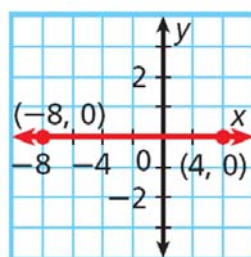
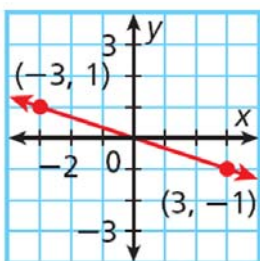


Warm-up 11-2

1. Find the slope of the lines below.

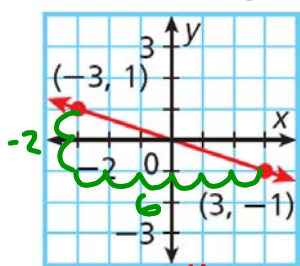


2. A climber is on a hike. After 2 hours he is at an altitude of 400 feet. After 6 hours, he is at an altitude of 700 feet.

What is the average rate of change?

Warm-up 11-2

1. Find the slope of the lines below.

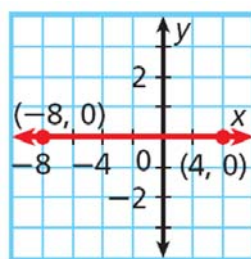


$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$-\frac{2}{6} = \left(-\frac{1}{3}\right)$$

$$m = \frac{-1 - 1}{3 - (-3)} = \frac{-2}{6}$$

$$= \left(-\frac{1}{3}\right)$$



zero

2. A climber is on a hike. After 2 hours he is at an altitude of 400 feet. After 6 hours, he is at an altitude of 700 feet.

What is the average rate of change?

x	y
2	400
6	700

$$\frac{300}{4} = 75$$

75 ft/hr

$$\frac{700 - 400}{6 - 2} = \frac{300}{4} = 75$$

$$y = mx + b$$

$$y = 1x - 2$$

slope-intercept

$$m = 1 \quad b = -2$$

$$m = 5 \quad b = -1$$

$$y = 5x - 1$$

EOC INFORMATION

Practice Tools [HERE](#)

Some study links for the EOC are below.

Practice tests [HERE](#) and [HERE](#)

Practice book [HERE](#)

Practice worksheets [HERE](#)

Links [HERE](#)



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Current Unit

Click [HERE](#) to get to the quiz.

Unit 4: Linear Equations and Inequalities



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Unit 3: Inequalities

Today's Goals

I can...

- write a linear equation in point-slope form
- write a linear equation in slope intercept form

Section 4.7: Point-Slope Form

* In order to use this form you must have 1 point on the line and the slope of the line

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

point y
slope
point x

$$y - (-5) = 6(x - (-1))$$

$$y + 5 = 6(x + 1)$$

Write an equation for a line that passes through the point $(-1, -5)$ slope of 6.

Step 1: Write point-slope form

Step 2: Substitute

Step 3: Look for a double negative change to +

Step 4: Simplify and solve for y (to write in slope-intercept form)

What about when given 2 points?

Write an equation given a slope of -2 and point $(-2, 3)$.

Write the equation for a line going through the points $(2, -3)$ and $(4, 1)$ and with a slope of 2 .

Write an equation for the line that goes through $(1, -4)$ and $(3, 2)$

Write the equation of the line in **point-slope form** formed by the points $(-1, 4)$ and $(1, 6)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{6 - 4}{1 - (-1)} = \frac{2}{2} = 1$$

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

$$y - 4 = 1(x - (-1))$$
$$y - 4 = 1(x + 1)$$

Write the equation of the line in **point-slope form** formed by the points $(-1, 4)$ and $(1, 6)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{6 - 4}{1 - (-1)} = \frac{2}{2} = 1$$

