

HW Page 54

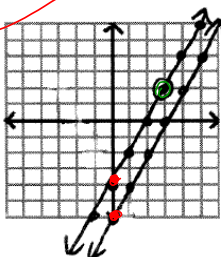
1. Parallel to $y = 2x - 6$
and passing through $(3, 2)$

$$m = 2$$

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

$$y - 2 = 2x - 6$$

$$y = 2x - 4$$



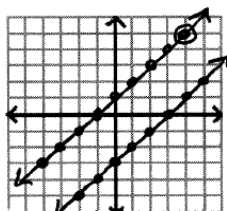
5. Parallel to $y = x - 3$
and passing through $(4, 5)$

$$m = 1$$

$$y - 5 = 1(x - 4)$$

$$y - 5 = x - 4$$

$$y = x + 1$$



HW Page 55

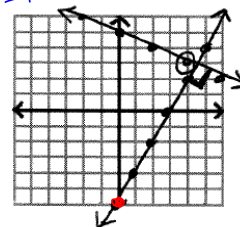
1. Perpendicular to $y = 2x - 6$
and passing through $(4, 3)$

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

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

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

$$y = -\frac{1}{2}x + 5$$



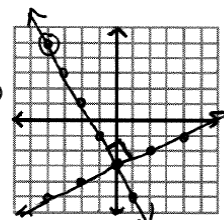
5. Perpendicular to $y = \frac{1}{2}x - 3$
and passing through $(-4, 5)$

$$m = -2$$

$$y - 5 = -2(x + 4)$$

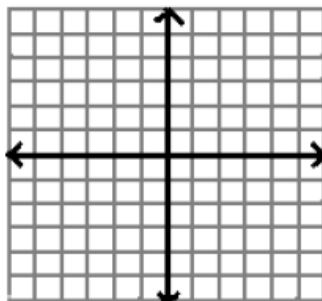
$$y - 5 = -2x - 8$$

$$y = -2x - 3$$



HW Page 54

1. Parallel to $y = 2x - 6$
and passing through $(3, 2)$



p 54!

