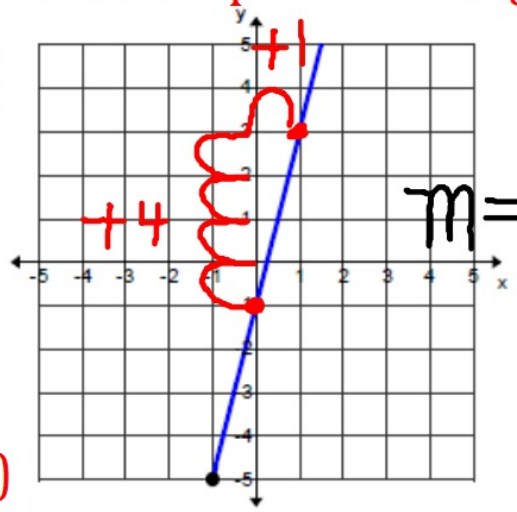
Warm Up

October 26, 2018

Find the slope from the graphs and tables below.

1.)



$m = 4$

2.)

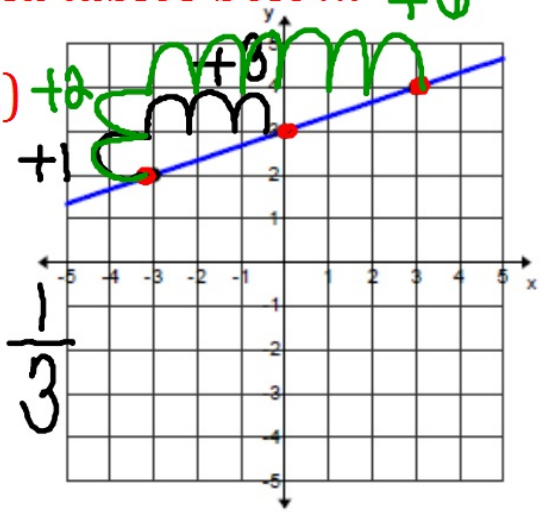
x	y
0	-3
4	-2
8	-1
12	0
16	1
20	2

+4, +4, +4, +4, +4, +18

+1, +1, +1, +1, +1, +2

$m = \frac{1}{4}$

3.)



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

4.)

x	y
3	-6
0	-2
-3	2
-6	6
-9	10
-12	14

−3, −3, −3, −3, −3

+4, +4, +4, +4, +4

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

WARM-UP!!!

REVIEW

Translate the following expressions, equations, & inequalities:

1. "The product of a number and 7"

$7n$

2. "Nine subtracted from twice a number"

$2x-9$

3. "One less than the quotient of a number and -5."

$\frac{n}{-5}-1$

4. "Three times the sum of a number and 10 is 24"

$3(n+10)=24$

5. "The difference of twice a number and 3 is 21."

$2n-3=21$

6. "One-third of a number is 8 less than the number itself."

$\frac{1}{3}n=n-8$

7. "x is at most 6"

$x\leq 6$

8. "You must be at least 18 years old to vote"

$x\geq 18$

How can you find the slope without a graph or table ?

(x_1, y_1) and (x_2, y_2)

Slope Formula

$$\frac{\text{Change } y}{\text{Change } x} \rightarrow m = \frac{y_2 - y_1}{x_2 - x_1}$$

It is important to remember to simplify your answer!

If you have a table, pick two points!

Find the slope between each pair of points.

1.) Write the points.

2.) Label (x_1, y_1) and (x_2, y_2)

3.) Write the formula.

4.) Plug - In (*Remember the signs)

5.) Simplify

SLOPE FORMULA

The **slope formula** is used to find the slope between two points (x_1, y_1) and (x_2, y_2).

Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

It is important to remember to SIMPLIFY your answer!

$X_1\ Y_1\quad X_2\ Y_2$

1. (1, 1) and (4, 3)

$m = \frac{3-1}{4-1} = \frac{2}{3}$

$X_1\ Y_1\quad X_2\ Y_2$

2. (-2, 4) and (10, -2)

$m = \frac{-2-4}{10-(-2)} = \frac{-6}{12}$

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

5. (5, 9) and (3, 9)

$m = \frac{9-9}{3-5} = \frac{0}{-2}$

$m = 0$

y's are same!

6. (-7, 8) and (-7, 5)

$m = \frac{5-8}{-7-(-7)} = \frac{3}{0}$

m = undefined

x's are same!

9. (5, 6) and (6, 5)

$m = \frac{5-6}{6-5} = \frac{-1}{1}$

$m = -1$

10. (9, -4) and (1, -4)

$m = 0$

Slope Intercept Form

$$y = mx + b$$

y - intercept

slope- always the coefficient paired with the x!

Ex. 1)
What are the slope and y-intercept of the graph of y=5x +2?

Plan Ahead:

Is the equation solved for y? (y =)?
If not then solve for y.

Use slope - intercept form (y = mx + b)

Label the slope and y-intercept.

