

> TODAY'S AGENDA:

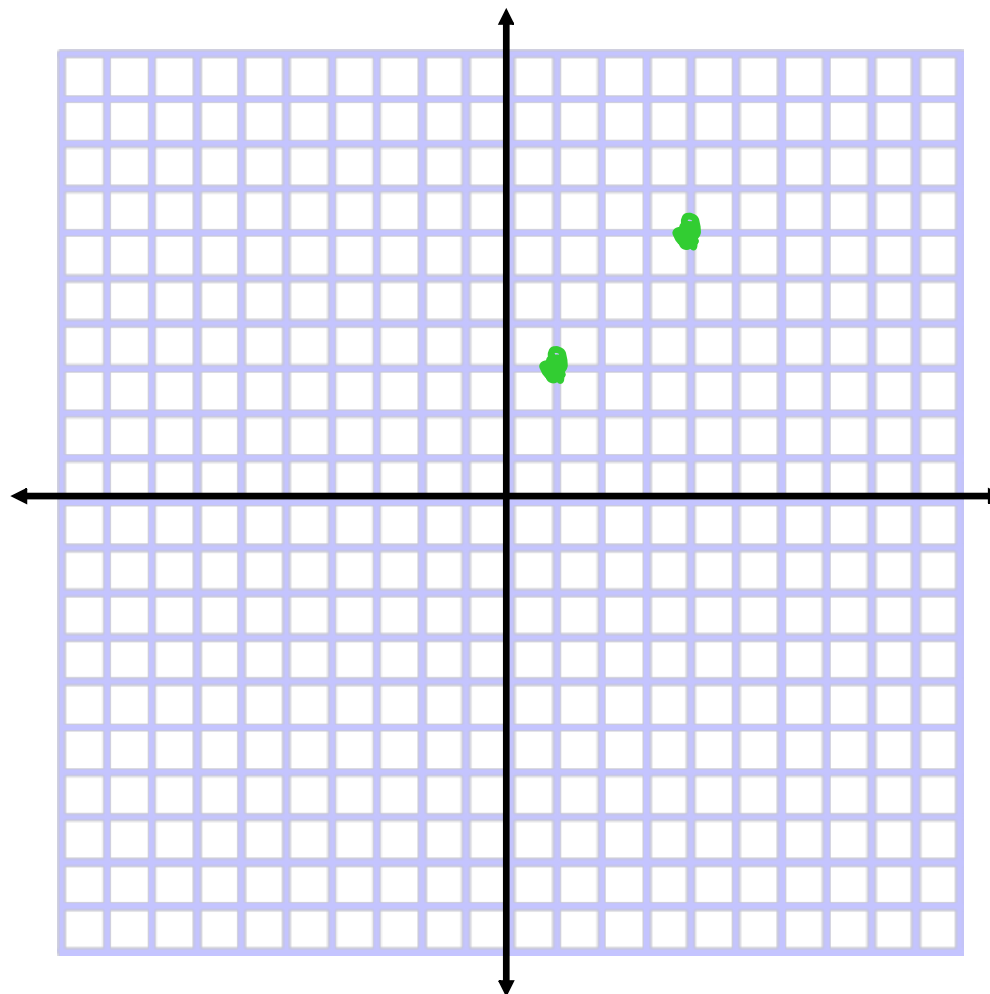
- Continue working on Khan Academy
- Mission: Engage NY Module 4
 - > Slope-Intercept Equation from Two Points

- Today's Objective:
 - > Students will be able to graph a line, given the equation of the line in Slope-Intercept Form

- Today's Standards:
 - > 8.EE.C.7, 8.EE.C.7b, 8.F.A.1, 8.F.A.3, 8.F.B.4, HSF.LE.A.2

Slope-Intercept Equation from Two Points

$$y = mx + b$$



Steps to find the Equation of a Line, Given Two Points

1. Find the slope (**m**) using:
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
2. Substitute slope from **Step 1**, into $y = mx + b$
3. Substitute the coordinates from one of the points into $y = mx + b$
4. Solve for **b**
5. Rewrite equation in slope-intercept form by substituting **m** from **Step 1** and **b** from **Step 4**.

Complete the equation of the line through $(-6, 5)$ and $(-3, -3)$.
Use exact numbers.

$$y = \boxed{}$$

$$\begin{matrix} (-6, 5) & (-3, -3) \\ x_1, y_1 & x_2, y_2 \end{matrix}$$

$$\textcircled{1} m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 5}{-3 - (-6)} = \frac{-8}{3}$$

$$\textcircled{2} y = mx + b \quad y = \frac{-8}{3}x + b$$

$$\textcircled{3} -3 = \frac{-8}{3}(-3) + b$$

$$\begin{array}{r} \cancel{-3} = \cancel{-8} + b \\ \cancel{-3} = 8 + b \\ \cancel{-3} \quad \cancel{+8} \\ \hline -11 = b \end{array}$$

$$\begin{array}{r} \textcircled{+} 11 \\ \hline -11 \end{array}$$

$$y = \frac{-8}{3}x - 11$$

Complete the equation of the line through $(-8, 8)$ and $(1, -10)$.

Use exact numbers.

$$y = \boxed{-2x - 8}$$

① Find slope $m = \frac{y_2 - y_1}{x_2 - x_1}$

$$\frac{-10 - 8}{1 - (-8)} = \frac{-18}{9} = -2$$

② $y = -2x + b$

③ $8 = -2(-8) + b$

$$8 = 16 + b$$

$$\begin{array}{r} 8 \\ -16 \quad -16 \\ \hline \end{array}$$

$$-8 = b$$

$$y = -2x - 8$$

Complete the equation of the line through $(4, -8)$ and $(8, 5)$.

Use exact numbers.

$$y = \frac{13}{4}x - 21$$

$$\textcircled{1} m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - (-8)}{8 - 4} = \frac{13}{4}$$

$$\textcircled{2} y = \frac{13}{4}x + b$$

$$\textcircled{3} -8 = \frac{13}{4}(4) + b$$

$$\begin{array}{r} -8 = 13 + b \\ -13 \quad -13 \\ \hline -21 = b \end{array}$$

$$y = \frac{13}{4}x - 21$$

Complete the equation of the line through $(3, -1)$ and $(4, 7)$.

Use exact numbers.

$$y = \boxed{8x - 25}$$

$$\textcircled{1} m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - (-1)}{4 - 3} = \frac{8}{1} = 8$$

$$\textcircled{2} y = 8x + b$$

$$\textcircled{3} -1 = 8(3) + b$$

$$-1 = 24 + b$$

$$\begin{array}{r} -24 \quad -24 \\ \hline -25 = b \end{array}$$

$$y = 8x - 25$$