

Grade 8 · Angles, Parallel Lines and Triangles · Test

Common Core 8.G.A.5 · mathovore.fr

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

This test covers triangle angle sums, exterior angles, parallel lines cut by a transversal and the AA criterion (8.G.A.5). There are nine questions worth 20 points in all. Show your work and name the angle relationships you use.

Test information

- **Grade:** Grade 8
- **Chapter:** Angles, Parallel Lines and Triangles
- **Common Core:** 8.G.A.5
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 3 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 3 pts)

Question 1: Third angle (2 points)

Find the missing angle in each triangle.

- A triangle has angles 63° and 49° . (1 point)
- A right triangle has an acute angle of 28° . (1 point)

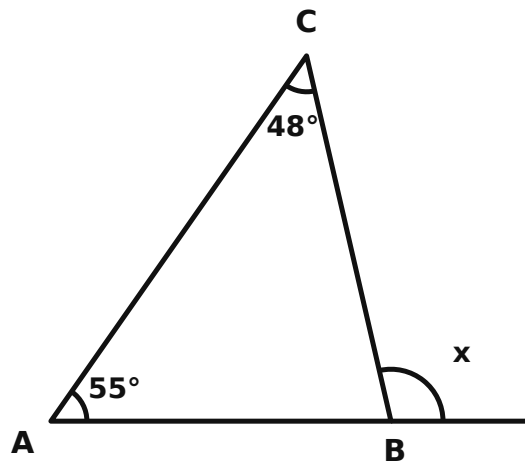
Question 2: Triangle with variables (2 points)

The angles of a triangle measure $(x+15)^\circ$, $(2x)^\circ$ and $(3x-15)^\circ$.

- Find x . (1 point)
- Find the measure of each angle. (1 point)

Question 3: Exterior angles (2 points)

Use the triangle to answer part (a).

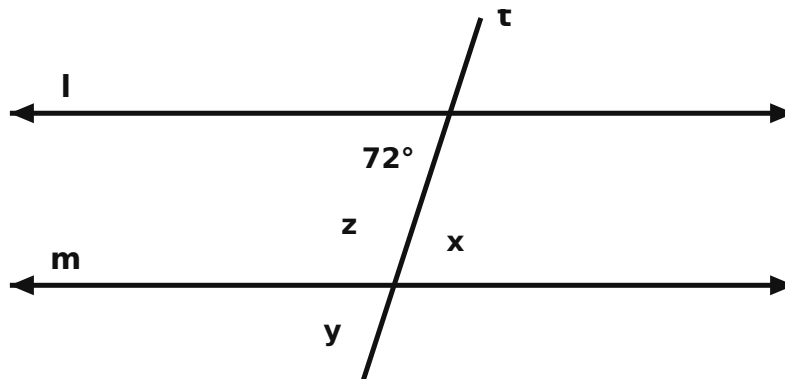


Triangle ABC with side AB extended.

- Find the exterior angle x . (1 point)
- A different triangle has an exterior angle of 142° and a remote interior angle of 89° . Find the other remote interior angle. (1 point)

Question 4: Parallel lines and a transversal (3 points)

Lines l and m are parallel. Find each measure and name the angle relationship.



Lines l and m are parallel.

- x (1 point)
- y (1 point)
- z (1 point)

Question 5: Alternate interior with x (2 points)

Two parallel lines are cut by a transversal. A pair of alternate interior angles measures $(4x-12)^\circ$ and $(2x+18)^\circ$.

- Find x . (1 point)
- Find the measure of each angle. (1 point)

Question 6: Roof truss (2 points)

A roof truss is an isosceles triangle with a top angle of 112° . The base is extended to form an exterior angle y .



A roof truss with equal base angles.

- a. Find the base angle x . (1 point)
- b. Find y . (1 point)

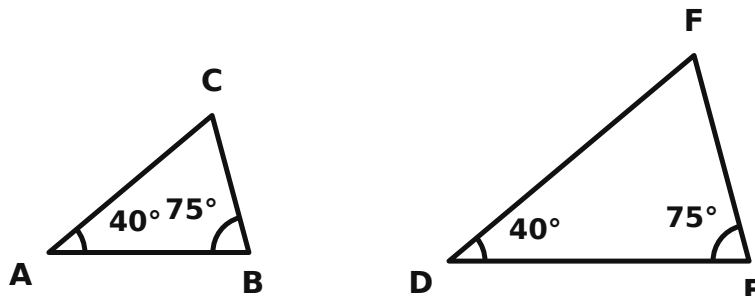
Question 7: Similar by angles (2 points)

Triangle ABC has angles 35° and 80° . Triangle DEF has angles 80° and 65° .

- a. Find the third angle of each triangle. (1 point)
- b. Are the triangles similar? Explain. (1 point)

Question 8: Missing side by AA (2 points)

In the figure, triangles ABC and DEF have equal marked angles. $AB = 8$, $AC = 10$ and $DE = 12$.

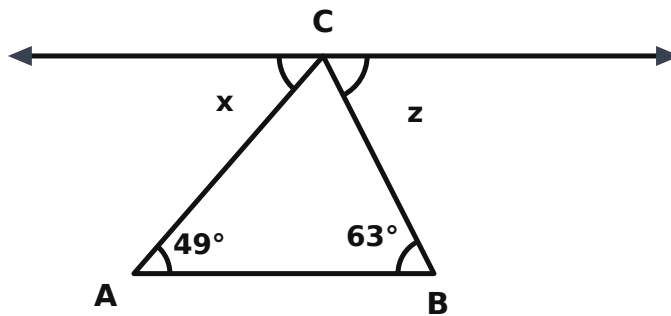


Triangles ABC and DEF .

- a. Find the scale factor from $\triangle ABC$ to $\triangle DEF$. (1 point)
- b. Find DF . (1 point)

Question 9: Why the angle sum is 180 (3 points)

A line through C is parallel to side AB of triangle ABC , where $\angle A = 49^\circ$ and $\angle B = 63^\circ$.



A line through C is parallel to side AB .

- Find x and z and name the angle relationship. (2 points)
- Find $\angle C$ and show that the angles along the line add to 180° . (1 point)