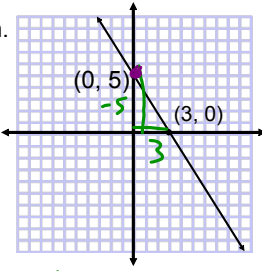


Warm up	week 13
1. Write the equation of the line in slope intercept form with the slope -7 and the y-intercept -5.	
$y = -7x - 5$	$y = mx + b$
2. Write the equation of the line in slope intercept form.	
$m = -\frac{5}{3}$	$b = 5$
$y = -\frac{5}{3}x + 5$	
3. Write the equation of the line perpendicular to $y = -4x + 6$ and goes through the point $(-3, -3)$ .	
$y = mx + b$	<del><math>m = -4</math></del> $m = \frac{1}{4}$
$-3 = \frac{1}{4}(-3) + b$	$y = \frac{1}{4}x - \frac{9}{4}$
$-3 = -\frac{3}{4} + b$	
$+\frac{3}{4} \quad +\frac{3}{4}$	
$\frac{-9}{4} = b$	

## 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\*

## **5.3 Quiz**

\*Was out of 20 points

**A - 18**

**B - 16**

**C - 14**

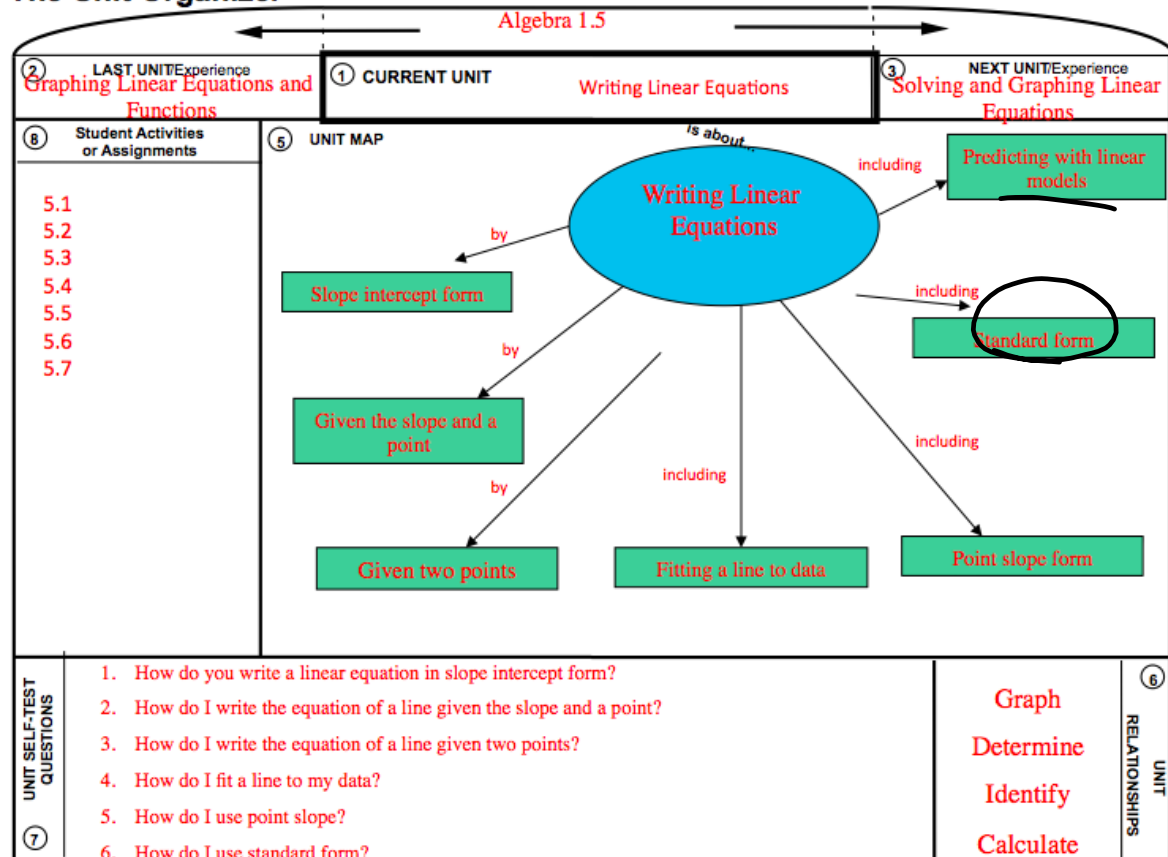
**Passing - 12**

# 5.6 The Standard Form of a Linear Equation

- Goal:**
- Write a linear equation in standard form.
  - Use the standard form of an equation to model real-life situations.

