1) Solve for a.

$g = -16a$

Do	Undo
a	
$\cdot -16$	$\div -16$
$= g$	$= g$

$a = \frac{g}{-16}$

2) Solve for x.

$2k + 3x = 4$

Do	Undo
x	
$\cdot 3$	$\div 3$
$+2k$	$-2k$
$= 4$	$= 4$

$x = \frac{4-2k}{3}$

Writing Linear Equations in Slope-Intercept Form

SLOPE-INTERCEPTFORM: $y = mx + b$

m is the slope b is the y-intercept

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

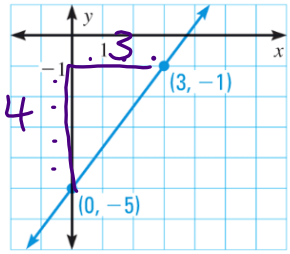
Write the equation of the line with the given slope and y-intercept.

1) Slope is -2 and a y-intercept of 5
   y = -2 x +5

2) Slope is -3 / 4 and y-intercept is -1
   y = $-\frac{3}{4}$ x -1

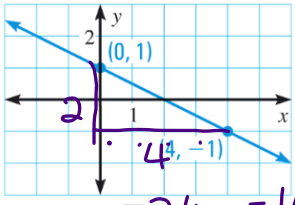
Write the equation of a line in slope intercept form given a graph.

3)



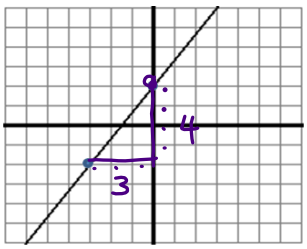
slope *m*: 4/3
y-intercept *b*: −5
equation: y = $\frac{4}{3}$ x −5

4)



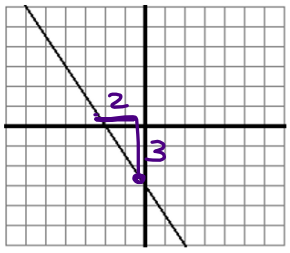
slope *m*: −2/4 = −1/2
y-intercept *b*: 1
equation: y = $-\frac{1}{2}$ x +1

5)



slope *m*: 4/3
y-intercept *b*: 2
equation: y = $\frac{4}{3}$ x +2

6)



slope *m*: −3/2
y-intercept *b*: −3
equation: y = $-\frac{3}{2}$ x −3

Write the equation of a line in slope intercept form given a table.

7)

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

run rise
+1 +2
+1 +2
+2
+2

m = 2/1 = 2
b = 1
y = 2 x +1

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

1st: find the slope:
$\frac{\text{Change in y}}{\text{Change in x}}$ $\frac{\text{rise}}{\text{run}}$

2nd: y-intercept is the point (0, #)

8)

+1

x	y
-2	4
-1	3.5
0	3
1	2.5
2	2

m = $-1/2$

b = 3

y = $-1/2$ x $+3$

9)

