2.4 Write Equations of Lines

TEKS a.1, a.3, a.4, 2A.2.A

Before You graphed linear equations.

Now You will write linear equations.

Why? So you can model a steady increase or decrease, as in Ex. 51.

Key Vocabulary
- point-slope form

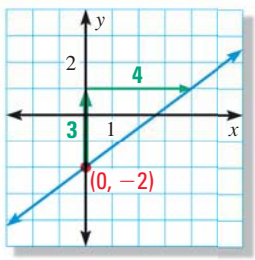
KEY CONCEPT *For Your Notebook*

Writing an Equation of a Line

Given slope m and y-intercept b	Use slope-intercept form: $y = mx + b$
Given slope m and a point (x_1, y_1)	Use **point-slope form**: $y - y_1 = m(x - x_1)$
Given points (x_1, y_1) and (x_2, y_2)	First use the slope formula to find m. Then use point-slope form with either given point.

EXAMPLE 1 Write an equation given the slope and y-intercept

Write an equation of the line shown.



Solution

From the graph, you can see that the slope is $m = \frac{3}{4}$ and the y-intercept is $b = -2$. Use slope-intercept form to write an equation of the line.

$y = mx + b$ **Use slope-intercept form.**

$y = \frac{3}{4}x + (-2)$ **Substitute $\frac{3}{4}$ for m and -2 for b.**

$y = \frac{3}{4}x - 2$ **Simplify.**

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GUIDED PRACTICE for Example 1

Write an equation of the line that has the given slope and y-intercept.

1. $m = 3, b = 1$
2. $m = -2, b = -4$
3. $m = -\frac{3}{4}, b = \frac{7}{2}$