

Algebra 1      4.3       $y - ? = m(x - ?)$   
Write equations of lines in point-slope form  
Write linear equations in different forms

slope-intercept form       $y = mx + b$

point-slope form

standard form       $Ax + By = C$

activity: cut & paste  
whiteboards

- 1) in order
- 2) no frac. (dec)
- 3) GCF

$$(3, 7) \downarrow$$

$$y - 7 = \frac{1}{2}(x - 3)$$

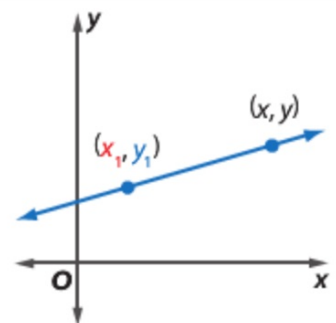
### Key Concept Point-Slope Form

Words

The linear equation  $y - y_1 = m(x - x_1)$  is written in point-slope form, where  $(x_1, y_1)$  is a given point on a nonvertical line and  $m$  is the slope of the line.

Symbols

$$y - y_1 = m(x - x_1)$$

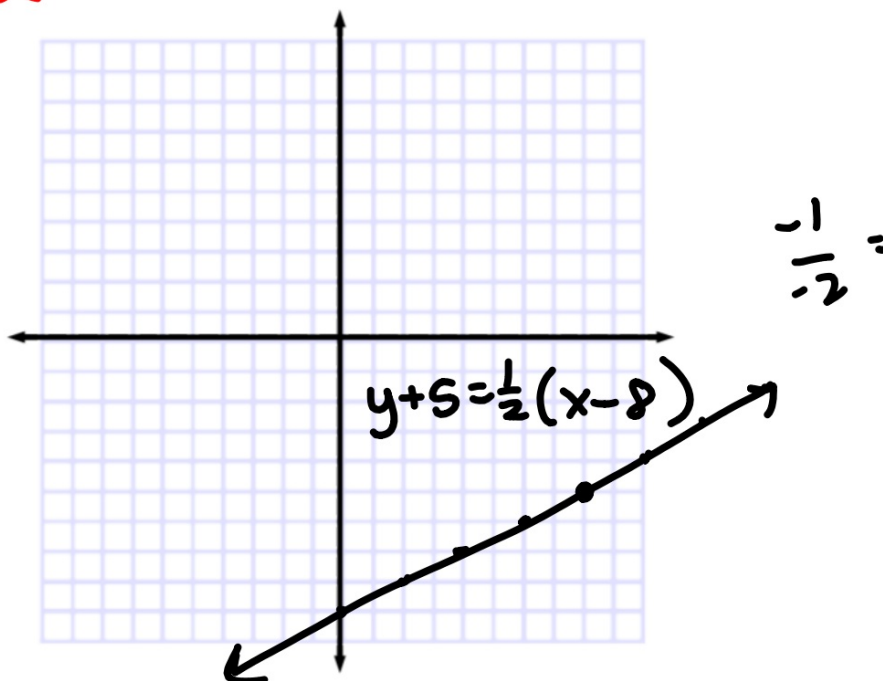




### Example 1 Write and Graph an Equation in Point-Slope Form

Write an equation in point-slope form for the line that passes through  $(8, -5)$  with a slope of  $\frac{1}{2}$ . Then graph the equation.

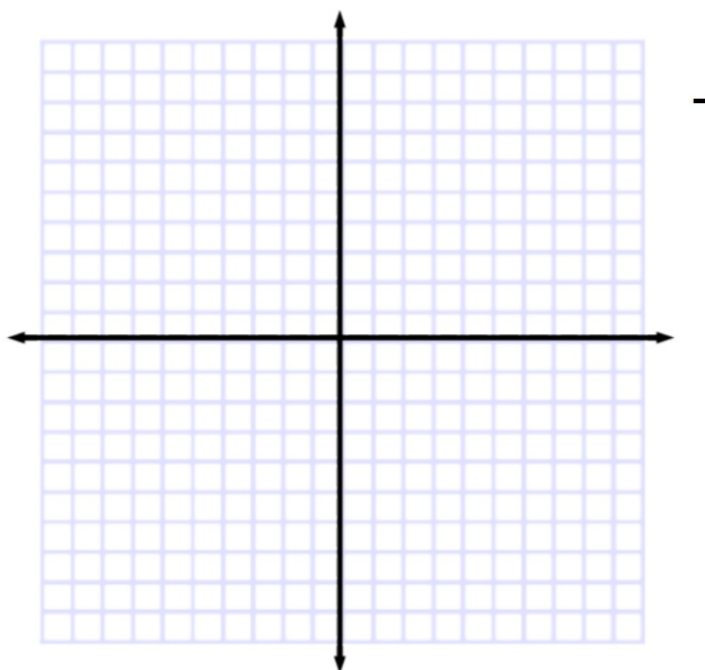
$$y + 5 = \frac{1}{2}(x - 8)$$



**Guided Practice**

1. Write an equation in point-slope form for the line that passes through  $(-3, 5)$  with a slope of  $-6$ . Then graph the equation.

