

Grade 8 · Angles, Parallel Lines and Triangles · Worksheet

Common Core 8.G.A.5 · mathovore.fr

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

These twenty-four problems practice Common Core standard 8.G.A.5. Find missing angles in triangles, use the exterior angle theorem, work with angles formed when parallel lines are cut by a transversal, and use the AA criterion to decide whether triangles are similar.

The problems run from one-step angle sums to equations with variables and word problems. Work from easiest to hardest and check each angle set against 180 degrees.

Grade 8 Common Core: 8.G.A.5

Problem 1: Find the third angle

Two angles of a triangle measure 48° and 67° . Find the third angle.

Problem 2: Right triangle angles

A right triangle has one acute angle of 35° . Find the other acute angle.

Problem 3: Isosceles triangle

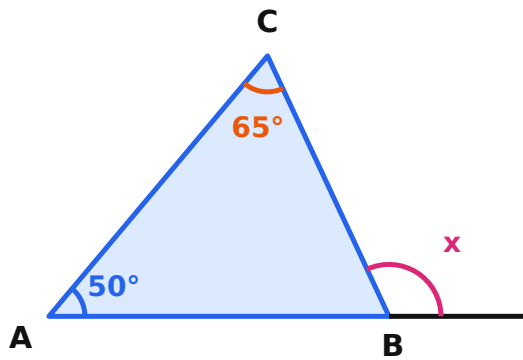
An isosceles triangle has a 40° angle between its two equal sides. Find the two base angles.

Problem 4: Angles in a ratio

The angles of a triangle measure x° , $2x^\circ$ and $3x^\circ$. Find x and all three angles.

Problem 5: Exterior angle

Find the exterior angle x at B .



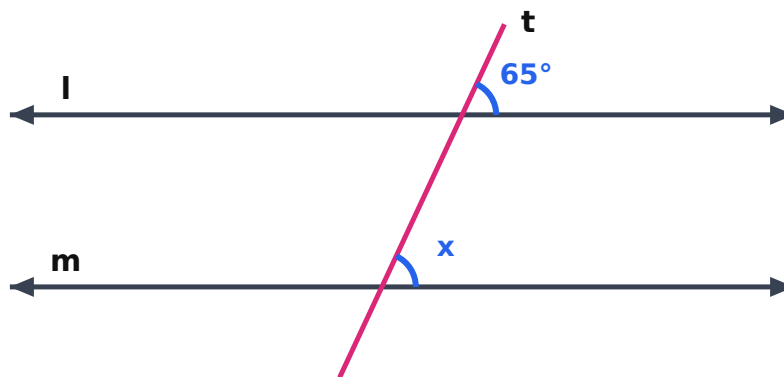
The exterior angle at B is marked x .

Problem 6: Missing remote angle

An exterior angle of a triangle measures 130° . One remote interior angle measures 80° . Find the other remote interior angle.

Problem 7: Corresponding angles

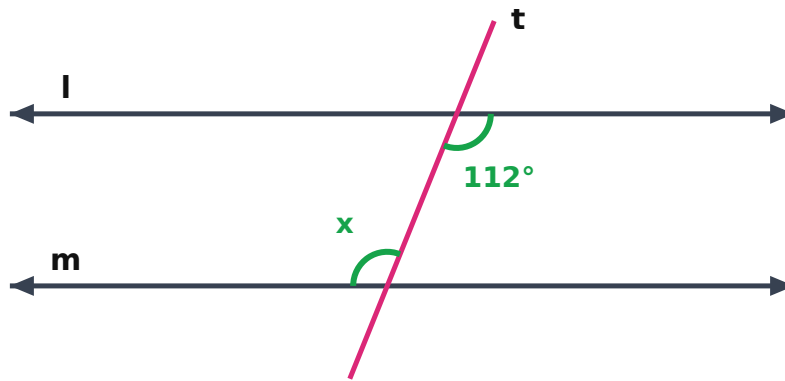
Lines l and m are parallel. Find x .



Lines l and m are parallel.

