

Grade 8 - Dilations and Similar Figures - Quiz

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

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

Pick the best answer for each of the 10 questions about dilations, scale factors, similar figures and similarity transformations (Common Core 8.G.A.3 and 8.G.A.4). Read each question carefully, then read the explanation to learn from any mistake.

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

Questions

Question 1

What is the image of $(5,2)$ after a dilation from the origin with scale factor 3?

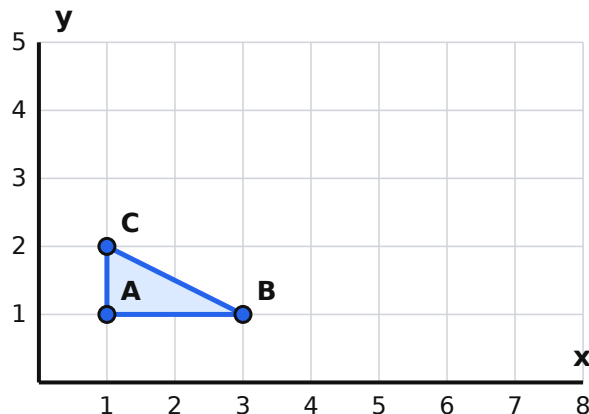
- A. $(15,6)$
- B. $(8,5)$
- C. $(15,2)$
- D. $(2,-1)$

Question 2

A dilation maps $(4,6)$ to $(2,3)$. What is the scale factor?

- A. 2
- B. -2
- C. 10
- D. $\frac{1}{2}$

Question 3

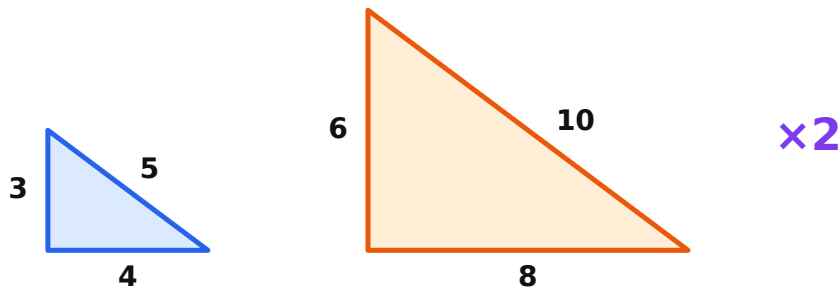


Triangle ABC with area 1.

Triangle ABC has area 1 square unit. It is dilated with scale factor 4. What is the area of the image?

- A. 4
- B. 8
- C. 16
- D. 64

Question 4



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

What is the scale factor from the small triangle to the large triangle?

- A. $\frac{1}{2}$
- B. 2
- C. 3
- D. 4

Question 5

Which is preserved by a dilation?

- A. Side lengths
- B. Perimeter
- C. Angle measures
- D. Area

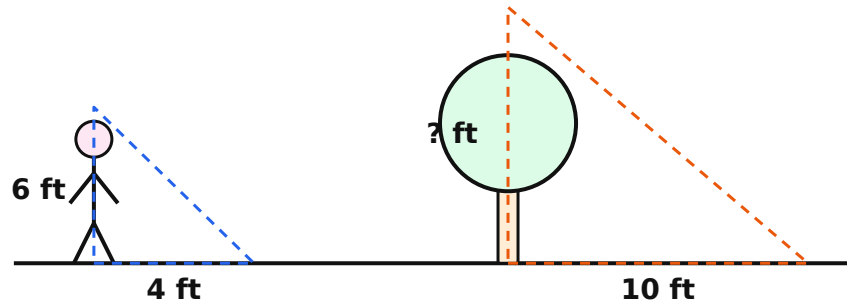
Question 6

Two similar triangles have shorter sides 4 and 10. The longer side of the smaller triangle is 6. What is the longer side of the larger triangle?

- A. 12
- B. 15
- C. 16

D. 9

Question 7



Sun rays make similar right triangles.

Using the diagram, how tall is the tree?

- A. 15 ft
- B. 12 ft
- C. 10 ft
- D. 20 ft

Question 8

A dilation with scale factor 1 produces a figure that is

- A. congruent to the original
- B. twice as large
- C. half as large
- D. rotated 90°

Question 9

Rectangles 3 by 5 and 6 by 9 are

- A. similar with $k = 2$
- B. not similar
- C. congruent
- D. similar with $k = 1.5$

Question 10

A photo 5 inches by 7 inches is enlarged by a factor of 3. What is the new width (the 5)?

- A. 8 inches
- B. 35 inches
- C. 21 inches
- D. 15 inches

Answers

1. **A** - Multiply both coordinates by 3.
2. **D** - $2/4 = 1/2$, so it is a reduction.
3. **C** - Area scales by k squared: $1 \times 16 = 16$. Multiplying by 4 only gives 4.
4. **B** - $6/3 = 8/4 = 10/5 = 2$.
5. **C** - Dilations keep angles; lengths, perimeters and areas change.
6. **B** - $k = 10/4 = 2.5$, so $6 \times 2.5 = 15$.
7. **A** - $h/6 = 10/4$, so $h = 15$.
8. **A** - Multiplying by 1 changes nothing.
9. **B** - $6/3 = 2$ but $9/5 = 1.8$, so the sides are not proportional.
10. **D** - $5 \times 3 = 15$.

Remember

- Dilation from the origin: $(x,y) \rightarrow (kx,ky)$.
- $k > 1$ enlarges; $0 < k < 1$ reduces; $k = 1$ leaves the figure unchanged.
- Angles stay equal; side lengths multiply by k ; area multiplies by k^2 .
- Similar figures have equal angles and proportional sides.
- Use $\frac{\text{new}}{\text{old}} = k$ to find missing lengths.