WRITE A LINEAR EQUATION FROM THE SLOPE 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 slope 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 slope of –3 and goes through the point (–5, 25).

Step 1: Find the y-intercept of the line.

Plug the slope and point into $y = mx + b$, and solve for b:

$y = mx + b$

$y = -3x + b$ *Plug in the slope, –3, for m.*

$25 = -3(-5) + b$ *Plug in the coordinates of the point (–5, 25).*

$25 = 15 + b$ *Simplify. Then solve for b.*

$10 = b$

So, the y-intercept of the line is 10.

Step 2: Write the equation in slope-intercept form: $y = -3x + 10$.

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

1. Slope: 2

Point: (3, 10)

Equation: y = 2x + 4

2. Slope: –3

Point: (–2, 12)

Equation: y = –3x + 6

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

3. Slope: 5
Point: (6, 23)

Equation: $y = 5x - 7$

4. Slope: 4
Point: (3, 16)

Equation: $y = 4x + 4$

5. Slope: $\frac{1}{2}$
Point: (4, 1)

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

6. Slope: $\frac{1}{6}$
Point: (18, 17)

Equation: $y = \frac{1}{6}x + 14$

7. Slope: -9
Point: (2, -15)

Equation: $y = -9x + 3$

8. Slope: $-\frac{2}{3}$
Point: (9, 7)

Equation: $y = -\frac{2}{3}x + 13$

9. Slope: $\frac{2}{5}$
Point: (5, 10)

Equation: $y = \frac{2}{5}x + 8$

10. Slope: $-\frac{1}{3}$
Point: (-6, -7)

Equation: $y = -\frac{1}{3}x - 9$