

NAME _____

DATE _____

PERIOD _____

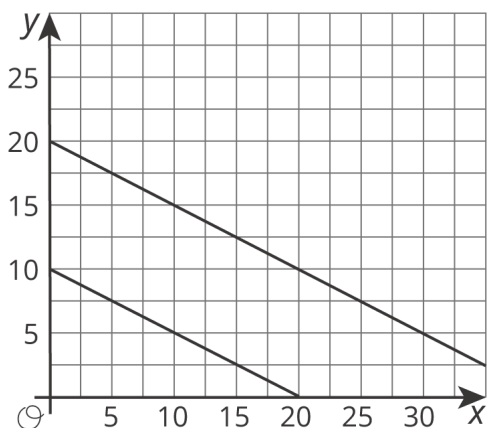
Unit 3, Lesson 11: Equations of All Kinds of Lines

Let's write equations for vertical and horizontal lines.

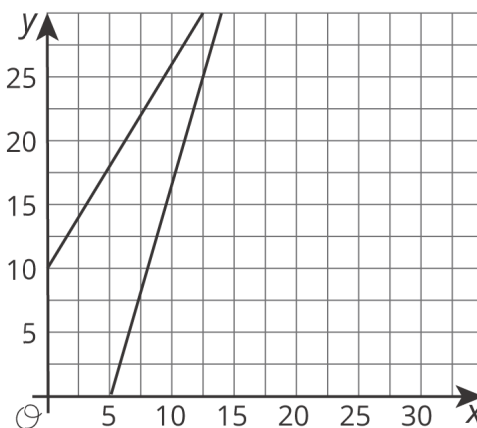
11.1: Which One Doesn't Belong: Pairs of Lines

Which one doesn't belong?

