Writing Equations of Lines Day 1

Agenda

Warm-Up
HW Check
Notes p. 62
HW #1-8

Reminders

- Math Blitz TONIGHT or Thurs 4:30-6:30PM
- Please bring your graphing calculator to class tomorrow!!!
- Quiz Friday

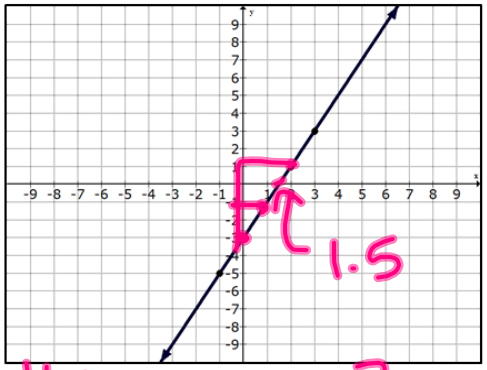
Essential Question

How do I write the equation of a line given a point and a slope?

Warm-Up (on yellow half-sheet)

Have out last night's assignment, ready to be checked.

1.



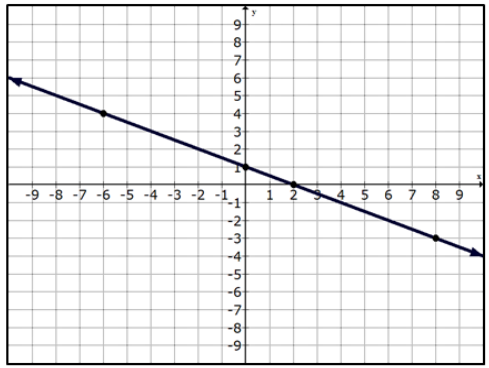
m = 4/2 = 2 *b*= −3

Equation in slope-intercept form: y = mx + b

y = 2x − 3

Zero: (1.5, 0)

2.



m = _____ *b*= _____

Equation in slope-intercept form: _____

***x*-intercept:** _____

Write your name & turn in when you finish!

Math Blitz: You must come on the day your pink invite states. You must stay the ENTIRE time!! Meet in upstairs G-hall (by the bathroom & stairs) BEFORE 4:30.

Questions, comments, concerns??

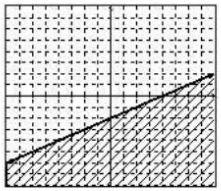
Algebra 1 - Unit 3: Topic 2 → Graphing Inequalities

Practice – Graphing Inequalities **pp 414-417**

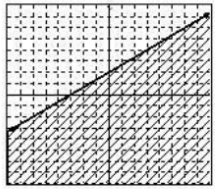
Match each inequality with its graph. Check the shading on the calculator.

_____1.	$y \geq \frac{1}{2}x - 2$
_____2.	$y \leq \frac{2}{3}x + 2$
_____3.	$y \geq \frac{2}{3}x + 2$
_____4.	$y \leq \frac{1}{2}x - 2$

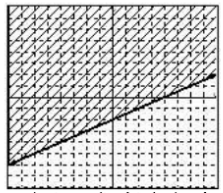
A.



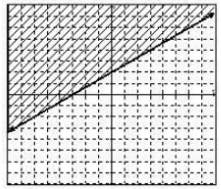
B.



C.



D.



5. Determine which ordered pairs are solutions to the inequality (circle them):

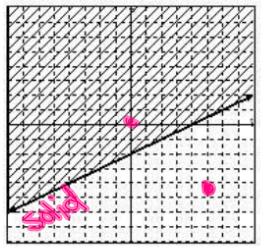
$$y > x - 1$$

A (0, 0) B (2, 0) C (5, 4) D (1, 3)

6. The members of a school choir had a fundraising drive last month. They sold candy bars for $2 each and cans of popcorn for $5 each. Derek sold more than $300 worth of candy and popcorn altogether. Which of the following points could not reasonably represent the number of candy bars, *y*, and cans of popcorn, *x*, sold by Derek last month?

