LESSON MAKER PRO

# Triangle Angle Detective

*Use angle relationships to find missing measures.*

**GRADE 7 · 7A.GM.A**

**7A.GM.A** "Construct and describe geometrical figures, analyzing relationships among them."

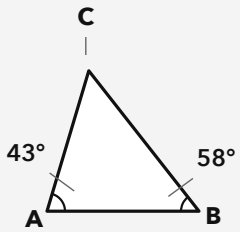
NAME _____ DATE _____

## TRIANGLE ANGLE RULES

The three inside angles of a triangle add to 180°. Angles opposite sides marked as equal have the same measure. A square corner mark shows a 90° angle.

## WORKED EXAMPLE

Find angle C.

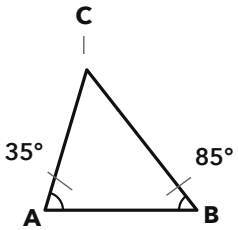



1. Add the known angles: 43° + 58° = 101°.
2. Subtract from 180°: 180° - 101° = 79°.

**Answer: Angle C = 79°.**

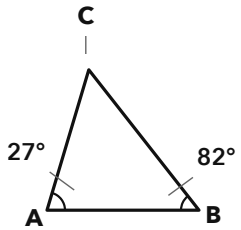
## PRACTICE 6 problems

**1** Find angle C.



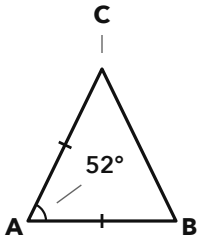

ANSWER _____

**2** Find angle C.




ANSWER _____

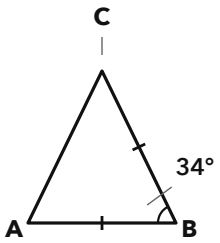
**3** The marked sides are equal. Find angles B and C.




**ANSWER** _____

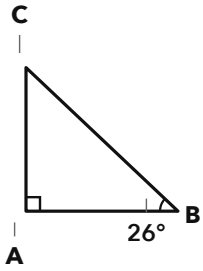
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**4** The marked sides are equal. Find angle A.



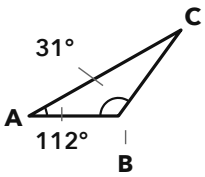

**ANSWER** _____

**5** Find angle C.




**ANSWER** _____

**6** Find angle C. Then classify the triangle as acute, right, or obtuse.

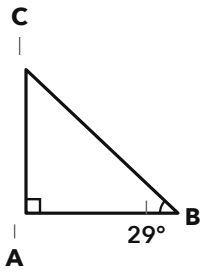



**ANSWER** _____

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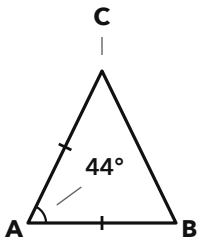
## APPLY IT Show your work

**1** A skate ramp support forms the triangle shown. What is angle C?




**ANSWER** _____

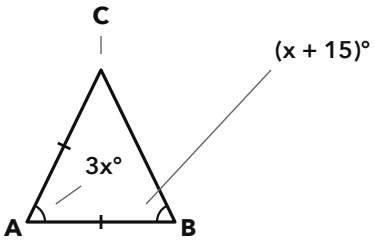
**2** An art club makes a triangular banner with two equal sides, shown by the marks. What is the measure of each base angle?




**ANSWER** _____

## CHALLENGE One step up

The marked sides are equal. Find x and angle C. Explain how the side marks help.




WORK SPACE AND ANSWER

**ANSWER KEY**

# Triangle Angle Detective

**GRADE 7 · 7A.GM.A**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Find angle C. | **60°** |
| 2 | Find angle C. | **71°** |
| 3 | The marked sides are equal. Find angles B and C. | **Angle B = 64°; angle C = 64°.** |
| 4 | The marked sides are equal. Find angle A. | **73°** |
| 5 | Find angle C. | **64°** |
| 6 | Find angle C. Then classify the triangle as acute, right, or obtuse. | **Angle C = 37°; obtuse triangle.** |

## PART 2 · APPLY IT

1. **61°** The marked corner is 90°, so angle C is 180° - 90° - 29° = 61°.
2. **Angle B = 68°; angle C = 68°.** The base angles are equal. Each measures (180° - 44°) / 2 = 68°.

## CHALLENGE

**x = 30; angle C = 45°. The marked sides make angles B and C equal, so 3x + 2(x + 15) = 180.**

Accept answers with or without degree symbols when the measure is clear. For the challenge, accept any correct explanation that uses equal base angles and the 180° triangle sum.