

Section 6.1b – Equation of a Line in Slope y-intercept form

MPM1D

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Learning Goals: In this lesson students will continue to develop their knowledge of the equation of a line while using slope and y-intercept to graph a line. Students will also develop an understanding of the equation of both vertical and horizontal lines.

Part 1: Graphing a Line Using the Slope and the y-Intercept:

Example 1: How can we graph $y = \frac{2}{3}x + 1$ without using a table of values?

a) The line $y = \frac{2}{3}x + 1$, has a slope: _____ and y-intercept: _____

b) Plot the y-intercept on the given grid

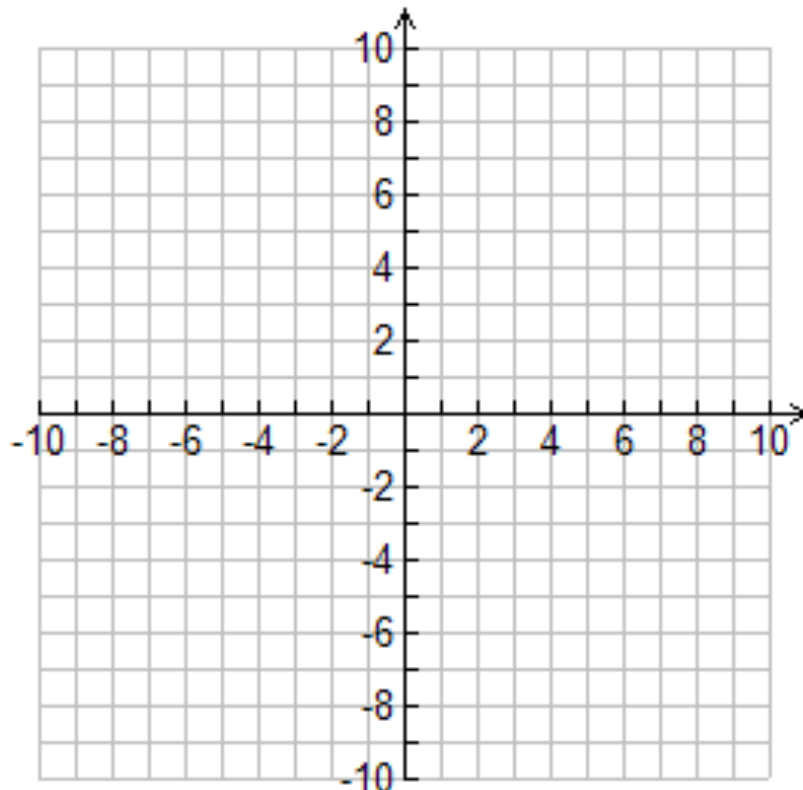
c) How can the slope be used to determine other points on this line?

Use the slope of $\frac{2}{3}$ which has a rise of _____ and a run of _____ to plot another point on the line.

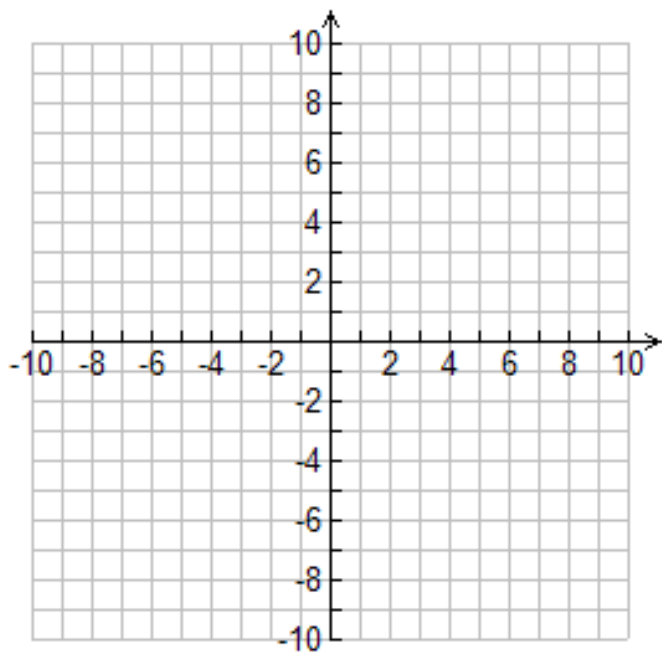
You could also use the opposite slope to plot points on the other side of the y-intercept.

