

Inequalities

Chapter 11: Inequalities · Topic 1

Key Concept

In any triangle, the side opposite the largest angle is the longest side, and the side opposite the smallest angle is the shortest.

The triangle inequality theorem states that the sum of any two sides of a triangle must be greater than the third side.

This means we can determine if three given lengths can form a triangle by checking if this condition holds for all three combinations.

Understanding these inequalities helps us solve problems involving triangle properties and verify if a triangle can exist with given measurements.

Quick Revision Notes

- The longest side is opposite the largest angle.
- The shortest side is opposite the smallest angle.
- Triangle inequality: sum of two sides $>$ third side.
- This must hold for all three side combinations.
- This determines if a triangle can form.
- These relationships apply to any triangle.
- They help verify triangle measurements.
- This is a fundamental geometry concept.

Practice Questions

- 1 Check if sides 4, 5, 9 can form a triangle.
- 2 Check if sides 6, 8, 10 can form a triangle.
- 3 Discuss which side is longest in a triangle with angles 40° , 60° , 80° .
- 4 Explain the triangle inequality theorem in your own words.
- 5 Solve a problem verifying triangle measurements.
- 6 Discuss why this theorem is useful in construction.