5. Parallel to $y = x - 3$
and passing through $(4, 5)$

$$m = 1$$

$$b = -3$$

$$m = 1$$

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

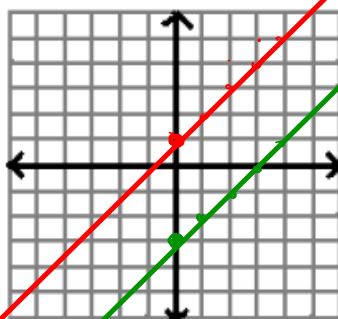
$$y - 5 = 1(x - 4)$$

$$y - 5 = x - 4$$

$$y = x + 1$$

$$m = 1$$

$$b = 1$$



HW Page 55

1. Perpendicular to $y = 2x - 6$
and passing through $(4, 3)$

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

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

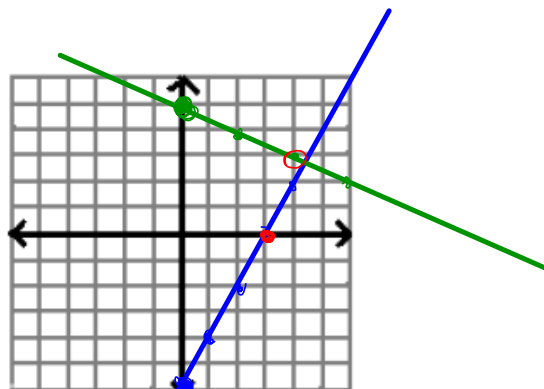
$$y - 3 = -\frac{1}{2}(x - 4)$$

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

$$y = -\frac{1}{2}x + 5$$

$$m = 2$$

$$b = -6$$



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

$$b = 5$$

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

$$b = -3$$

5. Perpendicular to $y = \frac{1}{2}x - 3$
and passing through $(-4, 5)$

$$m = -2$$

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

$$y - 5 = -2(x + 4)$$

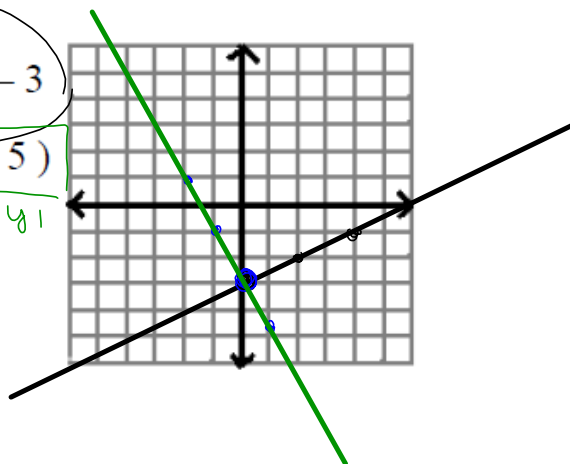
$$y - 5 = -2(x + 4)$$

$$y - 5 = -2x - 8$$

$$y = -2x - 3$$

$$m = -2$$

$$b = -3$$



1. Find the slope of the line pictured:

a. 0

b. $-\frac{2}{3}$

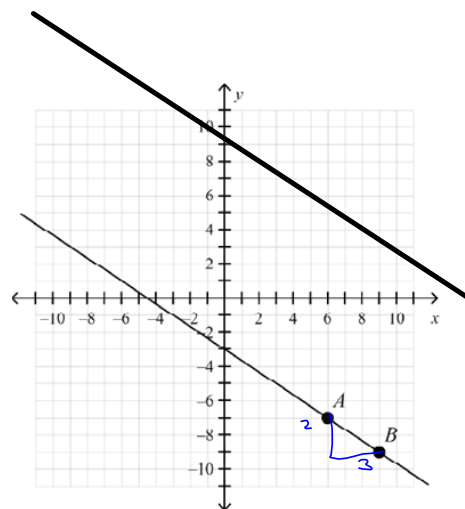
c. $-\frac{3}{2}$

d. undefined

2. Draw a line on the graph that is parallel to the line pictured.

$-\frac{2}{3}$

3. What is the slope of the line you drew in #2? _____



4. Find the slope of the line pictured

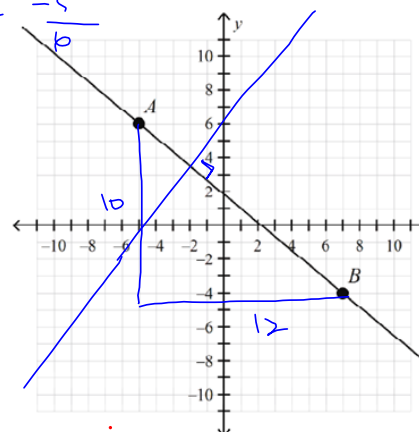
a. $-\frac{5}{6}$
b. 0

c. $-\frac{6}{5}$
d. undefined

5. Draw a line on the graph that is perpendicular to the line pictured.

6. What is the slope of the line you drew in #5? $\frac{6}{5}$

$$m = \frac{-10}{12} = -\frac{5}{6}$$



7. 3. Find the slope of the line pictured

- a. 13
- b. 0

c. $\frac{1}{13}$

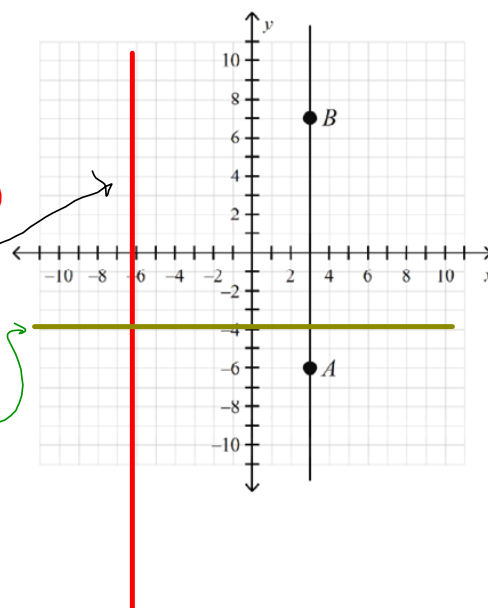
d. undefined

8. Draw a line on the graph that is parallel to the line pictured.

9. What is the slope of the line you drew in #8? undefined

10. Draw a line on the graph that is perpendicular to the line pictured.

11. What is the slope of the line you drew in #10? 0



page 93

5-6 Linear Inequalities

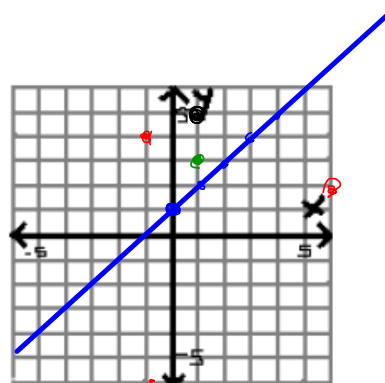
Investigating Linear Inequalities:

$$m=1$$

$$b=1$$

1. Graph $y = x + 1$ on the coordinate plane.
2. Change the equals sign in the equation to a "greater than or equal to" symbol.

