

Exploring Triangles and Polygons

Chapter 11: Exploring Some Geometric Themes · Topic 2

Key Concept

This pattern reveals a general rule: any polygon with n sides can be divided into $(n-2)$ triangles from a single vertex, giving a total interior angle sum of $(n-2) \times 180^\circ$. This connects triangle properties to the study of all polygons, showing how a fundamental geometric building block (the triangle) underlies the properties of far more complex shapes, a recurring theme throughout geometry.

Quick Revision Notes

- A polygon with n sides can be divided into $(n-2)$ triangles from one vertex.
- General angle sum formula for a polygon: $(n-2) \times 180^\circ$.
- A pentagon (5 sides) divides into 3 triangles, giving 540° angle sum.
- A hexagon (6 sides) divides into 4 triangles, giving 720° angle sum.

Practice Questions

- 1 Find the angle sum of a pentagon.
- 2 Calculate the angle sum of an octagon (8 sides) using the general formula.
- 3 Explain why a polygon with n sides can be divided into $(n-2)$ triangles.