

Angle Sum Property of Quadrilaterals

Chapter 4: Quadrilaterals · Topic 2

Key Concept

This angle sum property allows an unknown fourth angle to be calculated if the other three angles of a quadrilateral are known, simply by subtracting their sum from 360° . This principle also extends logically to other polygons: a pentagon (5 sides) can be divided into 3 triangles (540° total), a hexagon (6 sides) into 4 triangles (720° total), following the general formula $(n-2) \times 180^\circ$ for a polygon with n sides.

Quick Revision Notes

- The sum of interior angles of any quadrilateral is always 360° .
- This can be proven by dividing a quadrilateral into two triangles ($180^\circ + 180^\circ = 360^\circ$).
- The general formula for a polygon's angle sum is $(n-2) \times 180^\circ$, where n is the number of sides.
- An unknown fourth angle can be found by subtracting the other three from 360° .

Practice Questions

- 1 Find the fourth angle of a quadrilateral if the other three are 80° , 90° , and 100° .
- 2 Calculate the angle sum of a hexagon (6 sides) using the general polygon formula.
- 3 Explain how dividing a quadrilateral into two triangles proves its angle sum is 360° .