

Warm up

Find the slope of the line passing through the points.

a) $(3, 6)$ and $(3, 0)$

b) $(-6, 2)$ and $(4, -2)$

c) $(-1, -1)$ and $(-3, -6)$

d) $(-3, 1)$ and $(4, 1)$

Find the value of y so that the line passing through the two points has the given slope.

$(-1, 5), (3, y), \text{ and } m = 5$

Warm Up

Assume the variables vary directly. Use an equation to find the value of y .

1) If $x = 5$ when $y = 15$, find y when $x = 11$.

$$k = \frac{y}{x}$$

$$k = \frac{15}{5}$$

$$k = 3$$

$$y = kx$$

$$y = 3x$$

$$x = 11$$

$$y = 3(11)$$

$$y = 33$$

$$(11, 33)$$

Homework Questions?

7)

Graph

$y = -0.2x$

$y = -\frac{1}{5}x$

x	y
-5	-1
0	0
5	1

$-\frac{1}{5}(x-5)$

14)

$x = -8, y = 12$

$k = \frac{12 \div 4}{-8 \div 4}$

$k = -\frac{3}{2}$

$y = kx$

$y = -\frac{3}{2}x$

On the top of your paper (by your name) rate yourself for this section:

4 - I can summarize the concepts and explain it to others

3 - I can apply the concept to answer questions correctly

2 - I can apply the concepts but with some mistakes

1 - I need help and know how to apply the concept

0 - I can't apply the concept, even with help

Rating of 0-2 is a warning signal to me that you need help

Warm Up - 4.6 Day 2

Find the slope between the two points

1) $(3, -5), (7, 11)$

$$m = \frac{11 + 5}{7 - 3} = \frac{16}{4} = 4$$

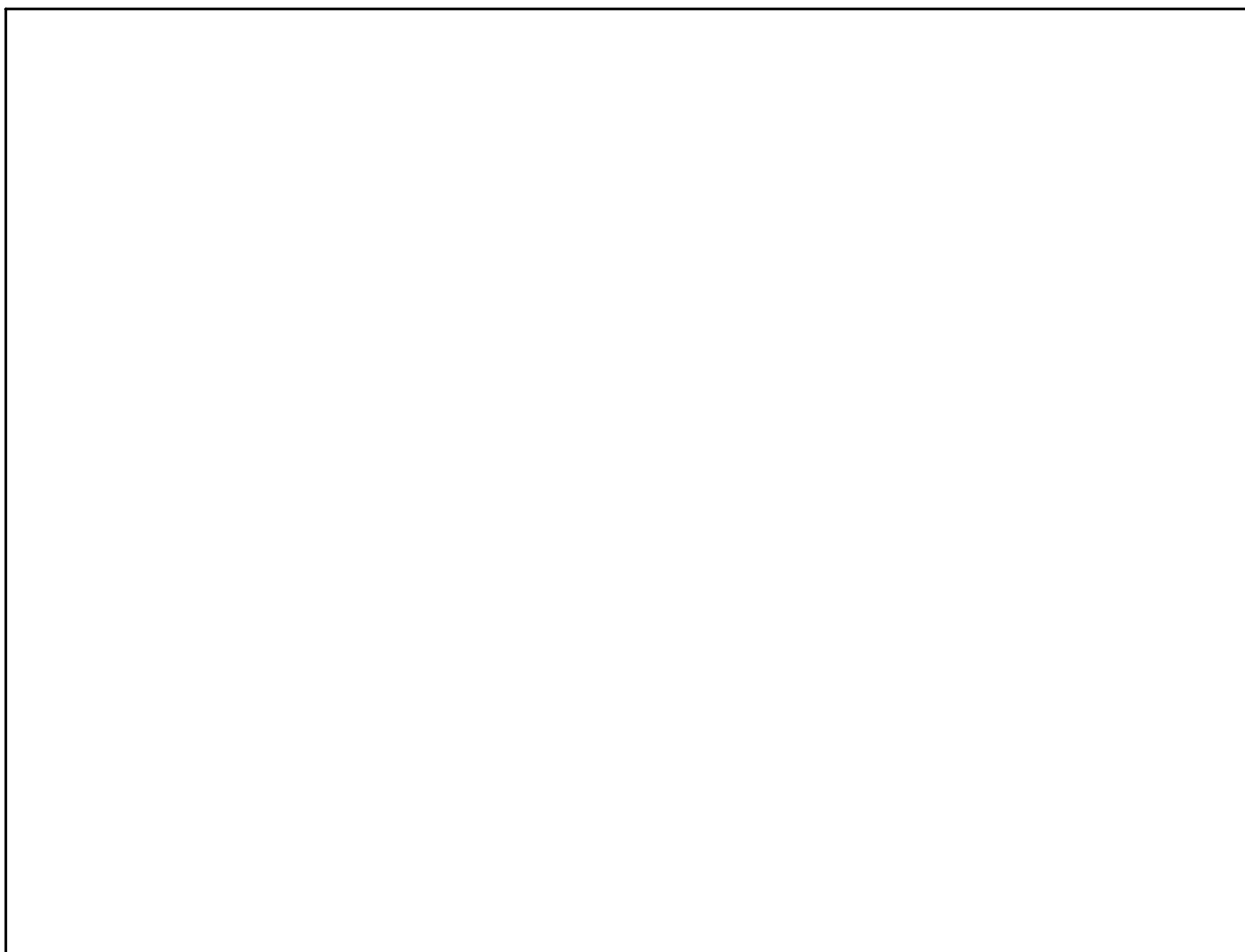
Identify the slope and y-intercept

2) $3x - 4y = 24$

$$\begin{array}{r} -3x \quad -3x \\ -4y = -3x + 24 \\ \hline -4 \quad -4 \quad -4 \end{array}$$

$$y = \frac{3}{4}x - 6$$

$$\begin{array}{l} m = \frac{3}{4} \\ b = -6 \end{array}$$



4.6 Quick Graphs Using Slope-Intercept Form

Goals:

- Graph a linear equation in slope-intercept form.
- Graph and interpret equations in slope intercept form that model real-life situations.

EQ: What do we need in order to graph using slope-intercept form?

NAME: _____
DATE: _____ Mo/Date/Year

Algebra 1.5

2 LAST UNIT/Experience Solving Linear Equations	1 CURRENT UNIT Graphing Linear Equations & Functions	3 NEXT UNIT/Experience Writing Linear Equations
