

Grade 8 - Dilations and Similar Figures - Worksheet

Common Core 8.G.A.3, 8.G.A.4 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 21 problems practice dilations, scale factors, similar figures and similarity transformations (Common Core 8.G.A.3 and 8.G.A.4). Each problem has its own space for work, so print the page and write directly on it.

The problems start with direct skill checks and grow harder as you go. Later items find missing lengths, describe sequences and solve real scale problems. Use the answer key afterwards to check every step.

Grade 8 · Common Core State Standards: **8.G.A.3, 8.G.A.4**

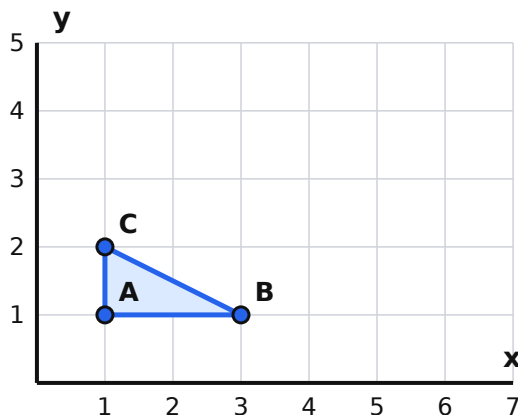
Exercise 1 - Dilate a point

Dilate $(2,3)$ from the origin with scale factor 3.

Exercise 2 - Reduce a point

Dilate $(4,-6)$ from the origin with scale factor $\frac{1}{2}$.

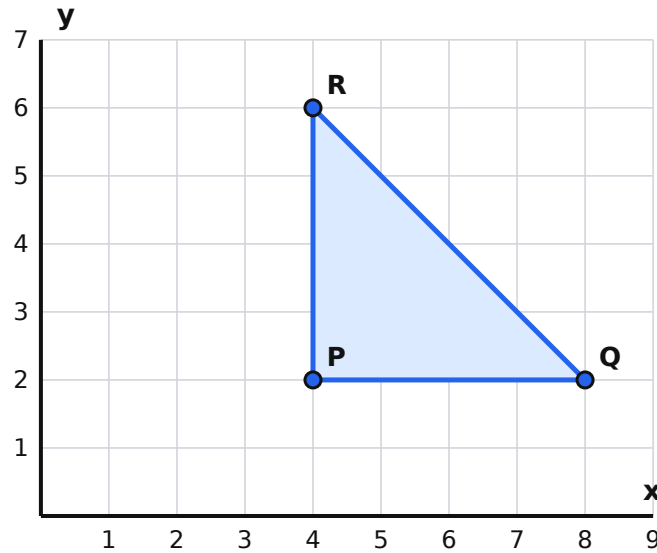
Exercise 3 - Dilate a triangle



Triangle ABC.

Dilate triangle ABC from the origin with scale factor 2. List the image vertices.

Exercise 4 - Reduce a triangle



Triangle PQR.

Dilate PQR from the origin with scale factor $\frac{1}{2}$. List the image vertices.

Exercise 5 - Find the scale factor

Point $A(2,4)$ is mapped to $A'(6,12)$ by a dilation from the origin. Find the scale factor.

Exercise 6 - Enlargement or reduction

Is a dilation with scale factor 0.75 an enlargement or a reduction? What about scale factor 1.5?

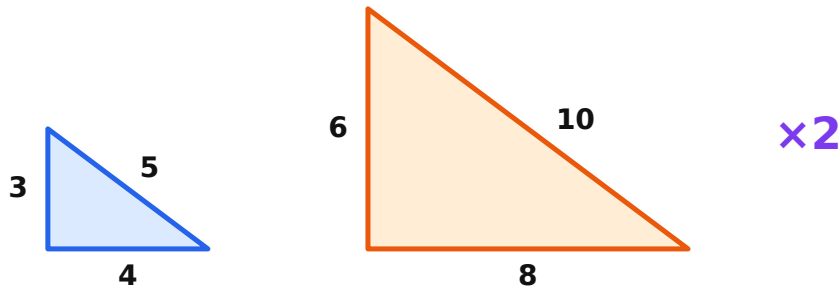
Exercise 7 - Side length

A segment of length 4 is dilated by scale factor 3. Find the length of its image.

Exercise 8 - Perimeter and area

A triangle has perimeter 12 and area 6. It is dilated with scale factor 3. Find the perimeter and the area of the image.

Exercise 9 - Similar triangles



Each side of the large triangle is 2 times the matching side.

Are the two triangles similar? If so, give the scale factor.

Exercise 10 - Missing side

A rectangle is 4 inches by 6 inches. A similar rectangle is 10 inches wide (matching the 4). Find its length.