rise/run

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

+1 +1 +1 +1

+2 +2 +2 +2

m = $2/1$

b = -4

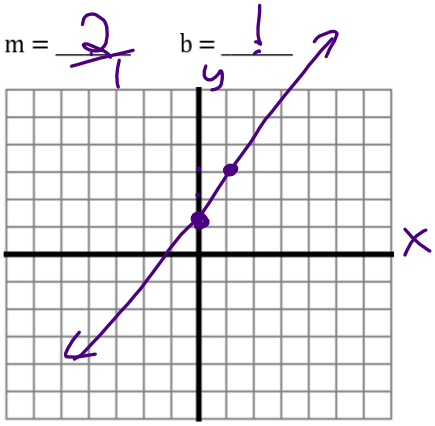
y = 2 x -4

Graph a linear equation given an equation

Graph the y-intercept first. Then apply the slope: Rise/run

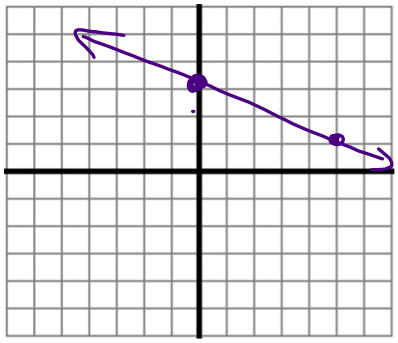
10) $y = 2x + 1$

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



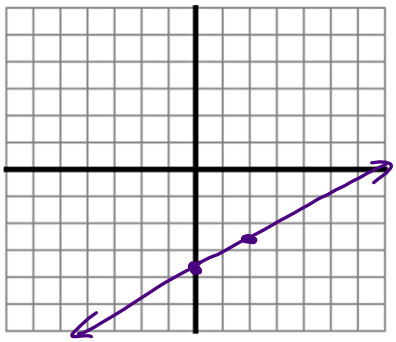
11) $y = \frac{-2}{5}x + 3$

m = $\frac{-2}{5}$ b = $+3$



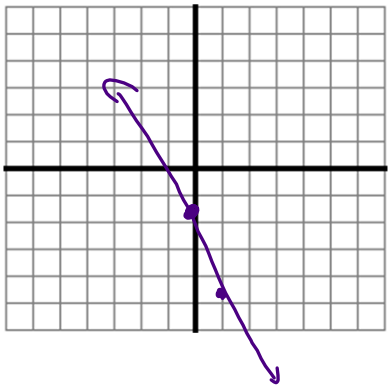
12) $y = \frac{1}{2}x - 4$

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



13) y = -3x - 2

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



How do you graph linear equations using the slope-intercept form of the equation?

y = mx + b

- **m =** slope $\frac{\text{rise}}{\text{run}}$
- **b =** y-intercept

Steps:

1. *Solve the equation for y.*
2. *Identify the y-intercept.*
3. *Graph the y-intercept.*
4. *Identify the slope.*
5. *Use slope to plot more points (rise/run).*
6. *Draw line through the points.*

Example:

(1) -2x + 3y = -6

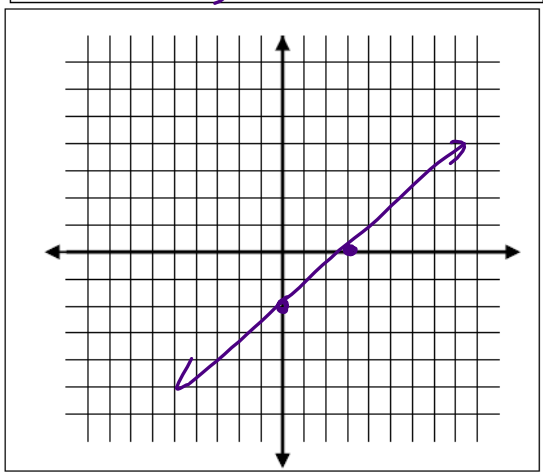
$+2x \qquad +2x$

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

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

(2) y-intercept is -2

(3) slope is $\frac{2}{3}$



You try...

