

5.6 The Standard Form of a Linear Equation

- Goals**
- Write a linear equation in standard form.
 - Use the standard form of an equation to model real-life situations.

VOCABULARY

Standard form The standard form of the equation of a line is $Ax + By = C$ where A , B , and C are real numbers and A and B are not both zero.

Example 1 Writing a Linear Equation

Write the standard form of an equation of the line passing through $(-3, 2)$ with a slope of -4 .

Solution

You are given a point on the line and its slope, so you can write the point-slope form of the equation of the line.

$$y - y_1 = m(x - x_1)$$

Write point-slope form.

$$y - 2 = -4[x - (-3)]$$

Substitute for m , x_1 , and y_1 .

$$y - 2 = -4(x + 3)$$

Simplify.

$$y - 2 = -4x - 12$$

Use distributive property.

$$4x + y = -10$$

Add $4x$ and 2 to each side.

Answer The equation $4x + y = -10$ is in standard form.