

Triangle Angle Track

Use the interior-angle sum to solve triangle problems.

HIGH SCHOOL • MA.912.GR.1.3

MA.912.GR.1.3 "Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles."

NAME _____

DATE _____

INTERIOR ANGLES ADD UP

The measures of the three interior angles in any triangle add to 180 degrees. Add the angle expressions, set their sum equal to 180, and solve for x .

WORKED EXAMPLE

Triangle ABC has interior angles measuring 47 degrees, 68 degrees, and x degrees. Find x .

1. $47 + 68 + x = 180$

2. $115 + x = 180$

3. $x = 65$

Answer: $x = 65$ degrees

PRACTICE 6 problems

- 1** A triangle has interior angles measuring 52 degrees, 73 degrees, and x degrees. Find x .

ANSWER _____

- 2** A triangle has interior angles measuring $(x + 14)$ degrees, 39 degrees, and 81 degrees. Find x .

ANSWER _____

- 3** A triangle has interior angles measuring $(2x + 5)$ degrees, $(3x + 1)$ degrees, and $(4x + 3)$ degrees. Find x .

ANSWER _____

- 4** A triangle has interior angles measuring $(x + 15)$ degrees, $(2x + 6)$ degrees, and 72 degrees. Find x .

ANSWER _____

- 5** A triangle has interior angles measuring 101 degrees, x degrees, and 26 degrees. Find x .

ANSWER _____

- 6** The interior angles of a triangle are in the ratio 2:3:4. Find the measure of the largest angle.

ANSWER _____

APPLY IT Show your work

- 1** A student makes a triangular pennant for the school robotics team's pit area. Two interior angles measure 58 degrees and 67 degrees. What is the third interior angle?

WORK SPACE

ANSWER _____

- 2** The three interior angles of a triangular support frame for a skateboard ramp measure $(3x + 5)$ degrees, $(2x + 10)$ degrees, and 45 degrees. Find x and all three angle measures.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A triangle has angle measures $(2x + 8)$ degrees, $(x + 17)$ degrees, and $(3x - 1)$ degrees. Find x and all three angle measures. Then explain in one sentence why these measures can form a triangle.

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A triangle has interior angles measuring 52 degrees, 73 degrees, and x degrees. Find x .	$x = 55$ degrees
2	A triangle has interior angles measuring $(x + 14)$ degrees, 39 degrees, and 81 degrees. Find x .	$x = 46$
3	A triangle has interior angles measuring $(2x + 5)$ degrees, $(3x + 1)$ degrees, and $(4x + 3)$ degrees. Find x .	$x = 19$
4	A triangle has interior angles measuring $(x + 15)$ degrees, $(2x + 6)$ degrees, and 72 degrees. Find x .	$x = 29$
5	A triangle has interior angles measuring 101 degrees, x degrees, and 26 degrees. Find x .	$x = 53$ degrees
6	The interior angles of a triangle are in the ratio 2:3:4. Find the measure of the largest angle.	80 degrees

PART 2 · APPLY IT

- 55 degrees** Add the two given angle measures. Subtract their total from the interior-angle sum of a triangle.
- $x = 24$; the angle measures are 77 degrees, 58 degrees, and 45 degrees.** Add the three expressions and set the result equal to the interior-angle sum. Solve for x , then substitute x into each expression.

CHALLENGE

$x = 26$, and the angles are 60 degrees, 43 degrees, and 77 degrees. They can form a triangle because $60 + 43 + 77 = 180$ degrees.

Accept equivalent equations and correct angle measures with or without the word "degrees." For the challenge, accept any one-sentence explanation that the three interior angles total 180 degrees.