Algebra 1 4.1

Write and graph linear equations in slope-intercept form. $y = mx + B$

Model data with equations in slope-intercept form

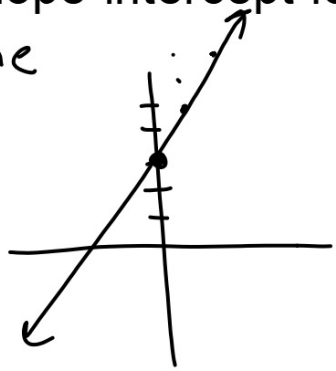
linear - graph is a line

slope

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

y=mx+b

★ constant function



Song

Whiteboards

KeyConcept Slope-Intercept Form

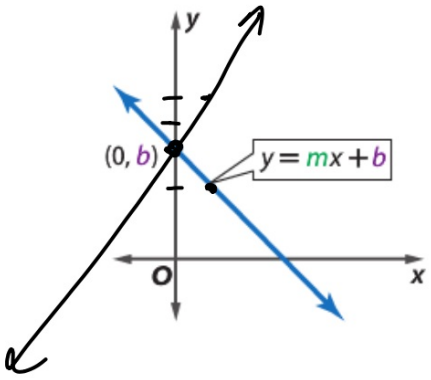
Words The slope-intercept form of a linear equation is $y = mx + b$, where m is the slope and b is the y-intercept.

Example

$$y = mx + b$$

$$y = 2x + 6$$

slope — y-intercept



+ uphill

− downhill

Y= MX + B

(YMCA)

Students, we need to graph a straight line.
I said, students, we will have a great time.
I said, students there's no reason to whine.
There's no need to be unhappy…

It's fun to graph y = mx + b
y = mx+ b
It makes a straight line and it'll be fine
You can even find the slo-ope!

(repeat)

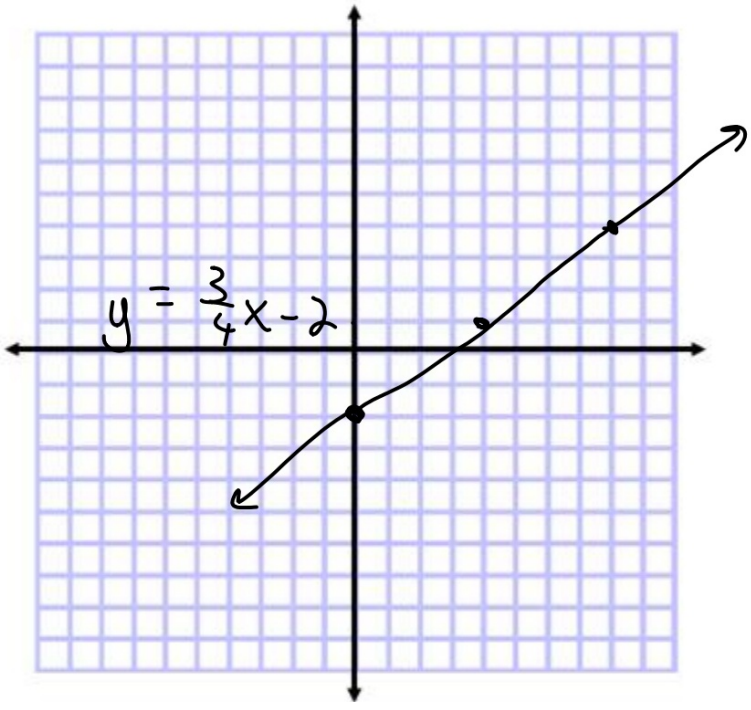
Example 1 Write and Graph an Equation

Write an equation in slope-intercept form for the line with a slope of $\frac{3}{4}$ and a y-intercept of -2. Then graph the equation.

$y = mx + B$

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

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



Where should I start?...

