

Algebra 1 4.1

Write and graph linear equations in slope-intercept form.

Model data with equations in slope-intercept form

linear

slope

y-intercept

$y=mx+b$

constant function

Whiteboards

KeyConcept Slope-Intercept Form



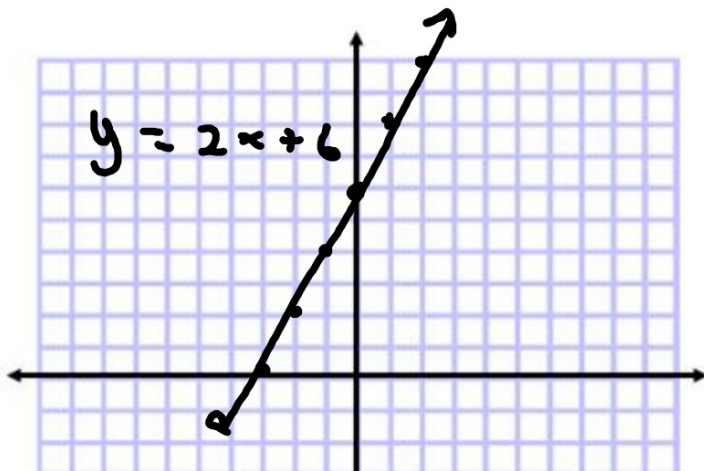
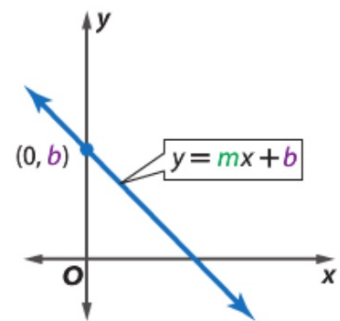
Words The slope-intercept form of a linear equation is $y = mx + b$, where m is the slope and b is the y -intercept.

Example

$$y = mx + b$$
$$y = 2x + 6$$

slope \uparrow \uparrow y -intercept

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



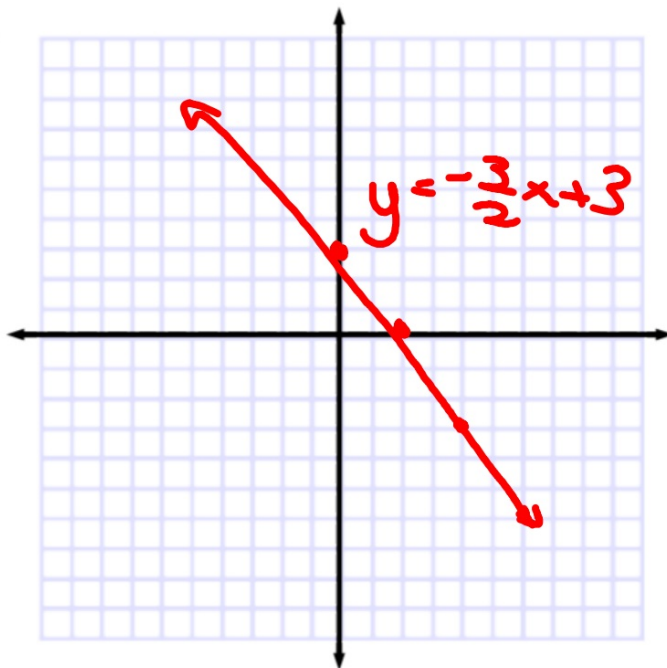
Example 2 Graph Linear Equations

Graph $3x + 2y = 6$.

