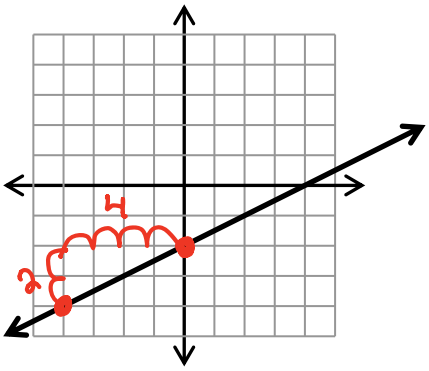
Unit 1 Day 1 Notes:
Graphing Equations of Lines & Function Notation

Name: Key
Date:

SLOPE INTERCEPT FORM OF A LINE: $y = mx + b$

What is the equation of the line in the graph displayed below:

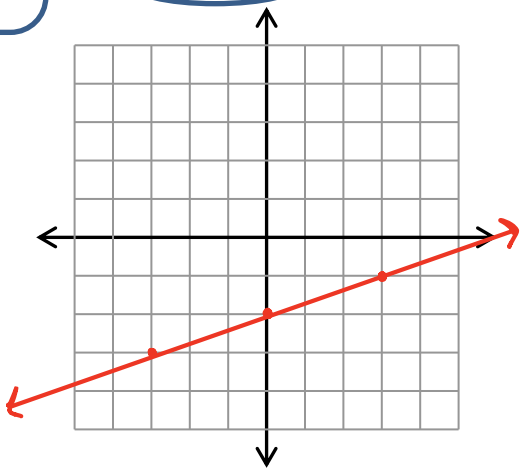


Slope: $\frac{2}{4} = \frac{1}{2}$ Y-Intercept: (0, -2)

Equation: $y = \frac{1}{2}x - 2$

reduced
Write the slope as a fraction & y-intercept as a point!

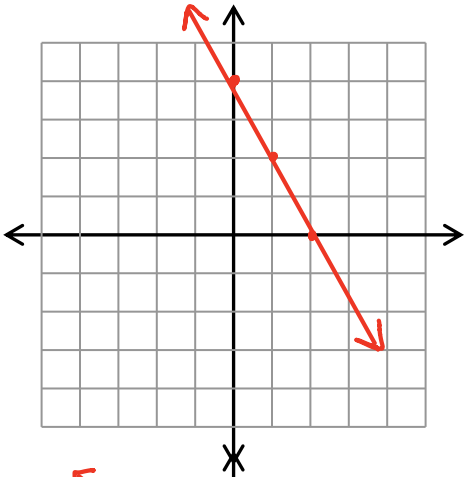
Let's graph the equation $y = \frac{1}{3}x - 2$



Slope: $\frac{1}{3}$ Y-Intercept: (0, -2)

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Let's graph the equation $y = -2x + 4$.

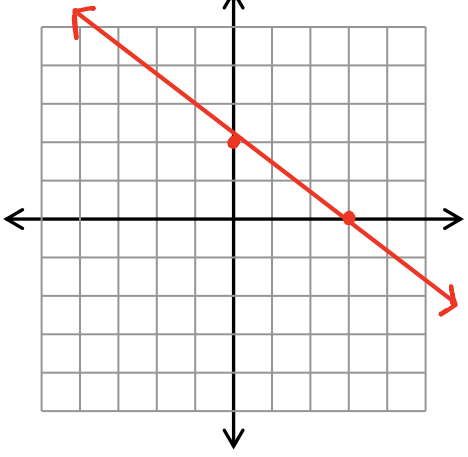


Slope: -2 Y-Intercept: (0, 4)

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Let's graph the equation $2x + 3y = 6$. $\frac{3y}{3} = \frac{-2x}{3} + \frac{6}{3}$

Remember it MUST be in slope intercept form in order to graph! $y = -\frac{2}{3}x + 2$



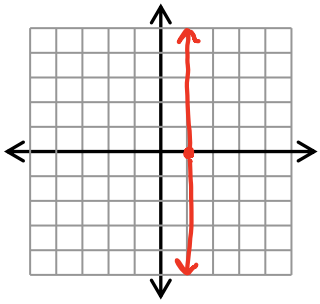
Slope: $-\frac{2}{3}$ Y-Intercept: (0, 2)

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

Let's practice putting equations in slope-intercept form (SOLVE FOR Y!!). Then state the slope and y-intercept.

$y - 10 = 3x$ $+10 \quad +10$ $y = 3x + 10$ Slope: $\frac{3}{1}$ Y-Intercept: $(0, 10)$	$3x - 4y = 12$ $-3x \quad -3x$ $\frac{-4y}{-4} = \frac{-3x + 12}{-4}$ $y = \frac{3}{4}x - 3$ Slope: $\frac{3}{4}$ Y-Intercept: $(0, -3)$	$-2x - 7y = 14$ $+2x \quad +2x$ $\frac{-7y}{-7} = \frac{2x + 14}{-7}$ $y = \frac{-2}{7}x - 2$ Slope: $\frac{-2}{7}$ Y-Intercept: $(0, -2)$

Graph a Vertical line:

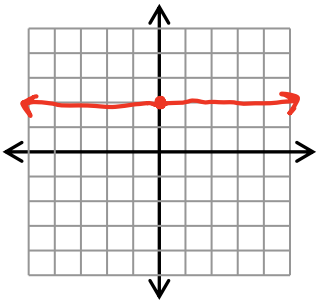


Find 3 points on your line:
(1,0) (1,6) (1,-3)

WHAT DO YOU SEE?
x-value is the same

Equation of your line:
$x = 1$ | $x = \#$

Graph a Horizontal line:



Find 3 points on your line:
(0,2) (1,2) (2,2)

WHAT DO YOU SEE?
y-value is the same

Equation of your line:
$y = 2$ | $y = \#$

Using FUNCTION NOTATION

Output value — Input value

$f(x) = 5x + 3$

f of x equals 5 times x plus 3.

$y = f(x)$

Output — Name of Function — Input

Given $f(x) = x^2 - 2$, find: $f(5) = (5)^2 - 2$ $= 25 - 2$ $= 23$ $f(-5) = (-5)^2 - 2$ $= 25 - 2$ $= 23$ $f(0) = (0)^2 - 2$ $= 0 - 2$ $= -2$	Given $g(x) = 2x + 7$, find: $g(4) = 2(4) + 7$ $= 8 + 7$ $= 15$ $g(-4) = 2(-4) + 7$ $= -8 + 7$ $= -1$ $g(a) = 2(a) + 7$ $= 2a + 7$	Given $h(x) = -2x^2 + 7x - 11$, find: $h(2) = -2(2)^2 + 7(2) - 11$ $= -2(4) + 14 - 11$ $= -8 + 3$ $= -5$ $h(2a) = -2(2a)^2 + 7(2a) - 11$ $= -2(4a^2) + 14a - 11$ $= -8a^2 + 14a - 11$ $3h(-3) =$

HW

A little more of a challenge: Given $f(x) = 2x + 1$, find $-4[f(3) - f(1)]$.