$y = mx + B$

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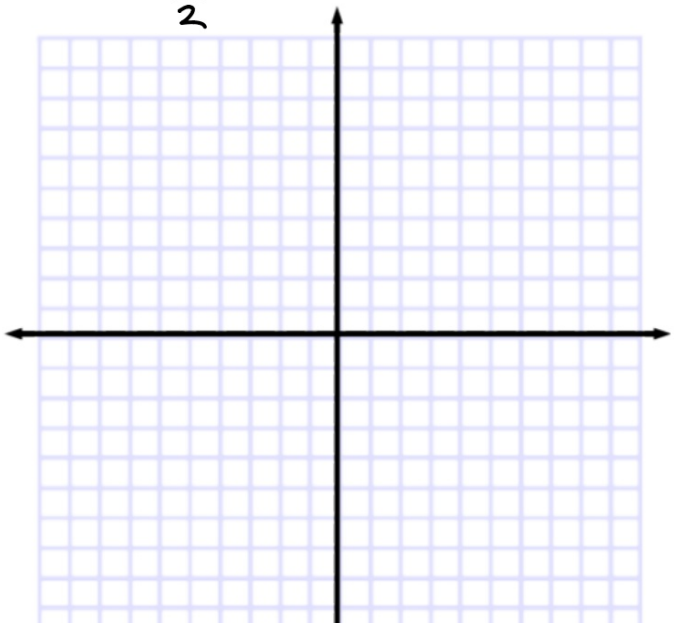
Write an equation of a line in slope intercept form with the given slope and y-intercept. Then graph the equation.

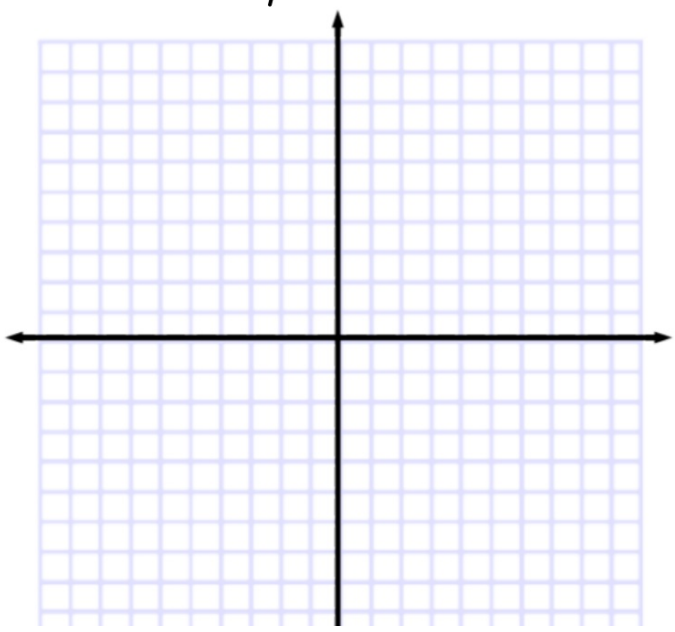
1A. slope: $-\frac{1}{2}$, y-intercept: 3

$\frac{-1}{2}$



1B. slope: -3, y-intercept: -8

$\frac{-3}{1}$



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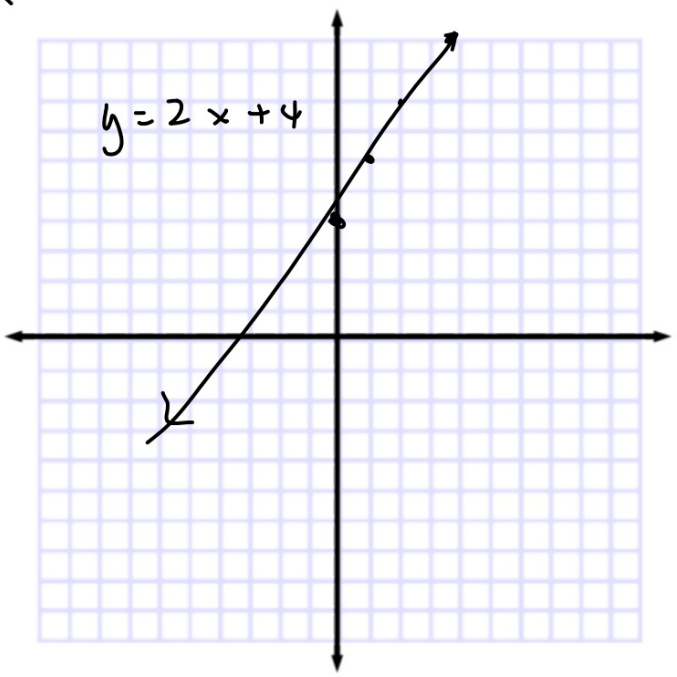
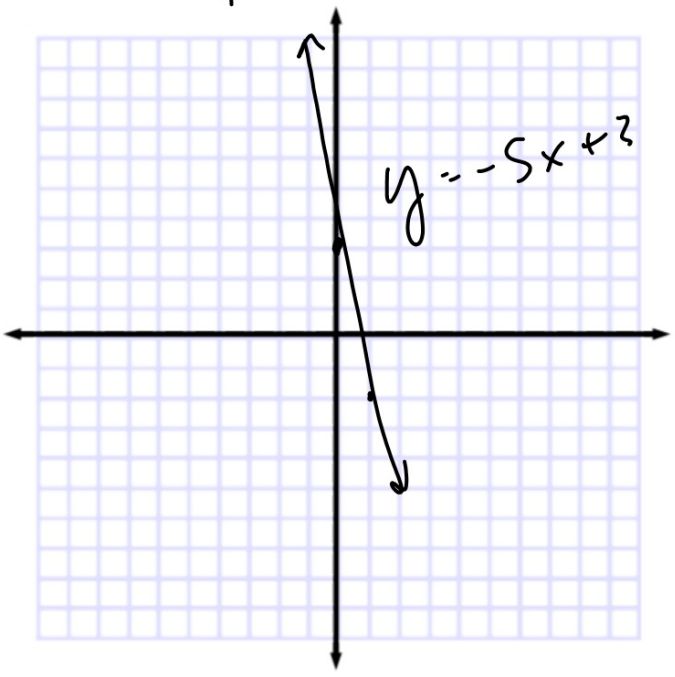
$y = mx + B$