8 Student Activities or Assignments 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8	5 UNIT MAP 	6 UNIT RELATIONSHIPS Graph Determine Identify Calculate
7 UNIT SELF-TEST QUESTIONS 1. How do you use a table to graph a line? 2. How do I find the intercepts in order to graph a line? 3. How can I calculate the slope with coordinates, or a graph, or a real world situation? 4. How do I write and solve a direct variation model? 5. How can I graph a line using the slope and y-intercept? 6. How can I determine a function and then evaluate it?		

Vocabulary

Slope-intercept form:

$$y = mx + b$$

\updownarrow (rise) \uparrow Slope \uparrow y-intercept
 \leftrightarrow (run)

(Where line crosses y-axis)

Parallel: Lines DO NOT Intersect
// SAME Slope

ex: $y = 3x + 1$ $y = 3x - 10$

$m = 3$ $m = 3$
 \therefore They are //

SLOPE-INTERCEPT FORM OF THE EQUATION OF A LINE

The linear equation $y = mx + b$ is written in slope-intercept form. The slope of the line is m . The y-intercept of the line is b .

Example: The linear equation $y = 2x + 3$ has a slope of 2 and a y-intercept of 3.

Example 1: Writing Equations in Slope-Intercept Form

Equation	Slope-intercept Form	Slope	y-intercept
$y = 5 - 2x$	$y = -2x + 5$	$m = -2$	$b = 5$
$y = \frac{x-2}{3}$	$y = \frac{1}{3}x - \frac{2}{3}$	$m = \frac{1}{3}$	$b = -\frac{2}{3}$
$y = 13$	$y = 0x + 13$	$m = 0$	$b = 13$
$2.2x - 4.4y = 0$	$y = \frac{1}{2}x + 0$	$m = \frac{1}{2}$	$b = 0$

$$\begin{array}{r}
 -2.2x \quad -2.2x \\
 2.2x - 4.4y = 0 \\
 \underline{-4.4y = -2.2x} \\
 -4.4 \quad -4.4 \\
 y = \frac{1}{2}x
 \end{array}$$

Try It

Find the slope and the y-intercept of the graph of the equation.

a) $y = 4 - 3x$

$$y = -3x + 4$$

$$m = -3$$

$$b = 4$$

b) $2x + y = -3$

$$y = -2x - 3$$

$$m = -2$$

$$b = -3$$

c) $y = \frac{3x-8}{4}$

$$y = \frac{3}{4}x - 2$$

$$m = \frac{3}{4}$$

$$b = -2$$

Example 2: Graphing Using Slope and y-Intercept

Graph the equation $-2x + y = -3$.

