4.5 Graph Using Slope-Intercept Form

TEKS A.6.A, A.6.B, A.6.E, A.6.F

Before You found slopes and graphed equations using intercepts.

Now You will graph linear equations using slope-intercept form.

Why? So you can model a worker's earnings, as in Ex. 43.

Key Vocabulary
- **slope-intercept form**
- **parallel**

In the activity on page 243, you saw how the slope and y-intercept of the graph of a linear equation in the form $y = mx + b$ are related to the equation.

KEY CONCEPT *For Your Notebook*

Finding the Slope and y-Intercept of a Line

Words

A linear equation of the form $y = mx + b$ is written in **slope-intercept form** where m is the slope and b is the y-intercept of the equation's graph.

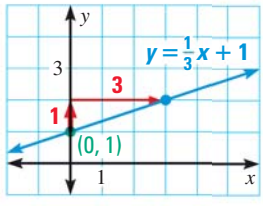
Symbols

$y = mx + b$

slope, y-intercept

$y = \frac{1}{3}x + 1$

Graph



EXAMPLE 1 Identify slope and y-intercept

Identify the slope and y-intercept of the line with the given equation.

a. $y = 3x + 4$ **b.** $3x + y = 2$

Solution

a. The equation is in the form $y = mx + b$. So, the slope of the line is 3, and the y-intercept is 4.

b. Rewrite the equation in slope-intercept form by solving for y.

$3x + y = 2$ **Write original equation.**

$y = -3x + 2$ **Subtract $3x$ from each side.**

▶ The line has a slope of -3 and a y-intercept of 2.

REWRITE EQUATIONS
When you rewrite a linear equation in slope-intercept form, you are expressing y as a function of x.

GUIDED PRACTICE for Example 1

Identify the slope and y-intercept of the line with the given equation.

1. $y = 5x - 3$ **2.** $3x - 3y = 12$ **3.** $x + 4y = 6$