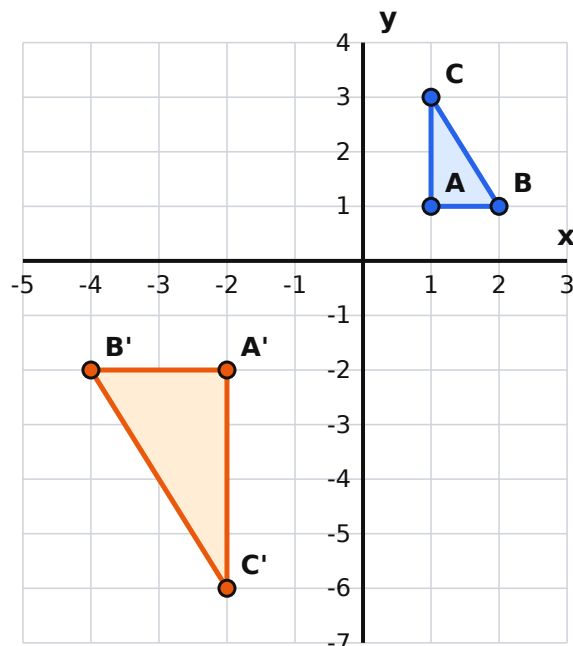
Exercise 11 - Angles in similar triangles

Two triangles are similar. The first has angles 50° and 60° . Find all three angles of the second triangle.

Exercise 12 - Scale factor 1

What is the image when a figure is dilated with scale factor 1? Is it congruent to the original?

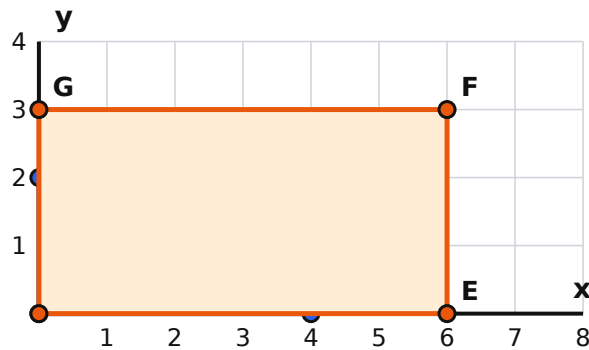
Exercise 13 - Describe a sequence



Triangle ABC and its image.

Describe a sequence of transformations that maps ABC onto $A'B'C'$.

Exercise 14 - Rectangle dilation



Two rectangles with a common corner.

Find the scale factor that maps the small rectangle to the large rectangle.

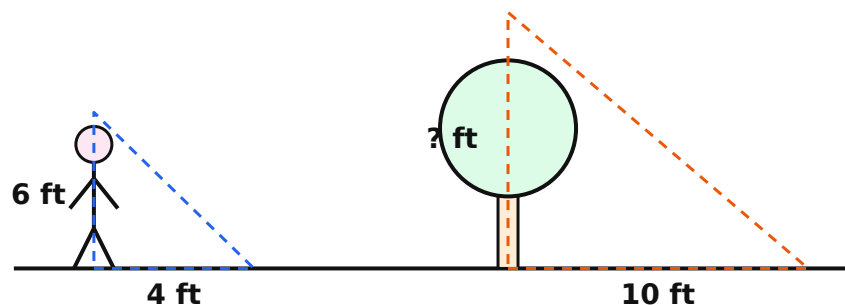
Exercise 15 - Not similar

Rectangle X is 2 by 3 and rectangle Y is 4 by 7. Are they similar?

Exercise 16 - Photo enlargement

A photo from Maya's soccer season is 4 inches by 6 inches. It is enlarged with scale factor 2.5. Find the dimensions of the enlargement.

Exercise 17 - Shadow problem



Sun rays make similar right triangles.

A 6-foot person casts a 4-foot shadow. At the same time, a tree casts a 10-foot shadow. How tall is the tree?

Exercise 18 - Map scale

On a map of a road trip, 1 inch represents 25 miles. Two cities are 3.6 inches apart on the map. What is the real distance? Name the scale factor.

Exercise 19 - Logo on a screen

Ethan's team logo is 3 cm wide and 2 cm tall. On the school scoreboard it is enlarged to 12 cm wide. Find the new height and the scale factor.

Exercise 20 - Poster area

A flyer is 8 inches by 10 inches. A poster of the same design has scale factor 3. How many times the area of the flyer is the area of the poster?

Exercise 21 - Explain

Noah says a dilation with scale factor 2 doubles all the angles of a triangle. Is he right? Explain.