

Triangle Angle Detectives

Use 180 degrees to solve triangle angle puzzles.

GRADE 5 • 5.MG.3

5.MG.3 "The student will classify and measure angles and triangles, and solve problems, including those in context. Classify angles as right, acute, obtuse, or straight and justify reasoning. Classify triangles as right, acute..."

NAME _____

DATE _____

TRIANGLE ANGLE RULE

The three interior angles in every triangle add to 180 degrees. Add the angles you know, then subtract that total from 180 to find the missing angle.

WORKED EXAMPLE

A triangle has angles of 52 degrees and 61 degrees. Find the third angle.

1. Add the known angles: $52 + 61 = 113$.

2. Subtract from 180: $180 - 113 = 67$.

Answer: 67 degrees

PRACTICE 6 problems

- 1** A triangle has angles of 45 degrees, 70 degrees, and _____. Find the missing angle.

ANSWER _____

- 2** A triangle has angles of 90 degrees, 38 degrees, and _____. Find the missing angle. Then classify it as right, acute, or obtuse.

ANSWER _____

- 3** A triangle has angles of 102 degrees, 36 degrees, and _____. Find the missing angle. Then classify it as right, acute, or obtuse.

ANSWER _____

- 4** A triangle has angles of 60 degrees, 60 degrees, and _____. Find the missing angle. Then classify it by sides and angles.

ANSWER _____

- 5** A triangle has angles of 88 degrees, 47 degrees, and _____. Find the missing angle. Then classify it as right, acute, or obtuse.

ANSWER _____

- 6** A triangle has angles of _____, 73 degrees, and 73 degrees. Find the missing angle. Then classify it by sides and angles.

ANSWER _____

APPLY IT Show your work

- 1** A triangular kite design has one angle of 90 degrees and another angle of 55 degrees. What is the measure of the third angle? Classify the kite design's triangle by its angles.

WORK SPACE

ANSWER _____

- 2** A student makes a triangular sign for a game booth. Two inside angles measure 110 degrees and 28 degrees. What is the third angle? Classify the sign's triangle by its angles.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A triangle has one right angle. Its other two angles are equal. What is the measure of each equal angle? Classify the triangle by sides and angles. Explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A triangle has angles of 45 degrees, 70 degrees, and ____. Find the missing angle.	65 degrees
2	A triangle has angles of 90 degrees, 38 degrees, and ____. Find the missing angle. Then classify it as right, acute, or obtuse.	52 degrees; right triangle
3	A triangle has angles of 102 degrees, 36 degrees, and ____. Find the missing angle. Then classify it as right, acute, or obtuse.	42 degrees; obtuse triangle
4	A triangle has angles of 60 degrees, 60 degrees, and ____. Find the missing angle. Then classify it by sides and angles.	60 degrees; equilateral and acute
5	A triangle has angles of 88 degrees, 47 degrees, and ____. Find the missing angle. Then classify it as right, acute, or obtuse.	45 degrees; acute triangle
6	A triangle has angles of ____, 73 degrees, and 73 degrees. Find the missing angle. Then classify it by sides and angles.	34 degrees; isosceles and acute

PART 2 • APPLY IT

- 35 degrees; right triangle** Add 90 and 55 to get 145 degrees. Subtract 145 from 180 to get 35 degrees, and the 90-degree angle makes it a right triangle.
- 42 degrees; obtuse triangle** Add 110 and 28 to get 138 degrees. Subtract 138 from 180 to get 42 degrees, and the 110-degree angle makes it an obtuse triangle.

CHALLENGE

Each equal angle is 45 degrees. The triangle is isosceles and right because $180 - 90 = 90$, and 90 split equally is 45 and 45.

Accept angle measures written with or without the word degrees. For classifications, accept the combined descriptions in either order, such as right isosceles or isosceles right.