Slope-Intercept Form: Writing Equations

An equation is in **slope-intercept form** if it is written like this:

$$y = mx + b$$

In slope-intercept form, *m* is the **slope** and *b* is the *y-intercept*. If you have a graph of a line, you can write its equation in slope-intercept form.

Let's try an example!

First, identify the *y-intercept*. The line crosses the *y*-axis at (0, 2). So, the *y-intercept* is **2**.

Next, find the slope using the *y-intercept* and another point on the line. Select a point that is easy to identify, like (3, 4). Remember that slope = $\frac{rise}{run}$. Since the rise is 2 and the run is 3, the slope of this line is $\frac{2}{3}$.

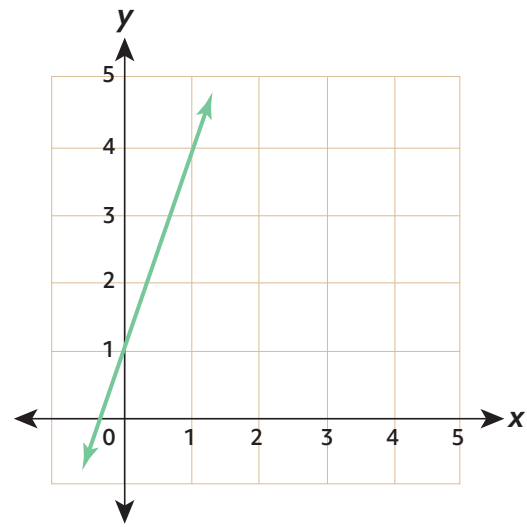Last, write the equation of the line in slope-intercept form: $y = \frac{2}{3} x + 2$.
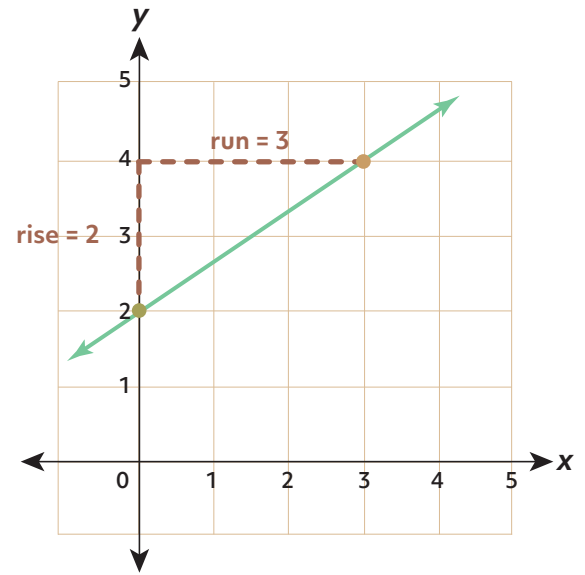
Try it yourself! Find the slope and *y-intercept* of each line. Write the slope as a simplified fraction or integer. Then, write an equation for each line in slope-intercept form.
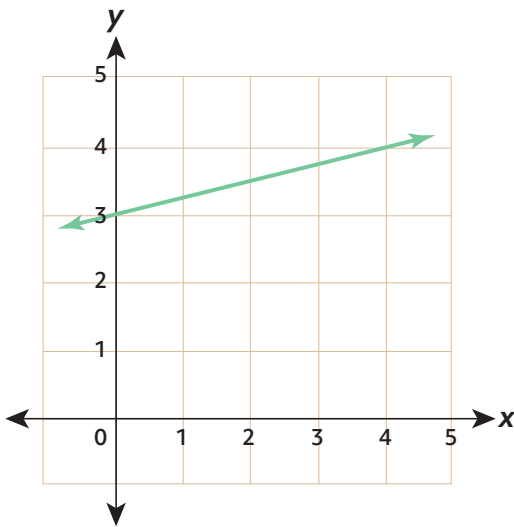
$m = \underline{\frac{1}{4}}$ $b = \underline{\ 3\ }$

Equation: $\underline{y = \frac{1}{4}x + 3}$

$m = \underline{\ 3\ }$ $b = \underline{\ 1\ }$

Equation: $\underline{y = 3x + 1}$

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Keep going! Find the slope and *y*-intercept of each line. Write the slope as a simplified fraction or integer. Then, write an equation for each line in slope-intercept form.

