MATHEMATICS · GRADES 7-9

Triangle Angle Sums

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you find a missing angle in a triangle, like checking the angles of a roof truss or a ramp support, from the two angles you already know. The three angles of any triangle always add to the same total, so two known angles leave only one possibility for the third. That makes the missing angle a simple subtraction, once you know the other two. Builders and designers use this to check a frame, a truss, or any triangular support is cut to the right angles.



Rule

Triangle angle sums: the three angles of any triangle add to 180 degrees.

If you know two angles, the third is 180 minus the other two.

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Worked examples

EXAMPLE 1

Q A triangle has angles 50 degrees and 70 degrees. Find the third angle.

SOLUTION

Angles in a triangle add to 180 degrees.

Add the known angles: 50 + 70 = 120

Subtract: 180 - 120 = 60. The third angle is 60 degrees.

EXAMPLE 2

Q A right triangle has one angle of 35 degrees. Find the third angle.

SOLUTION

Angles in a triangle add to 180 degrees, and the right angle is 90 degrees.

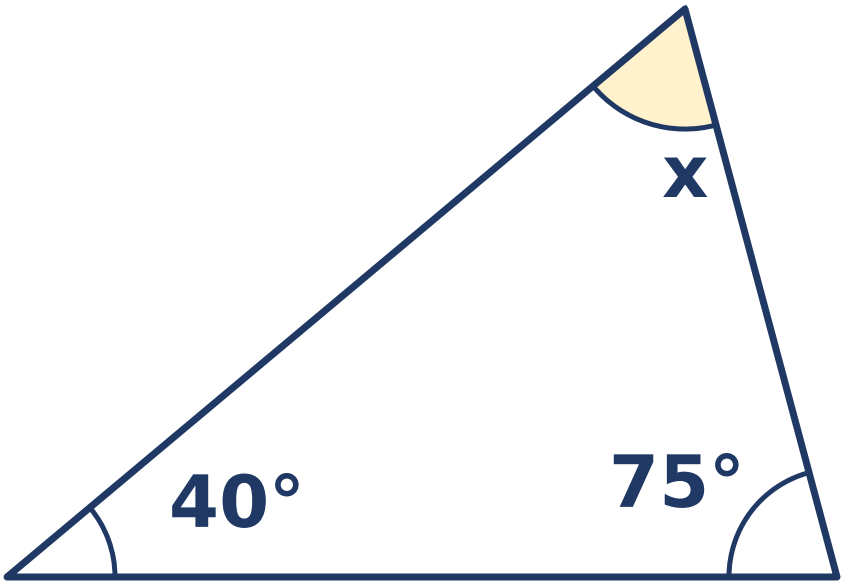
Add: 90 + 35 = 125

Subtract: 180 - 125 = 55. The third angle is 55 degrees.

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Practice questions

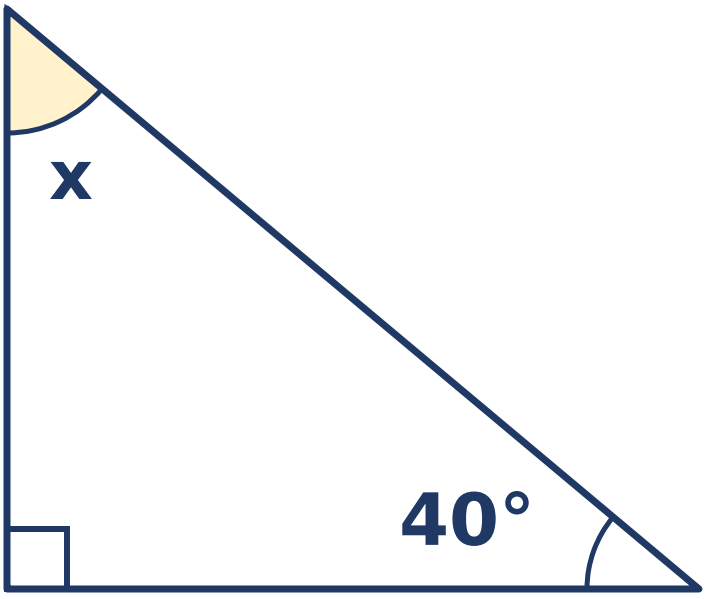
1 A tent is shaped like a triangle in the diagram. Find the third angle, marked x.



