

A linear relationship can be written in the standard form $Ax + By + C = 0$ and slope y-intercept form $y = mx + b$

$$\text{Graph: } 8x - 4y - 4 = 0$$

use when $Ax + By + C = 0$

METHOD 1: SLOPE and Y-INTERCEPT

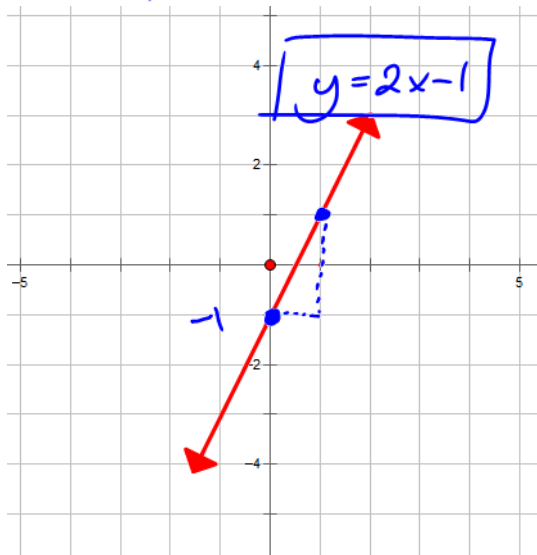
Step1: Rearrange the equation in slope y-intercept form as $y = mx + b$

$$\begin{aligned} 8x - 4y - 4 &= 0 - 8x + 4 \\ -4y &= -8x + 4 \\ \frac{-4y}{-4} &= \frac{-8x + 4}{-4} \end{aligned} \rightarrow \boxed{y = 2x - 1}$$

Step2: Determine the slope (m) and y-intercept (b)

$$\text{Slope (m)} = 2 \text{ and y-intercept (b)} = -1$$

Step3: plot y-int, move right (always) as much as run, then up (if +) / down (if -) as much as rise. Connect the points with an extended line.



$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{2}{1}$$

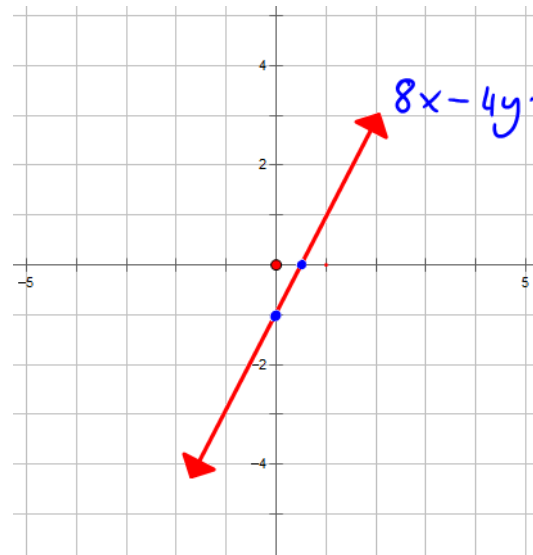
METHOD 2: USING X AND Y - INTERCEPTS

Step1: To find the x-intercept, let $y = 0$ and solve for x .

$$\begin{aligned} 8x - 4(0) - 4 &= 0 \\ 8x - 4 &= 0 + 4 \\ 8x &= 4 \\ \frac{8x}{8} &= \frac{4}{8} \end{aligned} \rightarrow \boxed{x = 0.5}$$

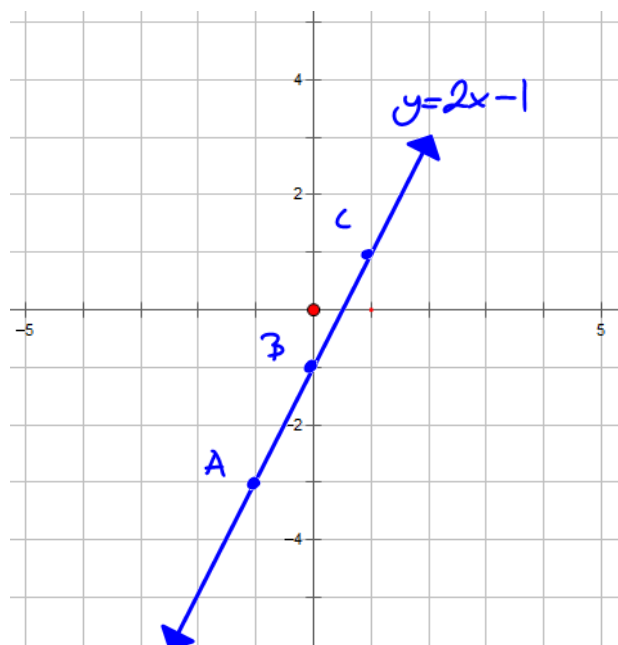
Step2: To find the y-intercept, let $x = 0$ and solve for y .