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

$$y - 4 = 1(x - (-1))$$

$$\boxed{y - 4 = 1(x + 1)}$$

Section 3.6 ~ Slope Intercept Form

$$y = mx + b$$

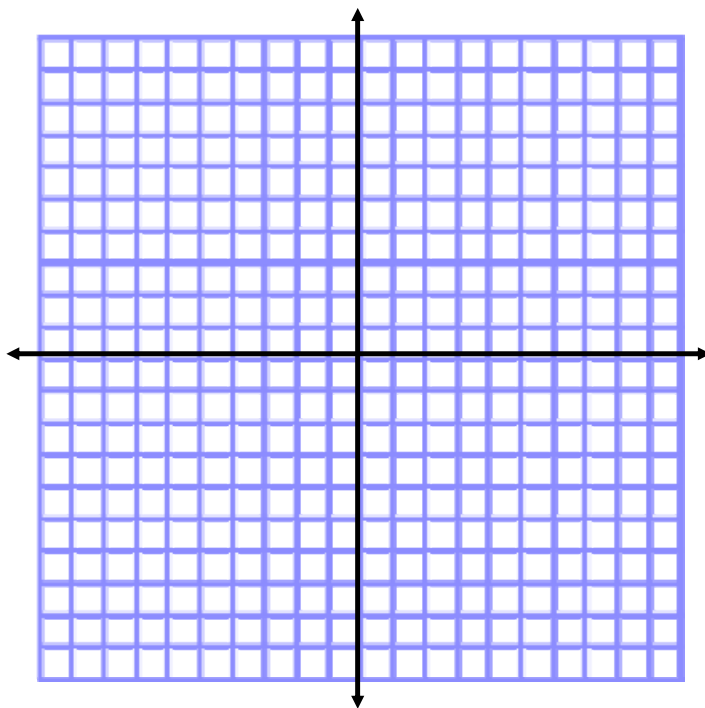
slope y-intercept

A line has a slope of -2 and a y - intercept of (0, -3). Write the linear equation for this line.