$$y = mx + B$$

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

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



$$y = mx + b$$

Guided Practice

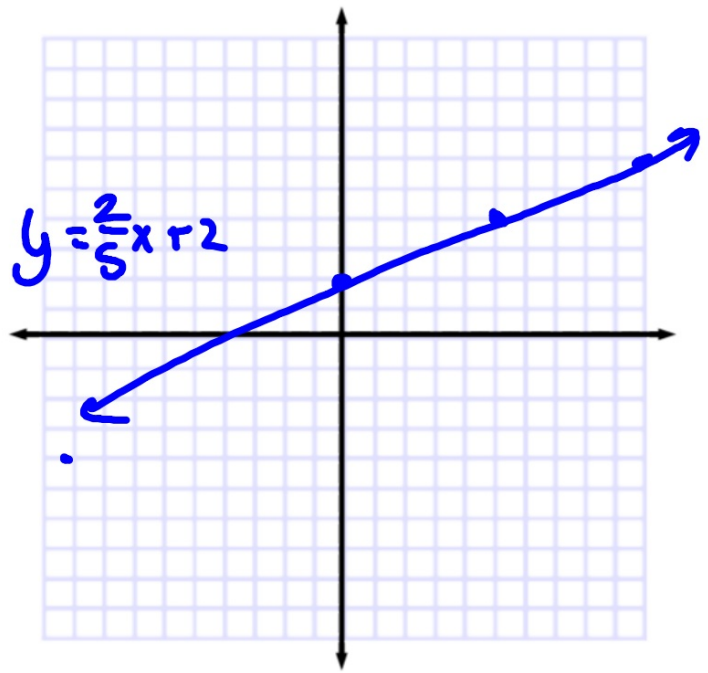
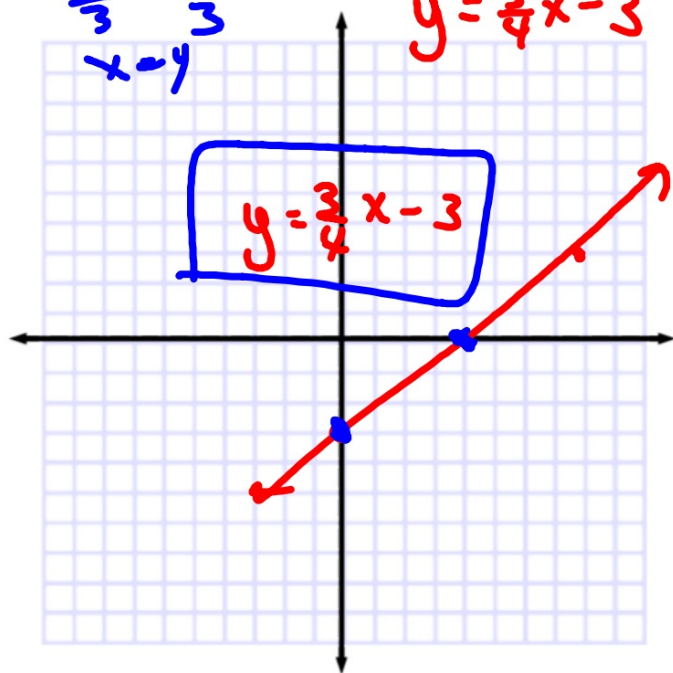
Graph each equation.

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

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

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

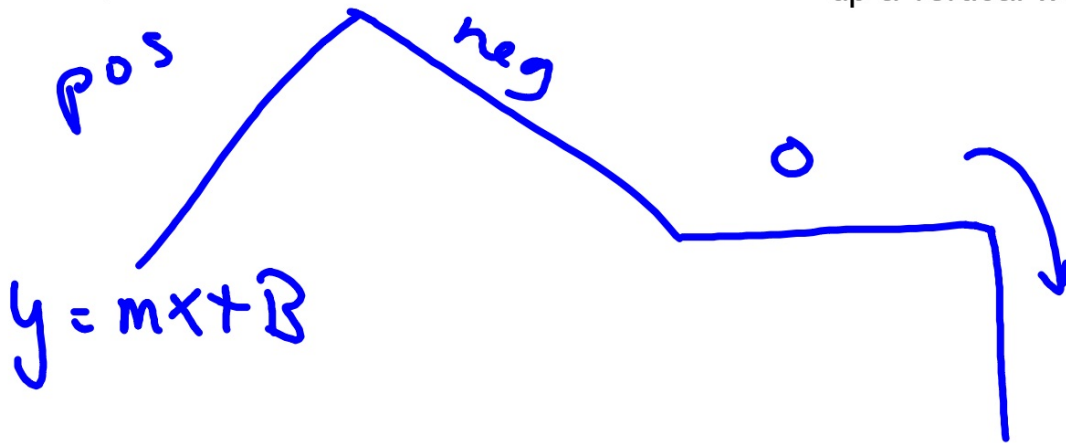
2B. $-2x + 5y = 10$





Horiz. $m = 0$
Vert $m = \text{undef}$

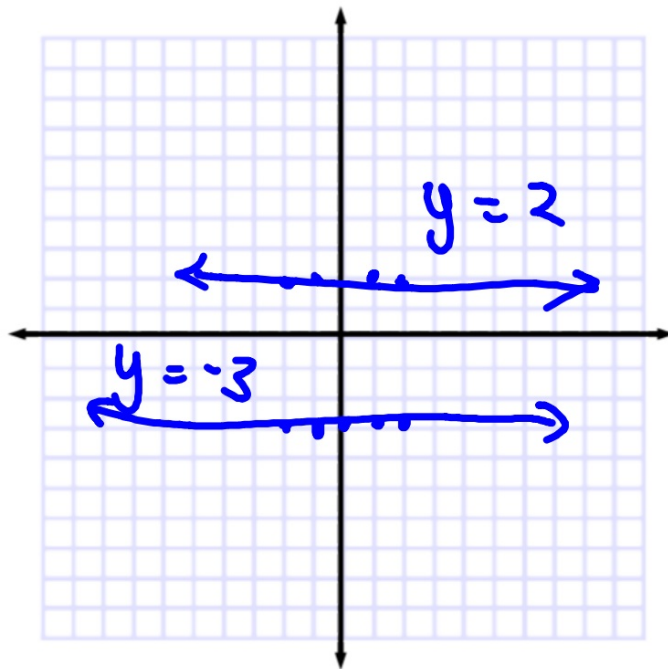
Can he ride...
up hill?
down hill?
horizontally?
up a vertical wall?