Problem 8: Alternate interior angles

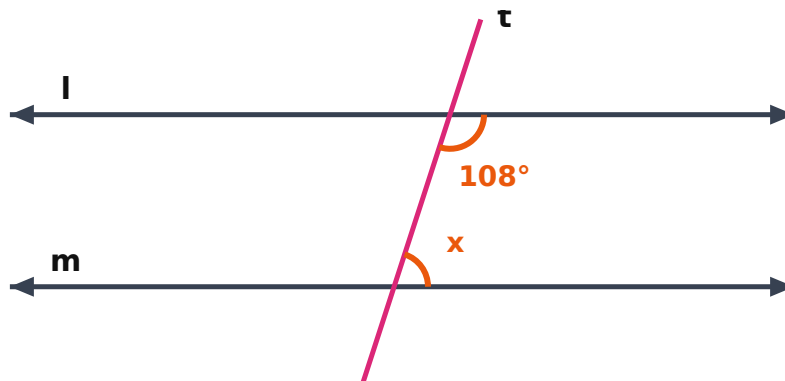
Lines l and m are parallel. Find x .



Lines l and m are parallel.

Problem 9: Same-side interior angles

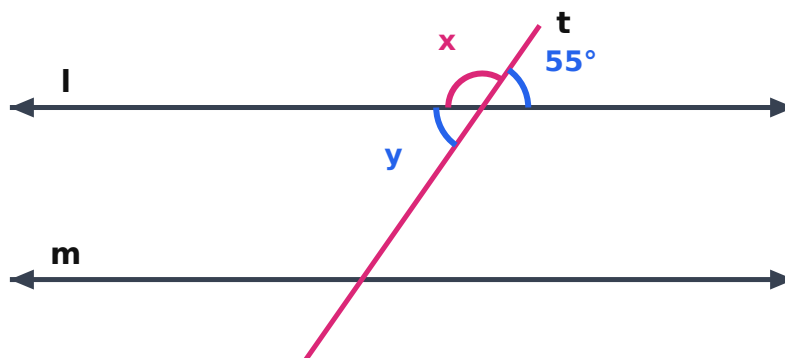
Lines l and m are parallel. Find x .



Lines l and m are parallel.

Problem 10: Linear pair and vertical angles

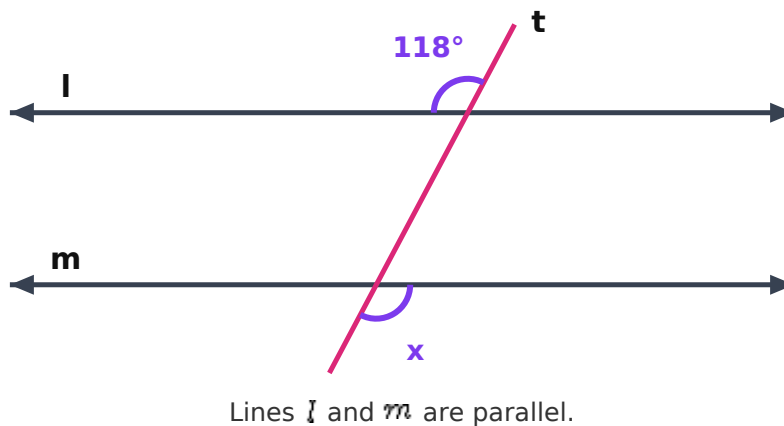
Find x and y .



Find x and y at the top intersection.

Problem 11: Alternate exterior angles

Lines l and m are parallel. Find x .



Problem 12: Corresponding angles with x

Two parallel lines are cut by a transversal. Corresponding angles measure $(3x+10)^\circ$ and 70° . Find x .

Problem 13: Same-side interior with x

Two parallel lines are cut by a transversal. Same-side interior angles measure $(2x+20)^\circ$ and $(x+40)^\circ$. Find x and both angles.

Problem 14: Triangle with x

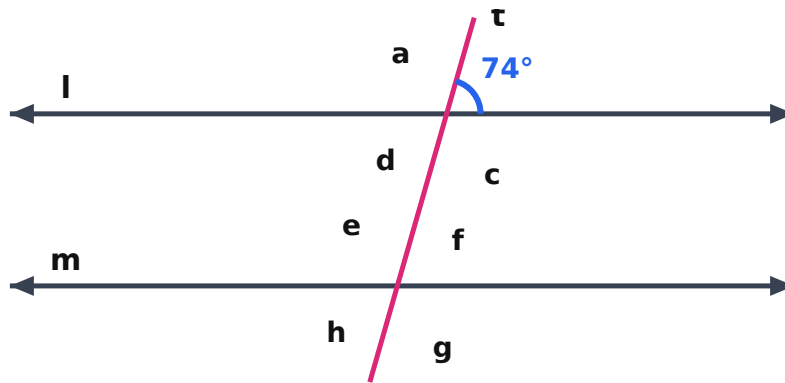
The angles of a triangle measure $(x+10)^\circ$, $(2x)^\circ$ and $(3x+20)^\circ$. Find x and each angle.

