

Exterior Angle of a Triangle

Chapter 7: A Tale of Three Intersecting Lines · Topic 2

Key Concept

This theorem provides a useful shortcut: instead of needing to know all three interior angles to find an unknown angle, only two are needed if the exterior angle relationship is used correctly. This property is derived directly from the fact that the interior angle sum is 180° and that the interior and exterior angle at any single vertex are supplementary (add up to 180°), making the Exterior Angle Theorem a logical consequence rather than an entirely separate, unrelated rule.

Quick Revision Notes

- Exterior Angle Theorem: an exterior angle equals the sum of the two non-adjacent (opposite) interior angles.
- This theorem is a useful shortcut for finding unknown angles without needing all three interior angles.
- It is derived from the triangle angle sum (180°) and interior-exterior angle supplementary relationship.
- An interior and its adjacent exterior angle at the same vertex always add up to 180° .

Practice Questions

- 1 Find the exterior angle if the two opposite interior angles are 40° and 70° .
- 2 Verify the Exterior Angle Theorem using a triangle with angles 50° , 60° , and 70° .
- 3 Explain why the Exterior Angle Theorem follows logically from the triangle angle sum property.