Write an equation of a line in slope-intercept form with the given slope and *y*-intercept. Then graph the equation.

1 slope: $\frac{2}{1}$, *y*-intercept: 4



2. slope: $\frac{-5}{1}$, *y*-intercept: 3



$y = mx + B$

Example 2 Graph Linear Equations

Graph $3x + 2y = 6$.

$-3x \qquad -3x$

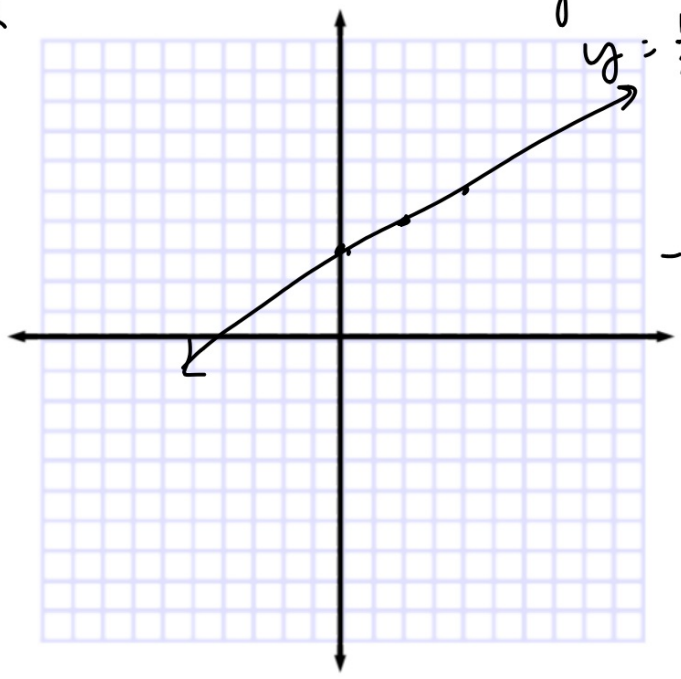
$$\frac{2y}{2} = \frac{-3x}{2} + \frac{6}{2}$$

