

Slope - Intercept Form

$$y = mx + b$$

m stands for the slope**b** stands for the point where the line crosses the y-axis (the y-intercept).**Graphing Lines**

On graph paper, make four axes (like we do in class, so you can draw 4 separate graphs on one sheet).

Graph these lines.

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

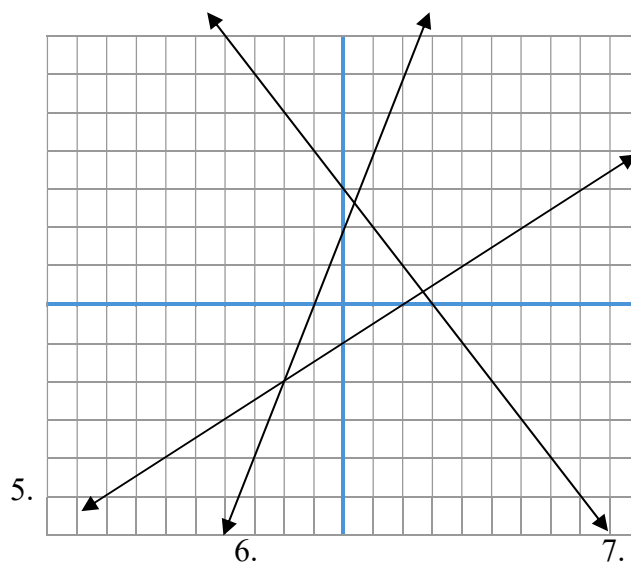
2. $y = -\frac{1}{3}x - 5$

3. $y = 2x$

4. $y = 2$

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

Line	Equation $y = mx + b$
5.	
6.	
7.	



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

Write the equation of each line in point-slope form.

8. The line passes through (5, 11) and has a slope of $\frac{1}{2}$.
9. The line passes through (-8, -7) and has a slope of -4.
10. The line passes through (54, -18) and has a slope of $\frac{9}{4}$.

Changing Forms

Change from Point-Slope form to Slope-Intercept form.

(Just two steps: distribute to get rid of the parentheses, then add or subtract to get the y by itself.)

Show your work.

Change each line to slope-intercept form.

11. $y + 4 = 5(x - 6)$
12. $y + 8 = \frac{1}{3}(x - 9)$
13. $y - 5 = -\frac{1}{2}(x + 4)$

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.

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

14. (2, 1) and (9, 10)
15. (-6, 8) and (2, -2)
16. (-10, 4) and (4, 10)