

Geometry - Theorems About Triangles - Worksheet

Common Core G-CO.C.10 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice angle sum, exterior angle, isosceles, midsegment, centroid and triangle inequality theorems (Common Core G-CO.C.10). The first problems are quick one-step checks of the definitions and formulas from the lesson. The middle problems ask for diagrams, equations and careful reasoning in the style of a high school Geometry class. The last six problems are applications with gardens, roof trusses, paths and coordinates.

Geometry · Common Core State Standards: **G-CO.C.10**

Exercise 1 - Third angle

Two angles of a triangle measure 52° and 67° . Find the third angle.

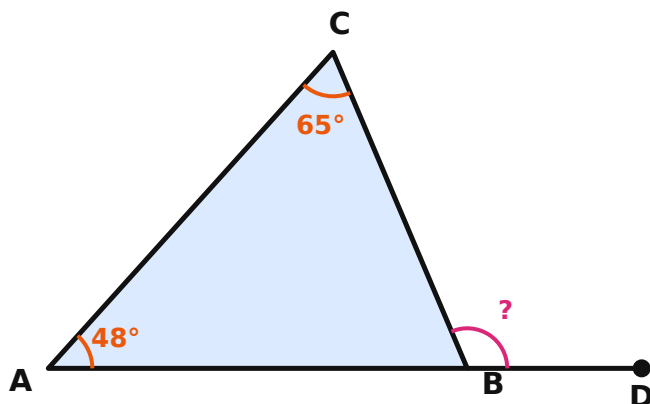
Exercise 2 - Right triangle

One acute angle of a right triangle is 38° . Find the other acute angle.

Exercise 3 - Equilateral triangle

In an equilateral triangle each side is $3x-6$ and the perimeter is 54. Find x and each angle measure.

Exercise 4 - Exterior angle



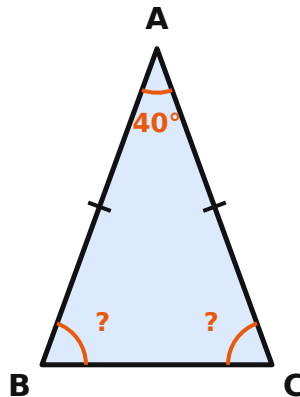
Exterior angle at B.

Find the exterior angle at B.

Exercise 5 - Remote angle

An exterior angle of a triangle measures 140° . One remote interior angle is 85° . Find the other remote interior angle.

Exercise 6 - Isosceles apex



Isosceles triangle ABC.

In isosceles triangle ABC, $AB = AC$ and $m\angle A = 40^\circ$. Find the base angles.

Exercise 7 - Isosceles base

A base angle of an isosceles triangle measures 54° . Find the vertex angle.

Exercise 8 - Angles in a ratio of 1 : 2 : 3

The angles of a triangle measure x , $2x$ and $3x$ degrees. Find each angle.

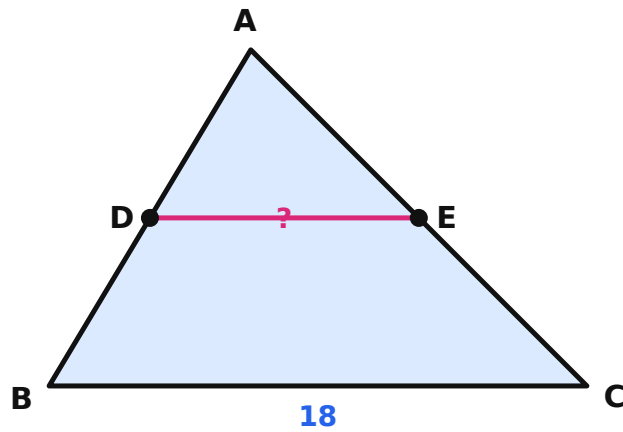
Exercise 9 - Angles with x

The angles of a triangle measure $(2x+10)^\circ$, $(3x-5)^\circ$ and $(x+25)^\circ$. Find x and each angle.

Exercise 10 - Exterior angle with x

The remote interior angles of a triangle measure $(2x+11)^\circ$ and $(3x+13)^\circ$, and the exterior angle is $(7x-16)^\circ$. Find x and the exterior angle.