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2 **A right triangle is drawn in the diagram, like the corner of a book page. Find the third angle, marked x.**

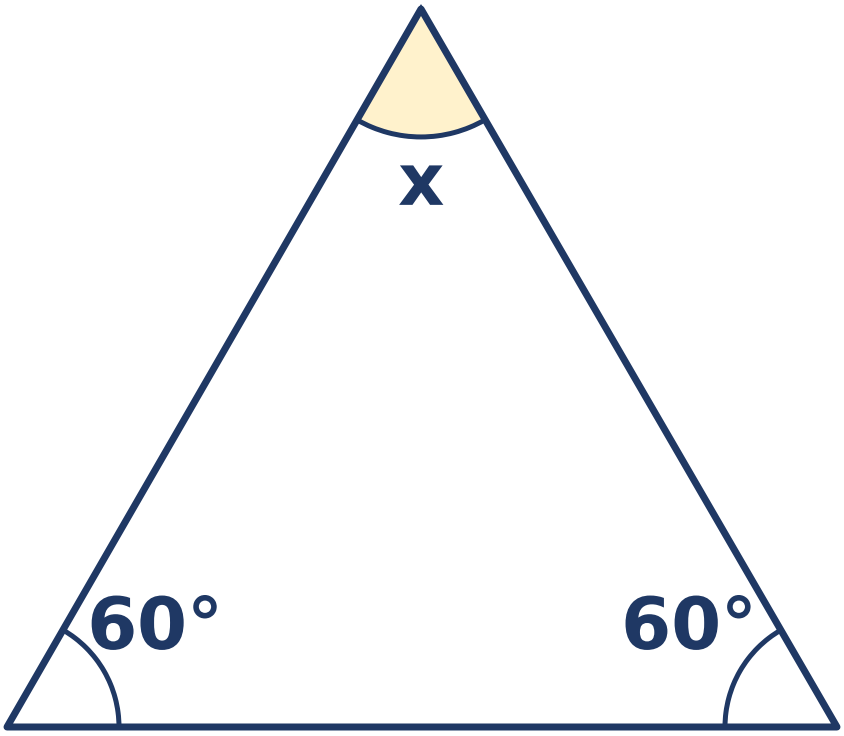


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3 A triangular road sign is shown in the diagram. Find the third angle, marked x.

