

Grade 8 - Dilations and Similar Figures - Answer Key

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

This answer key gives a full worked solution for each of the 21 problems on the dilations and similar figures worksheet (Common Core 8.G.A.3 and 8.G.A.4). Compare each step with your own work, not only the final answer, and note any step where your method differed.

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

Exercise 1 - Dilate a point

Multiply each coordinate by 3.

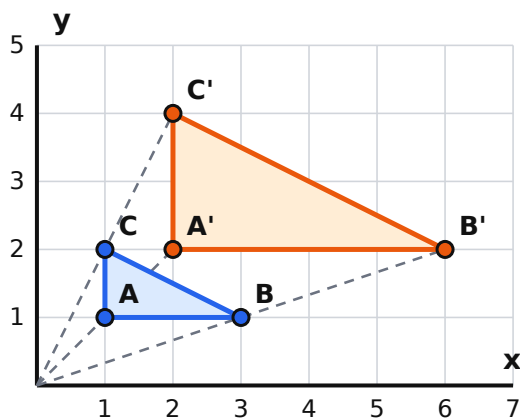
(6,9)

Exercise 2 - Reduce a point

$\frac{1}{2} \cdot 4 = 2$ and $\frac{1}{2} \cdot (-6) = -3$.

(2,-3)

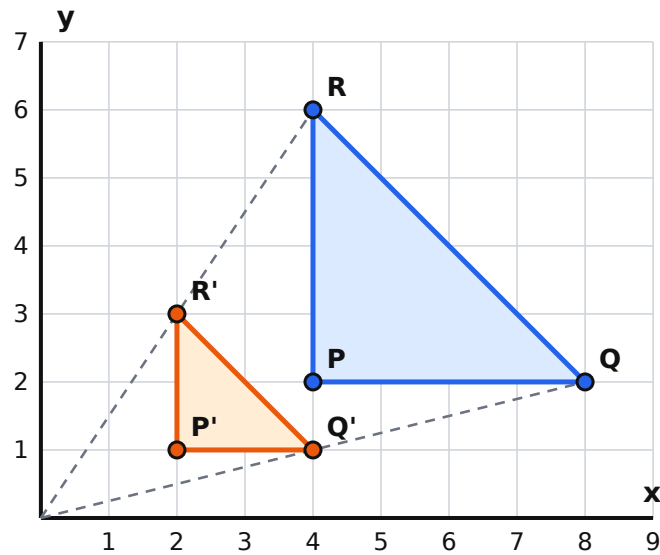
Exercise 3 - Dilate a triangle



Each coordinate doubles.

$A'(2,2)$, $B'(6,2)$, $C'(2,4)$

Exercise 4 - Reduce a triangle



The image is half as large.

$$P'(2,1), Q'(4,1), R'(2,3)$$

Exercise 5 - Find the scale factor

$$k = \frac{6}{2} = 3, \text{ and } \frac{12}{4} = 3.$$

$$k = 3$$

Exercise 6 - Enlargement or reduction

A factor less than 1 shrinks the figure; a factor greater than 1 enlarges it.

0.75: reduction; 1.5: enlargement

Exercise 7 - Side length

$$4 \cdot 3 = 12.$$

12

Exercise 8 - Perimeter and area

Perimeter: $12 \cdot 3 = 36$.

Area: $6 \cdot 3^2 = 54$.

Perimeter 36; area 54

Exercise 9 - Similar triangles

$$\frac{6}{3} = \frac{8}{4} = \frac{10}{5} = 2.$$

Yes, similar with scale factor 2

Exercise 10 - Missing side

$$k = \frac{10}{4} = 2.5. \text{ Length: } 6 \cdot 2.5 = 15.$$

15 inches

Exercise 11 - Angles in similar triangles

Third angle of the first: $180 - 50 - 60 = 70$. Similar triangles have equal corresponding angles.

50° , 60° and 70°

Exercise 12 - Scale factor 1

Each coordinate is multiplied by 1, so the image is the same figure.

The same figure; yes, congruent

Exercise 13 - Describe a sequence

Dilate with scale factor 2: $(2,2)$, $(4,2)$, $(2,6)$. Then rotate 180° about the origin: $(-2,-2)$, $(-4,-2)$, $(-2,-6)$.

Dilation with $k = 2$, then a 180° rotation about the origin

Exercise 14 - Rectangle dilation

$$\frac{6}{4} = 1.5 \text{ and } \frac{9}{2} = 1.5.$$

$$k = 1.5$$

Exercise 15 - Not similar

$$\frac{4}{2} = 2 \text{ but } \frac{7}{3} \approx 2.33. \text{ The sides are not proportional.}$$

No, not similar

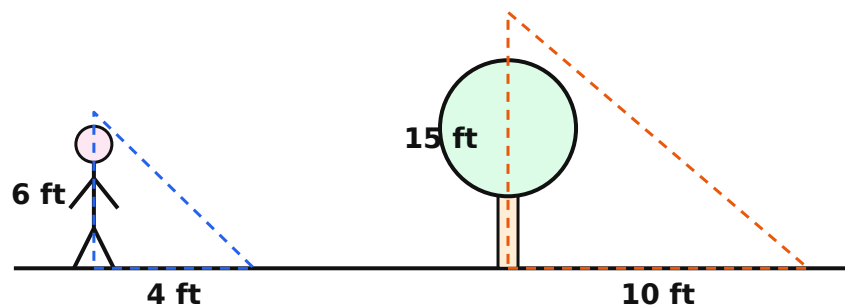
Exercise 16 - Photo enlargement

$$4 \cdot 2.5 = 10 \text{ and } 6 \cdot 2.5 = 15.$$

10 inches by 15 inches

Exercise 17 - Shadow problem

$$\frac{h}{6} = \frac{10}{4}, \text{ so } h = 6 \cdot 2.5 = 15.$$



The tree is 15 ft tall.

15 feet

Exercise 18 - Map scale

$$3.6 \cdot 25 = 90 \text{ miles.}$$

90 miles; each map inch is 25 real miles

Exercise 19 - Logo on a screen

$$k = \frac{12}{3} = 4. \text{ Height: } 2 \cdot 4 = 8.$$

Scale factor 4; height 8 cm

Exercise 20 - Poster area

$$\text{Flyer: } 80. \text{ Poster: } 24 \cdot 30 = 720. 720 \div 80 = 9 = 3^2.$$

9 times as large

Exercise 21 - Explain

No. A dilation preserves angle measures. It only multiplies lengths by 2.

Noah is wrong