Algebra 1 4.3

Write equations of lines in point-slope form

Write linear equations in different forms

slope-intercept form $y = mx + B$

point-slope form $y - ? = m(x - ?)$

standard form $Ax + By = C$

activity: cut & paste

whiteboards

$m = \frac{1}{4}$

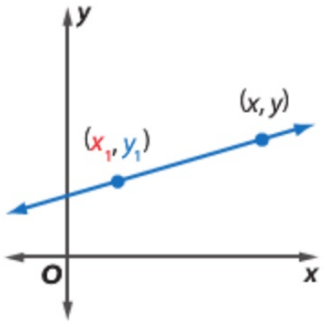
$(2, 3)$

**KeyConcept** **Point-Slope Form** → slope int.

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

$y - 3 = \frac{1}{4}(x - 2)$



## 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 1/2. Then graph the equation.**

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

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

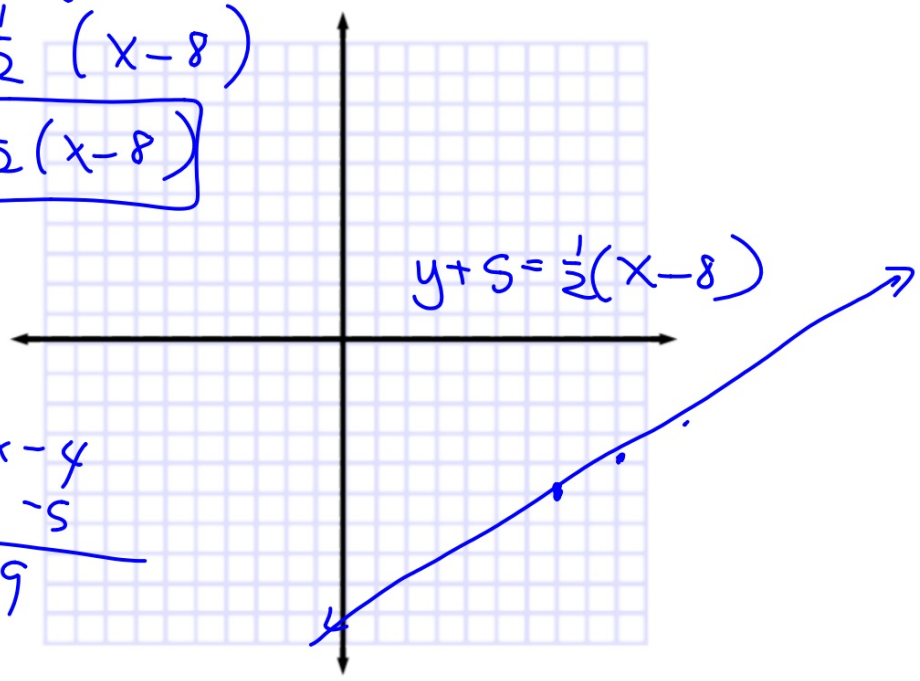
$\boxed{y + 5 = \frac{1}{2}(x - 8)}$

$y = mx + B$

$y + 5 = \frac{1}{2}x - 4$

$-5 \qquad -5$

$y = \frac{1}{2}x - 9$



## GuidedPractice

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.

