

G.SRT.B.5: Similarity 3

- 1 Which is *not* a property of all similar triangles?
 - 1) The corresponding angles are congruent.
 - 2) The corresponding sides are congruent.
 - 3) The perimeters are in the same ratio as the corresponding sides.
 - 4) The altitudes are in the same ratio as the corresponding sides.

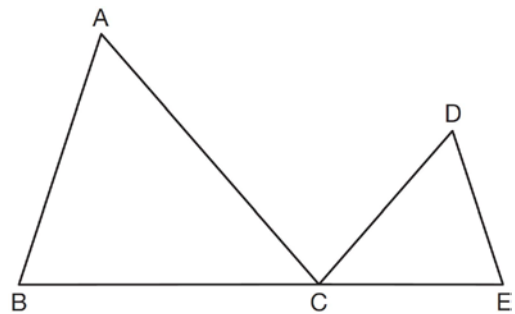
- 2 Two triangles are similar, and the ratio of each pair of corresponding sides is 2:1. Which statement regarding the two triangles is *not* true?
 - 1) Their areas have a ratio of 4:1.
 - 2) Their altitudes have a ratio of 2:1.
 - 3) Their perimeters have a ratio of 2:1.
 - 4) Their corresponding angles have a ratio of 2:1.

- 3 Given $\triangle ABC \sim \triangle DEF$ such that $\frac{AB}{DE} = \frac{3}{2}$. Which statement is *not* true?
 - 1) $\frac{BC}{EF} = \frac{3}{2}$
 - 2) $\frac{m\angle A}{m\angle D} = \frac{3}{2}$
 - 3) $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF} = \frac{9}{4}$
 - 4) $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF} = \frac{3}{2}$

- 4 If $\triangle ABC \sim \triangle LMN$, which statement is *not* always true?
 - 1) $m\angle A \cong m\angle N$
 - 2) $m\angle B \cong m\angle M$
 - 3) $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle LMN} = \frac{(AC)^2}{(LN)^2}$
 - 4) $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle LMN} = \frac{AB}{LM}$

- 5 $\triangle ABC$ is similar to $\triangle DEF$. The ratio of the length of \overline{AB} to the length of \overline{DE} is 3:1. Which ratio is also equal to 3:1?
 - 1) $\frac{m\angle A}{m\angle D}$
 - 2) $\frac{m\angle B}{m\angle F}$
 - 3) $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF}$
 - 4) $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF}$

- 6 In the diagram below, $\triangle ABC \sim \triangle DEC$.



- If $AC = 12$, $DC = 7$, $DE = 5$, and the perimeter of $\triangle ABC$ is 30, what is the perimeter of $\triangle DEC$?
- 1) 12.5
 - 2) 14.0
 - 3) 14.8
 - 4) 17.5

- 7 Two triangles are similar. The lengths of the sides of the smaller triangle are 3, 5, and 6, and the length of the longest side of the larger triangle is 18. What is the perimeter of the larger triangle?
 - 1) 14
 - 2) 18
 - 3) 24
 - 4) 42

