Solving an Area Problem

Abe Biggs wants to plant a flower bed in a triangular area in a corner of his garden. One leg of the right-triangular flower bed will be 2 m shorter than the other leg, and he wants the bed to have an area of 24 m². See Figure 1. Find the lengths of the legs.

**Step 1** Read the problem carefully. We need to find the lengths of the legs of a right triangle with area 24 m².

**Step 2** Assign a variable.

Let \( x = \) the length of one leg.

Then \( x - 2 = \) the length of the other leg.

**Step 3** Write an equation. The area of a right triangle is given by the formula

\[
\text{area} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2}bh.
\]

In a right triangle, the legs are the base and height, so we substitute 24 for the area, \( x \) for the base, and \( x - 2 \) for the height in the formula.

**Step 4** Solve.

**Step 5** State the answer.

**Step 6** Check.