

Created by Mr. Lischwe

Warmup 9/Smallest number whose digits add up to 10

1) Find the slope of each line:

CHECK HOMEWORK

Textbook pg. 228-229 (13-16)

Find and interpret the slope for each real-world situation.

13.

$m = \frac{170 - 110}{8 - 4} = \frac{60}{4} = 15$

The slope is 15. The money earned increases by \$15 for each hour worked.

14.

$m = \frac{7 - 2}{3360 - 960} = \frac{5}{2400} = \frac{1}{480}$

The slope is $\frac{1}{480}$. It takes 480 peanuts to make one jar of peanut butter.

15.

$m = \frac{460 - 310}{3500 - 1000} = \frac{150}{2500} = \frac{3}{50}$

The slope is $\frac{3}{50}$ or 0.06. The cost to print each page is \$0.06 after an initial charge of \$250.

16.

$m = \frac{860 - 585}{3 - 8} = \frac{275}{-5} = -55$

The slope is -55. The balance decreases by \$55 each month.

How do I get the slope?

- Between points (3, 2) and (5, 10)

Finding slope for a linear function WITHOUT a graph

- You can get the change in y by subtracting the y-coordinates.
- You can get the change in x by subtracting the x-coordinates.

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

The 2's and 1's are not exponents. They are just LABELS.

$y_2 - y_1$ just means "the 2nd y minus the 1st y"

DO NOT PUT THE X'S ON TOP.

Find the slope:

- Between (1, 4) and (3, 9)

$$m = \frac{9 - 4}{3 - 1} = \frac{5}{2}$$

- Between (-3, -4) and (7, 1)

$$m = \frac{1 - (-4)}{7 - (-3)} = \frac{5}{10} = \frac{1}{2}$$

- Between (-6, 2) and (-4, -10)

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

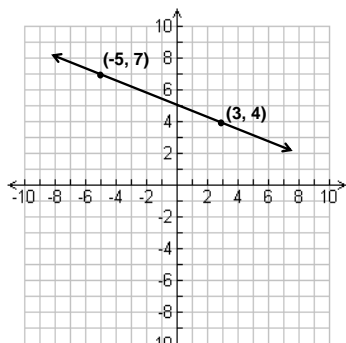
Would you get different answers?

Try using each formula to get the slope between **(5, 9)** and **(7, 3)**. Which ones can work?

$$\frac{y_2 - y_1}{x_2 - x_1} \quad \frac{y_1 - y_2}{x_1 - x_2}$$

$$\frac{y_2 - y_1}{x_1 - x_2} \quad \frac{x_2 - x_1}{y_2 - y_1}$$

Find the slope 2 different ways



Find the slope between...

- (10, -7) and (13, 2)

- (-4, 10) and (1, 6)

Find the slope between...

1. (-4, 4) and (2, 7)

1. (2, 0) and (-4, 8)

Find the slope between...

1. (2, -3) and (42, -3)

1. (6, 11) and (6, 8)

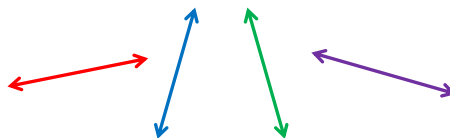
Slope?

x	0	1	2	3	4
y	-6	-4	-2	0	2

x	0	3	6	9	12
y	27	21	15	9	3

Which one of these lines could it be?

$$\text{Slope} = -\frac{1}{4}$$



Match:

- 1) Slope = $\frac{1}{2}$
- 2) Slope = 2
- 3) Slope = 3
- 4) Slope = $-\frac{1}{2}$
- 5) Slope = $-\frac{1}{4}$
- 6) Slope = -3

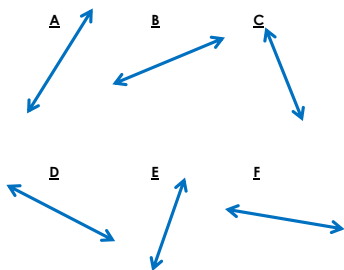


Table of Contents

- p. 8 Rate of Change
 p. 9 Slope
 p. 10 **Slope-Intercept Form**

Graphing Equations in Slope-Intercept Form

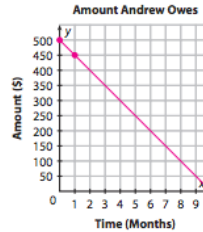
Objective:

- Be able to recognize and graph a linear equation in slope-intercept form

Andrew wants to buy a smart phone that costs \$500. His parents will pay for the phone then Andrew will pay them \$50 each month until the entire amount is repaid.

$$f(x) = 500 - 50x$$

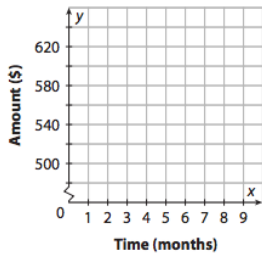
- A) Write a linear function to describe this situation.
- B) What is a reasonable domain and range?
- C) What would the graph look like?



*Sometimes you will see linear situations graphed as continuous graphs even though a fractional number of months does not make sense here

Graph this situation: An investor invests \$500 in a certain stock. After the first six months, the value of the stock has increased at a rate of \$20 per month.

Value of Investment



What is the linear equation for this situation?

$$f(x) = 500 + 20x$$

Guess the Rule

x	y
-2	-5
-1	-2
0	1
1	4
2	7

What is the value of y when x is zero?