(1) 3x + 4y = 12

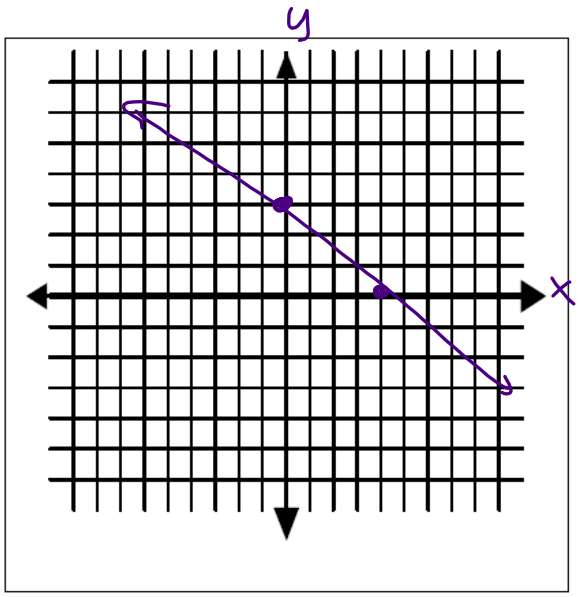
$-3x \qquad -3x$

$\frac{4y}{4} = \frac{-3x}{4} + \frac{12}{4}$

$y = \frac{-3}{4}x + 3$

(2) y-intercept is 3

(3) slope is $\frac{-3}{4}$



Slope-Intercept Form

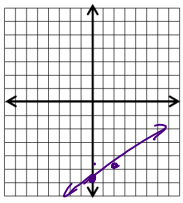
Name _____
Date _____ **Block:** ____

Identify a) the slope, b) the y-intercept and c) graph the equation.

1) $y = \frac{1}{2}x - 6$

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

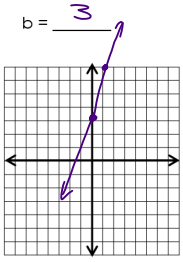
b = -6



2) $y = 4x + 3$

m = $4/1$

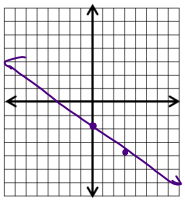
b = 3



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

m = $-2/3$

b = 2



Rewrite the equation into slope-intercept form, name the slope and y-intercept, then sketch the graph of the line.

4) $3x + 2y = -6$

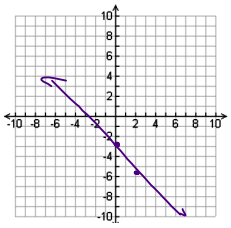
$-3x \quad -3x$

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

slope-intercept form: $y = -\frac{3}{2}x - 3$

slope = $-3/2$

y-intercept = -3



5) $-2x + 6y = -12$

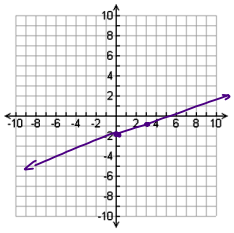
$+2x \quad +2x$

$\frac{6y}{6} = \frac{2x}{6} - \frac{12}{6}$

slope-intercept form: $y = \frac{1}{3}x - 2$

slope = $1/3$

y-intercept = -2



6) $9x - 2y = +10$

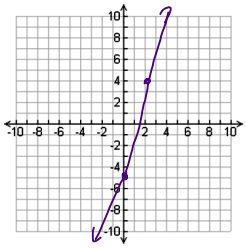
$-9x \quad -9x$

$\frac{-2y}{-2} = \frac{-9x}{-2} + \frac{10}{-2}$

slope-intercept form: $y = \frac{9}{2}x - 5$

slope = $9/2$

y-intercept = -5



7) $4x + 2y = 8$

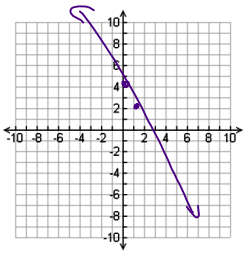
$-4x \quad -4x$

$\frac{2y}{2} = \frac{-4x}{2} + \frac{8}{2}$

slope-intercept form: $y = -2x + 4$

slope = $-2/1$

y-intercept = 4



8) $5x + 3y = 9$

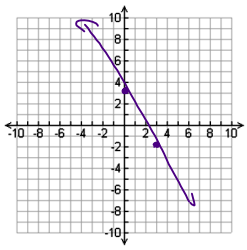
$-5x \quad -5x$

$\frac{3y}{3} = -\frac{5x}{3} + \frac{9}{3}$

slope-intercept form: $y = -\frac{5}{3}x + 3$

slope = $-5/3$

y-intercept = 3



9) $4x - 3y = -12$

$-4x \quad -4x$

$\frac{-3y}{-3} = \frac{-4x}{-3} - \frac{12}{-3}$

slope-intercept form: $y = \frac{4}{3}x + 4$

slope = $4/3$

y-intercept = 4