

Warm up

Write an equation of the line in slope intercept form.

1. The slope is 3, the y-intercept is -2

$$y = 3x - 2$$

2. The slope is 0, the y intercept is 4.

$$y = 0x + 4 \text{ or } y = 4$$

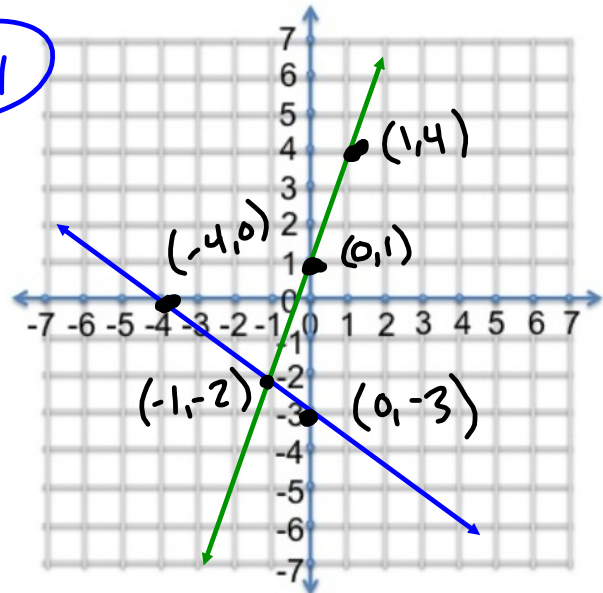
Write an equation of the lines shown.

a) $m = -\frac{3}{4}$ $b = -3$

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

b) $m = 3$ $b = 1$

$$y = 3x + 1$$



Week 11

Homework Questions?

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

Ch.4 Test

65 pts

58.5 - A

52 - B

45.5 - C

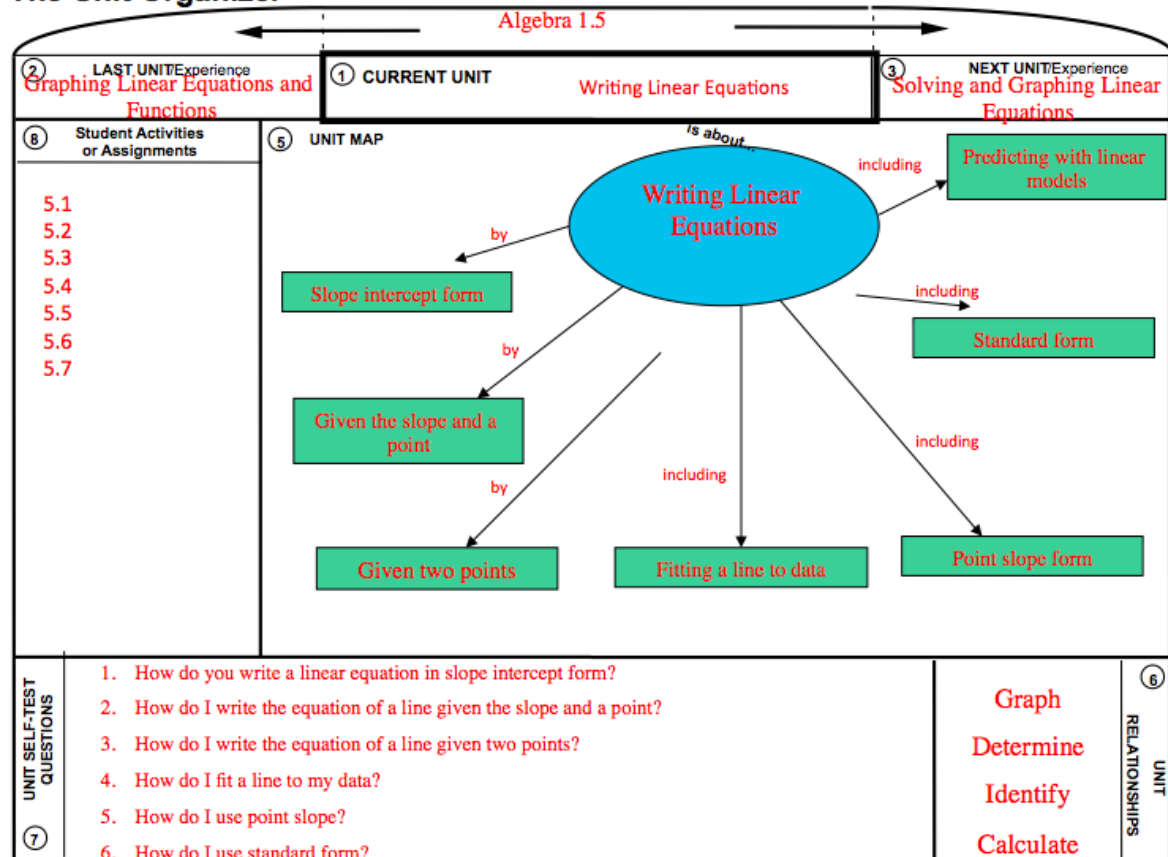
41.5 ↓

5.2 Writing Linear Equations Given the Slope and a Point

Goal: • Use the slope and any point on a line to write an equation of the line.