$$\begin{aligned} 8(0) - 4y - 4 &= 0 \\ -4y - 4 &= 0 + 4 \\ -4y &= 4 \\ \frac{-4y}{-4} &= \frac{4}{-4} \end{aligned} \rightarrow \boxed{y = -1}$$



METHOD 3: TABLE OF VALUES ($y=mx+b$)

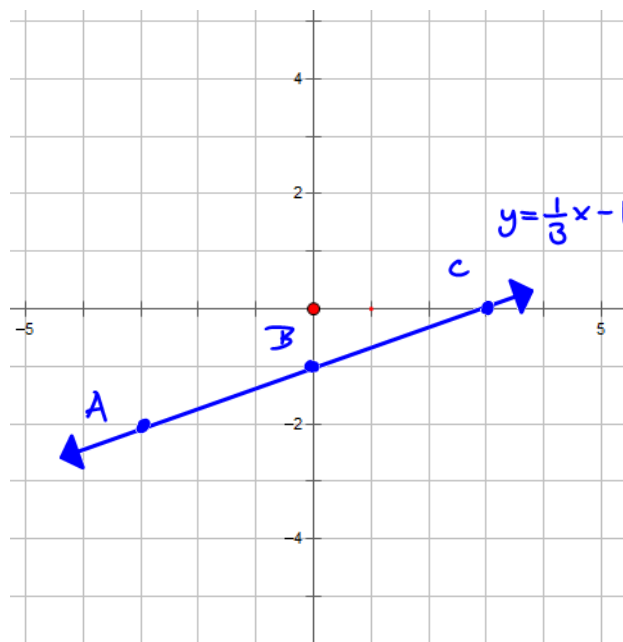
X	Y = $2x-1$	POINTS
-1	$= 2(-1) - 1$ $= -2 - 1$ $= -3$	A(-1,-3)
0	$= 2(0) - 1$ $= 0 - 1$ $= -1$	B(0,-1)
1	$= 2(1) - 1$ $= 2 - 1$ $= 1$	C(1,1)



Ex2. Graph $y = \frac{1}{3}x - 1$ using a table of values.

use multiples of 3 to avoid decimals

x	$y = \frac{1}{3}x - 1$	POINTS
-3	$= \frac{1}{3}(-3) - 1$ $= -1 - 1$ $= -2$	A(-3,-2)
0	$= \frac{1}{3}(0) - 1$ $= 0 - 1$ $= -1$	B(0,-1)
3	$= \frac{1}{3}(3) - 1$ $= 1 - 1$ $= 0$	C(3,0)



PRACTICE

Graphing

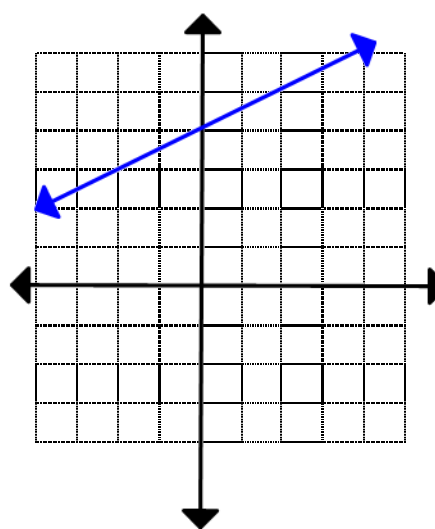
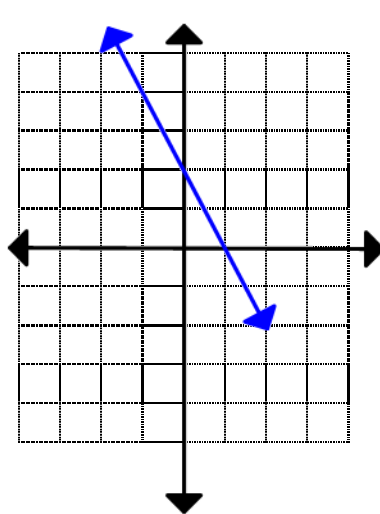
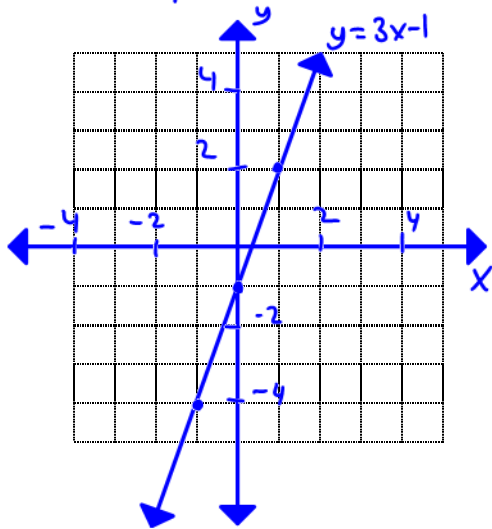
1. Graph each equation using a table of values

a) $y = 3x - 1$

b) $y = -2x + 2$

c) $y = \frac{1}{2}x + 4$

x	y = 3x - 1
-1	3(-1) - 1 = -4 (-1, -4)
0	3(0) - 1 = -1 (0, -1)
1	3(1) - 1 = 2 (1, 2)