Problem 15: Exterior angle with x

An exterior angle of a triangle measures $(5x-10)^\circ$. The remote interior angles measure $(2x+15)^\circ$ and $(x+25)^\circ$. Find x and the exterior angle.

Problem 16: All eight angles

Lines l and m are parallel and one angle measures 74° . Find the measure of every labeled angle.



Lines l and m are parallel.

Problem 17: Same angles?

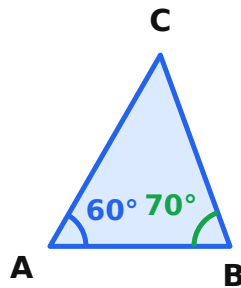
Triangle 1 has angles 50° and 60° . Triangle 2 has angles 60° and 70° . Are the triangles similar? Explain.

Problem 18: Not similar

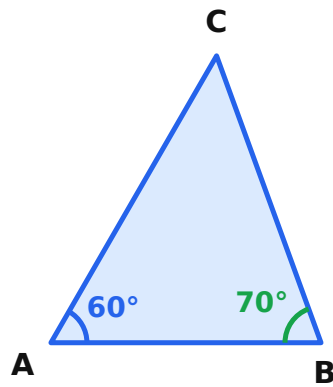
Triangle 1 has angles 45° and 65° . Triangle 2 has angles 45° and 75° . Are the triangles similar? Explain.

Problem 19: Missing side by AA

Triangles ABC and DEF have two pairs of equal angles, marked below. Show that they are similar, then find EF when $AB=6$, $BC=8$ and $DE=9$.



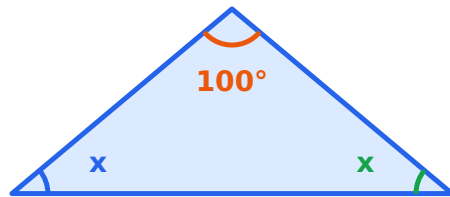
Triangle ABC : $AB=6$, $BC=8$.



Triangle DEF : $DE = 9$, $EF = x$.

Problem 20: Roof truss

The top angle of an isosceles roof truss measures 100° . Find the measure of each equal base angle x .



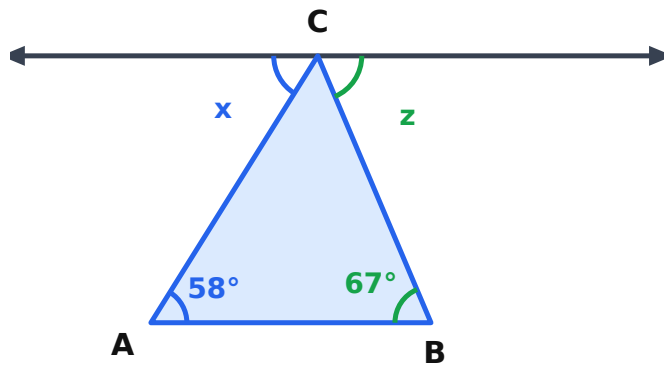
A roof truss with equal base angles.

Problem 21: City streets

Oak Street and Pine Street are parallel. Main Street crosses both. On the east side of Main, the angle between Main and Oak inside the strip between the two streets measures 52° . Find the angle between Main and Pine inside the strip on the east side, and on the west side.

Problem 22: Parallel line through a vertex

Sofia draws a line through C parallel to side AB of triangle ABC , where $\angle A = 58^\circ$ and $\angle B = 67^\circ$. The line makes angles x and z with the sides, as shown. Find x , z and $\angle C$, and show that $x + \angle C + z = 180^\circ$.



A line through C is parallel to AB .

Problem 23: Ramp brace

Liam builds a triangular brace for a skateboard ramp. At one corner the exterior angle measures 125° , and the interior angle at a different corner measures 35° . That corner is not next to the exterior angle. Find all three interior angles of the brace.

Problem 24: Quilt seam

Mei sews a quilt with two parallel stripes cut by a diagonal seam. A pair of alternate interior angles measures $(4x+8)^\circ$ and $(6x-32)^\circ$. Find x and the measure of each angle.