EQ: Write the equation of the line that is parallel to $y = 3x + 5$, and passes through $(2, -1)$.

The Unit Organizer



Step 1: Find the y-intercept. $\rightarrow b$

- Substitute the slope, m, and the point (x, y) into $y = mx + b$
- Solve for b.

Step 2: Write in slope-intercept form: $y = mx + b$

- Substitute the slope, m, and the y-intercept b.

Example 1: Writing an Equation of a Line

Write an equation of the line that passes through the point $(-3, 5)$ and has a slope of 2.

$$y = mx + b$$

$$5 = 2(-3) + b$$

$$5 = -6 + b$$

$$11 = b$$

$$m = 2$$

$$y = 2x + 11$$

Try It

Write an equation of the line that passes through the point and has the given slope. Write the equation in slope-intercept form.

1. $(2, 4)$, $m = 2$
 x y

$$y = mx + b$$

$$4 = 2(2) + b$$

$$y = 4 + b$$

$$-4 \quad -4$$

$$0 = b$$

$$y = 2x + 0$$

$$y = 2x$$

2. $(-3, 2)$, $m = -3$

$$y = mx + b$$

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

$$2 = 9 + b$$

$$-9 \quad -9$$

$$-7 = b$$

$$y = -3x - 7$$

3. $(-5, -1)$, $m = \frac{1}{2}$

$$y = mx + b$$

$$-1 = \frac{1}{2}(-5) + b$$

$$-1 = -\frac{5}{2} + b$$

$$+\frac{5}{2} \quad +\frac{5}{2}$$

$$\frac{3}{2} = b$$

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

5.2 p. 282

12-30 even

Warm Up

- 1) Write the equation through $(-3, 2)$ with a slope of $m = 1/3$

$$2 = \frac{1}{3}(-3) + b$$

$$2 = -1 + b$$

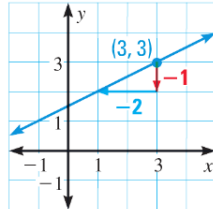
$$+1 \quad +1$$

$$b = 3$$

$$y = mx + b$$

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

- 2) Write the equation of the line shown



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

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

$(3, 3)$
x y

$$y = mx + b$$

$$3 = \frac{1}{2}(3) + b$$

$$3 = \frac{3}{2} + b$$

$$-3/2 \quad -3/2$$

$$\frac{3}{2} = b$$

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

Homework Questions?

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

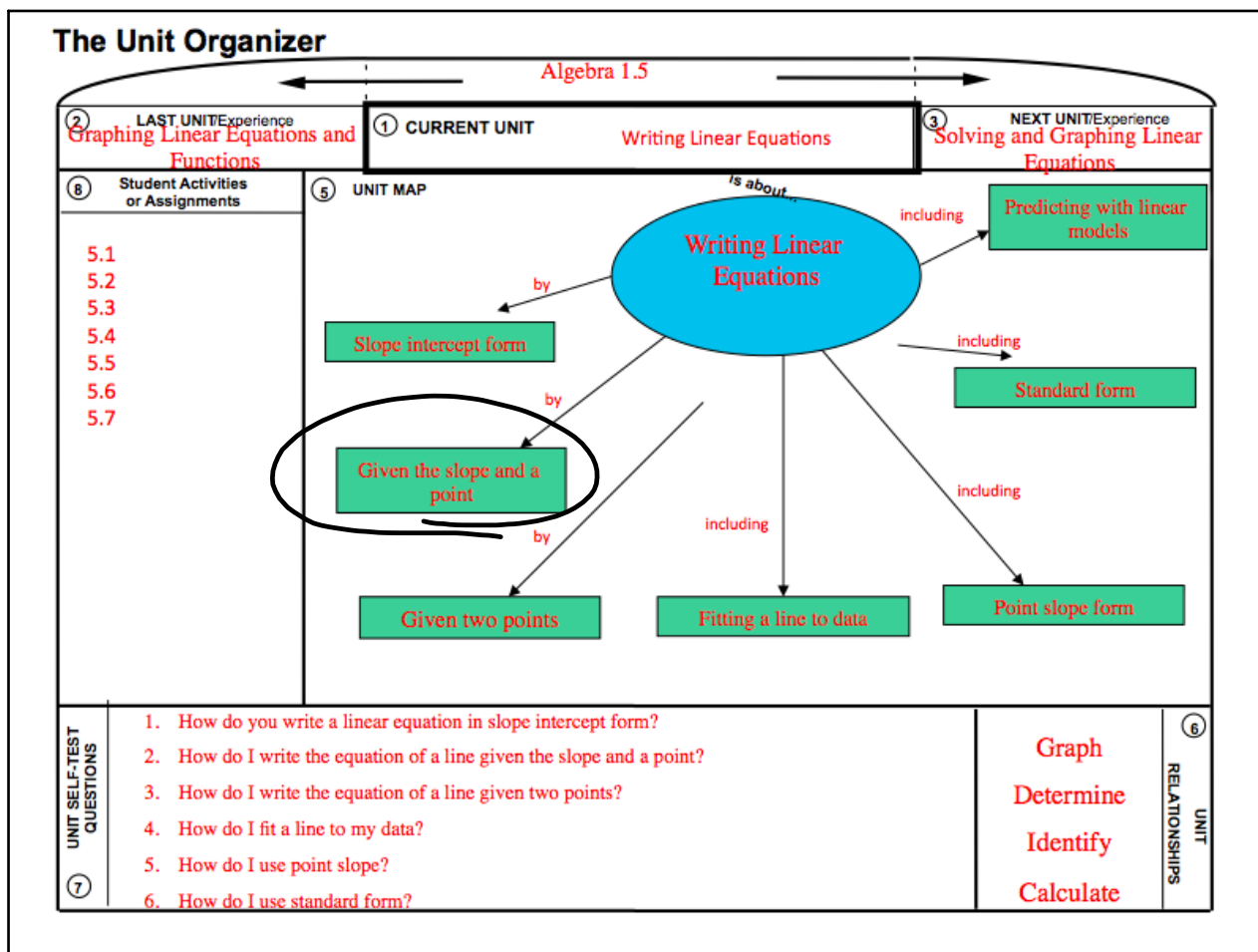
0 - I can't apply the concept, even with help