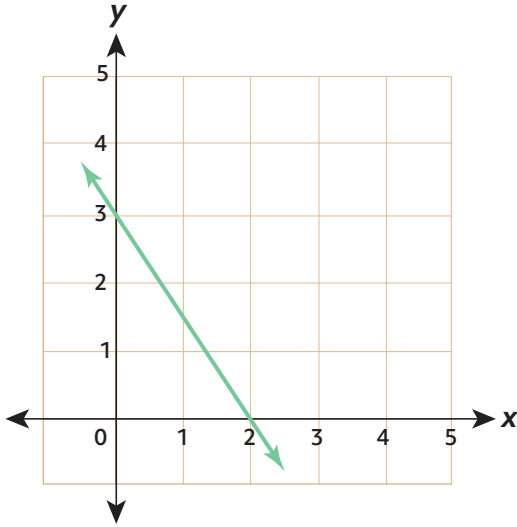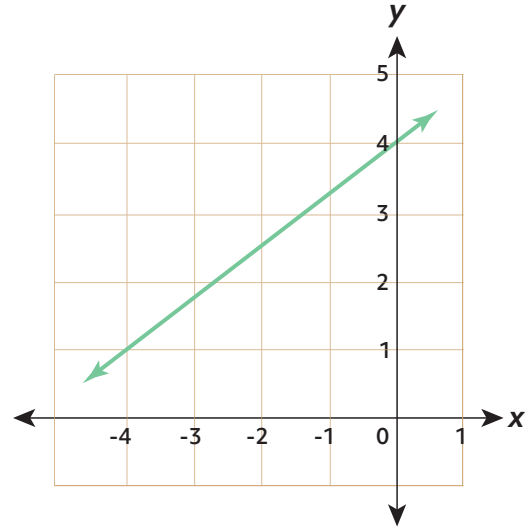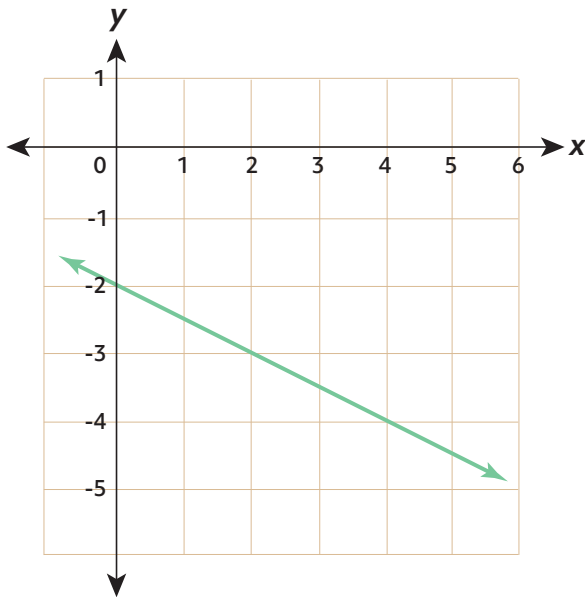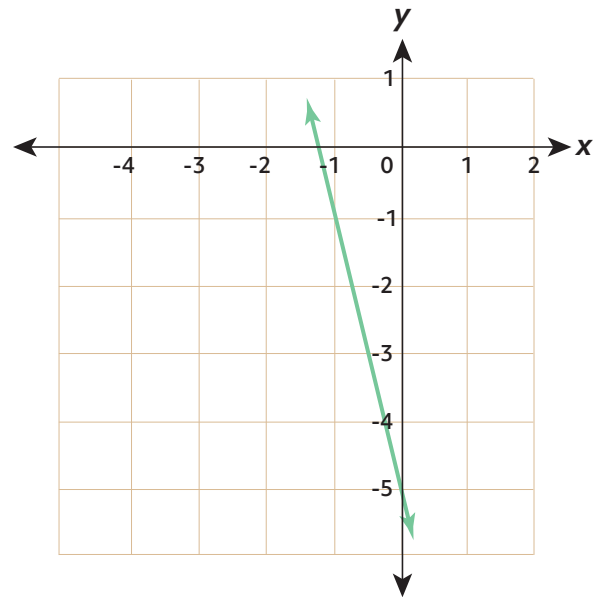$m =$ $-\frac{3}{2}$ $b =$ 3

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

$m =$ $\frac{3}{4}$ $b =$ 4

Equation: $y = \frac{3}{4}x + 4$

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

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

$m =$ -4 $b =$ -5

Equation: $y = -4x - 5$