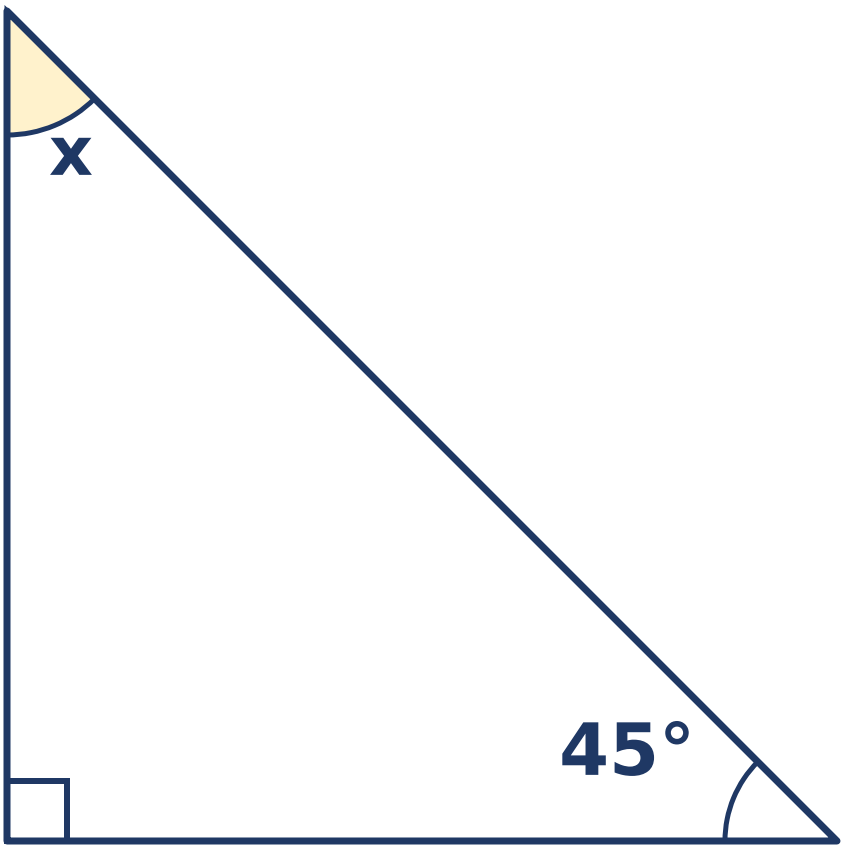


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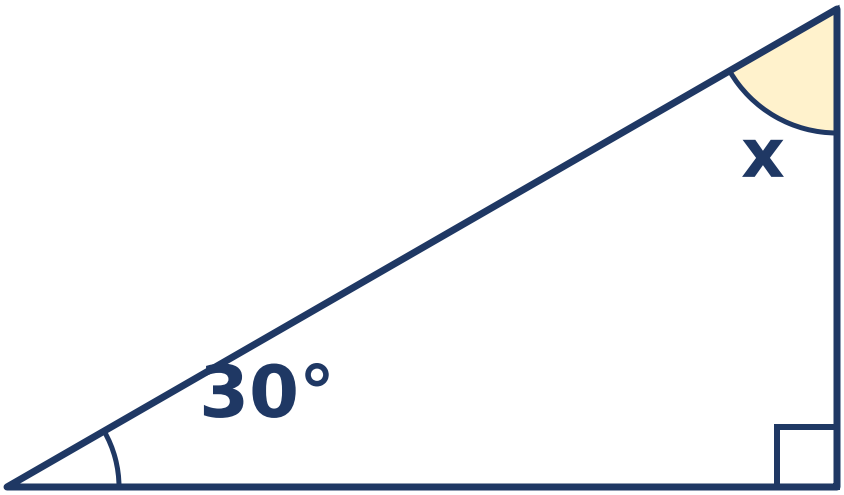
4 **A right triangle is drawn in the diagram. Find the third angle, marked x.**



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5 **A ramp forms a right triangle with the ground in the diagram. Find the third angle, marked x.**

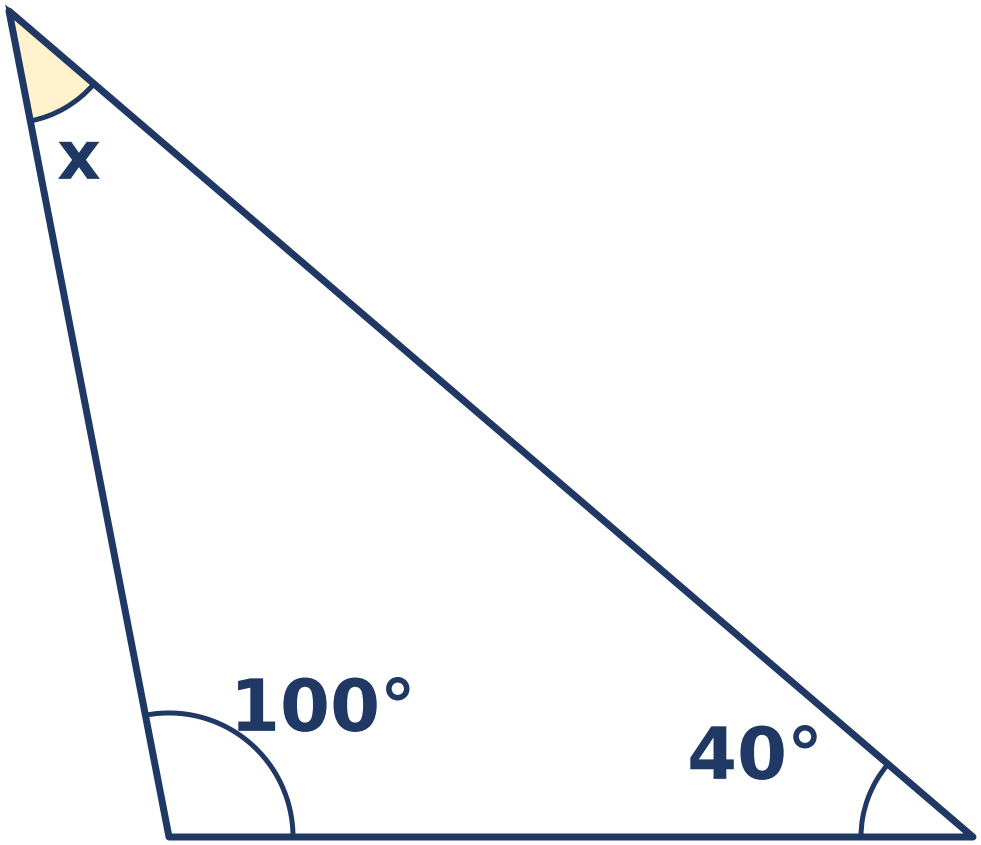


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6 **A sail is shaped like a triangle in the diagram. Find the third angle, marked x.**