$$y = -2x - 3$$

$$y = -1/2x + 9$$

$$y = 2x + 1$$

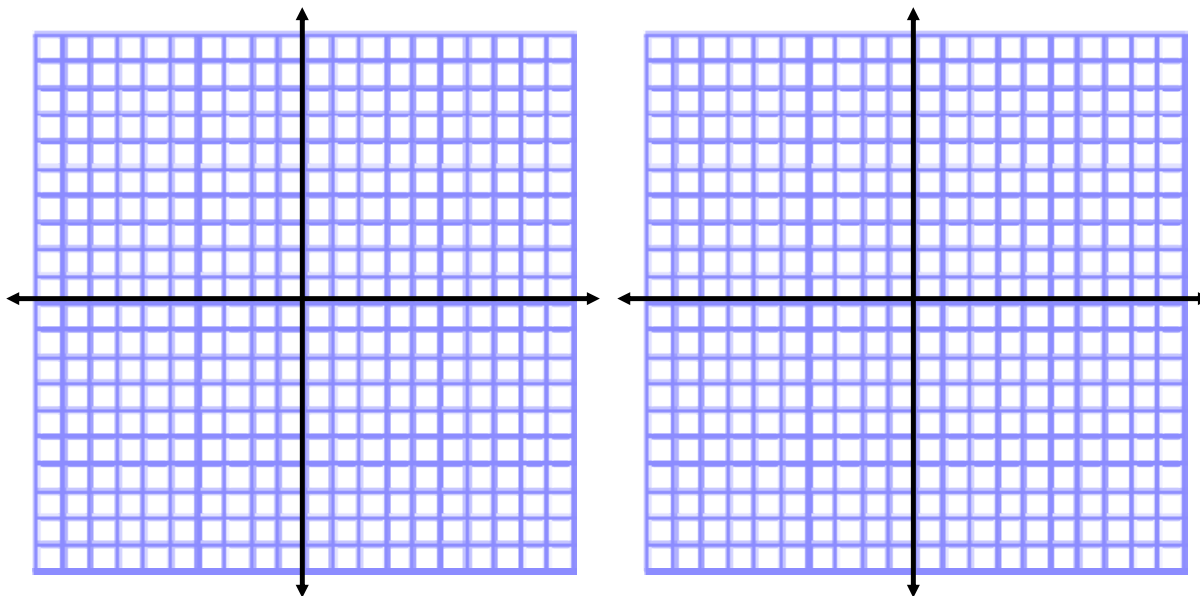


Using Slope intercept form

1. Find the y- intercept and slope for the following lines and graph the line.

a.) $y = 5x - 2$

b.) $y = -1/5x + 3$



2. Write the linear equation for the following lines

a.) slope: $-1/3$ y-intercept: $(0, -6)$

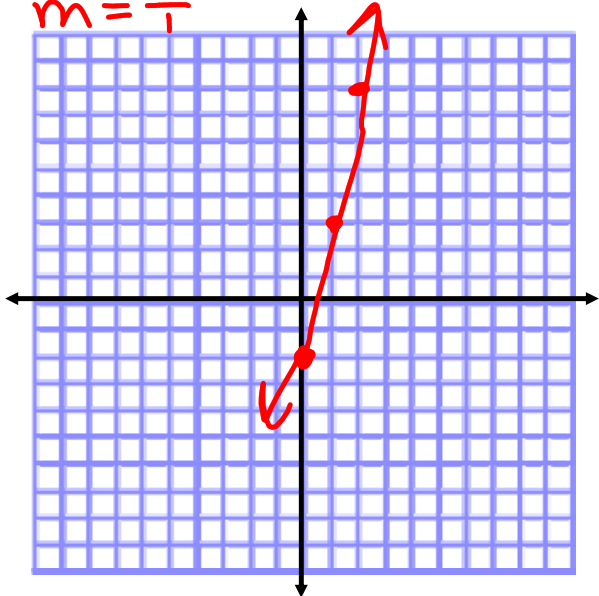
b.) slope $= 5/17$ y-intercept: $(0, 16)$

Using Slope intercept form

1. Find the y- intercept and slope for the following lines and graph the line.

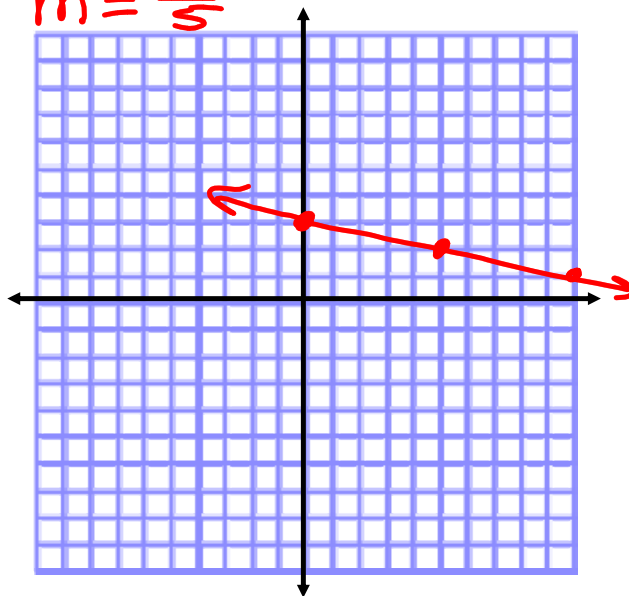
a.) $y = 5x - 2$

$m = \frac{5}{1}$



b.) $y = -\frac{1}{5}x + 3$

$m = -\frac{1}{5}$



2. Write the linear equation for the following lines

a.) slope: $-\frac{1}{3}$ y-intercept: (0, -6)

b.) slope = $\frac{5}{17}$ y-intercept: (0, 16)

Try These!!

$$y = mx + b$$

Write the equation for each line in slope intercept form.

1. slope = $\frac{1}{4}$ and y-intercept = 4

2. slope = -9 and y-intercept = $-\frac{5}{4}$

Try These!!

Write the equation for each line in slope intercept form.

1. slope = $1/4$ and y-intercept = 4 $y = mx + b$

$$y = \frac{1}{4}x + 4$$

2. slope = -9 and y-intercept = $-5/4$ $y = mx + b$

$$y = -9x + -5/4$$

$$y = -9x - 5/4$$

How to use slope-intercept form to write a linear equation.

Write an equation in slope-intercept form for the line that contains the pair of points. $m = \frac{y_2 - y_1}{x_2 - x_1}$ $y = mx + b$

$$\begin{array}{cc} x_1 & y_1 \\ (2, 7) & \end{array} \quad \begin{array}{cc} x_2 & y_2 \\ (5, 22) & \end{array}$$

$$m = \frac{22 - 7}{5 - 2} = \frac{15}{3} = 5$$

$$\textcircled{1} y - y_1 = m(x - x_1)$$

$$\begin{array}{r} y - 7 = 5(x - 2) \\ +7 \quad \quad \quad +7 \\ \hline \end{array}$$

$$y = 5x - 3$$

$$\textcircled{2} y = 5x + b$$

$$\begin{array}{r} 7 = 5(2) + b \\ 7 = 10 + b \\ -10 \quad -10 \\ \hline \end{array} \quad b = -3$$

