

Slope-Intercept Equation of a Line

$$y = mx + b$$

m stands for the slope

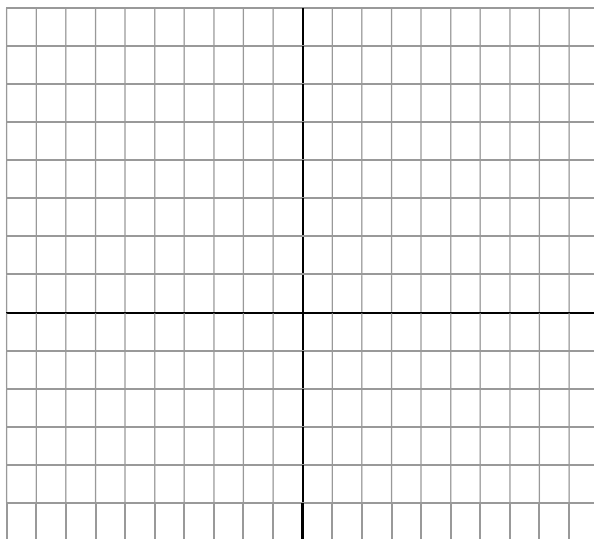
b stands for the point where the line crosses the y-axis (the y-intercept).

Graphing Lines

To graph a line that is in slope-intercept form, start at the y-intercept, then use the slope to count up (or down) and then over.

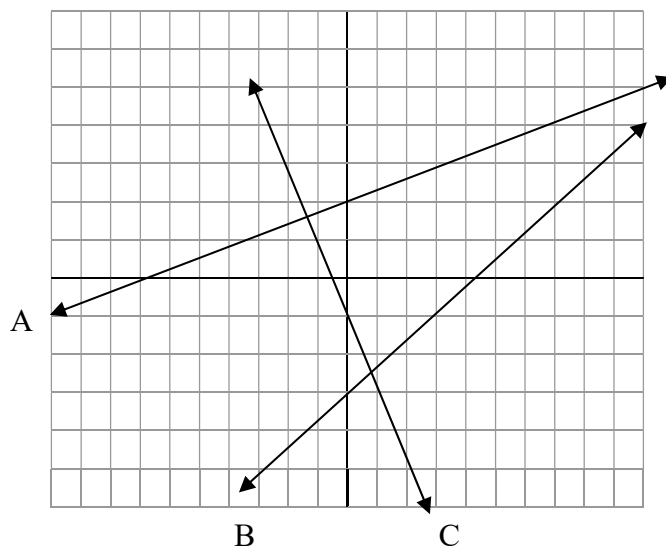
Graph these lines.

1. $y = \frac{2}{3}x + 1$
2. $y = -\frac{1}{4}x + 5$
3. $y = 2x - 4$
4. $y = 3$



**Use the graph to find the slope and y-intercept of each line.
Then write the equation for the line.**

Line	Equation $y = mx + b$
A	
B	
C	



Point-Slope Equation of a Line

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

m stands for the slope

(x₁, y₁) is a point on the line

Determine the equation of each line.

1. The line passes through (3, 1) and has a slope of -2.
2. The line passes through (-4, 6) and has a slope of $\frac{1}{2}$.
3. The line passes through (1, -1) and is parallel to $y = 3x - 5$.
(Remember what you know about parallel lines!)
4. The line passes through $(\frac{1}{2}, 3)$ and is parallel to $y = -\frac{2}{3}x + 4$.

Changing Forms

It's easy to change from Point-Slope form to Slope-Intercept form.

Just distribute to get rid of the parentheses, then add or subtract to get the y by itself.

Change each line to slope-intercept form.

1. $y - 7 = 3(x + 4)$
2. $y + 2 = \frac{1}{2}(x - 8)$

Line through Two Points

To write the equation of a line through two points, calculate the slope between the two points, then use the slope and one of the points in the Point-Slope equation.

Determine the equation of the line that passes through the given points.

1. (1, 1) and (2, 3)
2. (5, -1) and (3, -2)