A (30, 90)
B (40, 80)
C (20, 50)
D (50, 40)

7. Given the graph, answer the following questions.



A. *m* = _____ *b*: _____

B. Inequality: _____

C. Solution Point: _____ Not a solution Point: _____

Shaded not shaded

D. *x*-intercept: _____ *y*-intercept: _____

Algebra I - Unit 3: Topic 2 – Graphing Inequalities

Graph each inequality.

8. $y \leq -x + 0$

m = -1
b = 0
≤
solid
down

9. $4y - 16 \geq 0$

10. $x > 2$

vertical
>
dotted

HOY VWX
X=#

11. $4x - y < 2$

12. $2x - 5y \leq -10$

13. $6x + 2y < -2$

-6x -6x
$\frac{2y}{2} < \frac{-4x-2}{2}$
$y < -3x - 1$

m = -3/1
b = -1

<
dotted

Writing Equations of Lines Day 1

Point-Slope Form p.62

Essential Question: How do I write the equation of a line given a point and a slope?

We saw in the warm-up that we can write the equation of a line in slope-intercept form if we are given (or can find) a slope and a y-intercept. But what if you are given a point other than the y-intercept?

Once you have written your title & essential question, look at your formula chart (the colored half-sheet one is yours to keep!). Is there a formula that looks useful if we are given a point and a slope?

Point-Slope Form p.62

Essential Question: How do I write the equation of a line given a point and a slope?

Point-Slope Form of an Equation: $y - y_1 = m(x - x_1)$ ← slope; point: (x_1, y_1)

If a variable has a number, I put a number in its place.

Write an equation of a line for each of the following situations:

1.

x	y
5	-13
10	-10
15	-7

+5, +5; -13 +3, -10 +3

$m = \frac{\Delta y}{\Delta x} = \frac{3}{5}$

pick point $(5, -13)$ x_1 y_1

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

optional: solve for y

$y - (-13) = \frac{3}{5}(x - 5)$

$y + 13 = \frac{3}{5}(x - 5)$

2. {(2, 4), (6, 6), (12, 9)}

x	y
2	4
6	6
12	9

+4 +2; +6 +3

$m = \frac{3}{6} = \frac{1}{2}$

(x_1, y_1)

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

slope-intercept form $y =$

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

$+4 \quad +4$

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

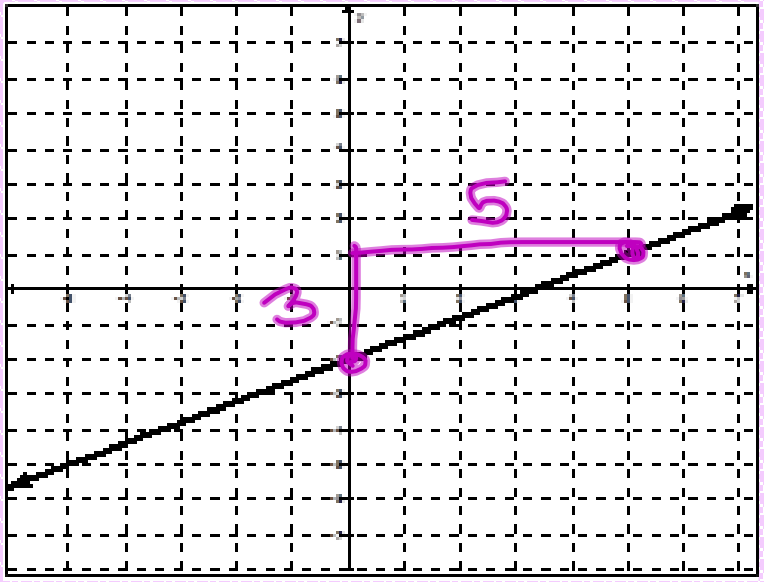
Point-Slope Form p.62

Essential Question: How do I write the equation of a line given a point and a slope?

Point-Slope Form of an Equation: $y - y_1 = m(x - x_1)$

If the variable has a number, I put a number in its place!

3. Using the graph below, write an equation for a line passing through the point (-2,4) with the same slope as the line graphed below.