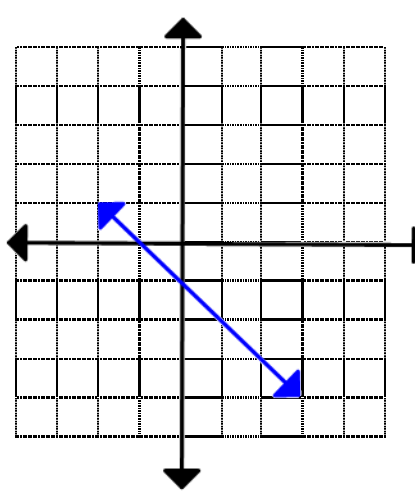
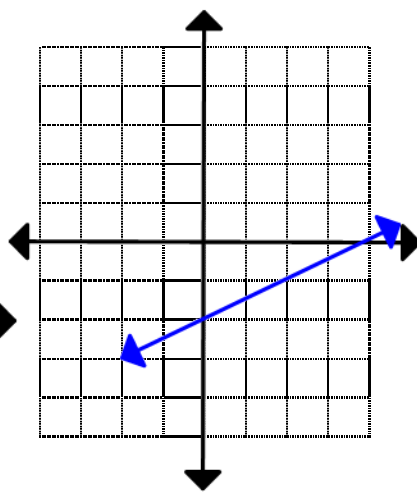
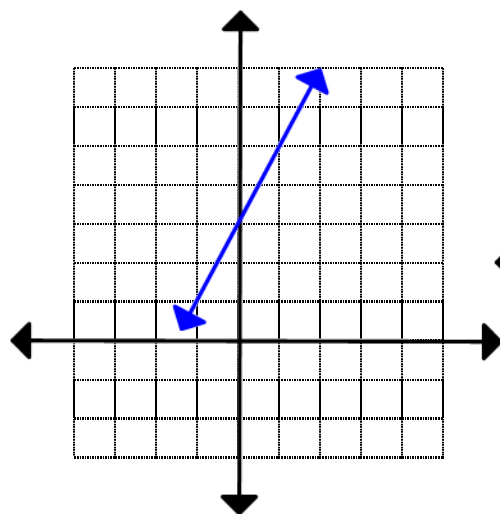


2. Graph each equation using the slope and y-intercept.

a) $y = 2x + 3$

b) $y = \frac{1}{2}x - 2$

c) $x + y + 1 = 0$

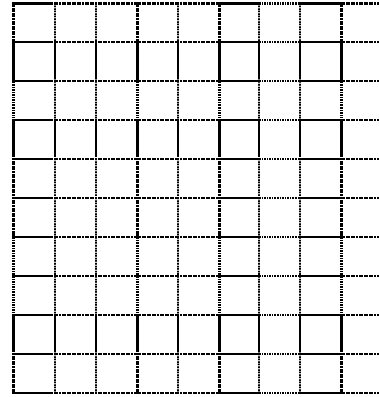
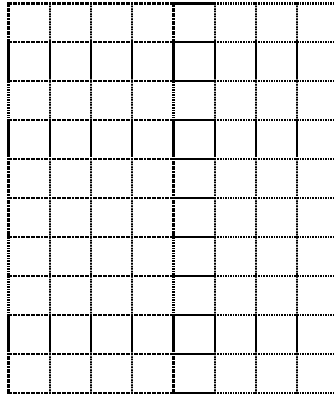
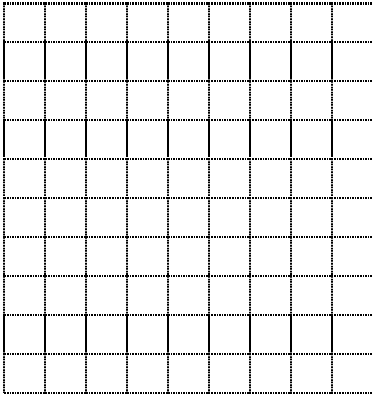


3. Graph each equation by determining the intercepts.

a) $x + y = 4$

b) $2x + y = 6$

c) $2x - 5y = 10$



4. Graph each equation using the most suitable method.

a) $y = 5x + 2$

b) $3x - y = 6$

c) $y = 3$