Write the equation of a line given the slope and y-intercept.

1. ~~slope~~ = 2; ~~y-intercept~~ = -1 $y = 2x - 1$

m b

2. slope = $-\frac{3}{5}$; y-intercept = 4 $y = -\frac{3}{5}x + 4$

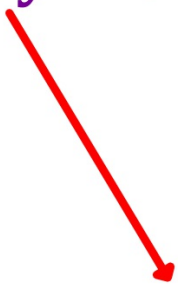
3. slope = -3; y-intercept = 2 $y = -3x + 2$

4. slope = -1; y-intercept = 7 $y = -x + 7$ $y = -1x + 7$

5. slope = $\frac{1}{4}$; y-intercept = 0 $y = \frac{1}{4}x$

Standard Form

$$ax + by = c$$



y is still the most important term

Given equations in standard form, you must convert them to slope-intercept form.

Examples:

1. $2x + y = 3$

$-2x \quad -2x$

$y = -2x + 3$

$m = -2$

$b = 3$

2. $4x + 5y = -30$

$-4x \quad -4x$

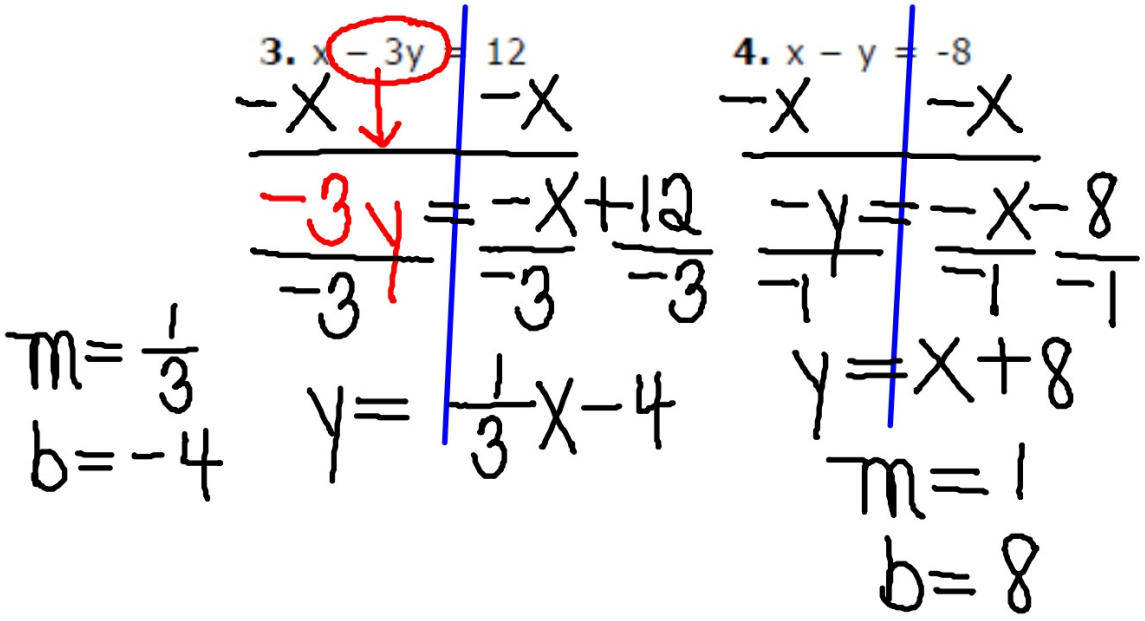
$\frac{5y}{5} = \frac{-4x}{5} - \frac{30}{5}$

$m = \frac{-4}{5}$

$b = -6$

$y = \frac{-4}{5}x - 6$

Identify the slope and y-intecept.



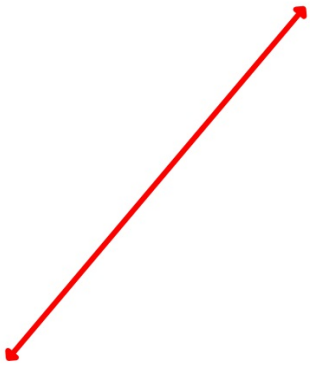
Identify the slope and y-intercept.

5. $4x - y = 0$

6. $3x - 2y = 14$

$$2x + 3y = 6$$
$$-2x \quad\quad -2x$$
$$\frac{3y}{3} = \frac{-2x}{3} + \frac{6}{3}$$
$$y = -\frac{2}{3}x + 2$$

$$6x - 2y = 3$$



Identify the slope and y-intercept.

Notebook Practice

Find the slope from each equation.

1.) $3x + 2y = 12$, m = _____ 2.) $y=4x -10$, m= _____

3.) $y= - x + 3$, m = _____ 4.) $x - y = 12$, m = ____

5.) $-6x + 4y = -12$, m= ____ 6.) $-3x + 2y = 6$, m =____

7.) $y = -6x - 3$, m = _____ 8.) $x + y = 8$, m = _____