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

5.2 Writing Linear Equations Given the Slope and a Point

Goal: • Use the slope and any point on a line to write an equation of the line.

EQ: Write the equation of the line that is parallel to $y = 3x + 5$, and passes through $(2, -1)$.



Example 2: Writing Equations of Parallel Lines

Two nonvertical lines are parallel if and only if they have the same slope. Write an equation of the line that is parallel to the line $y = -\frac{1}{2}x - 2$ and passes through the point (2, 1).

x y

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

$$y = mx + b$$

$$1 = -\frac{1}{2}(2) + b$$

$$1 = -1 + b$$

$$+1 \quad +1$$

$$2 = b$$

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

Check your result by graphing the original line and the new line.

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

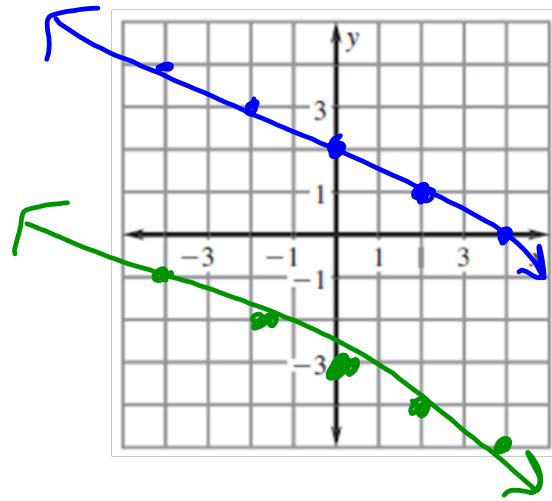
$$m = -\frac{1}{2}$$

$$b = -3$$

New line: $y = -\frac{1}{2}x + 2$

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

$$b = 2$$



Try It

Write an equation of the line that is parallel to the given line and passes through the given point.

4. ~~$y = 5x + 3$~~ , $(-2, 6)$
 x y

$$m = 5$$

$$y = mx + b$$

$$6 = 5(-2) + b$$

$$6 = -10 + b$$

$$+10 \quad +10$$

$$b = 16$$

$$y = 5x + 16$$

5. $y = -\frac{3}{4}x + 2$, $(3, -7)$
 x y

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

$$y = mx + b$$

$$-7 = -\frac{3}{4}(3) + b$$

$$-7 = -\frac{9}{4} + b$$

$$+\frac{9}{4} \quad +\frac{9}{4}$$

$$-\frac{19}{4} = b$$

$$b = -4.75$$

$$y = -\frac{3}{4}x - \frac{19}{4}$$

Summary

EQ: Write the equation of the line that is parallel to $y = 3x + 5$, and passes through $(2, -1)$.

$$m = 3$$

$$y = mx + b$$

$$-1 = 3(2) + b$$

$$-1 = 6 + b$$

$$-6 \quad -6$$

$$-7 = b$$

$$y = 3x - 7$$

5.2 Homework

5.2 Day 2 HW

p.283 #32-41

p.276 #23-25

a) $m = ?$
 $b = ?$
 $y = mx + b$

b) c)