$m = \frac{3}{5}$ $(-2, 4)$ x_1, y_1

$y - 4 = \frac{3}{5}(x - (-2))$

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

Point-Slope Form p.62

Essential Question: How do I write the equation of a line given a point and a slope?

Point-Slope Form of an Equation: $y - y_1 = m(x - x_1)$

If the variable has a number, I put a number in its place!

4. Write an equation that represents a line with a slope of 2 and an x-intercept of 5. (5, 0)

$m = 2$ $(5, 0)$ — x_1, y_1

$y - 0 = 2(x - 5)$

5. Write the equation of the line that passes through the points (-2, 1) and (0, -7)

x	y
-2	1
0	-7

+2, -8

$m = \frac{-8}{2} = -4$

$y - (-7) = -4(x - 0)$

(0, -7) y-intercept

$y = mx + b$

$y = -4x - 7$

Point-Slope Form p.62

Essential Question: How do I write the equation of a line given a point and a slope?

Point-Slope Form of an Equation: $y - y_1 = m(x - x_1)$

If the variable has a number, I put a number in its place!

6. The number of shirts you buy at the store determines the amount of money you have in your wallet. This table represents the amount of money left after different amounts of shirts are purchased.

Write an equation of the line that represents this data.

Number of shirts bought (s)	Money left (m)
2	$170
5	$125
7	$95
12	$20

Make sure you bring your graphing calculator to class tomorrow!!!

Algebra I - Unit 4: Topic 1 – Writing Equations of Lines

Student Practice – Writing Equations of Lines

Write an equation of a line for each of the following situations:

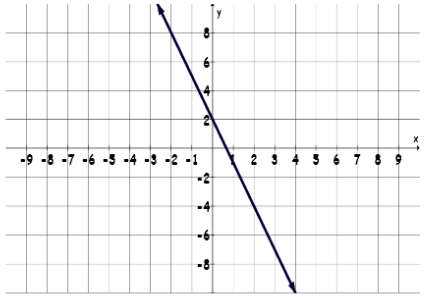
1.

x	*y*
-3	0
0	6
3	12

2.

x	*y*
-10	-3
-5	-3
0	-3

3. Using the graph below, write an equation for a line passing through the point (-5, 8) with the same slope as the line graphed below.



4. Write a linear equation that includes the points (8, -2) and (4, -4)

5. Write the equation of a line in slope-intercept form with a slope of $-\frac{2}{5}$ that passes through the point (5, 7)

Algebra I - Unit 4: Topic 1 – Writing Equations of Lines

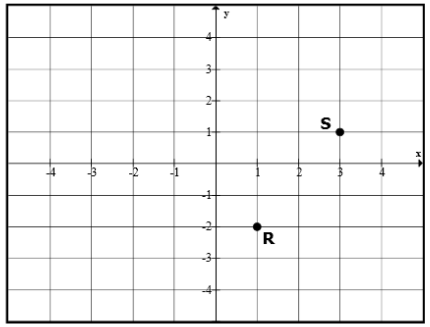
6. The weight, *w*, in pounds, of a stack of books is dependent on the number of books, *n*, in the stack. This table represents the weight of four different stacks of books.

Number of books (*n*)	Weight in pounds (*w*)
4	10
6	15
10	25
16	40

Write the equation of the line that represents this data.

7. Write an equation of a line with a slope of -4 that has an *y*-intercept of -3

8. Write the linear equation of the line passing throught points *R* and *S*



Writing Equations of Lines Day 1 HW Help!

Remember unless the problem specifies what form to put the equation in, you can leave all answers in point-slope form.

Point-Slope Form of an Equation: $y - y_1 = m(x - x_1)$

If the variable has a number, I put a number in its place!

#1 - the y-intercept is listed in the table!

#2 - all y's are the same, so the slope is 0.

#3 - the slope of the line graphed is -3.

#4 - This equation is $y = \frac{1}{2}x - 6$ in slope-intercept form.

#5 - EQUATION: y-7 = -2/5(x-5) & solve for y!

#6 - y=2.5x or w=2.5n

#7 - You don't even have to use point-slope! Try y=mx+b.

#8 - This graph doesn't have a nice y-intercept. Pick a pretty point and plug into point-slope form.