WRITE A LINEAR EQUATION FROM THE Y-INTERCEPT AND A POINT

Linear functions can be represented in slope-intercept form:

$$y = mx + b$$

m: slope; b: y-intercept

If you're given the y-intercept and a point on a line, you can write the equation of the line in slope-intercept form.

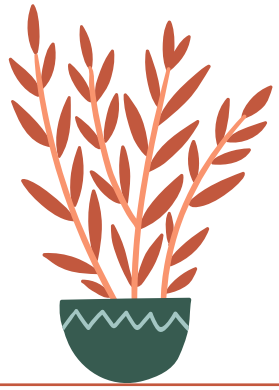
Try it! Write the equation of the line that has a y-intercept of 3 and goes through the point (–4, 11).

Step 1: Find the slope of the line.

Plug the y-intercept and point into $y = mx + b$, and solve for m:

$y = mx + b$	
$y = mx + 3$	*Plug in the y-intercept, 3, for b.*
$11 = m(-4) + 3$	*Plug in the coordinates of the point (–4, 11).*
$11 = -4m + 3$	*Rewrite the equation to make it easier to solve. Then solve for m.*
$8 = -4m$	
$-2 = m$	

So, the slope of the line is –2.



Step 2: Write the equation in slope-intercept form: $y = -2x + 3$.

Try it yourself! In each problem, you've been given the y-intercept of a line and a point on that line. Use the y-intercept and point to write the equation of the line in slope-intercept form.

1.

y-intercept: 2

point: (1, 6)

Equation: _____

2.

y-intercept: –5

point: (4, 7)

Equation: _____

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WRITE A LINEAR EQUATION FROM THE Y-INTERCEPT AND A POINT

Keep going! In each problem, you've been given the *y*-intercept of a line and a point on that line. Use the *y*-intercept and point to write the equation of the line in slope-intercept form.

3. *y*-intercept: 4
point: (2, 0)

Equation: _____

4. *y*-intercept: 7
point: (2, –3)

Equation: _____

5. *y*-intercept: –2
point: (–2, 12)

Equation: _____

6. *y*-intercept: –4
point: (–6, 8)

Equation: _____

7. *y*-intercept: –7
point: (–4, 5)

Equation: _____

8. *y*-intercept: 5
point: (4, 10)

Equation: _____

9. *y*-intercept: –9
point: (3, –11)

Equation: _____

10. *y*-intercept: –12
point: (–1, –20)

Equation: _____

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