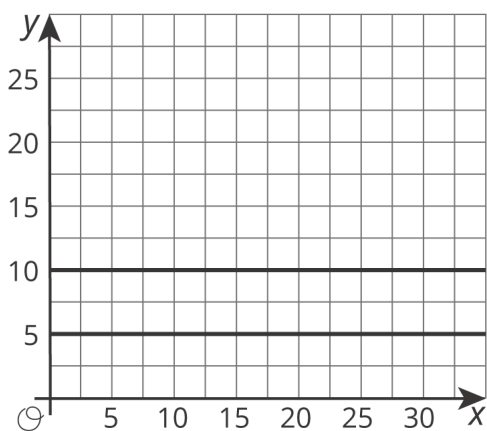
A



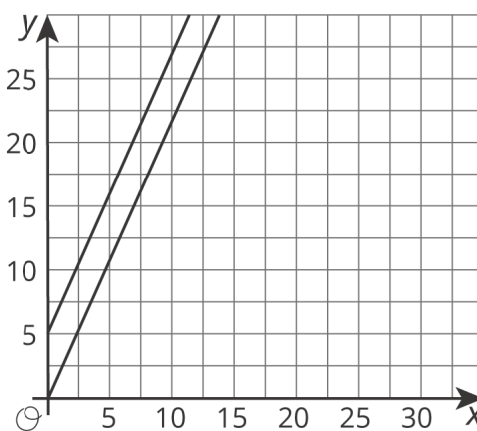
B



C



D



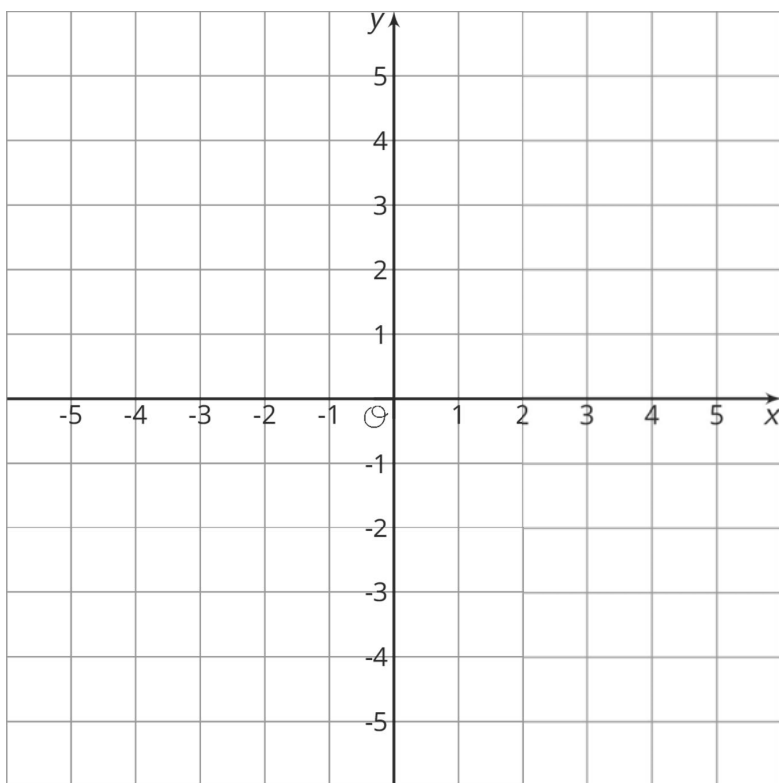
m.openup.org/1/8-3-11-2



NAME _____

DATE _____

PERIOD _____

11.2: All the Same

1. Plot at least 10 points whose y -coordinate is -4 . What do you notice about them?

2. Which equation makes the most sense to represent all of the points with y -coordinate -4 ? Explain how you know.

$x = -4$

$y = -4x$

$y = -4$

$x + y = -4$

NAME

DATE

PERIOD

3. Plot at least 10 points whose x -coordinate is 3. What do you notice about them?

4. Which equation makes the most sense to represent all of the points with x -coordinate 3? Explain how you know.

$x = 3$

$y = 3x$

$y = 3$

$x + y = 3$

5. Graph the equation $x = -2$.

6. Graph the equation $y = 5$.

Are you ready for more?

1. Draw the rectangle with vertices $(2, 1)$, $(5, 1)$, $(5, 3)$, $(2, 3)$.
2. For each of the four sides of the rectangle, write an equation for a line containing the side.
3. A rectangle has sides on the graphs of $x = -1$, $x = 3$, $y = -1$, $y = 1$. Find the coordinates of each vertex.

NAME _____

DATE _____

PERIOD _____

11.3: Same Perimeter

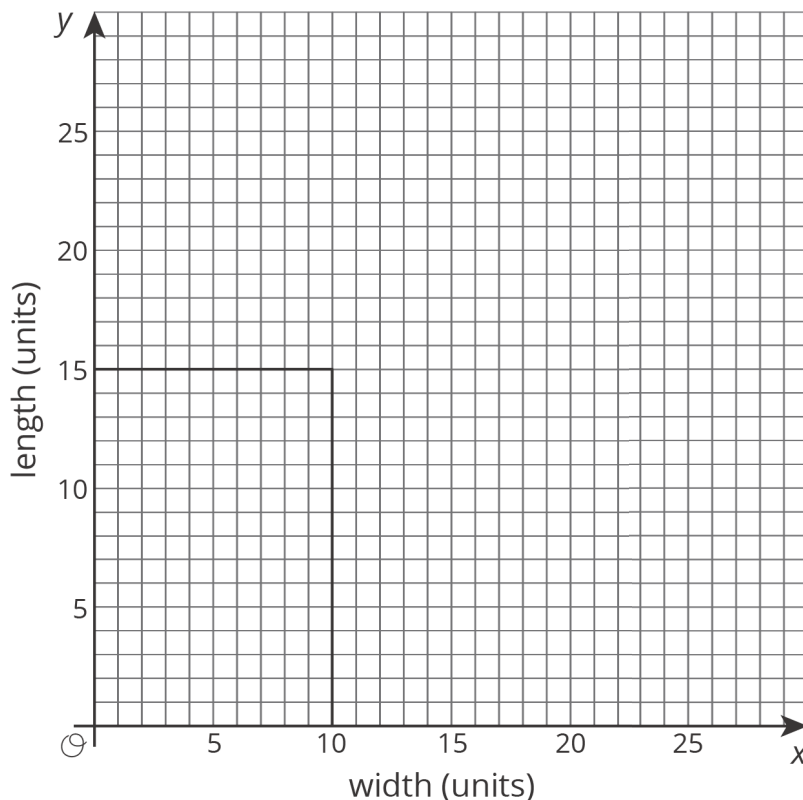
m.openup.org/1/8-3-11-3



1. There are many possible rectangles whose perimeter is 50 units. Complete the table with lengths, ℓ , and widths, w , of at least 10 such rectangles.

ℓ										
w										

2. The graph shows one rectangle whose perimeter is 50 units, and has its lower left vertex at the origin and two sides on the axes. On the same graph, draw more rectangles with perimeter 50 units using the values from your table. Make sure that each rectangle has a lower left vertex at the origin and two sides on the axes.



3. Each rectangle has a vertex that lies in the first quadrant. These vertices lie on a line. Draw in this line and write an equation for it.
4. What is the the slope of this line? How does the slope describe how the width changes as the length changes (or vice versa)?

NAME

DATE

PERIOD

Lesson 11 Summary

Horizontal lines in the coordinate plane represent situations where the y value doesn't change at all while the x value changes. For example, the horizontal line that goes through the point $(0, 13)$ can be described in words as "for all points on the line, the y value is always 13." An equation that says the same thing is $y = 13$.

Vertical lines represent situations where the x value doesn't change at all while the y value changes. The equation $x = -4$ describes a vertical line through the point $(-4, 0)$.

