EXAMPLE 7

Find the value of x if $\frac{x}{6}$ is greater than or equal to 8. Graph the solution.

Step 1: Write the problem. $\frac{x}{6} \geq 8$

Step 2: Multiply both sides by 6 to undo dividing by 6. $\frac{x}{6} \times 6 \geq 8 \times 6$

Solution: $x \geq 48$

Check: Choose any number greater than or equal to 48, such as 54, and substitute it for x in the original inequality.

$$\frac{x}{6} \geq 8$$
$$\frac{54}{6} \overset{?}{\geq} 8$$
$$9 \geq 8$$

TRY THESE F

Solve and graph each inequality. Check your work.

a. $7x < 9.1$ **b.** $\frac{3}{4}x > 27$

CHECK YOUR UNDERSTANDING

Write your answers on notebook paper. Show your work.

1. Write a question that will help solve each equation. Then use mental math to solve.

   a. $43 - x = 35$

   b. $w + 9 = 17$

   c. $9p = 36$

2. Write an equation for each question. Solve the equation and check your solution.

   a. What number can you divide by 4 to get 6?

   b. What number is added to 13 to get 63?

3. Solve and check each equation.

   a. $w - 1.23 = 4.72$ **b.** $\frac{7}{6} = y + \frac{2}{3}$

   c. $2.7x = 8.64$ **d.** $29 = \frac{p}{14}$

   e. $\frac{2}{3}x = 18$

4. The Math Club wants to buy math history books for the library. The total cost is $105. So far they have raised $72. How much more do they need to buy the books?

   a. Write a verbal model.

   b. Use numbers and variables to write expressions.

   c. Write an equation.

   d. How much more money does the Math Club need to earn?

5. Solve and graph each inequality.

   a. $1.2x \leq 9.6$ **b.** $y - 11 > 11$

   c. $w + 1.5 < 5$ **d.** $\frac{n}{4} \geq 8$

6. **MATHEMATICAL REFLECTION** Why is it important to have a systematic way to solve equations rather than just relying on "mental math"?