$$\begin{array}{cc} (6, 22) & \text{and} & (2, 14) \\ x_1 & y_1 & x_2 & y_2 \end{array}$$

$$m = \frac{14 - 22}{2 - 6} = \frac{-8}{-4} = 2$$

$$\textcircled{1} y - y_1 = m(x - x_1)$$

$$\begin{array}{r} y - 22 = 2(x - 6) \\ +22 \quad \quad \quad +22 \\ \hline \end{array}$$

$$y = 2x + 10$$

Step #1: Find the slope

Step #2: Pick one ordered pair and circle it

Step #3: Plug in the slope you found, the x-value from the ordered pair, and the y-value from the ordered pair into slope intercept form

Step #4: Solve for b

Step #5: Plug in **ONLY** the slope value and the b value into the slope intercept form ($y = mx + b$)

$$y = 5x - 3$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad y = mx + b \quad y - y_1 = m(x - x_1)$$

$$\textcircled{2} y = 2x + b$$

$$22 = 2(6) + b$$

$$22 = 12 + b$$

$$\begin{array}{r} -12 \quad -12 \\ \hline \end{array}$$

$$10 = b$$

$$y = 2x + 10$$

What about when given 2 points?

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad y = mx + b \quad y - y_1 = m(x - x_1)$$

Write the equation for a line going through the points (2, -3) and (4, 1)

$$m = \frac{1 - (-3)}{4 - 2} = \frac{4}{2} = 2$$

$$y - (-3) = 2(x - 2) \quad \begin{matrix} x_1 & y_1 \\ x_2 & y_2 \end{matrix}$$

$$y = 2x + b$$

$$y + 3 = 2(x - 2)$$

$$-3 = 2(2) + b$$

$$y + 3 = 2x - 4$$

$$\begin{array}{r} -3 = 4 + b \\ -4 - 4 \end{array}$$

$$b = -7$$

$$\begin{array}{r} y + 3 = 2x - 4 \\ -3 \quad -3 \\ \hline y = 2x - 7 \end{array}$$

Write an equation for the line that goes through (1, -4) and (3, 2)

What about when given 2 points?

$$y = mx + b$$

Write the equation for a line going through the points (x_1, y_1) and (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{1 - (-3)}{4 - 2} = \frac{4}{2} = 2$$

$$y = 2x - 7$$

$$y = 2x + b$$

$$-3 = 2(2) + b$$

$$-3 = 4 + b$$

$$\begin{array}{r} -4 \\ -4 \\ \hline -7 = b \end{array}$$

$$-7 = b$$

$$y - (-3) = 2(x - 2)$$

$$y + 3 = 2(x - 2)$$

$$\begin{array}{r} -3 \quad 2x - 4 \quad -3 \\ \hline y = 2x - 7 \end{array}$$

$$y = 2x - 7$$

Write an equation for the line that goes through (x_1, y_1) and (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{2 - (-4)}{3 - 1} = \frac{6}{2} = 3$$

$$y = 3x - 7$$

$$y = 3x + b$$

$$-4 = 3(1) + b$$

$$-4 = 3 + b$$

$$\begin{array}{r} -3 \\ -3 \\ \hline -7 = b \end{array}$$

$$-7 = b$$

$$y - (-4) = 3(x - 1)$$

$$y + 4 = 3(x - 1)$$

$$\begin{array}{r} -4 \quad 3x - 3 \quad -4 \\ \hline y = 3x - 7 \end{array}$$

$$y = 3x - 7$$

6. A climber is on a hike. After 2 hours he is at an altitude of 400 feet. After 6 hours, he is at an altitude of 700 feet. What is the average rate of change?

	35
	40

6. A climber is on a hike. After x_1 2 hours he is at an altitude of y_1 400 feet. After x_2 6 hours, he is at an altitude of y_2 700 feet. What is the average rate of change? 75 ft/hr

$$\begin{aligned}
 y - 400 &= 75(x - 2) \\
 y - 400 &= 75x - 150 \\
 y &= 75x - 150 + 400 \\
 y &= 75x + 250
 \end{aligned}$$

Homework

Worksheet (ALL)

Also write linear equations for 7-13(odd),
and identify what the y-intercept represents.