

Scale and Match

Use congruence and similarity to solve geometry problems.

HIGH SCHOOL • MA.912.GR.1.6

MA.912.GR.1.6 "Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures."

NAME _____

DATE _____

MATCH CORRESPONDING PARTS

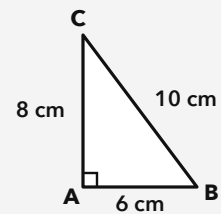
If two figures are similar, every pair of corresponding lengths has the same scale factor k . Multiply lengths by k and areas by the square of k , while congruent figures have equal corresponding lengths and equal area.

WORKED EXAMPLE

The right triangle shown is similar to a second triangle whose hypotenuse is 15 cm. Find the second triangle's legs.

1. Use the hypotenuses: $15/10 = 3/2$.
2. Multiply each leg by $3/2$.
3. $6(3/2) = 9$ and $8(3/2) = 12$.

Answer: 9 cm and 12 cm



PRACTICE 4 problems

- 1** $\triangle ABC \sim \triangle DEF$. $AB = 14$ cm, $BC = 16$ cm, and $DE = 21$ cm. Find EF .

ANSWER _____

- 2** A figure has area 32 square units. Its similar image has scale factor $5/4$. Find the image's area.

ANSWER _____

- 3** $\triangle JKL \cong \triangle PQR$. $KL = 4x + 3$ cm and $QR = 19$ cm. Find x .

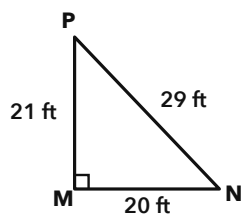
ANSWER _____

- 4** A figure has perimeter 28 cm. A similar figure has scale factor $7/4$ from the first figure to the second. Find the second perimeter.

ANSWER _____

APPLY IT Show your work

- 1** The triangular mural shown is similar to a larger stage backdrop. The backdrop side that matches the mural's longest side is 87 ft. Find the backdrop's other two side lengths.



ANSWER _____

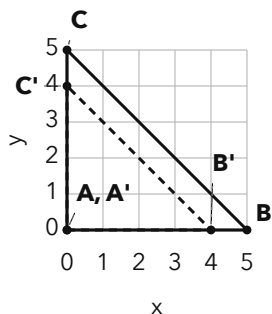
- 2** A phone photo is 4 in by 7 in. A similar poster has a short side of 16 in. Find the poster's long side.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The solid triangle ABC and dashed triangle A'B'C' are shown. Are they similar? Give the scale factor from the solid triangle to the dashed triangle and the area of the dashed triangle. Explain using corresponding side lengths.



WORK SPACE AND ANSWER

PRACTICE 1

$\triangle ABC \sim \triangle DEF$. $AB = 14$ cm, $BC = 16$ cm, and $DE = 21$ cm. Find EF .

24 cm

PRACTICE 2

A figure has area 32 square units. Its similar image has scale factor $5/4$. Find the image's area.

50 square units

PRACTICE 3

$\triangle JKL \cong \triangle PQR$. $KL = 4x + 3$ cm and $QR = 19$ cm. Find x .

4

PRACTICE 4

A figure has perimeter 28 cm. A similar figure has scale factor $7/4$ from the first figure to the second. Find the second perimeter.

49 cm

APPLY IT 1

60 ft and 63 ft The longest side changes from 29 ft to 87 ft, so the scale factor is 3. Multiply 20 and 21 by 3.

APPLY IT 2

28 in The scale factor is $16/4 = 4$. Multiply the photo's 7-inch long side by 4.

CHALLENGE

Yes. The scale factor is $4/5$, and the dashed triangle's area is 8 square units. Its corresponding legs change from 5 units to 4 units.

Accept equivalent scale-factor statements, such as 4:5 for the challenge. For the challenge, require that students connect corresponding side lengths to similarity.