

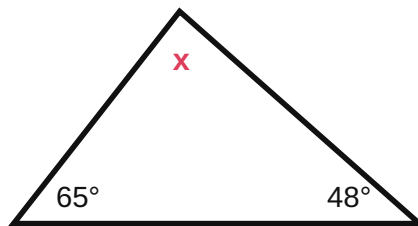
Boost Free Lessons - Year 7 Maths

Lesson 18: Angle Sum of a Triangle

Name: _____ Grade: _____ Date: _____

Worked Example 1

Find the size of angle x in the triangle below.



1. The three angles inside any triangle add to 180° .
2. Add the two known angles: $65 + 48 = 113$.
3. Subtract from 180: $x = 180 - 113$.

$x = 67^\circ$

Worked Example 2

An isosceles triangle has an apex angle of 40° . Find the size of each base angle.

1. The angle sum is 180° , so the two base angles together are $180 - 40 = 140^\circ$.
2. In an isosceles triangle the two base angles are equal.
3. Divide by 2: $140 \div 2 = 70$.

Each base angle = 70°

Remember: The angle sum of a triangle is 180° . Equilateral triangles have three 60° angles; isosceles triangles have two equal angles.



Question 1: Find the size of the third angle in a triangle containing the following two angles.

1. 50° and 60°
2. 90° and 35°
3. 45° and 45°
4. 110° and 25°
5. 72° and 72°
6. 30° and 30°
7. 100° and 47°
8. 15° and 85°
9. 60° and 60°
10. 8° and 121°



Question 2: Answer the following questions.

1. What is the size of each angle in an equilateral triangle?

2. A right-angled triangle has one angle of 28° . Find the third angle.

3. An isosceles triangle has two angles of 55° . Find the third angle.

4. An isosceles triangle has an apex angle of 100° . Find each base angle.

5. The angles of a triangle are in the ratio 1 : 2 : 3. Find all three angles.

6. A triangle has angles of x , $x + 10$ and $x + 20$. Find the value of x .

7. Can a triangle have angles of 90° , 80° and 20° ? Explain your answer.

8. A triangle has angles of x , $2x$ and $3x$. Find the value of x .



Question 3: Answer the following questions.

1. A triangular roof truss has a base angle of 35° at each end. Find the angle at the apex.
2. In triangle ABC, angle A = 90° and angle B is twice angle C. Find angles B and C.
3. The exterior angle of a triangle is 120° , and the two opposite interior angles are equal. Find each of those angles.
4. A triangle has one angle of 90° and one of 45° . What type of triangle is it? Explain.
5. Explain why a triangle cannot have two right angles.





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Answers : Angle Sum of a Triangle**Question 1**

- | | |
|---------------|----------------|
| 1. 70° | 6. 120° |
| 2. 55° | 7. 33° |
| 3. 90° | 8. 80° |
| 4. 45° | 9. 60° |
| 5. 36° | 10. 51° |

Question 2

- | | |
|--------------------|--|
| 1. 60° | 5. 30° , 60° and 90° |
| 2. 62° | 6. $x = 50^\circ$ |
| 3. 70° | 7. No. They add to 190° , but a triangle's angles must add to 180° . |
| 4. 40° each | 8. $x = 30^\circ$ |

Question 3

1. 110°
2. $B = 60^\circ$, $C = 30^\circ$
3. 60° each
4. Right-angled isosceles. The third angle is also 45° , so two angles are equal.
5. Two right angles already total 180° , leaving 0° for the third angle, which is impossible.