NAME

DATE

PERIOD

Unit 3, Lesson 11: Equations of All Kinds of Lines

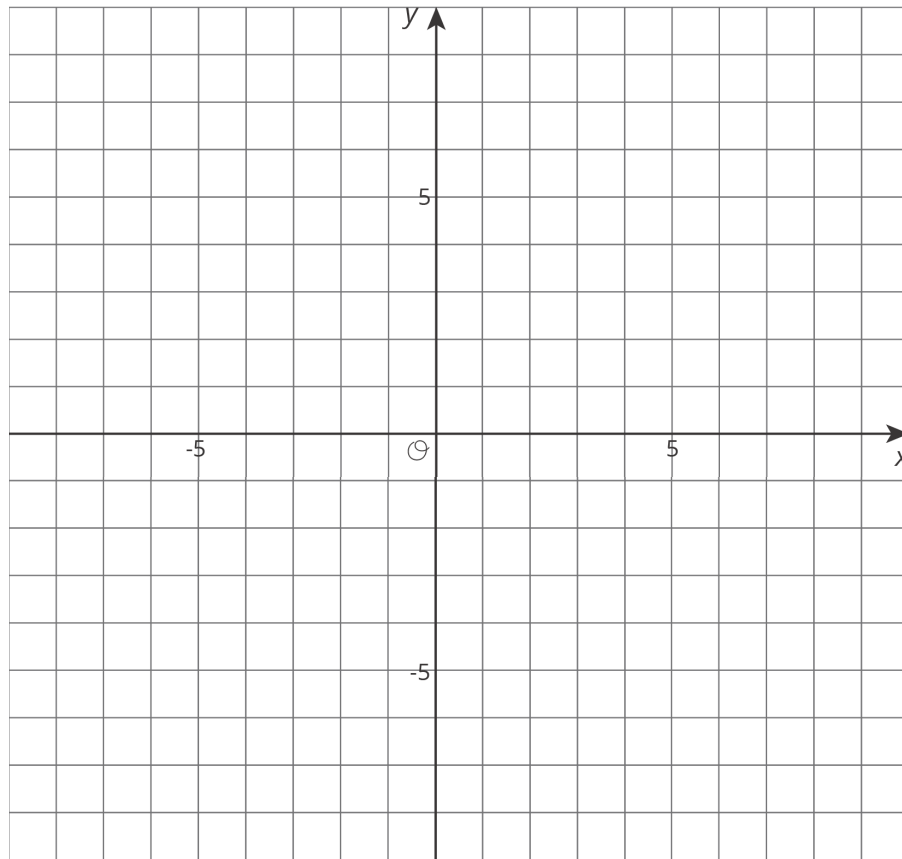
1. Suppose you wanted to graph the equation $y = -4x - 1$.
 - a. Describe the steps you would take to draw the graph.
 - b. How would you check that the graph you drew is correct?

2. Draw the following lines and then write an equation for each.
 - a. Slope is 0, y-intercept is 5
 - b. Slope is 2, y-intercept is -1
 - c. Slope is -2, y-intercept is 1
 - d. Slope is $\frac{1}{2}$, y-intercept is -1

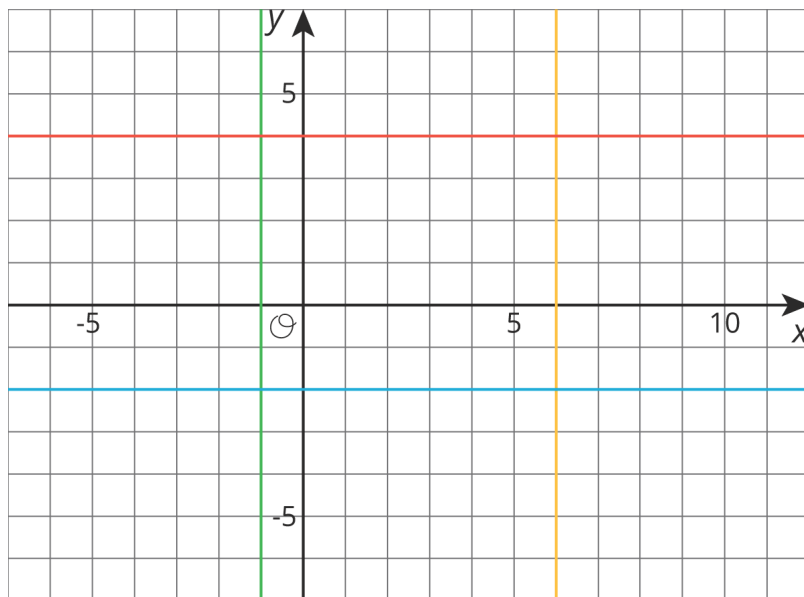
NAME _____

DATE _____

PERIOD _____



3. Write an equation for each line.



NAME

DATE

PERIOD

4. A publisher wants to figure out how thick their new book will be. The book has a front cover and a back cover, each of which have a thickness of $\frac{1}{4}$ of an inch. They have a choice of which type of paper to print the book on.
- Bond paper has a thickness of $\frac{1}{4}$ inch per one hundred pages. Write an equation for the width of the book, y , if it has x hundred pages, printed on bond paper.
 - Ledger paper has a thickness of $\frac{2}{5}$ inch per one hundred pages. Write an equation for the width of the book, y , if it has x hundred pages, printed on ledger paper.
 - If they instead chose front and back covers of thickness $\frac{1}{3}$ of an inch, how would this change the equations in the previous two parts?

(from Unit 3, Lesson 7)