

## WRITE EQUATIONS IN SLOPE-INTERCEPT FORM: TABLES

When the values in a table change at a constant rate, the table shows a linear function. You can also show a linear function using an equation in slope-intercept form:

$$y = mx + b$$

In slope-intercept form,  $m$  is the slope and  $b$  is the  $y$ -intercept. The  $y$ -intercept is the value of  $y$  where the line crosses the  $y$ -axis, or the value of  $y$  when  $x = 0$ .



**Write an equation in slope-intercept form for the linear function in the table below.**

First, find the slope. Find the change in  $y$  and change in  $x$  for each row of the table. Then, divide.

$x$	$y$
2	8
3	10
4	12
5	14

$$m = \frac{\text{change in } y}{\text{change in } x}$$

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

So, the slope is 2.

Next, find the  $y$ -intercept. If the table includes  $x = 0$ , the corresponding  $y$ -value is the  $y$ -intercept. Otherwise, you will need to solve  $y = mx + b$  for the  $y$ -intercept:

$$y = mx + b$$

$$y = 2x + b$$

*Plug in the slope you found, 2, for  $m$ .*

$$8 = 2(2) + b$$

*Plug in the  $x$ - and  $y$ -values from a row in the table. Let's use  $x = 2$  and  $y = 8$ .*

$$8 = 4 + b$$

*Simplify. Then solve for  $b$ .*

$$4 = b$$

*So, the  $y$ -intercept is 4.*

Last, write the equation in slope-intercept form:  $y = 2x + 4$ .

**Practice!** Each table represents a linear function. Find each slope and  $y$ -intercept. Then write an equation for each function in slope-intercept form.

$x$	$y$
0	12
1	15
2	18
3	21

slope: 3     $y$ -intercept: 12

equation:  $y = 3x + 12$

$x$	$y$
0	8
1	7
2	6
3	5

slope: -1     $y$ -intercept: 8

equation:  $y = -x + 8$

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**Keep going!** Each table represents a linear function. Find each slope and  $y$ -intercept. Then write an equation for each function in slope-intercept form.

$x$	$y$
0	-20
1	-15
2	-10
3	-5

slope: 5  $y$ -intercept: -20

equation:  $y = 5x - 20$

$x$	$y$
2	10
3	14
4	18
5	22

slope: 4  $y$ -intercept: 2

equation:  $y = 4x + 2$

$x$	$y$
4	9
6	10
8	11
10	12

slope:  $\frac{1}{2}$   $y$ -intercept: 7

equation:  $y = \frac{1}{2}x + 7$

$x$	$y$
7	-11
10	-5
13	1
16	7

slope: 2  $y$ -intercept: -25

equation:  $y = 2x - 25$

$x$	$y$
5	4
10	6
15	8
20	12

slope:  $\frac{2}{5}$   $y$ -intercept: 2

equation:  $y = \frac{2}{5}x + 2$

$x$	$y$
6	-13
9	-17
12	-21
15	-25

slope:  $-\frac{4}{3}$   $y$ -intercept: -5

equation:  $y = -\frac{4}{3}x - 5$