

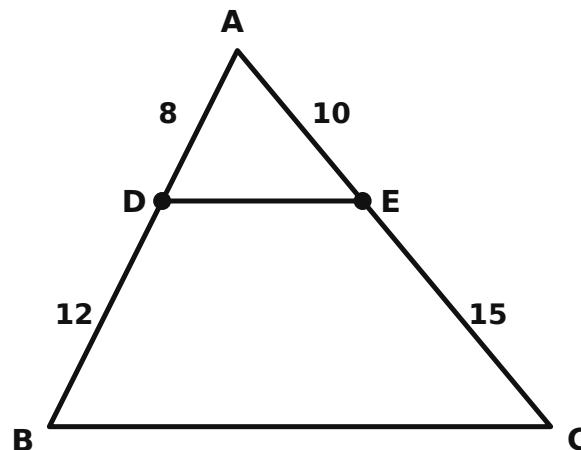
Geometry - Similar Triangle Theorems - Test Answer Key

Common Core G-SRT.B.4, G-SRT.B.5 · maths-pdf.fr/en/

Use this answer key and scoring guide for the similar triangles test. Each solution shows the full work, and the scoring note tells how the points are split between method and final answer. Partial credit is listed so that grading stays consistent from one paper to the next.

Geometry · Common Core State Standards: **G-SRT.B.4, G-SRT.B.5**

Question 1 - Triangle proportionality [2 pts]



AD = 8, AB = 20.

$$\frac{x}{12} = \frac{10}{15}$$

$$15x = 120$$

$$x = 8$$

$$AB = 8 + 12 = 20$$

$$x = 8; AB = 20$$

Scoring: 1 point for the proportion, 1 point for x and AB .

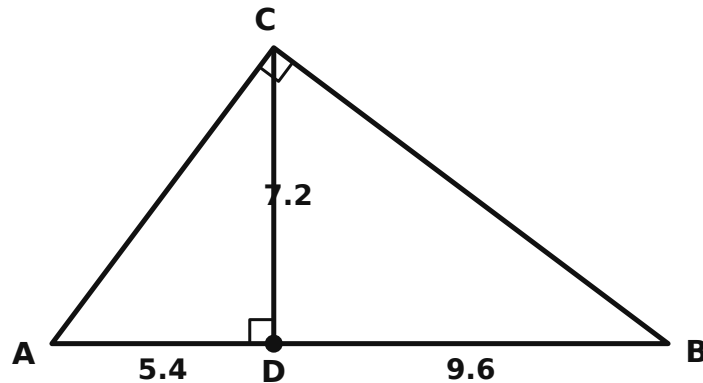
Question 2 - Is it parallel? [2 pts]

$$\frac{6}{8} = \frac{3}{4} \text{ and } \frac{9}{12} = \frac{3}{4}.$$

Equal ratios: by the converse of the Triangle Proportionality Theorem, DE is parallel to BC.

Scoring: 1 point for the ratios, 1 point for the conclusion.

Question 3 - Altitude to the hypotenuse [3 pts]



$$AD = 5.4, DB = 9.6, h = 7.2.$$

- a. $\sqrt{9^2 + 12^2} = 15$
- b. $9^2 = 15 \cdot AD$, so $AD = 5.4$; $12^2 = 15 \cdot DB$, so $DB = 9.6$
- c. $h = \sqrt{5.4 \cdot 9.6} = \sqrt{51.84} = 7.2$

Scoring: 1 point per part.

Question 4 - SSS similarity [2 pts]

$$\frac{9}{6} = \frac{12}{8} = \frac{15}{10} = 1.5.$$

All three pairs are proportional, so the triangles are similar by SSS~ with scale factor 1.5.

Yes, SSS~, k = 1.5

Scoring: 1 point for the ratios, 1 point for the test and the factor.

Question 5 - Solve for x [2 pts]

$$\frac{2x}{x+6} = \frac{9}{6}$$

$$12x = 9x + 54$$

$$x = 18$$

$$AD = 36$$

$$x = 18; AD = 36$$

Scoring: 1 point for the equation, 1 point for x and AD .

Question 6 - Prove similar [3 pts]

Angle A is shared. $\angle ADE$ and $\angle ABC$ are corresponding angles of parallel lines, so they are congruent.

Two pairs of congruent angles: similar by AA.

Scale factor $\frac{4}{10} = 0.4$, so $DE = 0.4 \cdot 15 = 6$.

$$AA; DE = 6$$

Scoring: 1 point for the angles, 1 point for AA, 1 point for DE .

Question 7 - Geometric mean [2 pts]

$\sqrt{6 \cdot 24} = \sqrt{144} = 12$. The altitude is the geometric mean of the segments, so it is also 12.

$$12; 12$$

Scoring: 1 point each.

Question 8 - Mirror method [2 pts]

$$\frac{h}{40} = \frac{5}{10}, \text{ so } h = 20.$$

$$20 \text{ feet}$$

Scoring: 1 point for the proportion, 1 point for the height.

Question 9 - Similar areas [2 pts]

The area ratio is $\left(\frac{4}{10}\right)^2 = 0.16$.

$$0.16 \cdot 125 = 20$$

$$20$$

Scoring: 1 point for the ratio, 1 point for the area.

Total
20 points