EXAMPLE 2 Solve a two-step equation by combining like terms

REVIEW LIKE TERMS
For help with combining like terms, see p. 97.

Solve $7x - 4x = 21$.

$7x - 4x = 21$ — Write original equation.

$3x = 21$ — Combine like terms.

$\frac{3x}{3} = \frac{21}{3}$ — Divide each side by 3.

$x = 7$ — Simplify.

EXAMPLE 3 Find an input of a function

The output of a function is 3 less than 5 times the input. Find the input when the output is 17.

Solution

STEP 1 **Write** an equation for the function. Let x be the input and y be the output.

$y = 5x - 3$ — *y* is 3 less than 5 times *x*.

STEP 2 **Solve** the equation for x when $y = 17$.

$y = 5x - 3$ — Write original function.

$17 = 5x - 3$ — Substitute 17 for *y*.

$17 + 3 = 5x - 3 + 3$ — Add 3 to each side.

$20 = 5x$ — Simplify.

$\frac{20}{5} = \frac{5x}{5}$ — Divide each side by 5.

$4 = x$ — Simplify.

▶ An input of 4 produces an output of 17.

CHECK

$y = 5x - 3$ — Write original function.

$17 \stackrel{?}{=} 5(4) - 3$ — Substitute 17 for *y* and 4 for *x*.

$17 \stackrel{?}{=} 20 - 3$ — Multiply 5 and 4.

$17 = 17$ ✓ — Simplify. Solution checks.

GUIDED PRACTICE for Examples 2 and 3

Solve the equation. Check your solution.

4. $4w + 2w = 24$ **5.** $8t - 3t = 35$ **6.** $-16 = 5d - 9d$

7. The output of a function is 5 more than -2 times the input. Find the input when the output is 11.

8. The output of a function is 4 less than 4 times the input. Find the input when the output is 3.