



EXAMPLE 3 TAKS REASONING: Multi-Step Problem

ANOTHER WAY

For an alternative method for solving the problem in Example 3, turn to page 442 for the **Problem Solving Workshop**.

WEBSITES Many businesses pay website hosting companies to store and maintain the computer files that make up their websites. Internet service providers also offer website hosting. The costs for website hosting offered by a website hosting company and an Internet service provider are shown in the table. Find the number of months after which the total cost for website hosting will be the same for both companies.

Company	Set-up fee (dollars)	Cost per month (dollars)
Internet service provider	10	21.95
Website hosting company	None	22.45



Solution

STEP 1 Write a system of equations. Let y be the total cost after x months.

Equation 1: Internet service provider

$$\begin{array}{ccccccc}
 \text{Total cost} & = & \text{Set-up fee} & + & \text{Cost per month} & \cdot & \text{Number of months} \\
 \downarrow & & \downarrow & & \downarrow & & \downarrow \\
 y & = & 10 & + & 21.95 & \cdot & x
 \end{array}$$

Equation 2: Website hosting company

$$\begin{array}{ccccccc}
 \text{Total cost} & = & \text{Cost per month} & \cdot & \text{Number of months} \\
 \downarrow & & \downarrow & & \downarrow \\
 y & = & 22.45 & \cdot & x
 \end{array}$$

The system of equations is: $y = 10 + 21.95x$ **Equation 1**
 $y = 22.45x$ **Equation 2**

STEP 2 Substitute $22.45x$ for y in Equation 1 and solve for x .

$y = 10 + 21.95x$ **Write Equation 1.**

$22.45x = 10 + 21.95x$ **Substitute $22.45x$ for y .**

$0.5x = 10$ **Subtract $21.95x$ from each side.**

$x = 20$ **Divide each side by 0.5.**

► The total cost will be the same for both companies after 20 months.



GUIDED PRACTICE for Example 3

- In Example 3, what is the total cost for website hosting for each company after 20 months?
- WHAT IF?** In Example 3, suppose the Internet service provider offers \$5 off the set-up fee. After how many months will the total cost for website hosting be the same for both companies?