**EQ:** What does standard form of a linear equation, and integer coefficients mean?

## The Unit Organizer



### Vocabulary

Standard form:  $Ax + By = C$

↓ ↓ ↓  
Numbers

ex:  $2x + 3y = 18$

Integer Coefficients

→ NO Fractions

→ NO Decimals

ex:  $\left(\frac{1}{8}x + \frac{3}{8}y = 4\right)$

$1x + 3y = 32$

### **Example 1: Writing a Linear Equation**

Write the standard form of an equation of the line passing through  $(-3, 2)$  with a slope of  $-4$ .

x y

$m = -4$

$y = mx + b$

$2 = -4(-3) + b$

$2 = 12 + b$

$-12 \quad -12$

$-10 = b$

$y = -4x - 10$

$+4x \quad +4x$

$4x + y = -10$

**Try It**

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

1.  $(2, 5)$ ,  $m = -3$

$$y = mx + b \quad y = -3x + 11$$

$$5 = -3(2) + b \quad +3x \quad +3x$$

$$5 = -6 + b$$

$$+6 \quad +6$$

$$11 = b$$

$$3x + y = 11$$

2.  $(4, -1)$ ,  $m = 0$

$$-1 = 0(4) + b$$

$$-1 = b$$

$$y = 0x - 1$$

$$y = -1$$

3.  $(-4, 6)$ ,  $m = 2$

$$6 = 2(-4) + b \quad y = 2x + 14$$

$$6 = -8 + b \quad -2x \quad -2x$$

$$+8 \quad +8$$

$$14 = b$$

$$-2x + y = 14$$

**Example 2: Horizontal and Vertical Lines**

Write the standard form of an equation

a. of the horizontal line

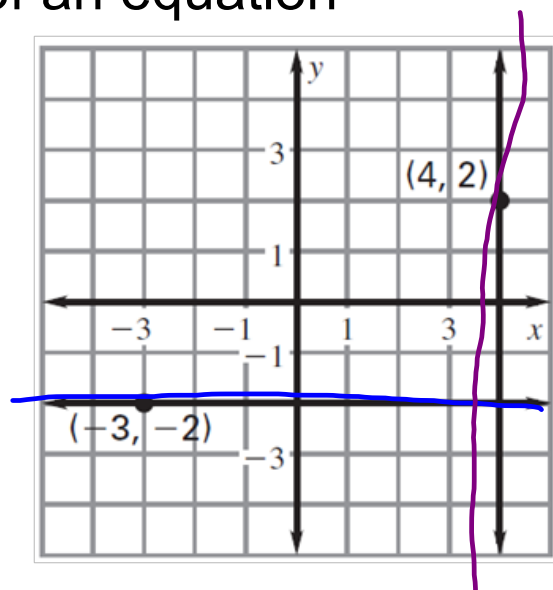
$$y = 0x + b \quad m = 0$$

$$y = 0x - 2 \quad y = -2$$

b. of the vertical line

$m = \text{Undefined}$

$$x = 4$$



**Try It**

Write the standard form of an equation of the line that passes through the two points.

4.  $(3, 7), (3, 1)$   
 $(3, 7)$   
 $(3, 1)$   
 $m = \frac{7-1}{3-3} = \frac{6}{0}$  *Undefined*  
 $x=3$

5.  $(-2, -4), (5, 3)$   
 $(-2, -4)$   
 $(5, 3)$   
 $m = \frac{3+4}{5+2} = \frac{7}{7} = 1$

6.  $(-1, 8), (2, -2)$   
 $(-1, 8)$   
 $(2, -2)$

$$m = \frac{8+2}{-1-2} = \frac{10}{-3}$$

$$m = \frac{-10}{3} \quad (2, -2)$$

$m=1$   $(5, 3)$   
 $y = m \cdot x + b$   
 $3 = 1(5) + b$   $y = 1x - 2$   
 $3 = 5 + b - 1x$   
 $-3 = 5 + b - 1x - 1x$   
 $-2 = b$   $-x + y = -2$

$$-2 = \frac{-10}{3}(2) + b$$

$$-2 = \frac{-20}{3} + b$$

$$\frac{12}{3} + \frac{20}{3} = b$$

$$\frac{14}{3} = b$$

$$y = \frac{-10}{3}x + \frac{14}{3}$$

$$3 \left( \frac{10}{3}x + y = \frac{14}{3} \right)$$

$$10x + 3y = 14$$

$$3 \cdot \frac{1}{3}$$

**Example 3: Writing an Equation in Standard Form**

Write  $y = \frac{2}{5}x - 3$  in standard form with integer coefficients.

$$y = \frac{2}{5}x - 3$$

$$-\frac{2}{5}x \quad -\frac{2}{5}x$$

$$5 \left( -\frac{2}{5}x + y = -3 \right)$$

$$-2x + 5y = -15$$

**Try It**

$$Ax + By = C$$

Write the equation in standard form with integer coefficients.

7)  $3x + 9 = \frac{7}{2}y$

$$3x = \frac{7}{2}y - 9$$

$$3x - \frac{7}{2}y = -9$$

$$6x - 7y = -18$$

8)  $y = \frac{1}{2}x + 8$

$$-\frac{1}{2}x - \frac{1}{2}x$$

$$2 \left( -\frac{1}{2}x + y = 8 \right)$$

$$-1x + 2y = 16$$

9)  $y = -\frac{1}{7}x + \frac{6}{7}$

$$+\frac{1}{7}x + \frac{1}{7}x$$

$$\frac{1}{7}x + y = \frac{6}{7}$$

$$1x + 7y = 6$$

**Summary****EQ:** What does standard form of a linear equation, and integer coefficients mean?

$$Ax + By = C$$

No Fractions  
No Decimals**5.6 Homework**

p.311 #18-32, 54-61

horizontal:  $y=3$ 54)  $(1, 3)$  vertical:  $x=1$