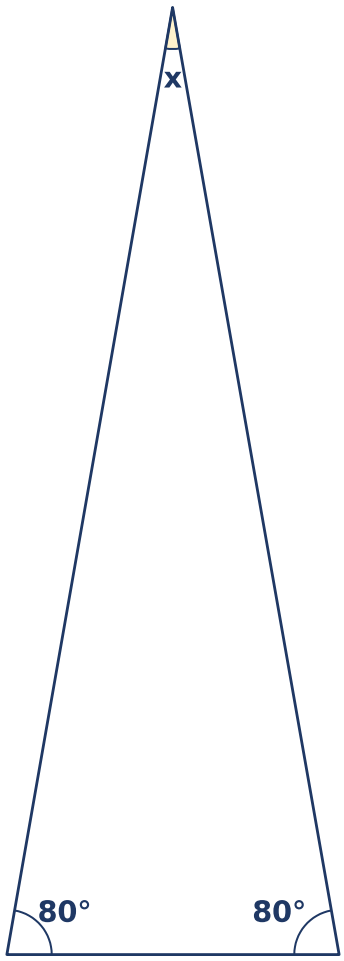


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7

A triangular slice of cake is shown in the diagram. Find the third angle, marked x.

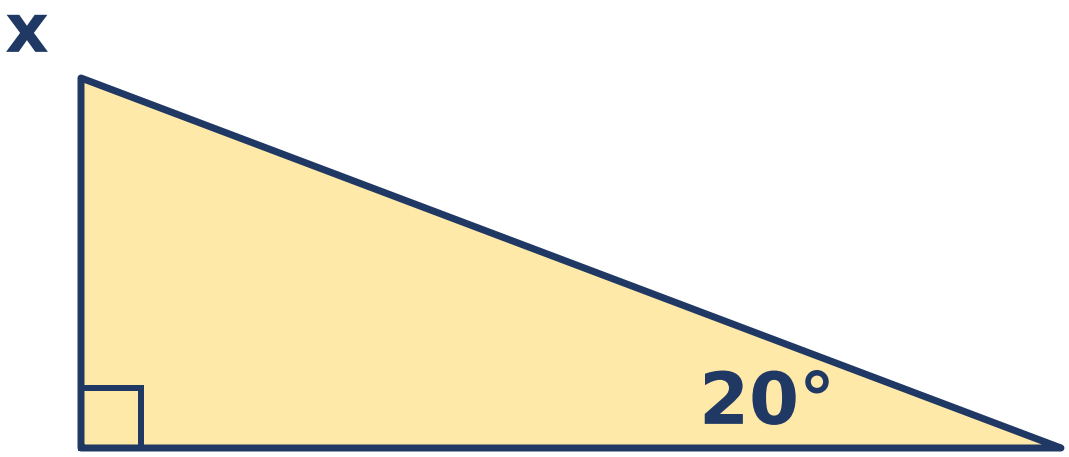


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8 A right triangle is drawn in the diagram, like half a rectangle cut across a corner. Find the other acute angle, marked x.