1. Write in slope-intercept form.

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

$$y = 2x - 3$$

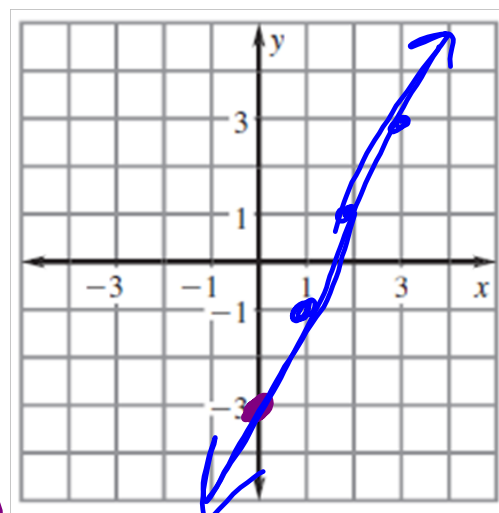
2. Find the slope and y-intercept.

$$m = 2$$

$$b = -3$$

$$m = \frac{2}{1}$$

Start at
(0, -3)



3. Plot the y-intercept and use the slope to find a second point.

Try It Graph the equation.

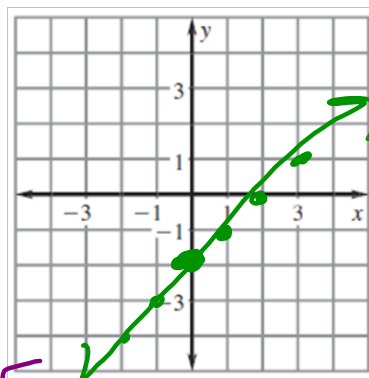
a) $x - y - 2 = 0$

$$x - 2 = y$$

$$y = x - 2$$

$$m = 1$$

$$b = -2$$



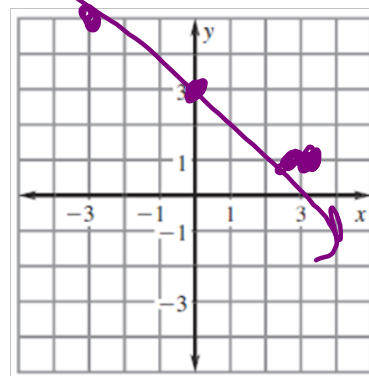
b) $2x + 3y = 9$

$$3y = -2x + 9$$

$$y = -\frac{2}{3}x + 3$$

$$m = -\frac{2}{3}$$

$$b = 3$$



4 word problems
(Finish 4.5wkst)

4.6 p. 244 #14-44

(Graph #22-32 even)

$$y = mx + b$$

$$m = ?$$

$$b = ?$$

Example 3: Identifying a Family of Parallel Lines

When are lines parallel? *m's match?*

Same slope

Yes

No \rightarrow NOT //

Which of the following lines are parallel? Begin by rewriting in slope-intercept form.

a: $-2x + y = 4$

$$y = 2x + 4$$

$$m = 2 \quad b = 4$$

b: $x + 2y = 6$

$$2y = -x + 6$$

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

$$m = -\frac{1}{2} \quad b = 3$$

c: $8x - 4y = 5$

$$-4y = -8x + 5$$

$$y = 2x - \frac{5}{4}$$

$$m = 2 \quad b = -\frac{5}{4}$$

Which lines are parallel?

a // c w/ slope $m = 2$

Try It Decide whether the lines are parallel.

a) $y = 5 - 2x$ and $y + 2x = 0$

$$y = -2x + 5$$

$$y = -2x + 0$$

$$m = -2$$

$$m = -2$$

Yes, //

b) $y = \frac{1}{3}x - 2$ and $2x + 6y = 12$

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

$$6y = -2x + 12$$

$$m = \frac{1}{3}$$

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

$$m = -\frac{1}{3}$$

NOT //

Summary

EQ: What do we need in order to graph using slope-intercept form?

1) Put eqn in $y = mx + b$

2) $m = ?$ $b = ?$

3) Graph \rightarrow start w/ y-int then count by slope

4.6 Homework

4.6 p.244 #14-44 even, (46-55), 78-86 even

(Graph #22-44)

$y = mx + b$
 $m = ?$
 $b = ?$
 yes // no // not //