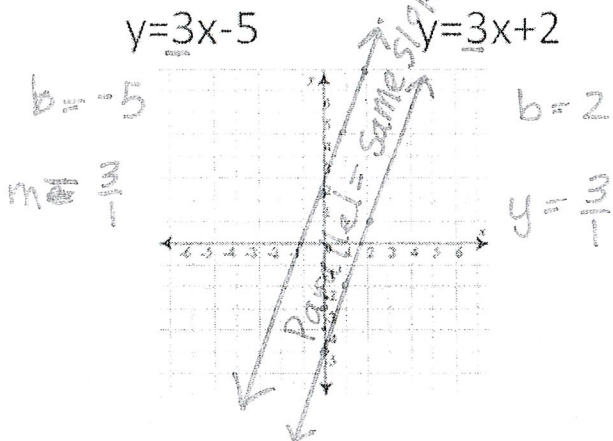


# Graphing parallel and perpendicular lines

What can you tell me about the graphs of these two equations?



**Rule/Conclusion:**

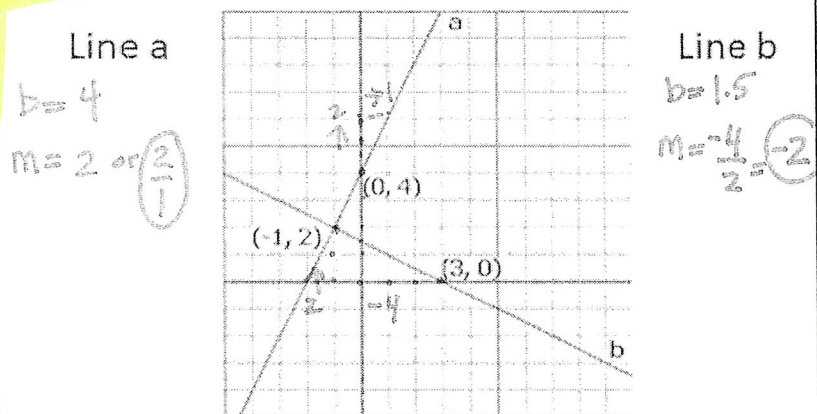
Parallel lines always have the same slope.

$$y = mx + b$$

↑  
slope is the number in front of the x

These highlights must be in your explanation.

What can you tell me about the slopes of these two graphs?



**Rule/Conclusion:**

Lines with opposite reciprocal slopes are always perpendicular.

Given 2 lines

determine if parallel, perp. or neither.

Explain!

Find slope from 2 points

- ① use a point on the very left.
- ② use slope to plot more points until you reach the y-intercept.

Practice: What is the slope perpendicular to the following?

3  $-\frac{1}{3}$  -5  $\frac{1}{5}$   $\frac{4}{5}$   $-\frac{5}{4}$   $-\frac{1}{4}$   $\frac{4}{1}$  or 4

Practice: Write an equation that is parallel and perpendicular to the given equations.

$$y = \frac{2}{7}x + 1$$

Parallel:  $y = \frac{2}{7}x \pm \text{any } \#$  but the one in the first line

Perpendicular  $y = -\frac{7}{2}x \pm \text{any } \#$  even the same as the other line

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

Parallel:  $y = -\frac{1}{2}x \pm \text{any number}$  but the one in the given line

Perpendicular  $y = 2x \pm \text{any } \#$

$$y = 4x - 8$$

Parallel:  $y = 4x \pm \text{any number}$  but the one in given line

Perpendicular  $y = -\frac{1}{4}x \pm \text{any } \#$

$$y = -6x$$

Parallel:  $y = -6x \pm \text{any } \#$  but the one in given line

Perpendicular  $y = \frac{1}{6}x \pm \text{any } \#$