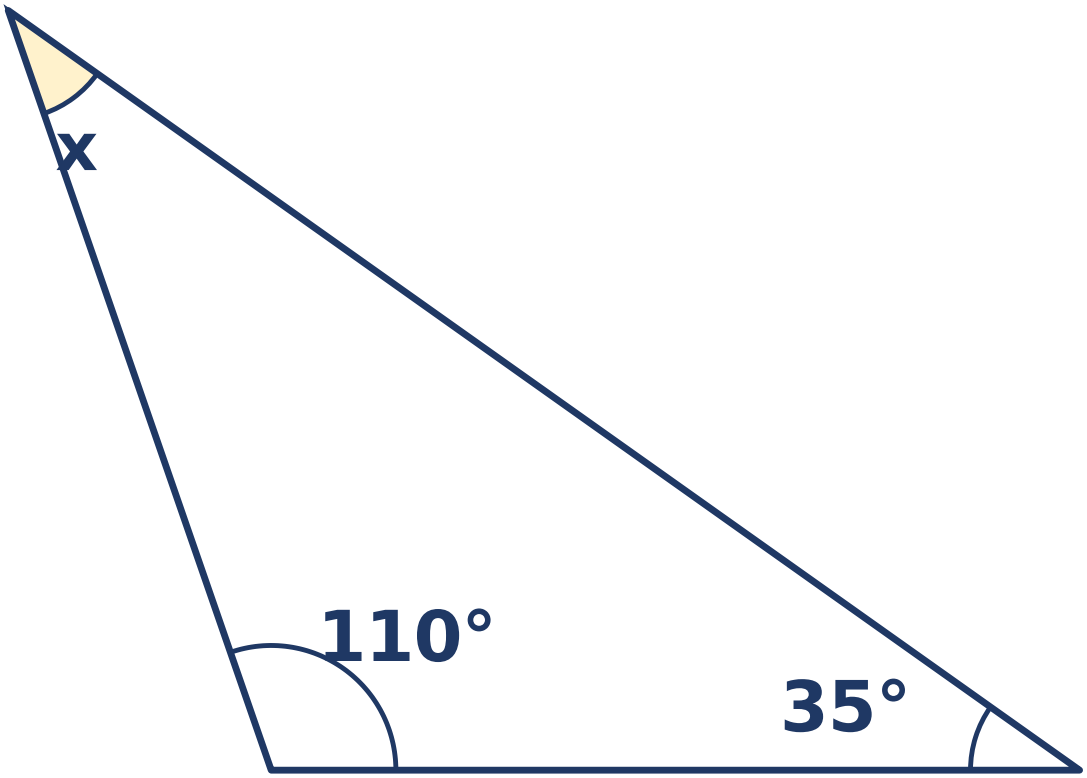


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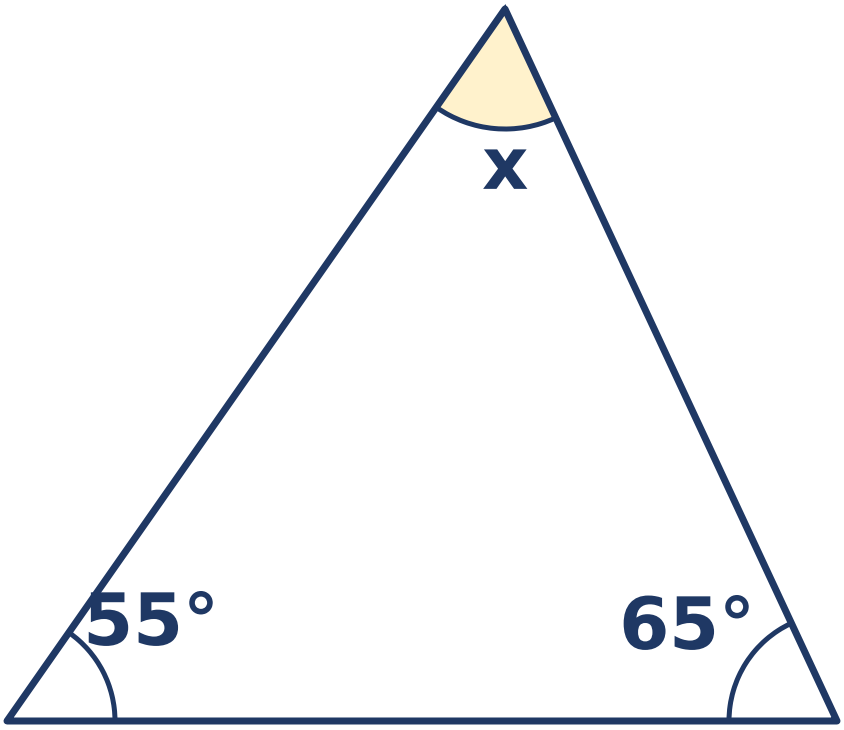
9 **A kite is shaped like a triangle in the diagram. Find the third angle, marked x.**



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10 **A roof peak forms a triangle in the diagram. Find the third angle, marked x.**



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ANSWER KEY

1. 65 degrees

2. 50 degrees

3. 60 degrees

4. 45 degrees

5. 60 degrees

6. 40 degrees

7. 20 degrees

8. 70 degrees

9. 35 degrees

10. 60 degrees

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