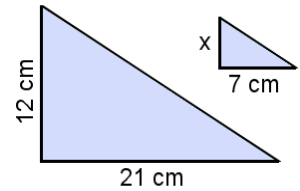


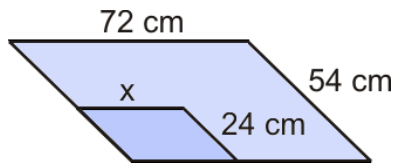
Scaling Figures 2

Example. The two triangles are similar. Find the side marked with x .

Here, we do *not* know the scale ratio, but we can solve it from the two corresponding sides that measure 7 cm and 21 cm. The scale is 21:7 or 3:1. Now we can figure out that the side length 12 cm needs to be divided by 3. We get $x = 4$ cm.



Example. The two parallelograms are similar. Find the length of the side marked by x .



Solution 1. We can get the scale ratio from the two corresponding sides whose lengths are known—the 54-cm and 24-cm sides—and form a proportion to solve x . The ratio $x : 72$ has to equal the ratio $24 : 54$.

$$\frac{x}{72} = \frac{24}{54}$$

We simplify the fraction $24/54$ before continuing.

$$\frac{x}{72} = \frac{4}{9}$$

Now cross-multiply.

$$9x = 4 \cdot 72$$

Multiply the right side.

$$9x = 288$$

Divide both sides by 9.

$$\frac{9x}{9} = \frac{288}{9}$$

Divide the right side.

$$x = 32$$

So, x is 32 cm.

Solution 2. Like in solution 1, we first find and simplify the scale ratio using the two corresponding sides whose lengths are known. The scale ratio is $24:54 = 4:9$ (simplified).

Now we use the scaling ratio 4:9 with the 72-cm side, which corresponds to the unknown side. Imagine that the 72-cm side is divided into 9 parts. Each part is $72 \text{ cm} \div 9 = 8 \text{ cm}$. Similarly, the unknown side has four parts, so it is $4 \times 8 \text{ cm} = 32 \text{ cm}$.

1. The figures are similar. Find the side lengths marked with x . First figure out the scale ratio.

