

Geometry · Similar Triangles and Proportions · Test

Common Core G-SRT.B.4, G-SRT.B.5 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This 45-minute test covers similar triangles and proportions (G-SRT.B.4 and B.5): SAS and SSS similarity, the side-splitter theorem and its converse, geometric means in right triangles, a short proof and indirect measurement. It is worth 20 points.

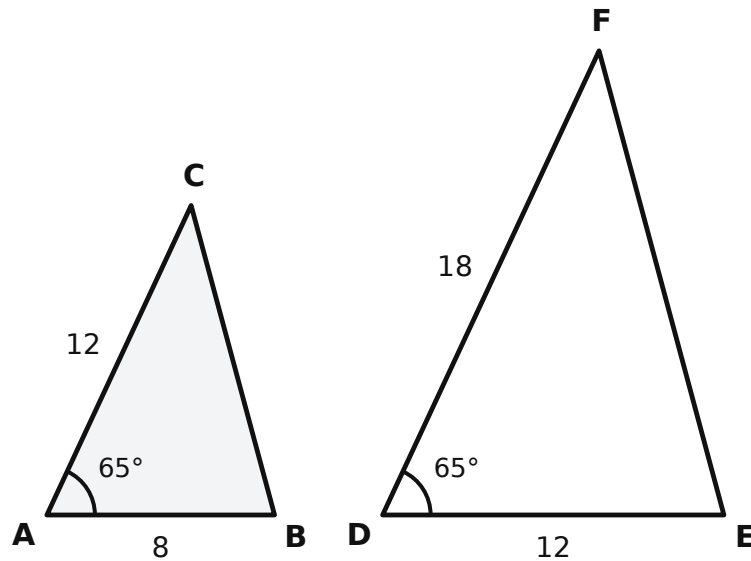
Test information

- **Grade:** Geometry
- **Chapter:** Similar Triangles and Proportions
- **Common Core:** G-SRT.B.4, G-SRT.B.5
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 3 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 1 pt)

Question 1: Similarity by SAS (2 points)

In the figure, $AB=8$, $AC=12$, $DE=12$, $DF=18$ and $m\angle A = m\angle D = 65^\circ$.

- Are the triangles similar? Name the criterion. (1 point)
- Write a similarity statement and the scale factor from ABC to DEF. (1 point)



Triangles ABC and DEF .

Question 2: Similar by SSS (2 points)

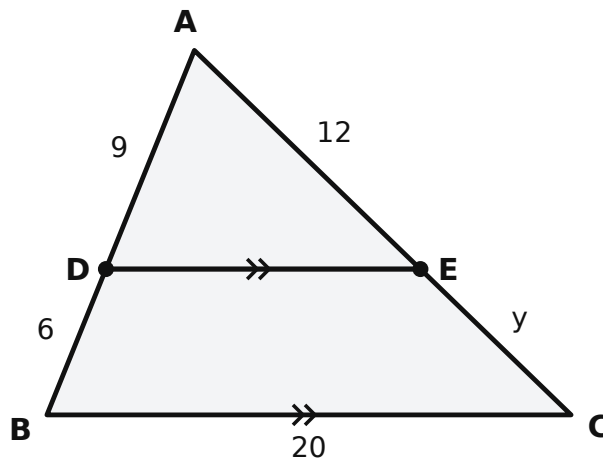
Decide whether each pair of triangles, given by side lengths, is similar. Justify each answer.

- 9, 12, 15 and 12, 16, 20 (1 point)
- 5, 6, 7 and 10, 12, 15 (1 point)

Question 3: Triangle proportionality (3 points)

In triangle ABC , $DE \parallel BC$. Use the figure.

- Find EC . (1 point)
- Find DE . (1 point)
- Name the similarity criterion that shows triangle ADE is similar to triangle ABC . (1 point)



DE is parallel to BC .