Example 3 Graph Linear Equations

Graph $y = -3$. *no x*

2	-3
1	-3
0	-3
-1	-3
-2	-3



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

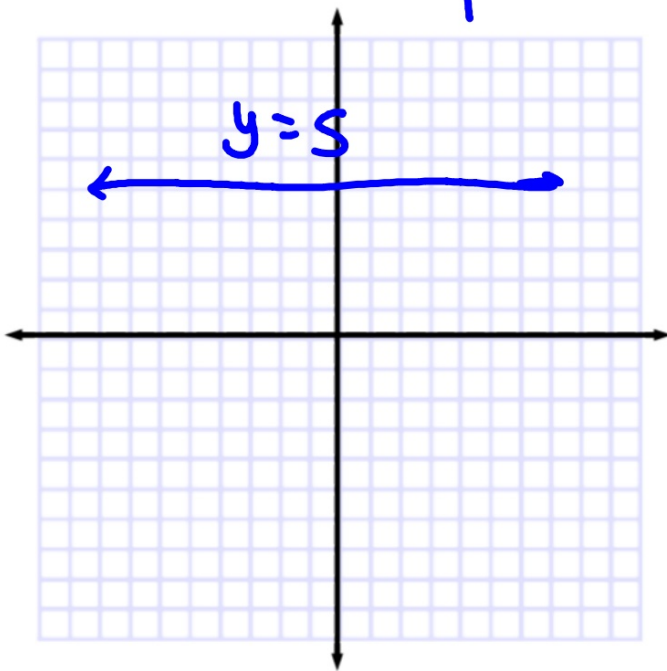
$y = 2$

-2	2
-1	2
+1	2
2	2

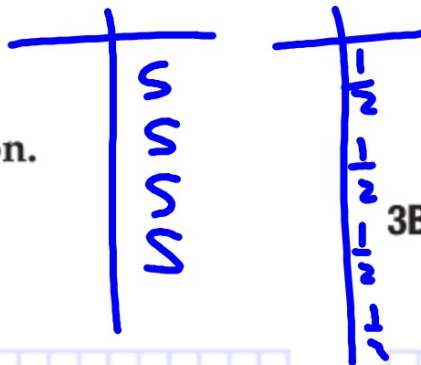
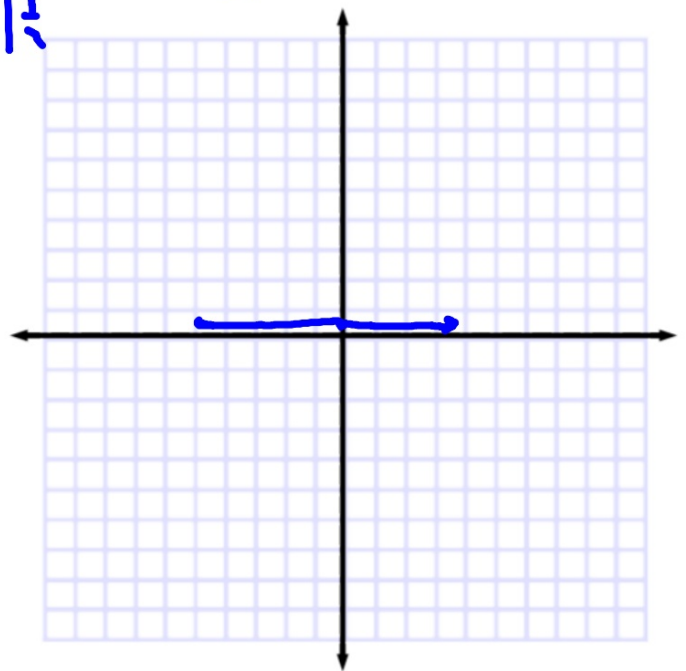
Guided Practice

Graph each equation.

3A. $y = 5$



3B. $2y = 1$ $y = \frac{1}{2}$



What do we need to know?

$$x = 3$$

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?

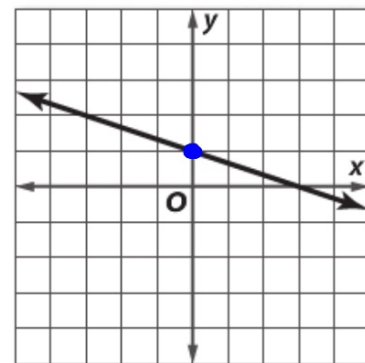
A $y = -3x + 1$

B $y = -3x + 3$

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

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

$$-\frac{1}{3}x + 1$$



Guided Practice

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 $y = 4x + 4$