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

Find slope and y-int
Hint: y=mx+b

$y = mx + B$

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

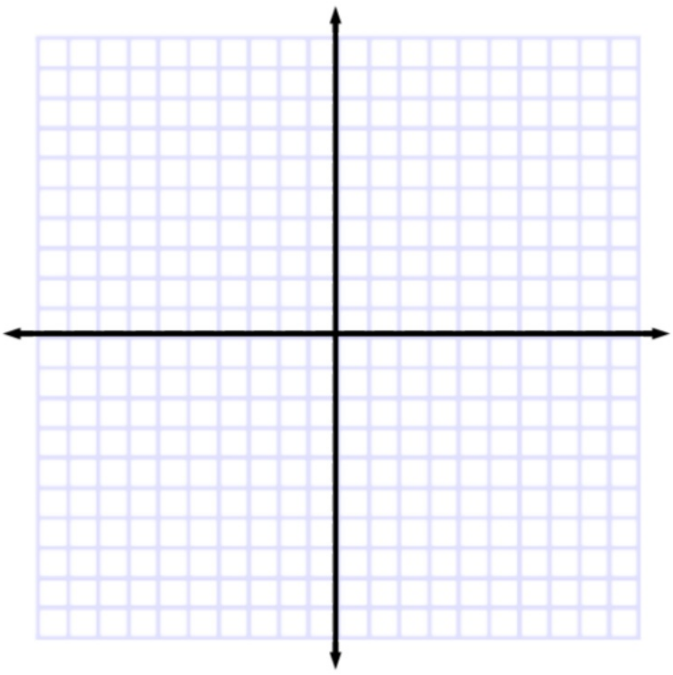


$-4 \quad \frac{-4}{1}$

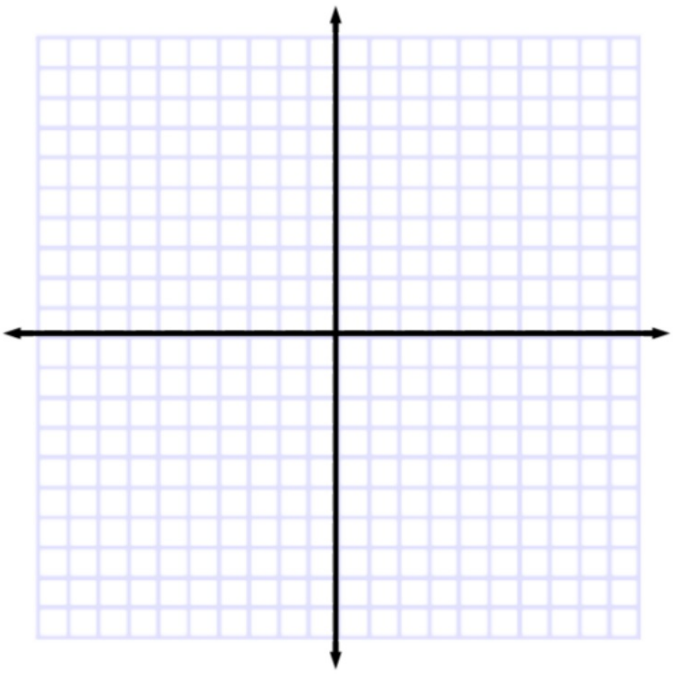
GuidedPractice

Graph each equation.

2A. $3x - 4y = 12$



2B. $-2x + 5y = 10$



Can he ride...

up hill?

down hill?

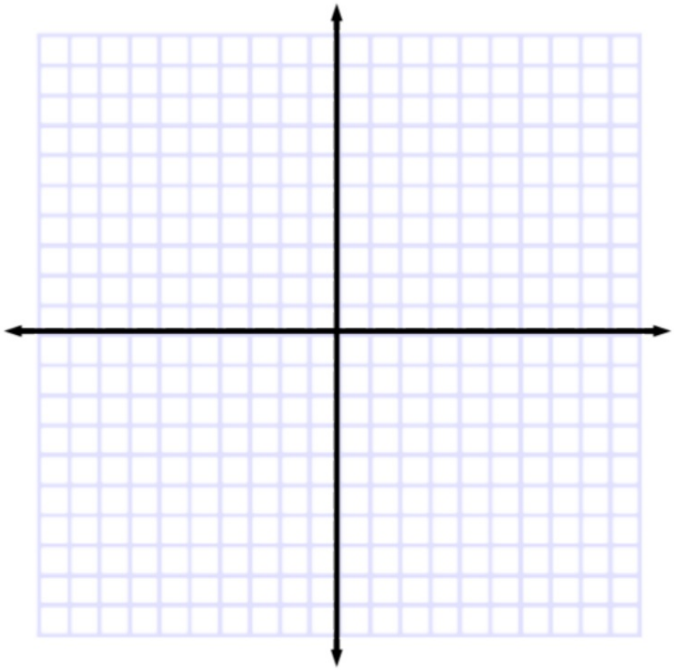
horizontally?

up a vertical wall?

Example 3 Graph Linear Equations

Graph $y = -3$.