$$y - 5 = -6(x + 3)$$

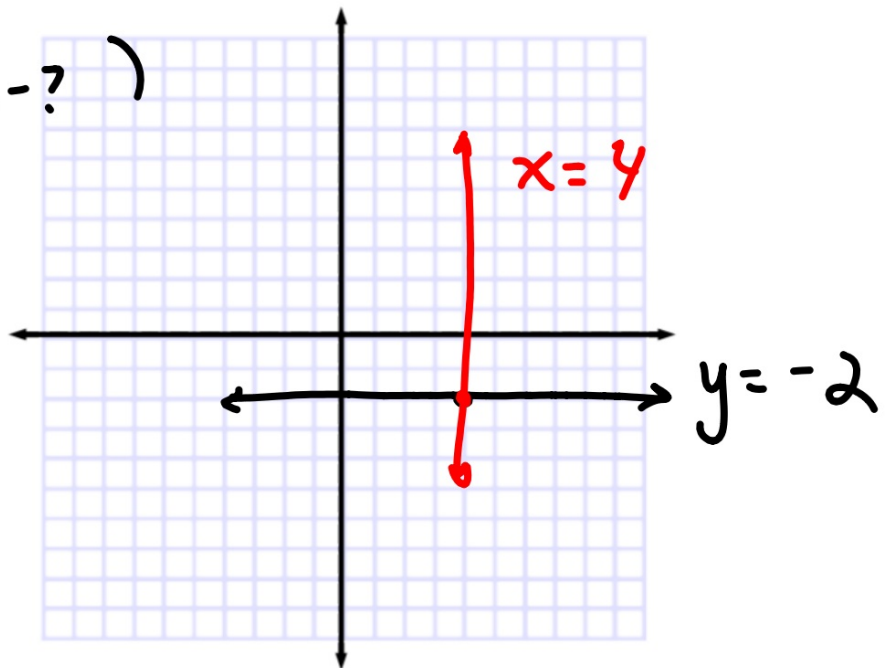




Slope is  $\uparrow$  **undefined** passing through  $(4, -2)$   
What kind of line is it?  
Graph first, then write equation (easier)

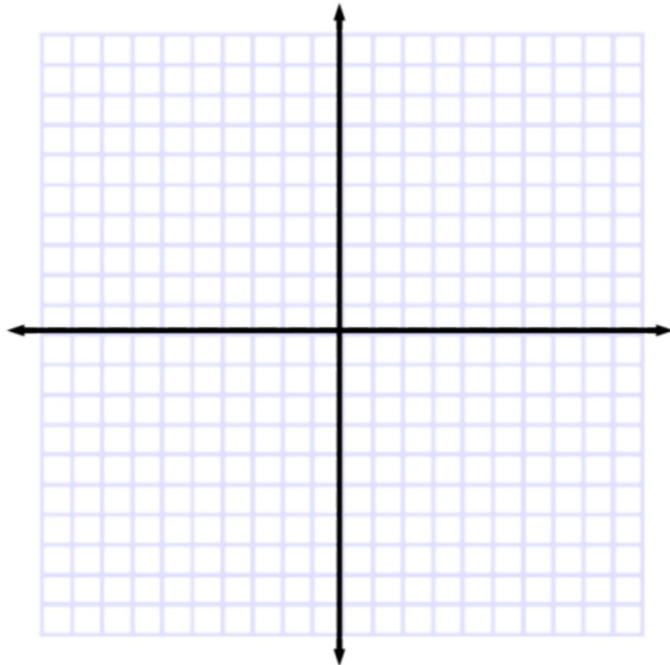
$$y - ? = m(x - ?)$$

$\uparrow$   
0



Slope is ~~undefined~~ <sup>zero</sup> passing through  
What kind of line is it?

(1, -6)



$$\textcircled{2}x + \textcircled{5}y = \textcircled{8}$$

$$A = 2$$

$$B = 5$$

$$C = 8$$

$$Ax + By = C$$

$$y = -2x + 5$$

+2x                      +2x

$$2x + y = 5$$

$$A = 2$$

$$B = 1$$

$$C = 5$$