How much does y increase when x increases by 1?

$$y = 3x + 1$$

Guess the Rule

x	y
-2	9
-1	7
0	5
1	3
2	1

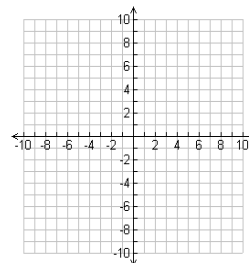
What is the value of y when x is zero?

How much does y increase when x increases by 1?

$$y = -2x + 5$$

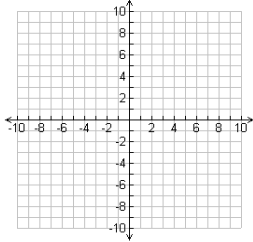
What is the value of y when x is zero?
How much does y increase when x increases by 1?

$$y = 4x$$



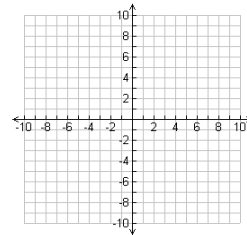
What is the value of y when x is zero?
How much does y increase when x increases by 1?

$$y = -x + 1$$



What is the value of y when x is zero?
How much does y increase when x increases by 1?

$$y = \frac{1}{2}x - 7$$

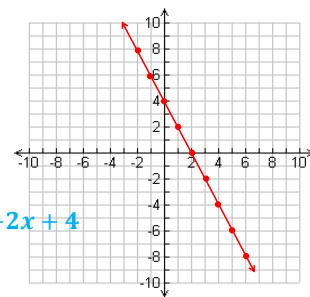


Slope-Intercept Form

$$y = mx + b$$

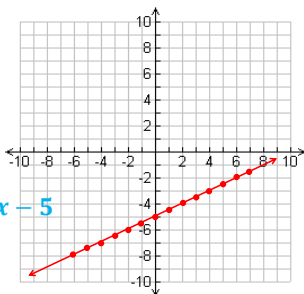
- “ m ” is the slope
 - how much the graph increases or decreases for each “ x ”
- “ b ” is the y -intercept
 - The value of y when x is zero (the “initial value”)
 - Always on the y -axis
- (I’m not sure why they picked those letters. If you find out why you can share it with the class)

Write the equation:



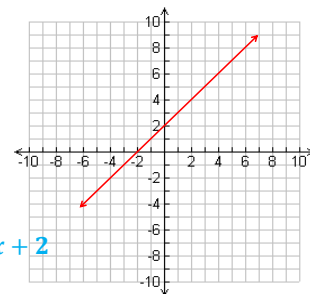
$$y = -2x + 4$$

Write the equation:



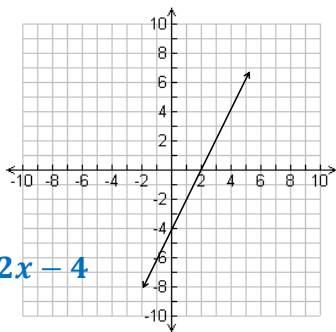
$$y = \frac{1}{2}x - 5$$

Write the equation:



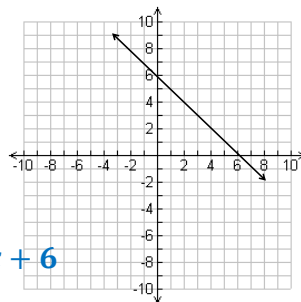
$$y = x + 2$$

Write the equation:



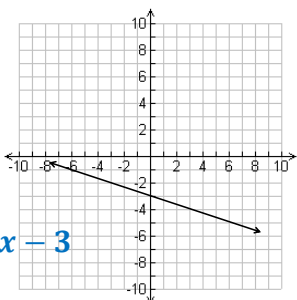
$$y = 2x - 4$$

Write the equation:



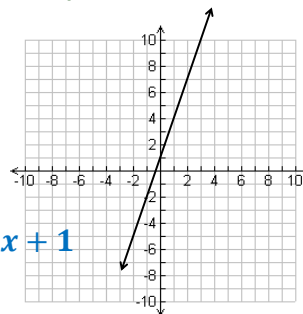
$$y = -x + 6$$

Write the equation:



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

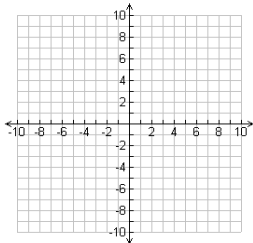
Write the equation:



$$y = 3x + 1$$

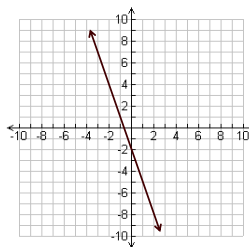
Checking our answer with a table!!!

• Graph: $y = \frac{1}{3}x + 4$

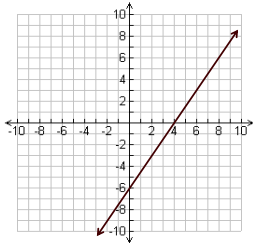


x	y
0	4
-3	0
3	5
6	6
9	7
-6	2
-9	1

• Graph: $y = -3x - 2$



- Graph: $y = \frac{3}{2}x - 6$



What would the graph of $y = 4$ look like? Convince me.