Question 4: Converse of the side-splitter theorem (2 points)

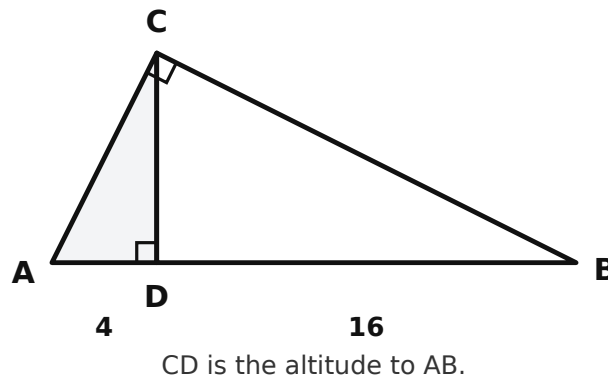
Points D and E lie on sides AB and AC of triangle ABC. Decide whether DE is parallel to BC.

- a. $AD=6$, $DB=10$, $AE=9$, $EC=15$ (1 point)
- b. $AD=5$, $DB=7$, $AE=8$, $EC=11$ (1 point)

Question 5: Right triangle altitude (3 points)

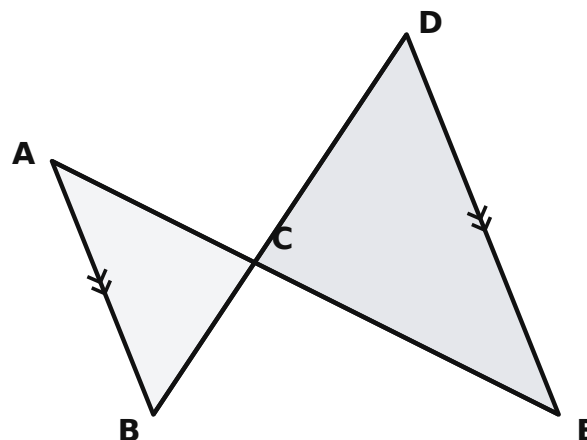
Triangle ABC has a right angle at C, and CD is the altitude to the hypotenuse. $AD=4$ and $DB=16$. Find each length in simplest radical form.

- a. CD (1 point)
- b. AC (1 point)
- c. BC (1 point)



Question 6: Complete a similarity proof (3 points)

In the figure, segments AE and BD intersect at C, and $AB \parallel DE$. Write a reason for each step to prove that triangle ABC is similar to triangle EDC.



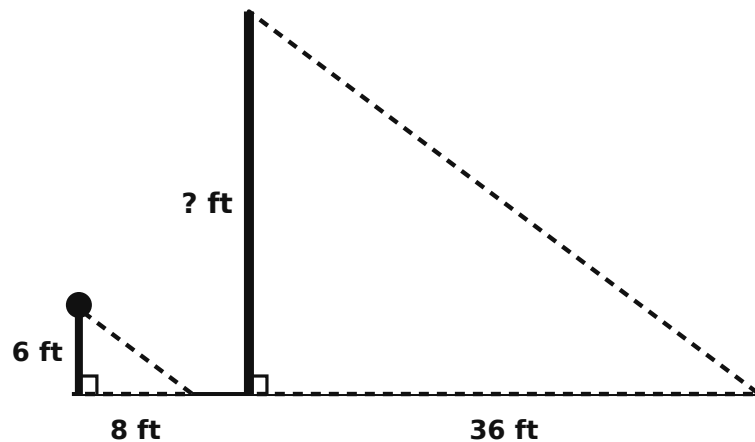
AB is parallel to DE.

Statements	Reasons
$AB \parallel DE$	Given
$\angle BAC \cong \angle DEC$	(1 point) _____
$\angle ACB \cong \angle ECD$	(1 point) _____
Triangle ABC is similar to triangle EDC	(1 point) _____

Question 7: Indirect measurement (2 points)

A 6 foot tall person casts an 8 foot shadow at the same time that a flagpole casts a 36 foot shadow. Use similar triangles to find the height of the flagpole.

- Write a proportion. (1 point)
- Solve it. (1 point)



A person and a flagpole at the same time.

Question 8: Similar triangles and algebra (2 points)

Triangle PQR is similar to triangle STU with $PQ = x+2$, $QR = 9$, $ST = 10$ and $TU = 15$. Find x and PQ .

Question 9: Geometric mean (1 point)

Find the geometric mean of 5 and 20.