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

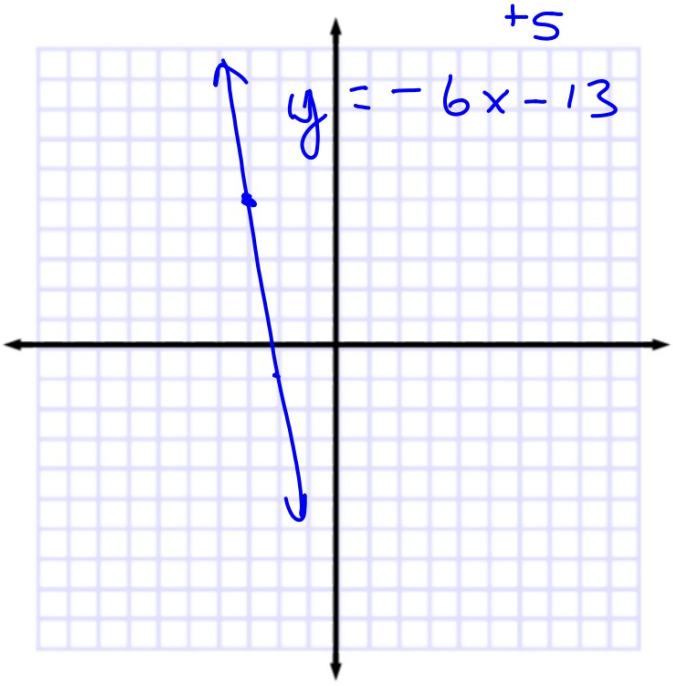
$+5 = -6x - 18$

$+5$

$y = -6x - 13$

S-i form

$Y =$



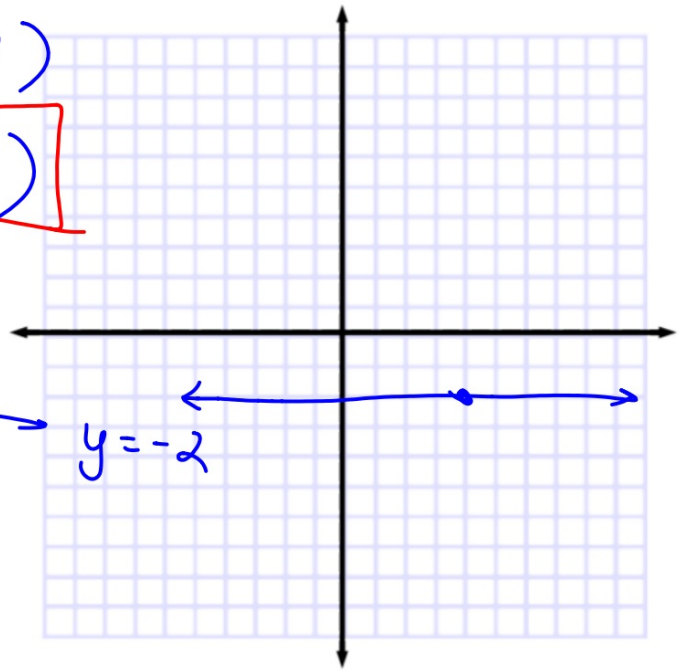
Slope is 0 passing through (4, -2)
What kind of line is it?
Graph first, then write equation (easier)

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

$y + 2 = 0(x - 4)$

$y + 2 = 0$
$-2 \quad -2$

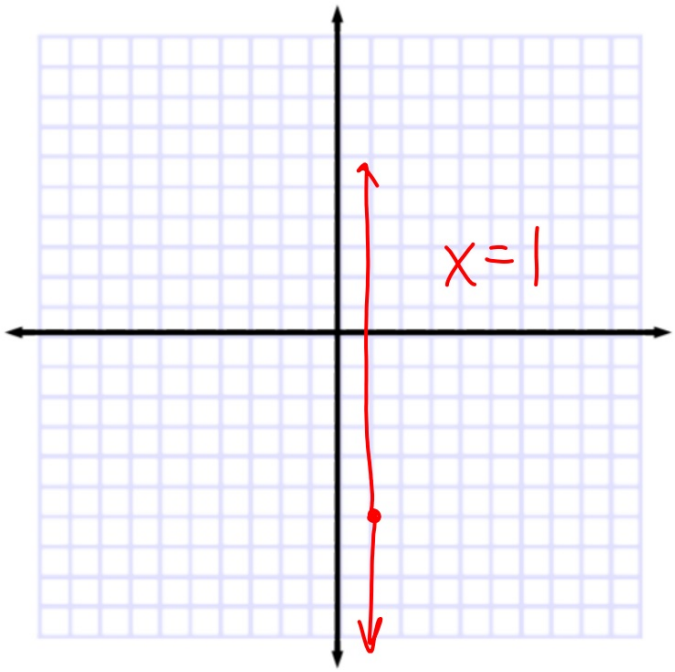
$y = -2$



Slope is undefined passing through (1, -6)
What kind of line is it?

$y = mx + b$

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



$\boxed{Ax + By = C}$

$2x + 3y = -2$

$y = -2x + 1$

$+2x \quad +2x$

$2x + y = 1$

1) in order

2) no frac/no dec (integers)

3) GCF

$y = \frac{1}{2}x + 6$

$+\frac{1}{2}x \qquad +\frac{1}{2}x$

$2 \cdot \frac{1}{2}x + y = 2 \cdot 6$

$1x + 2y = 12$

S.F.

$y = -3x + 5$

$+3x \qquad +3x$

$3x + y = 5$

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