Exercise 11 - Midsegment length



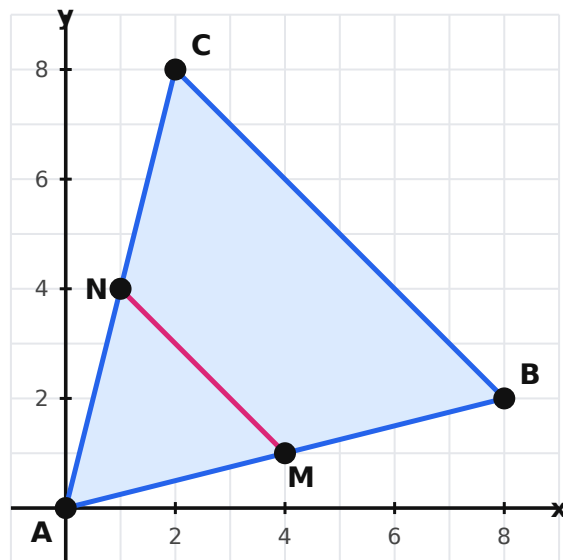
D and E are midpoints.

D and E are the midpoints of AB and AC. If $BC = 18$, find DE.

Exercise 12 - Midsegment with x

The midsegment DE of triangle ABC has $DE = 2x + 3$ and the parallel side has $BC = 5x - 6$. Find x, DE and BC.

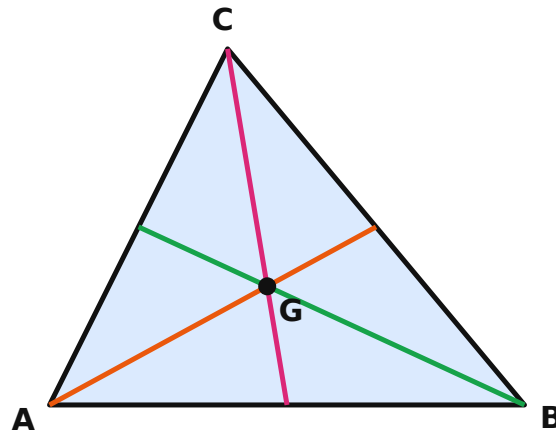
Exercise 13 - Midsegment on the plane



Triangle ABC and midsegment MN.

Triangle ABC has A(0, 0), B(8, 2) and C(2, 8). M and N are the midpoints of AB and AC. Find the coordinates of M and N and show that MN is half of BC.

Exercise 14 - Centroid and a median



Medians of triangle ABC.

The median from A has length 15. The centroid G lies on it. Find AG and the distance from G to the midpoint of the opposite side.

Exercise 15 - Centroid coordinates

Find the centroid of the triangle with vertices (0, 0), (6, 0) and (3, 9).

Exercise 16 - Can it be a triangle?

Can a triangle have sides of 5, 7 and 13? Explain.

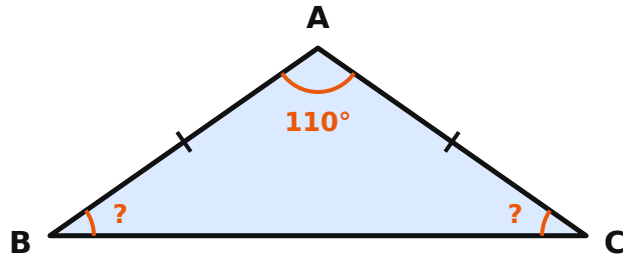
Exercise 17 - Third side range

Two sides of a triangle measure 9 and 14. Find all possible lengths of the third side.

Exercise 18 - Garden angles

The angles of a triangular garden are in the ratio 2:3:5. Find the three angles and say what kind of triangle it is.

Exercise 19 - Roof truss



Roof truss.

An isosceles roof truss has a 110° angle at the peak. Find the angle the rafters make with the horizontal beam.

Exercise 20 - Walking paths

Maya walks 120 feet east and then 200 feet along a straight path to a pond. A third straight path joins the pond back to her starting point. Can that third path be 70 feet long? Give the possible lengths.