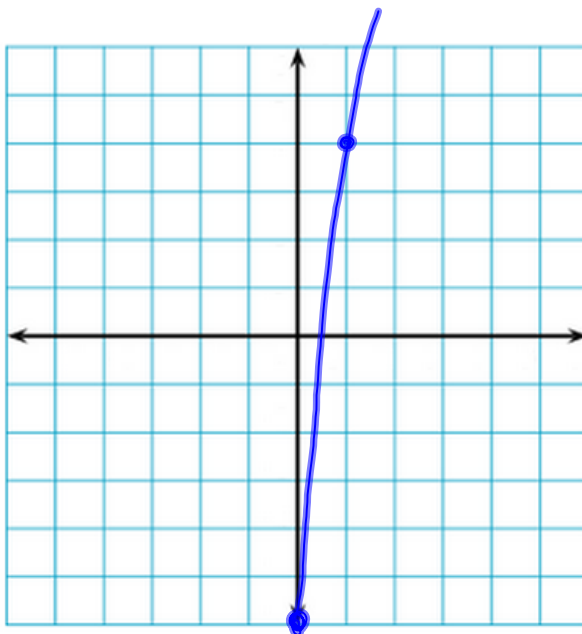
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Graph the equation:

$$y = 10x - 6$$

$$\text{slope: } \frac{10}{1}$$

$$\text{y-int: } -6$$



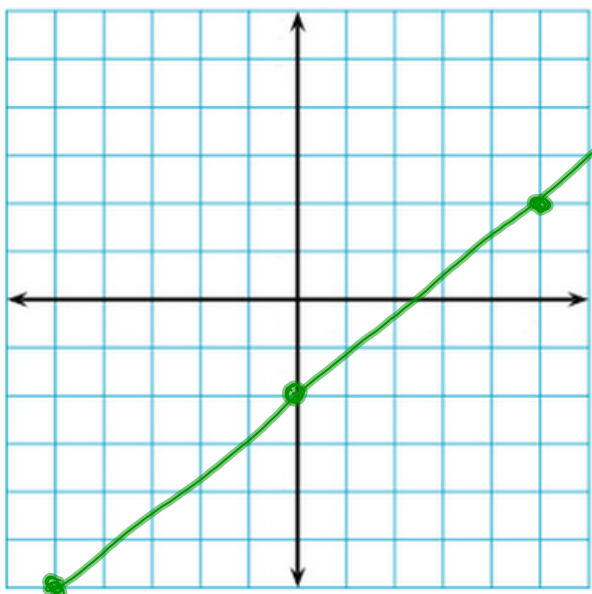
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Graph the equation:

$$y = \frac{4}{5}x - 2$$

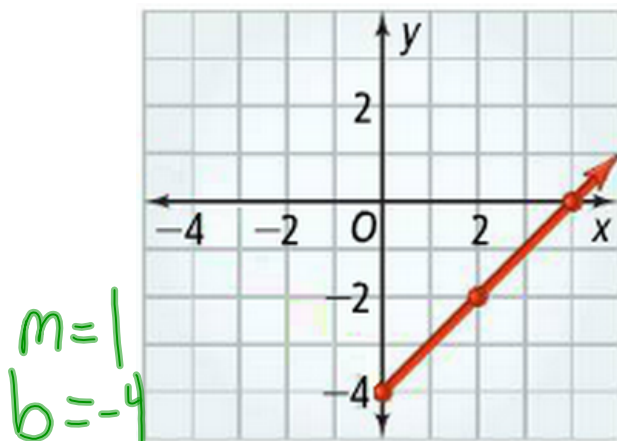
$$\text{y-int: } -2$$

$$\text{Slope: } \frac{4}{5} \rightarrow \frac{-4}{-5}$$



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Determine the equation of the line below:



$$y = mx + b$$

$$y = x - 4$$

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Write an equation for the line with the given points:

(10, -1) and (5, 4)

$m = ? - 1$
 $b = ?$

$$m = \frac{4 - (-1)}{5 - 10} = \frac{5}{-5} = -1$$

$m = -1$
 $(x, y) \rightarrow (5, 4)$

$$y = mx + b$$

$$4 = -1(5) + b$$

$$4 = -5 + b$$

$$+5 \quad +5$$

$$9 = b$$

$$y = -1x + 9$$

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Steps to write an equation for the line with given points:

****Find the slope**

****Plug in the slope to "y = mx + b"**

****Plug in one ordered pair for "x" and "y"**

****Solve for b**

****Plug in m and b (leave x and y as variables)**

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Write an equation for the line with the given points:

(3, -3) and (4, 7)

$$\frac{-3-7}{3-4} = \frac{-10}{-1} = 10$$

$$y = mx + b$$

$$7 = 10(4) + b$$

$$7 = 40 + b$$

$$-33 = b$$

$$y = 10x + (-33) \text{ or } y = 10x - 33$$

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Write an equation for the line with the given points:

$$(2, 7) \text{ and } (11, 7)$$

$$\frac{7-7}{2-11} = \frac{0}{-9} = 0$$

$$y = 0x + b$$

$$7 = 0 \cdot 2 + b$$

$$7 = b$$

$$y = 0x + 7$$

$$y = 7$$

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