The opposite slope, $\frac{-2}{-3}$, has a rise of _____ and a run of _____.

d) Use the slope to determine 2 other points on the line and draw in the line.



Example 2: Graph the line $y = -3x - 5$ using the slope and the y-intercept.



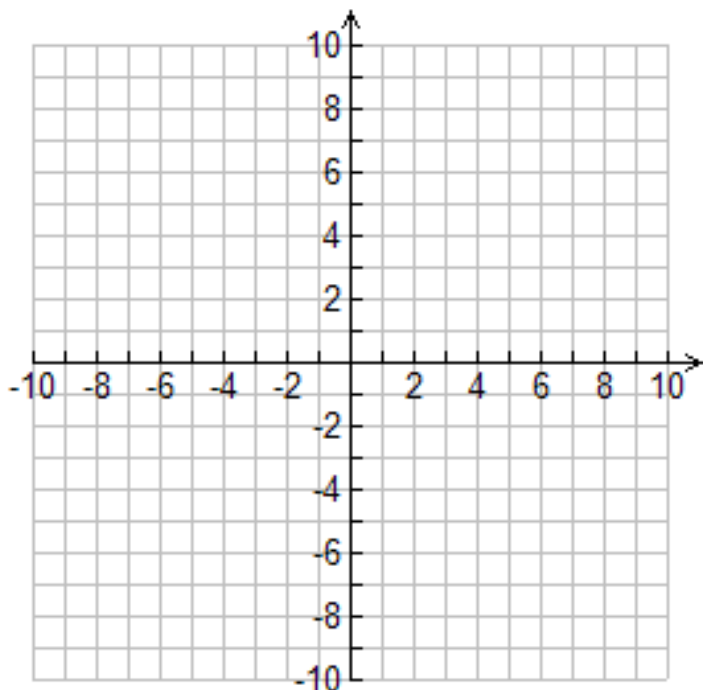
Slope:

y-intercept:

Part 2: Find the Equation of a Line Graphically Given Two Points

Example 3:

- a) Plot the points A(-5, 3) and B(8, 3) on the given grid.
- b) What is the y-intercept for the line that passes through A and B?
- c) What is the slope for the line that passes through A and B?
- d) What is the equation for the line that passes through A and B?



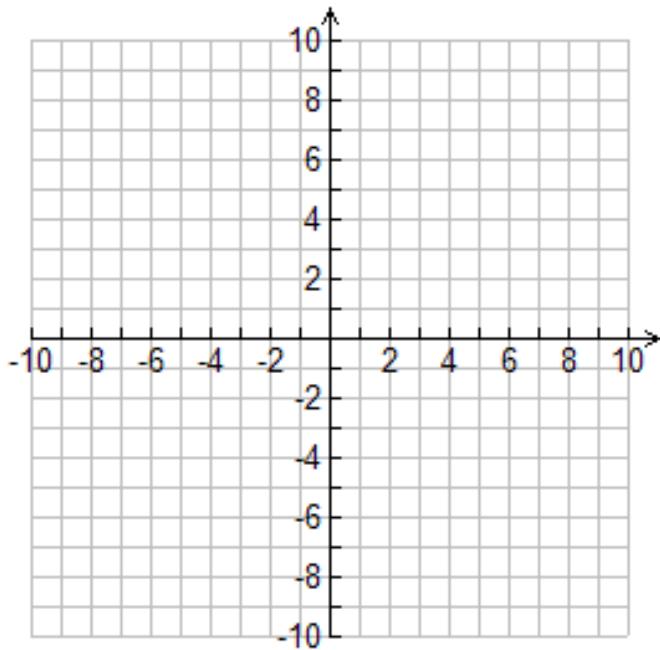
Note: the equation of a horizontal line is always in the form $y=b$. Every point on the line has a y-coordinate of 3.

Example 4: a) Plot the points A(5, 8) and B(5, -3) on the given grid.

b) What is the y-intercept for the line that passes through A and B?

c) What is the slope for the line that passes through A and B?

d) What is the equation for the line that passes through A and B?



Note: the equation of a vertical line is always in the form of $x =$ the x-intercept. Notice that every point on this line has an x-coordinate of 5.

Part 3: Consolidation

a) In general, a horizontal line has a slope that is _____ and an equation of the form _____ where 'b' is the _____.

b) In general, a vertical line has a slope that is _____ and an equation of the form _____ where 'a' is the _____.

c) State the steps required to graph a line using the slope and the y-intercept:

- 1.
- 2.
- 3.