- 8 Delroy's sailboat has two sails that are similar triangles. The larger sail has sides of 10 feet, 24 feet, and 26 feet. If the shortest side of the smaller sail measures 6 feet, what is the perimeter of the *smaller* sail?
- 15 ft
 - 36 ft
 - 60 ft
 - 100 ft
- 9 The base of an isosceles triangle is 5 and its perimeter is 11. The base of a similar isosceles triangle is 10. What is the perimeter of the larger triangle?
- 15
 - 21
 - 22
 - 110
- 10 The corresponding medians of two similar triangles are 8 and 20. If the perimeter of the larger triangle is 45, what is the perimeter of the smaller triangle?
- 14
 - 18
 - 33
 - 37
- 11 The sides of a triangle are 8, 12, and 15. The longest side of a similar triangle is 18. What is the ratio of the perimeter of the smaller triangle to the perimeter of the larger triangle?
- 2:3
 - 4:9
 - 5:6
 - 25:36
- 12 Triangle ABC is similar to triangle DEF . The lengths of the sides of $\triangle ABC$ are 5, 8, and 11. What is the length of the shortest side of $\triangle DEF$ if its perimeter is 60?
- 10
 - 12.5
 - 20
 - 27.5
- 13 On a scale drawing of a new school playground, a triangular area has sides with lengths of 8 centimeters, 15 centimeters, and 17 centimeters. If the triangular area located on the playground has a perimeter of 120 meters, what is the length of its longest side?
- 24 m
 - 40 m
 - 45 m
 - 51 m
- 14 The ratio of the corresponding sides of two similar squares is 1 to 3. What is the ratio of the area of the smaller square to the area of the larger square?
- $1:\sqrt{3}$
 - 1:3
 - 1:6
 - 1:9
- 15 In right triangles ABC and RST , hypotenuse $AB = 4$ and hypotenuse $RS = 16$. If $\triangle ABC \sim \triangle RST$, then 1:16 is the ratio of the corresponding
- legs
 - areas
 - volumes
 - perimeters
- 16 Triangle RST is similar to $\triangle XYZ$ with $RS = 3$ inches and $XY = 2$ inches. If the area of $\triangle RST$ is 27 square inches, determine and state the area of $\triangle XYZ$, in square inches.
- 17 The lengths of the sides of two similar rectangular billboards are in the ratio 5:4. If 250 square feet of material is needed to cover the larger billboard, how much material, in square feet, is needed to cover the smaller billboard?

G.SRT.B.5: Similarity 3**Answer Section**

1 ANS: 2 REF: 080729a

2 ANS: 4

Corresponding angles of similar triangles are congruent.

REF: fall0826ge

3 ANS: 2

Because the triangles are similar, $\frac{m\angle A}{m\angle D} = 1$

REF: 011022ge

4 ANS: 1 REF: 061517ge

5 ANS: 4 REF: 081023ge

6 ANS: 4

$$\frac{7}{12} \cdot 30 = 17.5$$

REF: 061521geo

7 ANS: 4

$$\frac{6}{18} = \frac{3}{b} \cdot \frac{6}{18} = \frac{5}{c} \cdot 9 + 15 + 18 = 42$$

$$b = 9 \quad c = 15$$

REF: 060208a

8 ANS: 2

$$\frac{6}{10} = \frac{b}{24} \cdot \frac{6}{10} = \frac{c}{26} \cdot 6 + 14.4 + 15.6 = 36$$

$$b = 14.4 \quad c = 15.6$$

REF: 060411a

9 ANS: 3

If the base of the isosceles triangle is 5, the other sides are each 3. $\frac{5}{10} = \frac{3}{x} \cdot 6 + 6 + 10 = 22$

$$x = 6$$

REF: 010704a

10 ANS: 2

$$45 \cdot \frac{8}{20} = 18$$

REF: 081511ge

11 ANS: 3

$$\frac{15}{18} = \frac{5}{6}$$

REF: 081317ge

12 ANS: 2

Perimeter of $\triangle DEF$ is $5 + 8 + 11 = 24$. $\frac{5}{24} = \frac{x}{60}$

$$24x = 300$$

$$x = 12.5$$

REF: 011307ge

13 ANS: 4

The perimeter of the drawing is 40 cm, for a scale of 300:1. If the longest side of the scale drawing is 17 cm, the longest side of the playground is 51 m.

REF: 060524a

14 ANS: 4

$$(3s)^2 = 9s^2 = 9A$$

REF: 089918a

15 ANS: 2

$$\left(\frac{1}{4}\right)^2 = \frac{1}{16}$$

REF: 082216geo

16 ANS:

$$\left(\frac{3}{2}\right)^2 = \frac{27}{A}$$

$$\frac{9}{4} = \frac{27}{A}$$

$$9A = 108$$

$$A = 12$$

REF: 061434ge

17 ANS:

160. Both the length and width of the smaller rectangle are $\frac{4}{5}$ that of the larger.

$$A = \frac{4}{5}l \times \frac{4}{5}w = \frac{16}{25}lw = \frac{16}{25} \times 250 = 160.$$

REF: 060322a