$$y \geq x + 1$$



3. Choose three points from the graph that lie above the line. Substitute each one into the inequality to check if it makes a true statement.

$$(1, 3)$$

$$3 \geq 1 + 1$$

$$3 \geq 2$$

true

$$(-1, 4)$$

$$4 \geq -1 + 1$$

$$4 \geq 0$$

true

$$(1, 5)$$

$$5 \geq 1 + 1$$

$$5 \geq 2$$

true

4. Choose three points from the graph that lie below the line. Substitute each one into the inequality to check if it makes a true statement.

$$(6, 2)$$

$$2 \geq 6 + 1$$

$$2 \geq 7$$

false

$$(-1, -6)$$

$$-6 \geq -1 + 1$$

$$-6 \geq 0$$

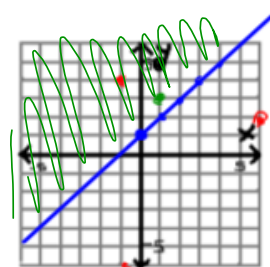
false

$$(0, 0)$$

$$0 \geq 0 + 1$$

$$0 \geq 1$$

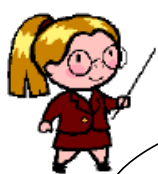
false



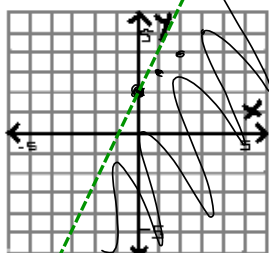
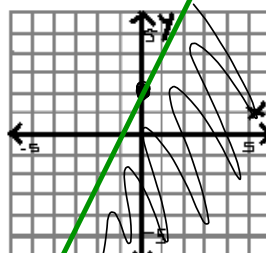
5. Shade the side of the line that contains all the points that will make the inequality true.
6. What if the inequality symbol was reversed? Which way would you shade then?

below

page 94



$$m = 1$$
$$b = 2$$

Graph $<$ and $>$ with a
dashed line.Example: $y < x + 2$ Graph \leq and \geq with a
SOLID line.Example: $y \leq x + 2$ 

Example 1: Graphing an InequalityGraph: $y < 2x + 3$

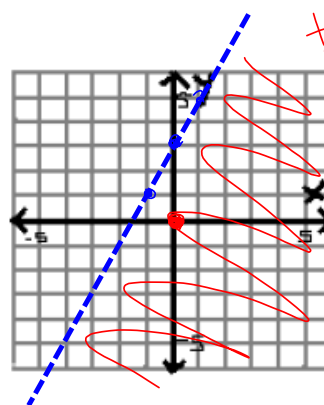
$$\begin{aligned} m &= 2 \\ b &= 3 \end{aligned}$$

Step 1: Graph line.

Use dashed or ~~solid~~.

Step 2: Choose test point.

Step 3: Shade true side.

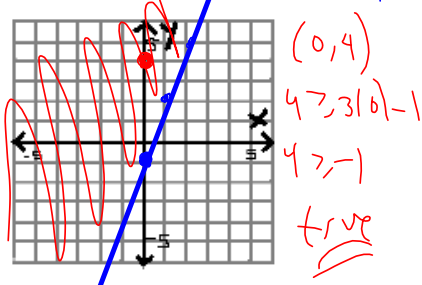


test
 $(0, 0)$
 $0 < 2(0) + 3$
 $0 < 3$
true

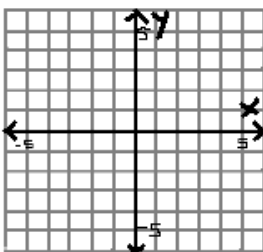
Understanding Check:

Graph each inequality:

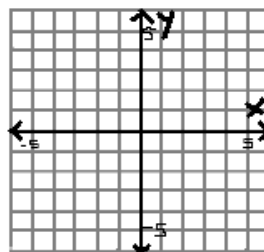
a. $y \geq 3x - 1$ → $\begin{aligned} m &= 3 \\ b &= -1 \end{aligned}$



b. $y > -2x + 3$

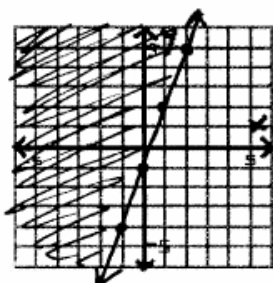


c. $y < x - 4$

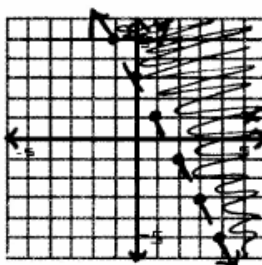
**Shortcut for shading:**

✓ **Understanding Check:**
Graph each inequality:

a. $y \geq 3x - 1$

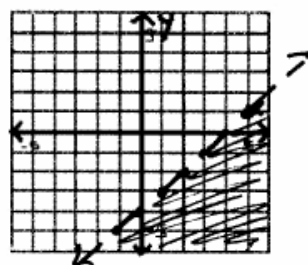


b. $y > -2x + 3$

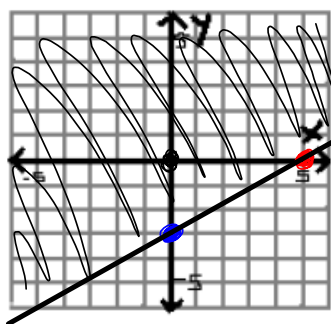


$0 < 2(0) + 3$
 $0 < 3$ True!

c. $y < x - 4$



page 95

Example 2: Graphing from Standard FormGraph: $3x - 5y \leq 15$ 

Step 1: Find and plot the intercepts.

* Use the cover up method.

x	y
0	-3
5	0

Step 2: ~~Dashed~~ or Solid line?

Step 3: Test a point. (0, 0) Shade the "true" side.

x y

$$3(0) - 5(0) \leq 15$$

$$0 \leq 15$$

true

* Or you can solve for y instead...but be careful!

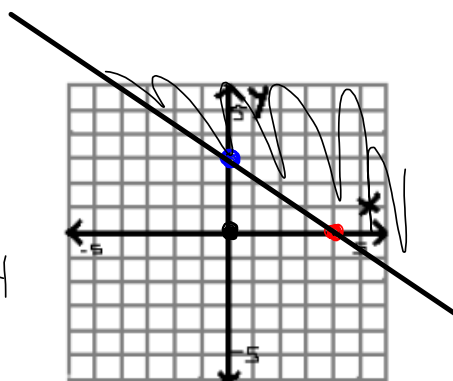
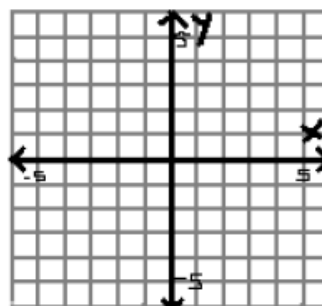
✓ Understanding Check:a. Graph: $6x + 8y > 24$

x	y
0	3
4	0

test:
 $(0,0)$
x y

$$6(0) + 8(0) > 24$$

$$0 > 24$$

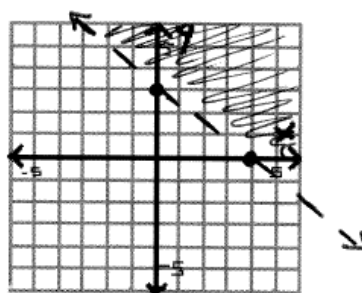
so shade
the other side. → falseb. Graph: $4x - 5y \geq 10$ 

✓ Understanding Check:

a. Graph: $6x + 8y > 24$

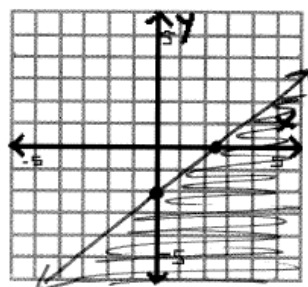
Students
can show
work here...
method will
vary.

Flip! —————



b. Graph: $4x - 5y \geq 10$

Students
can show
work here...
method will
vary.



Homework:

HW page 56 all