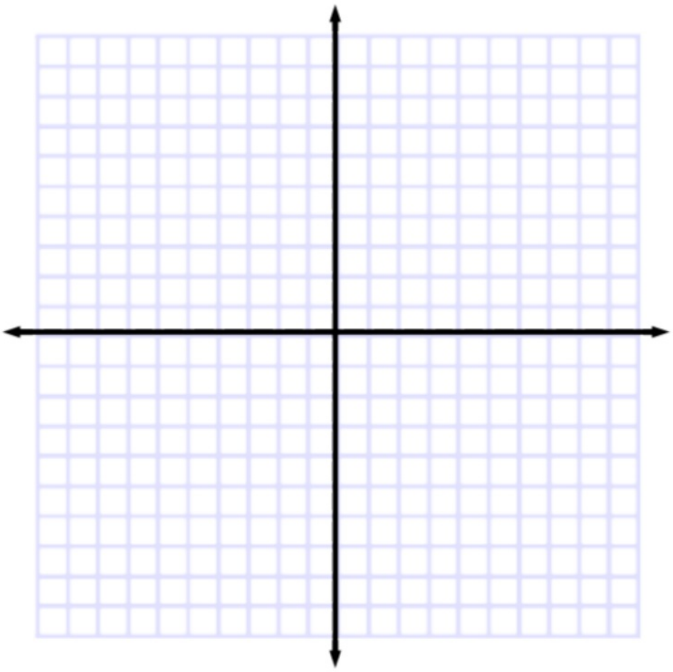
Bicycles: constant slope
y = constant describes vertical distance (x,y)
so y= 2 would be always "up 2" etc.



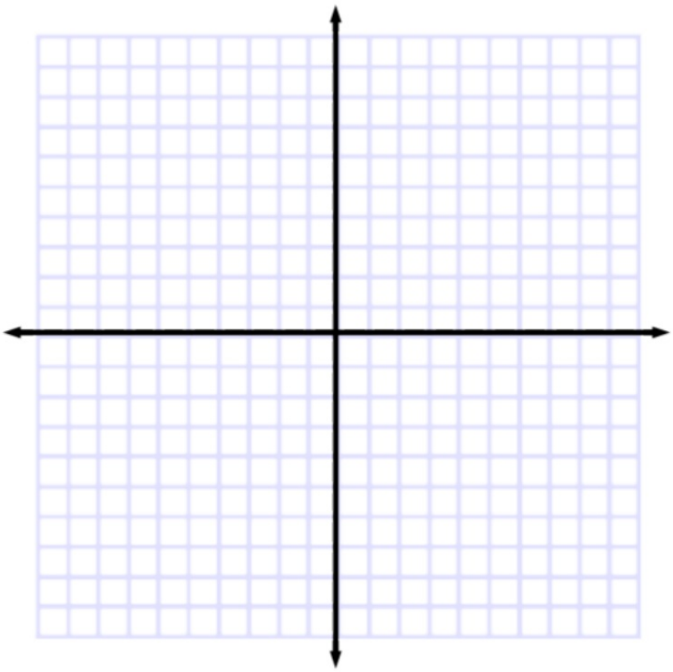
GuidedPractice

Graph each equation.

3A. $y = 5$



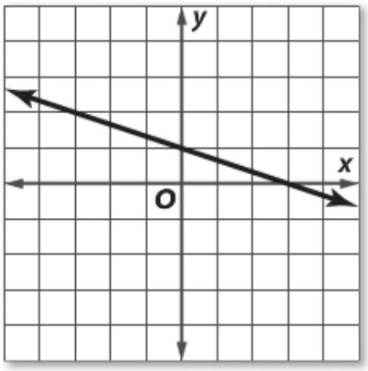
3B. $2y = 1$



What do we need to know?

Standardized Test Example 4 Write an Equation in Slope-Intercept Form

Which of the following is an equation in slope-intercept form for the line shown?



A $y = -3x + 1$

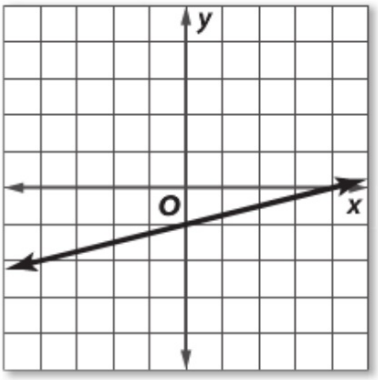
B $y = -3x + 3$

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

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

GuidedPractice

4. Which of the following is an equation in slope-intercept form for the line shown?



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

G $y = \frac{1}{4}x + 4$

H $y = 4x - 1$

J $y = 4x + 4$